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RG-S3760 "

ৰ ~ Ḥ

RGOS 10.4(2)

©2010

RGOS®

Red-Giant®

锐捷®

ŽĄ ˝ ѝ ' RGOS®10.4(2) Â

⁂ Л Ю " Ж˘

Ж˘

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⁂

1.

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

2. Ъ ę

Ъ ę Е Arial˘ ε Е Ž̃Ω Ъ̃ Ю'

Е' Ъ ę Ž̃Ω ˆ Ъ ę è ɖ a ˩ ǂ ˜ ╗ Е Â

Е' Ъ ę ˥ ˆ Ъ ę è ḣ ę ǂ ˜ Е

[ ] ' [ ] ǂ ˘ ج Ъ ę ˩ Â

{ x | y | ... }' ÿ ч э э è ˩ У э Â

[x | y | ...]' ÿ ч э э è ˩ У э a Â

//' ˥ ѝ Â

3. ʎ

ؠ ʎ ج ɔ è ⋮ ɯ ˘ ҏ ҂ Ю'

à ˆ à ɔ è Y Â

à à à ɔ ̈ ̇I

	1.	̈Ạ w R ̆ ʅ ص ɻ ɻ a ˘ ɔ è ʎ ɳ ҕ ʅ ص Â
	2.	̈Ạ ̆ w R ҷ è ɻ ̈ὺ ὲ ɳ ҕ " ̈ ̂ ɳ ҕ ص ʅ à ˜ ˘ ἑ E ҷ Ʌ G ҷ ὶ ñ Â
	3.	̈Ạ è ʅ ɮ ʅ ɮ ɳ ҕ في ˘ ʒ ɷ У ҂Ю ɮ˘ Ʌ ʅ ɷ ˜ Ь Ԩ Â

1 CLI

1.1

1.1.1 alias

У ԧ ʒ ⁞ ɻ˘ ɿ Л ھ ѿ Ю G alias ԧ ʒ Â G ԧ ʒ no ɿ Лʊ̃ У ԧ ʒ ⁞ ɻ ʊ̃ У э Ю ѿ ԧ ʒ ⁞ ɻ Â

alias *mode command-alias original-command*

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

۹	
mode	⁞ ɻ ʒ ԧ ʒ ԧ ʒ Â
command-alias	ԧ ʒ ⁞ ɻ Â
original-command	⁞ ɻ ʒ ԧ ʒ Â

ھ EXEC Ю ʊ̃ ԧ ʒ ھ ⁞ ɻ Â

ԧ ʒ ѿ

EXEC Ю ԧ ʒ ⁞ ɻ ѝ **h** ằ**p** ằ**s** ằ**u** ằ**un** ԧ ɻʊ̃ ⁞ ѝ **help** ằ**ping** ằ**show** ằ **undebug** ằ **undebug** Â

ԧ ʒ ⁞ ɻ a **no alias exec** ԧ ʒʊ̃ Â

ԧ ʒ ⁞ ɻ˘ ɿ Л У э´ ʒ У ԧ ʒ Â R ԧ ш ʒʊ̃ ԧ Ж ī

G

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

⋮ ⅈ ३ ھو ३ a У э´ ˘ ‡¸ G ⅊ ھو ३ ↑ Â R ˘ ج EXEC Ю ⋮ ⅈ ”sv” ३ ھو ३ ”**show version**” ‡'

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

⋮ ⅈ ÿ ώ ھو ३ У э ˘ ⅊ a Â Э R ˘ ج ھو ३ ⅊ ώ ⅊ ˘ a ⅊ ⅈ ⋮ ⅈ'

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

ھو ३ ⋮ ⅈ ≠ ⅉ ⅊ ⅉ ھو ३ ⅊ ╠ ⅊ ˘ R ⅊ Ю ھو ३ ⋮ ⅈ ”ia” ३ ”ip address” ‡ ج ⅊ Ю'

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

" ⅊ ”**ip address**” ھو ३ ⅊ ⅊ ⅊ ˘ ɜ ⋮ ⅈ ھو ३ Â ھو ३ ⋮ ⅈ ج G ώ˘ ї ‡ a ⋮ Â G **show aliases** ھو ३ ⅉ ⅊ è ⋮ ⅈ Â

ш R

⅊ Ю R ˘ ώ Ю˘ G ھو ३ ⋮ ⅈ ”def-route” ३ ”ip route 0.0.0.0 0.0.0.0 192.168.1.1”

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

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ھو ३	
show aliases	⋮ ⅈ

ⅈ

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⁞˘ ⌟ Л ججώ Ю ᴳ **privilege** ԧ ʒ Â ᴳ
ѝ ḣ Â

ommand-string

mand-string

ԧ ʒ CLI ԧ ʒ Â
ԧ ʒ ԧ ʒ ˘ ⌟ ѝ ⌟ ⁞ Â
ԧ ʒ ԧ ʒ ⁞˘ ⁞ ت 0-15 Â
ԧ ʒ ѝ ⁞ Â
ԧ ʒ s Â

è ⌟ CLI ԧ ʒ ̃Ω ˘ a ⌟ ˘ ⌟
ᴙ˘ ججώ Ю̆ ⌟ Л ᴳ **privilege ?** "

ώ
⌟

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   ˘ ˩   ˩ ⎍ G   reload ƪ ʒ'
Ruijie> reload ?
<cr>
       reload   ώ    ƪ ʒ          ⁞ 1      ˘ ‡ ˩ ⎍ G   all ˜Ω    '
Ruijie(config)# privilege exec all level 1 reload
   ˘ G    ⁞ 1   ώ CLI   ˘ ˩   ˩ ⎍ G   reload   ώ    ƪ ʒ'
Ruijie> reload ?
at                  reload at a specific time/date
cancel              cancel pending reload scheme
in                  reload after a time interval
<cr>
```

˜Ωƪ ʒ

ƪ ʒ	
enable secret	CLI ⁞ ˥ ʒ

˥

ЛuЮ R ˘ EXEC Ю ħu ३ ⁞ ⅄'

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

w R

2

2.1

2.1.1 disable

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disable [*privilege-level*]

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ϥ	
privilege-level	

ƕ ʇ

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G ƕ ʇ ÿ ᶧ Â ╗ Э ˘ ‡ ɱ æᶧ Â

disable ƕ ʇ Ⅎ ɏ ɱ Â

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Ю R ɱ æᶧ ˉ ˈ

```
Ruijie# disable 10
```

enable	ÿ ώᶧ ˘ ᶧ ⁝ Â

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2.1.2 enable

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	ǝ ৭ ê ώ ƙυ ३ ৭ Ì Â
ƙυ ३	ǝ ৭ ê ώ ƙυ ३ ৭ Ì Â
G	ǝ ৭ ê ώ ƙυ ३ ৭ Ì Â
w R	ǝ ৭ ê ώ ƙυ ३ ৭ Ì Â

ƙυ ३		
	ƙυ ३	
	-	-

৶	ǝ ৭ ê ώ ƙυ ३ ৭ Ì Â

ƙυ ३ ৶		
	৶	
	-	-

2.1.3 enable password

a ৶ ⁞ ৭ ३˘ ώ ƙυ ३ **enable password** Â ƙυ ३ **no** ⁞ ৭ ३ Â

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

৭		
	৭	
	Password	ώ EXEC ৭ ३ Â
	Level	⁞ Â
	0|7	৭ ३ ╗ ص˘ 0 ╗ ˘ 7 ´ ╗ Â
	encrypted-password	৭ ३ Â

Ĥu ȝ	ώ
G	ώ ╗ صر Â У ąЮ˘ ˂ ⁸ ╗ ˂ ȝ ˘ ώ ╗ صر Â ˂ ȝ ĦЖ Ю' ↑ ΰ 1↑ 26 ɔ ŋ̃ Ω Â ˂ ȝ ɱ ˂ Λυ ɱ ˘ ɲ Â è ˂ ‡ ɔ ὶ ˂ ȝ У ↑ Â ϖ ╗ صˇ ˂ ώ У ˂ ȝˇ ‡ a ώ EXEC Â a ˙ ╗ x ˂ ȝ Â ˂ ˂ ȝ Â
w R	Ю R ˂ ȝ ὶ pw10' `Ruijie(config)# **enable password** *pw10*`

Ĥu ȝ

Ĥu ȝ	
enable secret	ώ ˂ ȝ Â

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Ĥu ȝ ˥ ˂

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2.1.4 enable secret

a ˂ ⁝ ώ ˂ ȝˇ ώ Ĥu ȝ **enable secret** Â Ĥu ȝ **no** ⁝ ⁝ ˂ ȝ Â

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

no enable secret

˂

˂	
Secret	ώ EXEC ˂ ȝ Â
Level	⁝ Â
0|5	˂ ȝ ╗ صˇ 0 ╗ ˘ 5 ώ ╗ Â
encrypted-password	˂ ȝ Â

ᄒᆞᆫ ᄀᆞᆯ	ᄋᆞᄋᆞ
G	ᄒᆞᆫ ᄀᆞᆯ ᄋᆞᆫ ᄀᆞᄋᆞ ᄒᆞᆫ ᄀᆞᆯ ᄋᆞᆫ ᄀᆞᄋᆞ **no enable service** ᄒᆞᆫ ᄀᆞᆯ ᄋᆞᆫ ᄀᆞᄋᆞ
ᄋᆞ R	ᄋᆞᄋᆞ R ᄒᆞᆫ ᄀᆞᆯ' enable service ssh-sesrver, SSH Server ᄀᆞᆫ '

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

ᄒᆞᆫ ᄀᆞᆯ

ㅗ **Telnet** ㅠ ˘ ˚ ㅎㅎ ㅎㅇ

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

	enable Â
ȟʊ ʒ	ȣ
G	ȟʊ ʒ ¥ Web Â G **no ip http authentication** ȟʊ ʒ ȶ ȟ Â
ʷ R	ȽO R ȟʊ ʒ˘ Web local ' `Ruijie(config)#` **`ip http authentication local`**
ʔȟʊ ʒ	

ȟʊ ʒ	
enable service	

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2.1.9 ip telnet source-interface

ৰ Э IP ھ ڈ ھ ڈ ڭ Telnet ھ ڈ ھ ڈ ڭ ھ Ю ৰ ৷ Л υ G **ip telnet source-interface** ھυ ३'

ip telnet source-interface *interface-name*

ৰ

ৰ	
interface-name	ৰ Э IP ھ ڈ ھ ڈ ڭ Telnet ھ ڈ Â

ھυ ३ ڭ

G

ھυ ३ ५ ৰ Э IP ھ ڈ ھ ڈ ڭ ڭ Telnet ھ ڈ Âھ G telnet ھυ ३ У ৰ Telnet ৷ ৷ Ą ڭ ڭ ´ ৰ ھ ڈ G ڭ Â G **no ip telnet source-interface** ھυ ३ ڭ ھ Â

w R

Ю R ھυ ३ Loopback 1 ৰ Э IP ھ ڈ ھ ڈ ڭ ڭ Telnet ھ ڈ'

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

Ωھυ ३

ھυ ३	
telnet	؟ У ৰ Telnet ৷ ৷ Â

ৰ

ھυ ३ ৭ ৰ

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10.4(2)	ھυ ३

2.1.10 lock

ㅎㅎ Э У э ㅅ ㅋ˘ EXEC ㅏㅂ ㅋ **lock** Â

lock

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ㅏㅂ ㅋ

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æo ï ㅅ ㅋ ˘ ㅎㅎ ㄱ[ㅎㅎ ㄴ ˘ в Лㅂ Â
ЛㅂЮ в '
У ' ώ **lock** ㅏㅂ ㅋ˘ ώ ㅅ ㅋ'
γ ' ώ ㅅ ㅋ˘ ㄴЛㅂ ˙ s Â ώ ㄴ˘ ώ ㅅ ㅋ˘
ㄴ˘ ˘ l' Locked Ł ㅋ '
ώ ˘ ώ ï ㅅ ㅋ Â
ㅎㅎ Э G в ˥ ˘ æo ㅎㅎ line Ю **lockable** ㅏㅂ ㅋ˘ ㅎㅎ
line Э в Â

ㅈ R

Ю R й в У э '

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

ˆΩㅏㅂ ㅋ

ㅏㅂ ㅋ	
lockable	ㅎㅎ Э в Â

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ㅏㅂ ㅋ ㄱ ㄴ

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2.1.11 lockable

ㅎ Э G **lock** ㅏㅂ ㅋ˘ ㄴ ㄴㅂㅎ line Ю **lockable** ㅏㅂ ㅋ˘ ㅎ
ą Ю a **lock** ㅏㅂ ㅋ Â G **no** ㅏㅂ ㅋ ㄴ Â

lockable

no lockable

ㄱ	
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ㅏㅂ ㅋ line

G ㅏㅂ ㅋ ¥ ㅎ Э ㅂ ˘ ㅂ ㄴ ㄴㅂ ㅎ EXEC Ю
lock ㅏㅂ ㅋ Â

Ю R ㅎ 8 ㄴ ㄱ Э ㅂ ㅠ ˘ ㅂ 8 ㄴ'

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

w R

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lock	ㅂ Â

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login

no login

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ㅏㅂ ㅋ line

G ㅂ AAA ㅁ ㅡ ‡ ㅏㅂ ㅋ ¥ ㅇ ´ ㅓ ㅋ Â ㅓ ㅋ VTY console ㅓ è ㅓ ㅋ Â

w R Ю R ㅎ VTY Э ㅓ ㅋ Â

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

ㅁㅏㅂ ㅋ

ㅏㅂ ㅋ	
password	line

ঠ্ব ৩ line

G

	username ħu ३ aa ə Â

w R	ЮR جِ VTY Э aa Â Ruijie(config)# **no aaa new-model** Ruijie(config)# **username** *test* **password** *0 test* Ruijie(config)# **line vty** *0* Ruijie(config-line)# **login local**

˜Ωħu ३	ħu ३	
	username	aa ə Â

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2.1.15 privilege mode

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G	৲ ê CLI ħu ३ Ì Â
w R	৲ ê CLI ħu ३ Ì Â

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2.1.16 password

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

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

no password

৲	
password	line ৲ ৩ Â

service password-encryption

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

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ƒu ƒ} ¥ ¦ У ƒ telnet ╚ ╝ Â

/ipv6 ˜Ω ˘ Θ جم IPV6 è	

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R 1' Ю R ˘ telnet IPV4 سم فخ ى 192.168.1.1˜ ƒ G ḣ˘ ƒ ى vlan 1˜ VRF ى vpn1'

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

R 2' Ю R ˘ telnet IPV6 سم فخ ى 2AAA:BBBB::CCCC'

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

˜Ωƒu ƒ}

ƒu ƒ}	
ip telnet source-interface	ƒ Э IP سم فخ ɔ ى Telnet سم فخ'
show session	ƒ TTY ˚ '
exit	ƒ '

ƒ

ƒu ƒ} ˥ ƒ

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2.1.19 username

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

message	ƨ ƥ

ƪƱ ƷƷ ƫƫ

G G ƪƱ ƷƷ ƺƱƱ ƨ ˘ ˘ ƲƨƨƲ ˚ Â
ƫ ƫ ƺƲ ƫ ˘ ‡ Ʋ x Â

ƱƱ R ƨ '
Ruijie(config)
Ruijie(config)# **banner login** *$ enter your password $*

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2.2.2 banner motd

ƨ ˘ ƨ ƫƫ ƱƱ ƪƱ ƷƷ **banner motd** Â ƺƺ
ƨ ˘ G **no banner motd** ƪƱ ƷƷ Â

banner motd *c message c*

ƺƺ	
c	ƨ ƫ ˘ ƨ è a ƭ
message	ƨ ƥ

ƪƱ ƷƷ ƫƫ

ƪƱ ƷƷ ƫƫ

G G ƪƱ ƷƷ ƺƱƱ ƨ ˘ ˘ ƲƨƨƲ ˚ 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
```

ǘ ╟ Ą̆ s5750_10_4.bin Â

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show boot system	Ω̃ ɚ Â

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2.2.4 clock set

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

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hh:mm:ss	ɱ ˘ ӥ ˆ 24 8 ˜ : ɭ :
day	ˆ 1-31˜ ˘ У э è Â
month	` ˆ 1-12˜ ˘ У è `
year	Ω ĩ ˆ 1993-2035˜ ˘ a G ŋ̃ Â

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G ƙ ƙ ˘ ƒ Â

¥ k ˚ ˘ G clock set Э Θ

˘ Ю ˅˜ Â

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Ю R ɱ й 2003 3 17 Э ' 10 20† 30 '

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

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show clock	ɱ

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2.2.5 clock update-calendar

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clock update-calendar

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ƙ ˚ è ñ Ω ⁸† ˚ ˥ Â

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

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	- ÎB1u)ÚÞÉÚ AGÀ´

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ɯ ᴿ	Ю ᴿ 10ᵻ ʆƲ ʎ '
	 `Ruijie# reload in 10`
	 `Router will reload in 600 seconds.`

͂ΩƕƲ ʢ	<table><tr><th>ƕƲ ʢ</th><th></th></tr><tr><td>-</td><td>-</td></tr></table>
ʎ	
ƕƲ ʢ ˥ ɺ	<table><tr><th>ʎ</th><th></th></tr><tr><td>-</td><td>-</td></tr></table>

2.2.10 session-timeout

ɱ LINE Э ᵻ ̤ ˘ G **session-timeout** ƕƲ ʢ Â
no session-timeout ƕƲ ʢ˘ ʎ LINE Юᵻ ̤ ˘ ̤ a Â

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

no session-timeout

ɥ	<table><tr><th>ɥ</th><th></th></tr><tr><td>minutes</td><td>ᵻ '</td></tr><tr><td>output</td><td>ΐ ≠ ɔ ӣ ώ˘ ″ ΐ '</td></tr></table>
	ӣ 0 min Â
ƕƲ ʢ	LINE
G	௯ ᾀ˘ ӱ ɱ LINE Э ᵻ ̤ ˘ ˙ ! ώ ǝ ˘ è ˘ LINE ӣ ɺ Â
ɯ ᴿ	Ю ᴿ line vty 0 ̤ ӣ 5ᵻ 30 '

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

ῼꞁꞇ ʇ	ꞁꞇ ʇ	
	-	-

ɺ	

ꞁꞇ ʇ ˥ ɺ	ᴧ	
	-	-

2.2.11 speed

˘ ے Ю˘ ꞁꞇ ʇ **speed** *speed* Â
˘ G **no speed** ꞁꞇ ʇ Â

speed *speed*

ɥ	ɥ	
	Speed	· ˘ ´ Æ bpsÂ ɣ s ɥ˘ ɺ · й 9600 à19200 à38400 à57600 à 115200 è У э˘ 9600Â

	9600
ꞁꞇ ʇ	ῷ
G	G ꞁꞇ ʇ Â
ɯ R	Ю R s ɥ й 57600 bps' Ruijie(config)# **line console** *0* Ruijie(config-line)# **speed** *57600*

ῼꞁꞇ ʇ	ꞁꞇ ʇ	
	-	-

ɺ	

ꞁꞇ ʇ ˥ ɺ	ᴧ	

```
[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]
```

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

ㅎ

ㅎ ㅎ ㅎ ㅎ	
-	-

2.3

2.3.1 show clock

ㅎ ㅎ **show clock** ㅎ

show clock

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ㅎ

ㅎ ㅎ

G

G ㅎ ㅎ ㅎ ㅎ detail ㅎ

ㅎ ㅎ

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

clock set	

-	-

2.3.2 show line

show line

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

console	
aux	aux
vty	vty
line-num	line

console

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

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

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2.3.3 show reload

ㅇ ㅐ ˇ ㅎㅎ ㅇ ㅏㅇ ㅋ **show reload** Â

show reload

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ㅏㅇ ㅋ

G

G ㅏㅇ ㅋ ㅅㄴ ㅇ ㅐ Â

ㅇ R ㅇ ㅐ '

ㅈ R

```
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

ঠ্ব ৩ **show running-config** Â

show running-config

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w R

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	-	-

৶

```
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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ƕʊ ʅ ˥ ɺ

/ֈ	
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3 LINE

3.1 LINE

3.1.1 access-class

Line ƬO ACLˆ 8 " ~ Â G **access-class** *acl-no* { **in | out** } ƬU ʒ
Line ƬO 8 " Â G no **access-class** *access-list-number* {**in | out**} ƬU ʒ ˅ƚ
LINE ƬO ACL Â

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

Ĥu ३ ৭ ৶

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3.1.2 line

ώ̂ LINE ˘ G ΛЦЮĤu ३'

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

ʌ

ʌ	
aux	ʌ˘ У Θ ج ⅄ " ҥ ҩ Э
console	8 ʌ
tty	ʌ˘ У Θ ج ⅄ " ҥ ҩ Э
vty	˘ ɣ telnet/ssh
First-line	ώ first-line ʌ
Last-line	ώ last-line ʌ

Ĥu ३ ώ̃

G ώ LINE Â

w R ώ̂ LINE VTY 1̂ 3 LINE '

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

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Ĥu ३ ৭ ৶

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-	-

3.1.3 line vty

Ю ३ ৲ Л ╗ ৩ ৲ Л G VTY Â Ю ३ **no** ৭ ৲ Л ˜ ৩ ৲ Л G VTY Â

line vty *line-number*

no line vty *line-number*

৭	৭	
	-	-

ą Ю ˜ ৲ VTY ˀ 5˜ ৴ ˀ 0--4 Â

Ю ३	ŏ

G	╗ ˜ ৲ VTY ˘ ৲ Л G Э Ю ३ Â

ш R	R 1' ৲ VTY ╗ˆ 20˜ ৲ VTY ৴ ˀ 0--19 Â Ruijie(config)# **line vty** *19* R 2' ৲ VTY ˜ ˆ 10˜ ৲ VTY ৴ ˀ 0—9 Â Ruijie(config)# **line vty** *10*

˜Ω Ю ३	Ю ३	
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Ю ३ ˥ ৴	৴	
	-	-

3.1.4 transport input

Line Ю ৲ Л ˜ ˘ G **transport input** Ю ३ Line Ю ৲ Л ˜ Â G **default transport input** ˀ LINE Ю ˊ ˜ ˀ ˙ Â

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

default transport input

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

telnet	Line Ю˜ ৲ ї Telnet ˜ Â
none	Line Ю˜ a ї ˙ ! ˜ Â

˘ VTY ї ˜ Â ε ص TTY ḣ ẗ NONE˜ a ї ˙ ! ˜ Â ɷ ˜ ৲ Л ৴˘ ৲ Л G **default transport input** ƪ ३ ẗ ḣ Â

ƪ ३ Line

G

ƪ ३ Line Ю ї ˜ ÂVTY ج ɑ Ю˜ ї ˜ ą Â ɷ ї ˜ ৴˘ ৲ ˜ ৲ Л ج VTY Э ╗ Â G **show running** ƪ ३ Line Ю ą Â

G	**default transport input** ƪ ३ Â **no transport input** ƪ ३˘ LINE Ю ą ˜ Â б **transport input none** ৲ Â

W R

ج line vty 0 4 Ю˜ ৲ ї telnet ˜ '

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

˜Ωƪ ३

ƪ ३	
show running	ą Â

৴ ˚ RGOS10.1 Л Э

ƪ ३ ˥ ৴

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4

4.1

4.1.1 ping

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ƗƠ'

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

	˥	

	έ ᴇ ⁴ DNS ᛘ Â

ʬ ᴿ	ᴿ 1ʽ ping ᴿʽ
	`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 2ʽ ping ᴿʽ
	`Ruijie# **ping** *192.168.5.197* **length** *1500* **ntimes** *100* **timeout** *3* **data** *ffff* **source** *192.168.4.10*`
	`Sending 100, 1000-byte ICMP Echoes to 192.168.5.197, timeout is 3 seconds:`
	`< press Ctrl+C to break >`
	`!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!`
	`Success rate is 100 percent (100/100), round-trip min/avg/max = 2/2/3 ms`

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4.1.2 ping ipv6

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

⁴

⁴	
ip-address	IPv6 فخسم Â

length	৷ ↑
times	৷ ↑ ৩
seconds	
data	৷
source	IPv6 ফ্রস ৷ Â ɛ̀ è˘ ھى ৷ ফ্রস ˆ R ::1˜ a ï ɔ ঌ ফ্রস Â

ج ˆ ঌ 2 ˜ ą̈˘ 5 ৩ ঌ 100Byte ↑ ̊ IP ফ্রস Â

Ԧυ ২৲

Ping ipv6 Ԧυ ২৲ ج Ω Ю˘ ج Ю˘ ৷ ھ
ping ipv6 ╗ ˘ ج Ю˘ ‡ ৷ Л υ ping ipv6 ╗ Â
ping ipv6 ╗ ˘ ৷ Л υ ج Ω Ю ˘ ج ˆ
ঌ 2 ˜ ą̈˘ 5 ৩ ঌ 100Byte ↑ ̊ IP ফ্রস˘ ˘ ‡
G У э ‘!² ˘ ‡ У э ‘.² ą̈ б ą̈ a ˥ ˘
‡ a У э ‘C² Л У э ą Â ping ipv6 ╗ ˘ ৷ ج Ю
˘ ج ping è˘ ৷ Л υ ৷ ↑ ৩ à ˘ ˘ Ω
ping ipv6 ╗ У ˘ Л ≠ У э ą Â ╗

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ɦu ʒ جم ipv6 Э كا Â	

ɦu ʒ ˥ ɻ	ʃ	
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4.1.3 traceroute

traceroute ɦu ʒ˘ ˩ ʃu ɣ ˄ ÿ فخ سم ʔفخ سم فخ سم ʔΩ.

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

	ʃ	
	vrf-name	VRF ɻ
	Ip-address	IPv4 فخ سم Â
ʃ	*number*	˩
	source	IPv4 فخ سم ʃ Â ɛ̀ è˘ هى ʃ سم فخ ˆ R 127.0.0.1˜ a ï ɔ ì سم فخ Â
	seconds	
	minimum maximum	

2 192.168.9.2 4 msec 4 msec 4 msec

3 192.168.9.1 8 msec 8 msec 4 msec

4 192.168.0.10 4 msec 28 msec 12 msec

5 202.101.143.130 4 msec 16 msec 8 msec

6 202.101.143.154 12 msec 8 msec 24 msec

7 61.154.22.36 12 msec 8 msec 22 msec

ÿ Э ˘ ˧ Ꭻ سم ˥ ˘ ÿ فخسم IP فخسم ӥ 61.154.22.36 ў ˘ ˚ ɷ ف ȩ ῏Ω 1˙ 6˜ ˘ ˩ ɷ ˥ ῏Ω ˘ ɏ ˥ ˘ Â

ᴿ 2ʹ è ȩ ῏Ω a traceroute ᴿ ˈ

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 ˘ ˧ Ꭻ سم ˥ ˘ ÿ فخسم IP فخسم ӥ 202.108.37.42 ў ˘ ˚ ɷ ف ȩ ῏Ω 1˙ 17˜ ˘ ɜ ῏Ω 4 ɷ Â

Ruijie# **traceroute** *www.ietf.org*

Translating " *www.ietf.org* "...[OK]

< press Ctrl+C to break >

Tracing the route to 64.170.98.32

1 192.168.217.1 0 msec 0 msec 0 msec

2 10.10.25.1 0 msec 0 msec 0 msec

```
3     10.10.24.1        0 msec  0 msec  0 msec
4     10.10.30.1        10 msec 0 msec  0 msec
5     218.5.3.254       0 msec  0 msec  0 msec
6     61.154.8.49       10 msec 0 msec  0 msec
7     202.109.204.210    0 msec  0 msec  0 msec
8     202.97.41.69      20 msec 10 msec 20 msec
9     202.97.34.65      40 msec 40 msec 50 msec
10    202.97.57.222     50 msec 40 msec 40 msec
11    219.141.130.122    40 msec 50 msec 40 msec
12    219.142.11.10     40 msec 50 msec 30 msec
13    211.157.37.14     50 msec 40 msec 50 msec
14    222.35.65.1       40 msec 50 msec 40 msec
15    222.35.65.18      40 msec 40 msec 40 msec
16    222.35.15.109     50 msec 50 msec 50 msec
17    *       *       *
18   64.170.98.32     40 msec 40 msec 40 msec
```

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	-	-

4.1.4 traceroute ipv6

traceroute ipv6 ĥu ʒ˘ ˥ ˦ ¥ ˆ ÿ ˝ˆˇ˝ ˝ˆˇ
˜Ω Â

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

ˇ		
	Ip-address	IPv6 ˝ˆˇ ˝ˆ ˥ Â
	number	˥
	seconds	
	minimum maximum	˦ TTL ḣ

Ъ ę

G

Traceroute ipv6 Ъ ę ў ¥ ˘ ج ˅ ˘ ñ Æ ˅ Æ Â G ش ر ˥ ˘ ‡ ˝I ش ر ˧ ˅˘ é E ˅ DNS ˆ Â

w R

ЛЪЮ й traceroute ipv6 ч э R ˘ У э й ˘ У э й ج ę Ω a ą Â

R 1' traceroute ipv6 R '

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

ÿ Э ˅ Л Ъ س ˆ ˘ ÿ فخ س IP فخ س й 3004::1 ў ˘ ↑ ق ف ę Ω 1˙ 4˜ ˘ ˅ ق ˆ Ω ˘ ¥ ˆ ˘ Â

R 2' è ę Ω a traceroute ipv6 R '

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

ÿ Э ˅ Л Ъ س ˆ ˘ ÿ فخ س IP فخ س й 3004::1 ў ˘ ↑ ق ف ę Ω 1˙ 5˜ ˘ з Ω 4 ق Â

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5

5.1

5.1.1 carrier-delay

ج ৰ ЮG ԽU ३ **carrier-delay** ج ৰ ˘ G ԽU ३ **no** ھ
ḣ Â

carrier-delay [*seconds*]

no carrier-delay

ৰ	**ৰ**	
	seconds	৲ ৰ ˘ ᏗU ᾗ´ Æ˘ تن 1˙ 60 Â

	ḣ 2 Â
ԽU ३	ৰ Â
G	ৰ ৰ ą ৰ DCD ÿ Down ˺ Up ˘ DCD ج ǯ ǫ ৲ ৲ ᴙ˘ ǯ ৲ ᴙ a ą Э ˜ ك Â DCD è ˘ ǯ ৰ ᴙ˘ ৲ ᏗU ╗ ˘ ᏗU ɾ ৲ ᏗU Â ৲˘ DCD è ą ˘ ǯ ৰ ᴙ˘ ᏗU ȯ Â

ᏗUЮ R

ᴡ R

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5.1.2 clear counters

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clear counters [*interface-id*]

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interface-id	ᴺ ᵖᵃʳ ᴳ ᴺ ᴱ Â

ᴴᵘ ᶾ Â

ᴳ ᴺ ᵗʰ ᴶ ᴸᵘ ᴴᵘ ᶾ **show interfaces** ᵛ ᵉᵗᶜ ᴼᴳ **clear counters** ᴴᵘ ᶾᵛ ᴶ ᴸᵘ ᴺ ᵗʰ Â a ᴺᵛ ‡ ᴺ ᴸ Â

ᵂᴿ

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

ᴴᵘ ᶾ	
show interfaces	ᴺ ᴳ ᵉᵗᶜ Â

ᴺ

ᴴᵘ ᶾ ᴵ ᴺ	
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5.1.3 clear interface

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clear interface *interface-id*

ᴺ	
interface-id	ᴺ ᵖᵃʳ ᴳ ᴺ ᴱ Â

ใช้งาน

G

ใช้งาน ห Switch Port,L2 Aggrerate port ซึ่ง ห ,Routed port,L3 Aggregate port ซึ่ง ห Â ใช้งาน ¥ ห **shutdown** Ω **no shutdown** ใช้งาน Â

ตัวอย่าง

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

ข้อมูลใช้งาน

ใช้งาน	
shutdown	ปิด ห

ค่าเริ่มต้น

ใช้งานโหมด

ค่าเริ่มต้น	
-	-

5.1.4 descriptioin

ห ข้อมูล Â G ใช้งาน no ให้ Â

description *string*

no description

ห

ห	
string	ห ข้อมูล Â

ข้อมูล Â

ใช้งาน ห

G G **show interfaces** ใช้งาน ห อินเตอร์เฟส ข้อมูล Â

ตัวอย่าง

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

ข้อมูลใช้งาน

ใช้งาน	
show interfaces	ห Ω อินเตอร์เฟส Â

คำสั่ง

คำสั่งที่ใช้งาน		
	-	-

5.1.5 duplex

คำสั่งนี้ใช้กำหนดโหมดการใช้งานของพอร์ต Ethernet ส่วนคำสั่ง **no** ใช้ยกเลิกการตั้งค่าดังกล่าว

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

no duplex

พารามิเตอร์		
	auto	ตั้งค่าให้ทำงานแบบ Auto
	full	ตั้งค่าให้ทำงานแบบ Full
	half	ตั้งค่าให้ทำงานแบบ Half

ค่าเริ่มต้น ตั้งค่าให้ทำงานแบบ Auto

โหมดการใช้งาน ค่าเริ่มต้น

คำแนะนำ คำสั่งนี้ใช้ได้กับพอร์ตที่รองรับการทำงานแบบ Half และ Full ซึ่งสามารถตรวจสอบได้ด้วยคำสั่ง **show interfaces** ที่ใช้งานได้

ตัวอย่าง

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

คำสั่งที่ใช้งาน	

ใช้ ไม่ ... ใช้ no ห้ ห้ Â

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

no flowcontrol

ห	
auto	~ ไม่ ... Â
off	ไม่ ... Â
on	... Â

ไม่ ... Â

ใช้ ไม่ ห

G G **show interfaces** ห ... Â

w R

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

ไม่ใช้ ไม่	
show interfaces	ห ... ค Â

ห

ใช้ ไม่ ห	
-	-

5.1.7 interface aggregateport

ใช้ ไม่ ใช้ ... ย ง ห ห ... ห ... Â ใช้ no ไม่ ห Â

interface aggregateport *port-number*

ห	
port-number	Aggregate port ห ... ... ค ... Â

ᵇᵘ ᶾ	ώ
G	˩ Л υ У ‡˘ è ы ᴺ ╗ ώ˺ У э aggregate port è Âaggregate port ˘ ᴺ ˺ У э ᴇ˘ ˘ ᴺ aggregate port ᾱ Â ᴳ **show interfaces** **show interfaces aggregateport** ᵇᵘ ᶾ ᴺ Â
ᵂ ᴿ	`Ruijie(config)#` **`interface aggregateport`** *3* `Ruijie(config-if)#`

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ᵇᵘ ᶾ	
show interfaces	ᴺ ∩ ᵊ ᵊ Â

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5.1.8 interface fastEthernet

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interface fastEthernet *mod-num/port-num*

	ᴺ	
ᴺ	*mod-num/port-num*	ᴺ /

ชื่อใช้งาน	ใช้งาน	
	show interfaces	ห ใช้งาน ตัวอย่าง

ค่าเริ่มต้น	-

ใช้งานโหมด	ค่าเริ่มต้น	
	-	-

5.1.9 interface giagbitEthernet

ใช้งานพอร์ตเครือข่ายกิกะบิตอีเธอร์เน็ตที่ระบุ

interface gigabitEthernet *mod-num/port-num*

พารามิเตอร์	พารามิเตอร์	
	mod-num/port-num	หมายเลขโมดูล/หมายเลขพอร์ตของพอร์ตกิกะบิตอีเธอร์เน็ตที่ต้องการตั้งค่า

ใช้งาน	ไม่มี

คำสั่ง	ใช้งาน **no** ตามด้วยคำสั่งห ใช้งานเพื่อยกเลิกการตั้งค่าพอร์ตกิกะบิตอีเธอร์เน็ต

ใช้ ใช้ 10G ใช้ ห ห ห Â

interface tenGigabitEthernet *mod-num/port-num*

ห	
mod-num/port-num	ห ห / ห ห ห ห ห ห Â

ใช้	ห

ใช้ **no** ห a Â **show interfaces** **show interfaces tenGigabitEthernet** ใช้ ห Â

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

ใช้	
show interfaces	ห ห ห Â

ห

ห Â

ใช้ ห	
-	-

5.1.11 interface vlan

ใช้ ใช้ ... switch virtual interface SVI ห ใช้ **no** SVI Â

interface vlan *vlan-id*

no interface vlan *vlan-id*

ห	
vlan-id	VLAN ID Â

ƪ ३

ŏ

G

G **show interfaces** **show interfaces vlan** ƪ ३ ʌ Â

w R

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

ŏƪ ३

ƪ ३	
show interfaces	ʌ ∩ ə Â

ʌ

-

ƪ ३ ʅ ʌ

ʌ	
-	-

5.1.12 line-detect

line-detect ƪ ३ˇ ˩ ʃ ¥ Â

line-detect

ƪ ३

ʌ

G

line-detect ƪ ३ ǔ ¥ ˇ ə ˆ ~ ˇ ¥ Æ ˩ Æ Â

```
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#line-detect
Interface : GigabitEthernet 0/1
start1 TAs-deiagnoses,please wait...
sTAs-deaignoses end!this is result:
s4 pairs
```

w R

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

pairs	↑ Ü ˘ ৲ نني ৴ Â
state	ɲń ˘ ˝Ω Ь э ḣ' OK˘ ˜ ˘ Short˘ ˜ ˘ Open ˆ ˜ Â ą Ю˘ ˝I ৲ A à B ч й OK˘ C à D ч й Short Â˘ ˝I ৲ A à B à C à D نني ك й OK Â
length	˘ ´ Æ й Â ৲ state й OK Â ৴ ˘ ¥ ą ৴ · ˘ Л ৲ جم У Â й Short Open length ৲ ˆ Â

৸ ৸ ৩

ใบ ร ไ ง	ห	
	-	-

5.1.15 shutdown

5.1.16 snmp trap link-status

ㅎ è ㄴ ㄹ ㅎㅎ ㅕ ㅅ ㅣ ㄱ ㅅ LinkTrap ㅜ ˘ ㅅ ㄴ Link ㄴ ㅇ SNMP ㄴ LinkTrap, ㄴ ㅎ ‡ a ㄴ Â G ㅎ ㅋ **no** SNMP a ㄴ LinkTrap Â

snmp trap link-status

no snmp trap link-status

ㅅ	
ㅅ	

ㅏ Ю ㅜ ˘ ㅅ ㄴ Link ㄴ ㅇ SNMP ㄴ LinkTrap Â

ㅎ ㅋ ㅅ Â

G ㅕ ㅅ ㄱ ㄹ ㅅ ㅏ Ap ㅅ ㅏ SVI ㅅ ˜ ˘ ㅎ ㅋ ㅣ ㄱ ㅅ LinkTrap ˘ ㅜ ˘

R '1 Ю ㅅ ㅢ a ㄴ Link trap'

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

R '2 Ю ㅅ ㅢ ㄴ Link trap'

```
Ruijie(config)# interface gigabitE
Ruijie(config-if)# snmp trap link-
```

w R

-	-

ใช้งาน ถูกต้องเมื่อ 2 ขึ้นไป

ใช้งาน ห

G

ใช้งานเฉพาะเมื่อ Switchport ใช้งานเท่านั้น
ถ้าพอร์ตเป็นพอร์ตแบบ 2 ชั้น 3
ถ้าพอร์ตเป็นพอร์ตแบบ 2

ตัวอย่าง

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

ข้อความแสดงผลใช้งาน

ใช้งาน	
show interfaces	แสดงข้อมูลพอร์ต

ค่าเริ่มต้น

-

ข้อมูลการใช้งานค่าเริ่มต้น

ค่าเริ่มต้น	
-	-

5.1.19 switchport access

G ใช้งานเพื่อกำหนดพอร์ตให้เป็นพอร์ต **access port** ให้เป็นสมาชิก VLAN ที่ระบุ **G**
ใช้งาน no เพื่อยกเลิกการเป็นสมาชิก VLAN ที่ระบุ

switchport access vlan *vlan-id*

no switchport access vlan

พารามิเตอร์

พารามิเตอร์	
vlan-id	หมายเลข VLAN ID

switch port ที่ access จะเป็นสมาชิก VLAN ที่ VLAN 1

ใช้งาน ห

G

ต้องเป็นสมาชิก VLAN ID ที่มีอยู่ ... เป็นสมาชิก VLAN
ที่ VLAN ที่ VLAN ID ที่ใช้งาน VLAN
ที่ห้ามเป็นสมาชิก VLAN ที่เป็น trunkport ที่ใช้งาน

w R

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

ˇΩƕ ʒ

ƕ ʒ	
switchport mode	У э γ ʌˆ switch port˜ Â
switchport trunk	ὴ У э trunkport У э native VLAN Ω ɟ э Trunk ʌ ˩ VLAN " Â

˩

ƕ ʒ ˥ ˩

ʌ	
-	-

5.1.20 switchport mode

G ƕ ʒ У э γ ʌˆ switch port˜ ˘ ˩ Ω ʌ ὴ access port ὴ trunk port, ὴ 802.1Q Â G ƕ ʒ **no** ʌ ὴ ḣ Â

switchport mode {**access | trunk**}

no switchport mode

ʌ

ʌ	
access	У э switch port ὴ access port Â
trunk	У э switch port ὴ trunk port Â

switch port ὴ access

ƕ ʒ ʌ

G

У э switch port access˘ ‡ ʌ ˩ ὴ У э VLAN ˘ Â ˩ Ω G **switchport access vlan** ƕ ʒ ʌ ف У э VLAN ˘ Â

У э switch port trunk˘ ‡ ʌ ˩ Ω э VLAN ˘ Â ʌ ˩ Ω ţ ف VLAN ʌ ˩ VLAN " ā ˘ trunk port ˩ VLAN " è VLAN ˘ Â ˩ Ω G **switchport trunk** ƕ ʒ ƕ ʌ ˩ VLAN " Â

৸ ৸ ৩

ƿu ʒ ʌ

Native VLAN

ɔ ȕ Trunk ɘ ʌ ɣ У ɘ native VLAN Â native VLAN ɘ ɘ ʌ Э
ɿ UNTAG ˘ ȕ ɣ ɘ VLAN Â ˘ ɘ ʌ

G

5.2.1 show interfaces

ห Π- ดู ˘ ภูมิ ˝I ระบุ Â

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

ห	
interface-id	ห^ ↑ ภู ห à aggregateport ห à SVI ห à loopback ห˜ Â
counters	ห ดู Â
description	ห ดู ˘ ↑ link Â
status	γ ห ห ดู ˘ ↑ à ห Â
switchport	γ ห ดู ˘ ห γ ห Â
trunk	trunking port ดู ˘ ห à Aggregate port Â
transceiver	˝I ระบุ ดู Â
alarm	˝I ระบุ ทำ ˆ ดู ˘ l' None L- Â
diagnosis	˝I ระบุ ห ทำ ḣ Â

ห ดู Â

ใช้งาน

G a ╗ ห ˘ ‡ ห ดู Â

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

w R

interface aggregateport	… У э ˥ ˀ˘ ώ ˀ Â
interface vlan	… У э ╟ Ԋ ˀ ˆ switch virtual interface˘ SVI˜ ˘ ώ ˀ Â
shutdown	ج ˀ è˘ G ƪ ʒ ˇΩ ˀ Â
speed	ˀ Â
switchport priority	802.1q ˀ ˙ ˇI Â
switchport protected	ˀ ѝ ɖ ˀ Â

ˀ

6 Aggregate Port

6.1

6.1.1 aggregateport load-balance

У э AP Â G Ъ ३ no й ḣ Â

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

no aggregateport load-balance

৭		
৭	**src-dst-ip**	IP б IP ţ Â a ৶ IP—— IP a ৶ ৭ ৭˘ ৶ У IP—— IP ৶ ৭ Â ج Ь ˘ Ю˘ Â
	src-dst-mac	MAC б MAC ţ Â a ৶ MAC—— MAC a ৶ ৭ ৭˘ ৶ У MAC—— MAC ৶ ৭ Â

	ώ Ω MAC فخ سم ţ Â
Ъ ३	ώ Â
G	G **show aggregateport load-balance** Ъ ३ Â
ш R	`Ruijie(config)# aggregateport load-balance dst-mac`

Ъ ३		
Ъ ३	**show aggregateport load-balance**	aggregateport ą Â

৶
-

Ъ ३ ৭ ৶		
	৶	
	-	-

6.1.2 port-group

У э ٨ й Aggregate Port ˘ ٨ Â G Ъu ३ no ˉ ٨ Aggregate Port ˘ Â

port-group *port-group-number*

no port-group

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

	٨ a ¥˙ ¦ Aggregate Port Â
Ъu ३	٨ Â
G	AP ˘ ٨ ج ٨ У э VLAN è˘ trunk port Â ¥ a ٨ native VLAN ٨ a AP
w R	Ю R Лu ٨ 1/3 AP 3 ˘ '

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

ˇΩЪu ३	Ъu ३	
	-	-

٨	-

Ъu ३ ٦ ٨	٨	
	-	-

6.2

6.2.1 show aggregateport

aggregateport ٤ Â

٨	٨	

aggregate-port-number	Aggregate Port ^ /^ Â
load-balance	aggregaye port Â
summary	aggregate port è ə Â

ƒu ३

G aggregate port ^ /^˘ ‡ aggregate port ə Â

w R

```
Ruijie# show aggregateport 1 summary
AggregatePort  MaxPorts       SwitchPort Mode   Ports
-------------  --------       --------------   ------
Ag1              8                Enabled     ACCESS
```

ƒu ३	

˜Ωƒu ३

7 VLAN

7.1

7.1.1 name

VLAN ɹ Â G ħu ३ **no** ḣ Â

name *vlan-name*

no name

৭	
vlan-name	VLAN ɹ

VLAN ɹ ὶ VLAN¯ VLAN ID˘ VLAN 2 ɹ ὶ ”VLAN0002”

ħu ३ VLAN

G G **show vlan** ħu ३ vlan

w R

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

˝Ωħu ३

ħu ३	
show vlan	VLAN ˘ ৭ ৲ Â

ɹ

ħu ३ ৭ ɹ

৭	
-	-

7.1.2 switchport access

G ħu ३ У э ৭ ὶ access port˘ ὶ У э VLAN ˘ ৭ Â G ħu ३ **no** ৭ ˆ VLAN è Â

switchport access vlan *vlan-id*

no switchport access vlan

৭	
access	У э switch port ὶ access port Â
trunk	У э switch port ὶ trunk port Â
hybrid	У э switch port ὶ hybrid port Â

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

٩	
allowed vlan *vlan-list*	э Trunk ٩ ⌟ VLAN " Â ٩ vlan-list ⌟Л У э VLAN˘ ≠ ⌟Л У " VLAN˘ Л VLAN ID ˘ Л VLAN ID ˘ è ˆ -˜ ٨ Â ' 10-20 Â ǯ ⌟Л ˆ ,˜ ٨ ˘ ' 1-10,20-25,30,33 all ŭ Ъ⌧ ⌟ 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

Ъu ʒ ٩

Native VLAN˘

ɔ й Trunk˘ э ٩ ɥ У э native VLAN Â native VLAN˘ ج э ٩ Э ⌟ UNTAG ˘ й ɥ э VLAN Â ˘ э ٩ VLAN ID ˆ . IEEE 802.1Q è PVID˜ native VLAN VLAN ID Â ⌟ ˘ ج Trunk Э ⌟ ɥ native VLAN ˘ ‡ UNTAG Â

⌟ VLAN " '

У э Trunk ٩ ⌟Л VLAN˘ 1˙ 4094˜ Â п ˘ ≠ ⌟Л Trunk ٩ ⌟ VLAN " ⁸ Ҭ VLAN a э Trunk ٩ Â

G **show interfaces switchport** Ъu ʒ Â

Ю У э 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
```

ใช้งาน	

-	-

7.2

7.2.1 show vlan

VLAN ˜ ^ ə Â

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

^

^	
vlan-id	VLAN ID ^ Â

ώ ə

ƪu ३

G

ھ ˘ ώ **end** ƪu ३˘ ώ **Ctrl+C** ^ Â

ھ ώ ˘ ώ **exit** ƪu ३

w R

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

˜ƪu ३

ƪu ३	
name	VLAN ^ Â
switchport access	^ ╗ ώ У э Vlan Â

^

ƪu ३ ˥ ^

^	
-	-

8 Super-vlan

8.1

8.1.1 subvlan

G ƬU ३ super vlan subvlan ˥ subvlan Â

subvlan *vlan-id-list*

no subvlan [*vlan-id-list*]

৭	
Vlan-id-list	VLAN subvlan ID, ৶ ৯ vlan

ƬU ३ VLAN

G G **no subvlan** ˥ supevlan subvlan

w R

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

ƬΩƬU ३

ƬU ३	
show supervlan	supervlan ৯ Â

৶

ƬU ३ ৭ ৶

৸	
-	-

8.1.2 subvlan-address-range

G ƪ ३ subvlan ip ف ت ن Â

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

no subvlan-address-range

৭		
৭	*start-ip*	SubVLAN IP ف ت
	end-ip	SubVLAN IP ف ت

-

ƪ ३ VLAN

G ھ ˘ ώ **end** ƪ ३˘ ώ **Ctrl+C** ৸ Â
ھ ώ ˘ ώ **exit** ƪ ३

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

ƪ ३		
show supervlan	supervlan ৯ Â

৸

ƪ ३ ৭ ৸		
	৸	
	-	-

8.1.3 supervlan

G ƪ ३ VLAN ϋ **supervlan** Â

supervlan

no supervlan

৭		
	৭	
	-	-

ƪu ३ VLAN

G ھ ˘ ώ **end** ƪu ३˘ ώ **Ctrl+C** ʌ Â
ھ ώ ˘ ώ **exit** ƪu ३

w R

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

Ωƪu ३

ƪu ३	
show supervlan	supervlan ǫ Â

ʌ

ƪu ३ ʅ ʌ

ʌ	
-	-

8.1.4 proxy-arp

G ƪu ३ VLAN ARP ३ ˥ Â

proxy-arp

no proxy-arp

ʌ

ʌ	
-	-

ƪu ३ VLAN

G ھ ˘ ώ **end** ƪu ३˘ ώ **Ctrl+C** ʌ Â
ھ ώ ˘ ώ **exit** ƪu ३

w R

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

Ω ħu ३

ħu ३	
show supervlan	supervlan ə Â

ʎ

ħu ३ ʔ ʎ

ʎ	
-	-

8.2

8.2.1 show supervlan

G ħu ३ SuperVLAN ʎ ɛ SubVLAN Â **ñ1wçPĞavgjTm;VÄ%ÂarcBWNÍ1TtBWNRÉ08N**

ॅΩƚƣ ३	ƚƣ ३	

ħu ३ ङ

G

w R

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

ङ्ङħu ३

ħu ३	
show protocol-vlan profile	-
show protocol-vlan profile *num*	-
no protocol-vlan profile	-
no protocol-vlan profile *num*	-

ञ

RGOS10.1 ЛЬЭ

ħu ३ ञ

ञ	
-	-

9.1.3 protocol-vlan profile num vlan id

profile ञ

ञ

ञ	
num	profile
id	VLAN ID 1- ध्र VLAN

ħu ३ ञ

G

w R

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

	ƫ ३	
ॅΩƫ ३	**show protocol-vlan profile**	-
	show protocol-vlan profile *num*	-
	no protocol-vlan profile	-
	no protocol-vlan profile *num*	-

✓	RGOS10.1 ЛЪЭ

	-	-

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

no private-vlan mapping

৭	
svlist	secondary VLAN list
no	ৗ

ƚυ ३ Primary VLAN ৭

G

w R

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

ƚυ ३

ƚυ ३	
show vlan private-vlan	-

৶ RGOS10.1 ЛυЭ

ƚυ ३ ৗ ৶

৴	
-	-

10.1.3 private-vlan type

VLAN ঋ VLAN

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

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

৭	
community	ঋ community VLAN
isolated	ঋ isolated VLAN
primary	ঋ primary VLAN
no	ৗ VLAN

˜Ωħu ३	ħu ३	
	show vlan private-vlan	-

৲	˚ RGOS10.1 ЛЭ

ħu ३ ৲	৲	
	-	-

10.1.5 switchport private-vlan host-association

˜Ω private VLAN ў ৲ ˜Ω primary VLAN ৲ secondary VLAN

switchport private-vlan host-association *p_vid s_vid*

no switchport private-vlan host-association

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

ħu ३	৲

G

- -

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

৭	
primary	primary VLAN ৯
community	community VLAN ৯
isolated	isolated VLAN ৯

private VLAN

ħu ३

G

w R

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

ħu ३	
-	-

RGOS10.1 ЛЪЭ

ħu ३ ৭ ৶	
-	-

10.3 Hybrid

10.3.1 switchport hybrid allowed vlan

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

no switchport hybrid allowed vlan

hybrid ৭ ‡

৭	
no	hybrid ‡

ħu ३	^
G	
w R	Ruijie(config-if)# **switchport hybrid allowed vlan add untagged** *3-5*

˜Ωħu ३	ħu ३	
	-	-

⎦	˚ RGOS10.1 ⎍ Э

ħu ३ ⎤ ⎦	⎦	
	-	-

10.3.2 switchport hybrid native vlan

switchport hybrid native vlan *vid*

no switchport hybrid native vlan

hybrid ^ vlan

^	^	
	no	hybrid VLAN

ħu ३	^
G	
w R	Ruijie(config-if)# **switchport hybrid native vlan** *3*

˜Ωħu ३	ħu ३	
	-	-

⎦	˚ RGOS10.1 ⎍ Э

ใช้งาน VLAN	✓	

11 Share VLAN

11.1

11.1.1 share

G ƪυ ३ share vlan Â

৭	
-	-

ƪυ ३ vlan

G ৸ share vlan **no share** ƪυ ३ Â
ঞ ˘ ώ **end** ƪυ ३˘ ώ Ctrl+C ৸ Â
ঞ ώ ˘ ώ **exit** ƪυ ३ Â

ɯ R
```
Ruijie(config)#vlan 2
Ruijie(config-vlan)#share
```

ƪυ ३

ƪυ ३	
-	-

৸

ƪυ ३ ৭ ৸

৸	
-	-

11.2

11.2.1 show mac-address-table share

G ƪ ʒ ƒ ˘ ƒ Status original ‡ ƒ ƒ ƒ Status ƒ Status duplicated ‡ ƒ 8 ƒ ƒ Status
ˆ ˘ ‡ share vlan Â

ˆ	ˆ	
	-	-

ƪ ʒ

G

ƒ ˘ ώ **end** ƪ ʒ˘ ώ Ctrl+C ˆ Â
ƒ ώ ˘ ώ **exit** ƪ ʒ

w R

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

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	-	-

12 MAC

12.1

address-bind install

no address-bind install

	Ipv4
ш	IPV4+MAC
	IPV4+MAC
ò	IPV4+MAC

	IPV6	
ш	a ipv6	
	IPV6	
ò	MAC MAC IPV6	

R IP 192.168.5.2 00d0.f822.33aa IPV6

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

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æo У э IP فخ سم Ω У э MAC فخ سم ˘ ‡ Ц ˆ IP فخ سم ѝ э IP فخ سم ˘ MAC فخ سم a ѝ э IP فخ سم MAC ˘ э ˚ Ц x ˘ ٨ ѝ R ٨˘ з ϕ (address-bind install)

w R

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

Ω

show mac-address-table dynamic	

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12.1.7 clear mac-address-table filtering

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

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

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

w R

00d0.f800.0c0c

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

Ω

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

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	/1

no mac-address-table aging-time

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seconds	╟ فخ سم ɔ ˘ Лu ù´ Æ Â ḣ تن ā Â

ḣ 300 Â

ƕ ३ ώ

G

- G **show mac-address-table aging-time** ƕ ३ Â
- G **show mac-address-table dynami**c ƕ ३ ╟ فخ سم Â

w R

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

ƕ ३	

G	فذ سم a ىلإ فذ سم Â G **show mac-address-table filtering** ىلو ع فذ سم Â
ةغ R	`Ruijie(config)# mac-address-table filtering 00d0f8000000 vlan 1`
ةمدخلا ىلو ع	

ىلو ع	
clear mac-address-table filtering	فذ سم Â
show mac-address-table filtering	فذ سم ةلا Â

ةلاح	

ىلو ع ةلاح	
ةلاح	
-	-

12.1.11 mac-address-table notification

MAC فذ سم ةلا Â G ىلو ع **no** ةمدخلا Â

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

no mac-address-table notification [

ثلا	EÄÈGaAÄga9FÈGÄNéhtdJgXBg6
snmp-server enable traps	trap Â
show mac-address-table notification	MAC

	show mac-address-table static	MAC
	clear mac-address-table static	MAC

-

-	-

12.1.13 snmp trap mac-notification

MAC **no**

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

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

added	MAC
removed	MAC

MAC

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

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

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

	-	

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12.1.14 mac-address-learning

mac-address-learning

12.2

12.2.1 show address-bind

show address-bind

G

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

address-bind	Â

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12.2.2 show address-bind uplink

R Â

show address-bind uplink

G

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

.....

address-bind uplink	R

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12.2.3 show mac-address-table address

show mac-address-table interface	৸ صر سم فخ ৲ Â
show mac-address-table vlan	VLAN صر سم فخ ৲
show mac-address-table count	سم فخ è سم فخ ৩ Â
show mac-address-table static	سم فخ Â
show mac-address-table filtering	سم فخ Â

	-	-

12.2.5 show mac-address-table count

Â

show mac-address-table count

	-	-

G

```
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
```

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

	-	-

12.2.7 show mac-address-table filtering

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

mac-addr	

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

MAC Â

Â

G

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

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

-	-

12.2.10 show mac-address-table static

Â

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

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

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

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

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12.2.11 show mac-address-table vlan

VLAN Â

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

vlan-id	VLAN ID Â

G

```
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
```

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

G

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13 DHCP Snooping

13.1 DHCP snooping

13.1.1 ip dhcp snooping

DHCP Snooping ŏ ̧ ˘ ج ŏ ЮO Ĥu ३ ̧ Â Ĥu ३ ̧ no ˘ ŏ ̃Ω DHCP Snooping ̧ Â

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

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Ĥu ३ ̧	ŏ
G	DHCP Snooping ŏ ̧ ʌ˘ ˩ʌ ʌ G **show ip dhcp snooping** Ĥu ३ ̧ DHCP snooping ̧ ĭ Â DHCP Snooping б Private VLAN ̧ a ̃Ω Â

ЮO DHCP snooping ŏ ̧ ̃Ω R '

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping
Ruijie(config)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status ' ENABLE
```

w R

show ip dhcp snooping	DHCP snooping ə ʔ Â

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ƪ ʒ ʔ ʎ

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13.1.2 ip dhcp snooping bootp-bind

DHCP Snooping Bootp ˘ ج ώ ƟO ƪ ʒ Â
ƪ ʒ no ˘ ˜Ω DHCP snooping Bootp Â

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

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ƪ ʒ ώ Â

G ąƟ˘ DHCP Snooping Θ Bootp ʔ Â ʎ˘ DHCP Snooping Bootp ˜ Â Bootp ʎ˘ DHCP Snooping Bootp è Â

ɯ R

ƟO 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 ɘɿ

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ƚʋ ʅ ˥ ⅎ

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13.1.4 ip dhcp snooping database write-to-flash

Ʉ DHCP Snooping ╟ ɘɿ ῃ ὼ FLASH ̈ ̆ ﺠ ὤ Ю ƚʋ ʅ Â

ip dhcp snooping database write-to-flash

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G ƚʋ ʅ ̆ ⅎ Ꭻ DHCP Snooping è ╟ ɘɿ ῃ ὼ FLASH ̈ Â

Ю DHCP ╟ ɘɿ ῃ ὼ flash R '

ʬ R

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13.1.5 ip dhcp snooping information option

ह DHCP è ╗ ώ option82 ╗ ˘ ह ŏ ƗO ƪu ३ Â
ƪu ३ no ˘ ˜Ω ╗ Â

[no] ip dhcp snooping information option

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╗ ˜Ω Â

ƪu ३ ŏ

G ƪu ३˘ ह DHCP è ╗ option82 ৲ ˘ DHCP ┺ ৸ option82 ৲ ৯ ؾ Â

w R

```
ƗO ह 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)
------------------------  -------    ------------
```

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ƪu ३	
show ip dhcp snooping	DHCP snooping ৲ Â

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ʌ DHCP ˘ ج ʌ ЮO ħu ३ Â ħu ३
no ˘ ৶ ʌ ⁸ Â

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

ʌ	
rate-value	˘ PPS[Packet Per Second]

⁸

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ħu ३ ѝ ħu ३ Â
ℸ DHCP Snooping ⁸ VLAN ą̈ ʌ ˘ ↑ ą̇ ʌ Â
ǂ н ᵽ Э˘ ɷ CPP[CPU Protect Protocol]ℸ Â CPP˳ ˘ DHCP
⁸˘ ⁂ ¥ CPP . ˝l ¥ DHCP Snooping ⁸ ℸ Â ˝Ω
¥ CPP ǂ ˘ ɛ ᴇ Â
৶ Л ʊ **show ip dhcp snooping** ħu ३˘ ʌ Э ⁸ Â

w R

ЮO ʌ 1 ⁸ ѝ 100pps˙

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

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show ip dhcp snooping	DHCP snooping ą Â

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	-	-

13.2.2 ip dhcp snooping suppression

৸ ঋ suppression ˘ ج ৸ Ю ƪ ३ Â ƪ ३ no ˘ ৸ ঋ no suppression Â

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

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ƪ ३	৸ Â
G	ƪ ३˘ ৶ ৸ Ю DHCP ˘ . ৸ Ю DHCP فذسم Â

Ю ৸ **fastethernet** *0/2* ঋ suppression R '

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

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13.2.3 ip dhcp snooping trust

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

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

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ǫ ƮO˘ ʌ ǐ UNTRUST ʌ Â

ƪ ʒ ʌ Â

G ƪ ʒ˘ ʎ DHCP ⊨ ⋗ ʌ ǐ TRUST ʌ ÂTRUST ʌ ↑
DHCP ꞉ ˩˘ UNTRUST ʌ ↑ DHCP ꞉ x Â

w R

ƮO ʌ **fastethernet** 0/1 ǐ TRUST ʌ 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
```

13.3 DHCP snooping

13.3.1 show ip dhcp snooping

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13.3.2 show ip dhcp snooping binding

DHCP Snooping è ৲ ˘ ج Ю ħu ३ Â

show ip dhcp snooping binding

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G ħu ३˘ ৷ Λu ৷ DHCP Snooping è ৲ Â

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Ю 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
```

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ħu ३	
ip dhcp snooping binding	DHCP snooping
clear ip dhcp snooping binding	DHCP snooping ╟ ৲

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ħu ३ ৲ ৰ

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13.4 DHCP snooping

13.4.1 clear ip dhcp snooping binding

ī DHCP Snooping è ╟ ˘ ج Ю ħu ३ Â

clear ip dhcp snooping binding

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G ħu ३˘ ⌠Ʊī DHCP snooping è ╟ Â

w R Ю ī 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
-------  ---  ----------  ---------  ----  ---------
```

ħu ३	
show ip dhcp snooping binding	DHCP snooping ৭ Â

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ħu ३ ৭ ৶	
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13.4.2 debug ip dhcp snooping

ह Ɓ Э DHCP Snooping ॥ ॅΩ ह Ю ƪ ३ Â

debug ip dhcp snooping {

14 IGMP Snooping

14.1

14.1.1 deny

deny

৭	
deny	৷ profile ন ফ স

profile deny ɔ Â

ƪυ ३ profile Â

G ”I জ profile Ю G range ƪυ ३ ন Â ৷ ˘ й ও G profile ɔ ˘ profile ↑ ৭ Э Â

w R Ю … У э ৷ 224.2.2.2 profile R '

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

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ip igmp profile	… У э profile
range	ন ফ স

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ƪυ ३ ৭ ৷

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14.1.2 permit

profile ˜ن profile Ю ƪ ʒ permit˘ profile ˜Ω
ˆ ˆ ˆ Â

permit

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permit	˜ ˆ profile ن فخ سم Â

profile deny ɔ Â

ƪ ʒ

profile Â

G

˜I جم profile Ю G range ƪ ʒ ن Âˆ ˘ ˙ ˛ G profile ɔ ˘
profile ˜Ω ˆ ˜Ω ƪ ʒ Э Â

w R

Ю … У э ˆ ˜ ˆ 224.2.2.2 profile R '

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

˜Ωƪ ʒ

ƪ ʒ	
ip igmp profile	… У э profile
range	ن فخ سم

ˆ

ƪ ʒ ˆ ˆ

ˆ	
-	-

14.1.3 range

profile ˜ن profile Ю ƪ ʒ range˘ ˆ Л ´ э سم
فخ˘ ≠ ˆ Л э ن ˇ فخ سم Â G ƪ ʒ no ˆ فخ سم Â

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

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

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ˆ	
low-ip-address	ن فخ سم

high-ip-address	ن فخ سم

ḣ Â

ƪ ʒ profile Â

G فخ سم ن ʌ˘ У э ѝ˘ profile ѝ deny Â ʌ ˘ ѝ ɷ G profile ɔ ˘ profile ʃ ʌ Э Â

w R

Ю … У э ن 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
```

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ƪ ʒ	
ip igmp profile	… У э profile
deny	profile ѝ ѝ deny
permit	profile ѝ ѝ permit

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14.1.4 ip igmp profile

IGMP profile ɣ ⁸ У " ɮ Â ώ profile ˘ ˝I ج ώ Ю У э profile Â ƪ ʒ ƪ ʒ˘ profile-number˘ ώ igmp profile Â

ip igmp profile *profile-number*

no ip igmp profile *profile-number*

ʌ	
profile-number	profile ʌ˘ ن 1-65535

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ƪ ʒ ώ Â

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IGMP Profiles Э У ҭ Ɣ ˇ k ľ SVGL فخسم تن ـا à ľ
ᴎ تن ـا à ľ IGMP Filtering تن ـا ᴎ ╗ G Âچ ˇ й ɷ G profile
ɔ ˇ profile Ω ╗ ℃ G Â

ш R

Ю R … ɷ У э ᴎ й 1 profile ώ profile Â

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

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

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14.1.5 ip igmp snooping ivgl

igmp snooping ivgl ˇ ώ ħυ ३ **ip igmp snooping ivgl** Â
ħυ ३ no ℃ igmp snooping Â

ip igmp snooping ivgl

no ip igmp snooping

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disable Â

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ᴎ ' Ю جم ˙ ! У э VLAN ˇ ᴎ
ᴎ VLAN ğ ˘ ᴎ ᴎ Â

pim snooping ŋ ¥ igmp snooping IVGL IVGL-SVGL
ɔ˘ ॐ G no ip igmp snooping ˜Ω igmp snooping ╖ ˘
pim snooping ॐ ɔ ‡ ˚ ˝I ˜Ω pim snooping˘ ɜ
˜Ω a ╖ Â

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Ю R ॐ Э igmp snooping ivgl '

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

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

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14.1.6 ip igmp snooping ivgl-svgl

igmp snooping ivgl-svgl ˘ ώ ħυ ३ **ip igmp snooping ivgl-svgl** Â ħυ ३ no ˜Ω igmp snooping Â

ip igmp snooping ivgl-svgl

no ip igmp snooping

й IVGL-SVGL

ɣ Shared VLAN Â

SVGL Ю˘ IGMP Profile , ʃ У ƒ ƒ ƒ SVGL˘ ƒ ƒ ƒ ƒ ˘ ˅ ˅ ˅ ˅ VLAN ˅ ’ ɑ Ю ƒ a ƒ SVGL ƒ˘ x Â

й SVGL ˘ a ˇĄ Ь ˥ ˘ . a

ip multicast-routing Â ˅ ˘ ɑ Ь ˥ ˘ a

SVGL Â

pim snooping ŋ ɣ igmp snooping IVGL IVGL-SVGL

ɔ˘ ƒ G ip igmp snooping svgl ʃ˘ pim

snooping ƒ ɔ ‡ ˇI ˇΩ pim snooping˘ з ʃ

a ˥ Â

Ю R ƒ Э igmp snooping svgl ˘ ˇΩ profile й 1'

ш R

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

ˇΩƪ ʒ

ƪ ʒ	
ip igmp snooping svgl vlan	У э Shared VLAN Â
ip igmp snooping svgl profile	У э SVGL ˇΩ profile Â

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ƪ ʒ ˥ ˅

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14.1.8 ip igmp snooping vlan

ƒ vlan Э igmp snooping ivgl ˘ ώ ƪ ʒ **ip igmp snooping vlan** Â ƪ ʒ no ˇΩ igmp snooping Â

ip igmp snooping vlan vid

no ip igmp snooping vlan vid

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vid	vlan id

disable Â

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ώ Â

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ج ώ Ю ج vlan Э ŭ ╟ ̃Ω IGMP Snooping ╥ ˘ ƪ ३ Â

vlan Э pim snooping ŋ ¥ igmp snooping ɔ˘ ج G
no ip igmp snooping vlan ̃Ω vlan Э igmp snooping ╥ ˘
pim snooping ج VLAN ‡ ̆ ̃I ̃Ω pim snooping˘
ɜ ̃Ω a ╥ Â

ɯ R

Ю R ج vlan 2 Э igmp snooping˙

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

̃Ωƪ ३

ƪ ३	
ip igmp snooping ivgl	igmp snooping ivgl Â
ip igmp snooping ivgl-svgl	igmp snooping ʌ Â

ʌ

ʌ	1 "c„ Sd#8 &8

w R

Ю R ج vlan 2 ѝ igmp snooping svgl ˜Ω м vlan˝

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

˜Ωƪ ʒ

ƪ ʒ	
ip igmp snooping svgl	igmp snooping svgl Â
ip igmp snooping ivgl-svgl	igmp snooping ʌ Â

ʌ

ƪ ʒ ˥ ʌ

ʌ	
-	-

14.1.10 ip igmp snooping svgl profile

ج profile تن SVGL ˘ ѿ ƪ ʒ **ip igmp snooping svgl profile** Â ƪ ʒ no ʌ Â

ip igmp snooping svgl profile *profile-number*

no ip igmp snooping svgl profile

ʌ

ʌ	
profile-number	profile ʌ˘ ʌ ḣ تن<1-65536>

ą Ю svgl ˜Ω profile Â

ƪ ʒ ѿ Â

G ƪ ʒ ʌ ج SVGL IVGL-SVGL Ю Â

w R

Ю R ج ѝ igmp snooping svgl ˜Ω profile 2˝

```
Ruijie(config)# ƫ(prof1B1C01C4713 ƫE87)-1 ƫ94C(36)6(>)ƫ66.84 388.7 0E ƫ(prof
```

ƪ ǯ ˥ ˩	˥	
	-	-

14.1.11 ip igmp snooping dyn-mr-aging-time

˥		
	time	╟ ˜ ˥ ˨ ˘ ˩ ˙ تن<1-3600> Â

	300s
ƪ ǯ	ǿ Â
G	╟ ˥ ج ȅ ˨ ɱ ˥ IGMP PIM Hello ˘ Ɥ ˥ ÿ ˩ ˥ " è ̃ Âج ╟ ˥ ˜ α Ю ˩ ʃ ƪ ǯ ╟ ˥ ˨ ˘ ج ˨ ˘ ˩ ˬ ╗ Ω ̃ Â
ɯ R	Ю R ج ╟ ˜ ˥ ˨ й 100s ̃ `Ruijie(config)# ip igmp snooping dyn-mr-aging-time 100`

̃Ωƪ ǯ	ƪ ǯ	

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ƪ ǯ ˥ ˩	˥	
	-	-

14.1.12 ip igmp snooping fast-leave enable

igmp snooping ╗ ˘ ǿ ƪ ǯ **ip igmp snooping fast-leave enable** Â ƪ ǯ no ̃Ω igmp snooping fast-leave Â

ip igmp snooping fast-leave enable

no ip igmp snooping fast-leave enable

৭	

ƚʋ ʖ	ῷ Â
G	ﺟ ꞁ IGMP У Л˘ ˘ Վ у Ⴎ˘ Ⴎ ӥ ꞉ ˘ Ⴎ ḣ ˇ ӥ 0 ˘ ‡ ӥ Վ a Ặ ˘ ˘ ɣ Վ ӱ IGMP Snooping Ⴈ èꞁ Â ﺟ ꞁ IGMP Л˘ ˘ Վ ǚ ╟ у Ⴎ˘ Ⴎ ӥ ꞉ ˘ Ⴎ ḣ ˇ ӥ 0 ˘ ‡ ӥ Վ a Ặ ˘ ˘ Վ ӱ IGMP Snooping Ⴈ èꞁ Â ɣ IGMPv3 ˘ a ṁ Ⴎ Â
ɰ R	Ю R ﺟ ╟ ˘ Վ у ӥ 100s' `Ruijie(config)# ip igmp snooping query-max-response-time 100`

Ὼƚʋ ʖ

ƚʋ ʖ	

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ƚʋ ʖ ˥ Ⴇ

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14.1.14 ip igmp snooping limit-ipmc

╗ IP ˘ ῷ ƚʋ ʖ **ip igmp snooping limit-ipmc vlan** ˘ ƚʋ ʖ no ꞁ 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*

Վ

Վ	
vid	ip vlan id Â
gaddress	فخس Â
saddress	فخس (ⱶ Ⴎ) Â

	ḣ Â
ƚʋ ʖ	ῷ Â

G ˝I IP ╗ ╗ Â

w R Ю R ╗ ɑ У ip Â

```
Ruijie(config)# ip igmp snooping limit-ipmc vlan 1 address 224.0.0.1
server 192.168.4.243
```

˜ΩЪ ३

Ъ ३	
ip igmp snooping source-check default-server	IP ⅄ IP Â

⅄

Ъ ३ ˥ ⅄

⅄	
-	-

14.1.15 ip igmp snooping suppression enable

igmp snooping Report ⁸ ╗ ˘ ώ Ъ ३ **ip igmp snooping suppression enable** Â Ъ ३ no ˜Ω igmp snooping suppression Â

ip igmp snooping suppression enable

no ip igmp snooping suppression enable

⅄

⅄	
-	-

disable Â

Ъ ३ ώ Â

G ɑ IGMP ˘ ˜Ω ˆ ⁸ ╗ ⅄˘ ج У э ϟ ⅄˚ ˆ vlan ϟ ˆ э فذسم ϟ У э IGMP Report ⅄ ⅄˘ ⅄ IGMP Report a ⅄ ⅄ ⅄˘ ⅄Ω ˜ è Â ɑ Ъ ३ ⅄˘ suppression ╗ ϋ ╟˘ Ц ˚ IGMPv1/v2 report ⁸˘ Л a˚ IGMPv3 report ⁸ Â

w R Ю R ج Э **igmp snooping suppression**

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

ΩЪυ ϛ	Ъυ ϛ	
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Ъυ ϛ ˥ ⸗	⸗	
	-	-

14.1.16 ip igmp snooping mrouter learn pim-dvmrp

Ꜧ ╟ ˢ ŏ IGMP Query/Dvmrp/PIM Hellp ˘ Λυ ╟ ⁞ ⸗˘
ώ Ъυ ϛ **ip igmp snooping mrouter learn** Â Ъυ ϛ no ⸗ ╟ ˉ Â

ip igmp snooping mrouter learn pim-dvmrp

no ip igmp snooping mrouter learn pim-dvmrp

⸗	⸗	

	╥ Â
Ъυ ϛ	ώ Â

G

⸗ б ὲ ⸗ Â ąЮ˘ ώ ╟
⸗ ˉ ╥ ˘ ˥Λυ Ω ╟ ⸗ ˉ ╥ ˘ no
Ъυ ϛ Ω ╟ ˉ ˘ ╟ ˉ ↑ ⸗ Â
ώ ╟ ⸗ ˉ ╥ Ω ⸗˘ vlan ⸗ ╟ ˉ ╥ Ω Â
⸗ ˘ ώ ╟ ⸗ ˉ ╥ ąЮ˘ vlan ⸗ ˉ ╥
Ω ˘ vlan ╟ ⸗ ˉ ╥ ὴΩ Â
⸗ ˘ ˥ ÿ ⸗ ώ ⸗ ˘
˥ ˩ Ąˇ ⸗’ ÿ ⸗ ώ ὴΩ ˘ x Â جه
⸗ ╥ ąЮ˘ G ╟ ⸗ ˉ ˘ ˥Λυ igmp snooping

ip igmp snooping vlan mrouter learn pim-dvmrp	vlan Э ٨ ╟ ˜ ╖

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ħυ ३ ٦ ٨

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14.1.17 ip igmp snooping vlan mrouter interface

٨ б ὲ ٨, ٨˘ ὤ ħυ ३ **ip igmp snooping vlan mrouter interface** Â ħυ ३ no ī У э ٨ Â

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

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

٨	
vid	٨ vlan id Â
interface-id	٨ id

ḣ Â

ħυ ३ ὤ Â

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٦Л Ц Э ٨ ὶ Ы ٨˘ ÿ G Ц Э ī IP
٦Л ٨ ٦ Ы Â ج ٨ Ю˘ ٨ ÿ ٨ ὼ
٦˘ ὲ x Â
ج ٨ ╟ ˜ ╖ Ῑ ą Ю˘ ٦Л ٨ Â

w R

Ю R ج У э ٨'

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

Ῑħυ ३

ħυ ३	
ip igmp snooping source-check port	٨

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Ъυ ३ ٦ ৶	Л	
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14.1.18 ip igmp snooping vlan mrouter learn pim-dvmrp

Ц ╟ ш ŭ IGMP Query/Dvmrp/PIM Hellp ˘ Лυ ╟ ⁞ ৲˘ ώ Ъυ ३ **ip igmp snooping vlan mrouter learn** Â Ъυ ३ no ৶ ╟ ˘ Â

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

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

৲	৲	
	vid	৲ vlan id Â

	╥ ˜Ω Â
Ъυ ३	ώ Â
G	৲ б ὲ ৲ Â ąЮ˘ ą У э VLAN ╟ ৲ ˘ ৶Лυ ˜Ω ˜Ω VLAN ą̈ ╟ ৲ ˘ ╥ ˘ no Ъυ ३ ˜Ω ╟ ˘ ╟ ˘ ˆ ৲ Â ৲ ˘ ৶ ÿ ৲ ώ ৴ ˘ ৶ ৶ Ą ৲' ÿ ৲ ώ ŭ ˘ x Â ج ৲ ╥ ąЮ˘ G ╟ ৲ ˘ ৶Лυ igmp snooping Â
ш R	Ю R ج vlan 1 ╟ ৲ ˘ ╥ '

```
Ruijie(config)# ip igmp snooping vlan 1 mrouter learn pim-dvmrp
```

˜ΩЪυ ३	Ъυ ३	
	ip igmp snooping mrouter learn pim-dvmrp	ώ ৲ ╟ ˘ ╥

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	-	-

no ip igmp snooping filter *profile-number*

৭	
profile-number	profile ৸˘ ৷ ḣ ন<1-65536>

ḣ Â

ƪυ ३ ৭ Â

G IGMP Profile ج У э ৭ Ю˘ ৭ ↑ IGMP Report ˘ ‡ ॰ э ৭ ╗ ώ فخ سم ї ج IGMP Profile ї ন ڇ ق Â ˘ ‡ ї ╗ ώ˘ ڇ ৸ ৸ Â ˝I … profile˘ ৸ filter ˇΩ Â

w R Ю R ج ˝I ৭ 0/1 Э ˇΩ profile 1'

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

ˇΩƪυ ३

ƪυ ३	
ip igmp profile	… У э profile

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14.1.21 ip igmp snooping max-groups

৭ ї ύ э ╟ ╗ ώ ৭, ৭ ƪυ ३ **ip igmp snooping max-groups** ƪυ ३ Â ƪυ ३ no ৷ ⁸ Â

ip igmp snooping max-groups *number*

no ip igmp snooping max-groups

৭	
number	৭ ন ѝ <0 – 1024>

৭ э a ৷ ⁸ Â

ƕ ३ ৲ Â

G ɑ ï ˘ ‡ ج ৲ Э˘ ╟ ˘ ˆ э
ï ˘ Ԋ a Ạ ˘ IGMP Report … ৲ Â

ш R Ю R ˜I ৲ 0/1 Э ৲ 100 э '

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip igmp snooping max-group 100
```

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Ωħu ३

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14.2.2 show ip igmp profile [profile-number]

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৭	
	profile ৯
profile-number	profile ৯

ħu ३ EXEC

G ৭ profile ৯

w R

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ħu ३	
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IGMP Snooping Debug ə ̃Ω Â ħu ३ no ̃Ω ̃Ω Â

debug igmp-snp

debug igmp-snp event

debug igmp-snp packet

debug igmp-snp msf

debug igmp-snp warning

undebug igmp-snp

undebug igmp-snp event

undebug igmp-snp packet

undebug igmp-snp msf

undebug igmp-snp warning

৭	
	IGMP Snooping ə
event	IGMP Snooping ̃Ω Y ̆ ə
packet	IGMP Snooping ̃Ω ə
msf	IGMP Snooping б Ĥ ə
warning	IGMP Snooping ̃Ω ̆ ə

ħu ३ EXEC

G

w R

̃Ωħu ३	ħu ३	
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	-	-

15 DHCPV6 Snooping

15.1

15.1.1 ipv6 dhcp snooping

ᴳ dhcpv6 snooping ╗ ˘ ώ ̃Ω Â ƬU ३ **no** ώ ̃Ω dhcpv6

╠ ╗ˆ ˇ è ╗ Â G ƪ ३ no ˘ ˜Ω
╗ Â

ipv6 dhcp snooping binding-delay *seconds*

no ipv6 dhcp snooping binding-delay

৭	৭	
	time	ˆ ˇ ˘ ´ Æ'

	˜Ω

ƪ ३	ώ

| G | ą ƪ˜ ╠ ╗ˆ ˇ Â ╗ ৸˘ ╠
˘ ج ą IPv6 فذ سم ą ˘ ˇ ˆ ˇ è Â |

| ৷ R | R 1' ╠ 10 ˜Ą ╗ˆ ˇ è Â
`Ruijie(config)# ipv6 dhcp snooping binding-delay 10` |

˜Ωƪ ३	ƪ ३	

৸

ƪ ३ ৷ ৸	৸	
	10.4	ƪ ३

15.1.3 ipv6 dhcp snooping database write-delay

dhcpv6 snooping ą ţ̃ ώ flash ˇ è Â G ƪ ३ **no** ˜Ω
╗ Â

ipv6 dhcp snooping database write-delay *time*

no ipv6 dhcp snooping database write-delay

৭	৭	

ƪ ३ ङ

G dhcpv6 snooping ə ॖ ङ flash ˅ ˘ ˩ ʃ ʊ ʊ ╟ ʌ˘ ə x ˘ ˩ IP ॐ˘ ˩ ʃ ʊ Â

ʷ ᴿ ᴿ 1' ॖ ङ flash ङ 100

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

ˇΩƪ ३

ƪ ३	
show ipv6 dhcp snooping	dhcpv6 snooping ˥ ङ ə

˩

ƪ ३ ˥ ˩

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10.4	ƪ ३

15.1.4 ipv6 dhcp snooping database write-to-flash

dhcpv6 snooping ə ॖ ङ flash ˅ Â

ipv6 dhcp snooping database write-to-flash

˥

˥	
-	

ƪ ३ ङ

G ƪ ३˘ ˩ ʃ ʊ ॐ dhcpv6 snooping ə ॖ ङ flash ˅ Â ʊ ʌ˘ ˅ ╟ ÿ flash è ˩ ɖ ॐ flash è ə Â

ʷ ᴿ ᴿ 1' dhcpv6 snooping ə ॖ ङ flash

```
Ruijie(config)# 076D073ʒ/ʊ 1 79.70 0 T43 1 f9581 0D0
```


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ƕ ३ ٦ ƛ	ƛ	
	10.4	ƕ ३

15.1.5 ipv6 dhcp snooping filter-dhcp-pkt

ƛ x ĵ dhcpv6 Â G ƕ ३ no ˘ ̃Ω ╖ Â

ipv6 dhcp snooping filter-dhcp-pkt

no ipv6 dhcp snooping filter-dhcp-pkt

ƛ	ƛ	

̃Ω

ƕ ३ ƛ

G ƕ ३ ƛ˘ ⊣ ∏ υ x ƛ ĵ dhcpv6 ˘ . ƛ ƗO dhcpv6 فذ سم Â

w R R 1' ƛ **fastethernet** 0/1 x dhcpv6

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

̃Ωƕ ३	ƕ ३	

l' ^ Ł ˜Ω Â G ħu ३ no ˘ DHCPv6 ! ^ Â

ipv6 dhcp snooping ignore dest-not-found

no ipv6 dhcp snooping ignore dest-not-found

^	^	

˜Ω

ħu ३ ώ

G

DHCPv6 ! ˘˜ ŋ MAC فخ سم ˘ DHCPv6 ! جم
Ĥ Э a¦ MAC فخ سم ^˘ ŷ ϖ ώ ˘ a ˘ ˜Ω Â
Л جم э ⁞ è˘ ˘ يج à à يتج ^ ˅ يج˘ MAC سم
فخ ˘˜ ˘ ˘ ˘ ˘ Э Y ˘ جم Э¸ .
l' DHCPV6_SNOOPING-5-DEST_NOT_FOUND: Could not find destination port.
Destination MAC [mac-address] Ł˘ ˘ ŷ ϖ DHCPv6 ɔ˘ ˘ Л
Ю ˜Ω˘ a¦ MAC فخ سم ^ Л ˘ ¦ ˜Ω VLAN
^ Â

w R

R 1' ^ ˜Ω Â

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

˜Ωħu ३

ħu ३	
show ipv6 dhcp snooping	dhcpv6 snooping ╗ ώ ϑ

^

ħu ३ ˥ ^

^	
10.4	ħu ३

15.1.7 ipv6 dhcp snooping link-detection

^ LINK DOWN ˘ ^ Э ╟ ˜Ω Â G ħu ३ no ˘ ˜Ω
╗ Â

ipv6 dhcp snooping link-detection

no ipv6 dhcp snooping link-detection

৭	৭	

ঁΩ

Ĥu ३ ὅ

G ąĤঁ ৭ LINK DOWN ˘ a ৭Ю ╟ Â ŭ ╥ ৲˘ ৭ LINK DOWN ˘ ˚ ╟ ৭Ю ╟ Â

ш R R 1' ৭ LINK DOWN ˘ ╟ ৭Ю ╟ Â

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

ঁΩĤu ३

Ĥu ३	
show ipv6 dhcp snooping	dhcpv6 snooping ╥ ὅ ą

৶

Ĥu ३ ৲ ৶

৸	
10.4	Ĥu ३

15.1.8 ipv6 dhcp snooping trust

৭ dhcpv6 snooping ą˙ ὶ trust Â G Ĥu ३ no ˘ ৭ ą˙ ὶ untrust Â

ipv6 dhcp snooping trust

no ipv6 dhcp snooping trust

৭	৭	

৭ ὶ untrust

Ĥu ३ ৭

G ৶ dhcpv6 ⊨ ⊻ ৭ ὶ trust ৭˘ trust ৭ ˚ dhcpv6 Server ः ৻' untrust ৭ ˚ dhcpv6 Server ः x Â

ʷ ᴿ

ᴿ 1' ʌ fastethernet 0/1 ˀ trust ʌ

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

ʖƪ ʒ

ƪ ʒ	
show ipv6 dhcp snooping	dhcpv6 snooping ˥ ˝ ˄

ʌ

ƪ ʒ ˥ ʌ

ʌ	
10.4	ƪ ʒ

15.1.9 Ipv6 dhcp snooping vlan

ˆ vlan Ɔ ˇ dhcpv6 snooping ˥ ˇ ˝ ƪ ʒ Â ᴳ ƪ ʒ no ˇ ʖ vlan Ɔ dhcpv6 snooping ˥ Â

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

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

ʌ

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

dhcpv6 snooping ˆ vlan Ɔ ˇ

ƪ ʒ ˝

ᴳ dhcpv6 snooping ˝ ʖ ˇ ʌ˘ vlan ˩ dhcpv6 snooping ᴮ Â vlan a dhcpv6 snooping ᴮ˘ ‡ ˆ vlan

	-	-

	10.4	ƪ ३

15.1.11 ipv6 verify source

ʌ ƒ ƨ ˜Ω Â G ƪ ३ no ˘ ˜Ω ʌ ƒ ƨ Â

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

no ipv6 verify source

ʌ	ʌ	
	port-security	MAC ƒ ƨ + IPV6 ƒ ƨ ' ʌ MAC ƨ ƒ Ω IPV6 ƒ ƨ ʌ ˘ ї ' ʌ ˘ й IPV6 ƒ ƨ ˘ ʌ IPV6 ƨ ƒ ʌ ˘ . ї '

	˜Ω
ƪ ३	ʌ
G	ƨ ƒ ˜Ω ʌ˘ ʌ Ω IPV6 ƨƒ˜ ʌ DHCPV6 Ϟ ц ʌ IPV6 ƨƒ˜ ˘ ʌ Ω Â

ш R	R 1' ʌ **fastethernet** 0/1 ї MAC+IPV6 ƨ ƒ ˜Ω
	`Ruijie(config)# interface fastethernet 0/1`
	`Ruijie(config-if)# ipv6 verify source port-security`

˜Ωƪ ३	ƪ ३	

ʌ

ƪ ३ ʅ ʌ	ʌ	
	10.4	ƪ ३

15.2

15.2.1 show ipv6 dhcp snooping

dhcpv6 snooping ╗ ŋ̀ ą Â

show ipv6 dhcp snooping

৭	৭	
	-	-

ƫυ ३৲

G ƫυ ३৲˘ dhcpv6 scpn(g)]TJ/C2_0 1 Tf0 Tc 0 Tw7.7906 0 Td[<0873-6<36D1152708212C53-

vlan *vlan_id*	VLAN ɱ
interface *interface_name*	৲ ɱ

ƬU ३

G ƬU ३ ˇ ৲ ʃU dhcpv6 snooping ɱ è ৯ Â

ɯ R

```
R 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
```

ˇΩƬU ३

w R

╗ Ω dhcpv6 snooping ╟ Â

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

ৰ

15.3.1 clear ipv6 dhcp snooping binding

ī dhcpv6 snooping è ॠ Â

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

৭	৭	
	ipv6-address	ipv6 ফ্ৰ
	mac-address	mac ফ্ৰ
	vlan *vlan_id*	VLAN
	interface *interface_name*	৭

ƪ ३ γ š Ń ů ˘ q

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

ƚυ ३

G ƚυ ३˘ ⌟ ⎍υ dhcpv6 snooping ŋń ǫ Â

w R R 1' dhcpv6 snooping ŋń ǫ

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

ƚυ ३	

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ƚυ ३ ˥ ⌟l	
10.4	ƚυ ३

15.3.3 clear ipv6 dhcp snooping statistics

dhcpv6 snooping dhcpv6 ǫ Â

clear ipv6 dhcp snooping statistics

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ƚυ ३

G ƚυ ३˘ ⌟ ⎍υ dhcpv6 snooping dhcpv6 ǫ Â

ชื่อใบ ๓	ใบ ๓	

๗

ใบ ๓ ๆ ๗	๗	
	10.4	ใบ ๓

16 ND Snooping

16.1

16.1.1 ipv6 nd snooping

ŏ IPv6 ND snooping ╗ Â ┘ƸƪƸ ƪ ʒ no ŏ ˜Ω IPv6 ND Snooping ╗ Â

ipv6 nd snooping

no ipv6 nd snooping

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˜Ω

ƪ ʒ ŏ

G ƪ ʒ ipv6 nd snooping ╗ ˜Ω˜ ʃ ƪ ʒ ŋ ɛ ŭ Â

ʃ ƪ ʒ ŭ ˜Ω ˘ ┘ ج ŏ ŭ ƪ Â

w R R ' ŏ ŭ IPv6 ND snooping

Ruijie# **configure terminal**

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

Ruijie(config)# **ipv6 nd snooping**

˜Ωƪ ʒ

ƪ ʒ	
show ipv6 nd snooping	ipv6 nd snooping ə

ʃ

ƪ ʒ ˥ ʃ

ʃ	
10.4(2)	ƪ ʒ

16.1.3 ipv6 nd snooping trust

ʌ ŷ trust ʌ Â ˩ Ʃ ƪ ʒ no ʌ ŷ untrust ʌ

ipv6 nd snooping trust

no ipv6 nd snooping trust

ʌ	
ʌ	

ʌ ŷ untrust ʌ

ƪ ʒ ʌ

G

R' ʌ FastEthernet 0/1 ŷ Trust ʌ

w R

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

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ƪ ʒ	
show ipv6 nd snooping	ipv6 nd snooping ə

ʌ

ƪ ʒ ʅ ʌ

ʌ	
10.4(2)	ƪ ʒ

16.1.4 ipv6 nd snooping check address-resolution

ώ ND ﻔﺨﺴﻣ Â ꓲ ⎍ ƕꙄ no ώ ῼ ND ﻔﺨﺴﻣ
Â

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

no ipv6 nd snooping check address-resolution

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ꟼ	
key-node-only	ϴ ῼ ND ﻔﺨﺴﻣ

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ND ə ŭ˘ a ꓲ ⎍ ῼ Â

ա R

R 1' ŭ ND ﻔﺨﺴﻣ

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

R 2' ŭ ϴ ND ῼ ﻔﺨﺴﻣ

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#ipv6 nd snooping check address-resolution
key-node-only
```

ῼƕꙄ

ƕꙄ	
show ipv6 nd snooping	ipv6 nd snooping ə

ipv6 nd snooping detect gateway ra

no ipv6 nd snooping detect gateway ra

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ώ

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ج VLAN Э ŭ Â

w R

R' ώ ŭ ╟ ╟ Ω ą ৷ ╖

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

Ωƪ ३

ƪ ३	
show ipv6 nd snooping	nd snooping ╟ Ω ৷ Ω Â

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10.4(2)	ƪ ३

16.1.6 ipv6 nd snooping detect gateway vlan

ŭ VLAN ╟ Ω ą ˉ Â ৷ ∫ƪ ƪ ३ no Ω VLAN ╟ Ω ą ˉ Â

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

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

৭	
vlan-rng	vlan ت
vlan-min	vlan Э

vlan-max	vlan Ю

Ω

ƫ ३

ώ

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ώ ŭ

w R

R' ŭ ╟ VALN ╟ Ω ǫ ৷ ╖

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

Ωƫ ३

ƫ ३	
show ipv6 nd snooping	nd snooping ╟ Ω ৷ Ω Â

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10.4(2)	ƫ ३

16.1.7 ipv6 nd snooping key-node

╖ ¥ ND ফ Ω ǫ Â ৷ ∫ƫ ƫ ३ no ╖ Ω ǫ Â

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

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

৷

৷	
vid	link-local ফ VID
ipv6_address/prefix_len	Ω IPv6 ফ ৷ ε ŋ

ƪ ३ ŏ

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w R

R' ╗ Ω ৯

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

ꞷ R

R' ώ ̃Ω ΰ̈

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

̃Ωꞇυ ३

ꞇυ ३	
show ipv6 nd snooping stateless-user	ΰ̈ ̊ فخ سم Ω "

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	ꞷ	
ꞇυ ३ ʅ ꞷ	10.4(2)	ꞇυ ३

16.1.9 ipv6 nd snooping stateless-user combine-security

Ч # ď ̇ Ŋ

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

Ωħu ३

ħu ३	
show ipv6 nd snooping	ipv6 nd snooping ə

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10.4(2)	ħu ३

R 2' G ш فذ سم 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
```

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10.4(2)	ƫ ३

16.1.12 ipv6 nd snooping stateless-user limit

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ipv6 nd snooping stateless-user limit *num*

no ipv6 nd snooping stateless-user limit

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num	ƛ ї ώ

16

ƫ ३ ƛ

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w R

R' ƛ FastEthernet 0/1 ώ ѝ 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
```

Ω ƫ ३

ƫ ३	
show ipv6 nd snooping	ipv6 nd snooping ҋ

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10.4(2)	ħu ३

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

э VLAN IPv6 ŋń Â

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

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

৴	
num	э VLAN IPv6 ŋń

2

ħu ३ ŏ

G

R' э VLAN 4 э IPv6 ŋń

```
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
```

ħu ३	
show ipv6 nd snooping	ipv6 nd snooping ৲

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৴	
10.4(2)	ħu ३

16.1.14 clear ipv6 nd snooping key-node

w R

R ' فخ سم

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

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10.4(2)	ھو ३

16.2

16.2.1 show ipv6 nd snooping

IPv6 nd snooping

show ipv6 nd snooping [interface]

interface	

Ruijie# **show ipv6 nd snooping**

10.4(2)	

16.2.2 show ipv6 nd snooping key-node

show ipv6 nd snooping key-node

๑	๑	

16.2.3 show ipv6 nd snooping stateless-user

ปี ipv6 ฟัง

show ipv6 nd snooping stateless-user

๑	๑	

ใบ ๓

ND Snooping ƕ ३

17 MSTP

17.1

17.1.1 bpdu src-mac-check

э ^ bpdu mac Â ⌟ Л Ĥ ३ no ̃Ω ^ bpdu mac ℸ Â

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

no bpdu src-mac-check

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H.H.H	^ mac ـسم فخ ـسم ـسم فخ bpdu Â
no	^ ˙ ! bpdu Â

̃Ω Â

8 ৲ ৷ RSTP BPDU˘ BPDU 8 Â

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

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interface-id	৲

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w R

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

˜Ωƪ ३	
show spanning-tree interface	ɱ ৲ STP Â

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ƪ ३ ˥ ৶	
-	-

17.1.3 spanning-tree

MSTP˘ ৲ ৶ MSTP ৶ ˘ MSTP ώ ৷ Â G ƪ ३ no ˜Ω spanning-tree ˥ ˘ no ƪ ३ ৲ ৶ ৲ 8 ˘ ɲ a ˜Ω spanning tree Â

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

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

৲	
forward-time *seconds*	৶ Â
hello-time *seconds*	৷ BPDU Â
max-age *seconds*	BPDU Â

spanning-tree ˜Ω Â

ƀυ ३१ ώ Â

forward-time à hello-time à max-age Ь э ḣ ت ̃Ω ˘ g ɷ ɛ̀ è У э¸ ؛

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17.1.6 spanning-tree bpduguard

э ʌ BPDU Guard ˜Ω Â ˩ Л υ ħυ ʒ 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
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ɢ Ş	

š

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

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

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17.1.9 spanning-tree guard none

ˆ Э˜Ω guard Â G ƒu ३ no ˆ ˆ Э guard ╥ Â

spanning-tree guard none

no spanning-tree guard none

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˜Ω guard ╥ Â

ƒu ३ ˆ Â

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

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17.1.10 spanning-tree guard root

ʌ root guard Â G ƪ ३ no ʖΩ root guard Â ŭ root guard ╗ ˘ ج ɱ ɱ Æ ˩ ɤ Â

spanning-tree guard root

no spanning-tree guard root

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ʖΩ root guard ╗ Â

ƪ ३ ʌ Â

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ɯ R `Ruijie(config-if)# spanning-tree guard root`

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17.1.11 spanning-tree link-type

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

no spanning-tree link-type

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poinit-to-point	8 ʌ ص ȋ point-to-point.
shared	8 ʌ ص ȋ shared

ʌ ص ȋ ȍ ˩ ˘ ʌ ص ȋ point-to-point ʌ ص ȋ ` ˩ ʌ ص ȋ shared.

ħu 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

ħu ३	
show spanning-tree interface	STP ^

^

ħu ३ ˥ ^

^	
-	-

17.1.12 spanning-tree loopguard default

ॐ loop guard Â G ħu ३ no ॅΩ loop guard Â ॅ loop guard ॥ ˘ ^ ` ^ ॅ a bpdu ॠ ˩ Â

spanning-tree loopguard default

no spanning-tree loopguard default

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-	-

ॅΩ loop guard ॥ Â

ħu ३ ॐ

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w R

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

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ħu ३	
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17.1.14 spanning-tree mode

VLAN 3 ÿ Instance 1 è˜ ˘ ж ώ MST Л˘ Ю

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

э Instance 1˜ ˘ Ю'

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

˩Л˘ MST Ĥu ʒ è show Э Â

Ĥu ʒ	

G

cost ḣ

W R

У э Ω Instance 3 ̃Ω ٨ ḣ ẗ 400 Ю̃

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

≠ ⌟ Л ώ **show spanning-tree mst interface interface-id** ħυ ३ Э

ħυ ३

ħυ ३	
show spanning-tree mst	٨ MSTP ą Â
spanning-tree mst port-priority	٨. ̃I
spanning-tree mst priority	ẗ instance . ̃I

٨

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17.1.17 spanning-tree mst port-priority

ج ٨ Ю G ħυ ३ ⌟ Л ٨ a ⌟ Instance Л a ⌟ ٨. ̃I ˘ ؛ ؟ Region ą̈ è ف э ٨ ̣ ţ ⌟ Â G no ⌟ Л ħυ ३ ḣ Â

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

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

٨

٨	
Instance-id	Instance ٨˘ تن ẗ 0̃ 64
priority	٨. ̃I ˘ ⌟ 0̃ 16̃ 32̃ 48̃ 64̃ 80̃ 96̃ 112̃ 128̃ 144̃ 160̃ 176̃ 192̃ 208̃ 224̃ 240̃ ̃Ω 16 э ˘ ⌋ ẗ 16 ̃ Â

Instance-id ḣ ẗ 0

priority ḣ ẗ 128

ħυ ३ ٨ .

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

[illegible] 20 è Gigabitethernet 1/1 ˺ ˙ ˜I ḣ ḣ ẗ 10

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

˩Л ώ **show spanning-tree mst instance interface** *interface-id* Ъ ʒ Э Â

G ώ .

Ю R Instance 20 ˝I ḣ ѝ 8192˝

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

ϟ Л ώ **show spanning-tree mst instance interface interface-id** ħυ ३ Э Â

[redacted]

show spanning-tree interface	STP ৲ Â

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17.1.20 spanning-tree portfast

э ৲ Portfast ˜Ω Â ৲ Ω ħυ ३ disabled ˜Ω ৲ Portfast ˜Ω Â

spanning-tree portfast [**disabled**]

৲	
disabled	˜Ω ৲ Portfast ˜Ω Â

˜Ω Â

ħυ ३ ৲ Â

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w R

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

˜Ωħυ ३	
ħυ ३	
show spanning-tree interface	৲ STP ৯ Â

৲

no spanning-tree portfast bpdufilter default

৭	
-	-

ˆΩ BPDU filter

ƚυ ३ ώ Â

G BPDU Filter ⅄˘ ৭˚ a ৲ ≠ a BPDU Â G **show spanning-tree** ƚυ ३ Â

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

ˆΩƚυ ३

ƚυ ३	
show spanning-tree interface	STP ώ Â

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ƚυ ३ ৲ ৶

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17.1.22 spanning-tree portfast bpduguard default

ώ BPDU guard Â ৲ ⅄υ ƚυ ३ no ώ ˆΩ BPDU guard Â

spanning-tree portfast bpduguard default

no spanning-tree portfast bpduguard default

৭	
-	-

ˆΩ BPDU Guard.

ƚυ ३ ώ Â

G BPDU guardˇ ৯ ৭ Э ˚ BPDUˇ ‡˚ ώ error-disabled Â G **show spanning-tree** ƚυ ३ Â

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

ħu ३

17.1.24 spanning-tree reset

э spanning-tree ѝ ḣ Â ħυ ३ no Â

spanning-tree reset

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ħu ३ ^

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w R

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

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17.1.26 spanning-tree tc-protection

ŏ tc- protection ΩÂ G ħu ३ no ŏ Ω tc- protection ΩÂ

spanning-tree tc- protection

no spanning-tree tc- protection

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	-	-

tc- protection ΩÂ

ħu ३ ŏ Â

G ĺ Ȯ a A-ý N ṡ ĺ Ȯ a ḣ ц

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	-	-

17.1.27 spanning-tree tc-protection tc-guard

ŏ tc- guard ˜Ω Â G ħu ३ no ŏ ˜Ω tc- guard ˜Ω Â ŭ tc-guard ˇ tc Â

spanning-tree tc-protection tc-guard

no spanning-tree tc-protection tc-guard

৭	৭	
	-	-

	˜Ω tc- guard ˜Ω Â
ħu ३	ŏ Â
G	
w R	`Ruijie(config)# spanning-tree tc-protection tc-guard`

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17.1.28 spanning-tree tx-hold-count

STP ŏ TxHoldCountŏ

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

ḣ 3 Â

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w R

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

ƪ ३	
show spanning-tree	

tx-hold-count	TxHoldCount Â
pathcost method	Â

ƬU ३ Â

G

w R

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

link-type	৲ linktype

ƕ ३ Â

G

w R

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

ƕ ३

ƕ ३	
spanning-tree bpdufilter	э ৲ BPDU filter ˜Ω Â
spanning-tree portfast	э ৲ portfast ˜Ω Â
spanning-tree bpduguard	э ৲ BPDU guard ˜Ω Â
spanning-tree link-type	৲ ص a “ ” Â

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17.2.3 show spanning-tree mst

ƨ ƚO G ƬU ३ ⌟ ⎍ MST ˘ Instance ƨ Â

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

৭	
configuration	mst
instance-id	*Instance ⁄৭*
interface-id	৭ ⁄৭

Instance Â

ƬU ३ .

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w R

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

ƬU ३

18 SPAN

18.1

18.1.1 monitor session

… У э SPAN ˅ ৲ ˆ ৲ ˜ Ω ৲ ˆ ৲ ˜ . G ħυ ३ no
ˉ ˅ ´ ˉ ৲ ৲ 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 ţ *interface-id* ৲ ৲ ˘ ৲ ǐ ৲ ˘ a ৲ Ω ǐ SVI Â
destination interface *interface-id*	৲ Â ţ *interface-id* ৲ ৲ ˘ ৲ ǐ ৲ ˘ a ৲ Ω ǐ SVI Â
mac source *mac-addr*	ę

ƀ ʒ	ŏ
G	switch port à routed port Ω AP ˩ Ƨ ѝ ˥ Ω ˥ ÂSPAN ˬ a ˸ Ы ɔ Â ˩ Ƨ SPAN ˬ ج У э disabled port Э˘ ˘ SPAN a Э ˩ ɔ ˺ G Ω ˥ Â У э ˥ a ˩ ˥ Ω ˥ Â ج˥ ˘ a ˥ ˥˘ ‡˥ э ˬ Â G **show monitor** ƀ ʒ ˩ Ƨ SPAN ˬ ɔ Â session 1 ŏ ´ ˥ ę˘ ´ SPAN ˩ G session 1 Â

Ю э R ˺ … У э

ш R

session *session_number*	SPAN ॰ ʌ

SPAN ॰

ħu ३

G

Ю э R ɷ ! **show monitor** ħu ३ SPAN ॰ 1 ɱ

w R

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

Ωħu ३

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

ʌ

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19

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

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show monitor	ę, ą Â

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a ৲ ৷ ห ţ ώ reflector-port ʼΩ Â

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19.1.2 remote-span

G ħυ ३ RSPAN VLAN

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

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VLAN

G

ھ ˘ ώ **end** ħυ ३˘ ώ Ctrl+C ৷ Â

ھ ώ ˘ ώ **exit** ħυ ३

```
Ruijie(config)#
```

w R

	show vlan	Vlan ą Â

⅄	S5760 " ห p a ⅄ ∧ Â

ħu ३ ⅂ ⅄	∧	
	-	-

20 IP

20.1

20.1.1 ip address

ثبت ساخت IP آدرس no

У э С فخرسم Â ч э ˘ Лυ э IP فخرسم Â
ممم ¥ γ ˘ ,ĭ Â IP فخرسم G ⌋ Лυ
G ˘ ĭ ممم ¥ IP Â ¥ э ˘ У э IP فخرسم Â
У э ч э ⌊ У э ˘ æo ⌋ Лυ... У э ˘
IP فخرسم ˘ Â У э a جم ч э ч э
ЛυЭ ⌊ Â

w R

ЛυЮ R ˘ ϖ ⌊ ў IP فخرسم й 10.10.10.1˘ й 255.255.255.0 Â

```
ip address 10.10.10.1 255.255.255.0
```

˜Ωħυ ३

ħυ ३	
show interface	⌊ ęţ Â

⌋

جم γ Э˘ ⌋ Ь ⌊ IP فخرسم˘ з a γ فخرسم˘ . secondary Â

ip b-4mbered ħυ ३ ˥ ⌋

⌋	
-	-

20.1.2 ip unnumbered

ħυ ३ ⌋ ⌊˘ У э ⌊ й ⌋ ⌊ ⌋˘ ⌊ Э ĭ IP ˜ ˘
⌊ ⌋ Лυ ⌋ IP ↑ Â ⌋ Лυ no ⌋ Â

ip unnumbered *interface-type interface-number206(ip unnumbered)Tw 8.70 T4.012 0 T(T3 1 9 T0 T T -*

Â /ſ ſ˘ ЛUЮ 8'

ЛU ſ a /ſ ſ Â

s ſ SLIP àHDLC àPPP àLAPB àFrame-relay ˘ ˩ ЛU /ſ ſ Â

Л è ˘ ˩ ſ ſ ï /ſ ſ Â X.25 a ï

/ſ ſ Â

a ping ھU ३ /ſ ſ ï ɔ ˘ ج ѝ /ſ ſ IP فذ سم Â Л

SNMP ˩ ЛU ſ /ſ ſ Â

a /ſ ſ ŭ ╟ Â

ш R	ЛUЮ ˘ ſ ѝ /ſ ſ˘ ˜Ω ſ ѝ FastEthernet 0/1 Â ˜Ω ſ IP فذ سم Â `ip unnumbered fastEthernet 0/1`

˜ΩھU ३	ھU ३	
	show interface	ſ ą Â

˩	ھU ३ جم γ Э a Â

ھU ३ ˥ ˩	/ſ	
	-	-

20.2

20.2.1 arp

G ھU ३˘ ˩ ЛU جم ARP ă è ╗ ھA IP فذ سم Ω MAC فذ سم Â ھU ३ no ˩ ЛU˥ MAC فذ سم Â

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

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

ſ	ſ	
	vrf *name*	VRF R˘ name ſ VRF R ˩ Â
	ip-address	б MAC فذ سم IP فذ سم˘ ˥ ѝ نى ˜ 8 ḣ˘ ǯ Â
	MAC-address	فذ سم˘ 48 э Æ Â
	type	ARP صر Â ɣ ЛU ſ˘ ˜Ω ѝ arpa Â

ARP ă è ˙ ! Â

ő Â

RGOS G ARP ă ˘ 32 э Æ IP 48 э Æ MAC Â
ţ ŷ ╟ ARP ˘ Л a ARP Â ¯ **clear arp-cache** Ł ˩ Л ╟ ˘ ˚ ARP Â

ЛЮ ˘ й Л Э ŷ ⓐ ARP Â

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

Ł	
clear arp-cache	ARP ă

[redacted]

	ق ثب ج 3 ه ل ´ CPU ل x Â
ثب ع	ث Â
G	ARP IP ˇ ج ل ل´ IP ´ Ы ˇ Â ˇ ل ˇ **arp anti-ip-attack** *num* ل ل У ج Â ج ˇ ق ثب ˙ ˝ل G ˇ ل ل **arp anti-ip-attack** *num* ˇ ˜Ω Â

w R	R 1' ل ثب ˇ ل ARP x IP ي 5 Â
	`Ruijie(config)# arp anti-ip-attack 5`
	R 2' ل ثب ˇ ˜Ω ARP IP
	`Ruijie(config)# arp anti-ip-attack 0`

˜Ω ثب ع	**ثب ع** | | - | - |
ل	Ь Ы

ل t0.56BT1-0.0[redacted]16<071jET7F

G

```
arp retry interval 30
```

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ƒƒƒ	
Arp retry times *number*	ARP ·

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20.2.5 arp retry times

G ƒƒƒ ƒƒƒ ƒƒƒ ƒƒƒ · arp ˘ . ƒƒƒ ƒƒƒ IP ƒƒƒ˘ ƒƒƒ ARP Â G ƒƒƒ no ƒƒƒ · 5 ARP Â

arp retry times *number*

no arp retry times

ƒƒƒ

ƒƒƒ	
number	ƒƒƒ ƒƒƒ ARP ƒƒƒ ˘ ƒƒƒ<1-100> Â й 1 ˘ a · ARP ˘ ƒƒƒ ƒƒƒ 1 ARP Â

ƒƒƒ

ƒƒƒ ARP ˘ ARP ƒƒƒ ƒƒƒ 5 ˘ ƒƒƒ Â

ƒƒƒ

ƒƒƒ Â

G

ƒƒƒ ƒƒƒ ƒƒƒ ARP ˘ ƒƒƒ ˘ ƒƒƒ ARP · ƒƒƒ ˘ ƒƒƒ a · Â

ƒƒƒ R

R 1' ƒƒƒ ˘ ƒƒƒ ARP a · Â

```
arp retry times 1
```

R 2' ƒƒƒ ˘ ƒƒƒ ARP · 1 Â

```
arp retry times 2
```

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20.2.6 arp timeout

ARP ğ ш è ARP ˘ ٸ Л υ ĥυ ३ ٦ Â ĥυ ३ ٦ no ٸ Л υ Â

arp timeout *seconds*

no arp timeout

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seconds	˘ Л υ й ´ Æ˘ تن 0-2147483

й 3600 Â

ĥυ ३ ٦ ٸ Â

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ARP ٸ ╟ ˜ ↑ IP فخ سم Ω MAC فخ سم ɔ Â ˘ ARP ğ è ɖ ˘ ת ARP ≠ ˘ Л υ ¯ Â ⋮ ˘ ї ‡ У a ARP Â

ш R

ЛЫ ˘ ÿ Л υ FastEthernet 0/1 ↑ ╟ ARP й 120 Â

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

ĥυ ३ ٦	

20.2.7 arp trusted aging

[redacted] ARP no

arp trusted aging

no arp trusted aging

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GSN ARP a

G ARP ARP ARP **arp timeout**

service trustedarp	ARP	

-	-	

20.2.8 arp trusted *number*

G ARP no

arp trusted *number*

no arp trusted

w R

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	-	-

20.2.11 service trustedarp

ىلو ىل ىلى ARP ىل ˘ ىل ىلو **service trustedarp** ىلو ىل Â ىلو ىل no ىلى ىل ىلى ARP ىل Â

service trustedarp

no service trustedarp

20.3

20.3.1 ip broadcast-addresss

ĦЖ У э ^ فذسم ^ ĦU ३ **ip broadcast-addresss** Â ĦU ३ no ⌟ ЛU ⌟ فذسم Â

ip broadcast-addresss *ip-address*

no ip broadcast-addresss *ip-address*

^	
ip-address	IP فذسم Â

IP فذسم й 255.255.255.255 Â

ĦU ३ ^ Â

G ŋń IP فذسم У й ŏ ľ 1 Ľ й 255.255.255.255 Â RGOS ⌟ ЛU ĦЖ ŋ è IP فذسم з ⌟ ЛU ⌟ ŏ ľ 1 Ľ ЛU ⌟ ĦЖ ↑ Â

w R ЛЫЮ R ^ ŋ IP فذسم й 0.0.0.0 Â

```
ip broadcast-address 0.0.0.0
```

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ĦU ३ ⌟	
-	-

20.3.2 ip directed-broadcast

ŭ IP ⌟ ↑ ^ ĦU ३ **ip directed-broadcast** Â ĦU ३ no ⌟ ⌟ ↑ Â

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

no ip directed-broadcast

৭	
access-list-number	^ ৷ ~ " ৷˘ ن ÿ 1-199ˆ 1300 - 2699 Â ⌧ ɷ " ৷˘ ৷ ٦ IP ৷ Â

ˆΩ Â

ԽU ३ٖ ৭

G

IP ৷ فخسم ÿ ɜ IP فخسم IP ˘ فخسم ÿ
172.16.16.255 ÿ ৷ Âɲ ɥ ৭ a
˘ Â

б ˆ IP ৷ ˘ ৷´ У ৷
Â ৷ ˆ ৷˘ ৷ ÿ
^ У IP فخسم ÿ ώ ľ 1 Ł ˜ ˘ ৷ Л ৷
Э ў Â

æ ৷ Лجم ৭ Э˘ ů ╟ ৷ ˆ ╥ ˘ ৭ ৷ Л ৷
ˆ ৷ ɷ Â ԽU ३ٖ ৭ ؛ ˆ ৷ ৷·˘
a ؛ ɛ ৷ ৷ Â
جم ৭ Э˘ æ ৷ Л ⌧ " ⁸ ৷ ف ę ৷ Â ⌧ ɷ " ˘
৭ ৷ " è ⌧ ↑ ৷ ˆ Â
جم ৭ Э ɷ **no ip directed-broadcast** ˘ RGOS x ˆ
৷ Â

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ЛЮ R ˘ FastEthernet 0/1 ৭ ů ɷ ৷ ৭ Â

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

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20.4.1 clear arp-cache

ÿ ARP ğ è ARP ˘ ŏ ƒƒ clear arp-cache Â

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

ƒ	
trusted	ƒ ƒ ƒ ARP
vrf *vrf_name*	ƒ VRF R

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20.4.2 clear ip route

ɜ╕ IP IP è ɜ ˘ ˩ ƛ جم **clear ip route** ƪ ʒ Â

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

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*	╕ ώ
network	╕ فخ سم
netmask	ˆ ˩ ˜

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˩ è ˘ ˩ƛ . ⁹ ˆ Â ƭ ╕ ɜ ˘ ɜ ɋ Â

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ƛƟ ᴿ ˘ ˩╕ 192.168.12.0 Â

```
clear ip route 192.168.12.0
```

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ƪ ʒ	
show ip route	IP

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20.4.3 show arp

فخ سم ~ ^ ARP~ ğ Â

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

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

ЪU ३ Â

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w R

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

ARP ă è ʌ ů Ю

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

Ruijie

R 2 show arp 192.168.195.68

```
Ruijie# show arp 192.168.195.68
Protocol  Address   Age(min)  Hardware      Type   Interface
Internet  192.168.195.68  Tf(min2u520320a5.7a5f  shoa Type)-VLAN(mi102(1ware
```

ARP è ̈Ω э arp Â

show arp counter

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complete	arp
incomplete	arp

ARP ARP

show arp detail

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

ARP

IP Address	IP

Port	б ARP Ω γ ^ Â

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	-	-

^ hu ३ ज ь Ц Э ˘ Ж a Â

hu ३ ٦ ^	^	
	10.4	10.4

20.4.6 show arp timeout

У ^ ╟ ARP У

show arp timeout

^	^	
	-	-

hu ३

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ЛЫЮ й **show arp timeout** '

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

Ωhu ३	hu ३	
	-	-

^ hu ३ ज γ Э a Â

-	-

20.4.7 show ip arp

ARP è

show ip arp

-	-

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

ARP

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

Type	ARPA
Interface	IP

	-	-

	-	-

20.4.8 show ip interface

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

	Interface-type	
	Interface-number	

RGOS RGOS

```
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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IP interface state is:	ঋ ɏ ɟ ˘ ɛ̀ Ḇ ঋ ̈ ՌԷ ˜ ʆ ӥ "UP" Â
IP interface type is:	ঋ ص˘ ˘ Â
IP interface MTU is:	ঋ MTU ḣ Â
IP address is:	ঋ IP فخس ՌԷ ə̡ Â
IP address negotiate is:	ঋ IP فخس ĭ̈ ˜ ݣ Â
Forward direct-boardcast is:	ĭ̈ ɟ ɹ Â
ICMP mask reply is:	ĭ̈ ɟ ICMP Â
Send ICMP redirect is:	ĭ̈ ɟ ICMP ɹ Â
Send ICMP unreachabled is:	ĭ̈ ɟ ICMP a ɟ Â
DHCP relay is:	ĭ̈ ŭ̈ DHCP è Â
Fast switch is:	ĭ̈ ŭ̈ IP Ʉ ╖ Â
Route horizontal-split is:	ĭ̈ ŭ̈ ↾ →˘ ̤ ؛ ɹ ˜ ӥ Â
Help address is:	helper IP فخس Â
Proxy ARP is:	ĭ̈ ŭ̈ ٦ ARP Â
Outgoing access list is	ঋ ĭ̈ ɷ " Â
Inbound access list is	ঋ ĭ̈ ɷ ẇ " Â

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20.4.9 show ip redirects

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show ip redirects

21.1.2 ip mtu

IP ↑ · ´ ĩ^ MTU˜ ˘ ৲ ħυ ३ **ip mtu** Â ħυ ३ no ৲ Лυ Â

ip mtu *bytes*

no ip mtu

	৲	
৲	*bytes*	IP ↑ · ´ ĩ˘ Лυ ѝ´ Æ˘ تن 68~1500 Â

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RGOS IP Â ĵ IP ↑ ˘ ˚ IP ш ằ
ằ ˘ Ҷ ج RFC 791 è Â ĵ
↑ ŭ ϖ ὲ è У э ˘ ˚ ! ╟ ɔ' ĵ ˘ ˚
ч У э ICMP ч ˘ ⅄ x ↑ Â
RGOS ˚ ą Ю IP Â

w R

ЛЪЮ R ˘ ̃Ω ϖ IP Â
no ip source-route

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21.1.5 ip unreachables

RGOS ˚ ę ICMP a ⅃ ˘ ч Ъ ę **ip unreachables** Â Ъ ę no ⅃ЛЪ̃Ω ⅃ ICMP a ⅃ Â

ip unreachables

no ip unreachables

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RGOS ˚ ĵ У э ⅄ ⅃ ˘ ч a Э ˜ ˘ ˚ ⅃ У э ICMP a ⅃ Â
RGOS ˚ ţ ˘ a ⅃ У э ↑˘ ˚ ⅃ ⅃ ICMP ŭ a ⅃ Â

22 DHCP

22.1 DHCP

22.1.1 bootfile

ԻՐՏ DHCP ՍՆ ╟ ę ՞ ՛ DHCP ՀՅՍ ԻՍ ՀՅ **bootfile** Â ԻՍ ՀՅ **no** ՛ ՄՍ ՛ ԻՐՏ Â

bootfile *file-name*

no bootfile

ՀՅ	DHCP
file-name	ԻՐՏ ¥ ՍՆ ╟ ՞ ՛ Â

ԻՐՏ ՍՆ ╟ ՞ ՛ Â

ԻՍ ՀՅ DHCP ՀՅՍ .

G ‹Ę DHCP ՀՅ ՍՆ ╟ è Ю ɔ à ՞ ˘ DHCP ╞ ⅄ ᵏ ՍՆ ╟ ę ՞ ՛ DHCP ՛ ՄՍ ╞ ⅄ TFTP˜ Ю ՞ Â ὲ ╞ ⅄ **next-server** ԻՍ ՀՅ ԻՐՏ Â

W R ՄՍЮ R ˘ ԻՐՏ ⓐ router.conf ɔ ὶ ՍՆ ╟ ՞ ՛ Â

```
bootfile router.conf
```

22.1.2 client-identifier

ԻՀՇ DHCP ՀՇ ՍՍ ՀՇ ՀՇ ՀՇ 8 ՀՇ DHCP ՀՇ ՀՇ **client-identifier** Հ ՀՇ **no** ՀՇ Հ

client-identifier *unique-identifier*

no client-identifier

ՀՇ	
unique-identifier	DHCP ՀՇ ՀՇ 8 Հ 0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31 Հ

ՀՇ Հ

ՀՇ ՀՇ

DHCP ՀՇ Հ

G

ՀՇ DHCP DHCP IP ՀՇ ՀՇ ՀՇ Հ Ս MAC ՀՇ ՀՇ ՀՇ MAC ՀՇ ՀՇ 00d0.f822.33b4 ՀՇ ՀՇ ՀՇ GigabitEthernet 0/1 ՀՇ 0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31 ՀՇ 01 ՀՇ ՀՇ Ս ՀՇ 67.6967.6162.6974.4574.6865.726e.6574.302f.31 ՀՇ GigabitEthernet0/1 8 Հ ՀՇ Ս ՀՇ RFC1700 Address Resolution Protocol Parameters Հ Հ

ՀՇ DHCP ՀՇ ՀՇ G ՀՇ Հ

W R

ՍԻՕ R ՀՇ MAC ՀՇ ՀՇ 00d0.f822.33b4 ՍՍ DHCP Հ

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

ՀՇ ՀՇ

ՀՇ ՀՇ	
hardware-address	ԻՀՇ DHCP ՀՇ Հ
host	ԻՀՇ IP ՀՇ Հ DHCP Հ
ip dhcp pool	ԻՀՇ DHCP ՀՇ ՀՇ DHCP ՀՇ Հ

	-	-

22.1.3 client-name

DHCP **client-name** no

22.1.4 default-router

Ĥ DHCP Ω DHCP ǯ Ĥu ǯ **default-router** Â Ĥu ǯ **no** Ĵ Ĵ Ω Ĥ Â

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

no default-router

ǯ		
ǯ	*ip-address*	Ĥ IP ǯ Â У э Â
	ip-address2…ip-address8	ˆ Ĵ ˜ Ĵ 8 э Ω Â

Ĥ Ω Â

Ĥu ǯ

DHCP ǯ Â

G

У ąЮ˘ DHCP ÿ DHCP Ĺ Ω ąę ÂDHCP Ĺ Ω й У э Ω IP ǯ˘ ǯ б ǯ Ĵ У э Â

ш R

ЛЮ R ˘ Ĥ ⓐ 192.168.12.1 э й Ω Â

```
default-router 192.168.12.1
```

Ωĥu ǯ

Ĥu ǯ	
ip dhcp pool	Ĥ DHCP ǯ ˘ ώ DHCP ǯ Â

ǯ

Ĥu ǯ ˥ ǯ

ǯ	
-	-

22.1.5 dns-server

Ĥ DHCP DNS Ĺ˘ DHCP ǯ Ĥu ǯ **dns-server** Â Ĥu ǯ **no** Ĵ Ĵ DNS Ĺ Ĥ Â

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

no dns-server

	৭	
৭	*domain-name*	ħ DHCP ʌ ʿ ʌ s Ţ √ =

	type	DHCP ˚ ⎫ ˜ ˘ ⎭ Ωυ s Ϸϩ Â s ' ethernet ieee802 ' 1ˆ 10M ethernet˜ 6ˆ IEEE 802˜

	˚ ϭϭϭ Â Ϸϩ ˚ ϭϭϭ ˘ й ethernet Â
Ϸυ ϩ	DHCP ϭϭϭ Â
G	⎫ ϭϭϭ DHCP Ϸϩ ˘ ⎭ Ωυ G Ϸυ ϩ Â

ϖ R Δ ϖ R Δ ϖ R ϩ ϭ й .

	^ a DHCP IP ƒ ƒ Â
ƒu ३	^
G	RGOS ˚ DHCP ˘ ƒ IP ƒ ˘ DHCP ⊢ ⊥ k ч э ^ ą ' 1˜ DHCP 1˜ ' 2˜ DHCP 3˜ ⊥ У Э ˜Ω ą ' 3˜ DHCP 6˜ DNS ⊢ ⊥ ą ' 4˜ DHCP 15˜ ў ⊥ ƒ ⊥' DHCP 44˜ WINS ⊢ ⊥ ą Â RGOS ˚ ї ƒ PPP à FR à HDLC Э dhcp ƒ˘ э ⊢ ⊥ ˘ ⊥ τ ⊢ ⊥ ╥

w R	ЛuЮ R ˘ G FastEthernet 0 ^ ╟ IP ƒ Â
	`interface fastEthernet 0`
	`ip address dhcp`

˜Ωƒu ३	ƒu ३	
	dns-server	ƒ DHCP DNS ⊢ ⊥
	ip dhcp pool	ƒ DHCP ƒ ⊥ ˘ ώ DHCP ƒ Â

⊥

ƒu ३ ⊤ ⊥	⊥	
	-	-

22.1.10 ip add1(r)]TЈC2_0 1 Tf0 Tc 0 Tr 10.5 0 0 1.02 625.9 361.520<3F55 Td<116

	DHCP ╚ ⅄ ʔ ɜ ƒ ƨ IP ƒ ƨ Â
ƪ ʒ	ώ Â
G	IP ƒ ƨ ˘ DHCP ╚ ⅄ ˬ ˇ ƒ ƨ DHCP ƒ ƨ è IP ƒ ƨ Â ƪ ʒ ⅃ ⅄ ϋ ǔ ɖ У ⊖ IP ƒ ƨ ˘ ȯ ⊖ ƒ ƨ ʔ DHCP Â ƨ ƪ IP ƒ ƨ ˘ ≠ ⅃ ⅄ ˜ DHCP ╚ ⅄ ʔ ƒ ƨ ğ Â
w R	⅄ЮO R ˘ DHCP ╚ ⅄ a ˬ ˇ ʔ 192.168.12.100~150 ƨ ğ IP ƒ ƨ Â `ip dhcp excluded-address 192.168.12.100 192.168.12.150`

ƪ ʒ

G

DHCP ╚ Л ÿ DHCP فخسم è ڤي IP فخسم ˘ ˚ ping ɔ فخسم ї̈
è ў ´ ˘ ´ Ю ˘ ´ ї DHCP ÂPing
ɔ й ч э ↑˘ ↓ Л Ъ ↓ 10 э ↑ Â

ш R

ЛЪЮ R ˘ ping ɔ ↓ ↑ й 3 э Â
ip dhcp ping packets 3

Ъ ę

Ъ ę	
clear ip dhcp conflict	DHCP ↑ ↓ ă Â
ip dhcp ping timeout	DHCP ╚ Л ping ɔ Â جم ą̈ ping ↑ ї ˘ فخسم ↓ї ' ї̈ ‡ فخسم ă Â
show ip dhcp conflict	DHCP ╚ Л جمї فخسم ˘ ї فخسم ă Â

↓

Ъ ę ↑ ↓

↓	
-	-

22.1.12 ip dhcp ping timeout

DHCP ╚ Л ping ɔ فخسم ă ˘ ˘ ѿ Ъ ę
ip dhcp ping timeout Â Ъ ę **no** ↓ Л Â

ip dhcp ping timeout *milli-seconds*

no ip dhcp ping timeout

↑

↑	
milli-seconds	DHCP ╚ Л ping ˆ Л ˜ Â ↓ ḣ تن й 100ї 10000 Â

й 500 Â

Ъ ę ѿ Â

G ЪЖ У э ping ↑ Â

ɯ R	ЛЪЮ R ˘ ping ↑ й 600ms Â `ip dhcp ping timeout 600`

˜ΩƚƲ ʅ	ƚƲ ʅ	
	host	ĸѪ IP ﻔﺨﺴ Ո Â ɏ DHCP Â
	ip dhcp excluded-address	ĸѪ DHCP ≥ ꓘ a ˚ IP ﻔﺨﺴ Â
	networkˆ DHCP˜	ĸѪ DHCP ﻔﺨﺴ ʌ Ո Â

ɺ

ƚƲ ʅ ˥ ɺ	ʌ	
	-	-

22.1.14 lease

ĸѪ DHCP ≥ ꓘ˚ ﻔﺨﺴ ˘ DHCP ﻔﺨﺴ ƚƲ ʅ

ЛЬЮ R ˘ DHCP й 1ᾖ Â

lease 0 0 1

ip dhcp pool	Ĥ DHCP ƒ ˘ ώ DHCP ƒ Â

ʌ

Ĥu ʒ ʔ ʌ

ʌ	
-	-

22.1.16 netbios-node-type

Ĥ DHCP ŷ NetBIOS ˘ DHCP ƒ Ĥu ʒ **netbios-node-type** Â Ĥu ʒ **no** ˩ ˥ NetBIOS Â

netbios-node-type *type*

no netbios-node-type

ʌ	
type	Ĥ NetBIOS ˘ ч Â Ĥ˘ ŷ 0~FF˘ ˙ Ω 8 ˘ ˥ ˩ ˩ ˥ Ю ĥ ' ʒ b-node' ʒ p-node' ʒ m-node' 8˘ ʒ h-node Â s Ĥ' b-node˘ ' p-node˘ ' m-node˘ ʌ ' h-node˘ ʌ Â

Â

ą Ю˘ ɔ صر й صر ʌ صر Â WINS ╚
ℳ˘ й صر ' ɷ WINS ╚ ℳ˘ й ʌ صر Â NetBIOS
صر й Hybrid Â

ѡ ᴿ

ЛυЮ ᴿ ˘ DHCP NetBIOS й ʌ صر Â
`netbios-node-type h-node`

	فخ سم جم è جم˘ ЮУ э سم فخ˘ ĭ ĭ У э سم فخ Â سم فخ ĭ ą ˩ **show ip dhcp binding** Ԧ ३ ˘ سم فخ ą ˩ **show ip dhcp conflict** Ԧ ३ Â
ш R	ЛԦЮ R ˘ ₩ @ DHCP سم فخ Л й 192.168.12.0˘ й 255.255.255.240 Â `network 192.168.12.0 255.255.255.240`

	Ԧ ३	
˘Ωԧ ३	**ip dhcp excluded-address**	₩ DHCP ⊨ ⋊ a ĭ IP سم فخ Â
	ip dhcp pool	₩ DHCP سم فخ ⋊ ˘ ώ DHCP سم فخ Â

Л

	Л	
Ԧ ३ ˥ Л	-	-

22.1.18 next-server

₩ DHCP ŭ ╟ è ŭ ╟ ⊨ ⋊ " ˘ DHCP سم فخ Ԧ ३ **next-server** Â Ԧ ३ **no** ˩ Лư ŭ ╟ ⊨ ⋊ " ₩ Â

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

no next-server

	Л	
Л	*ip-address*	₩ ŭ ╟ ⊨ ⋊ IP سم فخ˘ й TFTP ⊨ ⋊ Â У э Â
	ip-address2…ip-address8	ˆ ˩ ˜ ˩ Лư 8 ŭ ╟ ⊨ ⋊ Â

Â

Ԧ ३	DHCP سم فخ Â

G	₩ э ŭ ╟ ⊨ ⋊ ˘ ĭ جم ńم ˙ ˝l ˘ DHCP ˩ б جم ńم ŭ ╟ ⊨ ⋊ ˘ ˚ ЮУ э ŭ ╟ ⊨ ⋊ Â

ш R

ЛЪЮ R ˘ й DHCP ɷ ŭ ╟ ╞ ⅄ 192.168.12.4 Â

```
next-server 192.168.12.4
```

ˇΩԦ ३

Ԧ ३	
bootfile	⅍ DHCP ŭ ╟ ę ˚ ⅃ Â
ip dhcp pool	⅍ DHCP ڧ ⅃ ˘ ώ DHCP ڧ Â
ip help-address	⅄ ⅍ Helper ڧ Â
option	RGOS ˚ DHCP ˋ ↄ

≠ ѝ У э Â ̃Ω ¥ ɱ DHCP option Ĥ̃ ^l RFC 2131 Â

ш R

R 1' ЛЫЮ R ˘ ʒ̧ 19 ɑ Ĥ̃ ā ɑ DHCP ĭ ŭ
IP ↑ ˥ Â 0 ̃Ω IP ↑ ˥' 1 ŭ IP ↑ ˥ Â ЛЫЮ ˘ G DHCP
ŭ IP ↑ ˥ Â

```
option 19 hex 1
```

R 2' ЛЫЮ R ˘ ʒ̧ 33 ɑ Ĥ̃ DHCP k ɑ
ǫ ˘ DHCP ч '

1˜ 172.16.12.0˜ ̃Ω 192.168.12.12'

2˜ 172.16.16.0˜ ̃Ω 192.168.12.16 Â

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

̃ΩĤu ʒ̧

Ĥu ʒ̧	
ip dhcp pool	Ĥ̃ DHCP فخ سم ˩ ˘ ώ DHCP فخ سم Â

^l

ج ۞ ڢ ڊ Ɜ ڶ DHCP ╗ ∩ ɛ ы ╗ ă ˘ ɛ́ ɛ ʖ ڢ ڊ ˘ ʃ ڶ ǫ Â

ш ᴿ

ʃʊ ˘ ǔ ɷ DHCP ⊨ ⋊ ∩ è Â

```
service dhcp
```

ʖʊ ǯ

Ĥu ǯ	
show ip dhcp server statistics	DHCP ⊨ ⋊ ڶ ǫ Â

ڶ

Ĥu ǯ ˥ ڶ

ڶ	
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22.2

22.2.1 clear ip dhcp binding

DHCP ˘ ج **clear ip dhcp binding** Ĥu ǯ Â

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

ڶ

ڶ	
*	˥ DCHP Â
ip-address	˥ IP ڧ Â

ǐ Â

Ĥu ǯ

G

Ĥu ǯ ڶ DHCP ╟ ˘ DHCP ˥ ڶ ʃ **no ip dhcp pool** Ĥu ǯ Â

ш ᴿ

ʃʊ ᴿ ˘ ɷ IP ڧ ǐ 192.168.12.100 DHCP Â

```
clear ip dhcp binding 192.168.12.100
```

ʖʊ ǯ

Ĥu ǯ	

show ip dhcp binding	DHCP ╚ ⅄ ⅄ ⅄ Â

⅄

Ĥu ३ ⅂ ⅄

⅄	
-	-

22.2.2 clear ip dhcp conflict

DHCP ŏ ˘ ⅄ **clear ip dhcp conflict** Ĥu ३ Â

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

⅄

⅄	
*	⅄ DCHP ⅄ ŏ Â
ip-address	⅄ IP ⅄ ŏ Â

ŷ Â

Ĥu ३

Â

G

DHCP ╚ ⅄ ⅄ ŏ ping ˘ DHCP ⅄ ŏ ⅄ ˜
ˆ ARP˜ Â **clear ip dhcp conflict** ⅂ ⅄ ⅄ ⅂ ⅄ ŏ Â

W R

⅄⅄Ю R ˘ ⅄ ⅄ ŏ Â

```
clear ip dhcp conflict *
```

Ĥu ३	
ip dhcp ping packets	Ĥ DHCP ╚ ⅄ ⅄ ⅄ ˘ ⅄ ⅄ ŏ ping ⅄ ↑

22.2.3 clear ip dhcp server statistics

Æ DHCP ╚ ⅃ ⅃˘ ⌡ è **clear ip dhcp server statistics** ƪ ३ Â

clear ip dhcp server statistics

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ƪ ३

DHCP ╚ ⅃ ˘ ɷ DHCP ⌡ à ╟ à ˘

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22.2.7 show ip dhcp binding

DHCP ƭ ƫ ƣ ƍ˘ EXEC ƪ ʒ **show ip dhcp binding** Â

show ip dhcp binding [*ip-address*]

ˀ	ˀ	
	ip-address	ˆ ˩ ˜ ˩ IP ƭ ƫ ƣ ƍ Â

	ˀ Â
ƪ ʒ	Â
G	ƪƬ IP

ħυ ३ ٦ ৶	٨	
	-	-

22.2.8 show ip dhcp conflict

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

show ip dhcp conflict

٩	٩	
	-	-

22.2.9 show ip dhcp server statistics

DHCP ╚ ⅄ ⁄ ˘ EXEC ħu ३ **show ip dhcp server statistics** Â

show ip dhcp server statistics

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-	-

ὶ Â

ħu ३

G ħu ३ ⁄ ⅃ DHCP ╚ ⅄ ⅿ ⁄ Â

⅃ЮὶЮ **show ip dhcp server statistics** ħu ३ Â

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

w R

⁄ Ü ⅿ ЮÂ

Address pools	ⅿ ⅆ ⅇ
Automatic bindings	╟ ⅿ ⅆ Â

Manual bindings	สถานะ Â
Expired bindings	สถานะ Â
Malformed messages	DHCP ข้อความ a Â
Message Received or Sent	DHCP ได้รับ หรือ ส่ง Â

ข้อมูลใช้งาน

ใช้งาน	
clear ip dhcp server statistics	ล้าง DHCP เซิร์ฟเวอร์ Â

ค่า

ใช้งานได้ค่า

ค่า	
-	-

23 DHCP Relay

23.1

23.1.1 ip dhcp relay check server-id

DHCP Relay check server-id ╖ ˘ ┘ЛU G ƪυ ३ৄ Â G ƪυ ३ৄ no
ˆΩ DHCP Relay check server-id ╖ Â

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

৭	
-	-

ˆΩ

ƪυ ३ৄ ώ

ƪυ ३ৄ˘ DHCP Relay ج ┘ DHCP ˚ option server-id
G ┘ DHCP ╞ ⅄ Â ƪυ ३ৄ˘ ‡ ┘ DHCP ╞ ⅄ ┘ DHCP
Â

ЛЫО R ˘ DHCP relay check server-id ╖ Â

ш R
```
Ruijie# configure terminal
```

DHCP Relay option dot1x ╗ ˘ ┘ЛЪ G ħu ३ Â G ħu ३ no ̃Ω ╗ Â

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

৭	
-	-

̃Ω

ħu ३ ώ

G ħu ३ ̈I DHCP è ╗ ˘ ৸ ৸ 802.1x ̃Ω Â

ЛЪЮ R ˘ ج DHCP è Э option dot1x ╗ Â

w R

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

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

৸

৸	
-	-

ħu ३ ৭ ৸

23.1.3 ip dhcp relay information option82

DHCP Relay option82 ╗ ˘ ┘ЛЪ G ħu ३ Â G ħu ३ no ̃Ω ╗ Â

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

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-	-

̃Ω

Ħυ ३	ὥ
G	╗ б option dot1x ╗ ц ˘ a ┘ ┘ Â

ш R	ЛЫЮ R ˘ ج DHCP è Э˘ ŭ opion82 ╗ '
	`Ruijie# configure terminal`
	`Ruijie(config)# Ip dhcp relay information option82`

Ħυ ३	
Ħυ ३	
Service dhcp	DHCP è ३
ip dhcp relay information option dot1x	DHCP option dot1x ╗

┘

-	-

cp relay information option vpn

DHCP Relay DHCP Relay Aware VRF ╗ ˘ ┘Л G Ħυ ३ Â
υ ३ no Ὢ ╗ Â

ip dhcp relay information option dot1x	DHCP option dot1x ╗

ƺ

ƿ ƹ ˥ ƺ	ƺ	
	-	-

23.1.5 ip dhcp relay suppression

ƺ ˥ Э DHCP Relay ⁸ ╗ ˘ ˩ Л ᵁ ƿ ƹ Â ᴳ ƿ ƹ no ˜Ω ˥ DHCP relay ⁸ ╗ Â

[**no**] **ip dhcp relay suppression**

˥	**˥**	
	-	-

˜Ω

ƿ ƹ ˥ Â

ᴳ ƿ ƹ ˄˘ ˥ Э ˆ DHCP Â

ᴡ ᴿ

ЛЮ ᴿ ˘ ˥ 1 Э DHCP relay ⁸ ╗ Â

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

ƿ ƹ

23.1.6 ip helper-address

╗ У э DHCP ╚ Ы ممخفز ˘ ┘ Л Ъu G Ъu ३ Â Ъu ३ no ˘ ╕ У э
╚ Ы ممخفز Â DHCP ╚ Ы ممخفز ┘ Л Ъu جم ώ Ω ^ Ю Â

[**no**] **ip helper-address** [**vrf** *vrf-name*]*A.B.C.D*

^

ॐ Ӌ Э ὖ DHCP è ╗ ˘ ৲ Л υ G Ъυ ३१ Â Ъυ ३१ no ̃Ω ╗ Â

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

৭

24 DNS

24.1

24.1.1 ip domain-lookup

ƺ ǁ DNS ƙ ƛ Â ǂ ƫ ƭ no ‡ ƞ DNS ƙ ƛ ǁ Â

ip domain-lookup

no ip domain-lookup

ƛ	ƛ	
	-	-

ǫ ƚ DNS ƙ ƛ ǁ Â DNS[illegible]

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

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

ip-address	IP
ipv6-address	IPV6

Â

Ö Â

DNS Server IP/IPv6 Â DNS Server Â
ÿ Server DNS
Server
Â
6 Â 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

ƒu ƒ

ŐŐ

G

ƒ ŭ " ˘ ˅ ˅ **no ip host host-name ip-address** ƒu ƒ Â

w R

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

ƒu ƒ

ƒu ƒ	
show hosts	DNS Ω ą Â

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ƒu ƒ ˅

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24.1.4 ipv6 host

ƒu ƒ ŭ ˅ ˅ IPV6 Â G ƒu ƒ no ƒ ŭ " Â

Ipv6 host *host-name ipv6-address*

no ipv6 host *host-name ipv6-address*

˅

˅	
host-name	ŭ ˅
Ipv6-address	IPV6

ƒu ƒ

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G

ƒ ŭ " ˘ ˅ ˅ **no ipv6 host host-name ipv6-address** ƒu ƒ Â

w R

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

	show hosts	DNS

	-	-

24.2

24.2.1 clear host

clear host [*host-name*]

	host-name	

IQ

24.2.2 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

-	-

25 SNTP

25.1

25.1.1 sntp enable

ƪυ ३ৃ SNTP ╖ ˘ G ƪυ ३ৃ è **no** ѝ ḣ —Disable Â

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

৭	৭	
	-	-

SNTP Disable

ƪυ ३ৃ ѿ

G G **show sntp** ƪυ ३ৃ **G**

ħυ ३	ώ
G	G **show sntp** ħυ ३ SNTP ॅΩ ৲
w R	Ruijie(config)# **sntp server** *192.168.4.12*

ॅΩħυ ३	ħυ ३	
	show sntp	SNTP
	sntp enable	SNTP

৲	RGOS10.0 ЛЪЭ

ħυ ३ ৲	৲	
	-	-

25.2

б ↑ ЛЪЮħυ ३'

show sntp

25.2.1 show sntp

ħυ ३ SNTP ॅΩ ৲ Â

৲	৲	
	-	-

ħυ ३
G G **show sntp** ħυ ३ SNTP ॅΩ ৲
w R

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

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

ħu ३	
sntp enable	SNTP
show sntp	SNTP ˜Ω ৲

RGOS10.0 Л Э

৲	
-	-

26 NTP

26.1 NTP

26.1.1 no ntp

ʔΩ ntp ɹ ⊨ ̆ ṃ б ⊨ ⅄ ɹ ̆ ntp ə̣ Â

no ntp

৭	
-	-

ɑ̣ Ю NTP ⊨ ʔΩ Â

Ԧ ʒ
ŏ Â

G
ɜ̣ ɑ̣ Ю̆ NTP ╥ ʔΩ ̆ ⊓ ɹ ɑ NTP ⊨ ⅄ NTP ŏ ⋮ ⁸ ̆ NTP ╥ ̊ Â

ɯ R
ЛԦЮ R ̆ ʔΩ ɑ NTP ⊨ Â no ntp

ʔΩԦ ʒ	Ԧ ʒ	
	ntp server	У э NTP ⊨ ⅄

ɹ

Ԧ ʒ ˥ ɹ	ɹ	
	-	-

26.1.2 ntp access-group

NTP ⊨ ⁸ ̆ Ԧ ʒ no ɹ ⁸ Â

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

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

৭	
peer	ï ৷ NTP Ĺ Ω ⁸ ˘ ≠ ï ৷ б ⁄ ^ ώ ~ Â
serve	ï ৷ NTP Ĺ Ω ⁸ ˘ π a ï ৷ б ⁄ Â
serve-only	Θ ï ৷ NTP Ĺ Â
query-only	Θ ï ৷ NTP Ĺ ⁸ Â
access-list-number	IP ⁸ " ⁄৷' تن й 1˙ 99 Ω 1300˙ 1999
access-list-name	IP ⁸ " ⁄ Â

ą Ю ˙ ¡ NTP ⁸ ‡ Â

Ъu ३

ώ Â

৷ ৷ NTP Ĺ ⁸ Â ᵏ ɑ У ώ ˘
ώ ᴳ NTP ` ⁸ Â
У э ˆ ˘ NTP Ĺ ÿ ⁸ˆ ⁸ ŋ ৭
‡˘ Лu У э ৭ ˆ ‡ й ñ Â ৭ й peer à serve à serve-only à query-only Â

⁄৷ ⁸ ⅊ Â Э ‡ ৭ ˘ π ৷ˆ б ⁸ ˜Ω Â	

˙ ¡ ⁸ ‡˘ ‡ ï Â π У ɑ ⁸ ‡˘
‡ Θ ‡ è ï Â

ЛuЮ ¡ ï 1 ⁄৷ " è ৷ à ⁸ Ω
৷ ' ⁸ 2 ⁄৷ " è Θ ৷ Â

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

Ъu ३	
ip access-list	… IP ⁸ " Â

Ъυ ३ ٦ ٧	٨	
	-	-

26.1.3 ntp authenticate

NTP ╞ G NTP ŏ 8 Â

ntp authenticate

no ntp authenticate

٩	٩	
	-	-

ą ЮO NTP ŏ 8 ̃Ω Â

Ъυ ३	ŏ Â

G ŏ ŏ ⁞ 8˘ ‡ a ٧ ą ╗ Â ŏ ŏ ⁞ 8˘

G ٧ ὲ ы ŏ ˘ ٧ ٧ ¥ ╞ ٧ ╗ ą Â

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

й NTP ⊨ У э ѿ NTP Â

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

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

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

	-	-

<187ę91B5B6B161C4]TDTT1 1 Tf-2.9940 Td( )TjET60.84 7404.5 0.24 20.43 ref66.84 7404.5 063.2

ƕ ३ ὅ Â

G

	ج ╟ ⌡ ˘ . ⌡ ˘ ‡ ⌡ЛU G ЪU ३ Â
w R	ЛUЮ R ˘ NTP ⌡ Â Ntp synchronize

ЪU ३	**ЪU ३**	
	ntp server	У э NTP ⌊ ⌊ ⌡

⌡	

ЪU ३ ⌉ ⌡	**⌡**	
	-	-

26.1.9 ntp trusted-key

У э ID й ŏ ą˙

ntp trusted-key *key-id*

no ntp trusted-key *key-id*

⌉	**⌉**	
	key-id	ŏ ą˙ ID Â

	ą Ю ą˙ Â
ЪU ३	ŏ Â
G	ج NTP ⌉ ⌡ ą˙ ˘ ئو ﷺ ⌋ ∫ o

[redacted]

ใช้งานโดย	N/	
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ค่าเริ่มต้น	
-	-

ข้อมูลเพิ่มเติม

ใช้งานได้

คำอธิบาย

NTP ย่อมาจาก Network Time Protocol ใช้สำหรับการซิงโครไนซ์เวลาของอุปกรณ์ผ่านเครือข่าย

ตัวอย่าง

ตัวอย่างการใช้งาน NTP

```
show ntp status
```

ข้อมูลจำเพาะ	
ใช้งานได้	
-	-

คำสั่งที่เกี่ยวข้อง

ใช้งานร่วมกับ	
-	-

27 FTP Server

27.1

27.1.1 debug ftpserver

FTP ⊨ ⋇ ə ˘ G ħu ३ no ̃Ω ə Â

debug ftpserver

no debug ftpserver

৭	
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̃Ω ə Â

ħu ३ Â

G G **debug ftpserver** ħu ३ ⌟ ⋀ ∞ FTP ⊨ ⋇ è ə Â

w R

R 1' ⋀ ЮО ! ⊨ ⋇ 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' ⋀ ЮО ! ̃Ω ⊨ ⋇ ə '

```
Ruijie# no debug ftpserver
```

̃Ωħu ३	
-	-

৭

ħu ३ ৭	
৭	

-	-

27.1.2 ftp-server enable

ŭ FTP ⊨ ⋊ˇ G ƪ ३ no ˜Ω FTP ⊨ ⋊ Â

ftp-server enable

no ftp-server enable

৭	
-	-

ˆ ˜Ω Â

ƪ ३ ŏ Â

G

FTP ⊨ ⋊ ŭ ˇ FTP ⊿ ⋀ ƃ ƺ ˇ ˚ Э· Ю ɔ Â

⊿ ƪ ३ ∩ **ftp-server topdir** ƪ ३ G FTP

FTP ⊨ ⋊ Э ˚ Â

ш R

R 1' ⋀ЮО ¡ ŭ ╟ FTP ⊨ ⋊ 8 Θ syslog '

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

R 2' ⋀ЮО ¡ ˜Ω FTP ⊨ ⋊'

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

˜Ωƪ ३

ƪ ३	
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⊿

ƪ ३ ⊤ ⊿

⋀	
-	-

27.1.3 ftp-server password

FTP ⊨ ⋊ ˇ G ƪ ३ no ⊿ Â

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

no ftp-server password

٩	
type	Ĥ ╗ ص' 0 7 Â0 ę ╗ ˆ ~ ' 7 ę й ╗ Â
password	Ĺ ⅄

Â

Ĥ ę

ŏ Â

G

FTP Ĺ ⅄ ⅃ Ω Λ ϵ ` ˘ ⅃ У э Â

↑ ŭ ˘ ⅄ ⅃ Λ ˘ Π ' è э й У ↑ Â

й 1 э ằ й 25 э ' й 4 э ằ й 52 э Â

FTP Ĺ ⅄ a ˘ ⓒ Ĺ ⅄ ` Â

w R

R 1' ΛЮ ! й pass'

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

'

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

R 2' ΛЮ ! й 8001'

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

R 3' ΛЮ ! ⅃ '

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

Ω Ĥ ę

Ĥ ę	
-	-

⅃

Ĥ ę ⅂ ⅃

⅃	
-	-

27.1.4 ftp-server topdir

⁸ FTP ˅ ŋ̃ ɔ ɲ Â ᴳ ƪ ȝ no
FTP ᴸ ɲ Ɔ˙ ¡ ˅ Â

ftp-server topdir *directory*

no ftp-server topdir

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directory	FTP ɔ

ˆ a ĭ ŋ̃˙ ¡ ˜ Â

ƪ ȝ ȣ Â

ᴳ

FTP ᴸ ɲ ɷ ʌ ˅ ɲ Â
FTP FTP ᴸ ɲ Ɔ ˅ Â
ƪ ȝ˘ FTP ᴸ ɲ Ɔ˙ ¡ ˅ Â

ᴡ ᴿ

ᴿ 1' ʌƱ ¡ ŭ ╟ FTP ᴸ ɲ ⁸ Θ syslog '

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

ᴿ 2' ʌƱ ¡ ɴ '

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

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ƪ ȝ ˥ ɴ

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27.1.5 ftp-server timeout

ใช้งาน

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FTP ⊨ ⊻ ¥ K€

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28 UDP-Helper

28.1

28.1.1 ip forward-protocol

ƕʋ ʅ è ˧ UDP ˦ Â ᴳ ƕʋ ʅ **no** ‡ ˨ UDP ˦ ꜛ è ˧ ╥ Â

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**]

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

ঁΩঢ ৩	ঢ ৩	
	udp-helper enable	G ৲ UDP
	ip forward-protocol	è ৲ UDP ৸

	RGOS10.1

	-	-

28.1.3 udp-helper enable

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

UDP è

udp-helper enable

no udp-helper enable

	-	-

UDP è

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

UDP è

SNMP ใน ३

no snmp

৭	" ৸ ˘ ৲ ᏡᏁ G Â

ƕ ३

G " ৸˘ ᏡᏁ ƒ ⁞ Â " ৸ ৲ ᏡᏁ

w R " ৸ ѝ 123456:

ver chassis-id *123456*

‘Ωƕ ३		SNMP ৯

৸

	aclnumber	" " /\^ 1-99~ ˘ ˜Ω " ˘ MIB ipv4 NMS فخ سم تن Â
	aclname	" ɹ ˘ ˜Ω " ˘ MIB ipv4 NMS فخ سم تن Â
	ipv6_aclname	ipv6 " ɹ ˘ ˜Ω " ˘ MIB ipv6 NMQ H5"@8Æ

SNMP ใน ३

G

ħu ३ б ŏ̈ ħu ३ **snmp-server host** У G ˘ ч Â

w R

Ю R ŭ̈ ŭ ŭ ╟ ч SNMP Y˘ '

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

ħu ३	

ipv6_aclname	ipv6 " ˩ ˘ ˜Ω " ˘ MIB ipv6 NMS فذ سم تن Â

Ĥu ३ ŏ

G

w R Ю R У э '

```
Ruijie(config)# snmp-server group mib2user v3 priv read mib2
```

˜Ωĥu ३

Ĥu ३	
show snmp group	SNMP ٤

˩

Ĥu ३ ˥ ˩

˩	
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29.1.7 snmp-server host

˩ SNMP ŷ ˆ NMS˜ ˘ ŏ Ĥu ३ **snmp-server host** Â Ĥu ३ no ˩ SNMP ŷ Â

snmp-server host {*host-addr*| **ipv6** *ipv6-addr*} **traps** [**vrf** *vrfname*] [**version** {**1** | **2c** | **3** [**auth** | **noauth** | **priv**]] *community-string* [**udp-port**

port-num][*notification-type*]

no snmp-server host {host-addr | ipv6 ipv6-addr}

˥

˥	
host-addr	SNMP ŷ فذ سم
ipv6-addr	SNMP ŷ فذ سمˆ ipv6˜
vrfname	vrf ˩ ˩
version	snmp ˘ V1 à V2C à V3
auth | **noauth** | **priv**	V3 ŏ ⁞ Â
community-string	ج E S ˩ˆ V3 ˜ Â

port-num	snmp ў ^l
notification-type	ў ╟ ˩ ص˘ R snmp Â

ą Ю˘ SNMP ў Â
ص˘ ‡ ↑ ص Â

Ĥu ʒ ŏ

G

Ĥu ʒ б ŏ Ĥu ʒ **snmp-server enable traps** У G ˘ ў ╟ NMS ˩ Â

˩Лu э a ˩ SNMP ў ţ ˘ У э ў ˩Лu G a ˩ ص ^˘ a ˩ ^˘ a ˩ vrf ˩ ˘ ţ ˩ ў [˩ ^ à ˩ vrf] ^ У ˚ Ω ŋ ^ ˘ . ˩ ў ˩ a ˩ ˘ ˩Лў ⁞ a ˩ ˘ ę ˚ ^ ↑ У Â

w R

Ю R У э SNMP ў ˘ SNMP Y˚ '

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

ŽĤu ʒ

Ĥu ʒ	
snmp-server enable traps	ŭ ˩

^

Ĥu ʒ ˥ ˩

^	
-	-

29.1.8 snmp-server location

SNMP Æ ą ˘ ŏ Ĥu ʒ **snmp-server location** Â Ĥu ʒ no ˩ SNMP Æ ą Â

snmp-server location *text*

no snmp-server location

^

^	
text	ą s Â

ą ŋ

ħυ ३	ώ
G	
w R	Ю R У э ą ' Ruijie(config)# **snmp-server location** start-technology-city 4F of A Buliding

ΩħU ३	ħυ ३	
	snmp-sever contact	SNMP

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ħυ ३ ৲	৲	
	-	-

29.1.9 snmp-server packetsiz

8 SNMP ↑ ˘ ώ ħυ ३ **snmp-sever packetsize** Â ħυ ३ no ḣ Â

snmp-server packetsize *byte-count*

no snmp-server packetsize

৭	৭	
	byte-count	↑ ˘ ÿ 484 ↑ 17876 Â

	1500
ħυ ३	ώ
G	
w R	Ю R SNMP ↑ ὶ 1492' Ruijie(config)# **snmp-server packetsize** *1492*

ΩħU ३	ħυ ३	

snmp-server queue-length	SNMP "

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ƕ ३ ٦ ƛ	ƛ	
	-	-

29.1.10 snmp-server queue-length

" ˘ ώ ƕ ३ **snmp-server queue-length** Â

-server queue-length *length*

ƛ	
length	" ˘ ÿ 1↑ 1000 Â

10

ώ

G ├ ώ

ὖ SNMP ╥ ˘ ὦ ƪυ ३ **snmp-server system-shutdown** Â
ƪυ ३ no ৷ ̃Ω SNMP ╥ Â

snmp-server system-shutdown

no snmp-server system-shutdown

ƕ ʇ	ώ
G	ą Ю SNMP ÿ ف э ٨ ١ G ف э ٨ IP سخف ɔ ӥ سخف ӥ ɷ ɟ ɣ ռ ፧ ˇ ˧ ɲ G ƕ ʇ ش G У э سخ IP سخف ɔ ӥ SNMP سخف Â
ɯ R	Ю R ɲ ٨ 0 IP سخف ɔ ӥ SNMP سخف' `Ruijie(config)# snmp-server trap-source fastethernet 0`

Ώƕ ʇ

ƕ ʇ	
snmp-server enable traps	ΰ ÿ ╟ ˧
snmp-server enable host	NMS ÿ

ɻ

ƕ ʇ ˥ ɻ

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-	-

29.1.13 snmp-server trap-timeout

ꟷ ˧ ˇ ώ ƕ ʇ **snmp-server trap-timeout** Â ƕ ʇ no ḣ Â

snmp-server trap-timeout *seconds*

no snmp-server trap-timeout

٨

٨	
seconds	ˇ ˊ Æ ӥ ˇ ˧ ḣ تن' 1 – 1000 Â

30

ƕ ʇ	ώ
G	
ɯ R	Ю R ӥ 60 ' `Ruijie(config)# snmp-server trap-timeout 60`

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

ʎ

Ĥu ʒ ʔ ʎ	ʎ	
	-	-

29.1.14 snmp-server user

SNMP ˘ ŏ Ĥu ʒ **snmp-server user** Â Ĥu ʒ no ʔ 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** }

ʎ	
username	ʎ Â
groupname	ʎ
v1 | **v2** | **v3**	SNMP Â ʎ v3 ʎ ŏ ʎ Â
encrypted	ȯ ȉ ȯ Â ĭ ‡˘ Л ȯ Â ȩ Л ȯ˘ ‡ ȯ 16 8 Â G MD5 ȉ 16 ˘ SHA ~ ȉ 20 Â Л ч э У э Â ╗ Ѳ Â
auth	ĭ G Â

SHA

aclnum	" " ˇ/ ˇΩ " ˇ MIB ipv4 NMS فخ سم تن Â

	У э default ففي ï MIB Â
ƪ ʒ	ѿ
G	
w R	Ю R У э ففي ↑ MIB-2 ˆ oid ѝ 1.3.6.1˜ '

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

˜Ωƪ ʒ	ƪ ʒ	
	show snmp view	SNMP ففي ǫ

ʎ		
ƪ ʒ ʅ ʎ	ʎ	
	-	-

29.1.16 snmp trap link-status

ʎ ê ʎ ƪ ʒ Ì Â

29.2

29.2.1 show snmp

SNMP ǫ ˘ ƪ ʒ **show snmp** Â

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

30.1.2 rmon collection history

э Лυ ^l ˥ ˩ ə̣ G ħυ ३ Â G **no** ˩ Â

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

no rmon collection history *index*

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ƒu ३ ৭

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G

ЛƱЮ R ˘ ƧƦ Y ˇ ╟ ɔ' Y ˇ ȁ ˩ trap Â

w 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
```

ƫυ ३	
rmon alarm	

ƫυ ३

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

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

ЛЬЮ R ˘ ə ˙

```
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
```

w R

历史	
rmon collection history *index* [**owner** *ownername*] [**buckets** *bucket-number*] [**interval** *seconds*]	╗ У э ⅂ ⅄ 8

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ħu ३

G

ЛЫО R ˘ ৯ '

```
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
```

w R

ħu ३	
rmon collection stats *index* [**owner** *owner-string*]	╗ У ৯

৶

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	-	-

31 DHCPv6 Client

31.1

31.1.1 ipv6 dhcp client pd

ج ٨ Э ŏ DHCPv6 client ممسفخ ŋ ą ˘ G **ipv6 dhcp client pd** ƪ ʒ Â G ƪ ʒ **no** ˜Ω ممسفخ ŋ Â

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

no ipv6 dhcp client pd

٨	
prefix-name	IPv6 ŋ ɹ
rapid-commit	ĭ G ɣ Ϟ ţ

ممسفخ ŋ ŏ

ƪ ʒ ٨

DHCPv6 ˘ ƪ ʒ ج ٨ Э ŏ DHCPv6 Â **ipv6 dhcp client pd** ƪ ʒ ŏ ƷƷ ɹ ɹ DHCPv6 Server ٤ ŋ Â ˆ ŋ ą ˘ client ɜ ŋ ą ɑ ج IPv6 ŋ è˘ ɛ ы ƪ ʒ Λ ٩ ٤ Λ G ɜ ŋ Â

rapid-commit ˜Ω ĭ Ω ŁɣL G two-message Ϟ ţ ˘ ɑ ˜Ω ˘ ٤ solicit è ↑ ŏ **rapid-commit** Â

ΛƪΟ ج ٨ Э ŏ ŋ ą У ɜ R '

```
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ipv6 dhcp client pd pd_name
```

ƪ ʒ	
clear ipv6 dhcp client	ج ٨ Э ŏ DHCPv6 ˥
show ipv6 dhcp interface	DHCPv6 ٨ ą

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ƬU ३ ٦ ৶	

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31.2

31.2.1 clear ipv6 dhcp client

جھ ৸ Э ŬŬ DHCPv6 ˘ G **clear ipv6 dhcp client** ƬU ३ Â

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

৸	
interface-type interface-number	৸ صΠ

ƬU ३

G

clear ipv6 dhcp client ƬU ३ جھ ৸ Э ŬŬ DHCPv6 Ĕ ˚ ৶ Ĕ ৶ ৲ ৲ Â

W R

ЛƬЮ ŬŬ DHCPv6 R '

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

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ƬU ३ ٦ ৶

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-	-

DHCPv6 Relay Agent ħυ ३

show ipv6 dhcp relay destination { **all** | **interface** *interface-type interface-number* }	ɱń Relay ƒƣ ƨ "

ʎ

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ƀu ३ ʅ ʎ

ʎ	
10.4	ƀu ३

32.2

32.2.1 show ipv6 dhcp relay destination

DHCPv6 Relay Agent ƒƣ ƨ ƣ ˘ G ƀu ३'

show ipv6 dhcp relay destination

ʎ

ʎ	
all	ƒƣ ƨ ʎ ƣ
interface *interface-type interface-number*	ʎ ƒƣ ƨ ʎ ƣ

ƀu ३

G

ƀu ३ ʅ ʃu Relay Agent ǔ Relay ʟ ʎ ɣ ʃ DHCPv6 ʎˆ ʅ ˜ ʅ ƒƣ ƨ Â

w R

R 1' ɱń Relay ƒƣ ƨ ƣ Â

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

⅄	-

ƀu ३ ⅂ ⅄	⅄	
	10.4	ƀu ३

32.2.2 show ipv6 dhcp relay statistit0f

ɱ ŭ DHCPv6 Relay ╗ ⅄ ⅁ ⅃ ɑ˘ ᴳ ƀu ३'

show ipv6 dhcp relay statisti0f

⅃	⅃	
	-	-

ƀu ३	
ᴳ	ƀu ३ ⅃ ⅄ƀ ɱ DHCPv6 Relay ̃Ω ⅁ ⅃ ɑ Â

DHCPv6tit Relay Agent ə ƀu ३ ᴡ ᴿ'

```
Ruijie# show ipv6 dhcp relay statisti0f
Packetf dropped              :  2      // x
   Error                    :  2      //        x
   Excess of rate limit     :  0      //             ╒ x
Packetf received            :  28     // ⅁
```

ᴡ ᴿ

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

ƫ ३	
clear ipv6 dhcp relay statistics	ḣ

ƛ -

ƫ ३ ৲ ƛ	
10.4	ƫ ३

32.2.3 clear ipv6 dhcp relay statistics

ɱ ŭ DHCPv6 Relay ৷ ƛ ƛ ৲ ɑ ˘ G ƫ ३'

clear ipv6 dhcp relay statistics

৲	
-	-

ƫ ३

G ƫ ३ ৲ ƛ ɱ DHCPv6 Relay ƛ ৲ ɑ Â

w R DHCPv6 Relay Agent ą ƫ ३ w R^ ƫ ३ ƛ˘ ḣ ˘ ৲ ƛ ƛ ḣ ÿ 0 ˜ '

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

ƫ ३	
show ipv6 dhcp relay statistics	ḣ

ƛ -

ใบ ๓ ๗ ๗	๗	
	10.4	ใบ ๓

33 TCP

33.1 TCP

33.1.1 ip tcp path-mtu-discovery

ŭ TCP · ´ ĩ (PMTU) ৺ ╗ ˘ ھ ώ Ю G **ip tcp path-mtu-discovery** Â ĩΩ ˘ ھ Ĥu ३ৃ ৺ ╗ **no** Â Ĥu ३ৃ Ю'

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

show tcp pmtu	TCP PMTU ḣ

ʎ ʎ Â

ƚƣ ʒ ʃ ʎ

ʌ	
RGOS 10.4	RGOS 10.4 Â

33.2 TCP

33.2.1 show tcp pmtu

TCP PMTU ǫ ˘ G ƚƣ ʒ'

show tcp pmtu

ʌ

ʌ	

ƚƣ ʒ Â

G TCP PMTU ḣ˘ ʃ ʃƣ G show tcp pmtu ƚƣ ʒ Â

show tcp pmtu ƚƣ ʒ ƚƣ'

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

ʷ R ƚƣ'

No.	ʌ
Local Address	ƣƣƣ б ʌ ʌ Â ʃ У э “.” ʃ ʌ ʌ Â “2002::2.23” б “192.168.195.212.23” è “23” ʌ ʌ Â

34 RIP

34.1

34.1.1 address-family RIP

ὶ ƒ ƒ RIP ~ ˘ G ƒ ƕ ३ **address-family** ˘ ˝
~ ƒ ˘ G ƕ ३ **no** Â

address-family ipv4 vrf *vrf-name*

no address-family ipv4 vrf *vrf-name*

	exit-address-family	Â
	ip vrf	… VRF Â

	-	-

34.1.2 auto-summary (RIP)

RIP **auto-summary** Â **no** Â

auto-summary

no auto-summary

	-	-

Â

Â

RIP Â
RIPv1 RIPv2 Â
RIP Â
Â

RIP
RIP
RIPv2
RIPv1 Â

Â

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

Ωƪu ३

ƪu ३	
version	ƪ RIP ˚ Â v1 ∩ v2 ч э ˘ ⌠ v1&v2 Â

⌠

ƪu ३ ⌐ ⌠

⌠	
-	-

34.1.3 bfd all-interfaces (RIP)

RIP ⌠ G BFD ˘ ج RIP Ю **bfd all-interfaces** Â G ƪu ३ no Â

bfd all-interfaces

no bfd all-interfaces

	Ĥu ʒ	
˜Ωĥu ʒ	**router rip**	ŭ ╟ RIP ώ Â
	ip rip bfd [**disable**]	RIP ˥ ŭ ╟ ˜Ω G BFD Â

˥

	˥	
Ĥu ʒ ˥ ˥	-	-

34.1.4 default-metric (RIP)

ĤЖ RIP ḣ˘ G Ĥu ʒ **default-metric** Â Ĥu ʒ **no** Â

default-metric *metric-value*

no default-metric

	˥	
˥	*metric-value*	ḣ˘ ḣ ẗ 1ˆ 16 Â *metric-value* ḣ ɣ ɣ 16˜ RGOS ẗ a ˩ Â

ẗ 1 Â

Ĥu ʒ Â

Ĥu ʒ б ˜ Ĥu ʒ **redistribute** ˥ G Â ÿ ˥ У э ˜ ˘ ˆ ˆ RIP ˘ ɣ a ˩ ˜ 8 a ȯ ˘ Ä ḣ Â ☺ a

G

ƕ ३	
redistribute	ÿ У э ॐ ĭ ĭ ৲ У э ॐ Â

৲

ƕ ३ ৭ ৲	৲	
	-	-

34.1.5 default-information originate (RIP)

ḣ ॼ ॐ RIP ɳ У ˘ ৲ ᒐ ᴳ ƕ ३ **default-information originate** ƕ ३˘ ƕ ३ **no** ৲ Â

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

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

৭	
always	ˆ ৲ ~ ˜Ω ᴳ RIP ˚ ɳ ˘ a ॐ ĭ ॐ Â
metric *metric-value*	ˆ ৲ ~ ৭ ḣ˘ *metric-value* ৲ ḣ ॐ 1-15 Â
route-map *map-name*	ˆ ৲ ~ ˜Ω route-map ৲ , ˜Ω route-map

ɳ ' ɳ metric ḣ ॐ 1 Â

ƕ ३

è ॐ ˘ RIP a ৲ ˆ ˘ ᴳ **default-information originate** ƕ ३ ˘ ৲ ˆ Â **always** ৭ ˘ RIP a ĭ ॐ ˘ ৲ ˆ У

ᴳ

	RIP ƪ ३ ˘ ॠ RIP a ̈Ą ˜ ˜ Â ¥ **ip default-network** ˘ ÿ G **default-information originate** ƪ ३ ώ RIP Â
ш R	ЛƪЮ R ɲ У ˆ RIP Â `Ruijie(config-router)#` **`default-information originate always`**

̃Ωƪ ३	**ƪ ३**	
	ip rip default-information	ॠ ˥ ˜
	redistribute	ὲ ˜ ώ RIP

˥		
ƪ ३ ˥	˥	
	-	-

34.1.6 distance

RIP ˘ G ƪ ३ **distance** Â ƪ ३ **no** Â

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

no distance [*distance ip-address wildcard*]

[redacted]

£ ï¹Æ3C851>-6<04B809542 3T1 1 T245 6 0 5 re f BT /T 78 36

	ą˘ ‡ ˘ ĭ ‡ RIP Â

w R	ЛƪЮ R ˘ RIP й 160, ÿ 192.168.12.1 ˘ ˆ й 123
	`Ruijie(config)# router rip`
	`Ruijie(config-router)# distance 160`
	`Ruijie(config-router)# distance 123 192.168.12.1 0.0.0.0`

ˇΩƪ ३	ƪ ३	
	-	-

৲

ƪ ३ ˥ ৲	৲	
	-	-

34.1.7 distribute-list in RIP

8 ˘ Л ˘ G ƪ ३ **distribute-list in** Â ƪ ३ **no** ˆ ƪ Â

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

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

৲	৲	
	access-list-number | *name*	" Â ৲ " ĭ ˘ ˩ Л Â
	prefix *prefix-list-name*	G ńń " Â
	gateway *prefix-list-name*	G ńń " Â
	interface-type interface-number	(˩) ˆ " ˘ ৲ ج ৲ Â

	ƪ " Â
ƪ ३	Â
G	й ۵ ۶ ˘ ˩ Л ˆ 8 " ˘ ˆ

Â ৲˘ ৲ Â

ƱƪƟ R ˘ RIP ÿ Fastethernet 0/0 ৲ ˘ ɷ 8 ˘ ৲ ĭ 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
```

ƪ ३	
access-list	ƪ ‡ Â
prefix-list	ƪ ɱ Â

৲

ƪ ३ ৲	
-	-

34.1.8 distribute-list out RIP

8 ˘ Ʊ ˘ G ƪ ३ **distribute-list out** Â ƪ ३ **no** ƪ Â

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

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

৲	
access-list-number | *name*	Â ৲ ĭ ˘ ৲Ʊ ৲ Â
prefix *prefix-list-name*	G ɱ Â
interface	(৲) ˘ 8 ৲ ৲ Â
bgp	(৲) ˘ 8 ৲ ÿ bgp ώ Â

connected	(ɹ) ǂ " ˘ ˎ ⁸ ɹ ج ÿ ώ Â
isis [*area-tag*]	(ɹ) ǂ " ˘ ˎ ⁸ ɹ ج ÿ isis ώ ˘ *area-tag* ἑ E ɜ isis ᴿ Â
ospf *process-id*	(ɹ) ǂ " ˘ ˎ ⁸ ɹ ج ÿ ospf ώ ˘ *process-id* ἑ E ɜ ospf ᴿ Â
rip	(ɹ) ǂ " ˘ ˎ ⁸ ɹ ج rip Â
static	(ɹ) ǂ " ˘ ˎ ⁸ ɹ ج ÿ

34.1.9 exit-address-family

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

exit-address-family

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۹	-	-

	ƪ ३	ѝ	ḣ
ƪ ३	فخ سم	Â	
G	فخ سم جم	Ю G	ƪ ३ فخ سم Â

	̃Ω s Â
Ĥu ३	٨ Â
G	s ج ٨ è ɑ˘ Л ¯ **key chain** ώ Ĥu ३ s Ĥ̃ a RIP ↑ Â RIPv1 a RIP ↑ ˘ ٨ RIPv2 Â

w R	ЛЫЮ R ˘ Serial 0 ٨ ŭ ɑ RIP ˘ ̃Ω s ŭ ripchain Â
	`Ruijie(config)# interface serial 0/0`
	`Ruijie(config-if)# ip rip authentication key-chain ripchain`

Ĥu ३	
ip rip authentication mode	Ĥ̃ RIP Â

text	RIP й Â
md5	RIP й MD5 Â

й Â

ԻՍ ՀՀ ^ Â

RIP ˘ Ԩ RIP ą ˘ RIP
У ˘ ї ‡ RIP ↑ Ԩ Â

ɢ

˘ ɲ s˘ ˇΩ s˘ ˇΩ ɷ
s ɲ s ˘ a˵ й ˅ Â ˄ ˘ MD5 ˘ ɲ
ˇΩ s˘ ˇΩ ɷ s ɲ s ˘ ≠ a˵ ˘ ˅ Ȯ

no ip rip authentication text-password

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ৰ	
password-string	s˘ 1˙ 16 Â

s Â

ĥu ३

ৰ Â

G

ů RIP ˘ ৷ Л G ĥu ३ s˘ ≠ ৷ Л
˜Ω s ৷ s˘ ৷ ˙ ˜l ¥ ńń Â
RIPv1 a RIP ↑ ˘ ৷ RIPv2 Â

w R

ЛЮ R ˘ Serial 0 ৰ ů RIP ˘ s ń ruijie Â

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

˜Ωĥu ३

ĥu ३	
ip rip authentication mode	ĥ RIP Â
ip rip authentication key-chain	ů RIP ˘ RIP G s Â ৷ RIPv2 RIP ↑ Â

৷

˘ Л RIP Ю BFD ù ñ Â

Ъυ ३ ৲ Â

Ԧ ʒ ʌ Â

G ج ʌ ɷ Ԧ ʒ ʎ ˇ ˬ ɳ У ˇ ÿ ʌ ˆ Â ˩ ɷ ʌ Ю **ip rip default-information** Ϩ RIP **default-information originate** ˇ ‡ ʌ ˆ ʌ Â

ʌ У э ʌ ɷ **ip rip default-information** ˇ RIP a ̈Ą ˇ ˆ Â

w R

ЛԦЮ R ˇ ج ʌ ethernet0/0 Э… У ˇ ʌ ˩ ˆ Â

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

ˇΩԦ ʒ

Ԧ ʒ	
default-information originate	ج RIP ɳ

˩

Ԧ ʒ ʅ ˩

ʌ	
-	-

34.1.15 ip rip receive enable

ˇ RIP ج У э ʌ Э RIP ↑˘ ʌ Ԧ ʒ **ip rip receive enable** Â Ԧ ʒ **no** RIP ج У э ʌ Э RIP ↑ Â

ip rip receive enable

no ip rip receive enable

ʌ

ʌ	
-	-

ˇ ʌ RIP ↑

Ԧ ʒ ʌ Â

G ʌ RIP ↑˘ ج ʌ ʌ Ю G Ԧ ʒ **no** Â Ԧ ʒ Θ ɔ ɣ ɷ Ԧ ʒ ʌ Â ˩ G Ԧ ʒ **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
```

Ĥu ३	
version	Ĥ ४ ৲ ৲ RIP ↑ Â

৲

Ĥu ३ ৲ ৲	৲	
	-	-

34.1.17 ip rip send enable

ĭ RIP ج У э ৲ Э ৲ RIP ↑˘ ৲ Ĥu ३ **ip rip send enable** Â Ĥu ३ **no** RIP ج У э ৲ Э ৲ RIP ↑ Â

ip rip send enable

no ip rip send enable

৲	৲	
	-	-

ĭ ৲ ৲ RIP ↑

Ĥu ३ ৲

৲ ৲ RIP ↑˘ ج ৲ ৲ Ю G Ĥu ३ **no** Â Ĥu ३ Θ ɔ ¥ ɷ Ĥu ३ ৲ Â ৲ G Ĥu ३ **default** ৲ ৲ RIP ↑ Â

ЛЫЮ R ˘ G Fastethernet 0/0 ৲ ৲ RIP ↑ Â

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

Ĥu ३	
ip rip receive enable	ĭ ৲ RIP ↑
passive-interface	RIP ╟ ৲

৲

34.1.19 ip rip send version

ھ RIP ھ У ۶ ۸ Э ۷ ف ۶ RIP

no ip rip split-horizon

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-	-

ą Ю˘ ˆ → ج ۸ Э Â

ƪ ʒ ۸ Â

G

۷ ج IP ص Э˘ ۸ ۷ ˜ ˘ ˆ
→ ⁸ Л ȯ Â ˆ → ۷ Л Ҷ ą ÿ ˜ ˆ Ҷ
ą ۸ ˆ ۷˘ ỳ ۷ ɷ э ą Ҧ Â
ɣ ˆ è ầ X.25 ˜ ˘ ˆ → ۷ ˆ
˜ aˆ ѿ ą Â ج ą Ю˘ ۷ Ω ˆ → Â У э ۸ ɷ
IP فخ سم˘ ≠ ˆ → Â
RIP ˜ ɣ ۷ ˜ ˘ ج è ˆ → Â a
У э ۸ ї ỷ ɷ ˆ →˘ ۷ Л show ip rip ƪ ʒ ″ Â ۸ **neighbor**
ƪ ʒ ƪ˘ ˘ a˛ ۷ˆ RIP ˆ → ؛ Â

ш R

ЛЮ R ˘ Fastethernet 0/0 ۸ Ω ɷ RIP ˆ → ˥ Â

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

Ωƪ ʒ

ƪ ʒ	
neighbor˘ RIP˘	ƪ RIP IP فخ سم Â
Validate-update-source	ỷ RIP فخ سم Â

۷

ƪ ʒ ˥ ۷

۸	
-	-

34.1.21 ip rip summary-address

ج э ۸ Ю RIP ۸ ˘ ج ۸ Ю G ƪ ʒ **ip rip summary-address** Â G ƪ ʒ **no** Ω فخ سم Â

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

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

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

RIP ╟ ↑

ħu ३ ৭ Â

G

ħu ३ **ip rip summary-address** جم ৩ ৭ Ю У ৩ فخ سم ÂRIP ╟ ↑ Â ৭ ৭ ৩ Â

ħu ३	a تن	˘ .	a
¥	Â		

W R

ЛuЮ R ˘ ˜Ω ɑ RIPv2 ╟ Â ৭ ˘ ৭ FastEthernet 1/0 ˜ Л 172.16.0.0/16 Â

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

˜Ωħu ३

ħu ३	
auto-summary	ŭ RIP ╟

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RIP ใบ ๆ 3

Ъu ३ Â

G

ل Л ل *network-number* Ω *wildcard* ٧ ˘ G جم فخ سم تن ق ٧ فخ سم ٧ б RIP Â

wildcard ٧ ˘ RGOS تن فخ سم ˘ G جم فخ سم تن ق ٧ فخ سم ٧ б RIP Â

ل ٧ فخ سم جم RIP Ъ Ж " è˘ ٧ ل Л ل RIP ˘ RIP Â

ЛЪЮ R ˘ Ъ Ж ф б RIP ˇΩ ч э /١˘ ї جم 192.168.12.0/24 Ω

w R

ƬU ३ৃ

G

RIPv1 G IP ৯ফ 255.255.255.255˜ ˆ ৰ ˘ RIPv2 G ৯ফˆ 224.0.0.9˜ ˆ ৰ Â a Э ѿ ˘ ৯ ৲ ৰ ˘ ৲ ƱU ƬU ३ৃ **passive-interface** ৲ ѝ ╟ ৲˘ ৲ ৲ ƗƜ ҭ ৲ ƱU ৰ Â ƬU ३ৃ a˚ ؛ RIP ৰ Â ѿ passive ৲˘ ŭ ৲ ≠ ৸ a˚ ৲ Â

w R

ƬU ३ৃ G w R ÂƱƬƱO R ˘ ƗƜ ѿ RIP ৲ ৲ 192.168.1.2 ˆ ৰ Â

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

offset Â

ƪ ʒ Â

G RIP ˩ ˥ offset-list Ʌ ˥ ˥ ὦ offset-list ‡ RIP ˚ ╗ ˥ offset-list metric ḣ Â

ѡ R

ЛƱ R ˘ ج acl 7 تن ᾷ RIP ˚ metric ╗ 7 Â

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

ЛƱ R ˘ fastEthernet1/0 ˜ ج acl 8 تن ᾷ RIP ˚ metric ╗ 7 Â

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

ƪ ʒ

ƪ ʒ	
-	-

˥

ƪ ʒ ˥

˥	
-	-

34.1.26 output-delay

˩ RIP ˥ ˘ G ƪ ʒ

output-delay ƪ ʒ **no** ˥ ˥ Â

output-delay *delay*

no output-delay

˥

˥	
delay	˥ ˘ ´ Æ ˝ ˘ تن <8-50>

˝ ˥ Â

ƪ ʒ Â

G ᾷ Ю RIP ˝ 512 ˘ ˩ Ʌ ↑ ΰ 25 ˘

ɣ 25˘ ˚ ɜ ˥ ˘ ɑ Ю ˩ ˥ Â
Л ˘ ˩ æ ˥ ˘ æ ˩ a ώ
˘ ə x Â ˘ G **output-delay** ƪ ʒ ╗
˥ ˘ G æ ώ Â

ЛƪЮ R ˘ RIP ˥ й 30

w R

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

rip receive enable ⁸ Â

ЛЪЮ 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
```

ħu ३ QN0 QN0

metric *metric-value*	ˆ ˅ metric˘ metric-value metric ˘ ˅ ḣ ‘تن 1-16
route-map *route-map-name*	ˆ ‡

ą Ю˘

ˆ OSPF˘ ‡ ˆ R صر ’

ˆ ISIS˘ ‡ ˆ R level-2 صر ’

ὲ ыı ą Ю˘ ˆ صر ’

ˆ л metric ὶ 1’

a ˜Ω route-map Â

ħυ ३ Â

G ħυ ३ ą ˆ ˆ RIP è Â

ˆ ˘ У э ˜ ˅ У ˜ ˘ ج

ὶ a ˅ ˜ ὦ a ˅ ÂRIP

G

34.1.29 router rip

… RIP router rip Â
no RIP Â

router rip

no router rip

-	-

RIP Â

RIP

update	˘ ՈՍ Âupdate ԻՋ ७ ৭ ▯ ˘ ↑ ˘ invalid Ո flush Æ Â 30 ৭ У Â

invalid

-	-

34.1.31 validate-update-source

ĵ RIP فخ سم ˘ ˘ G Ĥu ३

validate-update-source Â Ĥu ३ **no** ˜Ω فخ سم Â

validate-update-source

no validate-update-source

৭	
-	-

Ů فخ سم Â

Ĥu ३ Â

G

৷ Л RIP فخ سم ˘ Â ѝ ɷ ɖ RIP

˘ ৷ ৷ У э IP Â

ج ৭ Э ˜Ω ĵ →˘ RIP فخ سم ˘ a ĭ

ɷ Ĥu ३ **validate-update-source** Â

৸ ¥ ip unnumbered ৭˘ RIP a فخ سم ˘ a ĭ

ɷ Ĥu ३ **validate-update-source** Â

ш R

ЛЮ R ˘ ˜Ω ɷ فخ سم Â

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

˜ΩĤu ३

Ĥu ३	
ip rip split-horizon	৭ Ů RIP ĵ → Â
ip unnumbered	Ĥ IP ৸ ৭ Â
neighbor (**RIP**)	Ĥ RIP IP فخ سم Â

৸

Ĥu ३ ৭ ৸

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-	-

34.2.1 show ip rip

RIP ~ ~ ৯ ৲ ˘ G **show ip rip** Â

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

৭	
vrf *vrf-name*	ˆ ৲ ~ VRF RIP ৲

ħu ३ à ŏ à Â

G ৲ ¥ RIP ~ Ь ৩ ৯ à ˆ ৲ à ˆ ৲ à ৭ rip à rip ৭ б ت à metric б distance Â VRF˘ ˚ VRF ৲ ৭ VRF-id

R 1' ЛЫО R ˘ RIP ~ ৯ ৲ ˘ 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' ЛЫО R ˘ ɑ vrf˘ RIP R ৯ ৲ '

```
Ruijie(config-router)# sh ip rip vrf 1
VRF 1  VRF-id:1
Routing Protocol is "rip"
Sending updates every 30 seconds, next due in 4 seconds
```

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

R 2' ЛƱЮ R ˘ RIP è ̃Ω ¥ 192.168.121.0/24 فذ سم
ع 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' ЛƱЮ R ˘ RIP è ƒ ص ع

```
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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ƪ ३	
show ip rip	ɱ ˜ ع Â

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34.2.3 show ip rip external

RIP ƒ ˥ ع ˘ G **show ip rip external** ƪ ३ Â

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

ˆ

ˆ	
bgp | connected | isis | ospf | static	ˆ ˥ ˜ ƒ ˥ ˜

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

ħυ ३ à ŏ à Â

G

ЛυЮ R ˘ RIP ˆ 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

```
BFD: Enabled
V2 Broadcast: Disabled
Multicast registe: Registed
Interface Summary Rip:
  Not Configured
IP interface address:
  2.2.2.111/24
```

相关命令

命令	描述
show ip rip	显示 RIP 信息。

平台

命令历史

版本	修改
-	-

35 OSPF

35.1

35.1.1 area

Ш ॐ˘ G Ъu ३ **no** ╗ OSPF Ш ॐ Â

area area-id

no area area-id

৭	
area-id	OSPF Ш ॐ ৭ Â Ш ॐ ৭ ৲ Л У ॐ´ 8 ḣ˘ ≠ ৲ Л У э IP ॐ ফ Â

OSPF Ш ॐ Â

Ъu ३	
G	৲ Л G Ъu ३ no ˘ OSPF Ш ॐ ╗ Ш ॐ˘ ↑ **area authentication** à **area default-cost** à **area filter-list** à **area nssa** ॐ ¥ Ш ॐ Ъu ३ Â ॐ Ю ą Ю˘ OSPF Ш ॐ ' 1. ў Ш ॐ ˘ П ॐ Â ˝l ˘ ╗ ў Ш ॐ Â 2. ˙ ¡ У э Ш ॐ˘ ॐ network area Ъu ३ Â ˝l ╗ ώ Ш ॐ Ъu ३˘ ╗ Ш ॐ Â

Ш R	
	ЛЮ R ˘ ╗ OSPF Ш ॐ 2 ˜Ω '

```
Ruijie(config)# router ospf 2
Ruijie(config-router)# no area 2
```

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network area	৭ ৭ б OSPF ˘ Ш ॐ

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Ĥυ ३ ৭ ৶	৸	
	10.4(1)	Ĥυ ३ ώ

35.1.2 area authentication

ὖ OSPF ϖ ৷ ˘ G Ĥυ ३ **area authentication** Â Ĥυ ३ **no** ˜Ω OSPF ϖ ৷ Â

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

no area *area-id* **authentication**

৭ ⁸ A	৸	
	area-id ˜৷ ০ >	ὖ OSPF ϖ ৷ Âϖ ৷ ৶ Λυ У э ⁸ ĥ ≠ ৶ Λυ У э IP ফ Â

	ĥu ३	
˜Ωĥu ३	**ip ospf authentication-key**	ĥ OSPF ˄ ३ Â
	ip ospf message-digest-key	ĥ OSPF MD5 ˄ ३ Â
	area virtual-link	ĥ Â

˄

```
Ruijie(config-router)# area 1 default-cost 50
```

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ƪ ȝ	
area stub	У э OSPF ш ˋ й ˋ Â
area nssa	У э OSPF ш ˋ й NSSA ш ˋ

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ƪ ȝ ˥ ˇ

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35.1.4 area filter-list

ABR Э ˘ ˇ ˥ Л G area filter-list ƪ ȝ a ˇ ш ˋ ʒ ш ǫ ц ˜ 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**]

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ˇ	
area-id	ш ˋ ˇ Â
acl-name	acl ˇ
prefix-name	prefix-list ˇ
access | **prefix**	˜Ω prefix list ACL
in | **out**	˜ ˛ ώ| ˥ ш

ƪ ȝ Â

G

ƪ ȝ ˥ ج ABR ˜ ш ˜ Э Â

ج ABR Э a ˇ ш ˋ ʒ ˜ ˜ G ƪ ȝ Â

ш R

ЛЫО ƪ ȝ˘ area 1 ˥ ˜ ˆ ˛ 172.22.0.0/8 تن ǫ 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
```

缺省功能	功能	
	-	-

命令	
功能配置命令	命令
	-

LSA ˘ ج ASBR Э(⅄ ≠ a ABR) è ج ˘ ˬ ԩ Type-7 LSA Â

৲ **no-redistribution** ج ASBR Э ᴳ OSPF redistribute ԧ ʒ ώ ὲ a ৲ ˆ NSSA ʊ Â ɣ NSSA ASBR ৲ ABR Ạ˘ ⅄ Ω ą ώ NSSA Â

ὶ ɷ У ˜ ৲ ˆ NSSA ʊ ॐ è ˆ LSA˜ ˘ ⅄ Ω ج ABR Э no-summary ˘ ABR ⅃ NSSA ʊ ॐ ą̈ ৲ summary LSAŝ Type-3 LSA˜ Â

৴ **area default-cost** ج ج NSSA ʊ ॐ ABR Э Â ԧ ʒ ʊ ॐ ৲ ˆ NSSA ʊ ॐ ḣ Â ą Ю˘ ৲ ˆ NSSA ḣ ὶ 1 Â

ΩЮ ḣ ὶ Ḍ ھ ⅄ ھ ھ ב

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У э OSPF Ш ᏹᏹ й ᏹᏹ ώ ᏹᏹ G Ԩ ʒ **area stub** Â Ԩ ʒ **no** ᏹᏹ ώ ᏹᏹ Â

area *area-id* **stub** [**no-summary**]

no area *area-id* **stub** [**no-summary**]

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area-id	STUB Ш ᏹᏹ Ш ᏹᏹ ᏻ Â
no-summary	ˆ ˅ ˜ ABR ᏹᏹ ˅ ˜ ˇ ᏹᏹ ˅ й ώ ᏹᏹ Â ˅ ABR ᏻ Â

Ԩ ᏹᏹ Â

Ԩ ʒ

Â

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OSPF ᏹᏹ ᏹᏹ area stub Ԩ ʒ Â ABR ˅ ˅ ᏹᏹ ˅ Ь (LSA)' 1˜ صر 1˜ LSA' 2˜ صر 2˜ LSA' 3˜ صر 3˜ LSA Â ÿ ˇ ᏹᏹ è ˅ ˜ ˆ OSPF ᏹᏹ ᏹᏹ ˇ ˆ ABR ᏹ ᏹᏹ Â ᏹᏹ a ˜ ˆ OSPF ᏹᏹ Â ώ ᏹᏹ˜ ˅ ᏹᏹ ABR Э area stub Ԩ ʒ ˇ no-summary ˜Ω Â ώ ᏹᏹ ˅ ˆ Ш ᏹᏹ ᏹᏹ ˇ Л ˅ ABR ᏹ ᏹᏹ Â

У э OSPF Ш ᏹᏹ й ᏹᏹ ч Ԩ ʒ area stub Ω area default-cost Â ˆ ᏹᏹ Э˜ area stub Ԩ ʒ˜ П area default-cost Ԩ ʒ ˅ ᏹᏹ ABR Э Â area default-cost Ԩ ʒ Ԩ ᏹᏹ ᏹᏹ ˆ . ˜ Â

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ЛԩЮ R ˇ Ш ᏹᏹ 1 й ᏹᏹ˜ Ţ Ш ᏹᏹ Â

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

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area default-cost	Ԩ ˆ STUB Ш ᏹᏹ ḣˆ OSPF ḣ˜ Â

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Ԩ ʒ ˥ ˅

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message-digest	صر й MD5 Â
null	й a Â

dead-interval ' 40 '

hello-interval ' 10 '

retransmit-interval ' 5 '

transmit-delay ' 1 '

a '

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ج OSPF ھ è˘ Ш ھ б ھ ˘ ھ ˘

ھ ˘ ĭ ‡ Â ج ч э Ш ھ

ˆ ABR˜ ʒ̆ … ˘ ч э ABR ̈Ω ৲ Ш ھ й Ш ھ Â ھˆ Stub Area˜

Ո NSSA a ɔ й Ш ھ Â ≠ ৲ Лu ɣ ὲ Ш ھ Â

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

neighbor Ĥu ʒ Â ৲ Лu Loopback ھ ḿ Â

area virtual-link Ĥu ʒ ৲ Ĥ ˘ ŭ Ш ھ OSPF

˘ Ĥu ʒ **area authentication** Â

R 1' ЛЮ R ˘ ЛШ ھ 1 ɔ й Ш ھ˘ б 2.2.2.2 Â

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 0.0.0.255 area 0.0.0.0
```

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OSPF ใน ๓

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35.1.10 bfd all-interfaces (OSPF)

OSPF ᴊ G BFD ˘ ج OSPF Ю **bfd all-interfaces** Â G Ĥu ३ no Â

bfd all-interfaces

no bfd all-interfaces

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OSPF ˜ Hello ╟ ᴊ ˘ OSPF ŭ ╟ BFD ╥ ᴊ˘ ˵ й ˆ FULL ˆΩ BFD˵ ˘ BFD ⁸ ˘ У BFD ˘

G OSPF˵ ² Â

≠ ᴊ ᴎ ᴊ Ĥu ३ **ip ospf bfd** [**disable**] ŭ ╟ ˆΩ ᴊ BFD ╥ ˘ ᴊ . ˝l ¥ Ю **bfd all-interfaces** Ĥu ३ Â

35.1.11 clear ip ospf process

ŭ OSPF R Â

clear ip ospf [*process-id*] **process**

৭		
৭	process-id	OSPF ৸ ˘ ŭ OSPF R Â ˘ ŭ ج OSPF R Â

RFC2328 ‡ Â

Ĥu ३ Â

G Æ ৩ OSPF ˘ ˘ ৩ ˜ ؛ ' Ĵu Ĥu ३ ˘ ˅ ĭ '

w R ĴuЮ Ĥu ३ ŭ OSPF R 1

```
Ruijie# clear ip ospf 1 process
```

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Ĥu ३ ৲ ৶	৸	
	-	-

35.1.12 compatible rfc1583

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RFC1583 è G . ˝I ‡ RFC2328 è G . ˝I ‡ Â

commpatible rfc1583

no commpatible rfc1583

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RFC1583 ‡ Â

ЪU ३ Â

G

ЛЪЮ R ˘ G rfc 2328 ‡ ∧ Â

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

ЪU ३	
show ip ospf	ospf ŏ ˜Ω ą

ЪU ३ ˥ ⅄	
-	-

35.1.13 default-information originate OSPF

ц У ώ OSPF ˘ G ЪU ३ **default-information originate** Â ЪU ३ **no** ˜Ω 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*]

⅄	
always	ˆ ˥ ˜ ˜Ω G OSPF ˚ ц ˘ a ˘ ĭ ج Â
metric *metric*	ˆ ˥ ˜ ˥ ḣ˘ ⅄ ḣ ˙ 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

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35.1.14 default-metric

OSPF ʈ ḣ˘ G ħυ ३ **default-metric** Â ħυ ३ **no** Â

default-metric *metric*

no default-metric

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metric	ħ OSPF ʈ ḣ˘ ᴎ ḣ ت 1-16777214 Â

й 20 Â

ħυ ३ Â

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default-metric ħυ ३ б **redistribute** ħυ ३ ᴎ G ˘ ᴎ ᴎ g ʈ ʔ ʏ ḣ Â

default-metric ħυ ३ ˘ ᴎ **default-information originate** ώ OSPF a ɔ Â

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ᴎю R ˘ OSPF ʈ ʔ ʏ ḣ й 50 Â

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

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redistribute	ǂ è Â
show ip ospf	ospf ŏ ˜Ω ǫ Â

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ƪ ३ ˥ ʎ

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35.1.15 discard-route

ǐ discard ╗ǂ ˘ G no ˩ Λυ discard ╗ǂ Â

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

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

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ʎ	
internal	ǐ ╗ ʉ ƪ ३ area range discard Â
external	ǐ ╗ ƪ ३ summary-address discard Â

ǫ ǐ ╗ discard Â

ƪ ३ Â

G

ج ˘ ʎ تن ˩ è تن˘ ˩
تن ǫ̈ a ج ˘ ˩ ˩ ╗ Â й
ǫ ˩ ˘ ج ABR ASBR ╗ У discard ǂ Â ╟ ˘
ɜ a˚ · Â

ʉ R

ΛυЮ R ˘ ╗ area range discard Â

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

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area range	OSPF ʉ Â
summary-address	OSPF Â

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35.1.16 distance ospf

a ƛ ص OSPF

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

no distance [**ospf**]

ƛ

ƛ	
distance	˘ ƛ ḣ تن' 1-255
intra-area *distance*	ɯ ḉ ˘ ƛ ḣ تن' 1-255
inter-area *distance*	ɯ ˘ ƛ ḣ تن' 1-255
external *distance*	˘ ƛ ḣ تن' 1-255

ƙ 110'

ɯ ḉ ' ƙ 110'

ɯ ' ƙ 110'

' ƙ 110'

ƕ ३ OSPF Â

G OSPF a ƛ ص a ƛ ˘ ƕ ३ Â

ЛƕЮ R ˘ OSPF ƙ 160

ɯ R

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# distance ospf external 160
```

ƕ ३

35.1.18 distribute-list out

ĭ ˘ ╗ ɔ **redistribute** Ĥu ३

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

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

৭	
access-list-number | name	G acl ‡
prefix prefix-list-name	G prefix-list ‡
bgp | connected | isis [area-tag] | **ospf** process-id | **rip** | **static**	

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Ĥu ३ Â

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distribute-list out б **redistribute route-map** Ĥu ३ ɔ˘ ÿ ȅ ы ˜ ĭ ĭ OSPF è ˘ ɲ a ĭ ৭˘ У б **redistribute** Ĥu ३ ʌ G Â ACL ‡ Ω prefix-list ‡ a ॐ è Ω ˘ . У G ACL ‡ , ‡ a Ą prefix-list Â

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```
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
```

35.1.20 enable traps

OSPFv2 ŋń ৲ 16 TRAP ą ˘ ţ ŕ 4 ص˘ G ЮЪU ३ ৲ Л U ŭ ╟
TRAP ą ৲ Â G ЪU ३ **no** ৲ ЛU˘Ω TRAP ą ৲ Â

enable traps [**error** [**ifauthfailure | ifconfigerror | ifrxbadpacket | virtifauthfailure | virtifconfigerror | virtifrxbadpacket**] | **lsa** [**lsdbapproachoverflow | lsdboverflow | maxagelsa | originatelsa**] | **retransmit** [**iftxretransmit | virtiftxretransmit**] | **state-change** [**ifstatechange | nbrstatechange | virtifstatechange | virtnbrstatechange**]]

no enable traps [**error** [**ifauthfailure | ifconfigerror | ifrxbadpacket | virtifauthfailure | virtifconfigerror | virtifrxbadpacket**] | **lsa** [**lsdbapproachoverflow | lsdboverflow | maxagelsa | originatelsa**] | **retransmit** [**iftxretransmit | virtiftxretransmit**] | **state-change** [**ifstatechange | nbrstatechange | virtifstatechange | virtnbrstatechange | restartstatuschange | nbrrestarthelperstatuschange | virtnbrrestarthelperstatuschange**]]

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৲	
error	б error ˘Ω traps ˘Ω˘ ৲ ৲ Л U Ю error traps ˘Ω' **lfauthfailure** ৲ ' **lfconfigerror** ৲ ৲ ' **lfrxbadpacket** ৲ ţ ' **virtifauthfailure** ৲ ' **virtifconfigerror** ৲ ৲ ' **virtifrxbadpacket** ৲ ţ Â
lsa	б lsa ˘Ω traps ˘Ω˘ ৲ ৲ Л U Ю lsa traps ˘Ω' **lsdbapproachoverflow** LSA ţ ɷ Э ḣ ţ ǯ Ç ' **lsdboverflow** LSA ţ ɷ Э ḣ' **maxagelsa** LSA ţ ɣ ' **originatelsa** ɳ LSA'
retransmit	б retransmit ˘Ω traps ˘Ω˘ ৲ ৲ Л U Ю retransmit traps ˘Ω' **lftxretransmit** ৲ Э ৲ · ' **virtiftxretransmit** ৲ Э ৲ · Â

OSPF. ŭ (graceful restart GR) ˇ G ƪ ʒ **graceful-restart** Â **graceful-restart grace-period** . ŭ grace period ˇ G ~ . ŭ Â G ƪ ʒ no ǹ Â

graceful-restart [**grace-period** *grace-period*]

no graceful-restart [**grace-period**]

ˇ	
grace-period	ˆ ~ grace-period
grace-period	GR ŭ ˇ ŭ ǹ ÿ OSPF OSPF ŭ . ŭ Â ǹ 1-1800

G GR Restart Â

Grace-period ḣ ǹ 120s Â

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G

. ŭ ƹ ¥ OSPF R ˇ a R ƛ ą a ˇ Â

. ŭ ǹ OSPF ŭ OSPF . ŭ ˇ ą

ɔˇ G OSPF Â ŭ OSPF GR ˇ OSPF ɔ Â

graceful-restart GR ŭ ǹ 120 ˇ **graceful-restart grace-period** ĭ g ŭ Â

W R

Ю R ¡ G OSPF R 1 GR ƪ ƛ GR ƪ ŭ ˇ '

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# graceful-restart
Ruijie(config-router)# graceful-restart grace-period 60
```

Ω ƪ ʒ

ƪ ʒ	
graceful-restart helper	OSPF. ŭ ƪ

ˇ

ƪ ʒ ˇ ˇ

ˇ	
-	-

35.1.22 graceful-restart helper

OSPF. ŭ ╟(GR helper)╖ ˘ G ƪ ३ **graceful-restart helper** Â
ƪ ३ no ╟╖ Â

graceful-restart helper {**disable** | {**strict-lsa-checking** | **internal-lsa-checking**}}

no graceful-restart helper {**disable** | {**strict-lsa-checking** | **internal-lsa-checking**}}

৭	
disable	ɔ ѝ ╟ ╟ ε ы . ŭ Â
strict-lsa-checking	GR Helper types 1-5,7 LSA ৶ ע ″ ї ৭ ৶ ע˘ ৭ ৶ ע˘ GR Helper Â
internal-lsa-checking	GR Helper types 1-3 LSA ৶ ע ″ ї ৭ ৶ ע˘ ৭ ৶ ע˘ GR Helper Â

types 1- Ä 6Ñ oð!’À™1 w q 1 •7U ˜ý„Zøœcð À 8 c ÄÂ on ðÀI@ÑÏØKÈEà”z5$
Ä 5%Y }hñ ¡a~A Ä

graceful-restart	G OSPF ˜ . ŭ ╗

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ƀυ ३ ˥ ƛ

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-	-

35.1.23 ip ospf authentication

ƀυ ३ ƛ ˘ G **no** ˩ Ƨυ ѝ Â

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

no ip ospf authentication

ƛ

ƛ	
message-digest	ج ƛ Э MD5 ╗ Â
null	a Â

ƛ Э , ƛ Э ج Ш ش ص Â

ƀυ ३ ƛ Â

G

ƀυ ३ ƛ a ˙ ! . ج G **no**
ḣ ˘ ĭ ƛ ج Ш Э ᾱ ˘
ѝ **null**ґ ‡ 8 ѝ a , ƛ Э Ω ƛ ج Ш ش
, ˝l ƛ Э Â

ƛ R

ƛυЮ R ˘ FastEthernet 0/0 ƛ OSPF ص ѝ MD5 Â

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

ƀ̃Ωƀυ ३

ƀυ ३	
area authentication	ŭ OSPF Ш ش Ƕ Â
ip ospf authentication-key	OSPF Â
ip ospf message-digest-key	OSPF MD5 Â

ৰ

Ĥu ३ ৭ ৰ

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35.1.24 ip ospf authentication-key

OSPF ˘ G ৰ Ĥu ३ **ip ospf authentication-key** Â Ĥu ३ **no** ī Â

ip ospf authentication-key *key*

no ip ospf authentication-key

ৰ

ৰ	
Key	˘ ৲ Л৳ 8 ৩ Â

Â

Ĥu ३ ৰ Â

G

ip ospf authentication-key Ĥu ३ ˘ ώ OSPF Âج a У ˘ ч ৰ a OSPF ̃Ω ˘ ≠ a ৲ Ĥ Â a ৲ ৰ ৲ Л৳ a У ˘ Л ج ৲ У Э ˘ У Â

У ৩ OSPF ш ॐ ĩ ŭ ˘ Ĥu ३ **area authentication** Â ج ৰ Э ≠ ৲ Л৳´ ŭ , G ৰ Ю Ĥu ३ **ip ospf authentication** , ш ॐ Ω ৰ . ̃I ৲ ৰ صر Â

ш R

ЛЮ R ˘ FastEthernet 0/0 ৰ OSPF ŭ 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
```

̃Ω Ĥu ३

Ĥu ३	
area authentication	ŭ OSPF ш ॐ Ĥ Â
ip ospf authentication	ŭ ৰ Э Ĥ

ᴻ

Ъυ ३ ٦ ᴻ

ᴻ	
-	-

35.1.25 ip ospf bfd

OSPF ᴻ ŭ ╟ ̃Ω G BFD ˘ G ᴻ Ъυ ३ **ip ospf bfd** [**disable**] Â G Ъυ ३ no ̄ ᴻ Э **ip ospf bfd** Â

ip ospf bfd [**disable**]

no ip ospf bfd

ᴻ	
disable	̃Ω OSPF ᴻ G BFD 8

˘ Л OSPF Ю BFD ѝ ñ Â

Ъυ ३ ᴻ Â

ᴻ . ̈I ¥ Ю **bfd all-interfaces** Ъυ ३ Â

ˉ Л ̈I o

G

-	-

35.1.27 ip ospf database-filter all out

ƪ ʒ ʌ a ˩ LSA ˘ . a ج ʌ Э ˥ LSA , G ƪ ʒ **no** ˩ Л ḣ Â

ip ospf database-filter all out

no ip ospf database-filter

ʌ	
-	-

	˥ Ω , ˩ Лج ʌ Э ˥ ˙ ¦ LSA Â
ƪ ʒ	ʌ Â
G	ج э ʌ Э ˥ LSA ˘ ˩ Лج ʌ Э ˥ ˘ ˥ Л˘ a ˩ ˆ LSA ˘ л Ÿ ˩ Ω ˥ LSA ą Â

w R	ЛЫО R ˘ LSA ج serial 1/0 ʌ Э ˥ 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 database-filter all out`

ƪ ʒ	

OSPF ″ ʌ ʁ ˘ G ʌ Ĥu ʒ **ip ospf dead-interval** Â
Ĥu ʒ **no** Â

ip ospf dead-interval *seconds*

no ip ospf dead-interval

ʌ

ʌ	
seconds	Ĥ ʁ ″ ˘ Лu й´ Æ˘ ˅ ḣ ن' 1-65535 Â

й ip ospf hello-interval 4˝ Â

Ĥu ʒ ʌ Â

G

OSPF ʁ ↑ ü ج Hello ą̈ Â OSPF ج ʁ ą̈˘ ↑ ˅
Hello ˘ ˆ ÿ è˥ Â ʁ й hello
4˝ ˘ g ɑ hello ˘ ˬ ╟ g ʁ Â
Ĥu ʒ ˅ Лu g OSPF ″ ʁ ˘ л ˊ ↑ Â ч '
У ' ʁ ˘ a ɣ hello '
γ ' ˅ У Э ʁ У Â

ш R

ЛuЮ R ˘ serial 1/0 ʌ OSPF ″ ʁ й 30 Â

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip address 172.16.10.1 255.255.255.0
Ruijie(config-if)# encapsulation ppp
Ruijie(config-if)# ip ospf dead-interval 30
```

˝Ωĥu ʒ

Ĥu ʒ	
ip ospf hello-interval	OSPF ˅ Hello Â

˅

Ĥu ʒ ˥ ˅

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35.1.29 ip ospf disable all

G ʌ a Ą ɳ ospf Â

Л 10 '
PPP à HDLC ʌ 10 '
è ʃ ʌ 10 '
è ʃ ʌ à X.25 ʌ 30 Â

Ĥu ʒ ʌ Â

G

hello ↑ Ü ج hello è Â ˘ OSPF ʃ ˩ У ≠ ˘ П ╗ Â ˩ У Э hello У Â g ″ ϐ ˘ ɖ hello a ɣ ϐ Â

W R

ЛЫЮ R ˘ serial 1/0 ʌ OSPF ˩ Hello й 15 Â

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip address 172.16.10.1 255.255.255.0
Ruijie(config-if)# encapsulation ppp
Ruijie(config-if)# ip ospf hello-interval 15
```

˜Ωĥu ʒ

Ĥu ʒ	
ip ospf dead-interval	OSPF ″ ϐ Â

˩

Ĥu ʒ ˥ ˩

˩	
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35.1.31 ip ospf message-digest-key

OSPF MD5 ˘ G ʌ Ĥu ʒ ip ospf message-digest-key Â Ĥu ʒ no ʃ OSPF MD5 Â

ip ospf message-digest-key *key-id* **md5** *key*

no ip ospf message-digest-key

ʌ

ʌ	
key	˘ ˩ Л 16 э Â
key-id	˘ ÿ 1ʃ 255 Â

MD5 Â

Ĥu ३ ৲ Â

G

ip ospf message-digest-key Ĥu ३ ˘ ώ OSPF Â ج a
У ˘ ч ৲ a OSPF ̃Ω ˘ ≠ a ع
Ĥ Â
a ৲ ৲ ৲Л a У ˘ П ج ৲ У Э ˘
У Â ৲ У Â
У э OSPF Ш ষ ĭ ŭ ˘ G Ĥu ३ **area authentication** Â
ج ৲ Э ≠ ৲Л´ ŭ , G ৲ Ю Ĥu ३ **ip ospf authentication**
, Ш ষ Ω ৲ . ˝I ৲ ৲ صر Â
RGOS ˚ ষ MD5 g ˘ g У э ˝I ╗ ৲ ৲ ‡ Â
╗ У э OSPF MD5 ˘ ˚ й ὲ
˘ ج ˚ ĭ ⁞ a ৲ ৲ ` OSPF ˘ ĭ
ϖ Â ϖ ৲˘ ৲Лŭ ϖ Â

Ш R

ЛЮ R ˘ FastEthernet 0/0 ৲ ╗ ϖ У э OSPF ˘ ৲ й˝ ˘
й hello5 Â

```
Ruijie(config)# interface Serial 1/0
Ruijie(config-if)# ip address 172.16.24.2 255.255.255.0
Ruijie(config-if)# ip ospf authentication message-digest
Ruijie(config-if)# ip ospf message-digest-key 10 md5 hello10
Ruijie(config-if)# ip ospf message-digest-key 5 md5 hello5
```

╗ ϖ ৲˘ ώ ĭ Â

```
Ruijie(config)# interface Serial1/0
Ruijie(config-if)# no ip ospf message-digest-key 10 md5 hello10
```

̃ΩĤu ३

Ĥu ३	
area authentication	ŭ OSPF Ш ষ ⊮ Â
ip ospf authentication	ŭ ৲ Э ⊮

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Ĥu ३ ৲

৲	
-	-

35.1.32 ip ospf mtu-ignore

ʌ جھ ʎ ʌ mtu ˩ Л Ʊ ᴳ Ĥu ३ Â Ĥu ३ **no** Â

ip ospf mtu-ignore

no ip ospf mtu-ignore

ʌ	
-	-

mtu Â

Ĥu ३ ʌ Â

ᴳ

OSPF جھ ʎ ʌ MTU Ω ʌ MTU ĭ ˩, ʎ è ʌ MTU ɣ ʌ MTU, ʯ Ɂ a , ˩ Л Ʊ Ɂ MTU ā Â

ᴡ ᴿ

ЛЮ ᴿ ˘ serial 1/0 MTU ˥ Ɂ Â

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip ospf mtu-ignore
```

Ɂ Ĥu ३	
-	-

ʎ

Ĥu ३ ʅ ʎ	
-	-

35.1.33 ip ospf network

OSPF صˇ ᴳ ʌ Ĥu ३ **ip ospf network** Â Ĥu ३ **no** Â

ip ospf network {*broadcast* ˽ *non-broadcast* ˽

point-to-multipoint [*non-broadcast*

OSPF ใน ๓

˘ a ˘ ≠ ,

ʒ˙ ˘ a ŏ Â

ɣ ʌ à è Л ʌ X.25 ˘ IP ƫ ˘

broadcast ˜Ω Â

ʀ 1' ЛЮ ʀ ˘ è ʌ й ص˘ ʌ ŏ 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
```

ʀ 2' ЛЮ ʀ ˘ è ʌ й ˆ ص˘ ʌ ŏ 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
```

ʀ 3' ЛЮ ʀ ˘ è ʌ й ص˘ DR/RDR˘ ʌ ŏ ˚ ` è ÂЛЮ ج ˆ a Э ˆ 8 й DR/BDR˘ Â

```
Ruijie(config)# interface Serial1/0
Ruijie(config-if)#ip address 172.16.24.4 255.255.255.0
Ruijie(config-if)# encapsulation frame-relay
Ruijie(config-if)# ip ospf network broadcast
Ruijie(config-if)# ip ospf priority 0
```

˜Ωƪ ʒ

ƪ ʒ	
dialer map ip	ƭ IP ƫ б ʌ ʌ Â
frame-relay map	ƭ IP ƫ б è DLCI Â
neighborˆ OSPF˜	ƭ IP ˘ƫ ʌ ʌ NBMA ص Ω ˆ ص Â
X25 map	ƭ IP ƫ б X.25 ƫ Â

ʌ

ƪ ʒ ʅ ʌ

ʌ	
-	-

35.1.34 ip ospf priority

ʌ OSPF ˙ ˝I ḣ˘ G ʌ ƪ ३ **ip ospf priority** Â ƪ ३ **no** Â

ip ospf priority *priority*

no ip ospf priority

ʌ	
priority	ʌ OSPF ˙ ˝I ḣ˘ ˅ ḣ ˙ 0-255 Â

˙ ˝I ḣ ˝ Â

ƪ ३ ʌ Â

G

OSPF ʌ ˙ ˝I ḣ ˆ ˆ hello è Â OSPF ص ˅ DR/BDR ˜ ˘ ˙ ˝I ḣ ˘ DR BDR Â ˙ ˝I ḣ У ˘ DR BDR Â ˙ ˝I ḣ ˚ ˘ a ʌ б DR/BDR Â ƪ ३ ˅ OSPF broadcast Ω non-broadcast ص Â

è DR Ω BDR ʌ ˙ ˝I a ˘ ˅ Ю У DR Ω BDR w è ʌ ˙ ˝I Â	

ЛƪЮ R ˘ fastethernet 0/0 ʌ ˙ ˝I ḣ 0 Â

w R

```
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# ip ospf priority 0
```

Ωƪ ३

ƪ ३	
ip ospf network	ʌ OSPF ص Â

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ƪ ३ ˥ ˅

ʌ	
-	-

35.1.35 ip ospf retransmit-interval

ԧ ʌ LSU ~ . ˘ G ʌ ԧ ʒ **ip ospf retransmit-interval** Â ԧ ʒ **no** Â

ip ospf retransmit-interval *seconds*

no ip ospf retransmit-interval

ʌ	
seconds	LSU · ˘ Л й´ Æ˘ ˅ ḣ ستٔ 1-65535 Â ɣ ч э ǯ ↑ · Â

й 5 Â

ԧ ʒ ʌ Â

ч У э LSU ˘ LSU ɖ جھ ч ă " è˘ جھ **ip ospf retransmit-interval** ԧ ʒ ԧ ɖ˘ ↑ ˘ ч LSU Â

G ˘ Л ȯ a · ˘ جھ s Э˘ · ˅ Л У Â LSU · area virtual-link ԧ ʒ

no ip ospf transmit delay

৭	
seconds	ĦЯ OSPF ৭· LSU ˘ Лυ й´ Æ˘ ৶ ḣ ىتن 1-65535 Â

й 1 Â

ĥυ ३

	˘ a detail ˅ ˘ ˅ ˆ Full Full ą Â
ħu ३	Â
G	
w R	ЛЬЮ R ˘ ˅ У Â Ruijie(config)# **router ospf** *1* Ruijie(config-router)# **log-adj-changes detail**

˜Ωħu ३	ħu ३	
	show ip ospf	ospf ŏ ˜Ω ą Â

˅		

ħu ३ ˥ ˅	˅	
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35.1.38 max-concurrent-dd

ɣ ˅ DD Â

max-concurrent-dd *<1-65535>*

no max-concurrent-dd

˅	˅	
	<1-65535>	DD

	й 5Â
ħu ३	Â
G	б э ˅ Ц ˘ è ˅ˆ ! ˘ ħu ३˘ ˅ 8 э OSPF R ï ˅ ˅ DD Ц ц ↑ Â
w R	ЛЬЮ R ˘ DD ↑ й 4Â Ruijie(config)# **router ospf** *10*

OSPF ใน ๓

Hello ˘ OSPF ˬ ч Hello ˘ ч Hello й
Â OSPF У ˘ ˥ ˬ ˝l ḣ a й 0 ч Hello ˘
˝l ḣ й 0 aˬ ˥ б DR/BDR Â DR/BDR ӊ Лυ ˥˘ DR/BDRˬ
˥ ч Hello ˝Ω Â
ج ˆ Э, ج й a ε ┌ Лυ ╟ ч ,ج G
ħυ ३ й ε ,˥ ¥ ˆ ص ˥Лυ cost ˆ
э Â

ЛυЮ R ˘ ¢ У э OSPF ˘ ε IP فذسه й 172.16.24.2˝ ˝l
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 ३

ħυ ३	
ip ospf priority	OSPF ˝l ḣ Â
ip ospf network	OSPF ص

˥

ħυ ३ ˥˥

˥	
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35.1.40 network area

ħ˝ف˝ ˥ OSPF˝ Лυ ˥ OSPF ш ˝ G ħυ ३ **network area** Â
ħυ ३ **no** ˆ ˥ OSPF ш ħ˝ Â

network *ip-address wildcard* **area** *area-id*

no network *ip-address wildcard* **area** *area-id*

OSPF Ш ॐ Â

ƪ ʒ Â

G

ip-address Ω *wildcard* ч э ৲ ƪ ї У ƪ ʒ ৲ Л э ৲ Ї Ω ĺ У э OSPF Ш ॐ Â ج У э ৲ Э OSPF ৲ ў IP ف س ج network area ƪ IP ف س ت ق Â network area ƪ IP ف س ت ৲ ৲ IP ف س ৲ ৲ a OSPF Â

৲ ف س ৲ б э OSPF network ƪ ʒ ƪ IP ف س ت ٦ ˘ . ٦ ˘ ৲ ৲ б OSPF Â

ЛЮ R ˘ ƪ ق ' э Ш ॐ ' 0 1 172.16.16.0 Â IP ف س ج 192.168.12.0/24 ت ق ৲ ƪ Ш ॐ 1 IP ف س ج 172.16.16.0/20 ت ق ৲ ƪ Ш ॐ 172.16.16.0 è м ৲ ƪ Ш ॐ 0 Â

w R

```
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
```

Ωƪ ʒ

ƪ ʒ	
router ospf	… OSPF Â

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ƪ ʒ ٦ ৲

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35.1.41 overflow database

ƪ ʒ ɣ ɱ OSPF R LSA Â

overflow database *<1-4294967294>* **hard | soft**

no overflow database

৲

৲	
<1-4294967294>	LSA

	hard | **soft**	hard LSA ˘ ˜Ω OSPF R soft LSA ˘ ৲ ˆ

a 8 ŋń OSPF R LSA Â

ħu ३ Â

G ˜Ω OSPF ˘ hard ৲ ˘ a ˜Ω OSPF ˝ ৲ ˆ ˘ soft ৲

ш R ЛuЮħu ३ LSA 10 ˘ ˜Ω OSPF 10 R Â

```
Ruijie# config terminal
Ruijie(config)# router ospf 10
Ruijie(config-router)# overflow database 10 hard
```

˜Ωħu ३

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ħu ३ ৲

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35.1.42 overflow database external

ħu ३ ţ external LSA б ÿ Â

overflow database external *max-dbsize wait-time*

no overflow database external

৲

৲	
max-dbsize	external lsa ˆ ৲ У AS ğ ḣ ৲ ˜ ˘ ৲ ḣ ˈتن 0-2147483647 Â
wait-time	ÿ overflow ھى ˘ ৲ ḣ ˈتن 0-65535 Â

a ⁸ external-LSA Â

⁸ ɑ external-LSA ˘ external-LSA ḣ ʌ˘ a ̈Ą Â

ƪ ʒ ώ Â

external-LSA *max-dbsize* ˘ ̣ ώ ˘ Ю˘ a ̈Ą ╗ external-LSA˘ ƽ external-LSA Â *wait-time* ʌ˘ ˘ ╗ external-LSA Â

G

ج G ╗ ɖ OSPF ў Ш ƽ Ո Ш ƽ ⅄

ɹ *max-dbsize* ḣ˘ ї ‡ ɹ Ю '

1˘ У ˘ ↑ Full '

2˘ ˘ ↑ ą'

3˘ ɹ ̣ AS-External-LSA · '

W R

Юƪʒ external lsa ѝ 10˘ ‡ ɹ ѝ overflow ˘ ÿ overflow ↑ ѝ 3

```
Ruijie# config terminal
Ruijie(config)# router ospf 10
Ruijie(config-router)# overflow database external 10 3
```

˘Ωƪʒ

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-	-

ʌ

ƪʒ ˥ ʌ

ʌ	
-	-

35.1.43 overflow memory-lack

ƪʒ ї ج ą̈ a OSPF ώ OVERFLOW Â G ƪʒ no ˘Ω ╗ Â

overflow memory-lack

no overflow memory-lack

ʌ

ʌ	

no	˜Ω ج ϊ a OSPF ώ OVERFLOW ˥ Â

ϊ a ą Ю OSPF ĭ ώ OVERFLOW Â

ƪ ʒ

G

OSPF ώ OVERFLOW ŭ x ˆ ˘ й ɖ ϊ a Ä Â

ŭ ˥ ˘ ج OSPF ώ OVERFLOW x ˆ ˘ ˩ ˚

Â й ϖ ˜ ɳ ˘ OSPF˚ У ˩ NULL ˧

˘ ÿ æ ɳ ˘ ج OVERFLOW Ю У ج Â

˩ Л G **clear ip ospf process** ƪ ʒ Æ OSPF ˘ OSPF OVERFLOW Â

G no a ĭ OSPF ج ϊ a ώ OVERFLOW ˘ ˩ ˚ ϊ

˘ ج ϊ У ˆ У ˘ OSPF R m ˘ ˆ ˆ

Â

w R

R 1' OSPF ج ϊ a ą Ю a ώ OVERFLOW '

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# no overflow memory-lack
```

˜Ω ƪ ʒ

ƪ ʒ	
clear ip ospf process	OSPF R Æ
show ip protocols ospf	OSPF ˜Ω ą

˧

˧	

ʎ

ʎ	
type *number*	ǹ ‖ ʎ ʎ Â
default	ʎ ǹ ‖ ʎ Â

ą Ю˘ ʎ ǹ ‖ ʎ˘ ĭ ʎ ˩ OSPF Â

Ĥu ȝ

Â

G

ǹ ɷ è ɛ ы ‖ ˘ ˥ ą ˘ ˩ Л
ʎ ǹ ‖ ʎ Â

ɯ R

ЛЮ R ˘ ʎ serial 1/0 ǹ ‖ ʎ Â

```
Ruijie(config)# router ospf 30
Ruijie(config-router)# passive-interface serial1/0
```

˜Ωĥu ȝ

ĥu ȝ	
show ip ospf interface	ʎ ˜Ω ą

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35.1.45 redistribute

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redistribute {**bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **rip** | **static**} [{**level-1** | **level-1-2** | **level-2**} **|** **match** {**internal** | **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*]

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bgp	ÿ bgp ĭ
connected	ÿ ĭ

isis [*area-tag*]	ÿ isis ţ ˘ *area-tag* ź E э isis R
ospf *process-id*	ÿ ospf ţ ˘ *process-id* ź E э ospf R˘ ৷ ḣ ىتن' 1-65535
rip	ÿ rip ţ
static	ÿ ţ
level-1 | **level-1-2** | **level-2**	৷ ţ ৷ IS-IS G ˘ ɣ level ţ ৷˘ ৷ ĭ level-2 IS-IS ţ ৷ Â
match	৷ ţ ৷ OSPF G ˘ ɣ ţ ৷˘ ĭ OSPF ţ ৷'
metric *metric-value*	OSPF external 2 LSA metric˘ metric-value metric ˘ ৷ ḣ ىتن' 0-16777214
metric-type {*1*|*2*}	صر ѝ E-1 E-2
route-map *route-map-name*	ţ ‡
subnets	৷ ţ ñ
tag *tag-value*	ţ ţ OSPF ą̈ tag ḣ˘ ৷ ḣ ىتن' 0-4294967295

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ţ OSPF˘ ‡ ţ R صر '

ţ ISIS˘ ‡ ţ R level-2 صر '

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ţ BGP metric ѝ 1˘ ѐ м صر LSA metric ѝ 20'

metric-type ѝ E-2'

a ˘Ω route-map Â

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	৭ ৭ ' ¥ ĭ ৭ OSPF ISIS ˘ ৭ ĭ ৭ match level ‡˘ ¨Ą route-map " Â

ш ᴿ	ᴿ 1' ЛυЮħυ ३ ĭ **ospf** *2* Ω **isis** *isis-001* ĭ OSPF ॐ ą̈'

```
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
```

ᴿ 2' Show run Ю'

```
router ospf 1
redistribute ospf 2 match external 1 internal subnets
redistribute isis isis-001 level-1-2
```

˜Ωħυ ३	**ħυ ३**	
	summary-address	OSPF ॐ Â
	default-metric	OSPF ĭ ḣ

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35.1.46 router ospf

… OSPF ώ OSPF ˘ ᴳ ώ ħυ ३ router ospf Â ħυ ३ no ĭ ħ OSPF Â

router ospf

router ospf *process-id* [**vrf** *vrf-name*]

no router ospf *process-id*

৭	৭	
	OSPF ৭ Â ৭ ˘	1 Â
	ॐ OSPF è˘ ¥	

a جم OSPF Â

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G RGOS10.1 جم ৷ ممم Э ╗ ϖ ⁄৷ ৷ ˘ й R OSPF Â a ⁄ OSPF R
ц ˘ ⁄Л ɔ й ч э ~ Â

w R ЛЪЮ R ˘ جم **vrf** *vpn_1* ğ … OSPF 10 Â

```
Ruijie(config)# router ospf 10 vrf vpn_1
```

Ω Ъu ę

Ъu ę	
show ip protocols	⁄ ~ ę Â
show ip ospf	⁄ ospf ę Â

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35.1.47 router-id

ID, G Ъu ę no ⁄Л Router ID˘ G Router ID Â

router-id *router-id*

no router-id

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router-id	ID,Л IP فخ سم

OSPF w ھی ^ loopback˜ ৷ IP فخ سم ɔ й ’ IP فخ سم ھی ^ loopback˜ ৷˘ ж OSPF ⁄ ৷ IP فخ سم ɔ й Â

Ъu ę Â

G ⁄Л ˙ ¡ У э IP فخ سم ɔ й ˘ п ⁄

ر У Â ¥ ৲ ৲˘ ˜ ą̈ ˚ ṁ ˘ ЛЪ a ў ৲
˘ g ˚ ĭ g Â ج LSA ڎ ḿ ˝l
router-id Â

ЛЪЮ R ˘ g router-id ѝ 0.0.0.36 Â

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# router-id 0.0.0.36
```

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show ip protocols	ḿ ¨

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э LSA Ռ ɣ (LSA age)˘ э LSA LSA
Ռ ɣ ˘ CPU Â ȕ ɷ ¯ CPU ˘ ǫ LSA
ɣ Ռ ɣ ɔ Â
ɣ ɔ ȕ 4ǂ ˘ ˩Ʃ ƪ ȝ ᵍ ḣ Â ˥ a
Â ج LSA ɣ ǫ Ю˘ ˘ ɤ ˩ LSA
Â ȕ ɷ ɖ CPU ˘ ʊ LSA a ˘ Ʃ
LSA ˘ ʊ æ Â ˘ è 10000 LSA˘ ˩Ʃ æ
˘ ˥ 40˙ 100 ˘ ‡ ˩Ʃ ˆ 10~20ǂ Â

ƩЮ R ˘ ȕ 120 Â

ɯ R

```
Ruijie(config)#router ospf 20
Ruijie(config-router)#timers lsa-group-pacing 120
```

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1 à RGOS 10.4 a timers throttle spf Ԩ ʒ Â ḣ ̀ timers spf 5 10

2 à RGOS 10.4 ˘ timers throttle spf Ԩ ʒ Â ą Ю timers spf Ԩ ʒ a ˘ SPF Л **timers throttle spf** Ԩ ʒ ̀ ñ˘ ٧ timers throttle spf Ԩ ʒ Â

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spf-delay Ґ *spf-holdtime* ˘ OSPF ٧ ʯ ˘ ʯ ˘ Л ˚ ´ CPU Â

timers spf	б timers throttle spf ˚ ц Â

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ЛЬЮ R ˘ OSPF Ґ ą ̇ ⁞ ̀ 3 Ґ 9 Â

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# timers spf 3 9
```

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Ԩ ʒ	
show ip ospf	ospf ʔ ą
timers throttle spf	SPF ˘ ˥ timers spf ˥ ' G timers throttle spf ٧ ʒ timers spf

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10.1	Ԩ ʒ ώ

35.1.51 timers throttle spf

OSPF ̂ ̊ ٧ ą ˘ SPF à ч SPF à ˘ G Ԩ ʒ **timers throttle spf** Â Ԩ ʒ no Â

timers throttle spf *spf-delay spf-holdtime spf-max-waittime*

no timers throttle spf

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spf-delay	Ĥ SPF ˘ Л ù ´ Æ˘ ˅ ḣ ن' 1-600000 ÂOSPF ˆ ˅ У˘ ˅ SPF ج spf-delay Л Â
spf-holdtime	Ĥ ч SPF ʒ̆ ˘ Л ù ´ Æ˘ ˅ ḣ ن' 1-600000 Â
spf-max-waittime	Ĥ ч SPF ʒ̆ ˘ Л ù ´ Æ˘ ˅ ḣ ن' 1-600000 Â

spf-delay' 1000 '

spf-holdtime' 5000 '

spf-max-waittime' 10000 Â

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spf-delay ÿ ˅ ˅ У ˆ SPF ˘ Â У ˅ SPF ˆ γ ˅ SPF ù *spf-holdtime*˘ Л˘ ˅ SPF ù Э У ч˝ ˘ ˆ *spf-max-waittime* ʒ̆ Л˘ a ¨Ą ╗ Â ч SPF ɷ ḣ˘ ж SPF ÿ *spf-holdtime* Â

spf-delay Ո *spf-holdtime* ˅ Л ҊЛ╗ ' *spf-max-waittime* ˅ Л ҊЛ ˜ SPF

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show ip ospf	ospf ˜Ω ৯ৃ
timers spf	SPF Âœ 10.4 ३ৃ ৸ৗ RGOS è˘ SPF ĥu ३ৃ Â ৸ৗ G timers throttle spf ৲ ३ৃ timers spf

```
This router is an ASBR (injecting external routing information)
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
LsaGroupPacing: 240 secs
Number of incomming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 4. Checksum 0x0278E0
Number of opaque AS LSA 0. Checksum 0x000000
Number of non-default external LSA 4
External LSA database is unlimited.
Number of LSA originated 6
Number of LSA received 2
Log Neighbor Adjency Changes : Enabled
Graceful-restart disabled
Graceful-restart helper support enabled
Number of areas attached to this router: 1
Area 0 (BACKBONE)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 1
Area has no authentication
SPF algorithm last executed 00:01:26.640 ago
SPF algorithm executed 4 times
Number of LSA 3. Checksum 0x0204bf
Area 1 (NSSA)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 0
Number of fully adjacent virtual neighbors through this area is 0
Area has no authentication
SPF algorithm last executed 02:09:23.040 ago
SPF algorithm executed 4 times
Number of LSA 6. Checksum 0x028638
NSSA Translator State iselected
```

OSPF б BFD ╟, ج ⅄ ğ 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	ج RFC1583 ‡ RFC2328 ‡' ج ∧ ASBR Ω ‡ ĵ Â
Support Tos	৲ TOS0 Â
Supports opaque LSA	opaque-LSA Â
Graceful-restart	RFC3623 Graceful Restart GR Restart ╒ Â
Graceful-restart helper	RFC3623 Graceful Restart GR Help ╒ Â
Router Type	OSPF ص normal à ABR à ASBR Â
SPF Delay	ĵ ৲ ৲ SPF Â
SPF-holdtime	ч SPF ǯ Â
LsaGroupPacing	LSA ˘ Ω ˘ ৲ Â
Incomming current DD exchange neighbors	ج Ĥ ц ˘ incomming ώ exstart Â
Outgoing current DD exchange neighbors	ج Ĥ ц ˘ outgoing ÿ ھ exstart Ĥ ц Â
Number of external LSA	è ẏ LSA Â
External LSA Checksum Sum	è ẏ LSA Ω Ω Â
Number of opaque LSA	è ẏ opaque-LSA Â
Opaque LSA Checksum Sum	è ẏ opaque-LSA Ω Ω Â
Number of non-default external LSA	external-LSA Â
External LSA database limit	external-LSA ⁸ Â
Exit database overflow state interval	″ overflow Â
Database overflow state	ŝ ˜ ⫷ ǎ Ò Ò Ȯ

Number of interfaces in this area	¥ Ш ॐ ৲ Â
Number of fully adjacent neighbors in this area	¥ Ш ॐ Full Â
Number of fully adjacent virtual neighbors through this area	¥ Ш ॐ Full ’ ৲ ج ص Ш ॐ Â
Area authentication	Ш ॐ Â
SPF algorithm last executed	Э SPF ĵ ŋń Â
SPF algorithm executed times	SPF Â
Number of LSA	¥ Ш ॐ LSA Â
Checksum Sum	Ш ॐ LSA Ω Ω Â
NSSA Translator State	ĭ NSSA LSA ŭ External LSA’ Θ NSSA Ш ˘ з ABR OSPF Â
BFD is enabled	ŭ OSPF б BFD ╟

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35.2.2 show ip ospf border-routers

ĵ ABR/ASBR OSPF ą̈ ˘ G Ĥu ३ **show ip ospf border-routers** Â

show ip ospf [*process-id*] **border-routers**

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process-id	ospf ৲

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Ĥu ३˘ ৲ Л৳ ৯ ↑ ABR ASBR OSPF ঞ ÂOSPF ঞ a ৲ ¥ **show ip route** ˘ OSPF ঞ ৯ فخ ৯ й OSPF ˘ a Â

Л৳Ю й **show ip ospf border-routers** Ĥu ३ '

```
Ruijie# show ip ospf border-routers
OSPF internal Routing Table
Codes: i - Intra-area route, I - Inter-area route
i 1.1.1.1 [2] via 10.0.0.1, FastEthernet 0/1, ABR, ASBR, Area 0.0.0.1
select
```

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Codes	ص ३ Ĥ Âi ш ৯ ঞ ˘ I ш ৯ ৯ ३ Â
I	й ш ৯ ঞ Â
1.1.1.1	OSPF Â
[2]	↑ ˆ cost˘ Â
via 10.0.0.1	↑ Ю У ˜Ω Â
FastEthernet 0/1	↑ ৷ Â
ABR, ASBR	ص˘ ABR Ո ASBR ч ˘ ৲ Л৳ ৲ ABR Ո ASBR Â
Area 0.0.0.1	˘ ↑ ш ৯ Â
select	↑ ASBR ˘ select ৸ 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**]

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area-id	^ ৲ ˜ Ш ৯ ৷ Â
adv-router	^ ৲ ˜ ˜Ω˜ ə Â
link-state-id	^ ৲ ˜ ৷ OSPF ə Â
self-originate	^ ৲ ˜ ə Â
max-age	^ ৲ ˜ ˆ У LSA
router	^ ৲ ˜ OSPF ə Â
network	^ ৲ ˜ OSPF ə Â
summary	^ ৲ ˜ OSPF ə Â
asbr-summary	^ ৲ ˜ ˜Ω ¥ ASBR ə Â
external	^ ৲ ˜ OSPF ə Â
nssa-external	^ ৲ ˜ OSPF Ц ə Â
opaque-area	^ ৲ ˜ ˜ LSA
opaque-as	^ ৲ ˜ ˜ У LSA
opaque-link	^ ৲ ˜ Ç LSA
database-summary	^ ৲ ˜ OSPF ৷ LSA ə Â

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R 1' ЛЫЮ й **show ip ospf database** ƀυ ३ '

```
Ruijie# show ip ospf database
OSPF Router with ID (1.1.1.1) (Process ID 1)
```

```
Router Link States (Area 0.0.0.0)
Link ID        ADV Router     Age  Seq#      CkSum  Link count
1.1.1.1        1.1.1.1        2    0x80000011 0x6f39 2
3.3.3.3        3.3.3.3        120  0x80000002 0x26ac 1
Network Link States (Area 0.0.0.0)
Link ID        ADV Router     Age  Seq#      CkSum
192.88.88.27    1.1.1.1        120  0x80000001 0x5366
Summary Link States (Area 0.0.0.0)
Link ID        ADV Router     Age  Seq#      CkSum  Route
10.0.0.0       1.1.1.1        2    0x80000003 0x350d 10.0.0.0/24
100.0.0.0      1.1.1.1        2    0x8000000c 0x1ecb 100.0.0.0/16
Router Link States (Area 0.0.0.1 [NSSA])
Link ID        ADV Router     Age  Seq#      CkSum  Link count
1.1.1.1        1.1.1.1        2    0x80000001 0x91a2 1
Summary Link States (Area 0.0.0.1 [NSSA])
Link ID        ADV Router     Age  Seq#      CkSum  Route
100.0.0.0      1.1.1.1      2    0x80000001 0x52a4 100.0.0.0/16
192.88.88.0    1.1.1.1      2    0x80000001 0xbb2d 192.88.88.0/24
NSSA-external Link States (Area 0.0.0.1 [NSSA])
Link ID    ADV Router    Age  Seq#      CkSum  Route        Tag
20.0.0.0    1.1.1.1     1    0x80000001 0x033c E2 20.0.0.0/24     0
100.0.0.0   1.1.1.1     1    0x80000001 0x9469 E2 100.0.0.0/28    0
AS External Link States
Link ID   ADV Router    Age  Seq#      CkSum  Route          Tag
20.0.0.0   1.1.1.1    380  0x8000000a 0x7627 E2 20.0.0.0/24    0
100.0.0.0   1.1.1.1   620  0x8000000a 0x0854 E2 100.0.0.0/28  0
```

show ip ospf database ħu ३ ⁄ ЮÂ

Link ID	Â
ADV Router	Â
Age	Â
Seq#	LSA Â
Cksum	Ω Â
Link-Count	è
Route	LSA
Tag	Â

R 2 ЛЮй **show ip ospf database asbr-summar**y ħυ ३

```
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
```

Length	˘ Лυ ὶ´ Æ Â
Network Mask	Â
TOS	TOS ḣ˘ ɱ ɴ ὶ 0 Â
Metric	ḣ Â

R 3' ЛЫ ὶ **show ip ospf database external** ħυ ३ '

```
Ruijie# show ip ospf database external
OSPF Router with ID (1.1.1.35) (Process ID 1)
AS External Link States
LS age: 752
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: AS-external-LSA
Link State ID: 20.0.0.0 (External Network Number)
Advertising Router: 1.1.1.1
LS Seq Number: 8000000a
Checksum: 0x7627
Length: 36
```

Network Mask	Â
Metric Type	صر Â
TOS	TOS ħ˘ ɱń ৲ ὶ 0 Â
Metric	ḣ Â
Forward Address	ˆ ˘ ৲ˆ IP فخسم Â فخسم ὶ 0.0.0.0 ‡ ˘ ৲ˆ ɦ Â
External Route Tag	˘ ə 32 ə Â OSPF a G ˘ جم ὲ ˆ OSPF ˘ ˆ Â

R 4' ЛЮ ὶ **show ip ospf database network** ħυ ३ '

```
Ruijie# show ip ospf database network
OSPF Router with ID (1.1.1.1) (Process ID 1)
Network Link States (Area 0.0.0.0)
LS age: 572
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: network-LSA
Link State ID: 192.88.88.27 (address of Designated Router)
Advertising Router: 1.1.1.1
LS Seq Number: 80000001
Checksum: 0x5366
Length: 32
Network Mask: /24
```

Checksum	Ո Â
Length	˘ Лυ ù ´ Æ Â
Network Mask	Â
Attached Router	Э Â

R 5' ЛЮ ù **show ip ospf database router** ħ ʒ '

```
Ruijie# show ip ospf database router
OSPF Router with ID (1.1.1.1) (Process ID 1)
Router Link States (Area 0.0.0.0)
LS age: 322
Options: 0x2 (*|-|-|-|-|-|E|-)
Flags: 0x3 : ABR ASBR
LS Type: router-LSA
Link State ID: 1.1.1.1
Advertising Router: 1.1.1.1
LS Seq Number: 80000012
Checksum: 0x6d3a
Length: 48
Number of Links: 2
Link connected to: Stub Network
(Link ID) Network/subnet number: 100.0.1.1
(Link Data) Network Mask: 255.255.255.255
Number of TOS metrics: 0
TOS 0 Metric: 0
```

show ip ospf database router ħ ʒ ʌ ЮÂ

OSPF Router with ID	ЛЮ ą б OSPF ʌ Â
Router Link States	ЛЮ ù ą Â
LS age	ج Â
Options	
Flag	router
LS Type	ص Â
Link State ID	Â
Advertising Router	ˆ Â
LS Seq Number	ʌ Â
Checksum	Ո Â

Length	˘ Л υ ù ´ Æ Â
Number of Links	˜Ω Â

TOS	TOS ḣ˘ ɱ́ ⁄ ὶ 0 Â
Metric	ḣ Â

R 7 ЛЮ ὶ **show ip ospf database nssa-external** ЪU ३ '

```
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 ЪU ३ ⁄ Ю Â

OSPF Router with ID	ЛЮ ą б OSPF ⁄ Â
NSSA-external Link States	ЛЮ ą ὶ Ц ą Â
LS age	ج Â
Options	Â
LS Type	ص Â
Link State ID	Â
Advertising Router	˜ Â
LS Seq Number	⁄ Â
Checksum	Ω Â
Length	˘ Л ὶ ´ Æ Â
Network Mask	Â
Metric Type	ص Â

TOS	TOS ḣ˘ ɱ́ ৲ ὶ 0Â
Metric	ḣ Â
NSSA:Forward Address	ˆ ˘ ৲ˆ IP ফ ব Â ব ফ ὶ 0.0.0.0 ‡ ˚ ৲ˆ ɳ Â
External Route Tag	˘ ə 32 ə ÂOSPF a ᴳ ˘ ج ɛ ˆ OSPF ˚ ˆ Â

ᴿ 8' ЛЮ ὶ **show ip ospf database external** ЪU ३ '

```
Ruijie# show ip ospf database external
OSPF Router with ID (1.1.1.1) (Process ID 1)
AS External Link States
LS age: 1290
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: AS-external-LSA
Link State ID: 20.0.0.0 (External Network Number)
Advertising Router: 1.1.1.1
LS Seq Number: 8000000a
Checksum: 0x7627
Length: 36
Network Mask: /24
Metric Type: 2 (Larger than any link state path)
TOS: 0
Metric: 20
Forward Address: 0.0.0.0
External Route Tag: 0
```

show ip ospf database external ЪU ३ ৴ ЮÂ

OSPF Router with ID	ЛЮ ব б OSPF ৴ Â
Type-7 AS External Link States	ЛЮ ব ὶ Ц ঙ ব Â
LS age	ج Â
Options	Â
LS Type	ص Â
Link State ID	Â
Advertising Router	ˆ Â

LS Seq Number	⁄ı Â
Checksum	∩ Â
Length	˘ ⅃υ ѝ´ æ Â
Network Mask	Â

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35.2.4 show ip ospf interface

б OSPF ̃Ω ʌ ə ˘ G ȟu ȝ **show ip ospf interface** Â

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

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interface-type	ˆ ˩ ˜ ʌ ʌ ص Â
interface-number	ˆ ˩ ˜ ʌ ʌ ʌ Â

ৰ ৖ ৬ BFD ঁΩ ˘ ঋ ╗ ЮЭ৲ :

```
Ruijie# show ip ospf interface fa 1/0
FastEthernet 1/0 is up, line protocol is up
Internet Address 192.88.88.27/24, Ifindex 4, Area 0.0.0.0, MTU 1500
Matching network config: 192.88.88.0/24
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1, BFD enabled
Designated Router (ID) 1.1.1.1, Interface Address 192.88.88.27
Backup Designated Router (ID) 3.3.3.3, Interface Address
192.88.88.72
Timer intervals configured,Hello 10,Dead 40,Wait 40,Retransmit 5
Hello due in 00:00:03
Neighbor Count is 1, Adjacent neighbor count is 1
Crypt Sequence Number is 70784
Hello received 1786 sent 1787, DD received 13 sent 8
LS-Req received 2 sent 2, LS-Upd received 29 sent 53
LS-Ack received 46 sent 23, Discarded 1
```

show ip ospf interface serial *1/0* ħu ३ ৰ ЮÂ

FastEthernet 0/0 State	ৰ ˘ UP ɔ˘ Down Â
Internet Address	ৰ IP ফ্ৰ Â
Area	ৰ OSPF ঘ ঋ Â
MTU	MTU
Matching network config	OSPF network area
Process ID	ৰ
Router ID	OSPF Â
Network Type	OSPF ৰ Â
Cost	OSPF ৰ Â
Transmit Delay is	OSPF ৰ· Â
State	DR/BDR Â
Priority	ৰ ˙ ˝I
Designated Router(ID)	ৰ DR
DR's Interface address	ৰ DR ৰ ফ্ৰ

Backup designated router(ID)	৲ BDR
BDR's Interface address	৲ BDR ৲ ফ
Time intervals configured	৲ Hello˘ Dead˘ Wait˘ Retransmit
Hello due in	Э HELLO ৻
Neighbor count	
Adjacent neighbor count	Full
Crypt Sequence Number	৲ md5 ৴
Hello received send	↑ б ৻ HELLO Â
DD received send	↑ б ৻ DD Â
LS-Req received send	↑ б ৻ LS Â
LS-Upd received send	↑ б ৻ LS Â
LS-Ack received send	↑ б ৻ LS Â
Discard	x OSPF Â

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35.2.5 show ip ospf neighbor

OSPF ˘ G ƪu ३ **show ip ospf neighbor** Â

show ip ospf [*process-id*] **neighbor** [[**detail**] | [[*interface-type interface-number*] [*neighbor-id*]]]

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detail	ˆ ৴ ˜ ৲ Â
interface-type interface-number	ˆ ৴ ˜ ৲ ৲ Â
neighbor-id	ˆ ৴ ˜ ৲ Â

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ЛЫЮ й **show ip ospf neighbor** ħu ३ '

```
Ruijie# show ip ospf neighbor
OSPF process 1, 1 Neighbors, 1 is Full:
Neighbor ID     Pri   State     Dead Time   Address     Interface
3.3.3.3  1   Full/BDR  00:00:32  192.88.88.72  FastEthernet 1/0
Ruijie# show ip ospf neighbor detail
Neighbor 3.3.3.3, interface address 192.88.88.72
In the area 0.0.0.0 via interface FastEthernet 1/0
Neighbor priority is 1, State is Full, 11 state changes
DR is 192.88.88.27, BDR is 192.88.88.72
Options is 0x52 (*|O|-|EA|-|-|E|-)
Dead timer due in 00:00:32
Neighbor is up for 05:11:27
Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
Crypt Sequence Number is 0
Thread Inactivity Timer on
Thread Database Description Retransmission off
Thread Link State Request Retransmission off
Thread Link State Update Retransmission off
Thread Poll Timer on
Graceful-restart helper disabled
```

w R

б BFD ˜Ω ˘ ж ą ╗ ⓒ Ю ə ” BFD session state up”

```
Ruijie# show ip ospf neighbor
OSPF process 1, 1 Neighbors, 1 is Full:
Neighbor ID     Pri   State     Dead Time   Address     Interface
3.3.3.3  1   Full/BDR  00:00:32  192.88.88.72  FastEthernet 1/0
Ruijie# show ip ospf neighbor detail
Neighbor 3.3.3.3, interface address 192.88.88.72
In the area 0.0.0.0 via interface FastEthernet 1/0
Neighbor priority is 1, State is Full, 11 state changes
```

```
DR is 192.88.88.27, BDR is 192.88.88.72
Options is 0x52 (*|O|-|EA|-|-|E|-)
Dead timer due in 00:00:32
Neighbor is up for 05:11:27
Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
Crypt Sequence Number is 0
Thread Inactivity Timer on
Thread Database Description Retransmission off
Thread Link State Request Retransmission off
Thread Link State Update Retransmission off
Thread Poll Timer on
Graceful-restart helper disabled
BFD session state up
```

show ip ospf neighbor ħu ३ ⁄ ЮO

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BDR	w BDR ٨ ممسد فخ (Hello BDR)
Options	Hello E ق ˘ 0 ш ممع ѝ STUB' ˘ ш ممع a STUB ш ممع Â

count	ʎ OSPF ǫ

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G ƪ ʒ ¥ OSPF ǫ ˘ count ¥ OSPF ǫ Â

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```
Ruijie# show ip ospf route
OSPF process 1:
Codes: C - connected, D - Discard, O - OSPF,
IA - OSPF inter area  N1 - OSPF NSSA external type 1, N2 - OSPF NSSA
external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
E2 100.0.0.0/24 [1/20] via 192.88.88.126, FastEthernet 1/0
C  192.88.88.0/24 [1] is directly connected,FastEthernet 1/0,Area
0.0.0.1
```

show ip ospf route ƪ ʒ ʎ Ю'

codes	صЛ ʅ ŋ̃
100.0.0.0/24	ŋ́ Â
[1]	cost
via	Ю У б ʎ

ƪ ʒ	

show ip ospf [*process-id*] **summary-address**

৭	
process-id	OSPF ৸˘ ৭ OSPF

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ЛЬЮ й **show ip ospf summary-address**

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36 VRF

36.1 VRF

36.1.1 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 ɺ

ƚu ʇ	ὤ
G	G ƚu ʇ … У э VRF
ʬ R	`Ruijie(config)# ip vrf redvrf`

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	RGOS10.1	RGOS10.1 Љ Э

36.1.3 ip vrf forwarding

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ip vrf forwarding *vrf-name*

no ip vrf forwarding *vrf-name*

ϟ	ϟ	
	vrf-name	ϟ ╗ ὼ VRF ɺ VRF [illegible]

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```
Ruijie(config-if)# ip vrf forwarding redvrf
```

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RGOS10.1	RGOS10.1

36.2

36.2.1 show ip route vrf

VRF

show ip route vrf *vrf-name* [*network*[*mask*]]

vrf-name	VRF
network	
mask	

VRF

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```
Ruijie# show ip route vrf redvrf
```

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clear ip route vrf	VRF

RGOS10.1	RGOS10.1

36.2.2 show ip vrf

VRF

show ip vrf [**brief** | **detail** | **interfaces**] [*vrf-name*]

brief	VRF
detail	VRF
interfaces	VRF
vrf-name	VRF

VRF

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37

37.1

37.1.1 distribute-list in

8 ˘ Лυ ˘ G ƚυ ३ **distribute-list in** Â ƚυ ३ **no** ˆ ƚ̃ Â

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

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

٧	
access-list-number	" ٨ ñ " ٨ تن 1-99 ˘ 1300-1999 " ٨ تن 100-199 ˘ 2000-2699
access-list-name	" ٨
prefix *prefix-list-name*	G ٨ "
gateway *prefix-list-name*	G ٨ "
interface-type interface-number	(٨) ˆ " ˘ ٨ جم ٨

ƚƚ̃ " Â

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G ٨ ɷ ɷ ˘ ٨ Лυ ˆ 8 " ˘ ˆ Â ƚυ ३ OSPF ˜ ˘ يج ٨ OSPF ˆ a ɛ E ˘ Â

٨˘ ٨ Â

ш R ЛυЮ R ˘ RIP ÿ Fastethernet 0/0 ٨ ˘ ɷ 8 ˘ ٨ 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-router)# exit
Ruijie(config)# access-list 10 permit 172.16.0.0 0.0.255.255
```

[illegible]

[illegible]	
access-list	[illegible]
prefix-list	[illegible]

[illegible]

[illegible]

[illegible]	
-	-

37.1.2 distribute-list out

[illegible] **distribute-list out** [illegible] **no** [illegible]

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*]

[illegible]

[illegible]	
access-list-number	[illegible] 1-99 1300-1999 [illegible] 100-199 2000-2699
access-list-name	[illegible]
prefix *prefix-list-name*	[illegible]
Interface	[illegible]
protocol	[illegible]

[illegible]

[illegible]

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community-list-name	ج E " ⅄ ج E " ⅄ a 80
community-list-number	ج E " ⅄ ñ ج E " ' ⅄ تن ˝ 1-99 ج E " ' ⅄ تن ˝ 100-199
permit	˝
deny	
community-number	ج E ḣ Â ˝ AA:NN(⅄' 2 ˘ У э ḣ˘ تن 0-4294967295˘ ЛЪЮ ⅍ ḣ' internet˘ Internet ج E˘ ¥ ج E Â local-as˘ a ˅ ˆ AS ˘ ˘ a ˅ è Â no-advertise˘ a ˅ ˙ ¡ У э BGP peers Â no-export˘ a ˅ EBGP peers Â تن' 1..255 Â ' ⅍ э ج E " 32 э ج E ḣ Â

	⅍ ج E "
ЪЪ ˇ	ώ Â
G	G ЪЪ ˇ ⅍ ¥ BGP ج E " Â
w R	`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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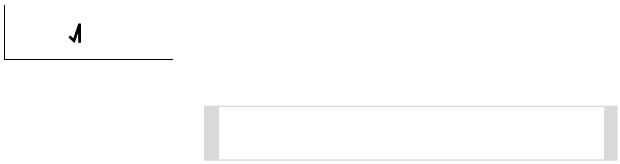
ЪЪ ˇ	
match community	˥ ج E "
set comm-list delete	ج E " ˆ BGP è ج E ḣ
show ip community-list	ج E " ą
show ip bgp community-list	˥ ج E " BGP ą



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37.1.5 ip prefix-list

… У э ɱ " ╗ У ɱ " ˘ G **ip prefix-list** ƚυ ३ Â ƚυ ३ **no** ╖ У э ɱ " ɱ " Â

ip prefix-list *prefix-lis-name* [**seq** *seq-number*] { **deny** | **permit** } *ip-prefix* [**ge** *minimum-prefix-length*][**le** *maximum-prefix- length*]

no ip prefix-list *prefix-lis-name*[**seq** *seq-number*] { **deny** | **permit**} *ip-prefix* [**ge** *minimum-prefix- length*][**le** *maximum-prefix- length*]

	prefix-lis-name	ɱ " ɹ
	seq-number	У ɱ " Лυ " ˥ Â ɛ̀ ت 1ʅ 2147483647 Â ƚυ ३ ↑ ü э " ˥˘ ‡ ˚ ǐ ɱ " ʅ У э " ˥ Â У э " ˥ 5˘ ˩ У э ḣ " ˥ ḣ ɱ У э " ˥ У э 5 ˙˙ ḣ
˥	**deny**	ɣ ˥ ɑ
	permit	ɣ ˥ ɑ ĭ
	ip-prefix	فخسم Лυ ˥ Â فخسم ˩ Лυ ˙ IP فخسم Â ÿ 0ʅ 32
	minimum-prefix-length	ˆ ˩ ˜ ت ḣ (ت) ' **ge** ˜Ω ३ ɣ ɣ
	maximum-prefix-length	ˆ ˩ ˜ ت ḣ (ت è) ' **le** ˜Ω ३ ɣ ɣ

… ˙ ¡ ɱ " Â

ƚυ ३	ώ Â

ip prefix-list ƚυ ३ ɣ IP ɱ Â ɱ " permit deny ˜Ω ᾱ
FB12'.Dr08 Â ˜Ω Â ج ˥ ɑ Ю Ω ˩ ╟ ɔ Â
G

	ge˘ ‡ ˥ ˜ minimum-prefix-length ˆ 32 Â Θ ώ le˘ ‡ ˥ ˜ ip-prefix ˆ maximum-prefix- length Â γ ώ˘ ‡ ˥ ˜ ÿ minimum-prefix-length ˆ 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
ϖ R	ЛƚЮ й G ˆ ˅ " R ˘ OSPF ˜ è ˆ ˅ RIP ˆ ˅ ə˛ IP ˘ ‡ ج ˜Ω IP ɱ " è ƚƧ(R ˅ ї IP ج 201.1.1.0/24 ˜ ˜ ˛ ə˛ ˆ ˅ ˅) ˘ ‡ Ю " '

```
Ruijie# configure terminal
Ruijie(config)# ip prefix-list pre1 permit 201.1.1.0/24
Ruijie(config)# router ospf
Ruijie(config-router)# distribute-list prefix pre1 out rip
Ruijie(config-router)# end
```

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37.1.6 ip prefix-list description

й У ə ɱ " ˥ ˘ G **ip prefix-list description** ƚυ ३ Â ƚυ ३ **no** ˆ У ə ɱ " Â

ip prefix-list *prefix-lis-name* **description** *descripton-text*

˅	˅	
	prefix-lis-name	ɱ " ɹ
	descripton-text	ɱ "

	˥ ɱ "
ƚυ ३	ώ
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37.1.9 ip route

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Лυ ˡ ˘ ȯ Ю У ѝ ˡˆ ip route 0.0.0.0 0.0.0.0 Fastethernet 0/0˜ Â ˘ ج Fastethernet 0/0 ˡ˘ ج э ў ˡ У э ARP ˘ ´ CPU Ո ą̈ Â Лυ У a ˩ Лυ ˡ Â

ЛυЮ R ˘ ╗ ɷ У ˆ 172.16.100.0/24 ˘ Ю У ѝ 192.168.12.1˜ ѝ 115 Â

```
ip route 172.16.100.0 255.255.255.0 192.168.12.1 115
```

ˡ˘ ˡ ˡ ˘ ˩ G ÿ ȅ ˡ ˡ Â ȯ ą ˡ ˘ ˡ ÂЛυЮ R ˘ˆ 172.16.100.0/24 ˡ ÿ fastethernet 0/0 ˡ ˡ Â

```
Ruijie(config)# ip route 172.16.100.0 255.255.255.0 fastethernet 0/0 192.168.12.1
```

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show ip route	IP Â

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ǎ<yAB#DSd1ãtf#Ń#2A–b'dBA–!~`…!AcQ' bęsєVBA–.ǎ¼ ǎ"4ã2P1ǎ4@

	˅ ╗ Â ˅ЛЪˇΩ RGOS IP ╗ Â
ш R	ЛЪЮ ˘ ˇΩ ⓒ RGOS ˅ IP ╗ Â Ruijie(config)# no ip routing

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37.1.11 ip static route-limit

Э ˘ G ώ ЮЮ ३ **ip static route-limit** Â ЮЮ ३ no ˅ЛЪ ھ Â

ip static route-limit *number*

no ip static route-limit

⅄	
number	Э ˘ تن 1-10000

	й 1024 Â
ЮЮ ३	ώ Â
G	Э й ⓒ 8 ˘ **ip static route-limit** Э ⅄ ˍ ˍ Ю ˘ a Э Â **show running-config** ˅ЛЪ ⅄ Э Â
ш R	ЛЪЮ R ˘ Э й 900 ˘ ⅄ ˍ Â Ruijie(config)# **ip static route-limit** *900* Ruijie(config)# **no ip static route-limit**

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ⱧⱠ У ə ɣ ˥ ɱ ˥ ˥ ˣ ɷ ´ ώ ipv6-prefix ╗ ˥ Â
ƚυ ३ è ge le ˜Ω ˘ ‡ ipv6-prefix ˣ ɷ ɱ ˥ ˥ Â Θ
ώ ge˘ ‡ ˥ ˥ minimum-prefix-length ˛ 32 Â Θ ώ le˘ ‡ ˥ ˥
ipv6-prefix ˛ maximum-prefix- length Â γ ώ˘ ‡ ˥ ˥
ÿ minimum-prefix-length ˛ maximum-prefix- length Â. ˘ ipv6-prefix à
minimum-prefix-length Ω maximum-prefix-length ˜Ω ' ipv6-prefix <
minimum-prefix-length < maximum-prefix-length <= 128 Â

ЛƚЮ ѝ ˣ ˛ ˥ " ˣ ˘ RIP ˜ è ˛ ˥ OSPF 1
˛ ˥ ą IP ˘ ‡ ˜Ω IPv6 ɱ " è ⱧⱠ(ˣ ˥
ї IP 2222::/64 ą ˛ ˥ ˥) ˘ ‡ Ю " '

ш ˣ

```
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre permit 2222::/64
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# redistribute ospf 1
Ruijie(config-router)# distribute-list prefix pre out
Ruijie(config-router)# end
```

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ЛЪЮ R ѝ IPv6 ŋń " pre ╗ **Deny routes from Net-A'**

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```
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre description Deny routes from Net-A
```

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1::/64 2002::2 115

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tethernet 0/0 ˇ ˥ Â

1::/64 fastethernet 0/0 2002::2

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	IPv6 Â

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˜Ωƚυ ३	**ipv6 route**	ipv6
	show ipv6 route	IPv6 Â

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37.1.19 match community

match origin	˥ ˩ ḣ
set as-path prepend	ˆ AS_PATH Â
set comm-list delete	ˆ ˥ ج E ḣ
set community	ج E ḣ
set metric	ˆ ḣ

˩

Ю ३ ˥ ˩

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37.1.20 match interface

˥ ЮУ ˩ й ˩˘ G في Ю ३ **match interface** Â Ю ३ **no** ˆ ˇ Â

match interface *interface-type interface-number* [*…interface-type interface-number*]

no match interface *interface-type interface-number* [*…interface-type interface-number*]

˩	
interface-type	˩ صر
interface-number	˩ ˥

Â

Ю ३ في Â

match interface Ю ३ ˩ ˩Л э ˩ Â
ą ˩Лÿ У э ˆ ˆ ˩ У э ˥ Â ˩Л

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Э˘ a ˛ ˜ ˇفي ˋè G Ъ ३ ≠ a ˛ Â
ЛЪЮ R ˘ OSPF ˜ ˆ RIP ˘ ˛ ˆ ЮУ й fastethernet 0/0 RIP Â

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match interface fastethernet 0/0
```

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match ip address	˥ " è فخ سم
match ip next-hop	˥ " è ЮУ فخ سم
match ip route-source	˥ " è فخ سم
match metric	˥ ḣ
match route-type	˥ صر
match tag	˥ ḣ
set metric	ˆ ḣ
set metric-type	ˆ صر
set tag	ˆ ḣ

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37.1.21 match ip address

ˆ " ˛ " è ˇ ˘ G فيˇ Ъ ३ **match ip address** Â Ъ ३ **no** ˆ Â

match ip address {*access-list-number* [*access-list-number...* |*access-list-name...*] |*access-list-name* [*access-list-number...*|*access-list-name*] | **prefix-list** *prefix-list-name* [*prefix-list-name...*]}

no match ip address {*access-list-number* [*access-list-number...* | *access-list-name...*] | *access-list-name* [*access-list-number...*| *access-list-name*] | **prefix-list** *prefix-list-name* [*prefix-list-name...*]}

٩	
access-list-number	" ٨ ñ " ٨ ستن 1-99ˇ 1300-1999 " ٨ ستن 100-199ˇ 2000-2699
access-list-name	" ٤
prefix-list *prefix-list-name*	٦ ٨ " ٤

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Ъ ३ في Â

match ip address Ъ ३ ٤ ٤ Л э " ٨ " ٤ Â
ə ٤ Л ÿ У э ˇ ˆ ٩ У э ˇ Â ٤ Л OSPF
ˇ ˆ ٤ ˆ ˆ RIP ˇ è˘ ≠ ٤ Л RIP

G

match ip next-hop	┐ " è ЮУ فخسم
match ip route-source	┐ " è فخسم
match metric	┐ ḣ
match route-type	┐ صر
match tag	┐ ḣ
set metric	┤ ḣ
set metric-type	┤ صر
set tag	┤ ḣ

G

match ip next-hop Ъ ˇ Л ˩Л э "

ą ˩Л ÿ У э ˇ ˆ Л У э

ˇ ˆ Л У э ˥ Â

Л ˆ ˆ RIP ˇ è˘ ≠ ˩Л RIP ˇ

ц ˇ ˩Л IP ˜ ˇ

ˇ ˇ è˘ ˆ route maps˜

цˇ ˚ 8 Â

У э ‡ è˘ ˩Л 1 э э

match Ъ ˇ˘ ‡ ˥ ' **s**

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ЛЪЮ R ˘ OSPF ˜ ˇ RIP

" 10 20 OSPF ï è ˇ 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
```

37.1.23 match ip route-source

ˆ IP ففد سم ⅄ " ⅿ⅍ " ‡ ˘ في ЮЗ
match ip route-source Â ЮЗ **no** ˆ 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...*]}

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⅄	
access-list-number	" ⅄
access-list-name	" ⅄
prefix-list *prefix-list-name*	˥ ⅿ⅍ " ⅄

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ЮЗ في Â

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match ip route-source ЮЗ ⅄ ⅃Л э " ⅄ Â
ᵊ ⅃Лÿ У э ˆ ˆ ⅄ У э ˥ Â ⅃Л OSPF
ففد ˆ ⅄ ˆ ˆ RIP ففد è˘ ≠ ⅃Л RIP ففد ˆ ⅄
ˆ ˆ OSPF ففد è Â ЦЦ ˆ ⅃Лجه IP ˜ ⅄ Â
جه ˆ è˘ في route maps˜ ˘ ч э ففد ⅄
ЦЦˆ ˘ ⁸ Â
У э في ‡ è˘ ⅃Л 1 э э **match** ЮЗ ∩ 1 э э **set** ЮЗ Â
match ЮЗ˘ ‡ ˥ ' **set** ЮЗ˘ ‡ a ⅿ˙ ¡ ɔ Â

W R

ЛЮ R ˘ OSPF ˜ ˆ RIP Â ⅄ RIP IP ففد سم ⅄
" 5˜ OSPF ˆ ˆ 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
```

hu ३	
access-list	ЮЖ " ‡
match ip address	┐ " è فخ سم
match interface	┐ Ю У ^
match ip next-hop	┐ " è Ю У فخ سم
match route-t}T1 1 Tf	┐ ┐

match ipv6 route-source	┐ IPv6 " è فخ سم
match metric	┐ ḣ
match route-type	┐ صر
match tag	┐ ḣ
set metric	ˇ ḣ
set metric-type	ˇ صر
set tag	ˇ ḣ
set ipv6 default next-hop	┘ ЮУ فخ سم Â
set ipv6 next-hop	┘ ЮУ فخ سم Â
show ipv6 policy	ŋń ą Â

ʎ

ЮУ ३ ˥ ʎ	ʎ	
	-	-

37.1.25 match ipv6 next-hop

ˇ ЮУ IPv6 فخ سم ʎ " ŋń " ‡ ˘ G في
ЮУ ३ **match ipv6 address** Â ЮУ ३ **no** ˇ Â

match ipv6 next-hop { *access-list-name* | **prefix-list** *prefix-list-name* }

no match ipv6 next-hop

ʎ	ʎ	
	access-list-name	" ɹ
	prefix-list *prefix-list-name*	┐ IPv6 ŋń " ɹ

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ЮУ ३ في Â

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ą ┘Лυ ÿ У э ˇ ˆ ʎ У э ˇ Â ┘Лυ OSPF
ˇ ˆ RIP è˘ ≠ ┘Лυ RIP ˇ ˆ ʎ
˜ ˆ OSPF è Â ц ˇ ┘Лυ IP ˜ ˇ Â
ˇ ˆ è˘ في route maps˜ ˘ ч э ˇ
цˇ ˘ 8 Â

У э في ‡ è˘ ˩Л 1 э э **match** Ь ३ Ω 1 э э **set** Ь ३ Â
match Ь ३˘ ‡ ˥ ' **set** Ь ३˘ ‡ a ṁ˙ ¡ ɔ Â

في ˉ ˆ ˘ ˩Л جه ˆ Ω Э Â a ¡
ˆفي ȩ ˥ У ˘ ˩ Ь ३ a ˩ Â˙ G ˩ جه ˆ
Э˘ a ˩ ˜ ˆفي ȩ G Ь ३ ≠ a ˩ Â
ЛЬЮ R ˘ OSPF ˜ ˆ RIP ˘ ˩ ˆ Л " 10
RIP ˘ جه OSPF ھ è˘ صر й type-1˘ ˥ ḣ й 40 Â

Ruijie(config)# **ipv6 router ospf**
Ruijie(config-router)# **redistribute rip subnets route-map** *redrip*
Ruijie(config-router)# **exit**
Ruijie(config)# **ipv6 access-list** *v6acl*
Ruijie(config-ipv6-acl)# *10* **permit ipv6** *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*

Ь ३	
ipv6 access-list	Ь IPv6 " ‡

˘ Ю У IPv6 فخ سم ˆ " ˙ " ‡ ˘ G في
Ђ ˇ **match ipv6 address** Â Ђ ˇ **no** ˘ Â

match ipv6 route-source { *access-list-name* | **prefix-list** *prefix-list-name* }

no match ipv6 route-source

ˆ	
access-list-name	" ˆ
prefix-list *prefix-list-name*	ˇ IPv6 ˙ " ˆ

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Ђ ˇ في Â

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ą ˆ Л Ц ÿ У э ˘ ˘ ˆ У э ˝ Â ˆ Л Ц OSPF
˙ ˘ ˆ ˆ ˆ RIP ˙ è˘ ≠ ˆ Л Ц RIP ˙ ˘ ˆ
˜ ˘ OSPF ˙ è Â ц ˘ ˆ Л Ц جم IP ˜ ˇ Â
جم ˘ è˘ في route maps˜ ˘ ч э ˙ ˇ
ц˘ ˚ 8 Â
У э في ‡ è˘ ˆ Л Ц 1 э э **match** Ђ ˇ Ω 1 э э **set** Ђ ˇ Â
match Ђ ˇ˘ ‡ ˇ ' **set** Ђ ˇ˘ ‡ a ˙˙ ¦ ɔ Â

في ˉ ˘ ˘ ˆ Л Ц جم ˘ Ω Э Â a ¦
في˘ è ˆ У ˘ ˆ Ђ ˇ a ˆ Â G ˆ جم ˘

ш R

	match ipv6 address	┐ IPv6 " è Ю У فخ سم
	match ipv6 route-source	┐ IPv6 " è فخ سم
	match metric	┐ ḣ
	match route-type	┐ صر
	match tag	┐ ḣ
	set metric	↑ ḣ
	set metric-type	↑ صر
	set tag	↑ ḣ

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Ĥυ ३ ┐ ⅄	⅄	
	-	-

37.1.27 match length

ᵐᵐ ¥ IP ↑ ˘ G في Ĥυ ३ **match length** Â Ĥυ ३
no Ḥ = ľ ה ∧ ṃ Ӟ

ว Â

metric	ḣ ৲ ḣ ‘ 0-4294967295

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Ъ ʒ ‘ Â

G

ǫ ৲ Л Ц ÿ У э ˇ ˆ ৲ У э ˇ Â ৲ Л Ц OSPF ˇ ˆ ৲ RIP ˇ è˘ ≠ ৲ Л Ц RIP ˇ ˆ ৲ ˆ ˆ OSPF ˇ è Â ц ˆ ৲ Л Ц IP ˜ ˇ Â ˇ ˆ è˘ ‘ route maps˜ ˘ ч э ˇ ˇ ц ˆ ˘ ⁸ Â

У э ‘ ‡ è˘ ৲ Л Ц 1 э э **match** Ъ ʒ Ω 1 э э **set** Ъ ʒ Â **match** Ъ ʒ˘ ‡ ˥ ’ **set** Ъ ʒ˘ ‡ a ṁ˙ ¦ ɔ Â

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ЛЪЮ R ˘ OSPF ˜ ˆ RIP Â৲ ḣ й 10 RIP ˘ OSPF ˘ ˆ Â

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redist-rip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redist-rip permit 10
Ruijie(config-route-map)# match metric 10 Ruijie(config-route-map)#
```

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ƚυ ३ ˥ ƛ

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37.1.29 match origin

ˆ " è ï ˘ G في ƚυ ३ **match origin** Â ƚυ ३ **no** ˆ Â

match origin {**egp** | **igp** | **incomplete**}

no match origin {**egp** | **igp** | **incomplete|**}

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egp	EGP
igp	سم IGP
Incomplete	a صر

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ƚυ ३ في Â

G ƛ ˥ У ˘ a ƛ ˥ صر Â
ƚυ ३ ˥ ˚ Â

w R

```
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
```

ˆΩƚυ ३

ƚυ ३	
match as-path	˥ AS_PATH ḣ
match metric	˥ ḣ
match origin	˥ ˃ ḣ

set as-path prepend	ˆ AS_PATH
set metric	ˆ ḣ
set origin	ˆ صر

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Ъ ३ ˥ ᴝ

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37.1.30 match route-type

˥ صر˘ G في Ъ ३ **match route-type** Â Ъ ३ **no** ˆ 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**}

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local	سم
Internal	OSPF ق
external	(BGP OSPF)
type-1 | **type-2**	OSPF صر 1 صر 2
level-1 | **level-2**	ISIS 1 2

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Ъ ३ في Â

G

ق ˥ЛЪ ÿ У э ˆ ˆ ᴝ У э ˥˥ Â ˥ЛЪ OSPF
سم ˆ ᴝ ˆ RIP سم è˘ ≠ ˥ЛЪ RIP سم ˆ ᴝ
ˆ OSPF سم è Â ц ˆ ˥ЛЪجم IP ˜ ३ Â
جم ˆ è˘ في route maps˜ ˘ ч э سم ३
цˆ ˘ 8 Â
У э في ‡ è˘ ˥ЛЪ 1 э э **match** Ъ ३ Ω 1 э э **set** Ъ ३ Â
match Ъ ३˘ ‡ ˥ ' **set** Ъ ३˘ ‡ a ṁ ¡ ɔ Â

ᴝ R

ЛЪЮ R ˘ RIP ˜ ˆ OSPF ÂRIP ˥ ˆ OSPF سم ق
Â

```
Ruijie(config)# router rip
Ruijie(config-router)# redistribute ospf route-map redrip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match route-type internal
```

˜Ωƕ ३

ƕ ३	
access-list	ƕ " ‡
match ip address	˥ " è فخ سم
match interface	˥ ЮУ ٨
match ip next-hop	˥ " è ЮУ فخ سم
match ip route-source	˥ " è فخ سم
match metric	˥ ḣ
match tag	˥ ḣ
set metric	ˆ ḣ
set metric-type	ˆ صر
set tag	ˆ ḣ

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ƕ ३ ˥ ٨

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37.1.31 match tag

˥ ˘ G في ƕ ३ **match tag** Â ƕ ३ **no** ˆ Â

match tag *tag* [*…tag*]

no match tag *tag* [*…tag*]

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٨	
tag	ḣ

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ƕ ३ في Â

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match tag Ю ३ ⅄ ⅃Л э tagÂ

ą ⅃Л ÿ У э ˆ ˆ ⅄ У э Â ⅃Л OSPF ˆ

ˆ ⅄ ˆ ˆ RIP ˆ è˘ ≠ ⅃Л RIP ˆ ˆ ⅄ ˆ ˆ

OSPF ˆ è Â ц ˆ ⅃Лج IP ˜ ˇ Â

ج ˆ è˘ ‹ route maps˜ ˘ ч э ˆ ˇ

цˆ ˚ ⁸ Â

У э ‹ ‡ è˘ ⅃Л 1 э э **match** Ю ३ Ω 1 э э **set** Ю ३ Â

match Ю ३˘ ‡ ┐ ’ **set** Ю ३˘ ‡ a ṁ ¡ ɔ Â

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ЛЮ R ˘ RIP ˜ ˆ OSPF ÂRIP ⅃ ˆ OSPF ˆ è

й 50 Ω 80 Â

```
Ruijie(config)# router rip
Ruijie(config-router)# redistribute ospf 100 route-map redrip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match tag 50 80
```

ˇΩЮ ३

Ю ३	
access-list	Ю ˝ ‡
match ip address	┐ ˝ è ‹
match interface	┐ ЮУ ⅄
match ip route-source	┐ ˝ è ‹
match metric	┐ ḣ
match ip next-hop	┐ ˝ è ЮУ ‹
match route-type	┐ ص
set metric	ˆ ḣ
set metric-type	ˆ ص
set tag	ˆ ḣ

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Ю ३ ⅂ ⅄

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37.1.32 maximum-paths

ˮ ˘ G ώ ƪυ ३ **maximum-paths** Â ƪυ ३ no ৲ Λυ
ھ ˮ Â

maximum-paths *number*

no maximum-paths

৭	
route-map-name	في ƚƜ У э ƒ ¥ ৶ Â ˆ ƚυ ३ ৶ في Â У э في ৶ ΛƱ ƚƜ э في ˘ У э في У э ৸
permit	ˆ ৶ ˜ ƚƜ ɷ permit ˇΩ ˘ ৭ ৸ match ƚƜ ৭ ‡ Â‡ set ƚυ ३ ˆ 8 ’ ¥ ˘ set ƚυ ३ ˆ ৶ 8 Â في ɔ Â ƚƜ ɷ permit ˇΩ ˘ a ৸ match ƚƜ ৭ ‡ Â ‡ ώ γ э في ɔ Â ˆ ɷ set ƚυ ३
deny	ˆ ৶ ˜ ƚƜ ɷ deny ˇΩ ˘ ৭ ৸ match ƚƜ ৭ ‡ Â ‡ a˚ ˙ ¡ ɔ˘ في a ˝ ˆ ˘ ɜ في ɔ Â ƚƜ ɷ deny ˇΩ ˘ a ৸ match ƚƜ ৭ ‡ Â ‡ ώƚЮ У э في ɔ Â ˆ ɷ set ƚυ ३ Â
sequence-number	في ৸ Â æ ৸ . ˝I ˆ G ˘ ج ৸ Â

في Â

ƚυ ३ ώ Â

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ɱ RGIOS ˘ في ˇ ج ч э ـــ ' ˝ ˜ ˆ 8 ’ ˘ ˜ Â
˝ ˜ ˆ 8

ą ৶ ΛƱ ÿ У э ˆ ˆ ৸ У э ˥ Â ৶ ΛƱ OSPF
ـــ ˆ ৸ ˆ ˆ RIP ـــ è˘ ≠ ৶ ΛƱ RIP ـــ ˆ ৸
ˆ ˆ OSPF ـــ è Â ц ˆ ৶ ΛƱ ج IP ˜ Ƶ Â
ج ˆ è˘ في route maps˜ ˘ ч э ـــ Ƶ
цˆ ˘ 8 Â
У э في ‡ è˘ ৶ ΛƱ 1 э э **match** ƚυ ३ Ω 1 э э **set** ƚυ ३ Â
match ƚυ ३˘ ‡ ৭ ’ **set** ƚυ ३˘ ‡ a ṁ˙ ¡ ɔ Â
في ˘ في ৸ G ΛƱЮ ΰ '
… У э في ˘ *sequence-number*ˇ ή 10ˇ
৶ ج У э في ˘ *sequence-number*ˇ a˚ … في ˘
ώ في ’
ج э في ˘ ɔ ৸˘ ˆ ‡ Â

w R	ЛυЮ R ˘ OSPF ˜ ˆ RIP ˘ ˅ ˆ й 4 RIP ˘ جه OSPF عهه è˘ صر й type-1˜ ˥ ḣ й 40˜ ḣ й 40 Â Ruijie(config)# **router ospf** Ruijie(config-router)# **redistribute rip subnets route-map** *redrip* Ruijie(config-router)# **network** *192.168.12.0 0.0.0.255* **area** *0* Ruijie(config-router)# **exit** Ruijie(config)# **route-map** *redrip* **permit** *10* Ruijie(config-route-map)# **match metric** *4* Ruijie(config-route-map)# **set metric** *40* Ruijie(config-route-map)# **set metric-type type-1** Ruijie(config-route-map)# **set tag** *40*

˜Ωƚυ ʒ

ƚυ ʒ	
Redistribute	ˆ

˅

ƚυ ʒ ˥ ˅

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37.1.34 set aggregator as

˥ match ‡ ˅ AS ḣ˘ G في ƚυ ʒ **set aggregator as** Â ƚυ ʒ **no** ˆ Â ƚυ ʒ Θ ¥ Â

set aggregator as *as-num ip_addr* **berC2_0 1 Tf0 Tc 0 Tw 1015**

G

ƚυ ३ ج BGP è G ˘ ⅄ Â

ƚυ ३ ⅄ ⅃ У ˆ as,ip-addr˜ ˘ a ⅃ ⅄

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```
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
```

˜Ωƚυ ३

ƚυ ३	
match as-path	˥ AS_PATH ḣ
match community	˥ يخ E ḣ
match metric	˥ ḣ
match origin	˥ ⅃ ḣ
set community	˥ COMMUNITY
set metric	˥ ḣ
set metric-type	˥ صر

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ƚυ ३ ˥ ⅃

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37.1.35 set as-path prepend

˥ match ‡ ˥ AS_PATH ḣ˘ G في ƚυ ३ **set as-path prepend** Â ƚυ ३ **no** ˥ Â ƚυ ३ Θ ¥ Â

set as-path prepend *as-number*

no set as-path prepend [*as-number*]

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⅄	
as-number	ñ ˥ ώ AS_PATH AS ⅄

Â

ƚυ ३ في

G ƚυ ३ ˥ ˥ ˥ ñ AS_PATH ˘ У ⅃ Λυ ج as-path è

	╗ 15 ɜ as Â

ѡ 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*

˜Ωƚυ ३	**ƚυ ३**	
	match as-path	┐ AS_PATH ḣ
	match community	┐ ڂ ᴇ ḣ
	match metric	┐ ḣ
	match origin	┐ ┘ ḣ
	set community	╡ COMMUNITY
	set metric	╡ ḣ
	set metric-type	╡ ص

┘

ƚυ ३ ┐ ┘	┘	
	-	-

37.1.36 set comm-list delete

┐ match ‡ ╕ COMMUNITY_LIST è community ḣˇ ᴳ
في ƚυ ३ **set comm-list delete** Â ƚυ ३ **no** ╕ Â ƚυ ३ Θ ¥
Â

set comm-list *community-list-number* | *community-list-name* **delete**

no comm-list *community-list-number* | *community-list-name* **delete**

┘	┘	
	community-list-number	ڂ ᴇ " ┘ ñ ڂ ᴇ " ' ┘ ن ẗ 1-99 ڂ ᴇ " ' ┘ ن ẗ 100-199
	community-list-name	ڂ ᴇ " ┘ ڂ ᴇ " ┘ a 80

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hu ३ في Â

G hu ३ ٦ ˆ جم è˜ يخ E " Â

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```
Ruijie(config)# router bgp 100
Ruijie(config-router)# neighbor 172.16.233.33 remote-as 120
Ruijie(config-router)# neighbor 172.16.233.33 route-map ROUTEMAPIN in
Ruijie(config-router)# neighbor 172.16.233.33 route-map ROUTEMAPOUT out
Ruijie(config-router)# exit
Ruijie(config)# ip community-list 500 permit 100:10
Ruijie(config)# ip community-list 500 permit 100:20
Ruijie(config)# ip community-list 120 deny 100:50
Ruijie(config)# ip community-list 120 permit 100:.*
Ruijie(config)# route-map ROUTEMAPIN permit 10
Ruijie(config-route-map)# set comm-list 500 delete
Ruijie(config-route-map)# exit
Ruijie(config)# route-map ROUTEMAPOUT permit 10
Ruijie(config-route-map)# set comm-list 120 delete
```

˜Ωhu ३

hu ३	
ip community-list	يخ E "
match as-path	٦ AS_PATH ḣ
match community	٦ يخ E ḣ
match metric	٦ ḣ
match origin	٦ ٤ ḣ
set as-path prepend	ˆ AS_PATH
set comm-list delete	˜ ٦ يخ E ḣ
set local-preference	ˆ سم. "l

٤

37.1.37 set community

 า match ‡ COMMUNITY ḣ˘ G في ЮЗ **set community** Â ЮЗ **no** ˆ

set community {*community-number*[*community-number …*] **additive** | **none**}

no set community { *community-number*[*community-community-number …*] **additive** | **none**}

৭		
৭	*community-number*	يخ E ḣ Â й AA:NN(৭:2) ˘ У э ḣ˘ تن 0-4294967295˘ ЛЮ ЮЖ ḣ' internet˘ Internet يخ E˘ ¥ يخ E Â local-as˘ a ৭ ˆ AS ˘ ˘ a ৭ ȅ Â no-advertise˘ a ৭ ˙ ¡ У э BGP peers Â no-export˘ a ৭ EBGP peers Â
	additive	جه ৷৷ community ৯৯ Э ╗
	none	يخ E й

Â

ЮЗ في Â

G G ЮЗ า ˆ يخ E Â

ш R

```
Ruijie(config)# route-map SET_COMMUNITY 10 permit
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set community 109:10
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_COMMUNITY 20 permit
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set community no-export
```

match community

g **in**

G	G ƚυ ٦ ˆ يخ E Â

w R

```
Ruijie(config)# access-list 2 permit 192.168.78.0 255.255.255.0
Ruijie(config)# route-map MAP_NAME permit 10
Ruijie(config-route-map)# match ip-address 2
Ruijie(config-route-map)# set extcommunity rt 100:2
```

˝Ωƚυ ३

ƚυ ३	
match as-path	٦ AS_PATH ḣ
match community	٦ يخ E ḣ
match metric	٦ ḣ
match origin	٦ ٤ ḣ
set as-path prepend	ˆ AS_PATH
set metric	ˆ ḣ
set metric-type	ˆ صر

٤

ƚυ ३ ٦ ٤

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37.1.40 set ip dscp

٦ match ‡ DSCP ḣˇ G في ƚυ ३ **set ip dscp** Â ƚυ ३ **no** ˆ Â

set ip dscp *dscp_value*

no set ip dscp

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٨	
dscp_value	IP è IP DSCP ḣ

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ƚυ ३ في Â

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w R

ƪʊ ʒ	
route-map	ƪ ƺ في
match ip address	˥ " è فخ سم

set default interface

set ԧ ३ ५ ' WCMP ऽ ˘ WCMP ऽ

Â ह ฑ У Ю˘ ώ weight ḣ WCMP

ऽ Â

set ip next-hop ԧ ३ ʌ ৲Ռ ə IP ففسه˘ a 32 ə Â

ह ip address ʌ ╗ weight ḣ˘ ‡ ৲Ռ a 4 ə nexthop ففسه Â

ह˙ ! У ə next-hop ʌ weight ḣ˘ G **set** ԧ ३

╟┼˹ ѝ WCMP ऽ Â ह WCMP ऽ

Ю˘ ą ف ۶ weight nexthop ففسه˘ ὲ weight

ѝ 1 Â

G

У ᏼ ą ╗ ↑ ৲ 8 Â ɷ

३˘ $ ᏼ Ţ R ف Â ə ɤ Ȯ я ṇ ৳ ح

set default interface	↑ ^˘ è
set default interface	↑ ^˘ è
set interface	↑ ^
set ip default next-hop	↑ Ю У IP ˘فخ سم è
set ip precedence	↑ IP. ˝I ḣ

^

hu ३ ˥ ^	^	
	-	-

37.1.42 set ip next-hop verify-availability

Ю У IP فخ سم ˅ ˘ G في hu ३ **set ip next-hop verify-availability** Â hu ३ ŭ ה ל ך ל

```
Ruijie(config)#access-list 20 permit 172.16.0.0 0.0.255.255
Ruijie(config)#route-map load-balance permit 10
Ruijie(config-route-map)#match ip address 10
Ruijie(config-route-map)#set ip  next-hop 192.168.100.1
Ruijie(config)#route-map load-balance permit 20
Ruijie(config--route-map)#match ip address 20
Ruijie(config-route-map)#set ip  next-hop 172.16.100.1
Ruijie(config)#route-map load-balance permit 30
Ruijie(config-route-map)#set interface Null 0
```

ƒu ʒ	
route-map	ƒƒ ƒƒ
match ip address	˥ " è ƒƒ
set default interface	↑ ˄˘ è
set default interface	↑ ˄˘ è RuijieEE4 r4 0.48 ref66.84 492.1

	-	-

37.1.44 set ip tos

ˆ match ‡ IP TOS, G في ƪ ʒ **set ip tos** Â ƪ ʒ **no** ˘ tos ḣ˜ Â

set ip tos {*<0-15>* | *max-reliability* | *max-throughput* | *min-delay* | *min-monetary-cost* | *normal* }

no set ip tos {*<0-15>* | *max-reliability* | *max-throughput* | *min-delay* | *min-monetary-cost* | *normal* }

ˆ	
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ƪ ʒ في Â

G IP è TOS ḣ G IP a ˛ ˩ · Â

˛ ˆ IP ¸ Э TOS ḣ Â

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ЛƱЮ R ˘ ÿ ˆ fastEthernet 0/0 فخ سم й 192.168.217.68 tos й 4 Â

```
Ruijie(config)#access-list 1 permit 192.168.217.68 0.0.0.0
Ruijie(config)#route-map name
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set ip tos 4
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map name
```

ƪ ʒ	
match interface	ˆ ЮУ ˆ
match ip address	ˆ " è فخ سم
match ip next-hop	ˆ " è ЮУ فخ سم
match ip route-source	ˆ " è فخ سم
match metric	ˆ ḣ
match route-type	ˆ صر

set metric-type	ˇ صر
set tag	ˇ ḣ
set ip precedence	IP ˙ ˝I

[redacted]	-	-

37.1.45 set ipv6 next-hop verify-availability

ج Route-map Ю **set ipv6 next-hop verify-availability** Ъ ˅ G ˇ ¥ BFD IPv6 Л Ю У ˝ Â **no** Ъ ˅ ˇΩ ˥ Â

set ipv6 next-hop verify-availability [*global-ipv6-address* [*weight*] **bfd** *interface-type interface-number gateway*]

no set ipv6 next-hop verify-availability [*global-ipv6-address* [*weight*] **bfd** *interface-type interface-number gateway*]

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```
# G ˜Ω BFD ˘ BFD б 2002::2 ৻
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# route-map Example1 permit 10
Ruijie(config-route-map)# match 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 ˬ ৻ Â

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ƚυ ३ ˥ ৻

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10.4	ƚυ ३

37.1.46 set level

˥ match ‡ ώ ৺ ৺ ˘ص G في ƚυ ३ **set level** Â
ƚυ ३ **no** ˥ Â

set level {**level 1**| **level 2** | **level 1-2** | **stub-area** | **backbone**}

no set level

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G ৲ У ə local-preference ḣ˘ a ə local-preference ḣ Â
ƕ ३ ˥ ˀ ِسم ˝l Â

```
Ruijie(config)# route-map SET_PREF permit 10
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set local-preference 6800
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_PREF permit 20
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set local-preference 50
```

ˇΩƕ ३

ƕ ३	
match as-path	˥ AS_PATH ḣ
match metric	˥ ḣ
match origin	˥ ৴ ḣ
set as-path prepend	ˀ AS_PATH
set metric	ˀ ḣ
set metric-type	ˀ صر

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ƕ ३ ˥ ৴

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37.1.48 set metric

˥ match ‡ ḣ˘ G في ƕ ३ **set metric** Â ƕ ३ **no** ˀ Â

set metric [+ *metric-value* | **-** *metric-value* | *metric-value*]

no set metric

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+	╗ˆ جه ৷৷ metric Э ╗˜
-	ˇ ˆ جه ৷৷ metric Э ˇ ˜
metric-value	ˆ

a ৷ ˜ ˆ ḣ a У Â

Ьυ ʒ ف Â

ḣ¸ ! ˇ يج ˇ سه Â ὲ è
set metric ȁ Лυ ৷ ị + Ľ ị - Ľ metric ɔ ৷ э ˜ ЭЮ ḣ Â
ɣ RIP ˜ ˆ ὲ ˜ ˇ metric ˇ ৷ تن й 1-16 Â
ǫ ৷ Лυ ÿ У э ˆ ˆ ৷ У э ╗ Â ৷ Лυ OSPF
ھ ˆ ৷ ˆ ˆ RIP ھ è˘ ≠ ৷ Лυ RIP ھ ˆ ৷
ˆ ˆ OSPF ھ è Â ц ˆ ৷ Лυ جه IP ˜ ʒ Â
جه ˆ è˘ ف route maps˜ ˇ ч э ھ ʒ
цˆ ˇ ⁸ Â
У э ف ‡ è˘ ৷ Лυ 1 э э **match** ЬυΩ 1 э э **set** ЬυΩ Â
match ЬυΩ˘ ‡ ˥ ’ **set** ЬυΩ˘ ‡ a ṁ ị ɔ Â

ЛЬЮ R ˘ OSPF ˜ ˆ RIP ˘ ˆ ˥ ḣ
й 40 Â

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set metric 40
```

ˇΩЬυ ʒ

ЬυΩ	
match interface	˥ ЮУ ৷
match ip address	˥ " è فخ سه
match ip next-hop	˥ " è ЮУ فخ سه
match ip route-source	˥ " è فخ سه
match metric	˥ ḣ
match route-type	˥ صر
match tag	˥ ḣ
set metric-type	ˆ صر

match interface	˥ Ю У ʌ
match ip address	˥ " è فخ سم
match ip next-hop	˥ " è Ю У فخ سم
match ip route-source	˥ " è فخ سم
match metric	˥ ḣ
match route-type	˥ صر
match tag	˥ ḣ
set metric	ˡ ḣ
set tag	ˡ ḣ

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ƚυ ʒ ˥ ʌ

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37.1.50 set next-hop

˥ match ‡ ə Ю У IP فخ سم˘ G في ƚυ ʒ **set next-hop** Â
ƚυ ʒ **no** ˡ Â ƚυ ʒ Θ ɣ Â

set next-hop *ip-address*

no set next-hop *ip-address*

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ip-address	Ю У IP فخ سم

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ƚυ ʒ في Â

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ə ˩ Лυ ÿ У э ˡ ˡ ʌ У э ˥˥ Â ˩ Лυ OSPF
سم ˡ ʌ ˆ ˡ RIP سم è˘ ≠ ˩ Лυ RIP سم ˡ ʌ
ˆ ˡ OSPF سم è Â ц ˡ ˩ Лυ جه IP ˜ ʒ Â
جه ˡ è˘ في route maps˜ ˘ ч э سم ʒ
цˡ ˘ ⁸ Â
У э في ‡ è˘ ˩ Лυ 1 э э **match** ƚυ ʒ Ω 1 э э **set** ƚυ ʒ Â
match ƚυ ʒ˘ ‡ ˥ ’ **set** ƚυ ʒ˘ ‡ a ṁ˙ ¡ ɔ Â

ƛƚƟ R ˘ ٦ 8 ˝ ƚƟ У ѝ 192.168.1.2 Â

w R

```
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ip address 1
Ruijie(config-route-map)# set next-hop 192.168.1.2
```

ˆΩƚυ ३

ƚυ ३	
match interface	Ģ ƚƟ У ٨
match ip address	Ģ " è فخ سم
match ip next-hop	Ģ " è ƚƟ У فخ سم
match ip route-source	Ģ " è فخ سم
match metric	Ģ ḣ
match route-type	Ģ صر
match tag	Ģ ḣ
set metric-type	ˆ صر
set tag	ˆ ḣ

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ƚυ ३ ٦ ٨

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37.1.51 set origin

Ģ match ‡ ٤ ˘ G فغي ƚυ ३ **set origin** Â ƚυ ३ **no** ˆ Â

set origin {**egp** | **igp** | **incomplete**}

no set origin

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egp	EGP
igp	سم IGP
incomplete	a ف

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hu ३	في Â
G	hu ३ ٦ ↑ ٤ Â
w R	Ruijie(config)# **route-map** *SET_ORIG* Ruijie(config-route-map)# **match as** Ruijie(config-route-map)# **set orig** Ruijie(config-route-map)# **exit** Ruijie(config)# **route-map** *SET_ORIG* Ruijie(config-route-map)# **match as** Ruijie(config-route-map)# **set orig**

	hu ३
˜Ωhu ३	**match as-path**
	match metric
	match origin
	set as-path prepend
	set metric
	set local-preference

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hu ३ ٦ ٤ ce		

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G ƕ ३ ৲ ¥ ĭ Â ƕ ३˘ ৷ Â

ЛƕЮ R ˘ OSPF ˜ ĭ RIP ˘ ĭ й 100 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)# set tag 100
```

ˇΩƕ ३

ƕ ३	
match interface	┐ ЮУ ৷
match ip address	┐ " è فخ سم
match ip next-hop	┐ " è ЮУ فخ سم
match ip route-source	┐ " è فخ سم
match metric	┐ ḣ
match route-type	┐ صر
match tag	┐ ḣ
set metric	ĭ ḣ
set metric-type	ĭ صر

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ƕ ३ ˥ ৷

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37.1.54 set weight

┐ match ‡ BGP ḣ˘ G في ƕ ३ **set weight** Â ƕ ३ **no** ĭ Â

set weight *number*

no set weight

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number	ḣ Â ش' 0-65535

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Ъ ϡ في Â

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Ъ ϡ ৻ ɣ g BGP ḣ Â
ąЮ˘ ÿ ˆ ˘ neighbor weight ˆ ḣ ' ـسم
ɥ ḣ ش 32768 Â
৻Л Ъ ϡ ḣ g BGP ˆ ৻ ḣ Â

ш R

ЛЮ R ˘ BGP جم in ৻Э ḣ У э R ˘ ÿ 1.1.1.1
ˆ ḣ й 100 Â

```
Ruijie(config)# router bgp 1
Ruijie(config-router)# neighbor 1.1.1.1 route-map nei-rmap-in in
Ruijie(config-router)# exit
Ruijie(config)# route-map nei-rmap-in permit 10
Ruijie(config-route-map)# set weight 100
```

ˇΩЪ ϡ

Ъ ϡ	
match as-path	˥ AS_PATH ḣ
match community	˥ يخ E ḣ
match metric	˥ ḣ
match origin	˥ ৻ ḣ
set community	ˆ COMMUNITY
set metric	ˆ ḣ
set metric-type	ˆ صر

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Ъ ϡ ˥ ৻

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37.2

˜ ˇΩ Ʊ ३

37.2.10show ip community-list

G Ʊ ३ ॆ E " ॅ Â

show ip community-list [*community-list-number*|*community-list-name*]

37.2.2 show ip prefix-list

ɱ " ǝ ɱ " ǝ ˘ G **show ip prefix-list** łυ ३ Â

show ip prefix-list [*prefix-name*]

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	protocol	ˆ ˩ ˜ ˜ ˇΩ ' **connected**, **static**' ˜ ˘ G ŁO ˇΩ ' **bgp**, **isis**, **ospf**, **rip**

E2	صر Â ˩ ˪ ˙h ˙й˙ E1˙ OSPF صر˝ ’ E2˙ OSPF صر˘ ’ N1˙ OSPF NSSA صر 1’ N2˙ OSPF NSSA صر 2’ IA˙ OSPF ˙ˆ ˙ˆ ’ su˙ IS-IS ’ L1˙ IS-IS 1 ’ L2˙ IS-IS 2 ’ ia˙ IS-IS ˙ˆ ˙ˆ Â
20.0.0.0/8	فخ سم Ω
[1/0]	˚ ˙h
Via 20.0.0.1	ЮУ IP فخ سم
00:00:06	˜
VLAN 1	ЮУ ˩ ˪

R 2˙ ЛЪЮ й **show ip route** *network* Ъ ʒ ˙

```
Ruijie# show ip route 30.0.0.0
Distance 110, metrif00
```

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łu ३ ৭ ४	४	
	-	-

37.2.4 show ipv6 prefix-list

IPv6 ŋń " ǫ ŋń " ǫ ˘ G **show ipv6 prefix-list** łu ३ Â

show ipv6 prefix-list [*prefix-name*]

४	४	
	prefix-name	IPv6

show ipv6 route [[*network/prefix-length* | **summary** | **protocol**]]

৭	
network/prefix-length	ˆ ৲ ˜ ৷ ˆ ৭
summary	ˆ ৲ ˜ ɱ ipv6 ˆ ৭
protocol	ˆ ৲ ˜ ˜ ˜Ω ' **connected**, **static**' ˜ ˘ G Ю ˜Ω ' **bgp**, **isis**, **ospf**, **rip**

ƚυ ३ à ŏ à ৭ à ˜ à ف

G ƚυ ३ ৷ Ɲυ ˘ ৯ ৭

ƛυЮ ѝ **show ipv6 route** ƚυ ३ '

```
Ruijie(config)# show ipv6 route
IPv6 routing table name is Default(0) global scope - 7 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
O - OSPF intra area, OI - OSPF inter area,  OE1 - OSPF external type
1, OE2 - OSPF external type 2
 ON1 - OSPF NSSA external type 1, ON2 - OSPF NSSA external type 2
      [*] - NOT in hardware forwarding table
L     ::1/128  via Loopback, local host
C     10::/64  via Loopback 1, directly connected
L     10::1/128  via Loopback 1, local host
```

W R

O	˜ Â ˩ ˛ ḣ ẗ' C' ' L' ˢ ˘ ' S' ' R' RIP ' B' BGP ' O' OSPF ' ï' IS-IS Â
E2	ˢ Â ˩ ˛ ḣ ẗ' E1' OSPF ˝ ' E2' OSPF ˇ ' N1' OSPF NSSA 1' N2' OSPF NSSA 2' IA' OSPF ˢ ˚ ' su' IS-IS ' L1' IS-IS 1 ' L2' IS-IS 2 ' ia' IS-IS ˢ ˚ Â
20::/64	ˢ ˚ Ω
[1/0]	˚ ḣ
Via 10::4	ЮУ IP ˢ ˚
00:00:06	˜
VLAN 1	ЮУ ˩ ˛

ˇΩƚυ ३	ƚυ ३	
	ipv6 route	**ipv6**

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ƚυ ३ ˥ ˛	˛	
	10.1	У ώ ƚυ ३

37.2.6 show route-map

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show route-map [*route-map-name*]

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route-map-name	^ ⌋ ~ ৷ في ৲

في ৲ Â

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G في ⌋ ˘ ˚ في ৲ ˘ ‡ ৷ في ৲ Â

```
Ruijie# show route-map
route-map AAA, permit, sequence 10
Match clauses:
ip address 2
Set clauses:
metric 10
```

W R

route-map	في ⌋
Permit	في ↑ permit Ω
sequence 10	في ৷
Match clauses	‡ Â

38

38.1

38.1.1 ip local policy route-map

ˆ G Ĥυ ३ **ip local policy route-map** Â Ĥυ ३ **no** ˜Ω Â

ip local policy route-map *route-map*

no ip local policy route-map

৭	
route-map	في ৷ Â

˜Ω Â

Ĥυ ३ Â

G

Ĥυ ३ ৷ ৷ ৷ IP ˆ ৷ IP a ৷ Ĥυ ३ ⁸ Â

ˆ G في ˜ ৩ ... في Â У ৩ في

ˆ ৩ ⊠ 1 ৩ ৩ ٦ ‡ ∩ ৩ Â У ৩ ৷

৷ ˆ ৷ ↑ ˆ a ৷ في ˙ ! ↑

৷ ˆ ৷ في è ৩ ↑ è ⊠

৩ Â

set interface a ⊠ , ⊠ ⊠ **set interface** ৩ ৷ˆ ৷

⊠ м ` Â

ш R

ЛЫЮ R è˘ G Лυ 192.168.217.10 й ৷ ÿ **serial** *2/0*

৷ ৷ Â

R 1' ⊠ ٦ IP ACL

```
Ruijie(config)#access-list 1 permit 192.168.217.10
```

R 2' ⊠ في

```
Ruijie(config)#route-map lab1 permit 10
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set interface serial 2/0
```

```
Ruijie(config-route-map)#exit
R' '        ـــ   ٨
Ruijie(config)#ip local policy route-map lab1
```

ƪ ƻ	
access-list	ƪƻ " ‡
route-map	ƪƻ في
set vrf	ƪƻ IP VRF R
set ip next-hop	ƪƻ Ю У
set ip default next-hop	ƪƻ Ю У
set interface	ƪƻ ٨
set default interface	ƪƻ ٨
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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ƪ ƻ ٦ ƻ	
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38.1.2 ip policy

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جھ غي è **set ip next-hop**

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38.1.3 ip policy route-map

جم У э ^ ˘ G Ъ ʒ **ip policy route-map**˘ G Ъ ʒ **no** ˜Ω ^ Э Â

ip policy route-map *route-map*

no ip policy route-map

^	
route-map	ف ⌋ Â

˜Ω Â	
Ъ ʒ	^ Â
G	جم ^ Э ˘ ⌋ ^ ⌉ ˘ ¥ ^ ⌋ ⌊ ↑ a¸ Â ˘ G ف˜ з … ف Â У э ف ˘ э ₩ ⓐ 1 э э ˥ ‡ Ω ɔ Â У э ^ ⌋˘ ^ ⌉ ↑ ˘ a ⌋ ف˙ ! ↑ ⌊ ˘ ⌋ ف è э ↑ è ₩ ɔ Â
	Э У э ^ ⌋ У э ف˜ جم ⌋ У э ^ Э ف˜ ⌋ ف ˝I ⌋ ف Â

ЛЪЮ R è˘ Л ^ FastEthernet 0/0 ⌉ ˘ سم فخ й 10.0.0.1˜ ‡ Ю У й 196.168.4.6˜ فخ سم й 20.0.0.1 ‡ Ю У й 196.168.5.6˜ ї ‡ ⌊ Â

R 1' ˥ IP

ш R

```
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 3' جم ٧ Э في
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map lab1
Ruijie(config-if)#exit
```

Ωku ʒ

ku ʒ	
access-list	ku " ‡ Â
route-map	ku في Â
set vrf	ku IP VRF R
set ip next-hop	ku Ю У
set ip default next-hop	ku Ю У
set interface	ku ٧
set default interface	ku ٧
set ip tos	IP è TOS
set ip dscp	IP DSCP
set ip precedence	IP è . "I
match ip address	‡
match length	٦

٧

ku ʒ ٦ ٧

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38.1.4 ipv6 local policy route-map

٧ ٧ ˘ G ɔ ku ʒ Â ٧ Λu ku ʒ no Ω
ɔɯ ٧ 8 ll Â

ipv6 local policy route-map *route-map-name*

no ipv6 local policy route-map

٧	٧	

	route-map-name	¥ ⅿ في ˅ ˅ **route-map** ƕ ३ Â
	no	ⅿ ˅ a ˅ ⁸ Â

˜Ω ⅿ ˥ Â

ƕ ३ ώ Â

ƕ ३ ˅ ⅿ ˅ ˅ ˅ IPv6 ˆ ¥ ping ˜
˅ ˅ ⅿ IPv6 a ˅ ƕ ३ ⁸ Â
˅ G في˜ з … في Â У э
G في ˅ э ⅿ ⅿ 1 э э ˥ ‡ ∩ ɔ Â У э
˄ ˅˜ ˄ ˅ ↑ ˅ a ˅ في˙ !
↑ ˅ ˅ في è э ↑
è ⅿ ɔ Â

set ipv6 precedence	IPv6 ˙ ˝I ḣ Â
show ipv6 policy	ɱ́ ɑ Â
show route-map	ɱ́ غي ɑ Â

ɅI Â

Ъ ʒ ˥ ɅI		
	ЛI	
	10.4	Ъ ʒ

38.1.5 ipv6 policy

set next-hop ŋ̈ м ` كا ˘ جه ѿ ЮG ipv6 policy .

ipv6 policy {**load-balance** | **redundance**}

no ipv6 policy

set default interface	ЮУ ٨ Â
set interface	ЮУ ٨ Â
set ipv6 default next-hop	٦ ЮУ فخسم Â
set ipv6 next-hop	٦ ЮУ فخسم Â
show ipv6 policy	ɱ ɑ Â

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S3760 " a ⅈ Â Ĥu ʒ Â

Ĥu ʒ ٦ ٨

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10.4	Ĥu ʒ

38.1.6 ipv6 policy route-map

جم У э ٨ Ů ˘ G ٨ Ĥu ʒ ipv6 policy route-map Â Ĥu ʒ no ˜Ω Â

ipv6 policy route-map *route-map-name*

no ipv6 policy route-map

٨

٨	
route-map-name	¥ سم في ˘ ٨ **route-map** Ĥu ʒ Â

٨ Ю ˙ ! ˥ Â

Ĥu ʒ

٨ Â

G

جم ٨ Э ˘ ٨ ٨ ˆ ˆ ˘
¥ ٨ ٦ ٨ ˆ a¸ Â
˘ G ˜في ʒ ... في Â У э
في ˘ э Ĥ ɷ 1 э э ٦ ‡ Ω ɔ Â У э
٨ ˆ ˜٨ ٨ ˆ ˘ a ٨ ˙في !
ˆ ٦ ˘ ٨ في è э ˆ
è Ĥ ɔ

Э У э ٨ ٨ У э ˜في جم ٨ У э ٨ Э	˜في ٨ في ˝I ɱ في Â

ɯ R

R 1' ٨ Â ¥ ٨ GigabitEthernet 1/38 Э ˆ ˘
ÿ 2003:1000::10/80 ٨ 2001:100::/64 ˘ ٦ AAA IPV6 ACL

ৰ 2003:1001::2 Â

ৰ 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 ѝ ɷ ɱ ˘ ⅃ Ɲ G ƕ ३ Â

ш R

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```
Ruijie#show ip policy
Banlance Mode: redundance
Interface           Route map
local               test
FastEthernet 0/0    test
```

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ƕ ३	
ip policy route-map	⅃ Ɜ Â
ip local policy route-map	⅃ Â

⅃

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⅃	
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38.2.2 show ipv6 policy

ɱ ɷ ⅃ ɷ IPv6 ˘ ⅃ Ɲ show ipv6 policy ƕ ३ Â

show ipv6 policy [*route-map-name*]

⅃

⅃	
route-map-name	ل في

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R 1: ɷ ɱ Ɜ Â

```
Ruijie#show ipv6 policy
```

```
Banlance Mode: redundance
Interface                Route map
VLAN 1                   RM_for_Vlan_1
VLAN 2                   RM_for_Vlan_2
```

Banlance Mode	ᴝᴝ Â
Interface	ᴝ ᴝ ᴝ Â
Route map	ᴝ ᴝ ᴝ ᴝ Â

ᴚᴜ ᴝ	
show route-map	ᴝᴝ ᴝ Â

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39 IGMP

39.1

39.1.1 ip igmp access-group

Ĥu ʒ ج ٨ Э ⁸ Â ج Ĥu ʒ ɱ́ no ˩ Л˩ ˩ ╗ Â

ip igmp access-group *access-list*

no ip igmp access-group

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access-list	⁸ " ˩ ˘ تن<1-199>|<1300-2699> | WORD

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Ĥu ʒ ٨

ў ج У э è У ҷ ٨ è ˩ Л ╗ ώ У ҷ ˘ ҷ ˩ Л **ip igmp access-group** ⁸ Â

G	ج ŭ IGMPv3 ˘ ⁸ Ĥu ʒ ˜Ω ACL Â ˺ MLD report ą ˆ S1,S2,S3…Sn,G˜ ˘ Ĥu ʒ (0,G) ą G ACL ˥ Â Л G Ĥu ʒ˘ ACL У (0, G)˘ ˩ Л ˆ S1,S2,S3…Sn,G˜ Â

ш R

R 1' ج Ю R è˘ ў ج ٨ Eth0 ˩ ╗ 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
```

R 2' ج Ю R è˘ ج ٨ Eth0 ⁸ " ˜Ω ACL˘ ٨ ˩ فخ سم й 1.1.1.1, فخ سم й 233.3.3.3 igmp ˜ Â

```
Ruijie# configure terminal
Ruijie(config)# ip access-list extended ext_acl
Ruijie(config-ext-nacl)# permit ip host 0.0.0.0 host 233.3.3.3
```

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

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39.1.2 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	ƪ Ɜ ` . R Λ

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39.1.4 ip igmp last-member-query-count

last-member-query-count ĵ leave ⅄˘ ˬ ٤ Â
ħu ३ **last-member-query-count** ḣ Â ᴳ no ħu ३ ḣ Â

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

no ip igmp last-member-query-count

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	number	⅄ ˜ ḣ , تن ẗ <2-7> Â

last member query count ḣ ẗ 2 Â

ħu ३ ٨ Â

ᴳ ٨ ĵ У ə IGMPv2 ˘ **ip igmp last-member-query-count**
ˆ ╗ Э У ` ˘ جھ ق̈ ĵ ˜ ˆ ˘ جھ ٨ĵ
˜ ə Â

ᴡ ᴿ ⅄ ˜ ḣ ẗ 3 Â

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

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⅄ .6 196.0 1 mh531.54 292.1 -164.2262[<281C1D0.72T

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

no ip igmp last-member-query-interval

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interval	ḣ تن й <1-255>ˇ ´ Æ й 0.1s

1s

Ĥu ३ ৭

G ৭ ↑ У э IGMPv2 ˇ **ip igmp last-member-query-count** ˝ ╗ Э У ` ˇ جھ ą̈ ↑ ˘ ˆ ˇ جھ ৭̄↑ ˘ ৲ Â

ш R ЛЫЮ R ¢ ৲ 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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Ĥu ३ ৲ ৶	
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39.1.6 ip igmp limit ( )

G Ĥu ३ جھ ৭ igmp states э Â ৶ ˇ G no Â

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

no ip igmp limit

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number	IGMP ĭ э ˇ تن Ω ٤ E ˇΩ Â

except	ˆ ˩ ˜ ˠ access-list è a ˺ б ˘ a ˩ limit э ˢ Â
access-list	ˆ ˩ ˜ " ˩ Â

ḣ ˝ 1024 Â

Ԧ ʒ ˺ Â

ˠ

ˠ Ԧ ʒ ˝ IGMP ˜ ˢ˘ ˜ ج ˢ ˆ a˚
IGMP ˘ a Â
ˠ Ԧ ʒ ˩ Л э ˺ ˘ ˺ Ґ ˝ ˩ Л ˘ ˜
ɷ ˺ ˝ Â

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ЛЮ ᴿ ɷ ˢ э ˝ 300˚

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

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39.1.7 ip igmp limit ( )

ˠ Ԧ ʒ ˝ ˩ Л igmp э Â ˩ ˘ ˠ no Â

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

no ip igmp limit *number* [*except access-list*]

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˺	
number	IGMP ˇ э ˘ ˢ Ґ ˊ ᴱ ˜Ω Â
except	ˆ ˩ ˜ ˠ access-list è a ˺ б ˘ a ˩ limit э ˢ Â
access-list	ˆ ˩ ˜ " ˩ Â

Ḣ й 65536

Ъu ३ ŏ

G

G Ъu ३ ŏ IGMP 8 ˘ ˜ 8 ǰ a
˚ IGMP ˘ a ˥ Â
G Ъu ३ ˩ Л э ˥ ˘ ˥ Π ŏ ˩ Л ˘ ˜
ɷ ˥ ŏ Â

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ЛЪЮ R ɷ 8 э й 300
Ruijie˜ config˜ # **ip igmp limit** *300*

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39.1.8 ip igmp mroute-proxy

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ip igmp mroute-proxy *interfname*

no ip igmp mroute-proxy

˥

˥	
interfname	Э ˥ ˩

˥ Â

Ъu ३ ˥ Â

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Э ˥ й proxy-service ˥ ˩˘ ˥ ˩ Л ˥ ȅ ˜ ˥
gmp ˜ Â

w R ˥ mroute-proxy ˥

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

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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 ə ƕ ३ ৲ IGMPv2 Â ə ƕ ३ ⁸ ह ॗ ह ḿ ः ह Â

w R

R 1' ह ৲ Ethernet 0 ˘ ः ѝ 20s Â

```
Ruijie(config-if)# ip igmp query-max-response-time 20
```

R 2' ह ৲ Ethernet 0 ˘ ः ѝ ḣ Â

```
Ruijie(config-if)# no ip igmp query-max-response-time
```

	255s
Ъu ३	৲
G	Ъu ३ IGMPv2 Â ą Ю˜ ч˝ **ip igmp query-interval** ˘ ج Ruijie Ю ḣ ѝ 255s Â ج ą̈˘ ˆ ˘ ѝ Â

w R	R 1' ج ৲ Ethernet 0 ˘ ὲ ⅄ 200s Â
	`Ruijie(config-if)# ip igmp query-timeout 200`
	R 2' ج ৲ Ethernet 0 ˘ ὲ ⅄ ѝ ḣ Â
	`Ruijie(config-if)# no ip igmp query-timeout`

ЛuЮ R Ő ৲ ĥ й З'

w R

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

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39.1.14 ip igmp ssm-map enable

ƪu ३ ॶ ŏ ЮŬ ╟ **igmp ssm-map** ╥ ˘ ƪu ३ й'

ip igmp ssm-map enable

no ip igmp ssm-map enable

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39.1.15 ip igmp ssm-map static

Ъu ३ ج ώ Ю ssm-map ˘ Ъu ३ й'

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

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

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٩	
access-list	Acl ৲ ĥ تن й <1-99> |<1300-1999> |WORD
a.b.c.d	´ فخ سم

فخ سم

Ъu ३ ώ

G Ъu ३ б **ip igmp ssm-map enable** ٨ G ˘ Ъu ३ ٨˘ ĵ v3 ЛuЮ Э è Â

w R ACL й 11 Э فخ سم 192.168.2.2˝ Ъu ३ й'

```
Ruijie(config)# ip igmp ssm-map static 11 192.168.2.2.
```

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39.1.16 ip igmp static-group

Ъu ३ Ц ˝Ω ٩ ╗ У э ˘ ج Ъu ३ ٨ ╗ no ৲ Â

ip igmp static-group *group-address*

no ip igmp static-group *group-address*

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group-address	৭ Э ╗ فذ سم Â

╗˙ ¡ У э Â

ƒu ३ ৭ Â

G ƒu ३ Ц ˜Ω ৭ ╗ У э ˚ ˘ ৭ ╗ У э ˚
G Â

ج Ю R è˘ Ц ৭ Eth0 ╗ ώ 236.6.6.6

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G ¥ igmp ^˘ ^˘ igmp˛ ŭ ╟ Â

w R

ЛuЮ R ⓪ ^ й 2

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

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39.2

39.2.1 clear ip igmp group

Ĥu ३ IGMP è ! ╟ ˘ ə Â **clear ip igmp group** [*group-address* |

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^	
	˜ ə Â
group-address	32 э Æ IP ⁄ D ⁄ 8 Æ У ˘ Лб 8 ˘ ⁄ Â
interface-type	˜Ω ^ ص Â
interface-number	˜Ω ^ ^ Â

Ĥu ३ Â

G IGMP ↑ ŭ У э " ˘ " ⓪ й ε è ŭ ╗ ώ ف ⓪ ’

≠ ╗ ώ э ˘ ≠ ¸ " ج э " è Â ÿ IGMP è╕ ώ ˘ ┘ Лυ a ৲ **clear ip igmp group** ħυ ३ Â

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╕ ώ '

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

Ωħυ ३

ħυ ३	
show ip igmp groups	-
show ip igmp interface	-

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39.2.2 clear ip igmp interface

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clear ip igmp interface *ifname*

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ifname	৲ ৶
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39.2.3 show ip igmp groups

G ƪ ʒ б Ω ÿ IGMP ˜ ˆ ą Â

show ip igmp groups [*group-address* | *interface-type interface-number*] [*detail*]

ʌ	ʌ	
	group-address	32 ɜ Æ IP ِفخسم D ّفخسم 8 Æ У ˘ Л ʊ 8 ˘ ʒ Â
	interface-type	˜Ω ʌ صر Â
	interface-number	˜Ω ʌ ʌ Â
	detail	ą Â
		ώ ą Â

ƪ ʒ	Â
G	G ƪ ʒ a ʌ فخسم à ʌ صΩ ʌ Э ą Â فخسم ą Â

ʍ R

```
R 1' Ю ą '
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
R 2' Ю У ɜ ą '
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
```

相关命令

设置	
-	-

说明

```
SSM Mapping : Enabled
Database    : Static mappings configured
R 2'        233.3.3.3          ع
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
```

相关命令

命令	
-	-

说明

配置指令说明

说明	
-	-

40 PIM-DM

40.1 PIM-DM

40.1.1 ip pim dense-mode

ह ग्ध ฺ Ɔ ŭ PIM-DM G **ip pim dense-mode** ƪ ३ Â G ƪ ३ no ह ग्ध ฺ Ɔ PIM-DM Â

ip pim dense-mode

no ip pim dense-mode

ฺ	ฺ PIM-DMPIM-DM · ~ > `ÍC›q•±x"'	
	๊ 6 · ~/U*ü PIM-DM Â	
ƪ ३	PIM-DM ฺ	

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40.1.2 ip pim neighbor-filter

ˆ Э ˘ G **ip pim neighbor-filter** ĥu ३ Â ¢ ˘ ˆ " ˘ ‡ PIM-DM a˚ б ˆ Peering˜ ˜Ω ˘ è б ˜Ω Â

ĥu ३ no ˆ Л ™ Â

ip pim neighbor-filter *access-list*

no ip pim neighbor-filter *access-list*

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	access-list	access-list˙ acl ن й 1-99˙ ≠ ĥu ˆ acl

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40.1.3 ip pim override-interval

hello override-interval ḣ˘ G **ip pim override-interval** ƫυ ३ Â

ƫυ ३ no ৶ ƱƱυ G hello override-interval ḣ Â

ip pim override-interval *interval-milliseconds*

no ip pim override-interval

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interval-milliseconds	৶ ḣ ت<1-65535>˘ ´ Æ ȕ

2500

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G ৸

40.1.4 ip pim query-interval

hello interval ḣ˘ G **ip pim query-interval** ħυ ३ Â

ħυ ३ no ৲ ΛΜυ G hello interval ḣ Â

ip pim query-interval *interval-seconds*

no ip pim query-interval

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interval-seconds	৲ ḣ ن ϋ <1-65535>˘ ´ Æ ϋ

30 Â

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G ϖ hello interval˘ hello holdtime ḣ¸ ϋ 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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40.1.5 ip pim propagation-delay

hello propagation-delay ḣ˘ G **ip pim propagation-delay** ħυ ३ Â

ħυ ३ no ৲ ΛΜυ G 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>ˇ ´ Æ ѝ

500

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G ৲ propagation-delay. ৲ · Â

Ю R ৲ propagation-delay ѝ 600 Â

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```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim propagation-delay 600
```

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40.1.6 ip pim state-refresh disable

ج ৲ Э ∩ ৲ PIM-DM 9 ˘ G **ip pim state-refresh disable** ħu ३ Â ħu ३ no PIM-DM 9 ╗ Â

ip pim state-refresh disable

no ip pim state-refresh disable

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ip pim state-refresh disable Ħυ ३ '

ॅΩ 9 ℼ ৲ ॅ PIM-DM ৲

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a ॅΩ 9 ℼ Â

ЛЪЮ R PIM-DM 9 Â

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```
Ruijie# configure terminal
Ruijie(config)# ip pim state-refresh disable
```

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40.1.7 ip pim state-refresh origination-interval

PIM-DM 9 ৲ ˇ G **ip pim state-refresh origination-interval** Ħυ ३ Â ৲ ч э 9 ३ ৲ Â Ħυ ३ no ৲ ЛЪ G ৲ ѝ ḣ Â

ip pim state-refresh origination-interval *interval-seconds*

no ip pim state-refresh origination-interval

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৸	
interval-seconds	৲ ḣ تن<1-100>ˇ ´ Æ ѝ

60

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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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40.2 PIM-DM

40.2.1 show ip pim dense-mode interface

PIM-DM **aB6ЖЕ4ОÄ** ˘ G

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ЛЪЮй **ip pim dense-mode interface** ħu ३ '

```
Ruijie# B.6w ip pim dense-mode interface
    Interface        VIFIndex  Ver/   Nbr
```

ᴡ R

VIF Index	VIF ˆ ID˜
Ver/Mode	PIM /
Nbr Count	PIM-DM ৲

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show ip pim dense-mode neighbor	PIM-DM ৲ ৲

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.	.

40.2.2 show ip pim dense-mode mroute

PIM-DM ৲ ˘ G show ip pim dense-mode mroute ƪu ३ Â

show ip pim dense-mode mroute [*A.B.C.D A.B.C.D*] [*summary*]

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A.B.C.D A.B.C.D	ফ্র ফ্র ∩ ফ্র ফ্র
summary	৲

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```
Downstream IF List:
FastEthernet 0/45:
Downstream State: NoInfo
Assert State: Loser, AT:170
```

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40.2.3 show ip pim dense-mode neighbor

PIM-DM ə ˘ G **show ip pim dense-mode neighbor** ƪ ʒ Â

show ip pim dense-mode neighbor [*interface-type interface-number*]

˥	
interface-type interface-number	˥ ص ∩ ˥ ˥

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ЛЫЮ й **show ip pim dense-mode neighbor** ƪ ʒ '

```
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 ˥

Uptime/Expires	Л৬ ৭ ৯
Ver	PIM

Metric	
Pref	. ”I

```
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
```

[illegible] SeBB ã)gC, S dáAeC,R–T7x D$ bà…!AeAv&S v

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dense mode_trace

ħ-T/CP 0 dTf0 Tc 0.012 0 Td<[<1879>6<1B5B34B3417505B5>6<1643>TJ/TT0 1 Tf05988 0 Td<

ข้อมูลใช้งาน

ใช้งาน	
show ip pim dense-mode track	PIM ตาม

ค่าเริ่มต้น

ใช้งานเป็นค่าเริ่มต้น

ค่าเริ่มต้น	
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41 PIM-SM

41.1 PIM-SM

41.1.1 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

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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

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```
Ruijie# clear ip pim sparse-mode bsr rp-set *
```

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41.1.4 clear ip pim sparse-mode track

clear ip pim sparse-mode track

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```
Ruijie# clear ip pim sparse-mode track
```

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show ip pim sparse-mode track	-

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41.1.5 ip multicast-routing

ip multicast-routing

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ip pim accept-crp-with-null-group

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ج BSR Э a prefix-count ѝ 0 C-RP-ADV Â

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G ج Ạ BSR Э ƪ ʒ˘ Ạ BSR ѝ BSR ˘ prefix-count ѝ 0 C-RP-ADV ˘ з ѝ C-RP Â

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```
Ruijie# configure terminal
Ruijie(config)# ip pim accept-crp-with-null-group
```

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41.1.9 ip pim accept-register list

ip pim accept-register list *access-list*

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access-list	access-listʹ تن<100˘ 199> ǎ تن <2000˘ 2699>˘ ƪ ʃ acl

˘ a ƪ ʒ˘ ج RP Э a 8 ˝Ạ فخ سم فخ سم

ƪ ʒ ώ

G ج RP Э˘ 8 فخ سم فخ سم ˝Ạ

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```
Ruijie (config)# ip pim accept-register list 100
```

```
Ruijie (config)# access-list 100 permit ip 192.168.195.0 0.0.0.255
225.1.1.1 0.0.0.255
```

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access-list	-

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41.1.10 ip pim bsr-candidate

ip pim bsr-candidate *interface-type interface-number* [*hash-mask-length*] [*priority-value*]

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ȝ	
interface-type interface-number	ȝ
hash-mask-length	ȝ ˘ ȝ ḣ تن ȋ <0-32>˘ ȋ RP ɯ ⁸ HASH ˘ ḣ 10
priority-value	ȝ ˘ ȝ ḣ تن ȋ <0-255>˘ Ạ BSR . ˝I ȝ ˘ ḣ 64

˘ a ƪ ȝ˘ . a Ạ BSR

ƪ ȝ ȫ

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ج У э PIM-SM ش è˘ ج У э ر У ɯ ȴ BSR Â BSR ȝ RP ą Â э Ạ BSR ɯ ɯ ȵ ر У Ȳ BSR Â ج BSR ą ʒ ɱ˘ C-BSR ȋ BSR˘ ʊ ج PIM-SM ش è Ʌ فخ سم 224.0.0.13 ȝ ɯ ˘ ↑ ȣ BSR فخ سم Ƞ ˝I Â

G ƪ ȝ ȝ Ʌ ʃ BSR فخ سم ȝ У э ɯ ą PIM ˘ э ȴ ˝I BSR ą ȴ ʃ ɯ ą ˘ ȝ ʃ ɯ . ˘ ɖ э ɯ è فخ سم ɔ ȋ BSR فخ سم˘ ȝ ɯ ą ' ĭ ‡ x ą Â ɱ Ạ BSR ȋ BSR˘ ʃ ÿ ȝ У э Ạ BSR è ʃ У э . ɯ ą ˘ ˜ ȝ У э Ạ BSR У э . ˝I ḣˆ У . ˝I ḣ˘ ɲ IP فخ سم˜ Â

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```
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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41.1.11 ip pim bsr-border

ip pim bsr-border

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˚ . x ˘ BSM ≠ a˚ ÿ ƛ ƛ Â

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ج g 0/3 Э BSR

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim bsr-border
```

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41.1.12 ip pim dr-priority

ip pim dr-priority *priority-value*

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৭	*priority-value*	. ”I ḣ˘ ḣ ˘ . ”I Â ت ẗ' <0-4294967294>˘ ḣ ẗ' 1 Â

	˘ DR . ”I ḣ ẗ 1
ħυ ३	৭

E8791.1B5B46D21_C1D78/C1E2A3E5RE-32.497FE>6<02D6Td(4<02DR)Tj/C2_0 1 Tf467a1D506 Td[DR

-

-

命令

命令	
协议 PIM-SM	-

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G ˘ ╗ PIM ǔ ˘ k ⁸ Â ^ " ˘ ‡ PIM-SM a¸ б ˆ peering˜ ˜Ω ˘ è б ˜Ω Â

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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 192.168.1.5 0.0.0.255
```

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access-list	-

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41.1.17 ip pim neighbor-tracking

ip pim neighbor-tracking

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G ^ ╗ ȯ ⁸ ╒ Â ^ ╗ ȯ ⁸ ╒ ǔ ╟ ˘ ⅄ Э ˩ join ˘ ⌒ ⅄ ˩

join ˘ ˽ Ю ǔ ɜ ˘ . Â

Ю R ˸ ╗ ώ 8 ╒

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim neighbor-tracking
```

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ip pim propagation-delay	-

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41.1.18 ip pim override-interval

ip pim override-interval *interval-milliseconds*

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ip pim propagation-delay-	-

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41.1.19 ip pim propagation-delay

ip pim propagation-delay *interval-milliseconds*

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interval-milliseconds	ƪ ḣ ش<1-32767>ˇ ´ Æ ѝ

ˇ Hello Propagation_Delay ḣ 500

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ƪ propagation-delay. · Â

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J/P-override-interval Â ˜ Э J/P-override-interval ɣ
Join-Prune holdtime ˇ ĭ ‡ ৲ Â У ˇ
ɖ Â

ƜO R ƪ propagation-delay ѝ 600

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```
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 ৻ ḣ 30s

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Hello ৻ ˘ Hello ɖ ≠ ЛЮ ‡ ʒ ' Hello ɖ ŷ Hello ৻ 3.5˝ ' Hello ৻ * 3.5 > 65535˜ ɜ Hello ৻ ⁸ ŷ 18725 Â

ɯ R

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim query-interval 123
```

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配置	Ruijie# **configure terminal** Ruijie(config)# **ip pim register-decapsulate-forward**

缺省情况	
协议	
-	-

命令模式	
全局配置模式	
-	-

41.1.23 ip pim register-checksum-wholepkt

ip pim register-checksum-wholepkt [**group-list** *access-list*]

参数	

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41.1.24 ip pim register-rate-limit

ip pim register-rate-limit *rate*

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rate	ĭ ৰ ə register ˘ ৰ ḣ ন <1-65535>

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G ə̂ S̆ G̃ ̈Ạ ৰ ˘ a ə ̈Ạ ৰ Â ŭ ╟ ƚu ३ æ DR ∩ RP ˘ a ⁸ ̈Ạ ৰ Â

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```
Ruijie# configure terminal
Ruijie(config)# ip pim register-rate-limit 3000
```

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41.1.25 ip pim register-rp-reachability

ip pim register-rp-reachability

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```
Ruijie(config)# ip pim register-source 192.168.195.80
Ruijie(config)# ipv6 pim register-source g 0/3
```

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41.1.27 ip pim register-suppression

ip pim register-suppression *seconds*

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seconds	৲ ৮ ˘ ৶ ḣ ন <1-65535> ˘ ´ Æ ঌ Â

˘ ৲ ৮ 60 Â

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ɢ ج DR Э ḣ ɡ ħ ج DR Э ৲ ৮ ' ip pim rp-register-kat ħu ३ ˘ ج RP Э ħ ḣ ɡ RPkeepalive Â

ɯ R

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-suppression 100
```

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41.1.28 ip pim rp-address

ip pim rp-address *rp-address* [*access_list*]

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rp-address	RP ip ƭƨ ƽ
access_list	۷ ˘ access-listť acl ƭƨ ƽ <1-99> ȁ <1300-1999>’ ≠ ƪ ۷ acl Â ˘ ï Â

˘ rp ƭƨ ƽ

ƪ ƻ

ƹ

RP˘ ≠ RP Ω BSR ⁸ ۷ Â ᴳ ƪ ƻ Ю ů ' BSR ⁸ Ω RP ۷ ˘ ˙ ˝I ᴳ ╟ Â ᴳ " RP ƭƨ ƽ ۷ Λƪ э ˆ ᴳ ACL˜ ˆ a ᴳ ACL˜ ˘ л У э RP ƭƨ ƽ a ᴳ Â э RP ╘ ɣ ۷ У э ˘ ƭƨ ƽ RP ˙ ˝I Â ۷ ج ACL è ƪ ï ƭƨ ƽ Â ACL ˘ й ï 224/4 Â ۸˘ RP ƭƨ ƽ ƹ ƽ ɣ ƭƨ ƽ RP è˘ э ƭƨ ƽ У э RP ˘ IP ƭƨ ƽ ˜ Â й У э ƭƨ ƽ У э RP˘ У э ї ˘ ≠ IP ƭƨ ƽ э ˝I Э Â ї У э RP ƭƨ ƽ ۷ ج è ї э ƭƨ ƽ˘ ÿ ƭƨ ƽ è У э ɔ й RP ƭƨ ƽ Â

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```
Ruijie# configure terminal
Ruijie(config)# ip pim rp-address 210.34.0.55
Ruijie(config)# ip pim rp-address 210.34.0.55 4
Ruijie(config)# access-list 4 permit 225.1.1.1 0.0.0.255
```

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access-list	-

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41.1.29 ip pim rp-candidate

ip pim rp-candidate *interface-type interface-number* [**priority** *priority-value*] [***i*nterval** *interval-seconds*][**group-list** *access_list*]

৭	

˘	´ <1-65535>	تن	ḣ Â ⸗ ḣ	⸗

er-kat *250*

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ক্ষ ঁ ╟ PIM-SM ৠ ক্ষ ও ЮО ঁ ╟ ৲ ╗ ˘ ї
‡ ᴳ ঁ ╟ ⓐ PIM-SM ≠ a ৲ Â
ক্ষ ঁ ╟ PIM-SM ৲ ˘ IGMP ক্ষ ৲ ৩ ৲ Э ⁞ ╟ ঁ ╟ a
╟ Â

ħu ३ৃ Ąˇ ˚ l' Failed to enable PIM-SM on < ৲
৲ >, resource temporarily unavailable, please try again Ł˘ Ąˇ
ħu ३ৃ Â

ħu ३ৃ Ąˇ ˚ l' PIM-SM Configure failed! VIF limit
exceeded in NSM!!! Ł˘ ৠ ї ৲ ৲
Э ˘ ї У Ęa PIM-DM [illegible]

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rp spt ˩ ˥ ˘ ƪ ʒ'

˩ ĭ ن G SPT ˺ ˘ ‡ Э group-list'

a G group-list ˘ ĭ G SPT ˺ Â

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```
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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41.1.33 ip pim ssm

ip pim ssm { **default** | **range** *access_list*}

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default	ن ˝ 232/8
access_list	ن acl ن ˝ 1-99' ≠ ƪ ˩ acl

SSM

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ƺ ╟ pim ssm ⊖ ƺ ╟ pim ssm˘ G ƪ ʒ Â

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R 1' Ю ƪ ʒ ن 232/8 Â

```
Ruijie# configure terminal
Ruijie(config)# ip pim SSM default
```

R 2' Ю ƪ ʒ ! " فخسم ˝ 10 Â

```
Ruijie(config)# ip pim SSM range 10
Ruijie(config)# access-list 10 permit 232.0.0.1 0.0.0.255
```

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G	BSR ǫ G

```
Ruijie# show ip pim sparse-mode bsr-router
Ю show ip pim sparse-mode bsr-router У ə R
Ruijie# show ip pim sparse-mode bsr-router
PIMv2 Bootstrap information
This system is the Bootstrap Router (BSR)
BSR address: 192.168.127.1
Uptime:  01d23h14m, BSR Priority: 64, Hash mask length: 10
Next bootstrap message in 00:00:42
Role: Candidate BSR  Priority: 64, Hash mask length: 10
State: Elected BSR
Candidate RP: 30.30.100.200(GigabitEthernet 0/3)
Advertisement interval 60 seconds
Next Cand_RP_advertisement in 00:00:32
```

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41.2.3 show ip pim sparse-mode interface

show ip pim sparse-mode interface [*interface-type interface-number* [**detail**]]

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interface-type interface-number	ʅ ˘ ʌ ˘ ƪ ʒ ʌ
detail	ʅ ˘ ʌ ǫ

a ʌ ǫ

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G	PIM SM ৲ ą ˘ ЛЫЮ Ь ħu ३ Â

```
Ruijie#show ip pim sparse-mode interface g 0/4 detail
Ruijie#show ip pim sparse-mode interface
Ruijie#show ip pim sparse-mode interface g 0/3
```

Ю **show ip pim sparse-mode interface detail** У э R

w 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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PIM SM ʌ Э ƨ IGMP ǫ Â

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```
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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41.2.5 show ip pim sparse-mode mroute

show ip pim sparse-mode mroute {*group_address* | *source_address* | }

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ʌ	
group_address	A.B.C.D ƨ ƫ Â
source_address	A.B.C.D ƨ ƫ Â
	a ɛ E ƨ ƫ ƨ ˘ (˘)

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ǫ G Â ʌ У э ƨ ˘ У э ƨ ˘ У э ƨ ƫ Ω
У э ƨ ˘ a ɛ E ƨ ƨ ƫ Â a ʌ ч э ƨ ч э
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```
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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41.2.6 show ip pim sparse-mode neighbor

show ip pim sparse-mode neighbor [**detail**]

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detail	৲ ˘ ৲ ৷

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```
Ruijie# show ip pim sparse-mode neighbor
Ruijie# show ip pim sparse-mode neighbor detail
```

Ю **show ip pim sparse-mode neighbor** У э R

```
Ruijie (config-if)#sh ip pim sparse-mode neighbor
```

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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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41.2.9 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#

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```
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
```

相关命令	协议	
	-	-

平台

协议限制	平台	
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42 IPv4

42.1 IPv4

42.1.1 clear ip mroute

ƚu ३ IP ৲ ৡ Â

clear ip mroute {* | *group-address* [*source -address*]}

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*	è ৲ ৡ Â
group-address	ফ ম Â
source -address	ফ ম Â

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ЛЫЮ R й ج è ফ ম й 230.0.0.1 '

```
Ruijie# clear ip mroute 230.0.0.1
```

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show ip mroute	৲ ৡ Â

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42.1.2 clear ip mroute statistics

ƚu ३ IP ৡ Â

clear ip mroute statistics {***** | *group-address* [*source -address*]}

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rpf-address	ώ ৲
interface-type interface-number	৲ صر Ω৲ ৲ ৴
distance	˘ ā ĭ ᴳ RPF Â ḣ ẻ ʊ̈ ৲ ḣ تن ẻ <0-255>

a *Distance*˘ *Distance* ḣ ẻ 0

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Â . ˝I ɣ ÿ´ ˜ ˝ ˀ Â
৲ ЮУ ip˘ ж ৲ ẻ صر Â
rpf ‡ ' ÿ è У э . ˘ ৶ جه bgp Ω৲
˘ ‡ . ˝I' ÿ´ è У э . ´ ' γ
˘ ẻ rpf ' ৶ distance˘ distance
ẻ rpf ' distance ৶˘ ẻ rpf

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ЛυЮ ᴿ У э ą̈ ৶ 172.30.10.13ʊ̈

```
Ruijie(config)# ip mroute 172.16.0.0 255.255.0.0  172.30.10.13
```

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42.1.4 ip multicast boundary

IP تن IP Â ᴳ Ħυ ३ **no** ˀ Â

ip multicast boundary *access-list*

no ip multicast boundary *access-list*

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access-list	IP access-list ẻ ʊ̈ ACL

تن

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IP تن IP Â ħu ३ ̃Ω ACL ৷ Л৷ ñ ACL ̆ ≠ ৷ Л৷
ACL ̆ Л ¥ ACL ৷ ৭ فخسم ̆ a ৭ فخسم Â

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ħu ३৷ ৷ ⁎ 4222@svi1 4)ñ►2ÄÇ̈ÄGÄÑ’RÖ►NäPÿ5!ħy%!ąąanÿ5!Ł!Ñ–’RA.aÖPÄÑ–“RÄÄ%!Ł.aPÿ

limit ḣ ẗ 1024

threshold ḣ ẗ 2147483647

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w R ЛƱЮ R ⁸ ẗ 500 Â

```
Ruijie(config)# ip multicast route-limit 500
```

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42.1.6 ip multicast-routing

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ip multicast-routing

no ip multicast-routing

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	ŭ ╟ IPv4 ╥ ˘ ħυ ३ Â ╥ Ω IGMP snooping ╥ ц ˘ ŭ ╟ ɷ IGMP snooping ╥ ˘ ж ħυ ३ a Â
	a ж ⌟ У ⌟ Э a ⌟ ⌟ a ⌟ v4 ~

ш R	ЛυЮ R ŭ ╟ ┤ Â `Ruijie(config)# ip multicast-rounting`

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ЛƱЮ R (192.168.43.4˜ 225.1.1.5) ˅ ї ÿ GigabitEthernet 2/6 Ω FastEthernet 3/2 ˅ Â

```
ruijie(config)# ip multicast static 192.168.43.4 225.1.1.5 G2/6
ruijie(config)# ip multicast static 192.168.43.4 225.1.1.5 F3/2
```

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42.1.9 ip multicast rpf longest-match

RPF ‡ ¦ ⁞ ÿ à MBGP à´ è ы ы ¥ RPF
à MBGP Ω´ Â

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Ъ ę˘ ÿ Ь è ę ’ τ . ˝l ы˘ ‡
à MBGP à´ Â

G Ъ ę **no** Ъ ę ḣ Â ąЮ˘ ÿ Ь è . ˝l
’ τ . ˝l ы˘ ‡ à MBGP à´
Â

ip multicast rpf longest-match

no ip multicast rpf longest-match

ы	**ы**	

RPF ‡ ¦ ⁞ ÿ à MBGP à´ è ы ы ¥ RPF
à MBGP Ω´ Â ÿ Ь è . ˝l ’
τ . ˝l ы˘ ‡ à MBGP à´ Â

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```
Ruijie(config)# ip multicast rpf longest-match
```

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42.2 IP

42.2.1 show ip mroute

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show ip mroute [*group-address*] [*source-address*] [**dense**][**sparse**] [**summary**] [**count**]

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group-address	สมาชิก Â
source-address	สมาชิก Â
dense	PIMDM
sparse	PIMSM
summary	ล Â

```
FastEthernet 1/3
R 2' ЛЦЮ R ą
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
R 3' ЛЦЮ R ą
Ruijie# show ip mroute count
IP Multicast Statistics
Total 1 routes using 132 bytes memory
Route limit/Route threshold: 2147483647/2147483647
Total NOCACHE/WRONGVIF/WHOLEPKT recv from fwd: 1/0/0
Total NOCACHE/WRONGVIF/WHOLEPKT sent to clients: 1/0/0
Immediate/Timed stat updates sent to clients: 0/0
Reg ACK recv/Reg NACK recv/Reg pkt sent: 0/0/0
Next stats poll: 00:01:10
Forwarding Counts: Pkt count/Byte count, Other Counts: Wrong If pkts
Fwd msg counts: WRONGVIF/WHOLEPKT recv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed Stat sent
Reg pkt counts: Reg ACK recv/Reg NACK recv/Reg pkt sent
(10.10.1.52, 224.0.1.3), Forwarding: 2/19456, Other: 0
Fwd msg: 0/0, Client msg: 0/0/0/0, Reg: 0/0/0
R 4' ЛЦЮ R ą
Ruijie# show ip mroute summary
IP Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(10.10.1.52, 224.0.1.3), 00:01:32/00:03:20, PIM-SM, Flags: T
```

Flags	I- . T- F- ʃ ৻
Timers:Uptime/Stat Expiry	… ˘ ɤ
Interface State	৸
Owner	˘ ৲ ə ˜
Incoming interface	ώ ৸˘ ώ ৸ б ǯ a ˘ x
Outgoing interface list	৸ " ˘ ج è ৸ Э ৻ ৷
Forwarding Counts' Pkt count/Byte count,	৻ ' ৻ /
Other Counts: Wrong If pkts	ʃ ώ ৸

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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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42.2.4 show ip mvif

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show ip mvif { *interface-type interface-number* }

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interface-type interface-number	ƕ

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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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42.3 IP

42.3.1 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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```
Ruijie# debug nsm mcast register
```

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42.3.4 debug nsm mcast stats

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debug nsm mcast stats

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```
Ruijie# debug nsm mcast stats
```

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42.3.5 debug nsm mcast vif

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debug nsm mcast vif

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```
Ruijie# debug nsm mcast vif
```

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43 IPv6

43.1

43.1.1 ping ipv6

Ĥu ʒ IPV6 Â

ping ipv6 [*ipv6-address*]

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ipv6-addres	*s* فخ سم

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G جم Ĥu ʒ è a ώ فخ سم ‡ ώ Ĥ ţ ˘ ৲ Ʌ ʊ ε ε ৲ ৭ Â

Ruijie# **ping ipv6 fec0**::*1*

جم ping ھى ৲ ৲ ŭ Ĥ Ю'

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.	৲ جم ą̈ ˆ
U	ˆ ŭ
R	৭
F	
A	فخ سم
D	৭ ţ Down ৭ IPV6 ʃ (ˆ فخ سم ă)
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43.1.2 ipv6 address

ঁ ৰ У э IPV6 ফ্রন্ট , G ħu ३ no ī ফ্রন্ট 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 ফ্রন্ট RFC4291 ħ ফ্রন্ট ফ্রন্ট ফ্রন্ট ३ ṇ ৰ ফ্রন্ট 16 Ω 8 .
ipv6-prefix	IPV6 ফ্রন্ট ṃ RFC4291 ħ ফ্রন্ট ফ্রন্ট ফ্রন্ট ३ ṇ ৰ ফ্রন্ট 16 Ω 8 .
prefix-length	IPV6 ṃ . IPV6 ফ্রন্ট è ३ ī Â
prefix-name	ṃ ৷ Â G э ṃ ৰ ফ্রন্ট Â
sub-bits	ṃ б ў ḥ Â э ḥ б ṃ è ṃ ৷ ৰ ফ্রন্ট Â э ḥ RFC4291 ṇ ৰ Â
eui-64	IPV6 ফ্রন্ট ফ্রন্ট ṃ Ω 64 ৰ ID Â

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У э IPV6 ʌ … з й UP ǯ й ʌ ╟ ǯǯ ǯǯ Â

ʌ IPv6 ǯǯ ≠ ˩ Л Ʊ G ǯǯ ⁸ Â ȅ ⁸ IPv6 ǯǯ = ľ ǯǯ Ľ + ľ ǯǯ Ľ + ľ ў Ľ Â ǯǯ ˩ Л Ʊ G **ipv6 general-prefix** Ĥu ǯ ˘ ≠ ˩ DHCPv6 PD˜ ǯǯ ˩ ˜ ╥ ˜ ˆ ʌ ľ DHCPv6 Ľ˜ Â ľ ǯǯ Ľ + ľ ў Ľ G Ĥu ǯ *sub-bits/prefix-length* ʌ Â

G **no ipv6 address** a ˥ ȅ E ǯǯ˘ ǯǯ ˥ ǯǯ Â

G **no ipv6 address** *ipv6-prefix/prefix-length* **eui-64** ˩ Л˥ G Ĥu ǯ **ipv6 address** *ipv6-prefix/prefix-length* **eui-64** ǯǯ Â

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R 1' Ю R IPv6 ǯǯ 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
```

Ї ǯǯ my-prefix ǯǯ 2001:1111:2222::/48˝ ǯǯ ʌ IPv6 ǯǯ 2001:1111:2222:7272::72/64 Â

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Ipv6 address autoconfig	╟ ǯǯ
ipv6 general-prefix	ǯǯ
show ipv6 general-prefix	ǯǯ

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RGOS10.4	ʌ IPv6 ǯǯ G ǯǯ ˘ ÿ RGOS10.4 Â

43.1.3 ipv6 address autoconfig

ǯǯ У э ʌ G IPv6 ╟ ǯǯ ˘ G **ipv6 address autoconfig** Ĥu ǯ˘ ȅ no ˥ ╟ ǯǯ Â Ĥu ǯ Ю'

ipv6 address autoconfig [**default**]

no ipv6 address autoconfig

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default	৷ ৭ Â Э ˜Ω ˘ ষ ╟ম ফ ˘ ˚ У Â ৷ ৷ ї У э Ь ৭ G **default** ˜Ω Â

Ĥu ३ ৭

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╟ম ফ ˆ RA ˆ ˜Ω ˆ ˜ ˘ ৷ Л G RA è ৸ ৭ ╟ EUI-64 ৭ ম ফ Â

ˆ RA è ü ľ è Ľ ˘ ষ ৭ DHCPv6 ৷ ę ľ è Ľ Â ľ è Ľ DNS Ľ ৷ IPv6 ম ফ à NTP Ľ ৷ IPv6 ম ফ Â

G **no ipv6 address autoconfig** Ĥu ३ ৭ Э IPv6 ম ফ Â

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```
Ruijie(config-if)# ipv6 address autoconfig default
Ruijie(config-if)# no ipv6 address autoconfig
```

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ipv6 address *ipv6-prefix/prefix-length* [**eui-64**]	৭ IPv6 ম ফ

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RGOS10.4	Ĥu ३ ÿ RGOS10.4 Â

43.1.4 ipv6 enable

Ĥu ३ ৭ IPv6 ╖ ˘ G Ĥu ३ no ৷ Л IPv6 ╖ ˜Ω Â

ipv6 enable

no ipv6 enable

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৭ IPv6 ╖ Â

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2 ˩ Л∪ ʌ Э IPv6 ╥ ˘ У ج ʌ Ю **ipv6 enable** ƚu ʒ , γ
ج ʌ Ю ɷ IPv6 فخسم Â

ج ʌ Э ɷ IPv6 فخسم ж ʌ IPv6 ╥ ˚ ╟ ˘
. G G **no ipv6 enable** ≠ a ‟Ω IPV6 ╥ Â

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

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show ipv6 interface	ʌ ‟Ω ə

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43.1.5 ipv6 general-prefix

IPv6 ɱ ˘ ج ώ Ю G **ipv6 general-prefix** ƚu ʒ Â ƚu ʒ
Ю'

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

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

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prefix-name	ɱ ɹ Â
ipv6-prefix	ɱ ɱ ḣ Â ə ḣ RFC4291 ḭ ʌ Â
prefix-length	ɱ Â

ƚu ʒ ώ

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G ɱ ˩ Л∪ ɟ ʌ Â ج ẅ ɱ ƚ ж У ə ɱ ˘ ɱ
˩ Л∪ Â ɱ ˩ У ˘ ɱ ɱ ˚ ˩ У Â

Л ⊥ У ˘ ⊥ g УЮ ⊓ . ⊥ Â
У э ⊓ ⊥ Л Ъ ↑ Ü э ⊓ Â
Ф ⊓ جم ⊥ IPv6 فخ سم Э Â

Ю R ⊕ У э ⊓ ⊥ my-prefix Â

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

Ъ ъ	
ipv6 address prefix-name sub-bits/prefix-length	G ⊓ ⊥ فخ سم

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43.1.7 ipv6 nd dad attempts

G Ъu ३ ج ৰ Э й IPV6 فخسم فخسم ğ ৲ (NS)
Â G Ъu ३ no ḥ Â

ipv6 nd dad attempts *value*

no ipv6 nd dad attempts

ৰ		
ৰ	value	(NS) Â ḥ й 0 й ৰ Э Ipv6 فخسم ů ╟فخسم ğ Â تن: 0-600 Â

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ج ৰ Э У э IPV6 فخسم ˘ ج فخسم э ৰ ɱ й ů ╟فخسم ğ
˘ فخسم ţ ”tentative”( ) Â فخسم ğ ɷ˘
ţ ğ ˘ ж فخسم ৲ Л G ˘ ţ ğ ɷ˘ з فخسم G
ৰ G EUI-64 ˘ ж ج Э ج فخسم ˘ ж
˚ ╟Ω ৰ (ج ৰ Э IPV6 Ω ɔ)˘ ৷
g فخسم˘ Ą down/up ৰ ů ╟فخسم ğ Â˙ ! ą Ю
У э ৰ ÿ down ৲ й up ˚ й ৰ Э فخسم ů ╟فخسم ğ Â

w R

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

Ω Ъu ३

Ъu ३	
show ipv6 interface	ৰ ą Â

ৰ

ƚυ ३ ৭ ৶	৸	
	-	-

43.1.8 ipv6 nd managed-config-flag

ᴳ ƚυ ३ ৯ Ω ̂ è “**managed address configuration**” Æ ̆ ᴳ ƚυ ३ no Æ Â

ipv6 nd managed-config-flag

no ipv6 managed-config-flag

৸	৸	
	-	-

	৯ Ω ̂ è Æ Â
ƚυ ३	৸ Â
ᴳ	Æ α ɑ ʲ ৯ Ω ̂ ŷ ĭ ᴳ ώ ╟ ৸ ৯ ফ Â Æ ɑ ̆ ᴳ ώ ╟ ৯ ফ ̆ ĭ ‡ a ᴳ Â
ᴡ ᴿ	Ruijie(config)# **int vlan** *1* Ruijie(config)# **ipv6 nd managed-config-flag**

̂Ωƚυ ३	ƚυ ३	
	show ipv6 interface	৸ è ̂Ω ɣ ra-info ৲ Â
	ipv6 nd other-config-flag	ώ ╟ ৸ ফ ৲ Æ Â

৶

ƚυ ३ ৭ ৶	৸	
	-	-

43.1.9 ipv6 nd ns-interval

ᴳ ƚυ ३ ৸ Ɔ (NS) · ̆ ᴳ ƚυ ३ no ḣ Â

ipv6 nd ns-interval *milliseconds*

no ipv6 nd ns-interval

৭	
milliseconds	1000-4294967295

جھ ৯ Ω (RA) è ḣ ṅ 0( ) جھ ৭ ṅ è G ṅ 1000ms(1) Â

ħu ३ ৭

G ḣ جھ ৯ Ω (RA) è ৭ ৭ ৯ ḣ ≠ G Â a ḣ Â

w R
```
Ruijie(conifg-if)# ipv6 nd ns-interval 2000
```

Ωħu ३

ħu ३	
show ipv6 interface	৭ ৯

৯

ħu ३ ৭ ৯

৯	
-	-

43.1.10 ipv6 nd prefix

ħu ३ ৯ Ω (RA) è ↑ ü فخ سم ṃ G ħu ३ no ṃ ṃ ৭ ḣ Â

ipv6 nd prefix *ipv6-prefix*/*prefix-length* | **default** [[*valid-lifetime preferred-lifetime*] | [**at** *valid-date preferred-date*] | **infinite** | **no-advertise**]] [**off-link**] [**no-autoconfig**]

no ipv6 nd prefix *ipv6-prefix/prefix-length* | **default** { [**off-link**] [**no-autoconfig**] | [**no-advertise**] }

৭

৭	
ipv6-prefix	IPV6 ৯ RFC4291 فخ سم Â
prefix-length	IPV6 ṃ ṃ ╗ Ɔ'/' Â

valid-lifetime	ў ↑ ⅄ ‘Ω ҃ ɱ ⅄ ѝ Â
preferred-lifetime	ў ↑ ⅄ ‘Ω ҃ ɱ ⅄ ѝ Â
at *valid-date preferred-date*	‘Ω ҃ ɱ ∩ ˘ Л ȁ ȁ ȁ ȁ↑ Â
infinite	Â
default	G ⅄ Â
no-advertise	ɱ a ⅄ ‘Ω ҃ Â
off-link	ў ج ⅄ IPV6 فخ سم ɱ ⅄ ɱ ѫ ѝ ج ⅄ У (on-link) Э ⅄ ↑ Â ɷ ɱ a ṁ on-link ″ Â
no-autoconfig	ў ↑ ⅄ ‘Ω ҃ è ɱ a ¥ فخ سم ╟ Â

‘Ω ҃ ɱ ج ⅄ Э IPV6 address Ԧ ҳ ɱ Â ɱ ج ⅄ ‘Ω ҃ è ⅄ Ю’

valid-lifetime: 2592000 (30)

preferred-lifetime: 604800 (7),

ɱ ‘Ω ҃ ˘ з ⅄ Л ¥ on-link ″ ˘ ⅄ Л ¥ فخ سم ╟

Ԧ ҳ ⅄

Ԧ ҳ ⅄ Л ⁝ У э ɱ ⅄ э ⅄ ˘ ↑ ї ‘Ω ҃ ɱ ˘ ɷ Ю ⅄ ‘Ω ҃ è (RA) ‘Ω ҃ ɱ ج ⅄ Э ipv6 address Ԧ ҳ ɱ ˘ ╗ è ɱ ⅄ Л G Ԧ ҳ Â

ipv6 nd prefix default

⅄ Э G ⅄ ˘ . ╗ У э ɱ ˘ ˙ ! ⅄ ˘ ѫ G ipv6 nd prefix default ⅄ ṁ ѝ ɱ ⅄ Â У ѝ ɱ ɷ э ⅄ Л ⅄ a ‘Ạ ѝ G ⅄ Â Л ⅄ G ipv6 nd prefix default ⅄ ⅄ a ⅄ g ɱ ˘ ⅄ g ѿ G ⅄ ɱ Â

at *valid-date preferred-date*

ɱ 2 ' У ج ‘Ω ҃ è э ɱ У э ش ’ ⅄ У ˘ G ѫ ⅄ ⅄ ‘Ω ҃ è ɱ ˘ ↑ ḣ ѝ 0 Â

ш R

R 1' ج ⅄ SVI 1 Э ╗ У э ɱ

```
Ruijie(conifg)#interface vlan 1
Ruijie(conifg-if)# ipv6 nd prefix 2001::/64 infinite 2592000
```

R 2' ৲ SVI 1 Э ɱń ৲ (a ৷ ¥ ফذسم ╟)

```
Ruijie(conifg)# interface vlan 1
Ruijie(conifg-if)# ipv6 nd default no-autoconfig
```

ج ąЮ ╗ У э ɱń ˘ a ˙ ¡ ৲ ˘ ж G ৲ . ɱń ≠ a ৷ ¥ ফذسم ╟ Â

ঁΩħu ३

ħu ३	
show ipv6 interface	৲ è ঁΩ ¥ ra-info ą

৶

ħu ३ ৲ ৶

৶	
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43.1.11 ipv6 nd ra-lifetime

G ħu ३ ৲ Э ৷ ঌ ঁΩ (RA) è ľ ঌ Ľ˘ G ħu ३ no ḣ Â

ipv6 nd ra-lifetime *seconds*

no ipv6 nd ra-lifetime

৲

৲	
seconds	ɔ ঋ ৲ Э Â

1800

ħu ३ ৲

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“ ঌ ” ج ¥ э ঌ ঁΩ (RA) è˘ ḣ ɑ ৲ ج Э ў ৷ Лu ɔ ঋ Â ḣ ঋ 0 a ঁĄ ɔ Â 0 ḣ ḣ ¥ ¥ ৷ ঌ ঁΩ (RA) (ra-interval) Â

w R

```
Ruijie(conifgf)# interface vlan 1
Ruijie(conifg-if)# ipv6 nd ra-lifetime 2000
```

ঁΩħu ३

ħu ३	

show ipv6 interface	৲ è ̃Ω ¥ ra-info ą Â
ipv6 nd ra-interval	⅄ ̈Ω̃ ৲ Â
ipv6 nd ra-hoplimit	⅄ ̈Ω̃ ḣ Â
ipv6 nd ra-mtu	⅄ ̈Ω̃ MTU ḣ Â

৲

ħυ ३ ৲ ৲

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43.1.12 ipv6 nd ra-interval

G ħυ ३ ৲ Э ৲ ⅄ ̈Ω̃ (RA) ˘ G ħυ ३ no ḣ Â

ipv6 nd ra-interval {*seconds* | *min-max min_value max_value*}

no ipv6 nd ra-interval

৲

৲	
seconds	⅄ ̈Ω̃ (RA)̈Ω̃ ৲ ÂΛυ ὶ ´ Æ Â
min-max	̃ ৲ ḣ Ω ḣ Â
min_value	̃ ৲ ḣ Â
max_value	̃ ৲ ḣ Â

200 ˘ ৲ ह 200 ЭЮ ╟ 20 ¸ Â

ħυ ३

৲ Â

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ˈl ˘ ѫ ḣ a ¥ ⅄ Â
৲ ˘ ὶ ϖ Э ὲ ⅃ ৲ ⅄ ̈Ω̃ ´ ˘ Λυ
৲ ह ḣ Э ╟ ↑ ƺ ϒ Â
̃Ω **min-max**̆ ѫ ৲ ह ḣ Ω ḣ ƺ
У э ḣ Â

ш R

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 nd ra-interval 110
```

ipv6 nd ra-lifetime	Â
ipv6 nd ra-interval	⅄ ʼΩ˜ ⅃ Â
ipv6 nd ra-mtu	⅄ ʼΩ˜ MTU ḣ Â

⅄

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ħυ ३ ʅ ᴶ

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43.1.15 ipv6 nd reachable-time

ᴳ ħυ ३ ᴺ Э NDP ╟ ʔ ج ˩ ᴶ˘ ὶ ˩ʔ
˘ ᴳ ħυ ३ no ḣ Â

ipv6 nd reachable-time *milliseconds*

no ipv6 nd reachable-time

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milliseconds	ὶ ˩ʔ ˘ ᴶᴝ ὶ´ Æ˘ ʿتن 0-3600000

ج ᴸ ̀Ω ̂ (RA) è ḣ ὶ 0( )˘ ج ˩ ὶ è
ὶ ˩ʔ ὶ 30000ms(30)

ħυ ३ ᴺ

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a ˩ ˘ ᴳ ˩ᴝ
ʔ ˘ ᴛ ȁ Â ج a
Â
ḣ ج ᴸ ̀Ω ̂ (RA) è ˩ ˩˘ ˩ ḣ ≠ ᴳ Â
ḣ ὶ 0 ˘ . ᴳ ḣ Â

ᴡ ᴿ

```
Ruijie(conifg-if)# ipv6 nd reachable-time 1000000
```

̂Ωħυ ३

ħυ ३	
show ipv6 interface	ᴺ ᵊ

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ħυ ३ ʅ ᴶ

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-	-

43.1.16 ipv6 nd suppress-ra

G ħu ३ 8 ह ৲ Э ৻ ৸ Ω (RA) ˘ G ħu ३ no ÿ ï ৲ ৻ ৸ Ω (RA) Â

ipv6 nd suppress-ra

no ipv6 nd suppress-ra

interface-id	جم ٨̂ ↑ Routed Port,L3 AP ٨ Ω SVI ٨ ˜ Â
hardware-address	سم ˘ فخ . Л υ XXXX.XXXX.XXXX 48

ค่า	
-	-

```
Ruijie(conifgf)# interface vlan 1
Ruijie(config-if)# ipv6 redirects
```

show ipv6 interface	

-	-

43.1.20 ipv6 route

IPV6 no

ipv6 route *ipv6-prefix*/*prefix-length* {*ipv6-address* | *interface-id* [*ipv6-address*]}

no ipv6 route *ipv6-prefix*/*prefix-length* {*ipv6-address* | *interface-id* [*ipv6-address*]}

ipv6-prefix	IPV6 RFC4291
prefix-length	IPV6
ipv6-address	RFC4291
interface-id	

-	-

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ƒu ʒ ʃ ʌ	ʌ	
	-	-

43.1.22 tunnel destination

G ƒu ʒ й ʌ è ممنوع , G ƒu ʒ no ƒu ʒ ʃ ممنوع Â

tunnel destination {*ipv4-address* | *ipv6-address*}

no tunnel destination

ʌ		
	ipv4-address	ممنوع , ʌ У IPv4 ممنوع Â
	ipv6-address	ممنوع Â ɑ tunnel mode ipv6˜ ʯ ممنوع G IPv6 ممنوع Â ɑ tunnel mode gre ipv6˜ ʯ ممنوع ≠ G IPV6 ممنوع

ممنوع Â

ƒu ʒ ʌ ʒ

G	a ج У ʌ Э è ص à ممنوع Ω ممنوع ʌ э Â
	¥ ╟ (6to4 Ω isatap) a ï ممنوع Â

IPv6 R '

w R

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6ip
Ruijie(config-if)# tunnel source vlan 1
Ruijie(config-if)# tunnel destination 192.168.5.1
```

ƒu ʒ	

tunnel source

Q.

	RGOS10.4	ƪ ʒ ÿ RGOS10.4 Â

43.1.24 tunnel mode ipv6ip

G ƪ ʒ У э IPV6 ص, G ƪ ʒ no ƪ ʒ IPv6 ص Â

tunnel mode ipv6ip [**6to4** | **isatap**]

no tunnel mode

[redacted]

G ƪ ʒ У э GRE ص, G ƪ ʒ no ƪ ʒ IPv6 ص Â

tunnel mode gre [**ip** | **ipv6**]

no tunnel mode

٧	
ip	˜ й IPv4
ipv6	˜ й IPv6

… ص й IPv6 Â

ƪ ʒ ٧

G ٧ У … й ˘ G ƪ ʒ tunnel mode gre ip ipv6 й gre Â ٧ ɷ tunnel source, tunnel destination, з destination ٧ ˘ gre ٧ UP Â

ƱO gre R '

w R

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode gre  ip
Ruijie(config-if)# tunnel source vlan 1
Ruijie(config-if)# tunnel destination 1.1.1.1
```

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43.2

ใบ ๓

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G **show ipv6 general-prefix**

```
Ruijie# show ipv6 interface vlan 1
Interface vlan 1 is Up, ifindex: 2001
address(es):
Mac Address: 00:00:00:00:00:01
INET6: fe80::200:ff:fe00:1 , subnet is fe80::/64
INET6: 2001::1 , subnet is 2001::/64 [TENTATIVE]
Joined group address(es):
ff01:1::1
ff02:1::1
ff02:1::2
ff02:1::1:ff00:1
MTU is 1500 bytes
ICMP error messages limited to one every 10 milliseconds
ICMP redirects are enabled
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds
ND advertised reachable time is 0 milliseconds
ND retransmit interval is 1000 milliseconds
ND advertised retransmit interval is 0 milliseconds
ND router advertisements are sent every 200 seconds<240--160>
ND router advertisements live for 1800 seconds
```

ϖ R

جه Э è ⌟ Л υ ↑ INET6: 2001::1 , subnet is 2001::/64

[TENTATIVE] У ˘ ̃Ω ɣ' INET6 سم فخ ⌊ [] ̈α Æ ΰ ЮЖ Ю

ANYCAST	سم فخ Ϊ سم فخ Â
TENTATIVE	جه Ϊ سم فخ سم فخ α (DAD)˘ سم فخ Э ϊ سم فخ Â

total	˥ ŋ́ ɔ Â
fec0:1:1:1::/64	ɛ́ E ŋ́ Â
Def	ŋ́ G ˥ ŋ́ ˥ Â
Auto | CFG	Auto ŋ́ ɣ ج ˥ ɷ IPV6 فذ سم ╟ ŋ́ , CFG ŋ́ Â
!Adv	ŋ́ a ʼΩ̂ Â
vltime	ŋ́ ( ) Â
pltime	ŋ́ ( ) Â
L | !L	L ŋ́ on-link Æ Э Â !L б Э ˥ Â
A | !A	A ŋ́

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G

w R

R 1' SVI 1 ʌ Ɜ ǫ

```
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' ǫ

```
Ruijie# show ipv6 neighbors verbose
IPv6 Address  Linklayer Addr Interface
2001::1      00d0.f800.0001 vlan 1
       State: Reach/H Age: - asked: 0
fe80::200:ff:fe00:1    00d0.f800.0001 vlan 1
       State: Reach/H Age: - asked: 0
```

IPv6 Address	IPV6 فخ سم
Linklayer Addr	فخ سم Mac فخ سم ˜ ‡ ˆ incomplete
Interface	ʌ جم

State	' state/H(R) STATE ḣ Ю' INCMP(Incomplete)— فخ سم جم è˘ (NS) ˥ Л ˆ (NA) Â REACH(Reachable) — ÿ ˆ ˘ جم ˩ ˥ a ╟ ɔ Â STALE — ѝ ˥ˆ ˆ ˘ جم a ╟ ɔ ˆ ˥ ˆ Э˘ . ŭ ╟ NUD (Neighbor Unreachability Detection) Â DELAY— ˩ ɣ STALE ˥ ˘ STALE ѝ DELAY ˘ جم DELAY_FIRST_PROBE_TIME seconds(5) ǫ̈ ˆ ˩ ǫ ˘ ѫ DELAY ѝ PROBE˘ ˩ ˩ ˥ (NS)˘ ŭ ╟ NUD Â PROBE— NUD ŭ ╟˘ ˩ ˘ RetransTimer milliseconds ˩ ˥ (NS) ˆ ˆ ɷ ˥ ˆ Э ḣ MAX_UNICAST_SOLICIT(3 ɜ) ?— /R— ѝ У ɜ /H— ѝ У ɜ ў
Age	ѝ ˥ˆ ˘ '-' ˩ ˘ ŋ ɣ ї˙ ˩ Â 'expired' ѝ ˥ ˆ ˘ ˥ NUD Â
Asked	جم فخ سم ˩ ˥ (NS) Â

ʳ ʒ'

```
Ruijie# show ipv6 neighbors static
IPv6 Address     Linklayer Addr  Interface              State
2001:1::1        00d0.f822.33ab  GigabitEthernet 0/14   ACTIVE
2001:2::2        00d0.f822.33ac  VLAN 1                 INACTIVE
```

IPv6 Address	IPV6 فخ سم
Linklayer Addr	فخ سم Mac فخ سم

Interface	ϟ
State	STATE ϟ Ю ACTIVE— ϟ INACTIVE— a ϟ IPV6 a ϟ a ϟ mac ϟ Â

Ϸ	**Ϸ ϟ**	
	ipv6 neighbor	

ϟ

Ϸ ϟ ϟ	ϟ	
	-	-

43.2.5 show ipv6 route

IPV6 Â

```
L    ::1/128
      via ::1, loopback 0
C    fa::/64
      via ::, vlan 1
L    fa::1/128
      via ::, loopback 0
C    2001::/64
      via ::, vlan 2
L    2001::1/128
      via ::, loopback 0
L    fe80::/10
      via ::1, Null0
C    fe80::/64
      via ::, vlan 1
L    fe80::200:ff:fe00:1/128
      via ::, loopback 0
C    fe80::/64
      via ::, vlan 2
```

!Dv œD •¾" @ à gp m ì !˜ Ñ»@ ï Â 4‘v @sBï 4‘v Nû ð QB2C8 A !56C…€4)g3ba•W dáAd3be)d3a D$ bà…!

˜Ωħu ३	ħu ३	
	ipv6 route	

ƒu ३

G

G **show ipv6 router** ⅆ∩ ‘Ω˜ ə Â ∧˘ ‡
ˆ ‘Ω˜ ə Â

w R

IPv6 ⅆ У э R ˘ Ю

```
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
```

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RGOS10.4	ƒu ३ ÿ RGOS10.4 Â

44 OSPFv3

44.1

44.1.1 area default-cost

ϫ stub Ϣ ϩ ABR Ϋ Ϸ ϗ˘ Ϸ stub Ϣ ϩ ϕ ϗ' Â G Ϸ ϗ
no ḣ Â

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

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

ϟ		
ϟ	*area-id*	stub Ϣ ϩ Ϣ ϩ ϧ Â ὲ ϡ Ϧ ὶ У э У э IPv4 ḿ Â
	cost	stub Ϣ ϩ ϕ ϗ' Â ϫ 1-16777214 Â

	default-cost ḣ ὶ 1 Â
Ϸ ϗ	Â
G	Ϸ ϗ ϡ ϫ stub Ϣ ϩ ABR Ϋ G Â

Ϣ R	Ю R ˘ stub Ϣ ϩ 50 ϗ' ὶ 100'
	`ipv6 router ospf 1`
	`area 50 stub`
	`area 50 default-cost 100`

Ϣ Ϸ ϗ	Ϸ ϗ	
	area stub	У э stub Ϣ ϩ Â

ϡ

Ϸ ϗ ϡ	ϧ	

-	-

44.1.2 area range

G Ĥ Ĝ Ш فخ سم تن G Ĥ Ĝ **no** Ĵ تن
تن ٩ Â

area *area-id* **range** *ipv6-prefix*/*prefix-length* [**advertise**|**not-advertise**]

no area *area-id* **range** *ipv6-prefix*/*prefix-length*

٩		
٩	*area-id*	Ш ٭ /١ Â è ⌟ Л ù У э У э IPv4 ŋń Â
	ipv6-prefix/*prefix-length*	فخ سم تن Â
	advertise	Ὼ تن Â
	not-advertise	a Ὼ تن Â ù Ὼ Â

	Ĥ Ш فخ سم تن Â

Ĥ Ĝ Â

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44.1.3 area stub

G Ԧ ԧ … У э stub Ш ꙮ stub Ш ꙮ ˘ G Ԧ ԧ **no** ѝ Ш ꙮ ̄ stub Ш ꙮ Â

area *area-id* **stub** [**no-summary**]

no area *area-id* **stub** [**no-summary**]

Ԩ

Ԩ	
area-id	stub Ш ꙮ Ш ꙮ Ԩ Â è ԫ Ԉ ѝ У э У э IPv4 ꙋ Â
no-summary	ԫ ҭ stub Ш ꙮ ABR Э ˘ ABR ԫ У صر 3 LSA Ѿ ̂ stub Ш ꙮ ̈ ˘ a Ѧ Ѿ ̂ صر 3 è ы LSA Â

Ԩ Ѫ stub Ш ꙮ Â

Ԧ ԧ Â

У э Ш ꙮ Ԥ э ̄ ˘ Ԉ Ш ꙮ ѝ stub Ш ꙮ ˘ stub Ш ꙮ ̈
area stub Ԧ ԧ Â Ш ꙮ ѝ stub Ш ꙮ ˘ è ̄ a ̄ AS
ҕ (type 5 LSAs) ˘ ҭ è ˘ ҕ ҭ è ԫ ´
˘ Ԉ stub Ш ꙮ ̈ ԫ ̄ ̄ ҕ ˘ ÿ æ ɷ

G OSPFv3 ̃ ´ Â

ҭ stub Ш ꙮ ABR Э У صر 3 LSA Ѿ ̂ ̄

ॅΩԦ ३	Ԧ ३	
	area default-cost	stub ᴡ ᴇᴇ ᴇ̈ ३ Â

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Ԧ ३ ᴉ ᴧ	ᴧ	
	-	-

44.1.4 area virtual-link

ᴳ Ԧ ३ … ᴙ ᴈ ᴧ ˘ ᴳ Ԧ ३ **no** ᴊ ᴌᴟ ᴙ ᴈ ᴧ 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**]

ᴧ	ᴧ	
	area-id	ᴇ ᴇᴇ ᴇ ᴇᴇ ᴧ Â ᴇ̀ ᴊ ᴌᴟ ᴙ̀ ᴙ ᴈ ᴙ ᴈ IPv4 ᴍ Â
	router-id	(router-ID) Â
	hello-interval *seconds*	ᴍ ᴧ ᴈ ᴊ hello Â ᴍ 1-65535 Â
	dead-interval *seconds*	ᴍ ᴧ ᴈ ᴙ̀ Â ᴍ 1-65535 Â
	retransmit-interval *seconds*	ᴍ ᴧ ᴈ ᴊ LSA Â ᴍ 1-65535 Â
	transmit-delay *seconds*	ᴍ ᴧ ᴈ ᴊ LSA Â ᴍ 1-65535 Â
	instance *instance-id*	instance˘ a ᴊ instance Â ᴍ 0-255

Ԧ ’

hello-interval й 10 ’

dead-interval й hello-interval ’

retransmit-interval й 5 ’

transmit-delay й 1 Â

Ԧ ʒ Â

G

OSPFv3 è˘ Ш б ў Ш ˘ Л ɖ ˜ ˆ э

OSPFv3 ą Â У э Ш б ў Ш ˘ ˩ Л G

G Ш ˩ ў Ш Â

Ш a ї stub Ш 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
```

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Ԧ ʒ	
show ipv6 ospf	OSPFv3 ą Â
show ipv6 ospf neighbor	OSPFv3 ą Â
show ipv6 ospf virtual-links	OSPFv3 ą Â

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44.1.5 auto-cost

OSPFv3 ˜ ˩ ɣ ˥ ḣ˘ G Ԧ ʒ ŭ ‖ ˥

g ˥ ḣ˘ G Ԧ ʒ **no** ˜Ω ˥

˥ ḣ Â

onoost

৭	
reference-bandwidth *ref-bw*	৭ ḣ˘ Лυ Mbps ѝ´ Æ Â ت 1-4294967 Â

Ϸ ϟ Â

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OSPFv3 ˜ Hello ╟ ϟ ˘ OSPFv3 ϋ ╟ BFD ╖ ϧ˘ ˚ ϋ
ϟ FULL ˜Ω BFD˚ ˘ BFD 8 ˘ У BFD
˘ OSPFv3˚ 2 Â
≠ ϟ ϧ ϟ Ϸ ϟ **ipv6 ospf bfd** [**disable**] ϋ ╟ ˜Ω ϟ BFD
╖ ˘ ϟ . ˝I ¥ Ю **bfd all-interfaces** Ϸ ϟ Â

ϖ R

˜ΩϷ ϟ

Ϸ ϟ	
ipv6 router ospf *process-id*	ϋ ╟ OSPFv3 ώ OSPFv3 Â
ipv6 ospf bfd [**disable**]	OSPFv3 ϟ ϋ ╟ ˜Ω G BFD Â

ϟ

Ϸ ϟ ϟ

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44.1.7 clear ipv6 ospf process

G Ϸ ϟ ϋ OSPFv3 R Â

clear ipv6 ospf [*process-id*] **process**

ϟ

ϟ	
process-id	OSPFv3 ϟ˘ تن 1-65535 0 0 13.98 62.30[0 9 10C556

w R	Ю R ˘ ¥ ŭ ╟ OSPFv3 R enable clear ipv6 ospf process

˜Ωĥu ३	ĥu ३	
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	-	-

44.1.8 default-information originate

ধ У ώ OSPFv3 ˘ G ĥu ३ **default-information originate** Â ĥu ३ **no** ˜Ω 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*]

৸	
always	ˆ ৲ ˜ ˜Ω G OSPFv3 ˘ ধ ˘ a ˜ ī Â

metric *–D*

redistribute **default-information** Ю ३ ˘ OSPFv3 ˚ ╟ ৲ й ASBR˜ ˜ Â

Л **redistribute** ц ˘ ˜ OSPFv3 è Â ASBR ц ˘ **default-information originate** Ю ३ Â

always ৲ ˘ a ї ج ˘ OSPFv3 ˚ ৲ ˜ У Â Л س a˚ ˘ ї ц ˘ ৲ Л **show ipv6 ospf database** OSPFv3 ÂOSPFv3 **show ipv6 route** Ю ३˘ ৲ Л ˆ Â ḣ˘ ৲ **default-information originate** Ю ३ Ю˜ a Ю ३ **default-metric** Â

OSPFv3 ч ˘ ص 1 ˚ ৲˘ ص 2 ثن a ৲ Âˆ У э ج ч ˘ ৲ ˘ ص 1˚ ص 2˙ ˝l ˘ Л **show ipv6 route** ৲ ص 1 Â stub Ш è a ৲ Л ц Â

Ю R ˘ ¥ ˆ ц '

```
default-information originate always
```

Ю ३	
redistribute	ą ˆ ৲ Â
show ipv6 ospf	OSPFv3 ą Â
show ipv6 ospf database	OSPFv3 ą Â

৲

Ю ३ ˥ ৲	
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44.1.9 default-metric

G Ю ३ ˆ ৲ ḣ˘ G Ю ३ **no** ḣ Â

default-metric *metric-value*

no default-metric

৲	
metric-value	ˆ ৲ ḣ Â ثن 1-16777214 Â

	20
Ԧ ʒ	Â
G	Ԧ ʒ ɻ **redistribute** Ԧ ʒ У G ˘ ʃ ɿ ḣ Â ɲ Ԧ ʒ ч ' **default-information originate** Ԧ ʒ ' ʃ ɿ ˘ ʃ ɿ G 20 ɔ й ḣ Â
ш R	Ю R ˘ ɣ ʃ ɿ metric й 10' default-metric 10

Ԧ ʒ

Ԧ ʒ	
redistribute	ҕ ʃ ɿ Â
show ipv6 ospf	OSPFv3 ҕ Â

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44.1.10 distance

G Ԧ ʒ a ɻ صر OSPFv3 ˘ G Ԧ ʒ **no** ḣ Â

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

no distance [**ospf**]

ʃ

ʃ	
distance	˘ ɻ ḣ تن' 1-255
intra-area *distance*	ш ̈ ˘ ɻ ḣ تن' 1-255
inter-area *distance*	ш ˘ ɻ ḣ تن' 1-255
external *distance*	˘ ɻ ḣ تن' 1-255

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Ш ' й 110ґ

' й 110ґ

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OSPFv3 a л ص a л ˘ Ъ ę Â

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a л OSPFv3 . ˝l ˘

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ЛЪЮ R ˘ OSPFv3 й 160

```
Ruijie(config)# ipv6 router ospf 20
Ruijie(config-router)# distance ospf external 160
```

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ipv6 router ospf	ŭ ╟ OSPFv3 Â

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Ъ ę ˥ л

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44.1.11 ipv6 ospf area

G Ъ ę ч ч б OSPFv3 ˘ G Ъ ę **no** ˝Ω ╖ Â

ipv6 ospf *process-id* **area** *area-id* [**instance** *instance-id*]

no ipv6 ospf *process-id* **area** [**instance** *instance-id*]

ч

ч	
process-id	ospf л ت 1-65535 Â
area *area-id*	ч ч б OSPFv3 Ш ش Â è л Лu й У э У э IPv4 ńń Â

instance *instance-id*	ϧ OSPFv3 E ϫ 0-255 Â

ϥ Â

Ϸ ϗ ϧ Â

ϧ ϗ ϫ ϧ Ю ϊ G Ϸ ϗ ϋ ϟ ϧ ϧ ϭ OSPFv3 ϊ **ipv6 router ospf** OSPFv3 ϡ OSPFv3 ϫ ϧ ϟ ϧ ϭ Â

G **no ipv6 ospf area** Ϸ ϗ ϧ a ϊ ϧ ϧ ϭ OSPFv3 Â

G **no ipv6 router ospf** Ϸ ϗ ϧ a ϊ ϧ ϧ ϭ OSPFv3 Â

ϧ *instance-id* ϫ ϗ ϊ Ω Â

Ϸ ϗ ϫ ϧ Э ϩ ϭ ϧ ϭ OSPFv3 Â

Ю R ϡ ϫ ϧ int fastethernet 0/0 Э ϋ ϟ OSPFv3 ϡ ϧ ϭ R

ϖ R

```
int fastethernet 0/0
ipv6 ospf 1 area 2 instance 2
```

Ϸ ϗ

disable	̃Ω OSPF ٨ G BFD 8 Â
instance *instance-id*	٨ OSPFv3 E تن 0-255 Â

˘ Лu OSPFv3 Ю BFD й ñ Â

Ĥu ३ ٨ Â

G

٨ . ̈I ¥ Ю **bfd all-interfaces** Ĥu ३ Â

⌟ Лu ˘ **ipv6 ospf bfd** Ĥu ३ ٨ G BFD ˘ ≠ ⌟ Лu G OSPFv3 Ю Ĥu ३ **bfd all-interfaces** ٨ б OSPFv3 ٨ BFD ˘ G **ipv6 ospf bfd disable** ̃Ω ٨ BFD ╖ Â

w R

̃ΩĤu ३

Ĥu ३	
ipv6 router ospf *process-id*	ŭ ╟ OSPFv3 ώ OSPFv3 Â
bfd all-interfaces	OSPFv3 ٨ G BFD Â

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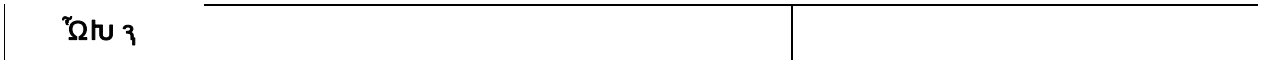
44.1.13 ipv6 ospf cost

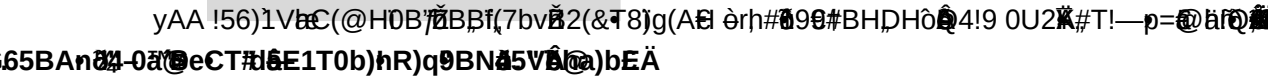
G Ĥu ३ ٨ ३ˢ ˘ G Ĥu ३ **no** ḣ Â

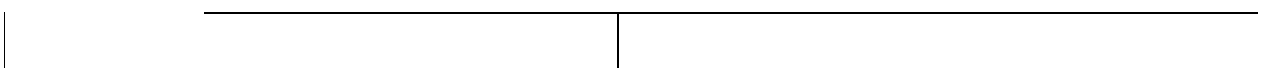
ipv6 ospf cost *cost* [**instance** *instance-id*]

no ipv6 ospf cost [**instance** *instance-id*]

٨	٨	
	cost	٨ ३ˢ Â







instance *instance-id*	৲ OSPFv3 E ˘ تن 0-255 Â

ipv6 ospf hello-interval 4˝ Â

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৲ Â

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ڎ ḣ ৶˘ ǐ ‡ ̃Ω Â

�и ৻ hello 4˝ ˘ g ɷ hello ˘

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ʊ a g ৲ ˘ ˘ ˈ

ɣ ৻ hello Â

ڎ ৶ ḣ Â

ɯ R

Ю R ˘ ɣ ৲ �и ḣ �и 60s'

```
ipv6 ospf dead-interval 60
```

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	MTU Â
Ԧ ২	৲ Â
G	OSPFv3 ج ؟ ৲ MTU Ω ৲ MTU ĭ ৲˘ ؟ è ৲ MTU ¥ ৲ MTU˘ ж ˇΩ a Â ৲ Ω ˇΩ MTU ā Â
	ΛΩЮ R ˘ ethernet 1/0

ш R

G

ž ৻ Hello ḣ ৲ ˘ ĭ ‡ ˜Ω Â

w R

Ю R ˘ ¥ ৻ ৻ hello й 20s'

```
ipv6 ospf hello-interval 20
```

ƕ ३	
ipv6 ospf dead-interval	৻ Э й Â

ƀ ' ' 120 ' . ˝l ḣ' й 0Â

ƀυ ३ ^ Â

G ⌟Лυ ˘صر ^ Â

ЛυЮ R ˘ OSPFv3 ˘ IPv6 فذسه й 2001:DB8:4::1˘ . ˝l ḣ й 1˘ й 150 Â

w R

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ipv6 ospf neighbor 2001:DB8:4::1 priority 1 poll-interval 150
```

˝Ωƀυ ३

ƀυ ३	
Ipv6 ospf priority	^ . ˝l ḣ Â
Ipv6 ospf network	^ صر

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44.1.18 ipv6 ospf network

G ƀυ ३ ^ ˘صر G ƀυ ३ **no** ḣ Â

ipv6 ospf network {**broadcast | non-broadcast** | **point-to-point | point-to-multipoint** [**non-broadcast**]} [**instance** *instance-id*]

no ipv6 ospf network [**broadcast | non-broadcast** | **point-to-point | point-to-multipoint** [**non-broadcast**]] [**instance** *instance-id*]

point-to-multipoint non-broadcast	ص
instance *instance-id*	۸ OSPFv3 E تن 0-255 Â

ص Â

ħυ ३ ۸

G ۲ Λυ ص Ω ˜Ω ˘ ۸ ص Â

w R Ю R ˘ ¥ ۸ б OSPFv3 ۸ ص ۸' ۸
`ipv6 ospf network point-to-point`

ħυ ३	
ipv6 ospf priority	۸ . ˝l Â
show ipv6 ospf interface	OSPFv3 ۸ ع Â
ipv6 ospf area	۸ ۸ б OSPFv3

۸

ħυ ३ ٦ ۸	
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44.1.19 ipv6 ospf priority

G ħυ ३ ۸ . ˝l ˘ G ħυ ३ **no** ḣ Â

ipv6 ospf priority *number-value* [**instance** *instance-id*]

no ipv6 ospf priority [**instance** *instance-id*]

۸	
number-value	۸ . ˝l Â تن 0-255 Â
instance *instance-id*	۸ OSPFv3 E ˘ تن 0-255 Â

1

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صر è˘ w DR/BDR(٪/ ` ٪) Â ہ DR/BDR
w ˘ ˙ ˝I ḣ ˙ ˝I ẻ DR BDR˘ ˙ ˝I ḣ ٪˘ Router-ID ḣ
˘ ˙ ˝I ẻ DR BDR Â
˙ ˝I ḣ ẻ˚ ˘ a ٧ б DR/BDR w Â
è ہ DR Ω BDR˘ ٪ g ٧ ˙ ˝I a˚ ˙ ˘ ٧ ہ ЮУ
DR BDR w ˘ ˚ ٧ б w Â

ЮR ˘ G ٧ ہ DR/BDR w ˘ a ˝A ẻ˜ DR BDR˝
0 1 Tf 2 Trd 108 0 T22ø 0 R1.659 22 021 pw [<03D.581E2 Rip_0 1v6 0 @g Â bH˜ hÕf†Â Ú ì <2°Q ýð < TÂ bH $FhdÀ 6„$C˜fL Q4f„tÀ
ipv6 ospf priority 0

Ĥu ३ ^ Â

G ŷ ɑ ɑ[ą · ↓ ˘ ↓ LSA ˘ ˆ Â ↓Л
˘ Ĥu ३ ï ˘ ج ą̈
ˆ ˘ · LSA ą Â

w R Ю R ˘ ¥ · LSA ŷ 10s'
```
ipv6 ospf retransmit-interval 10
```

Ĥu ३

Ĥu ३	
show ipv6 ospf interface	OSPFv3 ^ ą Â
ipv6 ospf area	^ ^ б OSPFv3

↓

Ĥu ३ ˥ ↓

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44.1.21 ipv6 ospf transmit-delay

G Ĥu ३ ج ^ Э· LSA ˘ G Ĥu ३ **no** ḣ Â

ipv6 ospf transmit-delay *seconds* [**instance** *instance-id*]

no ipv6 ospf transmit-delay [**instance** *instance-id*]

^

^	
seconds	↓ LSA Â تن 1-65535( ) Â
instance *instance-id*	^ OSPFv3 E تن 0-255 Â

1s

Ĥu ३ ^ Â

G G Ĥu ३ ج ^ Э· LSA Â

w R Ю R ˘ ¥ ج ^ Э· LSA '

```
ipv6 ospf transmit-delay 2
```

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ĥU ३	
show ipv6 ospf interface	OSPFv3 ^ ą Â

^

ĥU ३ ˥ ^

^	
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44.1.22 ipv6 router ospf

G ĥU ३ OSPFv3 ˘ G ĥU ३ **no** Ž OSPFv3 Â

ipv6 router ospf *[process-id]*

no ipv6 router ospf *process-id*

^

^	
process-id	OSPFv3 ^ Â ^ ˘ ŭ 1 Â

OSPFv3 Â

ĥU ३ ŏ Â

G OSPFv3 ˅˘ ȯ Â
ŋ˅˘ ^ ŋ ţ 32 ə OSPFv3 Â

W R Ю R ˘ ţ ŭ ╟ OSPFv3 '

```
ipv6 router ospf 1
```

ŽĥU ३

ĥU ३	
ipv6 ospf area	^ ^ б OSPFv3 Â
show ipv6 ospf	OSPFv3 ą Â

^

ĥU ३ ˥ ^

^	

	number	DD ت 1-65535

й 5 Â

Ъu ३ Â

G б э ۷ Ц ˘ è ۷ˆ ! ˘ Ъu ३˘ ۷ 8 э
OSPFv3 R ï ۷ ۷ DD Ц ц ↑ Â

Ю R max-concurrent-dd й 4˝ ۷ ï ۷ б 4 э Ц ц DD '

w R

G

У э ˥ й ˥˘ a ̈Ą Ո ˥ hello Â
Ъ ę ˥ ˥ б OSPFv3 ˥ ˘ з a Â

w R

Ю R ˘ ˥ ї VLAN1 ˥ ˥ б OSPFv3 '

```
passive-interface default
```

Ω Ъ ę

Ъ ę	
ipv6 ospf area	˥ ˥ б OSPFv3 Â
show ipv6 ospf	OSPFv3 ą Â
show ipv6 ospf neighbor	OSPFv3 ą Â

˥

Ъ ę ˥ ˥

˥	
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44.1.26 redistribute

G Ъ ę ŭ ╟ ˥˘ è ы ˜ ą ώ OSPFv3 è Â G
Ъ ę **no** ˥ ╥ g ˥ ˥ ˥ Â

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*]

˥

˥	
bgp	ÿ bgp ˥
connected	ÿ ˥
isis [*area-tag*]	ÿ isis ˥ ˘ *area-tag* ε E э isis R
ospf *process-id*	ÿ ospf ˥ ˘ *process-id* ε E э ospf R˘ ˥ ḣ ش' 1-65535
rip	ÿ rip ˥
static	ÿ ˥

level-1 | **level-1-2** | **level-2**	৲ ĭ ৲ IS-IS G ˘ ¥ level ĭ ৲ Â
match	৲ ĭ ৲ OSPFv3 G ˘ ¥ ĭ ৲' internal' ш ą̈ б ш ' external [1|2]' E1 à E2
metric *metric-value*	OSPFv3 external 2 LSA metric˘ metric-value metric ˘ ৲ ḣ ت' 0-16777214
metric-type {*1|2*}	ص й E-1 E-2
route-map *route-map-name*	ĭ ৲ ˜Ω Â map-tag ɹ a 32 Â
tag *tag-value*	ĭ ĭ OSPFv3 ą̈ tag ḣ˘ ৲ ḣ ت' 0-4294967295

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ړ У˘ ˩ У ˩ э OSPFv3 ˘ ≠ ɖ э
ړ У Â

˩ ˩˘ ˜ ą̈ ˸ ṁ ˘ Лu a ў ˩ ˘
g ˸ ї̆ g Â ج ů ╟ OSPFv3 ˩˘ ˝I
Router ID˘ ج OSPFv3 ѐ ы ˥ Â

ш R

Ю R ˘ ї ˥ б OSPFv3 й 1.1.1.1'

```
router-id 1.1.1.1
```

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ъu ъ	
ipv6 ospf priority	˥ ˙ ˝I Â
show ipv6 ospf	OSPFv3 ą Â

ḣ† ὶ ΛυΩ ч ą'

1 à ⁂ RGOS 10.4 ƷƷ ɱ˘ a timers throttle spf ƪυ ३१ Â ḣ ὶ timers spf 5 10

2 à RGOS 10.4 ˘ timers throttle spf ƪυ ३१ Â ą Ω timers spf ƪυ ३१ a ˘ SPF Λυ **timers throttle spf** ƪυ ३१ ὶ ñ˘ ৲ timers throttle spf ƪυ ३१ Â

ƪυ ३१ Â

spf-delay Λ spf-holdtime ˘ *OSPF* √ ν ≠ ˘ ≠ ˘ Λ ˵ ´ *CPU* Â

G

٩	
spf-delay	ĦŘ SPF ˘ Л ù ´ Æ˘ ت 1-600000 ÂOSPFv3 ↑ ˩ ˩˘ ˩ SPF ج *spf-delay* ˩ Â
spf-holdtime	ĦŘ ч SPF ƷƷ ˘ Л ù ´ Æ˘ ت 1-600000 Â
spf-max-waittime	ĦŘ ч SPF ƷƷ ˘ Л ù ´ Æ˘ ت 1-600000 Â

spf-delay' 1000 '

spf-holdtime' 5000 '

spf-max-waittime' 10000 Â

```
Number of AS-Scoped Unknown LSA 0
Number of LSA originated 11
Number of LSA received 4
Log Neighbor Adjency Changes : Enabled
Number of areas in this router is 2
Area BACKBONE(0)
Number of interfaces in this area is 1(1)
SPF algorithm executed 4 times
```

timers spf	OSPFv3 ج ʃ ˩ ɤ ə̧ ˘ SPF ˘ Ʌ ˥ ч SPF à Â

˩

ƪ ʒ ˥ ˩

˥	
-	-

44.2.2 show ipv6 ospf database

OSPFv3 ə̧ Â

show ipv6 ospf [*process- id*] **database** [*lsa-type* [**adv-router** *router-id*]]

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˥	
process- id	OSPFv3 ˥
lsa-type	LSA ص˘ ƱƱƱ ŭ ' 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 ˥ ˘ LSA ə̧
adv-route*r router-id*	router LSA ə̧ Â

ƪ ʒ Â

G

ƱƱƱ R ɣ OSPFv3 ə̧

```
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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44.2.3 show ipv6 ospf interface

OSPFv3 ƒ ə Â

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

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interface-type interface-number	ƒ ص Ω ƒ Â

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ȮOȶu ३ OSPFv3 ˊ 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 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
```

ˊ ŭ б BFD ╟, ȶu ३ ╗ ľ **BFD enabled** Ľ 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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44.2.4 show ipv6 ospf neighbor

OSPFv3 ٤ Â

show ipv6 ospf [*process- id*] **neighbor** [*interface-type interface-number* [**detail**]| *neighbor-id* |**detail**]

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process-id	OSPFv3 ٨
detail	٤ Â
interface-type interface-number	٨ ص Â
neighbor-id	Router ID Â

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```
R 1' ƒOƒu ३ ٧ OSPFv3 ٤
Ruijie# show ipv6 ospf neighbor
OSPFv3 Process (1) , 1 Neighbors, 1 is Full:
```

```
Neighbor ID  Pri  State     Dead Time   Interface     Instance ID
2.2.2.2      1   Full/DR    00:00:33    FastEthernet 1/0     0
```

R 2' ЮħU ३ ৶ OSPFv3 ৲

```
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 ৶ , ঋ ৲ è ╗ ЮI' **BFD session state up**Ł

```
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 ৲ ৲ Â

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44.2.5 show ipv6 ospf route

OSPFv3 Â

show ipv6 ospf [*process- id*] **route** [**count**]

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process- id	OSPFv3 ৸
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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OSPFv3 ə Â

show ipv6 ospf [*process-id*] **summary-prefix**

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process- id	OSPFv3 ৭

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```
Ruijie# show ipv6 ospf summary-prefix
OSPFv3 Process 1, Summary-prefix:
2001:db8::/64,Metric 16777215,Type0,Tag0,Match count0,advertise
```

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ipv6 router ospf	ŭ ╟ OSPFv3 Â
summary-prefix	OSPFv3 ॐ

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44.2.7 show ipv6 ospf topology

OSPFv3 0 ` ॐ # « Ụ - ~

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```
Ruijie# show ipv6 ospf topology
OSPFv3 Process (1)
OSPFv3 paths to Area (0.0.0.0) routers
Router ID       Bits  Metric    Next-Hop
Interface
1.1.1.1          EB  --
2.2.2.2          E   1        2.2.2.2
FastEthernet 1/0
OSPFv3 paths to Area (0.0.0.1) routers
Router ID       Bits  Metric    Next-Hop
Interface
1.1.1.1          B   --
```

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ipv6 router ospf	ƒU ╟ OSPFv3 Â
area range	OSPFv3 Ɯ فخ سم تن

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44.2.8 show ipv6 ospf virtual-links

OSPFv3 ǫ Â

show ipv6 ospf [*process- id*] **virtual-links**

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	process- id	OSPFv3 ƒ

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```
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 ৯ Â

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45.1.2 distance IPv6

RIPng ˘ G ใบ ๓ **distance** ๗ ๗

distribute-list

originate	˜ ipv6 ˘ ≠ ˜ ὲ
metric *metric-value*	ḣ˘ ৷ ḣ ‘ت 1-15 Â

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45.1.8 passive-interface RIPng

ৰ جھ У э ৰ Э ৰ ╖ ˘ G ৰ Ĥu ३ **passive-interface** Ĥu ३ Â
Ĥu ३ **no** ŭ ৰ ╖ Â

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

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

ৰ	**default**	ৰ ৰ й passive
	interface-type interface-num	ৰ صر б ৰ

	ৰ й passive Â
Ĥu ३	Â
G	**passive-interface default** Ĥu ३ ৰ й passive ˘ ৲ Ĵu G **no passive-interface**

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*]

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bgp	ÿ BGP ˆ
connected	ÿ ˆ
isis [*area-tag*]	ÿ ISIS ˆ ˘ *area-tag* ˆ ISIS R
ospf *process-id*	ÿ OSPF ˆ ˘ *process-id* ˆ ospf R˘ *process-id* ৲ ḣ تن' 1-65535
static	ÿ ˆ
metric *metric-value*	ˆ ৲ ˜ ˆ ˆ RIPng ḣ
route-map *route-map-name*	ˆ ৲ ˜ ˆ

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default-metric˘ **metric** ѝ 1'

a **route-map**'

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45.1.11 timers (ipv6)

RIPng ˘ G Ъ ъ **timers** Â Ъ ъ **no** Â

timers *update invalid flush*

no timers

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ч	*update*	˘ Л Âupdate Ъ Ж ф ч □ ˘ ˆ ˘ invalid Ω flush Æ Â 30 ч У Â
	invalid	˘ Л ˘ ÿ У Âinvalid Ъ Ж ф è ц ˘ ч й Â й Ь˝ ˘ ج ą ˆ ˙ ! ˘ ˘ ч й ˘ ώ invalid ’ invalid ą ˆ ˘ ˚ Æ Â Invalid й 180 Â
	flush	˘ Л ˘ ÿ RIPng ώ invalid Â flush ˆ ˘ ţ invalid Â flush й 120 Â

	ą Ю˘ й 30 ˘ й 180 ˘ й 120 Â
Ъ ъ	Â
G	Л Э ˘ ч ˚ ╗ ˜ Л ч Â ج ч У Э ˘ RIPng ń У У Â У a RIP ˘ Â ń RIPng ч ˘ ч Л **show ipv6 rip** ъ Â
	ج æ Э ˘ ˚ У ˘ ц й ˚ Â У ч ج Л 2Mbps Л Э ˘ ч Л У ˘ ч Л Â

ш R	ЛЮ R ˘ RIP 10 ч У Â 30 ą ˆ ˘
	ч й ˘ ώ invalid ’ ώ invalid ˘ 90
	˘ Â
	`Ruijie(config)# **ipv6 router rip**`
	`Ruijie(config-router)# **timers** *10 30 90*`

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show ipv6 rip	RIPng ~ ৲ б
show ipv6 rip database	RIPng

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45.2

45.2.1 show ipv6 rip

RIPng ~ ~ ৲ ∩ ৲ ৯ ˘ G **show ipv6 rip** ħu ३ Â

show ipv6 rip

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```
Ruijie# show ipv6 rip
Routing Protocol is "RIPng"
  Sending updates every 10 seconds with +/-50%, next due in 8 seconds
  Timeout after 30 seconds, garbage collect after 60 seconds
  Outgoing update filter list for all interface is:
    distribute-list prefix aa out
  Incoming update filter list for all interface is: not set
  Default redistribution metric is 1
  Default distance is 120
  Redistribution:
```

```
    Redistributing protocol connected route-map rm
    Redistributing protocol static
    Redistributing protocol ospf 1
  Default version control:  send version 1, receive version 1
  Interface              Send   Recv
    VLAN 1               1      1
    Loopback 1           1      1
  Routing Information Sources:
    None
```

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show ipv6 rip	RIPng ~ ৲ б

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45.2.2 show ipv6 rip database

RIPng ৴ ৯ ˘ G **show ipv6 rip database** ħu ३ Â

show ipv6 rip database

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```
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 ~ 4 6

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46 IPv6

46.1 IPv6

46.1.1 clear ipv6 mroute

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clear ipv6 mroute {***** | *v6group-address* [*v6source -address*]}

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*	IPv6 è ৭ ৲ Â
v6group-address	IPv6 IPv6 فخسم Â
v6source -address	IPv6 IPv6 فخسم Â

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```
Ruijie# clear ipv6 mroute *
```

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show ipv6 mroute	-
clear ipv6 mroute statistics	-

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46.1.2 clear ipv6 mroute statistics

Ĥu ३ IPv6 ৭ ৲ Â

v6rpf-address	˚ v6source-address Ю У ipv6 فخ سم
interface-type *interface-number*	٧ صر Ω ٧ ٧
distance	˘ ā ĭ G RPF Â ħ й 0 Â

IPv6

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IPv6 ˘ k ˜ جم سم ą IPv6 rpf
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٧ Ю У ip˘ ж ٧ й صر Â
G rpf ‡ ' ÿ è У э . ˘ ٧ جم bgp Ω
˘ ‡ . ”I’ ÿ ´ è У э . ´ ’ γ
˘ й rpf IPv è Ц л è Ю ٧ $ ъ ф جم D

limit ḣ ẗ 1024

threshold ḣ ẗ 2147483647

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```
Ruijie(config)# ipv6 multicast route-limit 100 90
```

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46.1.6 ipv6 multicast-routing

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ipv6 multicast-routing

no ipv6 multicast-routing

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```
Ruijie(config)# ipv6 multicast rpf longest-match
```

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46.2 IPv6

46.2.1 show ipv6 mroute

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show ipv6 mroute *[v6group-address] [v6source-address]* [**summary**] [**count**]

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v6group-address	IPv6 فخسم Â
v6source-address	IPv6 فخسم Â
summary	IPv6 ৲ Â
count	IPv6 ৲ Â

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G ƚυ ३ IPv6 ৰ ৲ Â

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```
Ruijie# show ipv6 mroute
IPv6 Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
```

```
(2222::1234, ff56::1234), uptime 00:00:31, stat expires 00:02:59
Owner PIM-SMv6, Flags: TF
Incoming interface: FastEthernet 2/1
Outgoing interface list:
FastEthernet 1/3
R 2' ЛЫО R ھ
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' ЛЫО R ھ
Ruijie# show ipv6 mroute summary
IPv6 Multicast Routing Table
Flags: I - Immediate Stat, T - Timed Stat, F - Forwarder installed
Timers: Uptime/Stat Expiry
Interface State: Interface (TTL)
(2222::1234, ff56::1234), 00:00:28/00:03:25, PIM-SMv6, Flags: TF
```

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clear ipv6 mroute	-
clear ipv6 mroute statistics	-

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46.2.2 show ipv6 rpf

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show ipv6 rpf *v6source-address*

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v6group-address	IPv6 IPv6 فخ سم Â

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G ħu ३ IPv6 فخ سم RPF ٤ Â

ЛЫЮ R ٭ 2222::3333 RPF ٤

```
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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```
Ruijie#show ipv6 mvif
Interface              Mif   Owner          Uptime
                       Idx   Module
Register               0                    03d03h09m
VLAN 1                 1     PIMSMV6        03d03h09m
```

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46.3 IPv6

46.3.1 debug nsm mcast6 all

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debug nsm mcast6 all

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46.3.2 debug nsm mcast6 fib-msg

IPv6 ˜ ॐ ॠ ˜Ω Â G ƚu ३ **no** ˜Ω ˜Ω

debug nsm mcast6 fib-msg

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```
Ruijie# debug nsm mcast6 fib-msg
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46.3.3 debug nsm mcast6 register

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debug nsm mcast6 register

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47 PIM-SMv6

47.1 PIM-SMv6

47.1.1 clear ipv6 mroute

clear ipv6 mroute {* | ipv6_group_address | ipv6_group_address ipv6_source_address }

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*

clear ipv6 mroute statistics {* | *ipv6_group_address* [*ipv6_source_address*] }

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```
Ruijie# clear ipv6 pim sparse-mode bsr rp-set *
```

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ipv6 multicast-routing

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˘ a ŏ ╟ IPv6

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```
Ruijie(config)# ipv6 multicast-routing
```

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47.1.6 ipv6 pim accept-bsr list

ipv6 pim accept-bsr list *WORD*

৭	
WORD	v6 acl

PIM-SMv6 ৷ BSM Â

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G ج PIM-SMv6 ৷ Ɔ ƪ ३˘ ৸ BSR تن Â

w R
```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim accept-bsr list bsr-list
```

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47.1.7 ipv6 pim accept-crp list

ipv6 pim accept-crp list *WORD*

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WORD	v6 acl

BSR Ąٰ RP ˆ Â

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جِ Ąٰ BSR Э ƪu ३ˇ Ąٰ BSR ٰ BSR ˇ ƛ C-RP فذ سم
تن ٦ ع ٤ تن ⁸ Â

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```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim accept-crp list crp-list
```

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ՀՅ BSR Э a prefix-count ԝ 0 C-RP-ADV Â

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G ՀՅ Ą BSR Э ԻՍ ՀՅ Ą BSR ԝ BSR

```
Ruijie(config)# ipv6 pim accept-register list register-access-list
Ruijie(config)# ipv6 access-list register-access-list
Ю          ˘  a ï          fe80::2d0:f8ff:fe22:33ad      ˝Ą
Ruijie(config-ipv6-acl)# deny ipv6 fe80::2d0:f8ff:fe22:33ad/128
any
```

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ipv6 access-list	-

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47.1.10 ipv6 pim bsr-border

ipv6 pim bsr-border

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˘ a ƚu ३˘ . ƛ a BSR

ƚu ३ ƛ

G ỳ ⓒ ⁸ BSM ˘ ˩ƱƬ ƛ Э BSR ˘ э ƛ ⌡ BSM ƛ ˚ . x ˘ BSM ≠ a˚ ÿ э ƛ ˩ Â

ᴡ ᴿ ƬƬ 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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47.1.11 ipv6 pim bsr-candidate

ipv6 pim bsr-candidate *interface-type interface-number* [*hash-mask-length*] [*priority-value*]

৸	৸	
	interface-type terface-number	৸
	hash-mask-length	ন্ত ঈ <0-128>ˇ ঈ RP ɯ ⁸ HASH ˇ 126
	priority-value	ন্ত ঈ <0-255>ˇ Ą BSR . ˝I ৸ ˇ 64

ˇ a ƚυ ३ˇ . a Ą BSR

ƚυ ३ ώ

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ج У э PIM-SMv6 ھ è˘ ᵍ ج У э ر У ɯ ⅄ BSR Â BSR ৭ RP ą Â э Ą BSR ɯ ɯ ɳ ر У Ω BSR Â ج BSR ą ʒ ɱ˘ C-BSR ঈ BSR˘ ʊ ج PIM-SMv6 ھ è ৭ ɯ ˇ ↑ ü BSR فتر سم Ω. ˝I Â

ᴳ ƚυ ३ ৶ Λυ ĭ BSR فتر سم ৭ У э ɯ ą PIM ˇ э ⅄ ˝I BSR فتر سم ৶ ĭ ɯ ą è فتر سم ˇ ৭ ĭ فتر سم IPV6 б ʒ ˇ ɖ э فتر سم ɔ ঈ BSR فتر سم˘ ৭ ɯ ą ' ĭ ‡ x ą Â

ɱ ঈ BSR˘ ĭ ÿ ৸ У э Ą BSR è ĭ У э ɯ ą ˇ ˆ ɱ У э . ˝I ḣ^ У . ˝I ḣ˘ Λ IPV6 فتر سم˜ Â

ɯ ᴿ

```
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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47.1.12 ipv6 pim dr-priority

ipv6 pim dr-priority *priority-value*

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priority-value	˙ ˝l ḣ˘ ḣ ˘ ˙ ˝l Â ىت ى' <0-4294967294> ḣ ى' 1 Â

˘ DR˙ ˝l ḣ ى 1

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У э DR ˘ Ю ΰ α '
ل У ھھ è Hello ˙ ˝l ƺ ˘ ھ جھ DR ˘ ˝l
˙ ˝l ˘ ˙ ˝l ˘ ى DR' э ل ˙ ˝l ˘ ھ˘
IP فذ سھ ˘ DR Â
ل У ھھ è э جھ Hello è ˙ ˝l ƺ ˘ ھ э
ھھ è DR w è˘ IP فذ سھ ˘ DR Â

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```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim dr-priority 11234
```

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47.1.13 ipv6 pim ignore-rp-set-priority

ipv6 pim ignore-rp-set-priority

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	˘ ˚ RP-SET è RP ˙ ˝l
ƪu ३	ώ
G	ج RP ˘ RP ˙ ˝l ˘ ƪu ३ Â

```
Ruijie# configure terminal ύg9R9IƱGÃ%w4Ê %nfq….s#hGÞ9h)'bä$5Sx2ÝNã!G6qƭ)h"v
```

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47.1.16 ipv6 pim neighbor-filter

ipv6 pim neighbor-filter *ipv6_access-list*

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ipv6_access-list	ipv6_access-listʹ ƪu ⅄ acl

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G ˘ ╗ PIM ώ ˘ k ⁸ Â ৲ "
˘ ‡ PIM-SMV6 a˵ б ˆ peering˜ ˜Ω ˘ è б
˜Ω Â

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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
ƗO ˘ 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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47.1.17 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

g · g ⅔ ĭ ā ˘ ˚ ! ˆ
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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47.1.18 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

	̈Ą	a	̈Ą	⁸	У ̀˘	̈ ‡˘	a˳	
̦	Â з˳	У э	.	Warning Â	з 3*	̈Ą	⁸	+ ̈Ą
	a	65535˘	̈ ‡˘	˳	У э	.	Warning Â	

Ю R ̈Ą 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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47.1.20 ipv6 pim query-interval

ipv6 pim query-interval *interval-seconds*

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Interval-seconds	ت ѝ <1-65535> ˇ ´ Æ ѝ

ˇ Hello ৲ ḣ 30s

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G Hello ৲ ˇ Hello ɖ ≠ ЛЮ ‡ ' Hello ɖ ѝ Hello ৲ 3.5˝ ' Hello ৲ * 3.5 > 65535˜ ɜ Hello ৲ ⁸ ѝ 18725 Â

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```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim query-interval 60
```

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47.1.21 ipv6 pim register-checksum-wholepkt

ipv6 pim register-checksum-wholepkt [**group-list** *ipv6_access-list*]

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ipv6_access-list	*ipv6_access-list* ƚu ɹ acl Â group-list ipv6_access-list ˘ فذ سم Â

˘ Ąą Ո PIM Ո Ąą ˘ ɜ PIM Â

ƚu ३ ŏ

G ĭ ɥ ك Ąą Ո ŷ ɜ PIM ˜ ŭ ɛ è ˘ ´ Ąą PIM Â ŷ ɷ ò ɴ ˘ ŏ ɷ ƚu ३ Â

ɯ 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 Ąą Ո
Ruijie(config-ipv6-acl)# permit ipv6 any ff66::6666/64
```

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ipv6 access-list	-

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47.1.22 ipv6 pim register-rate-limit

ipv6 pim register-rate-limit *rate*

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rate	ĭ ৲ ə register ˘ ৲ ḣ ت <1-65535>

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ƪ ३ ə̂ S̆ G̃ ̈Ạ ৲ ˘ a ə ̈Ạ ৲ Â ŭ ╟ ƪ ३ æ DR ∩ RP ˘ a ⁸ ̈Ạ ৲ Â

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```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-rate-limit 3000
```

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47.1.23 ipv6 pim register-rp-reachability

ipv6 pim register-rp-reachability

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ƪ ३ ৴̆ ৲ ̈Ạ ̣ ″ RP ĭ̆ ৲ ˘ a ৲ ˘ ‡ a ৲ ̈Ạ Â

```
Ruijie# configure terminal
```

Ԧ ʒ ώ

RP ≠ RP ∩ BSR ⁸ ⌟ Â ᴳ Ԧ ʒ Ю ΰ '

У ' BSR ⁸ ∩ RP ⌟ ˘ ˙ ˝I ᴳ ╟ Â

γ ' ᴳ ⁸ " RP فخ سم ⌟ Л Ԧ э ˆ ᴳ ACL˜ ˆ a ᴳ ACL˜ ˘ л У э RP فخ سم a ᴳ Â

Ь ' э RP ╚ ϒ ⌟ У э ˘ IPv6 فخ سم RP ˙ ˝I Â

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ني ' ⌟ جم ACL è ⌧ ΐ فخ سم Â ΐ Â

ч ' ⌟˘ RP فخ سم ώ ⁾ ⁿ ϒ تن RP è˘ э تن У э RP ˘ IPV6 فخ سم ˜ Â й У э تن У э RP˘ У э ΐ ˘ ≠ IPV6 فخ سم э ˝I Э Â

interface-type interface-number	۸
priority-value	۷ ˘ ۷ ḣ ىتن ىۋ <0-255>˘ priority priority-value ˘ . ”I 192
Interval-seconds	۷ ˘ ۷ ḣ ىتن ىۋ <1-16383>˘ interval interval-seconds ˘ interval-seconds 60s
ipv6_access-list	۷ ˘ ħυ ۷ acĭ group-list ipv6_access-list ˘ ĭ Â

˘ Ạ RP

ipv6_acl_name	ipv6_acl_name ğ RP ففز سم IPV6 سم ففز ŭ ╟ ώ RP ╥ Â ˘ ğ RP ففز سم IPV6 سم ففز ŭ ╟ ώ RP ╥ Â

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ħυ ३ ˘ ğ RP ففز سم IPV6 سم ففز ŭ ╟ ɷ ώ RP ╥ Â

G ŭ ╟ ώ RP ╥ ˘ ЛЫ ⅃ЛЫ ğ RP ففز سم IPV6 سم ففز ŭ ╟ ώ RP ╥ '

w R ЛЫЮ R ğ RP ففز سم IPV6 سم ففز˘ ŭ ╟ ώ RP ╥ '

```
Ruijie(config)# ipv6 pim rp embedded
```

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ipv6 access-list	-

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47.1.29 ipv6 pim rp-register-kat

ipv6 pim rp-register-kat *seconds*

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seconds	KAT ⅄ ḣ Â⅃ ḣ <1-65535>˘ ´ Æ ỉ Â

˘ RP Э KAT 210s **Â**

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G RP Э KAT

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```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim rp-register-kat 250
```

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47.1.30 ipv6 pim sparse-mode

ipv6 pim sparse-mode

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ʃ Ɜ a ŭ ╟ PIM-SMv6

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ƪ ʒ ŭ PIM-SMv6 ˇ ƪ ʒ Â
ƪ ŭ ╟ PIM-SMv6 ɱ˜ ƪ ɷ Ю ŭ ╟ ʃ ╥ ˇ ĭ ‡. G ŭ ╟ ɷ PIM-SMv6 ≠ a ʃ Â ƪ ŭ ╟ PIM-SMv6 ʃ ˇ MLD ƪ ʃ ɜ ʃ Ɜ ⋮ ╟ ŭ ╟ˇ a ╟ Â
ƪ ʒ Ąˇ ˅ ľ Failed to enable PIM-SMv6 on < ʃ ʃ >, resource temporarily unavailable, please try again Ľˇ ˝Ą ƪ ʒ Â
ƪ ʒ Ąˇ ˅ ľ PIM-SMv6 Configure failed! VIF limit exceeded in NSM!!! Ľˇ ɱ ʃ ʃ ʃ Ɜ Â Ÿ ƪ ʃ Ю ŭ PIM-SMv6 ˇ ˥ У Ҭ a PIM-SMv6 PIM-DMv6 ʃ Â

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```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim sparse-mode
```

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47.1.32 ipv6 pim ssm

ipv6 pim ssm { **default** | **range** *ipv6_access-list* }

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default	ন ঋ' FF3x::/32
ipv6_access-list	ƚu ৶ acl

ŭ ╟ SSMV6

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ŭ ╟ PIM-SSMv6 G ƚu ३

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Ю ƚu ३ ! " فخسم ঋ *acl* Â

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim ssm range acl
```

Ю ˘ فخسم fe80::2d0:f8ff:fe22:33ad à فخسم ন 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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47.1.33 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	ƬU ३ ʌ˘ RP. ˝I ¥ BSR ⁸ w RP Â	
	ƬO ƬU ३ ! RP. ˝I Â	
w R	Ruijie#	

```
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim triggered-hello-delay 3
```

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47.2.2 show ipv6 pim sparse-mode bsr-router

show ipv6 pim sparse-mode bsr-router

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G BSR ǫ 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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47.2.3 show ipv6 pim sparse-mode interface

show ipv6 pim sparse-mode interface [*interface-type interface-number* [detail]]

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৭	*interface-type interface-number*	৲ ˘ ৭ interface-type interface-number ˘ ৭ ৯
	detail	৲ ˘ ৭ ৯

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G	PIM-SMv6 ৭ ৯ Â

ɯ R

```
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
```

ƬU ३	6 530.9 0.48 ref66.84336 53 0.24 20.34

interface-type interface-number	৲ ˘ ৷˘ ˘ ƬU ३ ৷

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G PIM-SMv6 ৷ Э ম MLD ৲ Â

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Ruijie# show ipv6 pim sparse-mode local-members
PIM Local membership information
GigabitEthernet 0/5:
  (*, ff66::6666) : Include
```

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47.2.5 show ipv6 pim sparse-mode mroute

show ipv6 pim sparse-mode mroute {*ipv6_group_address* | *ipv6_source_address* }

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ipv6_group_address	IPv6 ফ ম Â
ipv6_source_address	IPv6 ফ ম Â

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47.2.7 show ipv6 pim sparse-mode nexthop

show ipv6 pim sparse-mode nexthop

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47.2.8 show ipv6 pim sparse-mode rp mapping

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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47.2.9 show ipv6 pim sparse-mode rp-hash

show ipv6 pim sparse-mode rp-hash *ipv6_group-address*

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ipv6_group-address	IPv6 فخ سم

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G ə فخ سم 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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48 MLD

48.1

48.1.1 clear ipv6 mld group

Ĥu ३ MLD ˜ ˝ ˆ ╟ ˘ Â ╟ ˘ ˝ report
˘ Â

clear ipv6 mld group [*group-address*] [*interface-type interface-number*]

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	ˆ ╟ ˝ ˆ ˘ Â
group-address	128 ৩ Æ IPv6 فذ سم
interface-type	˜Ω ৭ صر
interface-number	˜Ω ৭ ৸

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MLD У ৩ " ˘ " ε è ў ╗ ώ ف ⊖ '
≠ ╗ ώ ৩ ˘ ≠ ˬ " جه ৩ " è Â ÿ MLD ˘ " è ˆ ώ ╟
˘ ˘ ⊿ Л a ৭ **clear ipv6 mld group** Ĥu ३ Â

w R

```
ˆ ώ '
Ruijie# clear ipv6 mld group
ˆ У '
Ruijie# clear ipv6 mld group ff1e::100
ˆ ৭ Э '
Ruijie# clear ipv6 mld group ff1e::100 interfa fa0/1
```

˜Ωĥu ३

Ĥu ३	
show ipv6 mld groups	-
show ipv6 mld interface	-

ƛ

ƬU ३ ٦ ƛ

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-	-

48.1.2 clear ipv6 mld interface

ƬU ३ ٨ Ɜ MLD ǫ ٦ ˘ Â

clear ipv6 mld interface *interface-type interface-number*

٨

٨	
interface-type	٨ ص
interfaceid	٨ ɹ

ƬU ३

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ƬU ३ ٨ Ɜ MLD ˜ ↑ ǫ Ω ٨ Ɜ У Ҽ ǫ Â Ҽ ǫ ↑ Ü ↑ report ɜ ǫ ˘ done ɜ ǫ ˘ Ʌ ٦ ɱ ٨ Ɜ ˘ ǫ Â

W R

```
Ruijie# clear ipv6 mld interface fa 1/1
```

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ipv6 mld access-group *word*

no ipv6 mld access-group

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ৰ	
Word	IPv6 ⁸ " ACL ⅃

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ह ৰ Э У ę ˘ ⅃ Л ʊ G ħu ३ Â ħu ३ ˜Ω Э ACL˘
↑ ACL deny report ˘ x Â ħu ३ ACL˘
↑ MLDv2 è ą Â

⁸ ħu ३ ˜Ω ACL Â ↑ MLD report ą
^ S1,S2,S3…Sn,G˜ ˘ ħu ३ (0,G) ą G ACL
ৗ Â Л ʊ G ħu ३˘ ACL У
(0, G)˘ ⅃ Л ʊ ^ S1,S2,S3…Sn,G˜ Â

W R

ह ІО R è˘ ह ৰ Eth0/1 è ↑ report ą acl˘
Â

```
Ruijie(config)#ipv6 access-list acl
Ruijie(config-ipv6-acl)#permit ipv6 ::/64 ff66::100/64
Ruijie(config-ipv6-acl)#permit ipv6 2222::3333/64 ff66::100/64
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 mld access-group acl
```

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У ह ^ Э ^ У э ў ą Ю G ╗ Â G ħu ३ **no** ^ ╗ Â

ipv6 mld immediate-leave group-list *word*

no ipv6 mld immediate-leave group-list

^	
Word	IPv6 8 " ACL ⅄

Ω

ħu ३ ^

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ह ħu ३ ą Ю˘ ĵ MLD ⅄˘ ˚ ^
Â ⅄˘ Ÿ ў ! ˘ ÿ ˘ " è
Â ^ ā ¥ ⅄ ˘ Ω MLD Ő ^ ˘ ą Ю
2s Â
ɷ ħu ३˘ ĵ ⅄˘ a ^ Â ĵ
ą Â ¥ ^ Ю ^ У э ў ą Ю˘ ˜ ɷ Â

w R

Ю R k ɷ ╗ 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
```

Ωħu ३

ħu ३	
ipv6 mld last-member-query-interval	-

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ħu ३ ˥ ⅄

⅄	
-	-

48.1.5 ipv6 mld join-group

ƿ ʒ Ɥ ʖΩ ʎ ɛ ǔ ǐ ╗ ώ ˘ Ɥ ǔ ╟
ɻ Ʌ ˘ ʃ ǫ ˘ ج ʎ ╗ У э ˘ G Â G ƿ ʒ no
ʎ Ɥ ╗ ώ Â

Ipv6 mld join-group *group-address*

no ipv6 mld join-group *group-address*

ʎ

ʎ	
group-address	ipv6 فخ سم

ǫ Ю ʎ ╟ ╗ ώ Â

ƿ ʒ ʎ

G

G ƿ ʒ ʎ ǒ ╟ MLD ʎ ǔ ǐ ╗ Â ʎ ɻ Ʌ ǔ ╟ ɻ ˘ ≠ ɻ Ʌ
Â
ج ج ʎ Э ╗ У э ˘ ƿ ʒ Â
╗ ώ Ʌ 0xFF*1 ǎ 0xFF3* سم فخ˘ a ǐ Â Ʌ 0xFF*2 سم
فخ˘ a Â

w R

ЛЮ R ╗ ɷ ǔ ˘ '

```
Ruijie# configure terminal
Ruijie(config)# interface fast 0/1
Ruijie(config-if)# ipv6 mld join-group ff55::100
```

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48.1.6 ipv6 mld last-member-query-count

last-member-query-count ǒ ╟ MLD ʎ ʃ done ʌ˘ ˬ ɻ
Â ƿ ʒ **last-member-query-count** ḣ Â G **no** ƿ ʒ ḣ Â

ipv6 mld last-member-query-count *number*

no ipv6 mld last-member-query-count

๔	MLD

Ъu ३ ^l

G ^l ˆ MLD ˘ ج ğ Ÿ ˘ ^l Э MLD ˜ " ˆ Â э й **mld last-member-query-count**˝ ╗ Э У ` Â

w R ЛЪЮ R ¢ ء 2 '

```
Ruijie# configure terminal
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# ipv6 mld last-member-query-interval 200
```

˝ΩЪu ३

Ъu ३	
ipv6 mld immediate-leave	-

^l

Ъu ३ ˥ ^l

^l	
-	-

48.1.8 ipv6 mld limit ( )

G Ъu ३ ج ^l MLD ˜ ˩Лu ˜ ˆ ˜ э Â ^l ˘ G **no** Â

ipv6 mld limit *number* [**except** *access-list*]

no ipv6 mld limit

≠ ϕ except R " ˘ ‡ ¥ ↑ ج access-list è ˘ ˘ a ⊿ ˘ э
8˘ ج ˘ э 8 ϕ Ю ⊿ Л ˘ .
G Ъυ ϟ ≠ ⊿ Л ⊿ ¥ ⊿ ˘ ⊿ Π ώ ⊿ Л ˘ ώ
э 8 ⊿ ˘ Л ώ . ˝I Â

Ш R

ЛЫЮ R ϕ 8 э й 300
```
Ruijie(config-if)# ipv6 mld limit 300
```
ЛЫЮ R ϕ 8 э й 300 П acl Ÿ ⊿ Л ˘ ↑ ˘ a ⊿ 8'
```
Ruijie(config-if)# ipv6 mld limit 300 except acl
```

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Ъυ ϟ ⊿

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48.1.9 ipv6 mld limit ( )

G Ъυ ϟ ώ MLD ˘ ↑ ˘ э Â ⊿ ˘ G no Â

ipv6 mld limit *number* [**except** *word*]

no ipv6 mld limit *number* [**except** *word*]

⊿

⊿	
number	MLD ˘ ↑ ˘ э ˘ ت 1-65536 Â
except	^ ⊿ ~ "
word	^ ⊿ ~ ipv6 "

a ⊿ ϟ p ḣ a У Â

Ъυ ϟ

ώ

G

G Ъυ ϟ ώ ˘ ↑ ˘ 8˘ ˘ ج 8 ↑
a MLD ˘ a ⊿ Â ¥ ↑ ü ج except " è ˘ a ⊿ э 8 Â

w R

ЛЫЮ R ɷ 8 э й 300'

```
Ruijie˜ config˜ # ipv6 mld limit 300
```

ЛЫЮ R ɷ 8 э й 300˜ Л acl Ÿ ↓Лυ ˜ ↑ ˜ a ↓ 8'

```
Ruijie(config)# ipv6 mld limit 300 except acl
```

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48.1.10 ipv6 mld mroute-proxy

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Ipv6 mld mroute-proxy *interface-type interface-number*

no ipv6 mld mroute-proxy

↑

↑	
interface-type interface-number	Э ↑ ↓

˥

ħυ ३ ↑

G Э ↑ й proxy-service ↑ ↓˜ ↑ ↓Лυ ↓ ὲ ˜ ↓ MLD ˜ Â

w R ↑ mroute-proxy ↑

```
Ruijie(config-if)# ipv6 mld mroute-proxy fa 0/1
```

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↓

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48.1.11 ipv6 mld proxy-service

Ĥu ३ ŭ ╟ Ю mroute-proxy ৸ ╚╗ Âæ ৸ Э Ĥu ३˘ ৸ й mroute-proxy Э ৸˘ ̃Ω Ю ৸˘ Ю ৸ ˆ Э ą Â

ipv6 mld proxy-service

no ipv6 mld proxy-service

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	৸ a й proxy-service
Ĥu ३	৸
G	ŋń э Ĥu ३ ৶ э ṁ ɷ ⁸˘ ৶ ĭ 32 э Â ŭ MLD Proxy ╗ ৸ э ৶ ¥ ৸ э Â ৸ ↑ ৴˘ proxy-service ৸ ˘ ą ˘ ɔ Âproxy-service ৸ ˘ ą ÿ mroute-proxy ৸ è Â ɷ proxy-service˘ ¥ ৸ ৶ ɛ́ ɷ ў й˘ a ɛ́ ৸ й. ৸ ৸ switchport ɔ˘ ̃Ω Ю ৸ **ipv6 mld mroute-proxy interface** Ĥu ३ ╟ Â
w R	৸ й proxy-service æ `Ruijie(config-if)# ipv6 mld proxy-service`

Ĥu ३

Ԧ ३ ˘ ˅ ˅ **no** ˙ ˙ Â

ipv6 mld query-interval *seconds*

no ipv6 mld query-interval

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seconds	˘ Ã æ ˙ s˘ ˅ ˙ ت ˙ 1˙ 18000 Â

125 Â

Ԧ ३ ˅

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ใบ ๓ ฝ

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ج ^ Ю ˘ è ы ⅄ 200s Â

```
Ruijie(config-if)# ipv6 mld querier-timeout 200
```

ج ^ Ethernet 0 ˘ ⅄ й ḣ Â

```
Ruijie(config-if)# no ipv6 mld querier-timeout
```

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48.1.15 ipv6 mld robustness-variable

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ipv6 mld robustness-variable *number*

no ipv6 mld robustness-variable

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^	
number	Ő ˩ ḣ˘ تن й è 2-7 Ê Â

ḣ й 2

ħU ३ ^ Â

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w R

ЛЮ R Ő ˩ ḣ й 3

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet
```

ΩħU ३

ħU ३	
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no ipv6 mld ssm-map static *access-list X:X:X:X::X*

৭		
৭	*access-list*	ipv6 ħυ ⅄ ACL
	X:X:X:X::X	´ فخ سم

فخ سم

ħυ ३ ώ

G ħυ ३ б **ipv6 mld ssm-map enable** ⅄ G ˘ ħυ ३ ⅄˘ ↑ mldv2 ЛυЮ Э è Â

W R ACL ⅄ ὶ te Э فخ سم 4444::1234 Â ħυ ३ ὶ' 4444::1234

G

G ƪ ʒ ج ۸ Э ╗ ώ У э Â б join-group ш ⁞ a Ӈ ц
╗ ώ ̀ У э ˘ ╗ ώ Â
ج ج ۸ Э ╗ У э ˘ ƪ ʒ Â a clear ƪ ʒ ̀ , ۸
no ipv6 mld static-group ̀ э Â

ш R

ЛЫЮ R ╗ ɷ ў ˘ '

```
Ruijie# configure terminal
Ruijie(config)# interface fast 0/1
Ruijie(config-if)# ipv6 mld static-group ff55::3
```

ƪ ʒ

```
Ruijie(config-if)# ipv6 mld version 1
```

ข้อมูลใช้งาน

ใช้งาน	
-	-

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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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48.2.2 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
```

ข้อจำกัดการใช้งาน

ใช้งาน	
-	-

ตัวอย่าง

ข้อมูลที่แสดง

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48.2.3 show ipv6 mld ssm-mapping

คำสั่งนี้ใช้งานเพื่อแสดงรายการ Static SSM Mapping ที่ตั้งค่าไว้ในระบบ

show ipv6 mld ssm-mapping [*group-address*]

พารามิเตอร์

พารามิเตอร์	
group-address	แสดงรายการ Static SSM Mapping ที่ตั้งค่าไว้ในระบบ
	พารามิเตอร์

ค่าเริ่มต้น

การใช้งาน

ตัวอย่าง

```
Static SSM Mapping table:
Group address: FF3E::1
Source address: 2001:DB8::1
```

```
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
```

相关命令

命令	
-	-

平台

命令模式

模式	
-	-

49 MLD Snooping

49.1

49.1.1 ipv6 mld profile

MLD profile ɣ ⁸ У " ⅵ Â ώ profile ˘ ”I جم ώ Ю У э profile Â ħu ३ ħu ३˘ profile-numberˇ ώ mld profile Â

ipv6 mld profile *profile-number*

no ipv6 mld profile *profile-number*

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profile-number	profile ৭˘ تن 1-1024

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ħu ३ ώ Â

MLD Profiles Э У ҭ ⅵ˘ ᵏ I' SVGL فخسم تن ـا ـà I' ৭ تن ـا ـà I' MLD Filtering تن ـا ৭ ╗ ᴳ Â يج ˘ ѝ ҭ ᴳ profile ɔ ˘ profile Ω ╗ ᴳ Â

Ю ᴿ … ҭ У э ৭ ѝ 1 profile ώ profile Â

ш ᴿ

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)#
```

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range	profile فخسم تن
deny	profile ѝ ѝ deny
permit	profile ѝ ѝ permit

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	10.4	У ώ

49.1.2 range

У э profile profile profile Ю
ħυ ३ range ৶ Лυ ´ э ≠ ৶ Лυ э فخسم Â G
ħυ no فخسم Â

range *low-ivp6-address* [*high-ipv6-address*]

no range *low-ivp6-address* [*high-ipv6-address*]

৸	৸	
	low-ipv6-address	فخسم æ تن
	high-ipv6-address]	فخسم تن

ħ Â

ħυ ३ profile Â

G low-ipv6-address ħ ţ high-ipv6-address ħ فخسم تن ৶
У э й profile й deny Â

ш R Ю … У э تن й FF77::1~FF77::100 profile R :

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)# range FF77::1 FF77::100
```

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	ipv6 mld profile	… У э profile

49.1.3 deny

ㄱ profile ټن ˘ profile Ю ƚυ ३ deny Â

deny

٩	

profile deny ɔ Â

ƚυ ३ profile Â

G ˝I ج profile Ю G range ƚυ ३ ټن Â

w R Ю … У ɜ ㄱ 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 ɜ profile
range	ټن فخ سم
permit	profile ѝ ѝ permit

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10.4	У ώ

49.1.4 permit

ĭ profile ټن ˘ profile Ю ƚυ ३ permit Â

permit

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G ҭ Ю ґ VLAN ц Â ў ґ б ҷ ґ У э VLAN ґ ' Ԩ ҭ ʃ ˙ ! У э VLAN ˘ ґ ґ VLAN ѹ ˘ ґ ґ Â

Ю R ҭ 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 ʎ

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10.4	У ώ

49.1.8 ipv6 mld snooping svgl ivgl-svgl

mld snooping ivgl-svgl ˘ ώ ƪ ʒ **ipv6 mld snooping ivgl-svgl** Â ƪ ʒ no ʖΩ mld snooping Â

ipv6 mld snooping ivgl-svgl *profile-number*

no ipv6 mld snooping

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profile-number	profile ʎ˘ 1-1024

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ɷ ˘ ‡ IVGL ǎ SVGL ч Â IVGL Ω SVGL ч ˩ Ʌ ˩ ج˘ ˩ Ʌ MLD Profile , ǂ У فخسم تن SVGL˘ ج فخسم تن ǟ˘ ˩ ˘ ʎ ˩ Ʌ VLAN ˩ ˘ ɛ فخسم تن ǟ ˩ ˘ ʎ ɣ ˩ У ɜ VLAN Â

w R

Ю R ج Э mld snooping ivgl-svgl ˘ profile1 فخسم تن ɣ SVGL تن'

```
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 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

৭	
time	MLD У : ˘ ৸ ḣ ঋ 1-65535 ´ Æ ঋ

no ipv6 mld snooping vlan *vid*

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vid	vlan id ʌ˘ ٧ ḣ ẻ 1-4094

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ح ŏ ŏ ╟ mld snooping Ą˘ vlan ŏ ╟ mld snooping ' ٧ ʌ
vlan ˜Ω mld snooping ╥ Â

w R

Ю R ˜Ω VLAN 1 mld snooping ╥ '

```
Ruijie(config)# no ipv6 mld snooping vlan 1
```

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10.4	У ȯ

49.1.12 ipv6 mld snooping vlan mrouter learn

Ч ╟ ш ŏ MLD query PIM ˘ ʌ ╟ ⁞ ٩˘ ŏ ƪ ʒ **ipv6 mld snooping vlan mrouter learn** Â ƪ ʒ no ٧ ╟ ˙ Â

ipv6 mld snooping vlan *vid* **mrouter learn**

no ipv6 mld snooping vlan *vid* **mrouter learn**

٩	
vid	vlan id ʌ˘ ٧ ḣ ẻ 1-4094

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Ѧ ώ й ˘ x Â ج

╟ Ѧ ˆ ˘ ⊣ Л Ʊ mld snooping

Ѧ ˆ ╥ '

snooping vlan *1* mrouter learn

fastEthernet *0/1*

	ใช้งาน	
ยังไม่ใช้งาน	**ipv6 mld snooping vlan mrouter interface**	

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	10.4	У ώ

49.1.16 ipv6 mld snooping suppression enable

mld snooping suppression˘ ŏ ƪ ʒ **ipv6 mld snooping suppression enable** Â ƪ ʒ no ˜Ω mld snooping suppression Â

ipv6 mld snooping suppression enable

no ipv6 mld snooping suppression enable

ʌ	ʌ	

ƪ ʒ ŏ

G ɑ MLD ˜ ˜Ω ˆ ⁸ ╗ ʌ˘ ج У э ɑ̈ γ ʌ˙ ˆ IPv6 ɑ̈ У э MLD ˜ ˜Ω ˆ ʅ Ь ˘ a ɻ Ь ʅ ɻ У è MLD ˜ ˜Ω ˆ ˘ ɻ ʌ ˜ è Â

ɑ ƪ ʒ ʌ˘ suppression ╗ ŭ ╟˘ Ꜧ ˙ MLD v1 report ⁸˘ ʌ a˙ ⁸ Â

Ю R ج Э mld snooping suppression˘

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

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	10.4	У ώ

49.1.17 ipv6 mld snooping filter

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profile Â ƪu ३ৃ no ī ̃Ω profile Â

ipv6 mld snooping filter *profile-number*

no ipv6 mld snooping filter *profile-number*

Number	৲	ন ই	0 – 1024

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

配置	

默认

默认	

49.2

49.2.1 show ipv6 mld snooping

mld snooping ˜Ω ə Â

Show ipv6 mld snooping [**gda-table** | **interfaces** | **mrouter**| **statistics** [**vlan** *vlan-id*]]

^	
	mld snooping ╗
gda-table	┘ ‡
interfaces	mld snooping Filtering
mrouter	^ ə Â
statistics [**vlan** *vlan-id*]	snooping ə

ħu ३ Â

G mld snooping ˜Ω ə

w R

R 1' G **show ipv6 mld snooping** ħu ३ mld snooping ə '

```
Ruijie# show ipv6 mld snooping
MLD-snooping mode      : IVGL
SVGL vlan-id           : 1
SVGL profile number    : 0
Source check port      : Disabled
Query max respone time : 10(Seconds)Â
```

R 2' G **show ipv6 mld snooping statistics** ħu ३ mld snooping ^ ə '

```
Ruijie# show ipv6 mld snooping statistics
GROUP    Interface    Last report       Last leave     Last
                         time          time         reporter
--------------- ------------ -------------  -------------   -
FF88::1 VL1:Gi4/2   0d:0h:0m:7s     ----    2003::1111
                        Report pkts: 1          Leave pkts: 0
```

R 3' G **show ipv6 mld snooping mrouter** ħu ३ mld snooping ^ ə '

```
Ruijie# show ipv6 mld snooping mrouter
Vlan    Interface        State      MLD profile number
----     --------          -------      -------------------
1   GigabitEthernet 0/7    static        1
1   GigabitEthernet 0/12   dynamic       0
```

R 4' G **show ipv6 mld snooping gda-table** GDA ⅄ ə ⎍ ⅄ У ə ˢ ⅄ ə '

```
Ruijie# show ipv6 mld snooping gda-table
Abbr: M - mrouter
      D - dynamic
      S - static
VLAN  Address            Member ports
-----------------------------------------------------------
1      FF88::1          GigabitEthernet 0/7(S)
```

R 5' G show ipv6 mld snooping interface mld snooping Filtering '

```
Ruijie# show ipv6 mld snooping interface GigabitEthernet 0/7
Interface         Filter Profile number      max-groups
----------        ----------------------     -----------
GigabitEthernet 0/7          1               4294967294
```

ƕ ३	

ħu ३ Â

G mld profile ̃Ω ə

R 1' G **show ipv6 mld profile** ħu ३ MLD profile ə '

w R

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

̃Ωħu ३

ħu ३	

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ħu ३ ʅ ʎ

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10.4	У ώ

50

50.1

50.1.1 strom-control

ㅅ ⁸ ̃Ω Â ᴳ ƕ ३ **no** ̃Ω ⁸ ╗ Â

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

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

ㅅ	
broadcast	⁸ ╗ Â
multicast	ɹ ⁸ ╗ Â
unicast	ɹ ´ ⁸ ╗ Â
percent	Л ǰ 20 20%
packets	Л pps ѝ ´ Æ . packets per second
Rate-bps	ǐ ă

Ю R ৫ ৲

w R

[illegible] S32 [illegible] S37 [illegible] a [illegible] [illegible] a [illegible] a [illegible]
[illegible]

[illegible]	
-	-

50.1.3 switchport port-security

[illegible] no [illegible]
[illegible]

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

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

[illegible]	
port-security	[illegible]
violation protect	[illegible]
violation restrict	[illegible] trap [illegible]
violation shutdown	[illegible] Trap [illegible]

[illegible]

[illegible]

[illegible] MAC [illegible] IP([illegible]
[illegible]

[illegible] Gigabitethernet 1/1 [illegible]
shutdown'

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport port-security
Ruijie(config-if)# switchport port-security violation shutdown
```

[illegible]	

ЪU ३	
switchport port-security	^ ώ
switchport port-security binding interface	Ю ώ سم فخ
Switchport port-security mac-address	ώ سم فخ
switchport port-security aging	^ ώ سم فخ ⅄
show port-security	^ ώ ᵃ

^

/^	
-	-

50.1.6 switchport port-security binding interface

Ю ώ سم فخ ˘ ⅃ Л ώ سم فخ IP+ MAC Θ IP ˘
ᾷ ^˘ ^ ώ سم فخ ⅃ Л ώ Ц ˘ a ^ x
Â ᴳ no ⅃ ˥ سم فخ'

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

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

^	
interface-id	^ ID
mac-address	MAC سم فخ
Vlan_id	MAC VID
Ipv4-address	Ipv4 Ip سم فخ
Ipv6-address	Ipv6 Ip سم فخ

ЪU ३

G

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ᴹ 1ᴹ 192.168.1.100ᴹ ᴹ 10ᴹ

Ruijie(config)# **switchport port-security binding interface** *g0/10 192.168.1.100*

ᴹ 2ᴹ 192.168.1.100 MAC ᴹ 00d0.f800.5555, VID= 1 ᴹ ᴹ 10ᴹ

Ruijie(config)# **switchport port-security binding interface** *g0/10 00d0.f800.5555* **vlan** *1 192.168.1.100*

ᴹ

ᴹ	
switchport port-security	ᴹ ᴹ
switchport port-security binding	ᴹ ᴹ ᴹ
Switchport port-security mac-address	ᴹ
switchport port-security aging	ᴹ ᴹ ᴹ
show port-security	ᴹ ᴹ

ᴹ

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50.1.7 switchport port-security maximum

ᴹ ᴹ ᴹ ᴹ no ᴹ ᴹ ᴹ

switchport port-security maximum *value*

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

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ᴹ	
value	ᴹ 1-128

128

ᴹ ᴹ

ᴹ ᴹ ᴹ ᴹ ᴹ ᴹ ᴹ ᴹ ᴹ ᴹ ᴹ ᴹ ᴹ 128 ᴹ

ᴷᴱᴹᴱᴺᴳ	ᴿ 1' TRUNK ᴹ 10 ᴾᴼᴿᴳ 00d0.f800.5555 VID=2'
ᴱᴸᴱᴹᴱᴺᴳ	`Ruijie(config)#` **`switchport port-security interface g0/10 mac-address`** *`00d0.f800.5555`* **`vlan`** *`2`*

	ᴴᴵᴳᴴ	
ᴴᴵᴳᴴ	**switchport port-security**	ᴹ ᴾᴼᴿᴳ
	switchport port-security binding	ᴾᴼᴿᴳ
	Switchport port-security mac-address	ᴹ ᴹᴬᶜ ᴾᴼᴿᴳ
	switchport port-security aging	ᴹ ᴾᴼᴿᴳ ᴬᴳᴵᴺᴳ
	show port-security	ᴹ ᴾᴼᴿᴳ ᴳᴵᴺᴳ

ᴹᴼᴰᴱ	

	ᴹᴼᴰᴱ	ᴰᴱᴳᴵᴺᴳ
ᴴᴵᴳᴴ ᴬᴶᴬᴮᴬᴳᴵᴺᴳ	-	-

50.2

50.2.1 show storm-control

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show storm-control [*interface-id*]

	ᴹᴼᴰᴱ	
ᴹᴼᴰᴱ		

51 802.1X

51.1 dot1x

51.1.1 dot1x auto-req

802.1X ǔ ╟ ╥ ˘ ŏ ƪ ३ **dot1x auto-req** Â ƪ ३ **no** ৲ ǔ ╟ ╥ Â

[**no**] **dot1x auto-req**

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-	-

a ǔ ╟

ƪ ३ ŏ Â

G ǔ ╟ ৲ 802.1x ˘ ৲ Л G **show dot1x auto-req** ƪ ३ ╥ Â

Ю ǔ ╟ ৲ 802.1x R '

```
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req
Ruijie(config)# end
Ruijie# show dot1x auto-req
Ruijie(config)# dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num  : 0
Req-Interval: 30 Second
```

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show dot1x auto-req	ǔ ╟ ǫ Â

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	-	-

51.1.3 dot1x auto-req req-interval

ў ╟ ৲ ˘ **no** ѝ ḣ

dot1x auto-req req-interval *interval*

no dot1x auto-req req-interval

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51.1.4 dot1x auto-req user-detect

ў ╟ ┤ ˘ no й ḣ Â

dot1x auto-req user-detect

no dot1x auto-req user-detect

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-	-

ƀυ ३ ώ Â

G ў ╟ ┤ ˘ ┘ Л υ G **show dot1x auto-req** ƀυ ३ ╖ Â

Ю ў ج Э Л m Л ┤ ┤ '

```
Ruijie# configure terminal
```

w R

51.2 dot1x

51.2.1 dot1x timeout quiet-period

G ԧ ҳ ^ R ۸ ҳ ~ ۸ ї ^
~ Â G ԧ ҳ **no** й ḣ Â

dot1x timeout quiet-period *seconds*

no dot1x timeout quiet-period

	۸	
۸	*seconds*	Ԩ ҵ ۸ ї Â ḣ ت 0 ۱ 65535 Â ´ Æ s

ḣ 10 Â

ԧ ҳ ѿ Â

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

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show dot1x	802.1x ə ţ Â

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51.2.2 dot1x timeout re-authperiod

ج ƪ ʒ ʅ ˇ G ƪ ʒ ˇ .
Â G ƪ ʒ **no** ˝ ˙ Â

dot1x timeout re-authperiod *seconds*

no dot1x timeout re-authperiod

ʎ	
seconds	Â ˙ ˜ 0 ↑ 65535 Â ´ Æ s Â

3600

ƪ ʒ
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G
˩ Л G **show dot1x** ƪ ʒ 802.1x Â

Ю 1000s'

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

```
Re-authen Period:    1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:     3 sec
Supplicant Timeout:   3 sec
Server Timeout:      5 sec
Re-authen Max:       3 times
Maximum 2Request:     3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:    Disabled
Authorization Mode:   Group Server
```

-	-

51.2.5 dot1x timeout tx-period

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dot1x timeout tx-period *seconds*

no dot1x timeout tx-period

٩	
seconds	· ▯ Â ḣ ت 0 ʅ 65535 Â

ḣ 3 Â

Ъu ъ ѿ Â

G ˩ Л Ъ G **show dot1x** Ъu ъ 802.1x Â

Ю · ѝ 10s

```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout tx-period 10
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:       Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Disabled
Re-authen Period:     1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:      10 sec
Supplicant Timeout:   10 sec
Server Timeout:       10 sec
Re-authen Max:        3 times
Maximum Request:      3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:     Disabled
```

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```
Authorization Mode:   Group Server
```

ƪ ३	
show dot1x	802.1x ৲ Â

```
Re-authen Period:     1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:      10 sec
Supplicant Timeout:   10 sec
Server Timeout:       10 sec
Re-authen Max:        3 times
Maximum Request:      3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:     Disabled
Authorization Mode:   Group Server
```

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show dot1x	802.1x ə Â

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51.3.2 dot1x reauth-max

G ƪ ʒ Â G ƪ ʒ **no** ḣ Â

dot1x reauth-max *count*

no dot1x reauth-max

ʃ	
count	Â

ḣ ẗ 3

ƪ ʒ ŏ Â

G ɑ ƪ ʒ ˘ ‡ ɑ ʃ Ʃ Â ʃ Ʃ G **show dot1x** ƪ ʒ 802.1x Â

w R Ю ˥ '

```
Ruijie# configure terminal
Ruijie(config)# dot1x reauth-max 5
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:        Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Enabled
Re-authen Period:     1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:      10 sec
Supplicant Timeout:   10 sec
Server Timeout:       10 sec
Re-authen Max:        5 times
Maximum Request:      3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:     Disabled
Authorization Mode:   Group Server
```

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ƪ ३	
show dot1x	802.1x ə ţ Â

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51.4 dot1x

51.4.1 dot1x probe-timer

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

no dot1x probe-timer

৭	
no	ḣ
interval	hello
alive	ج
interval	⅄ ḣ

Hello ŷ 20 ’

ج ḣ ŷ 250 Â

ƪ ʒ ŏ Â

G ج ⅄˘ ⅃ Ω G **show dot1x** ƪ ʒ 802.1x Â

hello ŷ 30 , ج ŷ 120 '

```
Ruijie# configure terminal
Ruijie(config)# dot1x probe-timer interval 30
Ruijie(config)# dot1x probe-timer alive 120
Ruijie(config)# end
Ruijie# show dot1x probe-timer
Hello Interval: 30 Seconds
Hello Alive: 120 Seconds
```

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Show dot1x probe-timer	ج ⅄ Â

	-	-
	̃Ω	
ƪu ३	ώ Â	
G	ج ╗ ̃Ω Â	
	ج ╗ '	

```
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

51.5 dot1x

51.5.1 dot1x authentication

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51.5.2 dot1x auth-address-table

Ϸ ϳ 802.1X ϊ ϲ Ϸ ϳ **no** ϊ ϲ

dot1x auth-address-table address *mac-addr* **interface** *interface*

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

	mac-addr	
	Interface	

dot1x auth-mode {**eap-md5** | **chap** | **pap**}

no dot1x auth-mode

¶	
eap-md5	802.1x EAP-MD5 Â
chap	802.1x CHAP Â
pap	802.1x PAP Â

EAP-MD5

Ĥ ¾ ŏ Â

G ¬ Ĵ Ĵ G **show dot1x** Ĥ ¾ 802.1x Â

Ю 802.1x R '

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

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show dot1x	802.1x ą Â

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G	⌟ Л ʊ G **show dot1x** ƪ ३ 802.1x Â
w R	Ю 802.1x ৲ R ' `Ruijie#` **`configure terminal`** `Ruijie(config)#` **`dot1x default`** `Ruijie(config)#` **`end`** `Ruijie#` **`end`**

ॐƪ ३

ƪ ३	
show dot1x	802.1x ৲ Â

```
Ruijie(config)# dot1x dynamic-vlan enable
Ruijie(config)# end
Ruijie#
```

Ϸ ϟ

Ϸ ϟ	
show dot1x	802.1x ϟ Â

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Ϸ ϟ ϟ

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51.5.6 dot1x guest-vlan

ϊ ϊ **guest vlan** Â G Ϸ ϟ **no** ϟ Ϟ Ω Ω Â

dot1x dynamic-vlan <1 - 4094>

no dot1x guest-vlan

ϟ

ϟ	
vid	ϟ ن <1 - 4094>

Ω ϋ Ω

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ϟ Ю

G

У ' ج G guest vlan ╗ ϩϋ ˇ ˝l **dot1x dynamic-vlan enable** Ϸ ϟ ˇ
ϊ ‡ guest vlan a Â

γ ' guest vlan ╗ ˇ a g ϟ γ ˇ ε ╟
ϟ ╗ ώ ϶ vlan Â

Ь ' ϟ Ϟ G **show running-config** Ϸ ϟ 802.1x Â

ϖ R

Ю 802.1x guest vlan R '

```
Ruijie# configure terminal
Ruijie(config)# dot1x guest-vlan 10
Ruijie(config)# end
Ruijie#
```

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ใบ ๓	
show running-config	802.1x ๑๔ Â

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ใบ ๓ ไ ค

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51.5.7 dot1x eapol-tag

EAPOL TAG ╗ Â

dot1x eapol-tag

no dot1x eapol-tag

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Ъυ ३ ѿ Â

G ┘Л υ G **show dot1x** Ъυ ३ 802.1x Â

ш R

Ю 802.1X tag R '

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

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Ъυ ३	
show dot1x	802.1x ॠ Â

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Ъυ ३ ৭ ৶

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51.5.8 dot1x max-req

ج DOT1X Ω ⊨ ⋊ Ц ц è˘ DOT1X ج У ą̈ ˺ ⊨ ⋊ ; ˘ ‡ DOT1X Ä ⌋ ⊨ ⋊ ┘ Â G Ъυ ३ ⌋ ⊨ ⋊ ï Â G Ъυ ३ **no** ḣ Â

dot1x max-req *count*

no dot1x max-req

๑	

G ৲ Л Ю G **show dot1x private-supplicant-only** Ю ३ 802.1x Â

w R Ю ৲ G R '

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

Ю ३

Ю ३	
show dot1x private-supplicant-only	৯ Â

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51.5.10 dot1x port-control auto

ج ৲ è ˘ ৲ ï ৲ ╗ Â G Ю ३ **no** ḥ Â

dot1x port-control auto

no dot1x port-control

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৲ a ৲ ╗ 802.1x Â

Ю ३ ৲

G ৲ Л Ю G **show dot1x** Ю ३ 802.1x Â

w R Ю ৲ 802.1x ৲ б R '

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

Ruijie#

Ъu ३	
show dot1x	802.1x ə Â

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Ъu ३ Л

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51.5.11 dot1x port-control-mode

802.1x 8 ą Ю ㎜ ą MAC 8 ˘ ৲ G
˘ ą ε ы ج ৲ У ৲ G ˘ ㎜ ą ৲ 8 ৲
У ৲ У э ˘ ৲ ৲ ৲˘ ج ৲ Ю
G Â ㎜ ą ৲´ 8 ˘ ৲ Ю ৲ ï ´ У ˘
৲ ৲ ৲˘ G Â ج´ 8 Ю˘ ৲ ৲ й
৲˘ ৲ ৲ ε ج˘ ‡ ৲ Ю ˘ Â
Ъu ३ Ю'

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

no dot1x port-control-mode

	৲	
৲	**mac-based**	㎜ ą mac 802.1X 8
	port-based	㎜ ą ৲ 802.1X 8
	single-host	㎜ ą ৲´ 802.1x 8

5 b Ê À @ Û p8

single-host ţ ৲ ´ У ˘ ╟ ৲ default-user-limiť ج single-host Â ج single-host ⅄˘ ৲ Ю default-user-limiť ə single-host ˘ ৲ ৲ ï ´ У Э Â

ш ᴿ

ᴿ 1' Ю ৲ 802.1x ৲ 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 ৲´ 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#
```

ˆΩĦu ३

Ħu ३	
show dot1x port-control	৲ 802.1x ą Â
Show running-config	Ц ą Â

⅄

Ħu ३ ৲ ⅄

⅄	
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51.5.12 dot1x stationarity enable

802.1x ج ৷৷ ţ ৲ ⁸ Ю˘ ą Ю˘ ╟ ⅃Лج ⅄ ৲ ˘ ą Ю˘ й ‰ a ÿ 802.1X ৲ ˆ ȅ ы ৲˘ ⅃Л ЛЮĦu ३ ˆ Â

dot1x stationarity enable

no dot1x stationarity enable

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Ъυ ३	ѿ Â
G	ج ѹ Ъυ ३˘ ї ‡ Â

Ю ╢ 802.1x ╢ б R '

```
Ruijie# configure terminal
```

w R

G

w R

R 1' ʃ ƣ' ruijie.net/web'

```
Ruijie(config)# dot1x redirect url http://ruijie.net/web
```

Ƣƪ ʒ

ƪ ʒ	
dot1x redirect for special tcp-destination port	ʌ ȕ ʌ˘ ip ȕ ȯ ip web ʃ
dot1x redirect time-out	ʃ
dot1x redirect num for special source-ip	ʃ У ə ĭ ʃ
show dot1x	dot1x ʃ ǫ

ʌ

ƪ ʒ ʅ ʌ

ʌ	
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51.5.14 dot1x redirect for special tcp-destination port

ʌ ȕ ʌ˘ ip ȕ ʃ ip web ʃ˘ 80 à 8080 ʌ ˘ Ą 16 ə TCP ʌ ʌ˘ no dot1x redirect for special tcp-destination port ī ʃ ʌ ʌ˘ ʌ ╗ port_mum ʌ ‡ ī ʌ ʌ'

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

ʌ	
port num	TCP ʌ ʌ

8443

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Ԩ ३	
dot1x redirect url	۲ ڤ
dot1x redirect time-out	۲
dot1x redirect num for special source-ip	۲ У ə ї ۲
show dot1x	dot1x ۲ ə

dot1x redirect url	ʌ й ʌ˘ ip й ȯ ip web ɻ
dot1x redirect for special tcp-destination port	ɻ
dot1x redirect num for special source-ip	ɻ У э ĭ ɻ
show dot1x	dot1x ɻ ǫ

ʌ

Ĥu ʒ ʅ ɻ

ʌ	
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51.5.16 dot1x redirect num for special source-ip

ɻ У э ĭ ɻ ˘ 1 э˘ ɻ ت й 1-10 э Â G no ɻ Л G Ĥu ʒ ḣ'

dot1x redirect num for special source-ip n

no dot1x redirect num for special source-ip

ʌ	
num	ɻ

1

Ĥu ʒ

G

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R 1' ɻ й 3'

```
Ruijie(config)# dot1x redirect num for special source-ip 3
```

˜ΩĤu ʒ	Ĥu ʒ	
	dot1x redirect url	ɻ ف
	dot1x redirect for special tcp-destination port	ʌ й ʌ˘ ip й ȯ ip web ɻ

dot1x redirect time-out	⅃
show dot1x	dot1x ⅃ ə

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51.6 dot1x

51.6.1 show dot1x

802.1x ə Â

show dot1x

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```
Ruijie# show dot1x
802.1X Status:       Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Disabled
Re-authen Period:     3600 sec
Quiet Timer Period:   10 sec
Tx Timer Period:      3 sec
Supplicant Timeout:   3 sec
Server Timeout:       5 sec
Re-authen Max:        3 times
```

```
Maximum Request:     3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:    Disabled
Authorization Mode:   Group Server
Ruijie#
```

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ھو ۋ	
dot1x auth-mode	802.1x Â
dot1x max-req	ï · Â
dot1x port-control auto	۸ ï ۸ ╗ Â
dot1x reauth-max	
dot1x re-authentication	ï Â
dot1x timeout quiet-period	۸↑ ï Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	∩ ⊨ ⋊ ⋞ ⋗ ⋪ Â
dot1x timeout supp-timeout	∩ ⋞ ⋗ ⋪ Â
dot1x timeout tx-period	· ˘ · □ Â

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ھو ۋ ۱ ۸

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51.6.2 show dot1x auth-address-table

ھو ۋ 802.1X ï فخ سم Â

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

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mac-addr	۱ فخ سم

interface	

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Ruijie# **show dot1x auth-address-table**
interface:g3/1
---
mac addr: 00D0.F800.0001
Ruijie#

dot1x auth-mode	802.1x Â
dot1x max-req	Â
dot1x port-control auto	Â
dot1x reauth-max	
dot1x re-authentication	Â
dot1x timeout quiet-period	Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	Â
dot1x timeout supp-timeout	Â
dot1x timeout tx-period	Â

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51.6.3 show dot1x auto-req

ў ╟ ┤ 802.1x ҇ Â

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
```

Ю ३	
dot1x auto-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 Â
dot1x timeout supp-timeout	∩ ≥ Ц Â
dot1x timeout tx-period	· ˘ · Â

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51.6.4 show dot1x private-supplicant-only

show dot1x private-supplicant-only

-	-

```
Ruijie# show dot1x private-supplicant-only
private-supplicant-only:: disabled
Ruijie#
```

dot1x auth-mode	802.1x
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	

dot1x timeout supp-timeout	ตั้งค่าเวลาหมดอายุของ Supplicant
dot1x timeout tx-period	ตั้งค่าเวลาที่ Authenticator ส่งข้อมูลซ้ำ

ค่าเริ่มต้น

ค่าเริ่มต้น	
ค่าเริ่มต้น	
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51.6.5 show dot1x max-req

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show dot1x max-req

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```
Ruijie# show dot1x max-req
max-req: 2 times
Ruijie#
```

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dot1x auth-mode	802.1x Â
dot1x max-req	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	∩ ⊢ ⅄ ⅃ ⅄ ⅂ Ⅎ ⅂ Â
dot1x timeout supp-timeout	∩ ⅄ ⅃ Ⅎ ⅂ Â
dot1x timeout tx-period	· ˘ · □ Â

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51.6.6 show dot1x port-control

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

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interface	٨

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```
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#
```

Ω Ю ३

Ю ३	
dot1x auth-mode	802.1x Â
dot1x max-req	ï · Â
dot1x port-control auto	٨ ï ٨ ╗ Â
dot1x reauth-max	
dot1x re-authentication	ï Â
dot1x timeout quiet-period	৶ ï Â
dot1x timeout re-authperiod	Â

	dot1x timeout server-timeout	Ո Է ५ ३ Ի ц Â
	dot1x timeout supp-timeout	Ո ३ Ի ц Â
	dot1x timeout tx-period	. ˘ . . Â

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dot1x reauth-max	
dot1x re-authentication	[illegible]
dot1x timeout quiet-period	[illegible]
dot1x timeout re-authperiod	[illegible]
dot1x timeout server-timeout	[illegible]
dot1x timeout supp-timeout	[illegible]
dot1x timeout tx-period	[illegible]

ค่าเริ่มต้น

ค่าเริ่มต้น	
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51.6.8 show dot1x re-authentication

show dot1x re-authentication

ค่าเริ่มต้น

ค่าเริ่มต้น	
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ใบ ๓	
dot1x auth-mode	802.1x Â
dot1x max-req	๊ Â
dot1x port-control auto	๙ ๊ ๙ ๊ Â
dot1x reauth-max	
dot1x re-authentication	๊ Â
dot1x timeout quiet-period	๊ ๙ Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	๐ ๕ ๕ ๓ ๓ ๑ Â
dot1x timeout supp-timeout	๐ ๕ ๓ ๓ ๑ Â
dot1x timeout tx-period	Â

๙

ใบ ๓ ๗ ๙	๙	
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51.6.9 show dot1x reauth-max

show dot1x reauth-max

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

Ω

dot1x auth-mode	802.1x Â
dot1x max-req	ï · Â
dot1x port-control auto	ˆ ï ˆ ╗ Â
dot1x reauth-max	
dot1x re-authentication	ï Â
dot1x timeout quiet-period	ˆ ï Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	∩ ˆ ˇ Ц Â
dot1x timeout supp-timeout	∩ ˇ Ц Â
dot1x timeout tx-period	· ˘ · Â

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51.6.10 show dot1x summary

802.1X

show dot1x summary

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```
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#
```

Ω认证

认证	
dot1x auth-mode	802.1x Â
dot1x max-req	ï · Â
dot1x port-control auto	٧ ï ٧ ╗ Â
dot1x reauth-max	
dot1x re-authentication	ï Â
dot1x timeout quiet-period	٧ï ï Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	∩ ╘ ⅄ ⅋ Ⅎ ⊓ Â
dot1x timeout supp-timeout	∩ ⅋ Ⅎ ⊓ Â
dot1x timeout tx-period	· ˘ · ▯ Â

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认证 ٧

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51.6.11 show dot1x user id

dot1x max-req	ï · Â
dot1x port-control auto	৲ ï̈ ৲ ╗ Â

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

ƪu ३	
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 timeo/Tpf-0.0024 Tw 1.198 <4-0.0024 Tw 1.] 0.47A48 20.1 33.36 394.9840.1 F909B7>E2080

52 AAA

52.1

52.1.1 aaa authentication dot1x

G AAA 802.1X ˘ ŏ Ĥu ʒ **aaa authentication dot1x** 802.1X " Â Ĥu ʒ no ĵ 802.1X " Â

aaa authentication dot1x {**default** | *list-name*} *method1* [*method2*...]

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

٧	
default	G ٧ ˘ ‡ ٨ Ĥ " ɔ й 802.1X Â
list-name	Ĥ У э 802.1X " ˘ ˩ Л ˙ ! s Â
method	l' local à none à group Ł " ˜Ω ʒ У˘ У э " 4 э
local	G ѡ ٨
none	a
group	G Ł ɟ ˘ ɱ RADIUS Ł ɟ

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Ĥu ʒ ŏ Â

G

ŭ AAA 802.1X ŏ Ł˘ G AAA 802.1X ˜ ك Â G **aaa authentication dot1x** Ĥu ʒ ˩ " ¥ 802.1X Â

˩ ɱ ; ˘ G ٨ Â

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Ю R Ĥ У э ٨ й rds_d1x AAA 802.1X " Â "

˝I G RADIUS ŏ Ł ɟ ˘ جه У ą̈ ĵ RADIUS ŏ Ł ˘ ‡ G ѡ Â

```
Ruijie(config)# aaa authentication dot1x rds_d1x group radius local
```

	Ԧu ३	
ॅΩԦu ३	**aaa new-model**	G AAA ώ Ԩ
	dot1x authentication	ह 802.1X ~ Э ॅΩ "
	username	ԩ ऽ

ʎ ॠ Ń ɒ = Ō ɒ ॅ

ʷ R	ƗO R ƗƦ AAA Enable ` " Â " ˝I G RADIUS ѿ ⊨ ⊻ ` ˘ ج У ϱ ˆ RADIUS ѿ ⊨ ⊻ ˘ ‡ G ⩽ ` Â

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

Ԧ ३

ώ Â

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ŏ AAA ώ ᄂ G AAA Login ˜ ك Â

G **aaa authentication login** Ԧ ३ ᄀ " ţ Login Â

ᄀ ᄁ ; ˘ G ᄀ ` Â

ɷ Login ᄀ˘ ὲ ج Login Э˘ ĭ ‡ a

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Ю R ᄒ У э ᄀ ὶ list-1 AAA Login " Â " ˝ᄀ G

RADIUS ώ ᄂ ᄅ ˘ ج У ᾷ ᾖ RADIUS ώ ᄂ ᄅ ˘

‡ G س Â

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

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Ԧ ३	
aaa new-model	G AAA ώ ᄂ
username	ᄒ س
login authentication	ج Э Login

ᄀ

Ԧ ३ ˥ ᄀ

ᄀ	

local	G ৯ ৲
none	a `
group	G ⊨ ⊻ ˘ ɱ RADIUS Ω TACACS+ ⊨ ⊻

Ԧu ३ ॐ Â

G ŭ AAA PPP ॐ ⊨˘ G AAA PPP ˜ ؞ Â G **aaa authentication ppp** Ԧu ३ ⊿ " ¥ PPP Â ⊿ ɱ ؛ ˘ G ⊿ Â

ɯ R Ю R ԦЖ У э ⊿ й rds_ppp AAA PPP " Â " ˝ı G RADIUS ॐ ⊨ ⊻ ˘ ج У ॐ ॱ RADIUS ॐ ⊨ ⊻ ˘ ˘ ‡ G ৯ Â

```
Ruijie(config)# aaa authentication ppp rds_ppp
```

default	G ৲ ˘ Login " Â
list-name	У э ЮЖ Login " Â

Ъu ३ Â

G

Login " У ˘ ‖ ˆ Э Â ج Э
Login " ˘ ৲ ३ " Â في ЮЖ " ˘ ‡ ˚
У э ˆ ৲ ˘ Э Login a ˚ ˘ ЮЖ ⓒ Login
" ˚ Â

W R

Ю R ЮЖ У э ⅃ й list-1 AAA Login " Â " G ⌓
Â ⅃ ج VTY 0 - 4 Э Â

```
Ruijie(config)# aaa authentication login list-1 local
Ruijie(config)# line vty 0 4
Ruijie(config-line)# login authentication list-1
```

Ъ̃Ωu ३

Ъu ३	
aaa new-model	G AAA ώ ⊢
username	ЮЖ ⌓
login authentication	Login "

৲

Ъu ३ ˥ ৲

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52.2

52.2.1 aaa authorization commands

¥ ˆ NAS CLI Э ˘ G AAA Ъu ३ ˥ Ъu ३ ˘ ˈ э ε Ъu ३ Â ώ Ъu ३ **aaa authorization commands** Â Ъu ३ no Ъ̃Ω AAA Ъu ३ ˥ Â

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

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

৭	
level	ħυ ३ ⁝˘ ستن 0~15˘ ā ف ə ⁝ ħυ ३ ⁄ Â
default	G ৭ ˘ ‡ ⁄ ⁜ ’] Ư Ă –

52.2.2 aaa authorization config-commands

ᴳ AAA ˆ ↑ ϋ ϧ ὲ ˜ Ю Ϟυ ϡ ˇ ϋ Ϟυ ϡ **aaa authorization config-commands** Â Ϟυ ϡ no ˜Ω AAA Ю Ϟυ ϡ ╗ Â

aaa authorization config-commands

no aaa authorization config-commands

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a ЮϞυ ϡ Â

Ϟυ ϡ ϋ Â

ᴳ ϟ ˆ ˜ Ю Ϟυ ϡ ˇ ϟ ΛΛυ ᴳ Ϟυ ϡ no ˜Ω ╗ ˇ ‡ ϧ ὲ Ю Ϟυ ϡ a Ϟυ ϡ ϟ ΛΛυ Â

ᴡ ᴿ

Ю ᴿ ЮϞυ ϡ ╗ '

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

Ϟυ ϡ	
aaa new-model	ᴳ AAA ϋ ᴸ
aaa authorization commands	ⱱ AAA Ϟυ ϡ

ϡ

Ϟυ ϡ ϒ ϡ

ϡ	
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52.2.3 aaa authorization console

ᴳ AAA ⁸ ϡ ˇ Ϟυ ϡ ˇ ϋ Ϟυ ϡ **aaa authorization console** Â Ϟυ ϡ no ˜Ω AAA ⁸ ϡ Ϟυ ϡ ╗ Â

aaa authorization console

no aaa authorization console

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a ⁸ ৲ Ъυ ३ Â

Ъυ ३ ॐ Â

G RGOS Ш ⁸ ৲ Ω ε ы ˘ ৲ Λυ ⁸ ৲ ˘ ї Ъυ ३ Â Ζ Ω ⁸ ৲ Ъυ ३ ˘ ‡ ⁸ ৲ Ъυ ३ " a Â

ш R Ю R ⁸ ৲ Ъυ ३ '

```
Ruijie(config)# aaa authorization console
```

Ъυ ३	
aaa new-model	G AAA ॐ

AAA Խ ३

৭	
default	' G ৭ ˘ ‡ ⅄ Ⅎ " ɔ ὶ Network Â
method	l' none à group Ł " ̃Ω ̃ ̆ У ̆ У э " 4 э
none	a
group	G Ł ⅄ ˘ ɱ RADIUS Ω TACACS+ Ł ⅄

৭

̃Ω AAA Network ╗ Â

Ъu ३

ώ Â

G

RGOS ̃Ω Ł PPP ãSLIP ̃ Â ɑ ˘ ‡ ৭ ╟ Â ⅃ Λu Ь a ⅃ ˘ б ` У ˘ ৭ ɱ ! ˘ G ⅄ ˘ ɱ ˘ ‡ a ̃Ą G è ы ⅄ Â

RADIUS TACACS+ Ł ⅄ ش У " Â Λu ج ث Э ˘ ৭ ɑ ⅃ ৭ Â

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Ю R G RADIUS Ł ⅄ Ł '

```
Ruijie(config)# aaa authorization network default group radius
```

Ъu ३	
aaa new-model	G AAA ώ Ł
aaa accounting	Ⅎ AAA
aaa authentication	Ⅎ AAA `

Ԧ ३ " ج Э˘ Ԧ ३ **authorization commands** Â Ԧ ३ no ৲ Э Ԧ ३ ╗ Â

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

no authorization commands *level*

৲	
level	Ԧ ३ ⁝˘ ش 0~15˘ ā ف э ⁝ Ԧ ३ ⁄ Â
default	G ৲ ˘ Ԧ ३ Â
list-name	У э ⊠ Ԧ ३ " Â

AAA Ԧ ३ ╗ Â

Ԧ ३ Â

G

Ԧ ३ " У ˘ ╟ ˆ Э Â ج Э Ԧ ३ " ˘ ৲ ३ " Â في ⊠ " ˘ ‡ ˚ У э ˆ ą ˘ Э Ԧ ३ a ˚ ˘ ⊠ ⓒ Ԧ ३ " ˚ Â

ш R

Ю R У э ⁄ й cmd Ԧ ३ " ˘ 15 Ԧ ३ ˘ G TACACS+ ɔ й ώ ⊨ ⊻˘ ⊨ ⊻ ! none Â ⁄ ˆ VTY 0 – 4 Э'

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

˘Ωԧ ३

Ԧ ३	
aaa new-model	G AAA ώ ⊨
aaa authorization commands	⊠ AAA Ԧ ३ "

⁄

Ԧ ३ ˥ ⁄

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52.2.7 authorization exec

Exec " ج Э˘ Ъu ३ **authorization exec** Â
Ъu ३ no ৲ Э Exec ╗ Â

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

no authorization exec

৲		
৲	**default**	G ৲ ˘ Exec Â
	list-name	У э ЪЖ Exec " Â

AAA Exec ╗ Â

Ъu ३ Â

G

Exec " У ˘ ╟ ↑ Э Â ج Э
Exec " ˘ ৲ ३ " Â في ЪЖ " ˘ ‡
У э ˆ ৫ ˘ Э Exec a ˘ ЪЖ Exec
" Â

Ю R У э ৶ й exec-1 Exec " ˘ G RADIUS ɔ й ώ Ь ৸˘
Ь ৸ : none Â ৶ ↑ VTY 0 – 4 Э'

W R

```
Ruijie(config)# aaa authorization exec exec-1 group radius none
Ruijie(config)# line vty 0 4
Ruijie(config-line)# authorization exec exec-1
```

Ъu ३	
aaa new-model	G AAA ώ Ь
aaa authorization commands	ЪЖ AAA Exec "

৶

Ъu ३ ৲ ৶	
-	-

52.3

52.3.1 aaa accounting commands

ɣ ╟˘ ˆ NAS Ɜ Ԧ ʒ ╟ ˘ ŏ
Ԧ ʒ **aaa accounting commands** Â Ԧ ʒ no ˅ Ԧ ʒ ╖ Â

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

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

˄		
	level	Ԧ ʒ ⁝˘ ش 0~15˘ ā ف ɜ ⁝ Ԧ ʒ ˘ ɜ Â
	default	G ˄ ˘ ‡ ˅ Ԧ " ɔ ŕ Ԧ ʒ Â
˄	*list-name*	Ԧ У ɜ Ԧ ʒ " ˘ ˅ Л ˙ ¡ s Â
	method '	ľ **none à group** Ł " ˆΩ ǯ У˘ У ɜ " 4 ɜ '
	none	a
	group	G Ł ⅄ ˘ ɱ TACACS+ Ł ⅄

	ˆΩ ╖
Ԧ ʒ	ŏ Â

RGOS ع ɔ ʒ ɔ ɔ

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52.3.2 aaa accounting exec

¥ ‖ˇ NAS ‖ ˇ ŏ̈ Ĥu ʒ **aaa accounting exec** Â Ĥu ʒ no ɻ Exec ˥ Â

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

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

ʅ	ʅ	
	default	G ʅ ˇ ‡ Л Ĥ " ɔ й Exec Â
	list-name	Ĥ У э Exec " ˇ ˩ Л ˙ ! s Â
	method	Ĭ **none** à **group** Ĺ " ˜Ω ʒ̆ У˘ У э " 4 э
	none	a
	group	G Ĺ ɻ ˇ ɱ RADIUS Ω TACACS+ Ĺ ɻ

	˜Ω ˥
Ĥu ʒ	ŏ̈ Â
G	RGOS ɻ ج ɷ Л˘ ˚ ŭ Exec ˥ ˇ й none˘ ‡ a˚ Exec Â ŭ ˥ Л˘ ج ˆ NAS CLI Ą˘ ˩ ˆ Start˜ ą ŏ̈ Ĺ ɻ˘ ج Ą˘ ˩ ˆ Stop˜ ą ŏ̈ Ĺ ɻ Â У э ج ˩ Start ą ˇ ج ≠ a˚ ˩ Stop ą Â ɷ Exec Л˘ ɛ ج Ĥu ʒ Э˘ ĭ ‡ a Â
W R	Ю R G RADIUS NAS ‖ ˇ ج Ω ˩ ' `Ruijie(config)# aaa accounting exec default start-stop group radius`

˜ΩĤu ʒ	Ĥu ʒ	

aaa new-model	G AAA ώ Ł
aaa authentication	ƚ AAA `
accounting commands	ج Э Exec

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52.3.3 aaa accounting network

¥ ╟˘ ╟ ˘ ώ ƚυ ३ **aaa accounting network** Â ƚυ ३ no ƛ ╥ Â

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

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

ƛ

ƛ	
default	G ƛ ˘ ‡ ƛ ƚ " ɔ й Network Â
list-name	" ɿ Â
start-stop	ج ╟ ∩ ƙ ٦ ˘ ї ╥ ї ˘ ї Â
method	Ю " Ω ƺ У˘ У э " 4 э
none	a
group	G Ł ƛ ˘ ƴ RADIUS ∩ TACACS+ Ł ƛ

Ω ╥

ƚυ ३ ώ Â

G RGOS ώ Ł ƛ ٦ ╟ Â G Ω **start-stop˘** 8 Â

w R Ю R G RADIUS Ł ˘ ج ∩ ٦

'

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

Ϊυ ϛ

Ϊυ ϛ	
aaa new-model	G AAA ώ Ε
aaa authorization network	Ϊϗ AAA
aaa authentication	Ϊϗ AAA `
username	Ϊϗ ϩϩ

ϡ

Ϊυ ϛ ϡ

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52.3.4 aaa accounting update

ϋ ϥ ˘ ώ Ϊυ ϛ **aaa accounting update** Ϊυ ϛ˘ Ϊυ ϛ ϥ G ώ Â G Ϊυ ϛ no Ϗ ϥ Â

aaa accounting update

no aaa accounting update

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Ϊυ ϛ

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ϋ AAA ώ Ε˘ ‡ a G Â ϋ AAA ώ Ε˘ ‡ Ϊυ ϛ Â

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

Ϊυ ϛ

Ϊυ ϛ	

aaa new-model	AAA ॐ ᒪ
aaa accounting network	ᒪᘐ "

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52.3.6 accounting commands

Ԧ ३ " ج Ɔ˘ Ԧ ३ **accounting commands** Â
Ԧ ३ no ۷ Ɔ Ԧ ३ ╗ Â

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

no accounting commands *level*

۸	۸	
	level	Ԧ ३ ⁝˘ تن 0~15˘ ā ف ɔ ⁝ Ԧ ३ Â
	default	G ۸ ˘ Ԧ ३ Â
	list-name	У ɔ ⊠ Ԧ ३ " Â

	˘Ω ╗
Ԧ ३	Â
G	Ԧ ३ " У ˘ ╟ ˆ Ɔ Â ج Ɔ Ԧ ३ " ˘ ۷ ३ " Â ڤي ⊠ " ˘ ‡ ˬ У ɔ ˆ ɘ ˘ Ɔ Ԧ ३ a ˬ ˘ ⊠ Ԧ ३ " ˬ Â
ш R	Ю R У ɔ ɹ й cmd Ԧ ३ " ˘ 15 Ԧ ३ ˘ G TACACS+ ɔ й ώ ⊨ ⊻˘ ⊨ ⊻ ؛ none Â ɹ ˆ VTY 0 – 4 Ɔ'

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

˘Ωԧ ३	Ԧ ३	
	aaa new-model	G AAA ώ ⊨
	aaa accounting commands	⊠ AAA Ԧ ३ "
۷		

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52.3.7 accounting exec

Exec " ج Ɜ˘ Ĥu ३ **accounting exec** Â
Ĥu ३ no ৶ Ɜ Exec ╗ Â

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

no accounting exec

৸	৸	
	default	G ৸ ˘ Exec Â
	list-name	У ɜ ĤȜ Exec " Â

	˜Ω ╗
Ĥu ३	Â
G	Exec " У ˘ ╟ ˆ Ɜ Â ج Ɜ Exec " ˘ ৶ ३ " Â في ĤȜ " ˘ ‡˚ У ɜ ˆ ɜ˛ ˘ Ɜ Exec a˚ ˘ ĤȜ ɷ Exec " ˚ Â

ш R	Ю R У ɜ ɹ ŷ exec-1 Exec " ˘ G RADIUS ɔ ŷ ώ Ĺ ˘
	Ĺ ɻ ؛ none Â ɹ ˆ VTY 0 – 4 Ɜ'
	`Ruijie(config)# **aaa accounting exec** *exec-1* **group radius none**`
	`Ruijie(config)# **line vty** *0 4*`
	`Ruijie(config-line)# **accounting exec** *exec-1*`

˜Ωĥu ३	Ĥu ३	
	aaa new-model	G AAA ώ Ĺ
	aaa accounting commands	ĤȜ AAA Exec "

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Ĥu ३ ٦ ৶	৸	

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52.4 AAA

52.4.1 aaa domain

ώ ˘ Â Ъu ३ no ৲ Ъu ३ Â

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

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

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default	G ৲ ˘
domain-name	˛

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Ъu ३ ώ Â

G AAA default domain-name 32 Â

Ю R ˛ '

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

52.4.2 aaa domain enable

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aaa domain enable

no aaa domain enable

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ƺ ƽ ƾ ƿ AAA ǀ ǎǏǎǏ Ǎ

ƪ ƻ	ǂǃ Ǎ
ǂ	ƺ ƽ ƾ ƿ AAA ǀ ǂ ǎǏǐǑǒǓǔǕǖǗǘǙǚǛǜǝǞǟǠǡǢǣǤǥǦǧǨǩǪǫǬǭǮǯǰǱǲǳǴǵǶǷǸǹǺǻǼǽǾǿ Ǎ
ǁ ǂ	ƺ ƽ ƾ ƿ AAA ǀ ǎǏǐǑǒǓǔǕǖǗǘǙǚǛǜǝǞǟǠǡǢǣǤǥǦǧǨǩǪǫǬǭǮǯǰǱǲǳǴǵǶǷǸǹǺǻǼǽǾǿ `Ruijie(config)#` **`aaa domain enable`**

	ƪ ƻ	
ǎǏƪ ƻ	**aaa new-model**	AAA ǂǃ ǀ
	show aaa domain	ƾ

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ƪ ƻ ǂ ǁ	-	-

52.4.3 access-limit

ƾ 8 ǂ IEEE802.1x ǃ ƪ ƻ no ǁ ƪ ƻ Ǎ

access-limit *num*

no access-limit

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num	؋ ˘ ৲ IEEE802.1x

	ह " ˘ ५ ˘ ॰ default " Â
Ĥu ३	ह Â
G	ऱ ह G Network " Â

w R	Ю R ह Network " '
	`Ruijie(config)# aaa domain ruijie.com`
	`Ruijie(config-aaa-domain)# accounting network default`

	Ĥu ३	
ऱ्Ωĥu ३	**aaa new-model**	AAA ॐ ⊢
	aaa domain enable	ह ¥ ह ऽ AAA ⊢ ऱ्Ω
	show aaa domain	ह

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Ĥu ३ ˥ ऽ	[redacted]	
	-	-

52.4.5 authentication dot1x

ह ह Ю IEEE802.1x " ˘ Ĥu ३ no ऽ Ĥu ३ Â

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

no authentication dot1x

G й ॐ У э IEEE802.1x " Â

w R

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

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aaa new-model	AAA ώ ᄂ
aaa domain enable	㎜ ¥ ㎜ ㄱ AAA ᄂ ̃Ω
show aaa domain	㎜

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与 ㄱ ㄱ	ㄱ	
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52.4.8 show aaa domain

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show aaa domain [**default**

aaa new-model	AAA ώ ⊨
aaa domain enable	⌘ ¥ ⌘ ⅃ AAA ⊨ ̃Ω

ⅅ

ƪ ३ ⅂ ⅅ

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52.4.9 username-format

⌘ ⌘ Ю NAS б ⊨ ⅄ Ϟ ⊤ ⅃ è ї ⌘ ą ˘ ƪ ३ no Â

username-format {**without-domain** | **with-domain**}

no username-format

⅄	
without-domain	Ω ⌘ ą
with-domain	a Ω ⌘ ą

ą Ю a Ω ⌘ ą Â

ƪ ३ ⌘ Â

G ⌘ ⌘ Ю̃ NAS ⌘ б ⊨ ⅄ Ϟ ⊤ ⅃ ˘ ⅃ è ї ⌘ ą Â

Ю R Ω ⌘ ą '

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```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# username-domain without-domain
```

ƪ ३	
aaa new-model	AAA ώ ⊨
aaa domain enable	⌘ ¥ ⌘ ⅃ AAA ⊨ ̃Ω
show aaa domain	⌘

ⅅ

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52.5 AAA

52.5.1 aaa group server

ώ AAA ⊨ ⋊ Â Ĥu ३ no ĵ ⊨ ⋊ Â

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

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

٩	٩	
	name	⊨ ⋊ ৲ ৲˘ ⋊ a ⋊ Ω ľ radius ⊢˘ ľ tacacs+ ⊢˘ ج ⋊ RADIUS ∩ TACACS+ ⊨ ⋊ ৲ Â

Ĥu ३	ώ Â
G	Ĥu ३ AAA ⊨ ⋊ ˘ ⋊ RADIUS ∩ TACACS+ ⊨ ⋊ Â

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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:
```

Ω Ĥu ३	Ĥu ३	
	show aaa group	aaa ⊨ ⋊

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52.5.2 ip vrf forwarding

й AAA ╞ ⅄ vrf no ╕ Â

ip vrf forwarding *vrf_name*

no ip vrf forwarding

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	vrf_name	vrf ৶

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G	й ╞ ⅄ vrf Â

ш 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`

ƚu ३	ƚu ३	
	aaa group server	aaa ╞ ⅄
	show aaa group	aaa ╞ ⅄

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52.5.3 server

╗ AAA ╞ ⅄ ╞ ⅄˘ no ╕ Â

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

no server *ip-addr* [**authen-port** *port1*] [**acct-port** *port2*]

৭	
ip-addr	╞ ⅄ ip ফ্রস
port1	╞ ⅄ ৭ˆ Θ RADIUS ╞ ⅄ ~
port2	╞ ⅄ ৭ˆ Θ RADIUS ╞ ⅄ ~

╞ ⅄

ƪ ३ ╞ ⅄ Â

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```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12
acct-port 5 authen-port 6
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Group Name:  ss
Group Type:  radius
Referred:   2
Server List:
IP Address: 192.168.4.12
Authentication Port: 6
Accounting Port: 5
Referred:  1
```

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aaa group server	aaa ╞ ⅄
show aaa group	aaa ╞ ⅄

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52.5.4 show aaa group

AAA ⊨ ⋗ Â

show aaa group

52.6.1 aaa local authentication attempts

login

aaa local authentication attempts *max-attempts*

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max-attempts'	˘ ৷ ḣ ন 1~2147483647 Â

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login ˘

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

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ȶ ȝ	
Show running-config	Ȣ ɱ
Show aaa lockout	ɱ login ˥

˩

ȶ ȝ ˥ ˩

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52.6.3 aaa new-model

G RGOS AAA ǿ ˪ ˘ ǿ ȶ ȝ **aaa new-model** G AAA Â ȶ ȝ **no** ˇΩ AAA ǿ ˪ Â

aaa new-model

no aaa new-model

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ˇΩ AAA ǿ ˪

ȶ ȝ

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G

ȶ ȝ AAA G ȶ ȝ˘ G AAA ǿ ˪˘ G **aaa new-model** G AAA ǿ ˪ Â ȣ AAA˘ ‡ AAA ȶ ȝ a ˩ Â

ɯ R

Ю R G AAA ǿ ˪ Â

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

默认认证	认证	
	aaa authentication	用户 "
	aaa authorization	用户 "
	aaa accounting	用户 "

命令模式

认证方式配置模式	
-	-

52.6.4 clear aaa local user lockout

"

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

参数		
	<*word*>	ID

5 ug aaa

AAA ╞ ˜Ω Â ƪυ ३ **no** ˜Ω ˜Ω Â

g aaa event

ebug aaa event

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EXEC Â

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ƚu ३ AAA " Â

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```
ƗO 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
```

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ƚu ३	
aaa authentication	ƚƜ "
aaa authorization	ƚƜ "
aaa accounting	ƚƜ "

ƚu ३ ˥ ˤ

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52.6.7 show aaa user lockout

ɱ " Â

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

ˤ

ˤ	
<*word*>	ID

ƚu ३ Â

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```
Ruijie# show aaa user lockout all
```

ЮЗ

ЮЗ	
show running-config	Ц ЮЗ
show aaa lockout	ЮЗ login Ч

Ч

ЮЗ Ї Ч

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53.1.2 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	৷৷ id <1-255>
type	type

৯ ৸ ⋮ '

id	৷৷	type
1	max down-rate	1
2	qos	2
3	user ip	3
4	vlan id	4
5	version to client	5
6	net ip	6
7	user name	7
8	password	8
9	file-diractory	9
10	file-count	10
11	file-name-0	11
12	file-name-1	12
13	file-name-2	13
14	file-name-3	14
15	file-name-4	15
16	max up-rate	16
17	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilige	22

23	login privilige	42

ą'

id	ll	type
1	max down-rate	76
2	qos	77
3	user ip	3
4	vlan id	4
5	version to client	5
6	net ip	6
7	user name	7
8	password	8
9	file-diractory	9
10	file-count	10
11	file-name-0	11
12	file-name-1	12
13	file-name-2	13
14	file-name-3	14
15	file-name-4	15
16	max up-rate	75
17	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilige	22
23	login privilige	42
24	limit to user number	50

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w R Ю R max up-rate ص ḣ ' ъ

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radius set qos cos	radius· Ю qos ḣ ȕ ˀ cos ḣ

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53.1.3 radius-server deadtime

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ˆ deadtime˜ ˘ RGOS ɔ RADIUS ȝ ˘ ѿ ƪ ȝ
radius-server deadtime Â ƪ ȝ **no** ˘ ḣ Â

radius-server deadtime *minnutes*

no radius-server deadtime

ˀ	ˀ	
	minnutes	ȝ ˆ ´ Æ ȕ˥ ˜ Â ˀ ḣ تن ȕ 1-1000 Â

5˥

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G	G ƪ ȝ ˀ Â
w R	Ю R ȝ ȴȕ 10˥ '

```
Ruijie(config)# radius-server deadtime 10
```

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	radius-server host	ȴ RADIUS ѿ ˩ȴ ў
	radius-server retransmit	ȴ RADIUS ˀ
	radius-server key	ȴ RADIUS ˝Ω м ˀ ȝ
	radius-server timeout	ȴ RADIUS

radius-server key	⊮ RADIUS ॐ ⊨ ⊻ ॅΩ ॠ ४ ३
radius-server retransmit	⊮ RADIUS ⊣
radius-server timeout	⊮ RADIUS ⊻

⊿

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53.1.5 radius-server key

⊮ ⊨ ⊻ ~ б RADIUS ॐ ⊨ ⊻ ॅ ॅΩ ॠ ४ ॅ ॐ ħu ३ **radius-server key** Â ħu ३ no ⊿ ॅΩ ॠ ४ ३ Â

radius-server key *text-string*

no radius-server key

⊿	⊿	
	text-string	ॅΩ ॠ ४ ३

ॅΩ ॠ ४ ३ Â

ħu ३ ॐ Â

G ॅΩ ॠ ४ ३ ∩ RADIUS ॐ ⊨ ⊻ ॅ ⊞ Â ⊮ ⊕ G ∩ RADIUS ॐ ⊨ ⊻ ॅ ⊞ ∩ RADIUS ॐ ⊨ ⊻ Э ⊮ ⊿ ॅΩ ॠ ४ ३ Â

w R Ю R ⊮ RADIUS ॐ ⊨ ⊻ ॅΩ ॠ ४ ३ ⊮ aaa

```
Ruijie(config)# radius-server key aaa
```

ħu ३		
ॅΩħu ३	**radius-server host**	⊮ RADIUS ॐ ⊨ ⊻ ⊽
	radius-server retransmit	⊮ RADIUS ⊣
	radius-server timeout	⊮ RADIUS ⊻

⊿

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ৗ RADIUS ŏ ᄂ ᄅ ˘ ŏ ƀυ ३ৃ

radius-server timeout Â ƀυ ३ৃ **no** ˘ ḣ Â

radius-server timeout *seconds*

no radius-server timeout

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	qos	ὶ dscp ḣ
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G

radius attribute	ص ٨
radius set	qos ĭ G cos

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53.2 RADIUS

53.2.1 debug radius

RADIUS ̃Ω Â ƚu ३ no ̃Ω RADIUS ̃Ω Â

debug radius [**event | detail**]

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

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RADIUS ⊨ ⋊ ŏ ৭ Â

show radius parameter

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

ħu ३	
radius-server host	ħ RADIUS ŏ ⊨ ⋊ ŷ
radius-server retransmit	ħ RADIUS ৻
radius-server key	ħ RADIUS Ω ৸ ৭ ३
radius-server timeout	ħ RADIUS

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53.2.3 show radius server

RADIUS ⊨ ⋊ ą Â

show radius server

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G G ħu ३ radius ⊢ ⋊ ą Â

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```
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
```

ˇΩħu ३

ħu ३	
radius-server host	ħ RADIUS ω ⊢ ⋊ ў
radius-server retransmit	ħ RADIUS ⊣
radius-server key	ħ RADIUS ˇΩ м ⊣ ३
radius-server timeout	ħ RADIUS

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53.2.4 show radius vendor-specific

RADIUS ص Â

show radius vendor-specific

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G G ƕ 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

ค่า

ใช้งานได้	ค่า	
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54 TACACS+

54.1 TACACS+

54.1.1 aaa group server tacacs+

ħu ३ TACACS+ ᒪ ᔑ ˘ a ᔑ TACACS+ ᒪ ᔑ ,ᑊ ᑊ a ᔑ Â

aaa group server tacacs+ *group-name*

no aaa group server tacacs+ *group-name*

ᔑ	
group-name	TACACS+ ᒪ ᔑ ᔑ

TACACS+ ᒪ ᔑ Â

ħu ३ ὅ Â

G TACACS+ ᒪ ᔑ ᑊ ˘ à à ᔑ ᒐ G a ᔑ ᒪ ᔑ Â

w R Ю R У э ᔑ й tac1 TACACS+ ᒪ ᔑ ˘ з ج è У э 1.1.1.1 TACACS+ ᒪ ᔑ فذ سم '

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

ħu ३	
server	TACACS+ ᒪ ᔑ server "
ip vrf forwarding	TACACS+ ᒪ ᔑ VRF ᔑ

ᔑ

ħu ३ ᒉ ᔑ	
-	-

54.1.2 ip tacacs source-interface

ħu ३ TACACS+ فخ سم Â

ip tacacs source-interface *interface*

no ip tacacs source-interface

۹	
Interface	TACACS+ فخ سم ۸

vrf-name	vrf ชื่อ

ใช้งาน

G

ħu ३ ŋń˘ ħu ३ **aaa group server tacacs+** ώ TACACS+ Â TACACS+ ╞ ⅄ è ╞ ⅄ ﻣﺠﻤﻮﻋﺔ ﺟﻬ ώ Ю˘ **tacacs-server host** ħu ३ ╞ ⅄ Â

╞ ⅄ è TACACS+ ╞ ⅄ ﻣﺠﻤﻮﻋﺔ ˘ У э ╞ ⅄ ; ˘ ˬ ˬ Ю У э ╞ ⅄ ⅃ Â

w R

Ю R У э ˬ й tac1 TACACS+ ╞ ⅄ ˘ з ﺟﻬ è У э 1.1.1.1 TACACS+ ╞ ⅄ ﻣﺠﻤﻮﻋﺔ'

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

ħu ३	ŏ Â
G	ŷ ɷ G TACACS+ AAA ŏ Ĕ ħ TACACS+ ŏ Ĕ ɮ Â ɹ ɲ G **tacacs-server** ħu ३ ħ У ɜ ɜ TACACS+ ŏ Ĕ ɮ Â
w R	Ю R ħ У ɜ TACACS+ ŏ Ĕ ɮ ŷ '

```
Ruijie(config)# tacacs-server host 192.168.12.1
Ruijie(config)# tacacs-server host 2001::1
```

	ħu ३	
ŐħU ३	**aaa authentication**	ħ AAA ` "
	tacacs-server key	ŏ ħ TACACS+ ŏ Ĕ ɮ Ő ɱ ʌ ३
	tacacs-server timeout	ŏ ħ TACACS+ Ĕ ɮ : ɮ

ʌ	

	ʌ	
ħu ३ ʅ ʌ	-	-

54.1.6 tacacs-server key

ħu ३ TACACS+ ŏ Â

tacacs-server key [*0* | *7*] *string*

no tacacs-server key

	ʌ	
ʌ	*string*	Ő ɱ ʌ ३

τ й э Ł ⅄ a ⅃ G˘ τ G host ħυ ३ è key ˘
⅃ Л υ ŏ key Ł ⅄ У э key Â

ш R

Ю R ⅍ TACACS+ ŏ Ł ⅄ ‘Ω м ^ ३ й aaa’
Ruijie(config)#**tacacs-server key** *aaa*

‘Ωħυ ३

ħυ ३	
tacacs-server host	⅍ TACACS+ ŏ Ł ⅄ ŭ
tacacs-server timeout	⅍ TACACS+ ⅄

⅃

ħυ ३ ˥ ⅃

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-	-

54.1.7 tacacs-server timeout

ħυ ३ б TACACS+ Ł ⅄ ˘ Ł ⅄ ŏ Â

tacacs-server timeout *seconds*

no tacacs-server timeout

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^	
seconds	ˆ ´ Æ й ˜ Â ⅃ ḣ ⅍ й 1-1000 Â

5

ħυ ३

ŏ Â

G

G ħυ ३ ! Â τ й э Ł ⅄ a ⅃
˘ G host ħυ ३ è timeout ˘ ⅃ Л υ ŏ
timeout Ł ⅄ У э timeout Â

ш R

Ю R ⅍ й 10 '
Ruijie(config)# **tacacs-server timeout** *10*

‘Ωħυ ३

ħυ ३	

tacacs-server host	ħ TACACS+ ॐ ॡ ॅ
tacacs-server key	ħ TACACS+ ॅ ॡ ४ ३

ॡ

ħu ३ ৭ ॡ	४	
	-	-

54.2 TACACS+

54.2.1 debug tacacs+

TACACS+ ॅ ħu ३ no ॅ TACACS+ ॅ

debug tacacs+

no debug tacacs+

४	

54.2.2 show tacacs

Ω ϧ TACACS+ ϵ ϫ ϯ ϥ ϱ Â

show tacacs

ϡ	
-	-

ϸ ϩ

G G ϸ ϩ Ω ϧ TACACS+ ϵ ϫ ϯ ϥ ϱ 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
```

w R

ϸ ϩ	
tacacs-server host	ϩϡ Ω ϧ TACACS+ ϵ ϫ ϯ ϥ ϱ ϣ ϵ ϫ ϭ

ϧ

ϸ ϩ ϩ ϧ	
-	-

55 SSH

55.1 SSH

55.1.1 crypto key generate

ЕЛ ЮЮ ˇ ЭЖ ЮО ЮЗ'

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

ЛЛ	
rsa	RSA
dsa	DSA

ąЮ SSH Server ЮЮ Â

ЮЗ
ЮО

G
SSH Server Е ˇ ЮЗ SSH Е Л ЮЮ Â Л **enable service ssh-server** ЮЗˇ SSH Server ╗ ÂSSH 1 G RSA ' SSH 2 G RSA DSA Â ЮЖ ˇ ńń RSA ˇ ‡ SSH1 б SSH2 Л ЛЮ G ' Θ DSA ˇ ‡ Θ SSH2 Л ЛЮ G Â
╕ ˇ a ЭЖ ЮЗ **no crypto key generate**ˇ ЮЗ **crypto key zeroize** ЮЗ╕ Â

W R
`Ruijie# configure terminal` `Ruijie(config)# crypto key generate rsa`

ЮЗЮЗ		
show ip ssh	SSH Server ńń ąĻ Â
crypto key zeroize {**rsa	dsa**}	╕ DSA б RSA ˇ ЮЮ SSH Server ╗ Â

Л
ˇ RGOS10.1 ЛЭ

ЮЗ Л Л	Л	

	-	-

55.1.2 crypto key zeroize

ĵ SSH Ĺ ⅄ ŹŹ ˘ ج ŏ Ю˘ Ĥu ३'

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

	৭	
৭	**rsa**	ĵ RSA
	dsa	ĵ DSA

Ĥu ३	ŏ
G	Ĥu ३ ĵ Ĺ ⅄ ŹŹ Â ĵ ⅄˘ SSH Server ŷ ŷ DISABLE Â ˇŹ SSH Serverˇ **no enable service ssh-server** Ĥu ३ Â
w R	`Ruijie# configure terminal` `Ruijie(config)# crypto key zeroize rsa`
ˇŹĤu ३	Ĥu ३ |
	show ip ssh | SSH Server ŋŕ Â
	crypto key generate {**rsa|dsa**} | DSA б RSA Â
⅄	˘ RGOS10.1 ЛЪЭ
Ĥu ३ ˥ ⅄	⅄ |
	- | -

55.1.3 ip ssh authentication-retries

SSH Server ÂG Ĥu ३ no
ŷ Â

ip ssh authentication-retries *retry times*

no ip ssh authentication-retries

ৰ

ৰ	
retry times	Â

Ю ὶ 3 Â ⅄˘ G **no ip ssh authentication-retries** ħυ ३ ≠ ⅃ ⅄υ G ὶ ḣ Â

ħυ ३

ὦ

G

ħυ ३ SSH Server Â SSH Server ˘ ÿ ╥˘ ‡ ὶ Â G **show ip ssh** ħυ ३ SSH Server ə Â

w R

ὶ 2

```
Ruijie# configure terminal
Ruijie(config)# ip ssh ssh authentication-retries 2
```

ΩħΩ ३

ħυ ३	
show ip ssh	SSH Server ɲ Â

ħυ ३ ώ

G ħυ ३ SSH Server Âÿ ৲ ˘ 120s ╗ ˘ ‡ ὶ ÂG **show ip ssh** ħυ ३ SSH server ঔ Â

w R ὶ 100s

```
Ruijie# configure terminal
Ruijie(config)# ip ssh time-out 100
```

ΩħΥ ३

ħυ ३	
show ip ssh	ssh-server ৸ ঔ Â

৴ ˘ RGOS10.1 ΛυΞ

ħυ ३ ৲ ৴

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55.1.5 ip ssh version

SSH server Â G ħυ ३ no ὶ Â

ip ssh version {**1** | **2**}

no ip ssh version

৷

৷	
1	SSH Server Θ SSH1
2	SSH Server Θ SSH2

Ю ò SSH 1 Ω 2 Â ৴˘ ৴ ৴ SSH ৴ Â G **no ip ssh version** ħυ ३ ≠ ৴Λυ ὶ Â

ħυ ३ ώ

G ħυ ३ ⁸ SSH Server SSH ˜ Â ą Ю˘ SSH Server ò SSH1 б SSH2˘ G SSH 1 SSH 2 ৴Λυ Â ˘ ৴ [illegible] SSH ÂG

√ G 2

w R

```
Ruijie# configure terminal
Ruijie(config)# ip ssh version 2
```

ΩħU ३

ħU ३	[redacted]
show ip ssh	SSH Server ɱ Â

√ RGOS10.1 ЛUЭ

	Clear line vty *line_number*	ɲʌ VTY ˅ Â

ʌ	˅ RGOS10.1 ЛƱЭ	

ƚƣ ʒ ʅ ʌ	ʌ	
	-	-

55.2.2 show crypto key mypubkey

SSH Server ʼΩ˝Ω ʼΩ ˆ ǝ Â

show crypto key mypubkey {***rsaldsa***}

ʌ	

show ip ssh

৭	
-	-

ħu ३

G

SSH Server ɱ ə Â ↑ ' à ï SSH Server à à Â

. G ɷ SSH ˘ ⊨ ⊻ ˘ ÿ SSH й a ⊣ Â

w R

```
Ruijie# show ip ssh
```

Ωħu ३

ħu 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

⊿ ˘ RGOS10.1 ЛЭ

ħu ३ ˥ ⊿

⊿	
-	-

55.2.4 show ssh

SSH э ə Â

show ssh

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-	-

56 CPU

56.1

56.1.1 cpu-protect cpu bandwidth *bandwidth_value*

CPU ʌ

cpu-protect cpu bandwidth *bandwidth_value*

ʌ	
bandwidth_value	" ˘ ʌ ḣ ن ن ̀ 64

ثو ع ٦ ل	ل	
	-	-

56.1.2 cpu-protect traffic-class id *id_num* bandwidth *bandwidth_value*

э " Â

cpu-protect traffic-class id *id_num* **bandwidth** *bandwidth_value*

ل	ل	
	id_num	" ID ل ه تن ى 0 7
	bandwidth_value	" ˘ ل ه تن ى 32 131072(kbps)

S3760 " " ى 1000kbps Â

ثو ع ŏ Â

G

ю " 7 ى 312(kbps)

```
Ruijie#configure terminal
Ruijie(config)# cpu-protect traffic-class id 7  bandwidth 312
Ruijie(config)#end
Ruijie# show cpu-protect traffic-class id 7
%*********traffic class     bandwidth(kbps)**********
              7                 312
```

ثو ع	ثو ع	
ثو ع	**cpu-protect type** packet-type **traffic-class** *traffic-class-num*	∩ " Ω
	cpu-protect traffic-class all bandwidth *bandwidth_value*	"

ل

ثو ع ٦ ل	ل	
	-	-

56.1.3 cpu-protect traffic-class all bandwidth *bandwidth_value*

" Â

cpu-protect traffic-class id *id_num* **bandwidth** *bandwidth_value*

local-http | local-tftp | local-other | ipv4-uc | ipv6-uc | mld| ns | other } traffic-class *traffic-class-num*

۹	
traffic-class-num	" id ۷ ḣ ت ۸ 0 7 Â

۷ Л ۰ ۷ ҥ ҩ a ۷ a ۷ , ɛ ɛ ص ۹ ´

S3760 " ɑ Ю Ⅱ " ̃Ω Ю '

ص	"
BPDU	6
ARP	5
IGMP	3
802.1X	3
GVRP	3
DHCP	2
Unicast	4
Known_ mc	1

```
Ruijie(config)# end
Ruijie # show cpu-protect type bpdu traffic-class
%**********packet type      traffic-class**********
                bpdu           5
```

ħυ ३	
cpu-protect traffic-class id *id_num* **andwidth** *bandwidth_value*	ə "
cpu-protect traffic-class all bandwidth *bandwidth_value*	"
cpu-protect cpu bandwidth bandwidth_value	CPU ٨

٨

ħυ ३ ٦ ٨	
-	-

56.2

56.2.1 show cpu-protect cpu

CPU ٨ '

show cpu-protect cpu

٨	
-	-

ħυ ३ Â

G ħυ ३ CPU ٨ Â

ɯ R ЛυЮ R CPU ٨ '

```
Ruijie# show cpu-protect cpu
```

```
%cpu port bandwidth: 100000(kbps)
```

ةيلاحلا

ةلاح	
show cpu-protect type *packet-type*	ةصاخلا
show cpu-protect traffic-class id id_num	ةيئاوشعلا id_num ةفرعم ىلع 0 - 7
show cpu-protect traffic-class all	ةيئاوشعلا

ةيلاحلا

ةلاح ىلإ ةلوخدلا	
ةلاحلا	
-	-

56.2.2 show cpu-protect traffic-class id id_num

ةيئاوشعلا ةيامحلا ةكبش ةلاح ضرعت

show cpu-protect traffic-class id *id_num*

ةلاحلا

ةلاحلا	
idt_num	ةفرعم ىلع ةيئاوشعلا ةيامحلا ةكبش ةلاح ضرعت

ʃ

ƿ ʒ ʃ ʃ

ʃ	
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56.2.3 show cpu-protect traffic-class all

" '

show cpu-protect traffic-class all

ʃ

ʃ	
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ƿ ʒ Â

G ƿ ʒ " Â

ЛƱЮ R G **show cpu-protect traffic-class all** ƿ ʒ " '

w R

```
Ruijie# show cpu-protect traffic-class all
%*********traffic class     bandwidth(kbps)**********
            0                1000
            1                1000
            2                1000
            3                1000
            4                1000
            5                1000
            6                1000
            7                100000
```

ʃ ʒ

ƿ ʒ	
show cpu-protect type *packet-type*	ص "
show cpu-protect traffic-class id id_num	ɜ " Â id_num ʃ ḣ ت ȉ 0 7
show cpu-protect cpu	CPU ʃ Â

ʃ

ƫ ʒ ʃ ʃ

ʃ	
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56.2.4 show cpu-protect type packet-type

ص " Â

show cpu-protect type *packet-type*

ʃ

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-	-

ƫ ʒ Â

G ƫ ʒ ص " Â

ЛƱЮ R S5760 G **show cpu-protect type all** ƫ ʒ " '

```
%**********packet type      traffic-class**********
                bpdu            6
```

ɯ R

```
                pim          5
                rip          5
               vrrp          5
                mld          3
                 ns          5
        error-ttl            0
error-hop-limit              0
  local-telnet               5
    local-snmp               5
    local-http               5
    local-tftp               5
    local-other              5
      ipv4-uc                4
      ipv6-uc                4
        other                0
```

ھ ۳	

57 GSN

57.1

57.1.1 security address-bind enable

ƪ ʒ ¥ ^ ĭ فخ سم Â

security address-bind enable

no security address-bind enable

^	
-	-

, ш ȯ « ⊢ ך ⊢˝

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

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

৭	
community	ɹ ᒪ ᔑ Ᏼ ᖶ *community* s Â
username	ᴳ v3

5

-	-

ʃ ˅ RGOS10.1 Л Э

ƪ ʒ ʃ ʃ

ʃ	
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57.1.5 smp-server host

ƪ ʒ ¥ smp-server ip ƒ ˆ Â

smp-server host *ip-address*

no smp-server host

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ʃ	
ip-address	smp server ip ƒ

smp server

ƪ ʒ ŏ

G ƪ ʒ Â G **show smp-server** Â

w R

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

ˆƪ ʒ

ƪ ʒ	
show smp-server	smp server

ʃ ˅ RGOS10.1 Л Э

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57.2

57.2.1 show security evnet interval

ŏ Y ˇ Â

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Ъ ३

G ŏ Y ˇ Â

w R

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

Ъ ३

Ъ ३	
security event interval *interval*	ŏ Y ˇ Â

৶ ˇ RGOS10.1 Л Э Â

Ъ ३ ৲ ৶

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57.2.2 show smp-server

smp server IP ফ স

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-	-

Ъ ३

G smp server IP ফ স Â

w R

```
Ruijie# show smp-server
```

SMP-Server IP' 192.168.20.30

ƕ ३	
smp-server host	smp server ip ف س Â

RGOS10.1 ЛЭ Â

Л
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58 DAI

58.1 VLAN DAI

58.1.1 ip arp inspection vlan

G ħυ ३˘ ৲ ᑎυ ᑊ *vlan-id* VLAN DAI ╖ Â ħυ ३ no ৲ ᑎυ
ᐧ *vlan-id* VLAN DAI ╖ ˘ ৭ *vlan-id* ‡ ᐧ VLAN
Э DAI ╖ Â

ip arp inspection vlan *vlan-id*

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

	৭	
৭	*vlan-id*	vlan ৭ Â

58.2

58.2.1 ip arp inspection trust

γ ʌ ĭ ˩ ə˙ ˘ G ʌ Ԧ ʒ **ip arp inspection trust** Â Ԧ ʒ **no**
γ ʌ ǐ a ə˙ Â

ip arp inspection trust

no ip arp inspection trust

ʌ	**ʌ**	
	-	-

	ʌ ɣ a ə˙ Â
Ԧ ʒ	ʌ Â

	G ə ʌ ʈ ARP ˚ DAI ˘ ˩ Ʌ ɛ ˩ ə˙ ˘ τ a ʌ ʈ ARP ˘ τ ʅ Â
G	NFPP(⁂ ɖ) ʜ ɒ˘ ⁸ NFPP ˘ a ̈Ạ DAI ˘ ⁂ ̃Ωԧ ʒ **show ip arp inspection interface** ʌ ʌ ə˙ Â

58.3.1 ip arp inspection limit-rate limit-rate

ħЖ У э ^ ARP ˘ ^ ħυ ३ **ip arp inspection limit-rate** Â
ħυ ३ **no** ⌟ Л υ Â

ip arp inspection limit-rate {*limit-rate* | **none** }

no ip arp inspection limit-rate

^	
none	^ a ṁ ⁸ Â
limit-rate	˘ ⌟ ḣ تن й^ 1˘ 2048˘ Â

ą˙ ^ ⁸ й 15 э ARP / Â ą˙ ^ й 0̊ . a ⁸˜ Â

ħυ ३ ^ Â

G ^ ŭ DAI ╥ ˘ ⁸ Â ⅄ ˘ ą (Network Foundation Protection Policy) ╥ ˘ Л a Ą k ħυ ३ Â

ШR ЛЮ R ˘ ę ţ VLAN 2 ^ gigabitEthernet 0/2 ⁸ й 10 э ARP / Â

```
Ruijie(config)# ip arp inspection
Ruijie(config)# interface gigabitEthernet 0/2
Ruijie(config-if)# ip arp inspection limit-rate 10
```

˜Ωħυ ३	
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ħυ ३ ˥ ⌟	
-	-

58.4 DHCP Snooping

ŭ ɑ VLAN DAI ╥ ˘ з ARP γ ^ ţ a ⌟ ą˙ ˘
ARP ‡ У ⅄ ˘ ŋ DHCP Snooping ˜Ω ą .

59 arp ƶ¥ f‘Ɛ

ʌ ƗΟ ˆΩ arp ǝ ɥ Â

show anti-arp-spoofing

ʌ

ʌ	

ƚυ ३

G

w R

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

ˆΩƚυ ३

ƚυ ३	
anti-arp-spoofing ip	ˆΩ arp ƚυ ३

ʎ

ƚυ ३ ˥ ʎ

ʎ	
-	-

60 IP Source Guard

60.1 IP Source Guard

60.1.1 ip source binding

ج IP فخ سم è ╗ ə ˘ **no** ˆ Â

[**no**] **ip source binding** *mac-address* **vlan** *vlan-id ip-address* **interface** *interface-id*

٨		
mac-address	╗	MAC فخ سم’
vlan-id	╗	vlan id’
ip-address	╗	IP فخ سم’
interface-id	╗	٨ Â

٨

╗ ˙ ! فخ سم Â

ƪ ʒ ŏ Â

G ƪ ʒ ⌟ Л ї ˆ ⌟ Л IP Source Guard ˘ a DHCP У ⁸ Â

w R

Ю У э ˆ ٨ 1 R ˈ

```
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
```

ƪ ʒ

ƪ ʒ	

show ip source binding	IP ƒƫ ƫ ƫ

ƪ

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	-	-

60.2 IP Source Guard

60.2.1 ip verify source

ƪ Ɜ IP Source Guard ʃ ˘ **no** ˜Ω ʃ Â

[**no**] **ip verify source** [**port-security**]

ƪ	ƪ	
	port-security	IP Source Guard ʃ ƫ ¥ IP+MAC Â

˜Ω Â

ƪ ʒ ƪ Â

G

ƪ ʒ ƪ IP Source Guard ʃ ˘ ˩ Ʌ ƫ ¥ IP ˘ ƫ ¥ IP+MAC ’

IP Source Guard ʃ Θ Θ ج DHCP Snooping ƫ˙ ƪ Ɜ ˘ ≠ ˘ ج Trust ƪ Ʌ ƪ DHCP Snooping ⁸ ƪ Ɜ IP Source Guard ʃ ˘ IP Source Guard ʃ a Â

w R

Ю ƪ 1 Ɜ IP Source Guard ʃ ’

```
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip verify source
Ruijie(config-if)# end
```

ƪ ʒ

ƪu ३ ٦ ٧	٨	
	-	-

60.3 IP Source Guard

60.3.1 show ip source binding

ƪu ३ IP فذ سم ٤ Â

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

٨	٨	
	ip-address	ip ٤ '
	mac-address	mac ٤ '
	dhcp-snooping	╟ ٤ '
	static	٤ '
	vlan-id	vlan ٤ '
	interface-id	٨ ٤ Â

Â

ƪu ३ Â

G Â

ƪO R '

w R

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

ƪu ३ Ωƪu ३	ƪu ३	
	ip source binding	IP فذ سم Â

ค่าเริ่มต้น

ค่าเริ่มต้น	
-	-

缺省情况

缺省功能	缺省值
缺省情况下，IP Source Guard 功能	缺省情况下，IP Source Guard 功能
-	-

ƪ ʒ صر ´ " ʅ Â

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

৭	
percent_vaule	ʅ ˘ ৷ ḣ ىتن 1ʅ 100

(Manage)´ ǎ ʉ ʅ ǐ 30˝
৷ (Route)´ ǎ ʉ ʅ ǐ 25˝
˜ (Protocol)´ ǎ ʉ ʅ ǐ 45 Â

ƪ ʒ ǿ

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ʷ R

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

ƪ ʒ	
cpu-protect sub-interface { *manage* | *protocol* | *route* } **pps**	э صر ´ " ʅ

৷

[illegible]Br2/ctA[illegible]ebQ¸

61.3 ARP

61.3.1 arp-guard attack-threshold

ώ ˘ . Ą˘ ѝ ج ѝ Â

arp-guard attack-threshold {**per-src-ip** | **per-src-mac** | **per-port**} *pps*

61.3.2 arp-guard enable

ƪ ३ ŏ ARP ╗ Â

arp-guard enable

৭	
-	-

ARP ╗

ƪ ३ NFPP

G

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

ƪ ३	
nffp arp-guard enable	ج ৭ Ɔ ARP ╗
show nfpp arp-guard summary	৯

৶

ƪ ३ ৭ ৶	
-	-

61.3.3 arp-guard isolate-period

ƪ ३ ŏ Â

arp-guard isolate-period {*seconds* | **permanent**}

৭	
seconds	˘ ´ Æ ˘ ৶ ḣ ش 0 [30, 86400] Â
permanent	ƪ

ŏ ḣ Ơ . a Â

ƒu ३ NFPP

G

w R

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

show nfpp arp-guard summary	३१

ƀυ ३ ٦ ৶	٨	
	-	-

61.3.7 arp-guard scan-threshold

ώ Â

arp-guard scan-threshold *pkt-cnt*

٩	٩	
	pkt-cnt	ḣ˘ ৶ ḣ تن [1,9999] Â

15˜ ´ Æ 10 Â

ƀυ ३	NFPP
G	10 ˆ 15 ৩ ƛυ Э ARP ˘ MAC فخ سم ثن IP فخ سم ৶ لا˘ MAC فخ سم Ω IP ثن فخ سم IP فخ سم a ৶ لا˘ ỳ Â
ɯ R	`Ruijie(config)# nfpp` `Ruijie(config-nfpp)# arp-guard scan-threshold 20`

ƀυ ३	ƀυ ३	
	nfpp arp-guard scan-threshold	جم ٩ Э
	show nfpp arp-guard summary	৯
	show nfpp arp-guard scan	ARP
	clear nfpp arp-guard scan	ARP

৶

ƀυ ३ ٦ ৶	٨	
	-	-

61.3.8 clear nfpp arp-guard hosts

৶ ў ˘ ў ˘ Â

clear nfpp arp-guard hosts [**vlan** *vid*] [**interface** *interface-id*] [*ip-address* | *mac-address*]

৭	
vid	৯ ৯
interface-id	৭ ৯
ip-address	IP ফ্ড সম
mac-address	MAC ফ্ড সম

ƚu ३

G

a ৭ ˘ ў Â

w R

VLAN 1 ৭ g 0/1 ў Â

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

Ωƚu ३

ƚu ३	
arp-guard attack-threshold	ড়
nfpp arp-guard policy	∩
show nfpp arp-guard hosts	৯ ў

৯

ƚu ३ ৭ ৯

৯	
-	-

61.3.9 clear nfpp arp-guard scan

ARP Â

clear nfpp arp-guard scan

৭

৭	
-	-

ƪ ३

G

w R

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

ƪ ३

ƪ ३	
arp-guard scan-threshold	ώ
nfpp arp-guard scan-threshold	
show nfpp arp-guard scan	ARP

ƛ

ƪ ३ ʅ ƛ

ƛ	
-	-

61.3.10 nfpp arp-guard enable

ƪ ३ ॐ ƛ Ɔ ARP ॥ Â

nfpp arp-guard enable

ƛ

ƛ	
-	-

ƛ ARP ƪ ώ ƪ Â

ƪ ३ ƛ

G ƛ ARP ƪ ʹI ɣ ώ ARP ƪ Â

w R

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp arp-guard enable
```

ƪ ३

ƪ ३	
arp-guard enable	ώ ARP ॥
show nfpp arp-guard summary	ॠ

ƪ

ƪ ३ ٦ ƪ

ƪ	
10.4	ƪ ३

61.3.11 nfpp arp-guard isolate-period

ƪ ३ ह ƪ Ɔ Â

nfpp arp-guard isolate-period {*seconds* | **permanent**}

ƪ

ƪ	
seconds	˘ ´ Æ ˘ ƪ ḣ ش 0 [30, 86400]ʹ 0 a Â
permanent	ƪA

ą ˘ ώ Â

ƪ ३ ƪ

G

w R

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

ƪ ३

ج ٨ Э Ω Â

nfpp arp-guard policy {**per-src-ip** | **per-src-mac** | **per-port**} *rate-limit-pps attack-threshold-pps*

٨	
per-src-ip	Э IP فذ سم Ω Â
per-src-mac	Э MAC فذ سم Ω Â
per-port	Э ٨ Ω Â
rate-limit-pps	˘ ٧ ḣ تن 1↑ 9999 Â
attack-threshold-pps	˘ ٧ ḣ تن 1↑ 9999 Â

٨ Ω ˘ ŏ Ω Â

ƪ ३ ٨

G a ɣ Â

ω 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
```

ƪ ३ Ω

ƪ ३	
arp-guard attack-threshold	ŏ
arp-guard rate-limit	ŏ
show nfpp arp-guard summary	٤
show nfpp arp-guard hosts	٧ ŭ
clear nfpp arp-guard hosts	ŭ

٧

ƪ ३ ٦ ٧

٨	
10.4	ƪ ३

61.3.13 nfpp arp-guard scan-threshold

ج ٨ Э Â

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

٩

٩	
pkt-cnt	ḣ˘ ৲ ḣ تن [1,9999] Â

ش ¥ ٨ ARP ḣ˘ ŏ ARP ḣ Â

ħυ ३ ٨

G

w R

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard scan-threshold 20
```

ŽΩħυ ३

ħυ ३	
arp-guard scan-threshold	ŏ
show nfpp arp-guard summary	ə
show nfpp arp-guard scan	ARP
clear nfpp arp-guard scan	ARP

৲

ħυ ३ ৲

٨	
10.4	ħυ ३

61.4 DHCP

61.4.1 dhcp-guard attack-threshold

ŏ ˘ . Ạ˘ ỳ ج ỳ Â

dhcp-guard attack-threshold { **per-src-mac** | **per-port**} *pps*

٩

٩	
per-src-mac	ə MAC فذ سم Â
per-port	ə ٨ Â

pps	˘ ´ Æ ˘ ৷ ḣ ت [1,9999] Â

э MAC فذ سم 10 э˘ э ৷ 300 э Â

ƪ ३ NFPP

G

w 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
```

ƪ ३

ƪ ३	
nfpp dhcp-guard policy	∩
show nfpp dhcp-guard summary	৯
show nfpp dhcp-guard hosts	৷ ў
clear nfpp dhcp-guard hosts	৷ ў

৷

ƪ ३ ৷

৷	
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61.4.2 dhcp-guard enable

ƪ ३ DHCP ╗ Â

dhcp-guard enable

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-	-

৷ DHCP ˜Ω ώ ˜Ω Â

ƪ ३ NFPP

G

ш R

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

ΩƚU ३

ƚU ३	
nffp dhcp-guard enable	ج ٨ Э DHCP ll
show nfpp dhcp-guard summary	٤

٨

ƚU ३ ٦ ٨

٨	
-	-

61.4.3 dhcp-guard isolate-period

ƚU ३ ώ Â

dhcp-guard isolate-period {*seconds* | **permanent**}

٩

٩	
seconds	˘ ´ Æ ˘ ٨ ḣ ش 0 [30, 86400] 0 a Â
permanent	ƛ

ώ ḣ Ơ . a Â

ƚU ३ NFPP

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ˆ ˜ Â ˘ ˘ ώ ' ‡ ˘ Â

ш R

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard isolate timeout 180
```

ΩƚU ३

ƚU ३	
nfpp dhcp-guard isolate-period	ج ٨ Э

show nfpp dhcp-guard summary	ϟ

ϟ

Ϸ ϟ ϟ	
-	-

61.4.4 dhcp-guard monitor-period

Ϸ ϟ Â

dhcp-guard monitor- period *seconds*

ϟ	
seconds	˘ ´ Æ ˘ ϟ ϟ ϟ [180, 86400] Â

ϟ ϟ 600 Â

Ϸ ϟ NFPP

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Â ϟ ˘ è˘ ϟ ϟ ˘ ˘
ϟ ˘ ˘ ϟ ϟ Â ϟ ϟ 0 ą Ю
Ϸ Â
ÿ ϟ ˘ Ω ϟ ˘ a
˘ Â

W R

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard monitor-period 180
```

Ϸ ϟ	

NFPP ใบ ๓

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

৭	
per-src-mac	ɔ MAC فذ سم
per-port	ɔ ৭
pps	ḣ˘ ৷ ḣ تن [1,9999] Â

ɔ MAC فذ سم 5 ɔ˘ ɔ ৭ 150 ɔ Â

ƀu ʒ NFPP

G

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard rate-limit per-src-mac 8
Ruijie(config-nfpp)# dhcp-guard rate-limit per-port 100
```


61.4.9 nfpp dhcp-guard isolate-period

61.4.10 nfpp dhcp-guard policy

ج ٨ Э Ω Â

nfpp dhcp-guard policy { **per-src-mac** | **per-port**} *rate-limit-pps attack-threshold-pps*

٨		
٨	**per-src-mac**	Э MAC فذ سم Ω Â
	per-port	Э ٨ Ω Â
	rate-limit-pps	˘ ٧ ḣ تن 1↑ 9999 Â
	attack-threshold-pps	˘ ٧ ḣ تن 1↑ 9999 Â

	٨ Ω ˘ ŏ Ω Â
ƪ ३	٨
G	a ¥ Â

ш 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`

ƪ ३		
ƪ ३	**dhcp-guard attack-threshold**	ŏ
	dhcp-guard rate-limit	ŏ
	show nfpp dhcp-guard summary	٤
	show nfpp dhcp-guard hosts	٧ ŷ
	clear nfpp dhcp-guard hosts	ŷ

٧

ƪ ३ ٦ ٧	٨	
	10.4	ƪ ३

61.5 DHCPv6

61.5.1 dhcpv6-guard attack-threshold

ὤ ˘ . Ąˇ ѝ ج ѝ Â

dhcpv6-guard attack-threshold { **per-src-mac** | **per-port**} *pps*

৭		
৭	**per-src-mac**	৩ MAC فخ سم Â
	per-port	৩ ৭ Â

ৰ

ৰ	
-	-

ৰ DHCPv6 ॅΩ ώ ॅΩ Â

ƪ ३ NFPP

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w R

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcpv6-guard enable
```

ॅƪ ३

ƪ ३	
nffp dhcpv6-guard enable	ج ৰ Э DHCPv6 ॥
show nfpp dhcpv6-guard summary	৲

ৰ

ƪ ३ ৲ ৰ

ৰ	
10.4	ƪ ३

61.5.3 dhcpv6-guard isolate-period

ƪ ३ ώ Â

dhcpv6-guard isolate-period {*seconds* | **permanent**}

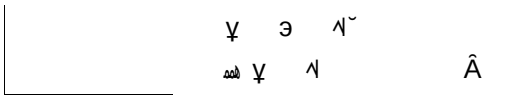
ৰ

ৰ	
seconds	˘ ´ Æ ˘ ৰ ḣ ت 0 [30, 86400]ॅ 0 a Â
permanent	ƪ

ώ ḣ Ơ . a Â

ƪ ३ NFPP

G ţ ṅ ώ Ω ৷ ¥ ৰ ˆ . ˜ Â



¥ ɔ ˥˘ ㎜ ¥ ˥ ˘ ㎧ ώ ' ǐ ‡˘
㎜ ¥ ˥ Â

ɯ R

ħu ३	
show nfpp dhcpv6-guard summary	ə
show nfpp dhcpv6-guard hosts	৲ ŭ
clear nfpp dhcpv6-guard hosts	ŭ

৲ ħu ३ ৲ ৲	
10.4	ħu ३

61.5.5 dhcpv6-guard monitored-host-limit

ħu ३ ৲ ŭ Â

dhcpv6-guard monitored-host-limit *number*

৲	
number	৲ ŭ ˘ ৲ ḣ ن ŭ 1ˆ 4294967295

৲ ŭ ŭ 1000 ə

ħu ३ NFPP

G ৲ ŭ ˆ 1000 ə˘ ˜ ৲ ŭ ¥ 1000˜ a˚ ˜ ৲ ŭ ˘ . ə ľ %ERROR' The value that you configured is smaller than current monitored hosts 1000˜ ৲ ŭ ˜ ˘ please clear a part of monitored hosts. Ł ˜ ˘ ˜ ˆ ŭ Â

৲ ŭ ˘ . ľ % NFPP_DHCP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 1000˜ ৲ ŭ ˜ monitored hosts. Ł ˜ Â

w R

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

ħu ३	
show nfpp dhcpv6-guard summary	ə

ৰ

ħu ३ ৲ ৰ

ৰ	
10.4	ħu ३

61.5.6 dhcpv6-guard rate-limit

ὤ Â

dhcpv6-guard rate-limit { **per-src-mac** | **per-port**} *pps*

ৰ

ৰ	
per-src-mac	ə MAC فذ سم
per-port	ə ৰ
pps	ḣ˘ ৰ ḣ تن [1,9999] Â

ə MAC فذ سم 5 ə˘ ə ৰ 150 ə Â

ħu ३ NFPP

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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
```

ὤħu ३

ħu ३	
nfpp dhcpv6-guard policy	∩
show nfpp dhcpv6-guard summary	৲

ৰ

ħu ३ ৲ ৰ

ৰ	
10.4	ħu ३

61.5.7 clear nfpp dhcpv6-guard hosts

˘ . Â

clear nfpp dhcpv6-guard hosts [*vlan vid*] [**interface** *interface-id*] [*mac-address*]

ৰ

ৰ	
vid	ৰ
interface-id	ৰ
mac-address	MAC

ƚυ ३

G a ৰ ˘ Â

w R VLAN 1 ৰ g 0/1 Â

```
Ruijie# clear nfpp dhcpv6-guard hosts vlan 1 interface g0/1
```

ƚυ ३

ƚυ ३	
dhcpv6-guard attack-threshold	ώ
nfpp dhcpv6-guard policy	∩
show nfpp dhcpv6-guard hosts	ў

ৰ

ƚυ ३ ৰ

ৰ	
10.4	ƚυ ३

61.5.8 nfpp dhcpv6-guard enable

ƚυ ३ ৰ DHCPv6 ╗ Â

nfpp dhcpv6-guard enable

ৰ

ৰ	
-	-

ৰ DHCPv6 ώ Â

ħu ३ ^

G ^ DHCPv6 ̃Ω ̈I ¥ ώ DHCP ̃Ω Â

w R

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcpv6-guard enable
```

̃Ωħu ३

ħu ३	
dhcpv6-guard enable	ώ DHCPv6 ̃
show nfpp dhcpv6-guard summary	३

^

ħu ३ ^

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10.4	ħu ३

61.5.9 nfpp dhcpv6-guard isolate-period

ħu ३ ह ^ Э Â

nfpp dhcpv6-guard isolate-period {*seconds* | **permanent**}

^

^	
seconds	˘ ´ Æ ˘ ^ ḣ ت 0 [30, 86400] ̃ 0 a Â
permanent	ħ

α ˘ ώ Â

ħu ३ ^

G

w R

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp dhcpv6-guard isolate-period 180
```

̃Ωħu ३

ħu ३	

dhcpv6-guard isolate-period	ώ
show nfpp dhcpv6-guard summary	৯

ʎ

ʎ	2.94 0.24 17f-0.0003 Tc .012 0 Td2

ƻ

ƪ ३ ٦ ƻ

ƻ	
10.4	ƪ ३

61.6 ICMP

61.6.1 icmp-guard attack-threshold

ώ ˘ . Ąˇ ѝ جم ѝ Â

icmp-guard attack-threshold { **per-src-ip** | **per-port**} *pps*

ƻ

ƻ	
per-src-ip	ə IP فذ سم Â
per-port	ə ƻ Â
pps	˘ ´ Æ ˘ ƻ ḣ تن [1,9999] Â

ə IP فذ سم 1200 ə˘ ə ƻ 1500 ə Â

ƪ ३ 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
```

ƪ ३ Ω

ƪ ३	
nfpp icmp-guard policy	Ω
show nfpp icmp-guard summary	ə
show nfpp icmp-guard hosts	ƻ ў
clear nfpp icmp-guard hosts	ў

ƻ

ƪ ३ ৭ ৶	৸	
	-	-

61.6.2 icmp-guard enable

ƪ ३ ICMP ৷৷ Â

icmp-guard enable

৭	৭	
	-	-

ICMP ৷৷

ƪ ३ NFPP

G

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

ƪ ३	ƪ ३	
	nffp icmp-guard enable	৯ ৭ ৩ ICMP ৷৷
	show nfpp icmp-guard summary	৯

৶

ƪ ३ ৭ ৶	৸	
	-	-

61.6.3 icmp-guard isolate-period

ƪ ३ ঔ Â

icmp-guard isolate-period {*seconds* | **permanent**}

৭	৭	

seconds	˘ ´ Æ ˘ ৲ ḣ ت 0 [30, 86400]˘ 0 a Â
permanent	℔

ώ ḣ Ơ . a Â

ħυ ३ NFPP

G ǂ ὶ ώ Ω ৷ ¥ ৲ ˆ . ˜ Â ¥ ৩ ৲˘ ৷ ¥ ৲ ˘ ϰ ώ ' ǐ ‡˘ ৷ ¥ ৲ Â

ш R

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard isolate-period 180
```

ΩħΥ ३

ħυ ३	
nfpp icmp-guard isolate-period	ج ৲ Э
show nfpp icmp-guard summary	৯

৲

ħυ ३ ৲

৲	
-	-

61.6.4 icmp-guard monitor-period

ħυ ३ Â

icmp-guard monitor-period *seconds*

৲

৲	
seconds	˘ ´ Æ ˘ ৲ ḣ ت [180, 86400] Â

ώ ḣ 600 Â

ħυ ३ NFPP

G Ą˘ ὶ Ơ ˚ ˘ ὶ

Â ह ˚ è˘ ѝ ḣ ˘ ╟ ˚

exceed limit of 1000 ˆ ˇ ˘ ˜ monitored hosts. ˛ ˚ Â

61.6.8 clear nfpp icmp-guard hosts

ৰ ў ˘ ў ˘ Â

clear nfpp icmp-guard hosts [*vlan vid*] [**interface** *interface-id*] [*ip-address*]

	ৰ	
ৰ	*vid*	ৰ
	interface-id	ৰ ৱ
	ip-address	IP

63.12f66.84 591.76 239.88 1.5 refBT/TT0 1 Tf104TT0 0410.5 142.32 578.1803 Tm( )Tj/C2_0 1 Tf2

	^ ICMP ˜Ω˘ ώ ˜Ω Â
ħu ३	^
G	^ ICMP ˜Ω ¨I ¥ ώ ICMP ˜Ω Â
w R	Ruijie(config)# **interface G0/1** Ruijie(config-if)# **nfpp icmp-guard enable**

˜Ωħu ३

ħu ३	
icmp-guard enable	ώ ICMP ╗
show nfpp icmp-guard summary	ə

ˇ

ħu ३ ˥ ˇ

^	
10.4	ħu ३

61.6.10 nfpp icmp-guard isolate-period

ħu ३ ج ^ Э Â

nfpp icmp-guard isolate-period {*seconds* | **permanent**}

^

^	
seconds	˘ ´ Æ ˘ ˇ ḣ تن 0 [30, 86400]˘ 0 a Â
permanent	ħA

	ą ˘ ώ Â
ħu ३	^
G	
w R	Ruijie(config)# **interface** *G 0/1* Ruijie(config-if)# **nfpp icmp-guard isolate-period** 180

	ħu ३	
	icmp-guard isolate-period	

NFPP ใบ ๓

show nfpp ip-guard hosts	৲ ў
clear nfpp ip-guard hosts	ў

৲

ƚu ३ ৲		
	৲	
	10.4	ƚu ३

61.7.2 ip-guard enable

ƚu ३ ѿ IP ╗ Â

ip-guard enable

৲		
	৲	
	-	-

IP ╗

ƚu ३ NFPP

G

w R

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

ƚu ३		
	ƚu ३	
	nffp ip-guard enable	ҹ ৲ Ɔ IP ╗
	show nfpp ip-guard summary	৯

৲

ƚu ३ ৲		
	৲	
	10.4	ƚu ३

61.7.3 ip-guard isolate-period

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ip-guard isolate-period {*seconds* | **permanent**}

৭	
seconds	˘ ´ Æ ˘ ৷ ḣ ت 0 [30, 86400] Â
permanent	ƪA

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ƪ ३ NFPP

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```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard isolate-period 180
```

ƪ ३	
nfpp ip-guard isolate-period	ج ৭ Ɔ
show nfpp ip-guard summary	৲

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ƪ ३ ৭ ৷	
10.4	ƪ ३

61.7.4 ip-guard monitor-period

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ip-guard monitor-period *seconds*

৭	
seconds	˘ ´ Æ ˘ ৷ ḣ ت [180, 86400] Â

ḣ 600 Â

ƪ ३ NFPP

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Â ج ˅ è˘ й ḣ ˘ ╟ ˅
ৰ ˅ ˇ з й Â ج й 0 ą Ю
Ħ Â
ÿ ḣ ˘ ˇ Ω ৰ ˅ ˇ a
˅ Â

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard monitor-period 180
```

Ħυ ३	
show nfpp ip-guard summary	৲
show nfpp ip-guard hosts	ৰ ў
clear nfpp ip-guard hosts	ў

৸	
10.4	Ħυ ३

ard monitored-host-limit

ৰ 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	३
✓		

ip-guard trusted-host *ip mask*

no ip-guard trusted-host {**all** | *ip mask*}

৭	
ip	IP ফ্রস
mask	IP ফ্রস
all	Ω no У G ˘ ī ৲ ą ў

ƪ ३

G a ৲ ˘ ў Â

w R VLAN 1 ৲ g 0/1 ў Â

```
Ruijie# clear nfpp ip-guard hosts vlan 1 interface g0/1
```

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ƪ ३	
ip-guard attack-threshold	ώ
nfpp ip-guard policy	∩
show nfpp ip-guard hosts	৶ ў

৶

ƪ ३ ৲ ৶

৶	
10.4	ƪ ३

61.7.10 nfpp ip-guard enable

ƪ ३ ج ৲ Э IP ╗ Â

nfpp ip-guard enable

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৲ IP ˜Ω˘ ώ ȯ « Λ ɒ Λ ⊥ = ৴

	ĦU ३	
ΩĦU ३	**ip-guard enable**	ώ IP ॥
	show nfpp ip-guard summary	३

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

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30 э˘ ৸ Ὼ / ৶ 30 э Â

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```
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
```

Ωƪu ३

ƪu ३	
nfpp nd-guard policy	∩
show nfpp nd-guard summary	৯

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10.4	ƪu ३

61.8.2 nd-guard enable

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nd-guard enable

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ND ৷৷

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```
Ruijie(config)# nfpp
```

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

ข้อมูลใช้งาน

ใช้งาน	
nffp nd-guard enable	เปิดใช้งาน ND ป้องกัน
show nfpp nd-guard summary	แสดง

ค่าเริ่มต้น

ใช้งานล่าสุด

ค่าเริ่มต้น	
10.4	ใช้งาน

61.8.3 nd-guard rate-limit

คำสั่ง

nd-guard rate-limit per-port {**ns-na** | **rs** | **ra-redirect**} *pps*

พารามิเตอร์

พารามิเตอร์	
ns-na	กำหนดอัตรา
rs	RS
ra-redirect	RS อัตรา กำหนด
pps	ค่าอัตราสูงสุดของแพ็กเก็ต [1,9999]

ค่าเริ่มต้น

ค่าเริ่มต้น/อัตรา 15 ครั้ง RS
15 ครั้ง RS อัตรา/ 15 ครั้ง

ใช้งาน

NFPP

โหมด

ตัวอย่าง

```
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
```

ข้อมูลใช้งาน

ใช้งาน	
nfpp nd-guard policy	นโยบาย

nfpp nd-guard policy per-port {**ns-na** | **rs** | **ra-redirect**} *rate-limit-pps attack-thresh old-pps*

৭	
PP **ns-na**	∩ ‘Ω’

(oldgu)4(pa)]TJ/C2_0 1 Tc 147906 -0.006 Td1B0F07CF2208349316>62C809AA16>661038D70CC88F

10.4	ħυ ३

61.9 NFPP

61.9.1 clear nfpp log

NFPP ğ ʁ Â

clear nfpp log

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```
Ruijie# clear nfpp log
32 log-buffer entries were cleared.
```

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	show nfpp log	NFPP ğ ʁ

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	10.4	ħυ ३

61.9.2 log-buffer entries

NFPP ğ ʁ Â

log-buffer entries *number*

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number	ǎ ʠ ˘ ´ Æ ˘ ৶ ḣ ت [0,1024]

ǎ ʠ ѝ 256 Â

ƪ ३ NFPP

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NFPP ǎ ʠ ѝ 50 Â

ʷ R

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer entries 50
```

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ƪ ३	
log-buffer logs number_of_message **interval** length_in_seconds	NFPP ÿ ǎ ʠ ৶ Â
show nfpp log	NFPP ǎ ʠ

number_of_message й 1˜ *length_in_seconds* ĥ й 30 Â

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```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer logs 2 interval 12
```

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log-buffer entries *number*	NFPP ă ш Â
show nfpp log summary	NFPP ă ш Â

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61.9.4 logging

NFPP ف VLAN ˆ Â

logging vlan *vlan-range*

logging interface *interface-id*

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ˆ	
vlan-range	VLAN ن ą ą ˘ ώ ľ 1-3,5 Ł Â
interface-id	ˆ ą Â

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Ĥ ʒ ˇ Л ˆ VLAN ن ˆ ą Â ч ˜Ω ˘ ˆ è è У ‡˘ ˆ ă ш è Â

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˜ ˅ VLAN 1 à VLAN 2 à VLAN 3 Ω VLAN 5 ˘ Ю'

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# logging vlan 1-3,5
```

˜ ˅ ˄ G 0/1 ˘ Ю'

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# logging interface G 0/1
```

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show nfpp log summary	NFPP ă ш Â

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61.9.5 show nfpp log

NFPP Â

show nfpp log summary

NFPP ă ш ą̈ Â

show nfpp log buffer [**statistics**]

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statistics	NFPP ă ш ą

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й"-" Â ˜ ╗ ă ш Â
ÿ ă ш ˅ Y˚ ˅ ˘ Ю '

```
%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 ą 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 ğ ʊ è Â

```
Ruijie#show nfpp log buffer statistics
There are 6 logs in buffer.
```

NFPP ğ 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 ЛЪЮ ৲ ḣ'

ARP˜ ARP ˜

IP˜ IP ˜

ICMP˜ ICMP ˜

DHCP˜ DHCP ˜

DHCPv6˜ DHCPv6 ˜

NS-NA˜ ND è Ω Ω˜ ˜

RS ND è ⅆ ~

RA-REDIRECT ND è ⅆ Ω Ω ⅃ ~

Reason ⅆ ج 5 ⅆ ḣ'

DoS ⅃ ⅃

ISOLATED ˚ ⅀ ⅀

ISOLATE_FAILED

SCAN ⅃

PORT_ATTACKED ⅄

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clear nfpp log	NFPP ǎ ⅄

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61.10 ARP

61.10.1 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	ⅆ ǔ ǝ
vid	⅄
interface-id	⅄ ⅃
ip-address	IP
mac-address	MAC

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```
Ruijie# show nfpp arp-guard hosts statistics
success   fail   total
-------   ----   -----
100       20      120
```

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ᴿ 2' ৲ ǔ ˘ ني " l' remain-time(seconds) Ł ⅓ ᴍ Â

ᴡ ᴿ

```
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	৲ ǔ

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61.10.2 show nfpp arp-guard scan

ARP Â

show nfpp arp-guard scan [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-addres s*] [*mac-address*]]]

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৲	
statistics	ARP

vid	۸/ ھ
interface-id	

	ȶ ३	
ॅȶ ३	**arp-guard scan-threshold**	ॅ
	nfpp arp-guard scan-threshold	
	clear nfpp arp-guard scan	ARP

ˆ 3˜ Rate-limit ЙˆIP فخ سم / MAC فخ سم
/ ٨ ḣ˜ ˘ Attack-threshold ɿ Â ľ - Ł
Â

Ωƚu ३

ƚu ३	
arp-guard attack-threshold	ώ
arp-guard enable	ώ ARP ℼ
arp-guard isolate-period	ώ
arp-guard monitor-period	
arp-guard monitored-host-limit	৲ ў
arp-guard rate-limit	ώ
arp-guard scan-threshold	ώ
nfpp arp-guard enable	ج ٨ Э ARP ℼ
nfpp arp-guard isolate-period	
nfpp arp-guard policy	Ոɾ
nfpp arp-guard scan-threshold	

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61.11 DHCP

61.11.1 show nfpp dhcp-guard hosts

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show nfpp dhcp-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*mac-address*]]]

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statistics	৲ ў ৭
vid	ھ ৲ Qd0

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Ruijie# **show nfpp dhcp-guard hosts statistics**

success fail total

------- ---- -----

100 20 120

ɱ 120 ˅ ˇ ˇ ɛ è 100 ˅ ˇ ˇ ˇ ˅ ˇ 20 ˅ ˇ ˇ

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ɴ ˅ ˇ ˇ ني " ľ remain-time(seconds) Ł ⅓ м ˆ

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	˅ ˇ

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61.11.2 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
```

ˆ 1˜ Interface ˝ Global ˝ Â

ˆ 2˜ Status ˝ ˥ Â

ˆ 3˜ Rate-limit ˝ IP ˝ / MAC ˝ / ʌ ˙˜ ˘ Attack-threshold ˥ Â ˙ - ˩ Â

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ƺʊ ʒ	
dhcp-guard attack-threshold	˝
dhcp-guard enable	˝ DHCP ˥
dhcp-guard isolate-period	˝
dhcp-guard monitor-period	
dhcp-guard monitored-host-limit	˩ ˘
dhcp-guard rate-limit	˝
nfpp dhcp-guard enable	˝ ʌ Ɜ DHCP ˥
nfpp dhcp-guard isolate-period	
nfpp dhcp-guard policy	˩

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61.12 DHCPv6

61.12.1 show nfpp dhcpv6-guard hosts

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show nfpp dhcpv6-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*mac -address*]]]

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statistics	ƛ ў ҕ
vid	ƛ
interface-id	ƙ ƛ
mac-address	MAC

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Ruijie# **show nfpp dhcpv6-guard hosts statistics**

success fail total

------- ---- -----

100 20 120

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ˆ ƛ ˘ a ˘ a ~ Â

ƛ ў ˘ " 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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	10.4	ħu ३

61.12.2 show nfpp dhcpv6-guard summary

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show nfpp dhcpv6-guard summary

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```
Ruijie# show nfpp dhcpv6-guard summary
ˆ Format of column Rate-limit and  Attack-threshold is per-src-ip
/per-src-mac/per-port.˜
Interface  Status  Isolate-period Rate-limit Attack-threshold
Global     Enable  300            -/5/150    -/10/300
Gi 0/1      Enable  180            -/6/-      -/8/-
Gi 0/2      Disable 200            -/5/30     -/10/50

Maximum count of monitored hosts: 1000
```

Monitor period' 300s

'

ˆ 1˜ Interface ˝ Global ˜ Â

ˆ 2˜ Status ˜ ˜ Â

ˆ 3˜ Rate-limit ˝ IP ˜ / MAC ˜

/ ˜ ˜ Attack-threshold ˜ Â ˜ -

Â

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ƪ ३	
dhcpv6-guard attack-threshold	˜
dhcpv6-guard enable	˜ DHCPv6 ˜
dhcpv6-guard isolate-period	˜
dhcpv6-guard monitor-period	
dhcpv6-guard monitored-host-limit	˜ ˜
dhcpv6-guard rate-limit	˜
nfpp dhcpv6-guard enable	˜ ˜ DHCPv6 ˜
nfpp dhcpv6-guard isolate-period	
nfpp dhcpv6-guard policy	˜

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61.13 ICMP

61.13.1 show nfpp icmp-guard hosts

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show nfpp icmp-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-addr ess*]]]

˜

˜	
statistics	˜ ˜ ˜
vid	˜ ˜

interface-id	৸ ৶
ip-address	IP ফ্ৰ ৰ

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Ruijie#**show nfpp icmp-guard hosts statistics**

success fail total

------- ---- -----

100 20 120

' l' ''Ω 120 ৶ ў ˘ ὲ è 100 ৶ ў ╗˘ 20 ৶ ў Ł Â

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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ħu ३	
clear nfpp icmp-guard hosts	৷ ў

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61.13.2 show nfpp icmp-guard summary

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show nfpp icmp-guard summary

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Ruijie# show nfpp icmp-guard summary

```
ˆ Format of column Rate-limit and  Attack-threshold is per-src-ip
/per-src-mac/per-port.˜
Interface  Status  Isolate-period Rate-limit Attack-threshold
Global     Enable  300            4/-/60     8/-/100
Gi 0/1      Enable  180            5/-/-      8/-/-
Gi 0/2      Disable 200            4/-/60     8/-/100

Maximum count of monitored hosts: 1000
Monitor period' 300s
```

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ˆ 1˜ Interface ѝ Global ѿ Â

ˆ 2˜ Status ї ╗ Â

ˆ 3˜ Rate-limit ѝˆ IP ফ ফ / MAC ফ ফ /

ˆ ˙ ˜ ˘ Attack-threshold ৲ Â ľ - Ł Â

Ω Ĥ ३

Ĥ ३	
icmp-guard attack-threshold	ѿ
icmp-guard enable	ѿ ICMP ╗
icmp-guard isolate-period	ѿ
icmp-guard monitor-period	
icmp-guard monitored-host-limit	৲ ў
icmp-guard rate-limit	ѿ
nfpp icmp-guard enable	ج ˆ Э ICMP ╗
nfpp icmp-guard isolate-period	
nfpp icmp-guard policy	Ω

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61.13.3 show nfpp icmp-guard trusted-host

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show nfpp icmp-guard trusted-host

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```
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Ruijie# show nfpp icmp-guard trusted-host
IP address     mask
---------      ------
1.1.1.0        255.255.255.0
1.1.2.0        255.255.255.0
Total' 2 record(s)
```

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icmp-guard trusted-host	a ৰ ৲ ğ

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61.14 IP

61.14.1 show nfpp ip-guard hosts

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show nfpp ip-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-addres s*]]]

ৰ	
statistics	ৰ ŷ ৰ
vid	ৰ ৰ
interface-id	ৰ ৰ
ip-address	IP ৰ

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Ruijie#**show nfpp ip-guard hosts statistics**

success fail total

--- --- ---

100 20 120

' ľ ŤΩ 120 ৰ ŷ ˘ ε è 100 ৰ ŷ ˘ 20 ৰ ŷ Ł Â

Ruijie#**show nfpp ip-guard hosts**

W R If column 1 shows '*', it means "hardware do not isolate host" .

VLAN interface IP address Reason remain-time(s)

--- --- --- --- ---

1 Gi0/1 1.1.1.1 ATTACK 110

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	ip-guard attack-threshold	ώ
	ip-guard enable	ώ IP ๗
	ip-guard isolate-period	ώ
ॅΩ	**ip-guard monitor-period**	> @ / ɗ Ù ħ
	ip-guard monitored-host-limit	৲ ў
	ip-guard rate-limit	ώ
	nfpp ip-guard enable	ह ৲ Э IP ๗
	nfpp ip-guard isolate-period	

```
1.1.2.0        255.255.255.0
Total' 2 record(s)
```

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ip-guard trusted-host	a ৲ ৡ ў

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10.4	ħu ३

61.15 ND

61.15.1 show nfpp nd-guard summary

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show nfpp nd-guard summary

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-	-

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G ħu ३ ৶ ৸ ৡ Â

```
Ruijie# show nfpp nd-guard summary
ˆ Format of column Rate-limit and  Attack-threshold is NS-NA/RS/R
A-REDIRECT.˜
Interface  Status  Rate-limit Attack-threshold
Global     Enable  20/5/10    40/10/20
Gi 0/1      Enable  15/15/15   30/30/30
Gi 0/2      Disable -/5/30      -/10/50
```

ˆ 1˜ Interface ঋ Global ঔ Â

ˆ 2˜ Status ї ╗ Â

ˆ 3˜ Rate-limit й /Ω˜ / ⅄

/ ⅄ Ω˜ / ⅃ ˜˘ Attack-threshold ɔ Â

Ґ - Ԩ Â

w R ' Ґ -/5/30 Ԩ ج ∧ G 0/2 Э /Ω˜ ˘ ⅄

5˜ ⅄ Ω˜ / ⅃ 30 Â

Ԧ ३	
nd-guard attack-threshold	ώ
nd-guard enable	ώ ND ╗
nd-guard rate-limit	ώ
nfpp nd-guard enable	ج ∧ Э ND ╗
nfpp nd-guard policy	Ω

Ґ

Ԧ ३ ˥ Ґ

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10.4	Ԧ ३

62 ACL

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Ъu ę	R T ; ž	ň > r ЫЖ я Ж a /
	id	" ḣ ˥ Â ˩ ته IP ñ ACL' 1-99˜ 1300-1999 IP ACL' 100-199˜ 2000-2699 MAC ACL' 700–799 ж ACL' 2700–2899
	name	ACL ˩
	sn	ACL ˥ (. ˝l н ţ)
	start-sn	˥ ḣ
	inc-sn	˥
	deny	˥ ˘ ‡
	permit	˥ ˘ ‡ ĭ
	prot	˜ ˥˘ ţ IPv6 ˩ й ipv6˜ icmp˘ tcp˘ udp ˥ ḣ 0-255˜ ţ IPv4˜ ˩ Лu eigrp˘ gre˘ ipinip˘ igmp˘ nos˘ ospf˘ icmp˘ udp˘ tcp˘ ip è У э˘ ≠ ˩ Лu ę IP ˜ 0-255 ˥˘ У Ҭ ˜ icmp/tcp/udp ´ "
	interface idx	ώ ˥ ˥
	src	فخ سم ˆ ў فخ سم فخ سم ˜
	src-wildcard	فخ سم Â ˩ Лu G a ˘ 0.255.0.32
	src-ipv6-pfix	IPv6 فخ سم صر
	dst-ipv6-pfix	IPv6 فخ سم صر
	pfix-len	Æ Æ
	src-ipv6-addr	IPv6 فخ سم
	dst-ipv6-addr	IPv6 فخ سم
	dscp dscp	Ł , ḣ˘ تن 0-63
	flow-label flow-label	˘ ḣ تن 0-1048575
	dst	فخ سم ˆ ў فخ سم فخ سم ˜
	dst-wildcard	فخ سم Â ˩ Лu a ˘ 0.255.0.32

precedence precedence	˙ ”I ⁞ˆ 0-7˜
range	نعي ۸ /۱ تن
time-range tm-rng-name	ШˇJ й tm-rng-name
tos tos	⅕ صرˆ 0-15˜
cos cos	cos ḣ (0-7)
cos inner cos	ğ tag è cos
icmp-type	ICMP صرˆ 0-255˜
icmp-code	ICMP صر ३ ˆ 0-255˜
icmp-message	ICMP صر J
operator port[port]	Operator й ɔ ˆ lt- ɥˇ eq- ɥˇ gt- ɥˇ neq- a ɥˇ range- تن˜ port ۸ /۱ˇ γ ɔ ч э ۸ /۱ ˇ è ыı ɔ ۷ У э ۸ /۱

B	MAC	6	P	˜ ʌ	35
C		12	Q	IP Ω	36
D	VLAN tag	14	R	ip فخ سم	38
E	DSAP( ) ᴸ	18	S	ip فخ سم	42
F	SSAP( ) ᴸ	19	T	TCP ʌ	46
G	Ctrl	20	U	TCP ʌ	48
H	Org Code	21	V	" ʌ	50
I	ص	24	W		54
J	IP ʌ	26	XY	IP Ω ɖ Æ	58
K	TOS	27	Z	ɖ Æ Ω flags Æ	59
L	IP ↑	28	a	Windows size	60
M	ID ʌ	30	b	ɛ ئا	62
N	Flags	32			

Э è ʌ э Ļ ъ جم SNAP tag 802.3 è Ļ Â

62.1

62.1.1 access-list

Ъυ ʒ … У э " ‡ ˇ ɣ Â Ъυ ʒ **no** ī " Â

1) IP ñ " ˆ 1 - 99˘ 1300 - 1999˜

access-list *id* {**deny** | **permit**} {*source source-wildcard* | **host** *source* | **any**}

2) IP " ˆ 100 - 199˘ 2000 - 2699˜

access-list *id* {**deny** | **permit**} **protocol** {*source source-wildcard* | **host** *source* | **any**} {*destination destination-wildcard* | **host** *destination* | **any**} [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

3) MAC " ˆ 700 - 799˜

access-list *id* {**deny** | **permit**} {**any** | **host** *source-mac-address*} {**any** | **host** *destination-mac-address*} [*ethernet-type*][**cos** [*out*][**inner** *in*]]

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*]

↑ ŭ 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*]

˜ 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*]

У ęę ˜ 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*

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ٸ	
id	" ٸ Â ٻ تن 1-99 100-199 1300-1999 2000-2699 2700 – 2899 700 - 799 Â
Deny	٦ ˘ ‡ Â
Permit	٦ ˘ ‡ ĭ Â
Source	فخ سم ŷ فخ سم فخ سم
source-wildcard	فخ سم Â ٻ Л ʊ ᴳ a ˘ 0.255.0.32
protocol	IP ˜ ٸ˘ ٻ Л EIGRP àGRE àIPINIP àIGMP à NOS à OSPF à ICMP à UDP à TCP à IP è У э˘ ≠ ٻ Л ʒ IP ˜ 0-255 ٸ Â У Ҷ ˜ ICMP/TCP/UDP ´ " Â
Destination	فخ سم ŷ فخ سم فخ سم
destination-wildcard	فخ سم Â ٻ Л ʊ ᴳ a ˘ 0.255.0.32
fragments	ĭ
precedence	˙ ˝I ⁞
precedence	˙ ˝I ⁞ ḣ 0-7
range	ني ٸ ٸ تن
lower	ني ٸ ٸ تن Ю
upper	ني ٸ ٸ تن Э
time-range	Ш
time-range-name	Ш ٺ
tos	⅟ صر
tos	⅟ صر ḣ 0-15
icmp-type	ICMP صر 0-255
icmp-code	ICMP صر ʒ 0-255
icmp-message	ICMP صر ٺ
operator	ɔ lt- ɥ˘ eq- ɥ˘ gt- ɥ˘ neq- a ɥ˘ range- تن
port [*port*]	ٸ ٸ˘ *range* ч э ٸ ٸ ˘ ȅ ыı ɔ ٸ У э ٸ ٸ Â
host *source-mac-address*	ŷ فخ سم Â
host *destination-mac-address*	ŷ فخ سم Â
VID *vid*	vid ٦
ethernet-type	Л ˜ صر

match-all	٦ *tcp flag* Æ
tcp-flag	tcp flag

˙ ¦ ACL

ħu ३ ώ

ѝ ɷ G " ˘ ˝l ħu ३ **access-list** ЮЖ У " "
‡ ۱ Â ۷ Л υ ές E ώ G a ۷ R ' ȯ B

G

dod-host-prohibited
dod-net-prohibited
echo
echo-reply
fragment-time-exceeded
general-parameter-problem
host-isolated
host-precedence-unreachable
host-redirect
host-tos-redirect
host-tos-unreachable
host-unknown
host-unreachable
information-reply
information-request
mask-reply
mask-request
mobile-redirect
net-redirect
net-tos-redirect
net-tos-unreachable
net-unreachable
network-unknown
no-room-for-option
option-missing
packet-too-big
parameter-problem
port-unreachable
precedence-unreachable
protocol-unreachable
redirect
router-advertisement
router-solicitation
source-quench
source-route-failed
time-exceeded
timestamp-reply
timestamp-request

ttl-exceeded

unreachable

Ю TCP ৲ ৶ ˘ TCP ৷ Ƶ ᴳ ৲ ৶ ৲ ৴ ἑ ᴱ ৲'

bgp

chargen

cmd

daytime

discard

domain

echo

exec

finger

ftp

ftp-data

gopher

hostname

ident

irc

klogin

kshell

login

nntp

pim-auto-rp

pop2

pop3

smtp

sunrpc

syslog

tacacs

talk

telnet

time

uucp

whois

www

Ю UDP ৲ ৶ ˘ UDP ৷ Ƶ ᴳ ৲ ৶ ৲ ৴ ἑ ᴱ ৲'

biff

bootpc

bootps
discard
dnsix
domain
echo
isakmp
mobile-ip
nameserver
netbios-dgm
netbios-ns
netbios-ss
ntp
pim-auto-rp
rip
snmp
snmptrap
sunrpc
syslog
tacacs
talk
tftp
time
who
xdmcp

Л ~ ص Ethernet-type Ю'

aarp
arp
appletalk
decnet-iv
diagnostic
etype-6000
etype-8042
lat
lavc-sca
mop-console
mop-dump
mumps
netbios

vines-echo

xns-idp

R 1' IP ñ " R

Ю IP " ï й 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 Ω ICMP '

```
Ruijie(config)# access-list 102 permit tcp any any eq domain
Ruijie(config)# access-list 102 permit udp any any eq domain
Ruijie(config)# access-list 102 permit icmp any any echo
Ruijie(config)# access-list 102 permit icmp any any echo-reply
```

R 3' MAC " R

Ю G R˘ MAC й 00d0f8000c0c ў ч й 100 Лu

w R

62.1.2 deny

У э э x (deny) ˇ Лυ ɣ ā ч x Â

1˜ IP ñ "

[*sn*] **deny** {*source source-wildcard* 1

[*sn*] **d**{] [(s)-[illegible]

destination-wildcard | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**time-range** *time-range-name*]

b) ˜ protocol

[*sn*] **deny protocol** [[**VID** [*out*][**inner** *in*]]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destinationdestination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

c) У ʻ ̣ ˜ expert " '

Internet Control Message Protocol (ICMP)

[*sn*] **deny icmp** [[**VID** [*out*][**inner** *in*]]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any**} {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *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*]

Transmission Control Protocol (TCP)

[*sn*] **deny tcp** {*source-ipv6-prefix / prefix-length* | **host***source-ipv6-address* | **any**}[*operator* **port**[*port*]] {*destination-ipv6-prefix /prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)

[sn] **deny udp** {*source-ipv6-prefix/prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix /prefix-length* | **host** *destination-ipv6-address* | **any**}[*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

৭	
Sn	ACL ৸
source-ipv6-prefix	IPv6 فخ سم صر.
destination-ipv6-prefix	IPv6 فخ سم صر
prefix-length	Æ Æ
source-ipv6-address	IPv6 فخ سم
destination-ipv6-address	IPv6 فخ سم
dscp	ᒪ
dscp	ḣ˘ تن 0-63.
flow-label	
flow-label	ḣ˘ تن 0-1048575
protocol	ɣ IPV6 ৲ ѝ IPV6 | icmp | tcp | udp ৭ <0-255>

৭

ž

```
ใช้งาน ACL 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
```

คำสั่งใช้งาน

คำสั่ง	
show access-lists	"
ipv6 traffic-filter	ใช้งาน ACL ประเภท IPV6 "
ip access-group	IP ACL ใช้งาน
mac access-group	MAC ACL ใช้งาน
ip access-list	IP ACL ใหม่
mac access-list	MAC ACL ใหม่
expert access-list	ขยาย ACL ใหม่
ipv6 access-list	IPV6 ACL ใหม่
permit	กำหนดให้ใช้งาน

ประวัติการใช้งาน

เวอร์ชั่น	
V10.0	V10.0 ผลิตภัณฑ์

G ħu ३ ৲ Л show **expert access-lists** ħu ३ Â

R 1' … ж

w R

ħu ३ ^

G G **ip access-group** ħu ३ " ¥ ^˘ . ŭ Â

ЮO R جه fastEthernet0/0 Э " 120 ώ '

w R `Ruijie(config)# interface fastEthernet`

w 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

˜Ωħu ३	ħu ३	

G

ħu ३ ৲ Л show access-lists ħu ३ Â

w R

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
```

ˆΩħu ३

ħu ३	
show access-lists	"

৲

ħu ३ ৲ ৲

৲	
V10.0	˚ V10.0 Л Э

ħu ३	^
G	ACL ¥ ^ Э˘ ¥ ^ ώ ⁸ ÂG **show ipv6 traffic-filter** ħu ३

w R	ЮO R ¡ access-list v6-acl ¥ Gigabit ^ 1 Э'
	`Ruijie(config)# interface GigaEthernet 0/1`
	`Ruijie(config-if)# ipv6 traffic-filter v6-acl in`

ॅΩħυ ३	ħυ ३	
	show ipv6 access-lists	IPV6 "

৲

ħυ ३ ৲ ৲	৲	
	V10.0	˚ V10.0 ᒐᓄᑦ

62.1.10 MAC access-group

ᐊᔪᑦ MAC ACL ᑎᒥᒃ ᐊᑎᒃ ħυ ३ **no** ৲ ᑕᐃᓕᓐᓂᖅᓴᐃᓂᖅ

mac access-group {*id* | *name*}{**in** |

ħu ३ ٦ ۷		
	۸	
	V10.0	ˇ V10.0 ⎍ Э

62.1.11 MAC access-list

ħu ३ … MAC ACL˘ ώ Â ᴳ ħu ३ **no** ˉ ACL

mac access-list extended {*id* | *name*}

no mac access-list extended {*id* | *name*}

۹		
	۹	
	Id	MAC " ۸ˆ 700-799˜
	name	MAC " ۷

	MAC ACL
ħu ३	ώ
ᴳ	ħu ३ ۷ ⎍ **show mac access-lists** ħu ३ Â

ᴿ 1' … MAC ACL'

```
Ruijie(config)# mac access-list extended mac-acl
Ruijie(config-mac-nacl)# show mac access-lists
mac access-list extended mac-acl
```

ᴿ 2' … MAC ACL'

```
Ruijie(config)# mac access-list extended 704
Ruijie(config-mac-nacl)# show mac access-lists
mac access-list extended 704
```

˜Ωħu ३	ħu ३	
	show mac access-lists	mac "

۷

ħu ३ ٦ ۷		
	۸	
	V10.0	ˇ V10.0 ⎍ Э

ħυ ३ ٦ ৶	ʎ	
	V10.0	ˇ V10.0 ΛΩ Э

62.1.13 permit

У э э ĭ (**permit**) ˇ ΛΩ ţ ā ৻ x Â

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 ę ˜ IP 8 " '

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** {*source source-wildcard* | **host** *source* | **any**} {*destination destination-wildcard* | **host** *destination* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[(ho)6(s)8(t)]TJ /17 Tc 3c50001 Tc host

[*sn*] **permit tcp** {*source source-wildcard* | **host** *Source* | **any**} [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**}[*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)

[*sn*] **permit udp** {*source source -wildcard*|**host** *source* |**any**} [*operator* **port** [*port*]] {*destination destination-wildcard* |**host** *destination* | **any**} [**operator** **port** [*port*]]

ild0.0006)Tc 0 Tw 1.5f950.07Tc(3010eTw 0.28ildcard)]5TJ 0 Tc -39.45

a host o ild

↑ ŭ Лu صر Ethernet-type cos

[*sn*] **permit** {*ethernet-type*| **cos** [*out*] [**inner** *in*]} [**VID** [*out*][**inner** *in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**time-range** *time-range-name*]

~ Protocol

[*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 ҭ ~ Expert " '

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** [**VID** [*out*][**inner** *in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**}[*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **permit tcp** [**VID** [*out*][**inner** *in*]]{*source source-wildcard* | **host** *Source* | **any**} {**host** *source-mac-address* | **any** } [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)

[*sn*] **permit udp** [**VID** [*out*][**inner** *in*]]{*source source –wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any** } [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*operator* **port** [*port*]] [**precedenceprecedence**] [**tos** *tos*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

Address Resolution Protocol (ARP)

[*sn*] **permit arp** {**vid** *vlan-id***}** [**host** *source-mac-address* | **any**] [**host** *destination –mac-address* | **any**] {*sender-ip sender-ip–wildcard* | **host** *sender-ip* | **any**} {*sender-mac sender-mac-wildcard* | **host** *sender-mac* | **any**} {*target-ip target-ip–wildcard* | **host** *target-ip* | **any**}

5) IPV6 "

[*sn*] **permit protocol** {*source-ipv6-prefix / prefix-length* | **any** | **host** *source-ipv6-address*} {*destination-ipv6-prefix / prefix-length* | **any**| *hostdestination-ipv6-address*} [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

У ۋ ~ IPV6 8 " '

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** {*source-ipv6-prefix / prefix-length* | **any** *source-ipv6-address* | **host**} {*destination-ipv6-prefix / prefix-length*| **host** *destination-ipv6-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**dscp** *dscp*] [**flow-label** *flow-label*][**fragments**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **permit tcp** {*source-ipv6-prefix / prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix / prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)

[*sn*] **permit udp** {*source-ipv6-prefix / prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix / prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [**port**]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**range** *lower upper*] [**time-range** *time-range-name*]

৭	৭	
৭	ЛЫЮ ĵ ৭ deny	-

	˙ !
ħu ३	ACL Ю
G	ج ACL Ю ACL ĭ ˇ
ш R	R 1' Ю R ! … ৭ У Expert Extended ACLˇ ж ACL ĭ IP فذ سم й 192.168.4.12 з MAC فذ سم й 001300498272 TCP Â Ruijie(config)# **expert access-list extended** *exp-acl* Ruijie(config-exp-nacl)# **permit tcp host** *192.168.4.12* **host** *0013.0049.8272* **any any** Ruijie(config-exp-nacl)# **deny any any any any** Ruijie(config-exp-nacl)# **show access-lists** expert access-list extended exp-acl 10 permit tcp host 192.168.4.12 host 0013.0049.8272 any any 20 deny any any any any Ruijie(config-exp-nacl)# R 2' Ю IP ACL G Rˇ ñ IP й 192.168.4.12 ў k TCP

ন ঌ 100 ᄂ ᄀ ন 1Â

```
Ruijie(config)# ip access-list extended 102
Ruijie(config-ext-nacl)# permit tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
10 permit tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group 102 in
```

```
Ruijie# show access-group
ip access-list standard ipstd3
Applied On interface GigabitEthernet 0/1.
ip access-list standard ipstd4
Applied On interface GigabitEthernet 0/2.
ip access-list extended 101
Applied On interface GigabitEthernet 0/3.
ip access-list extended 102
Applied On interface GigabitEthernet 0/8.
```

ip access-group	ip
mac access-group	MAC
expert access-group	Expert
ipv6 traffic-filter	IPV6

V10.0	V10.0

62.2.2 show access-lists

ACL ACL

show access-lists [*id* | *name*]

id	
name	

acl *id* *name* ACL

```
Ruijie# show access-lists
```

w R

w R

```
Ruijie# show expert access-group interface gigabitethernet 0/2
expert access-group ee in
Applied On interface GigabitEthernet 0/2.
```

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expert access-list	Expert ACL ħ不

ˇ

ħu ३ ˥ ˇ

(Ë ˇ	A È

V10.0	˚ V10.0 ΛƱ Э

62.2.5 show ipv6 traffic-filter

ʌ IPV6 "

show ipv6 traffic-filter [**interface** <*interface*>]

ʌ

ʌ	
<*interface*>	ʌ

ƪ ʒ

G ʌ ˜Ω IPv6 ACL˘ ʌ˘ ‡ ʌ 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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ƪ ʒ	
ipv6 access-list	IPV6 ص ACL ƪ

ʌ

ƪ ʒ ˥ ʌ

ʌ	
V10.0	˚ V10.0 ΛƱ Э

62.2.6 show mac access-group

ʌ MAC "

show mac access-group[**interface** <*interface*>]

ʌ

ʌ	
<*interface*>	ʌ

ħu ३

G ৲ ঁΩ MAC ACLˇ ৲ˇ ‡ ৲ ঁΩ MAC ACL

```
Ruijie# show mac access-group interface gigabitethernet 0/3
```

w R

ॅΩħu ३	ħu ३	
	show secu-acl	ॐ

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ħu ३ ৲ ऻ	ऽ	
	V10.2	ॅ V10.2 ᏗᏩᎭ

62.3.2 security global access-group

ॐ ॐ

security global access-group {*id*|*name*}

no security global access-group

ऽ	*id*	ACL id
	name	ACL ऻ

ħu ३	ॐ
G	ॐ ॐ
ᏉR	`Ruijie(config)#`**`security global access-group`** *`1`*

ॅΩħu ३	ħu ३	
	show secu-acl	ॐ

ऻ

ħu ३ ৲ ऻ	ऽ	
	V10.2	ॅ V10.2 ᏗᏩᎭ

62.3.3 security uplink enable

ʌ ώ R ʌ

security uplink enable

no security uplink enable

```
Ruijie(config-if)#show secu-acl
```

w R

63 QOS

63.1

ᵉ QoS ڎ ᵐ Ռ QoS ˜Ω ЛЬЮ ύ ᵃ '

У э ᴻ ˜Ω 1 э policy-map'

У э policy-map ˩ Ль э class-map'

У э class-map ˜Ω 1 э ACL˘ ACL ACE ᵉ ˩ ᵃᵉ
'

У э ᴻ Э˜Ω ACE э ÿ “ ώ ACL” ⁸ Â

ᵃ Ю˘ QoS

63.2

63.2.1 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,ħu ⸝ 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
```

ħu ३	
show mac access-lists	-

	show mls qos queueing	-

权限

用户级别	
权限级别	
-	-

63.2.3 interface rate-limit

命令格式 8

rate-limit {**input** | **output**}

	-	-

63.2.4 mls qos cos

ʌ CoS ḣ

mls qos cos *default-cos*

no mls qos cos

	ʌ	
	default-cos	ȕ 0˙ 7

dscp	ՀՀ ḣ ՇՏ ՊՀ ḇ a ՀՀ a ՀՀ
no	ḣ

ԻՍ ՀՀ ŏ

G

W R

```
Ruijie(config)# mls qo map cos-dscp 8 10 16 18 24 26 32 34
```

w R Ruijie(config)# **mls qos trust dscp**

63.2.8 mls qos scheduler

"

mls qos scheduler [**sp** | **rr** | **wrr** | **drr**]

no mls qos scheduler

৭	

cos	৲ Qos ৡ˙	৸ CoS
dscp ৸	৲ Qos ৡ˙	৸ DSCP

๑	

63.2.11 priority-queue

"

[**no**]

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G

w R

```
Ruijie(config)# priority-queue cos-map 1 0 1
```

Ωƺ ३

ƺ ३	
show mls qos queueing	-

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-	-

63.2.13 service-policy

policy map ĵ ƺ Ɜ

service-policy {**input** | **output**} *policy-map-name*

no service-policy {**input** | **output**}

3.118Tj/C23E109E032Cr 10.02 0 0 10.02 241.86 606.2603 Tm<0A5104B8>Tj/T 0 0 100 Tc 0 Tr 3.012

show mls qos interface	-

QOS ใน ๆ

命令格式

```
Ruijie# show mls qos interface fastEthernet 0/1
```

配置说明

配置项	
-	-

使用指导

配置举例

配置项	
-	-

63.3.4 show mls qos maps

命令功能

显示dscp-cos maps,dscp-cos maps 和 ip-prec-dscp maps

命令格式

show mls qos maps [**cos-dscp** | **dscp-cos** | **ip-prec-dscp**]

参数说明

参数	
cos-dscp	cos-dscp maps
dscp-cos	dscp-cos maps
ip-prec-dscp	ip-prec-dscp maps

缺省配置

dscp-cos maps 和 dscp-cos maps 和 ip-prec-dscp maps

配置模式

特权模式

命令格式

```
Ruijie# show mls qos maps
```

配置说明

配置项	
-	-

使用指导

配置举例

配置项	
-	-

63.3.5 show mls qos queueing

QoS " ə (cos-to-queue map,wrr weight,drr weight)

show mls qos queueing

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ƚu ३

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w R

```
Ruijie# show mls qos queueing
```

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-	-

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	-	-

63.3.6 show mls qos rate-limit

৲ 8 ə

show mls qos rate-limit [**interface** *interface-id*]

৲	
interface	interface-id rate-limit ƚu ३ ৲

ƚu ३

G

命令格式

```
Ruijie# show mls qos rate-limit
```

配置说明

配置项	
-	-

默认情况

使用指导

命令模式	
-	-

63.3.7 show mls qos scheduler

[illegible]

show mls qos scheduler

参数

参数	
-	-

缺省

配置

命令模式

命令格式

```
Ruijie# show mls qos scheduler
```

配置说明

配置项	
-	-

默认情况

-

使用指导

命令模式	
-	-

64 Voice VLAN

64.1

64.1.1 voice vlan

ώ G Voice VLAN У э VLAN ὶ Voice VLAN Â ⅃ Л G ħυ ३ **no** ̃Ω Voice VLAN ╗ Â

voice vlan *vlan-id*

no voice vlan

৭	
vlan-id	Voice VLAN ID Â

̃Ω Â

ħυ ३

G Voice VLAN Remot /C2_ê 1 Ti $ ىJc 0 ŝ ATJ/C2_5 036ïTf -0.00Td

show voice vlan	Voice VLAN ą б ŋń Â 64-2

64.1.3 voice vlan cos

ὥ Voice VLAN CoS ḣ Â ⌟ Ʌ ʊ ᴳ ħυ ३ **no** ʃ
ḣ Â

voice vlan cos *cos-value*

no voice vlan cos

৭	
cos-value	Voice VLAN CoS ḣ Â

cos-value ৭ ḣ ὴ 6 Â

ħυ ३ ὥ

ᴳ ᵍ Voice VLAN CoS б DSCP ḣ . ˝I ˘ ɖ
Â

dscp-value	Voice VLAN DSCP ḣ Â

dscp-value ৲ ḣ ẗ 46 Â

ħu ३ ὥ

G g Voice VLAN CoS б DSCP ḣ . ˝I ˘ ɖ Â

w R R 1' Voice VLAN . ˝I ˘ DSCP ẗ 40 Â

```
Ruijie(config)# voice vlan dscp 40
```

ˇΩħu ३

ħu ३	
show voice vlan	Voice VLAN ą б ɱ Â

৲ -

ħu ३ ˥ ৲

৲	
10.4	ħu ३

64.1.5 voice vlan enable

ج ৲ ЮG ħu ३ G ৲ Voice VLAN ╥ Â ৲ ΛU G ħu ३ **no** ˇΩ ৲ Voice VLAN ╥ Â

voice vlan enable

no voice vlan enable

৲

৲	

ą Ю ə п - Â

w R	R 1' OUI فخسم 0012.3400.0000 ѝ Voice VLAN ʌ فخسم ˇ ˆ ك ѝ Company A Â Ruijie(config)# **voice vlan mac-address** *0012.3400.0000* **mask** *ffff.ff00.0000* **description** *Company A*

1˜ ৲ G ɷ Voice VLAN ɔ ॐ ˘ ৲ ╗ ώ Voice VLAN˝ ɖ Voice VLAN ╖ Â

2˜ ৲ ɔ ɣ ╟ ˘ ѝ ɖ ╖ ˘ a ৲ native VLAN ѝ Voice VLAN Â

3˜ ɥ ϱ Trunk Port/Hybrid Port ৷ Лυ VLAN ˘ ˝I Voice VLAN ÿ ৲ VLAN ৷ " è ˘ ˝Ą Voice VLAN ╖ ˘ Лυ ɖ ৲ a ╖ ώ Voice VLAN˝ a G ৲ У ॐ

G

ώ ⅄ ˚ MAC فخ سم ˘ MAC فخ سم ⅃ ⁞
Voice VLAN OUI فخ سم ˘ ΐ جم Voice VLAN ϕ· ˘ ΐ ‡ x Â

a جم Voice VLAN è ⅃ · Ω н ⊨ Â
˘ Voice VLAN ώ Ζ Â

ώ Ю Θ untagged ⅂ Voice VLAN tag
MAC فخ سم ˘ ¥ è Voice VLAN tag ˘
VLAN ‡ ⅃ Ω x ˘ a ⅃ Voice VLAN ώ/
; Â

w R

R 1' Voice VLAN ώ Â

```
Ruijie(config)# voice vlan security enable
```

Ζ ɦ ʒ

ɦ ʒ	
show voice vlan	Voice VLAN ą б ɱ Â

⅄

ƪ ʒ

G

ƪ ʒ˘ ˩ Voice VLAN ǫ б ɱ ˘ ↑ G Voice VLAN ˥ ˩ ɔ Â

w R

R 1' ɱ Voice VLAN

```
Ruijie(config)# show voice vlan
Voice VLAN status: ENABLE            //Voice VLAN G
Voice VLAN ID: 2                     //Voice VLAN ID
Voice VLAN security mode: Security   //  ώ      ї
Voice VLAN aging time: 5 minutes     //  ɣ
Voice VLAN cos: 6                    //      CoS ḣ
Voice VLAN dscp: 46                  //      DSCP ḣ
Current voice vlan enabled port mode: //G  Voice VLAN    ˩ б
PORT                    MODE
-----------------------------------------------------
Fa0/1                   Auto
```

ΩƪʒΩ

ƪ ʒ	
voice vlan *vlan-id*	ώ G Voice VLAN˘ У э VLAN й Voice VLAN Â
voice vlan aging *minutes*	Voice VLAN ɣ Â
voice vlan cos *cos-value*	Voice VLAN CoS ḣ Â
voice vlan dscp *dscp-value*	Voice VLAN DSCP ḣ Â
voice vlan enable	G ˩ Voice VLAN ˥ Â
voice vlan mode auto	˩ Voice VLAN ɔ Â
voice vlan security enable	Voice VLAN ώ Â

˩

ƪ ʒ ˥ ˩

˩	
10.4	ƪ ʒ

64.2.2 show voice vlan oui

ɱ OUI ﻣﺨﺼﺼﺔ à OUI ﻣﺨﺼﺼﺔ Ω ǫ Â

show voice vlan oui

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ใบ ๓

G ใบ ๓ ๆ ๗

65

65.1

65.1.1 rgos-security compatible

ą Ю˘ Ӌ ѿ ҭ ѝ RGOS ò ˝Ω ˘ ԧ ʒ **rgos-security compatible** ò ˝Ω ' RGOS ò ˝Ω ˘ G no ԧ ʒ '

rgos-security compatible

no rgos-security compatible

৲	

Ю˘ Ӌ ѿ ҭ ѝ RGOS ò ˝Ω

ԧ ʒ ѿ

G g ò ˝Ω ԧ ʒ ʖ ৴˘ ů Ӌ G

ѡ R R 1' ѿ ҭ ѝ RGOS ò ˝Ω '

```
Ruijie(config)#no gos-security compatible
```

˝Ωԧ ʒ	

৴

ԧ ʒ ৲ ৴	
10.4	ԧ ʒ

66 VRRP

66.1

66.1.1 vrrp authentication

Ԧ ʒ ŏ VRRP ↑ ˇ è **no** ˜Ω У Â

vrrp group authentication *string*

no vrrp *group* **authentication**

˄	
group	VRRP ˄
string	¥ VRRP s (a 8 э ˇ ˄ ʒ ˄ ʒ)

ą Ю˜ ج ˄ Э ŏ VRRP Â ŕ ŏ VRRP ˇ ! ˄ ʒ Â

Ԧ ʒ ˄

ج ˅ У э VRRP è ˅ ˄ ʒ Â ˄ ʒ a ɖ ŏ ˇ ˄ / VRRP Â

IPv6 VRRP ɑ ˇ ج IPv6 ˥ Э ɑ Ԧ ʒ˘ a Â	

Ю R ѝ VRRP 1 ɑ ˄ ʒ Â

```
vrrp 1 authentication x30dn78k
```

Ԧ ʒ	
Ruijie(config-if)# **vrrp** *group ip ipaddress* [**secondary**]	ŏ VRRP IP

˅

Ԧ ʒ ˥ ˅	˄	

-	-

66.1.2 vrrp description

Ĥu ʒ ǐ VRRP У э ˘ è **no** Â

vrrp *group* **description** *text*

no vrrp group description

٩	
group	VRRP ٨
text	VRRP

ąЮ˘ ج ٩ Э ǔ VRRP ╗ Â ǃ ǔ ɑ VRRP ╗ ˘ ≠ ˙ ¡ VRRP Â

Ĥu ʒ ٩

G ǐ VRRP ˘ ⅃ Л ǃ ɣ Ш VRRP Â

ш R

Ю R è ج Л ٩ E0 Э VRRP 1 ǐ Building A – Marketing and Administration Â

```
interface FastEthernet 0/0
ip address 10.0.1.1 255.255.255.0
vrrp 1 ip 10.0.1.20
vrrp 1 description “Building A - Marketing and Administration”
```

Ĥu ʒ	

ƚυ ३ ج ৲ Э ὖ VRRP IP ফز ˘ è **no** ৲ Э VRRP ╗ ৴ IP ফز Â

vrrp *group* **ip** *ipaddress* [**secondary**]

no vrrp *group* **ip** *ipaddress* [**secondary**]

৲	
group	VRRP ৴
ipaddress	IP ফز
secondary	IP ফز

ąЮ˘ ج ৲ Э ὖ VRRP ╗ Â

ƚυ ३ ৲

a ᴳ secondary ৲ ˘ ঋ IP ফز ὶ ў IP ফز Â ˘ VRRP ᴳ Λυ ৲ IP ফز ˘ ج ᴳ no ƚυ ३ ৴ VRRP IP ফز ˚ ὶ ᾳ ˘ ج ὶ ج ঈ Э ج ч э ৴ IP ফز Â

ج Ю ᴿ è˘ ج Λυ ৲ 0 Э ὖ VRRP ╗ Â VRRP ৴ ὶ 1˘ ў IP ফز ὶ 10.0.1.20˘ IP ফز ὶ 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
```

ƚυ ३	
Ruijie# **show vrrp** [**brief | group**]	ŋή VRRP

৴

ƚυ ३ ৴	
৴	
-	-

66.1.4 vrrp ipv6

Ĥu ʒ ج ^ Э ŭ IPv6 VRRP IPv6 سم فخ ˘ è **no** ^
Э VRRP ╥ ^ IPv6 سم فخ Â

vrrp *group* **ipv6** *ipv6-address*

no vrrp *group* **ipv6** *ipv6-address*

^	
group	VRRP ^
ipv6-address	IPv6 سم فخ

ą Ю˘ ج ^ Э ŭ IPv6 VRRP ╥ Â

Ĥu ʒ ^

IPv6 VRRP б IPv4 VRRP "Ω 1˙ 255 ^ Â У э VRRP ˘ IPv4 سم فخ Ω IPv6
a "Ω ˘ ® IPv6 سم فخ˘ a ĭ IPv4 سم فخ˘ "I IPv6 سم فخ˥
˘ ^ IPv4 سم فخ Â
У э سم فخ سم سم فخ˘ سم سم فخ ج è سم فخ˥ ^
˥ Â

ج Ю R è˘ ج Лu ^ FastEthernet 0/0 Э ŭ IPv6 VRRP ╥ Â
VRRP ^ й 1˘ IPv6 سم فخ й FE80::1 Ω 2001::1 Â

```
interface FastEthernet 0/0
no switchport
ipv6 enable
ip6 address 2001::2/64
vrrp 1 ipv6 FE80::1
vrrp 1 ipv6 2001::1
```

Ĥu ʒ	
Ruijie# **show vrrp** [**brief | group**]	ńń VRRP

^ Â

^	
RGOS10.4	Ĥu ʒ ÿ RGOS10.4 Â

66.1.5 vrrp preempt

ħu ʒ VRRP ¥ ´ ˘ ὲ no VRRP ´ ╗ Â

vrrp *group* **preempt** [**delay** *seconds*]

no vrrp *group* **preempt** [**delay**]

^	
group	VRRP ^
delay *seconds*	˩ ^ ˘ ^ ħ ɷ ñ ˆ Master ` ʒ ɱ Â ḣ ẻ 0 Â

ą ЮŎ ج ^ Э ŭ VRRP ╗ Â У ŭ VRRP ╗ ˘ VRRP
ʒ è Ỳ ˝Ḥ ˆ] ґ Ə æ Ń

vrrp *group* **priority** *level*

no vrrp *group* **priority**

৭	
group	VRRP ৭
level	VRRP ˙ ˝I

ą ЮŎ ج ৭ Э ŭ VRRP ╗ Â У ŭ VRRP ╗ ˘ VRRP è ˙ ˝I й 100 Â

Ĥu ३ ৭

G Ĥu ३ ╟ VRRP ˙ ˝I Â

ш R Ю R è VRRP 1 ˙ ˝I й 254 Â

```
vrrp 1 priority 254
```

Ĥu ३	
Ruijie(config-if)# **vrrp** *group* **ip** *ipaddress* [**secondary**]	ŭ VRRP ╗ IP فذ سم
Ruijie(config-if)# **vrrp** *group* **preempt** [**delay** *seconds*]	VRRP ¥ ´

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66.1.7 vrrp timers advertise

Ĥu ३ ў ৸ VRRP ˜ ˘ è no Â

vrrp *group* **timers advertise** *interval*

no vrrp *group* **timers advertise**

৭	
group	VRRP ৭
interval	VRRP ˜ ৸ (Л й ´ Æ)

ą Ю˘ ج ٨ Э ů VRRP ╗ Â У ů VRRP ╗ ˘ ў
˘ ч й VRR1/C2_0 1 Tf0 T006 Tc 7.14 60 Td[<0<2FA64>54</TT0 1 Tf0 Tc 2.01.988Td(

Л˘ ¸ ÿ ў VRRP ˆ è ˜ VRRP ˆ ˩ ˘ Master
˘ a G ممم VRRP ˆ ˩ Â Ħu ३ ˩ Л
б Master VRRP ˆ ˩ Ы ˩ Â

ш R

Ю R è جم VRRP 1 Э ў ⓐ Ы ˜ ╖ Â

```
vrrp 1 timers learn
```

ЎЮħu ३

Ħu ३	
Ruijie(config-if)# **vrrp** *group* **ip** *ipaddress* [**secondary**]	ў VRRP ╖ IP فخ ممم
Ruijie(config-if)# **vrrp** *group* **timers advertise** [**msec**] *interval*	VRRP ˆ ˩

˩

Ħu ३ ˥ ˩

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66.1.9 vrrp track

ў VRRP ˩ G **vrrp** *group* **track** *interface-type number* Ħu ३˘ ў VRRP IP فخ ممم ╖ ˘ G **vrrp** *group* **track** *ip-address* Ħu ३˘ **vrrp** *group* **track bfd** BFD IP˜ è **no** Ўˇ ╖ Â Ħu ३ Ю'

vrrp *group* **track** [*interface-type number* | **bfd** *interface-type interface-number ipv4-addess*] [*priority*]

vrrp *group* **track** *ipv4-address [***interval** *interval-value] [***timeout** *timeout-value] [priority]*

vrrp

ipv4-addres	IPv4 ƒƫ ˘ bfd ˚ Â
ipv6-global-addres	IPv6 ώ ´ ƒƫ
ipv6-linklocal-addree	IPv6 ƒƫ ƒƫ ƒƫ
interval-value	˩ Â´ Æ ϋ Â a ˘ ḣ ϋ 3 Â
timeout-value	˩ ˥ Â ˺ ϖ˘ ˺ ˘ ‡ ϋ a ˩ Â´ Æ ϋ Â a ˘ ḣ ϋ 1 Â
priority	˥ ˩ ὲ VRRP ˙ ˝I ˩ Â a ˘ ḣ ϋ 10 Â

ą Ю˘ ج ˥ Э ŭ VRRP ˥ Ą ŭ VRRP ˥ ˘ ˥ à IPv4 ƒƫ IPv6 ƒƫ Â

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G

˩ ˥ Ĥu ʒ ˥ ˘ ˥ ˩ ĭ Ь ˩ ˥ (Routed Port ˘ SVI ˘ Loopback˘ Tunnel) Â

ŭ ˘ ą IPv4 ˥˘ ŭ IPv4 ƒƫ' ą IPv6 ˥˘ ŭ IPv6 ƒƫ Â

ŭ ƒƫ ƒƫ˘ ˥ Â

ɯ R

R 1' ج Ю R è˘ VRRP 1 Routed Port Fa1/1 Â Fa1/1 ˘ VRRP ˙ ˝I ˜ 30' ج Fa1/1 ˥˘ VRRP 1 ˙ ˝I Â

```
vrrp 1 track FastEthernet 1/1 30
```

R 2' Ю R ŭ 1000::1 ĭ ˩˺ Â

```
vrrp 1 track 1000::1
```

R 3' Ю R ˥ VLAN 1 Э ŭ FE80::1 ĭ ˩˺ ˘ ˥ Â

```
vrrp 1 track FE80::1 vlan 1
```

```
# VRRP BFD 192.168.1.3
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface FastEthernet 0/1
Ruijie(config-if)#no switchport
Ruijie(config-if)#ip address 192.168.1.1 255.255.255.0
Ruijie(config-if)#bfd interval 50 min_rx 50 multiplier 3
Ruijie(config)#interface FastEthernet 0/2
```

```
Ruijie(config-if)#no switchport
Ruijie(config-if)#ip address 192.168.201.17 255.255.255.0
Ruijie(config-if)#vrrp 1 priority 120
Ruijie(config-if)#vrrp 1 ip 192.168.201.1
Ruijie(config-if)#vrrp 1 track bfd FastEthernet 0/1  1f8 0 Td(rA 3Tj/TT1 1 Tf0
```

```
Ruijie# debug vrrp
Ruijie#
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
VRRP: Grp 1 Event - Advert higher or equal priority
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 1 state Master -> Backup
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual
address 192.168.1.1
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 1 state Backup -> Master
Ruijie#
```

```
Ruijie#
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual
address 192.168.1.1
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual
address 192.168.1.1
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual
address 192.168.1.1
```

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66.2.3 debug vrrp events

ħυ ३ VRRP Y˘ ˜Ω˘ è no ˜Ω ˜Ω Â

debug vrrp events fl[illegible]d5>)gSbQ ta[illegible]f6 ë6UEBA-RT[illegible]6d24BA-[illegible]4CQ1@

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66.2.4 debug vrrp packets

ħu ३ VRRP ↑ ॅ ॅ è **no** ॅ ॅ Â

debug vrrp packets

no debug vrrp packets

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ą Ю VRRP ↑ ॅ Â

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```
R 1' ج Ю R è ˘ ą VRRP ↑ ॅ ˘ ج è è ą VRRP 1
↑ ∩ Â
Ruijie# debug vrrp packets
Ruijie#
VRRP: Grp 2 sending Advertisement checksum DD4D
VRRP: Grp 2 sending Advertisement checksum DD4D
VRRP: Grp 2 sending Advertisement checksum DD4D
R 2' ج Ю R è , ą VRRP ↑ ॅ ˘ ج è è ą VRRP 1
↑ IP ممفذ ∫∪ ৶ VRRP 1 ˙ ˝I Â
Ruijie# debug vrrp packets
Ruijie#
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
```

```
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
```

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66.2.5 debug vrrp state

ħυ ३ VRRP ˜Ω˘ è no ˜Ω ˜Ω Â

debug vrrp state

no debug vrrp state

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Ruijie#

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66.3

66.3.1 show vrrp

ĥυ ३ VRRP α Â

show vrrp [**brief** | *grou*p]

˥	
brief	˩ ˥ ˘ VRRP α
group	VRRP ˥

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G a G ˩ ˥ ˘ VRRP α Â

```
R 1'        VRRP α
Ruijie# show vrrp
FastEthernet 0/0 - Group 1
State is Backup
Virtual IP address is 192.168.201.1 configured
Virtual MAC address is 0000.5e00.0101
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
```

```
Priority is 100
Master Router is 192.168.201.213 , pritority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
FastEthernet 0/0 - Group 2
State is Master
Virtual IP address is 192.168.201.2 configured
Virtual MAC address is 0000.5e00.0102
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 120
Master Router is 192.168.201.217 (local), priority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
```

R 2' VRRP α

```
Ruijie# show vrrp brief
Interface   Grp Pri Time  Own Pre State   Master addr     Group addr
FastEthernet 0/0   1   100   -    -   P  Backup  192.168.201.213
192.168.201.1
FastEthernet 0/0   2   120   -    -   P  Master  192.168.201.217
192.168.201.2
```

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Ruijie(config-if)# **vrrp** *group ip ipaddress* [**secondary**]	Ů VRRP ╗ IP فخ سم

ھو ۶ Ω

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type	৲ ص
number	৲ ৸
brief	৶ ৲ Â G α

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Ruijie(config-if)# **vrrp** *group* **ip** *ip address* [**secondary**]	ŷ VRRP ╖ IP فخ سم

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67 BFD

67.1

67.1.1 bfd

คำสั่ง ใช้ **bfd** ใช้งาน BFD ส่ง ใช้ **no** ใช้งาน BFD ส่ง

bfd interval *milliseconds* **min_rx** *milliseconds* **multiplier** *multiplier-value*

no bfd interval *milliseconds* **min_rx** *milliseconds* **multiplier** *multiplier-value*

clear bfd	ʔ BFD ˬ Â
ip ospf bfd	G ї OSPF б BFD ╟ Â
ip rip bfd	G ї RIP б BFD ╟

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	10.3(4b3)	Ԧ ʒ

67.1.2 bfd all-interfaces

ج router (RIP,OSPF)Ю **bfd all-interfaces** Ԧ ʒ G ʌ ˜ б BFD ╟˘ G **no** Ԧ ʒ ˜Ω ╥ Â

bfd all-interfaces

no bfd all-interfaces

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a ї ʌ ˜ б BFD ╟

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ч ʌ Л G ˜Ω ʌ ї ˜ б BFD ╟'

У ' ج OSPF Ո RIP Ю [**no**] **bfd all-interfaces** Ԧ ʒ G ˜Ω ʌ ї ˜ б BFD ╟'

Y ' ʌ Л ώ ʌ **ip ospf bfd** [**disable**] **ip rip bfd** [**disable**] Ԧ ʒ G ˜Ω ʌ ї OSPF RIP ˜ б BFD ╟'

w R

```
#ج Ю G ʌ ї OSPF ˜ б BFD ╟ Â
Ruijie(config)# router ospf 123
Ruijie(config-router)# bfd all-interface
```

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bfd	BFD ˅ ৲ Â
ip ospf bfd	G ĭ OSPF ϭ BFD ╟ Â
ip rip bfd	G ĭ RIP ϭ BFD ╟

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10.3(4b3)	ƪ ३

```
Ruijie(config)# bfd cpp
```

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10.3(4b3)	Ĥu ३

67.1.4 bfd slow-timer

ج ώ Ю **bfd slow-timer** Ĥu ३ BFD ج ΰ ECHO ╗ ʎ˘
˘ ¥ BFD ┤ BFD ⁸ Â **no** Ĥu ३ ĥ Â

bfd slow-timer [*milliseconds*]

no bfd slow-timer

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milliseconds	(┤)BFD ⅄ ˘ ´ Æ й Â ┤ تن ÿ 1000ʔ 30000, ĥ й 1000 Â

ĥ й 1000ms

Ĥu ३ ώ

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ɯ R

```
# slow-timer й 14000 Â
Ruijie(config)# bfd slow-timer 14000
```

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Ĥu ३	

bfd echo	G BFD Echo ╗

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Ĥu ३ ৭ ৰ

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10.3(4b3)	Ĥu ३

67.1.5 ip ospf bfd

ह ৰ Ю **ip ospf bfd** Ĥu ३ G ৰ ĭ OSPF ˜ б BFD ╟˘ **disable** ˜Ω ˜Ω G ˘ **no** Ĥu ३ī Â

ip ospf bfd [**disable**]

no ip ospf bfd

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ৰ	
disable	(৲)˜Ω ৰ Э ĭ OSPF ˜ б BFD ╟ Â

ώ **disable**ˇ ѝ G ৰ ĭ OSPF ˜ б BFD ╟

Ĥu ३ ৰ

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ч ৲ Л G ˜Ω ৰ ĭ OSPF ˜ б BFD ╟'

У ' ह OSPF Ю [**no**] **bfd all-interfaces** Ĥu ३ G ˜Ω ৰ ĭ ˜ б BFD ╟'

У ' ৲ Л ώ ৰ **ip ospf bfd [disable]**Ĥu ३ G ˜Ω ৰ ĭ OSPF ˜ б BFD ╟'

w R

```
#ह Routed Port ৰ FastEthernet 0/2 Э˜Ω ĭ 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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Ĥu ३	
bfd	BFD ˚ ৲ Â
bfd all-interfaces	G ৲ ˜ б BFD ╟

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10.3(4b3)	Ĥu ३

67.1.6 ip rip bfd

ج ৲ Ю **ip rip bfd** Ĥu ३ G ৲ ï RIP ˜ б BFD ╟˘ **disable** ˜Ω ˜Ω G ˘ **no** Ĥu ३ ˜ Â

ip rip bfd [**disable**]

no ip rip bfd

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৲	
disable	(৲)˜Ω ৲ Э ï RIP ˜ б BFD ╟ Â

ώ **disable** ˘ ŷ G ৲ ï RIP ˜ б BFD ╟

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ч ৲ Л G ˜Ω ৲ ï RIP ˜ б BFD ╟'

У ' ج RIP Ю [**no**] **bfd all-interfaces** Ĥu ३ G ˜Ω ৲ ï ˜ б BFD ╟'

Y ' ৲ Л ώ ৲ **ip rip bfd [disable]**Ĥu ३ G ˜Ω ৲ ï RIP ˜ б BFD ╟'

w R #ج 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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Ю ३	
bfd	BFD ˚ ٧ Â
bfd all-interfaces	G ٧ ~ б BFD ╟

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Ю ३ ٦ ٧

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10.3(4b3)	Ю ३

67.1.7 ip route static bfd

ج ŏ Ю **ip route static bfd** Ю ३ б BFD ╟˘ **no** Ю ३ Â

ip route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ip-address*]

no ip route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ip-address*]

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٧	
vrf *vrf-name*	(٧) ٧ VRF ٧ Â
interface-type interface-number	٧ صر Ω ٧ ٨ Â
gateway	Ω IP˘ . ŷ BFD IP Â Ю У ŷ BFD ٧ ٧ Â
source *ip-address*	(٧) BFD ˚ IP فذ سم , IP ŷ ą Ю˘ ٧ Â

б BFD ╟

ƪu ३ ώ

G ˜l ɖ ৲ BFD ˬ ৲

w R

```
# G ˜Ω BFD ˘ BFD б 172.16.0.2 ৲ Â
Ruijie(config)# interface FastEthernet 0/1
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip address 172.16.0.1 255.255.255.0
Ruijie(config-if)# bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if)# ip route static bfd FastEthernet 0/1 172.16.0.2
Ruijie(config-if)# ip route 10.0.0.0 255.0.0.0 FastEthernet 0/1
172.16.0.2
```

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bfd	BFD ˬ ৲ Â

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10.3(4b3)	ƪu ३

67.1.8 ipv6 route static bfd

ج ώ ƗO **ipv6 route static bfd** ƪu ३ б BFD ╟˘ **no** ƪu ३ Â

Ipv6 route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ipv6-address*]

no ipv6 route static bfd [**vrf** *vrf-name*] *interface-type interface-number gateway* [**source** *ipv6-address*]

৲

vrf *vrf-name*	(⌟) ⌞ VRF ⌟ Â
interface-type interface-number	⌝ صر ⌈ ⌝ ⌟ Â
gateway	˜Ω IP˝ . ѝ BFD IP Â Ю У ѝ BFD ⌟ ⌟ Â
source *ipv6-address*	(⌟) BFD˚ IP فذ سم , IP ѝ يمم У ѝ æ

router address-family ЮO, **neighbor fall-over** ЪU ३ BGP б BFD
BGP , **no** ЪU ३ ˜Ω

neighbor *ip-address* **fall-over bfd**

no neighbor *ip-address* **fall-over bfd**

ip-address	BGP Â

BGP a ˜Ω BFD

ЪU ३

G

˜I d[IP BFD˚

G BGP ˜Ω BFD ˘ BFD б 172.16.0.2

```
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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bfd	BFD˚ Â

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ЪU ३ ˥ ЛЛ

10.3(4b3)	ЪU ३

67.1.10 set ip next-hop verify-availability

ج Route-map Ю **set ip next-hop verify-availability** Ъ ъ G ش ¥ BFD TRACK IP Л Ю У ї Â **no** Ъ ъ Ω ╗ 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*]]

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vrf *vrf-name*	(┘) ⅄ VRF ⅃
next-hop-address	(┘)Ю У IP فخ سم
track	(┘) Track Л " Ю У ї
number	(┘)track ٨
bfd	(┘) BFD
interface-type interface-number	(┘) ٧ صر Ω ٧ ٨
gateway	(┘) Ω IP˘ . й BFD IP Â Ю У й BFD ┘ ┘ Â

a Ω BFD ╗

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G ˝I ɖ IP ٧ BFD ٭ ٧

G Ω BFD ˘ BFD б 172.16.0.2 ┘

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# route-map Example1 permit 10
Ruijie(config-route-map)# match ip address 1
Ruijie(config-route-map)# set ip precedence priority
Ruijie(config-route-map)#set ip next-hop verify-availability
172.16.0.2 bfd FastEthernet 0/1 172.16.0.2
```

```
Ruijie(config-route-map)#end
```

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bfd	BFD ๆ ๅ Â

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bgp	BGP ╟ BFD ə
ospf	OSPF ╟ BFD ə
rip	RIP ╟ BFD ə
vrrp	VRRP ╟ BFD ə
static-route	StaticRoute ╟ BFD ə
pbr	PBR ╟ BFD ə
ipv4 *ip-addess*	┘ IPv4 ə
ipv6 *ip-addess*	┘ IPv6 ə
details	

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show bfd neighbors ħu ३ Ю'

```
Ruijie# show bfd neighbors
OurAddr        NeighAddr    LD/RD RH  Holdown(mult) State  Int
172.16.11.1    172.16.11.2 1/2    1   532 (3 )       Up     Ge2/1
```

show bfd neighbors details ħu ३ Ю'

```
Ruijie# show bfd neighbors details
OurAddr        NeighAddr    LD/RD RH  Holdown(mult) State  Int
172.16.11.1    172.16.11.2 1/2    1   532 (3 )       Up     Ge2/1
Local Diag: 0, Demand mode: 0, Poll bit: 0
MinTxInt: 200000, MinRxInt: 200000, Multiplier: 5
Received MinRxInt: 50000, Received Multiplier: 3 nei328 0 Td3-6.ts):16 0(22
```

W R

```
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	ๆ ๆ IP ๆ
NeighAddr	ๆ IP ๆ
LD/RD	ๆ ๆ Ω
RH	ๆ ๆ ๆ
Holdown(mult)	ๆ ๆ hello ๆ
State	ๆ ๓
Int	ๆ ๆ ๅ ๅ

Session state is UP and using echo function with 50 ms interval ๆ ๆ echo echo (ๆ ๅ ๆ ๆ Echo ๆ Ю ๆ)

BFD ใบ ๓

68 RLDP

68.1

68.1.1 rldp detect-interval

G ԻՍ ՀՅ RLDP جھ ՍՅԵՍ Â

rldp detect-interval *interval*

no rldp detect-interval

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interval	˘ ՍՍ ḣ تن ؾ 2-15

3 Â

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rldp detect-max *num*

no rldp detect-max

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num	, ٧ ḣ ن ٨ 2-10

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```
Ruijie(config)# rldp detect-max 5
```

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rldp detect-interval	

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68.1.3 rldp enable

Ĥ ʒ 8 RLDP ŏ ˥ ŽÂ

rldp enable

no rldp enable

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G ϡ ϣ RLDP ϡ RLDP Â

ϖ R Ю R '

```
Ruijie(config)# rldp enable
```

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rldp port	ϡ RLDP ϖ

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68.1.4 rldp port

Ϸ ϗ ϡ rldp ϡ ϡ ϡ Ω Â

rldp port {**unidirection-detect | bidirection-detect | loop-detect** } {**warning | shutdown-svi | shutdown-port | block**}

no rldp port { **unidirection-detect | bidirection-detect | loop-detect** }

ϡ

ϡ	
unidirection-detect	ϡ ϡ
bidirection-detect	ϡ ϡ
loop-detect	
warning	
shutdown-svi	shutdown ϡ svi
shutdown-port	shutdown ϡ
block	Ϲ ϡ ϡ

ϡ Â

Ϸ ϗ ϡ Â

G ϡ ϣ RLDP ϡ RLDP ϡ Â

ϖ R Ю R fas 0/1 rldp ϡ ϡ ϡ Ϲ

ʌ ˉ ˥ Â

```
Ruijie(config)# interface fas 0/1
Ruijie(config-if)# rldp port loop-detect block
```

ˇΩħu ३

ħu ३	
rldp enable	ώ rldp ħu ३

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68.2

68.2.1 show rldp

rldp ৲ ৯ Â

show rldp [**interface** *interface-id*]

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৲	
Interface-id	৲

ƚυ ३ EXEC

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w R

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68.2.2 debug rldp

rldp ⊨ ʹΩ Â ƚυ ३ no ʹΩ ʹΩ Â

debug rldp [**packet | event | error**]

undebug rldp [**packet | event | error**]

৲

৲	
packet	৷ rldp ৯ Â
event	৲ ৷ ৸ ৯ Â
error	è ৷ ৯ Â

EXEC

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-	-

69 TPP

69.1

69.1.1 topology guard

ह ώ Ĥu ३ Ю G topology guard Ĥu ३ ŭ ╗ ώ ΎΩ Â G Ĥu ३ no ╗ Â

[**no**] **topology guard**

৲	
-	-

	╗ ŃŃ
Ĥu ३	ώ Ĥu ३
G	╗ ˘ ৲ Ω ɖ ˘ Ω ȯ ह ৲ Â б Ĥu ३ **cpu topology-limit** ৴ G Â

w R	Ю R ! ŭ Ω Ύ ώ ╗ '
	`Ruijie(config)# topology guard`
	`Ruijie(config)# no topology guard`

Ĥu ३	
Ύ Ĥu ३	**tp-guard port enable** G ৲ ╗ Â
	cpu topology-limit CPU ¯ Â

৴

Ĥu ३ ৲ ৴	
-	-

69.1.2 tp-guard port enable

G ৲ ৷ ˘ G ƫu ३ no ৲ ৷ Â

[**no**] **tp-guard port enable**

৲	

ƻ ३

ƻ ३

G

ƻ ३ ¥ ŋ́ tpp ˈ ˊ ą Â

w R

ƻ R ! ˥ ə ˈ

```
Ruijie# show tpp
```

ƻ ३

ƻ ३	
topology guard	G ώ ˥

ˊ

ƻ ३ ˥ ˊ

ˊ	
-	-

70.1.2 copy

ÿ ꞁ · ˚ Â

copy *source-url destination-url*

ҷ	
source-url	˚ URL Â ˚ Э· Ю ╟ ɔˇ э ﺳﻢ ﻓﺨ ˧ Ꮑ ﺳﻢ Â
destination-url	˚ URL Â ˚ Э· Ю ╟ ɔˇ э ﺳﻢ ﻓﺨ ˧ Ꮑ ﺳﻢ Â

ȶu ʅ

ᴳ copy ȶu ʅ ˧ Ꮑ ﺳﻢ ɹ ẏ Ȳ ǯ Ꮑ ˦ Ո ╘ Ꭹ ǯ ˚ . Â

˚ URL ɱ ˈ

ɱ	
flash:	flash ẏ Ȳ Â э ɱ ﺟ Э ˧ Ꮑ ᴳ Â URL a ᴳ ɱ Ḁˇ flash Â ȕ ╟ ÿ ɖ ﺟ flash Э Â
tftp:	TFTP ╘ Ꭹ
xmodem:	ᴳ xmodem ˜ ɹ ˧ ˚
slave:	è ÿ Э flash
usb0:	У э usb
usb1:	γ э usb
sd0:	У э sd ´

ɔ a .

URL ɱ ‡ ɱ ˚

ɯ ᴿ ᴿ 1' ÿ tftp ╘ Ꭹ Э Ю ˚

```
Ruijie#copy tftp://192.168.201.54/rgos.bin flash:/
R 2' Э· ˘ ĵ tftp Ł ⅄
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
```

˘Ωĥu ȝ

ĥu ȝ	
del	ĵ ˘
rename	˘ ⅄
dir	˘ "

⅄

ĥu ȝ ˥ ⅄

⅄	

70.1.3 delete

ĵ ˘ Â

delete *url*

⅄

⅄	
url	ĵ ˘ url Â

70.1.6 rename

[illegible]

rename *url1 url2*

[redacted]

70.1.7 rmdir

ĩ Â

rmdir *directory*

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directory	ĩ ɹ, ѝ

Ъυ ३

G a ɔ, ĩ ѝ Â

w R ɱѝ Ю У э tmp ˘ з è ˚ Â
Ruijie# **rmdir** *tmp*

Ъυ ३	
mkdir	…

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Ъυ ३ ৭ ɹ

70.2

pwd

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ƚu ३

[redacted]

```
Ruijie# pwd
flash:/
```

ƚu ३	
cd	ˇ Ô ƶ ش

G

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˚ Ɜ ˩ ɑ Â

w R

R 1' ˚ ǝ

Ruijie#**show file systems**

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71

71.1 CPU

71.1.1 cpu-log

CPU ¯ ą ৻ , ৻ Л৷ ᴳ **cpu-log** Â

cpu-*log* *log-limit low_num high_num*

৻		
৻	*log-limit*	ت ħ ३
	low_num	CPU ¯ ৻ æ
	high_num	CPU ¯ ৻

ą Ю й 100%˘ æ й 90% Â

ħ ३ ŏ Â

ý*ü(Ð @l)â

ᴳ ħ ३ ৻ Л৷ CPU ¯ ą ৻ æ ˘ CPU ¯

ą Ю ৻ ą ˘ CPU ¯ ¥ ৻ , ৻ ৻ У ą ' CPU

ᴳ ¯ æ ¥ ৻ æ Л , ৻ ą , ˆ ń CPU ¯ Ю ˘ ą ৻ '

[illegible]	-

[illegible]	-

71.1.2 show cpu

CPU [illegible] [illegible] [illegible] **show cpu** [illegible]

show cpu

[illegible]	-

[illegible]

[illegible]

[illegible] CPU [illegible] [illegible] 5 [illegible] 1[illegible] [illegible] 5
[illegible] [illegible] CPU [illegible] [illegible] [illegible] [illegible] 5 [illegible] 1[illegible] [illegible] 5
[illegible] [illegible] CPU [illegible] [illegible]

[illegible] **show cpu** [illegible]

```
Ruijie# show cpu
=========================================
    CPU Using Rate Information
CPU utilization in five seconds: 25%
CPU utilization in one minute  : 20%
CPU utilization in five minutes: 10%
  NO   5Sec   1Min   5Min   Process
```

5	0%	0%	0%	waitqueue_process
6	0%	0%	0%	tasklet_task
7	0%	0%	0%	kevents
8	0%	0%	0%	snmpd
9	0%	0%	0%	snmp_trapd
10	0%	0%	0%	mtdblock
11	0%	0%	0%	gc_task
12	0%	0%	0%	Context
13	0%	0%	0%	kswapd
14	0%	0%	0%	bdflush
15	0%	0%	0%	kupdate
16	0%	3%	1%	ll_mt
17	0%	0%	0%	ll main process
18	0%	0%	0%	bridge_relay
19	0%	0%	0%	d1x_task
20	0%	0%	0%	secu_policy_task
21	0%	0%	0%	dhcpa_task
22	0%	0%	0%	dhcpsnp_task
23	0%	0%	0%	igmp_snp
24	0%	0%	0%	mstp_event
25	0%	0%	0%	GVRP_EVENT
26	0%	0%	0%	rldp_task
27	0%	2%	1%	rerp_task
28	0%	0%	0%	reup_event_handler
29	0%	0%	0%	tpp_task
30	0%	0%	0%	ip6timer
31	0%	0%	0%	rtadvd
32	0%	0%	0%	tnet6
33	2%	0%	0%	tnet
34	0%	0%	0%	Tarptime
35	0%	0%	0%	gra_arp
36	0%	0%	0%	Ttcptimer
37	8%	1%	0%	ef_res
38	0%	0%	0%	ef_rcv_msg
39	0%	0%	0%	ef_inconsistent_daemon
40	0%	0%	0%	ip6_tunnel_rcv_pkt
41	0%	0%	0%	res6t
42	0%	0%	0%	tunrt6
43	0%	0%	0%	ef6_rcv_msg

```
44     0%     0%     0%    ef6_inconsistent_daemon
45     0%     0%     0%    imid
46     0%     0%     0%    nsmd
47     0%     0%     0%    ripd
48     0%     0%     0%    ripngd
49     0%     0%     0%    ospfd
50     0%     0%     0%    ospf6d
51     0%     0%     0%    bgpd
52     0%     0%     0%    pimd
53     0%     0%     0%    pim6d
54     0%     0%     0%    pdmd
55     0%     0%     0%    dvmrpd
56     0%     0%     0%    vty_connect
57     0%     0%     0%    aaa_task
58     0%     0%     0%    Tlogtrap
59     0%     0%     0%    dhcp6c
60     0%     0%     0%    sntp_recv_task
61     0%     0%     0%    ntp_task
62     0%     0%     0%    sla_deamon
63     0%     3%     1%    track_daemon
64     0%     0%     0%    pbr_guard
65     0%     0%     0%    vrrpd
66     0%     0%     0%    psnpd
67     0%     0%     0%    igsnpd
68     0%     0%     0%    coa_recv
69     0%     0%     0%    co_oper
70     0%     0%     0%    co_mac
71     0%     0%     0%    radius_task
72     0%     0%     0%    tac+_acct_task
73     0%     0%     0%    tac+_task
74     0%     0%     0%    dhcpd_task
75     0%     0%     0%    dhcps_task
76     0%     0%     0%    dhcpping_task
77     0%     0%     0%    dhcpc_task
78     0%     0%     0%    uart_debug_file_task
79     0%     0%     0%    ssp_init_task
80     0%     0%     0%    rl_listen
81     0%     0%     0%    ikl_msg_operate_thread
82     0%     0%     0%    bcmDPC
```

```
 83     0%     0%     0%    bcmL2X.0
 84     3%     3%     3%    bcmL2X.0
 85     0%     0%     0%    bcmCNTR.0
 86     0%     0%     0%    bcmTX
 87     0%     0%     0%    bcmXGS3AsyncTX
 88     0%     2%     1%    bcmLINK.0
 89     0%     0%     0%     bcmRX
 90     0%     0%     0%     mngpkt_rcv_thread
 91     0%     0%     0%     mngpkt_recycle_thread
 92     0%     0%     0%     stack_task
 93     0%     0%     0%     stack_disc_task
 94     0%     0%     0%     redun_sync_task
 95     0%     0%     0%     conf_dispatch_task
 96     0%     0%     0%     devprob_task
 97     0%     0%     0%     rdp_snd_thread
 98     0%     0%     0%     rdp_rcv_thread
 99     0%     0%     0%     rdp_slot_change_thread
100     4%     2%     1%     datapkt_rcv_thread
101     0%     0%     0%     keepalive_link_notify
102     0%     0%     0%     rerp_msg_recv_thread
103     0%     0%     0%     ip_scan_guard_task
104     0%     0%     0%     ssp_ipmc_hit_task
105     0%     0%     0%     ssp_ipmc_trap_task
106     0%     0%     0%     hw_err_snd_task
107     0%     0%     0%    rerp_packet_send_task
108     0%     0%     0%    idle_vlan_proc_thread
109     0%     0%     0%    cmic_pause_detect
110     1%     1%     1%    stat_get_and_send
111     0%     1%     0%    rl_con
112    75%    80%    90%    idle
```

ج Э " è˘ 3 ǀ ⁞ ج 5 à 1ǀ à 5ǀ ą̈
CPU ¯ ąˆ ↑ LISR à HISR Ω˙ ˩˜ ÂЮ ‡ ε ε CPU ¯ ǀ
ą Â ε è˘ У " ΰ Ю Ю˙

No	Л
5Sec	У ˙ ˩ 5 ą̈ CPU ¯
1Min	У ˙ ˩ 1ǀ ą̈ CPU ¯
5Min	У ˙ ˩ 5ǀ ą̈ CPU ¯

	Ĥu ʒ " ɱ 2 ˘ʃ ⁞ LISR CPU ¯ Ω HISR CPU ¯ ˘ ÿ 3 ˘ · ⊨ CPU ¯ ɷ Â ʌ У idle CPU ¯ ˘ Windows Ю ľ System Idle Process Ł У ˘ Â ج Э R è˘ idle 5 ą̈ CPU ¯ ѝ 75%˘ ɱ CPU 75% ɣ Â

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	-	-

71.2

71.2.1 memory-lack exit-policy

ĥu ʒ ą̈ ʃ lower ǯ ʌ˘ Э ˜ ˘ Э ˜ ↑ BGP à OSPF à RIP à PIM-SM Â

memory-lack exit-policy (**bgp**|**ospf**|**pim-sm**|**rip**)

no memory-lack exit-policy

ò ʌ Ô

ʌ	
bgp|ospf|pim-sm|rip	˜ ѝ BGP OSPF PIM RIP Â

й bgp Â

¥ ŭ ˜ ˘ й. ˝I ˜ ˘ a ╟ ą̈

Â

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ò R Ô

R 1' ЛЮ w R ą й BGP й. ˝I ˜ Â

```
Ruijie(config)# memory-lack exit-policy bgp
```

ò ˝Ω ħ ę Ô

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show memory	ą̈ ą

ò л Ô

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ò ħ ę ˥ л Ô

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10.3(4b3)	ħ ę

71.2.2 show memory

ń ą̈ G ą ą ˘ ħ ę **show memory** Â

show memory

	л	

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 ↑ Ü Ю Ú э ţ '

1. ⅃ ą э ˘ У э ą ì 4k ą Â

2. ą ḣ˘ Ю ì ⅄ ą ⅎ'

min	ą a ˘ Ѳ ą ˘ ţ ˘ Э a ⅃ Â
lower	ą ш a ˘ ţ ˘ У э Э ˜ ╟ ˘ ą Â ˜ ⁸ ⅄ **memory-lack exit-policy** ħu ʒ Â
low	ą a ˘ ţ ˘ Э ˜ ώ OVERFLOW ˘ Ю˘ a Ą ˘ Â ą a ˘ ⁸ ⅄ a ĭ ħu ʒ Â
high	ą ˈl ˘ Лu Э˘ ą ˈl ˘ ⅄ ˜ ÿ OVERFLOW ţ Â

3. ą ˘ ⅎ ⅃ ą ˘ Лu ⅄ ą G Â

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ò ¶ Ô

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ò Ìu ¾ Ô

ò G Ô

G Ìu ¾ ¶ ~ ´ ¤ ¤ Â

a ¶ ¶ ~ a ¶˘ ÿ ~
BGP,OSPF,RIP,LDP,PIM,ISIS Â

ò R Ô

R 1' ÎÔ R ì show memory protocols ¤

```
Ruijie(config)# show memory protocols
=====================================================
protocol      |memory(byte)
BGP            102000000
OSPF            24000000
RIP             10000000
PIM             50000000
LDP             20000000
Total           206000000
```

ò ˜ÔÌu ¾ Ô

Ìu ¾	
show memory	¤ G ¤

ò ¶ Ô

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ò Ìu ¾ ¶ Ô

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10.3(4b3)	Ìu ¾

72

72.1

72.1.1 clear logging

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clear logging

ϡ	
-	-

Ϸ ϳ

G Ϸ ϳ ϡ ϟ ă ϣ è ϟ Â a ϡ Â

ϣ R Ю R ϟ ă ϣ è ϟ Â

```
Ruijie# clear logging
```

Ϸ ϳ	
logging on	Ϗ
show logging	ă ϣ è
logging buffered	ϡ ↑ ϟ ă ϣ

ϡ

Ϸ ϳ ϡ	
-	-

72.1.2 more flash

ϭ FLASH è ϟ ˘ ϭ Ю Ϸ ϳ'

more flash:filename

ˆ	
Filename '	ˇ ˆ

Ĥ ĵ

G

ˆ FLASH è ˇ ˇ ˆ ˆ ”//f2/˝ ”//f3/’ ˇ Â Ĥ ĵ ˆ ĭ
ˇ ˘ a ĭ G Ĥ ĵ ˆ è ы ˇ Â

w R

Ю R FLASH ˇ У э '

```
Ruijie# more flash://f2/log.txt
look up file in the extended flash://f2/log.txt
00004 2004-11-17 4:1:32 Ruijie: %5:Reload requested by
Administrator. Reload Reason :Reload command
```

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logging file flash:	ą ˆ FLASH Э

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72.1.3 logging buffered

ą ą̈ ą̆ ą̆ ˆ ą ш à ą̆ ˆ ˘ ˆ ą̈
Ĥ ĵ Â Ĥ ĵ no ˆ ą̈ ą̆ è ą Â Ĥ ĵ default
ą̈ ą̆ ˆ ˆ ˆ Â

logging buffered [*buffer-size* | *level*]

no logging buffered

default logging buffered

levell	ą ш ˘ ÿ 0↑ 7 Â ⅃ Л G ⁞ ⅃ ˘ ≠ ⅃ Л G Â

ă ш й 4k Bytes Â

ą ш й 7 Â

Ъ ३ ŏ

ą̈ ă ш G ˘ ą̈ ш ŋ̃ ˘ ‡ ą Â ą̈ ă ш ą ˘ G Ъ ३ **show logging Â**

ą̈ ă ш è ą ï ˘ ŭ Ъ ३ clear logging˘ ă ш è ą Â ˘ ŋ̃↑ FLASH ⅃ Syslog Server Â

ą ↑ й ЛЮ 8 э ⁞'

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Ѿ		
Emergencies	0	ą˘ a
Alerts	1	. ⅃
Critical	2	ą
Errors	3	ą
warnings	4	ˋ ą
Notifications	5	ص˘ a Ѿ ą
informational	6	ą
Debugging	7	ą

ḣ ˘ ⁞ ˘ . 0 ⁞ ą ⁞ ą Â

ï ą ⁞ Л ⅄˘ ¥ æ ¥ ḣ ⁞ ą ï Â

ш R

Ю R ⅃ ï ⁞ й 6 Л ⅃ æ ¥ 6 ą ج й 10000 ą̈ ă ш è'

```
Ruijie(config)# logging buffered 10000 6
```

Ѿ Ъ ३

Ъ ३	
logging on	Ѿ
show logging	ă ш è
clear logging	ă ш è

ʎ

ƚƱ ǯ ˥ ʎ	ʎ	
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72.1.4 logging console

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ǰ ˢ ʎ Ɜ ˘

72.1.5 logging count

Ĥ ˘ ج ŏ Ĥ O Ĥu ३ Â Ω
Ĥ ˘ G Ĥu ३ no Â

logging count

no logging count

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	Ω
Ĥu ३	ŏ
G	Ĥu ३ Ĥ Âÿ Ĥu ३ Â **no logging count** Ĥu ३ ˘ Ĥ Ω ˘ 3 Â
w R	Ĥ ' Ruijie(config)# **logging count**

	Ĥu ३	
Ωĥu ३	**show logging count**	è ৸ ২৯ ৯

৭	
facility-type	Syslog ḣ˘ ἑ E ḣ ৭ G ´ Â

Local7(23)

Ю ३ ὅ

Ю ˆ 2˜ Syslog ৲ 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)

ḣ ὶ (local7) 23 Â

ш R

Ю Syslog ḣ й kernel

```
Ruijie(config)# logging facility kern
```

Ю ३

Ю ३	
logging console	ї ج 8 ۸ Э ق ⁞

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Ю ३ ٦ ۸

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-	-

72.1.7 logging file flash

ق ق ج FLASH è˘ ج ŏ Ю Ю ३ Â ۸ ج FLASH è ق ˘ G Ю ३ no Â

logging file flash:filename [*max-file-size*] [*level*]

no logging file

۹

۹	
Filename	˚ ۱ Â a ˚ ص˘ ش й txt ص Â
max-file-size	˚ ḣ Â ÿ 128K↑ 6M bytes˘ й 128K Â
level	ї ↑ ˚ è ق ⁞ Â ۱ Л G ⁞ ۱ ˘ ≠ ۱ Л G Â ḯ↑ FLASH è ⁞ й 6 Â˘Ω ɣ ق ⁞˘ ۹ 1 Â

a ق ↑ FLASH è Â

Ю ३ ŏ

G

Syslog Server˘ ш ɣ ۸ ŏ a ج è· ق ˘ ۱ Л ق ق ج FLASH è Â

˚ ۸ й ش й txt˘ ˚ ۸ ۱ Â

ق ↑ FLASH˘ ۸ FLASH˘ FLASH˘ logging file flash ╟ ˘ a ї Â

ш R

Ю R ą ج FLASH è˘ ˚ ˩ й trace.txt˝ ˚ й 64K, ą ⁞ й 6 Â

```
Ruijie(config)# logging file flash:trace
```

˝Ω Ю ʒ

Ю ʒ	
logging on	˝Ω
show logging	ă ш è ˘ Л ˥ ˝Ω ˥
more flash	FLASH è ą

˩

Ю ʒ ˥ ˩

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72.1.8 logging monitor

ĭ ج VTY ˥ˆ telnet ˥ à SSH ˥ ˜ Э ą ⁞˘ ج ŏ Ю Ю ʒ Â Ю ʒ no ج VTY ˥ Э . Â

logging monitor *level*

no logging monitor

˥

˥	
level	ш Â ˩ Л G ⁞ ˩ ˘ ≠ ˩ Л G Â ˝Ω ¥ ą ш ˘ ˥ 1 Â

Debugging (7)

Ю ʒ

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ج VTY ˥ Э . ą ˘ ˝l Ю ʒ **terminal monitor** ĭ ج ńı VTY ˥ . ą Â ĭ ą ⁞ ‡ **logging monitor** Ю Â **Logging monitor** Ю ą ⁞ VTY ˥ Â

ш R

Ю R ĭ ج VTY ˥ Э . ą ⁞ й ϭ

```
Ruijie(config)#
```

Խ ३

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

Ĥu ३	
show logging count	è ⅄ ⅋ ⅊
show logging	⅋ ⅌ ⅊ б ă Ψ è ⅊

Ĥu ३ ⅂ ⅄	
-	-

72.1.11 logging server

Ĵ **Syslog Severĭ** ⅌ ⅋ Ю G Ĥu ३ Â ⅂ **Syslog server** " è ⅌ **Syslog Severĭ** G Ĥu ३ no Â

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

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

⅄	
ip-address	⅊ ŭ IP ⅌'
vrf vrf-name	Ĵ ŭ VRF VPN ⅃ ~ R'
ipv6 ipv6-address	⅊ ŭ IPV6 ⅌'

a ⅃ ¡ syslog server ⅃ ⅊

Ĥu ३ ⅋

G Ĥu ३ У ⅇ Syslog server ⅊ Â ⅃ Ʌ ⅄ 5 ⅇ Syslog Server Â ⅊ ⅃ ⅃ Syslog Server Â

ш R

R 1' Ю R У ⅇ ⅌ й 202.101.11.1 syslog serveŕ

```
Ruijie(config)# logging server 202.101.11.1
```

R 2' Ю R У ⅇ IPV6 ⅌ й AAAA:BBBB::FFFF

```
Ruijie(config)# logging server ipv6 AAAA:BBBB::FFFF
```

Ԧ ʒ	
logging on	̃Ω
show logging	ă ʍ è ˘ Ʌ ۱ ̃Ω ۱
logging trap	ĭ ۱ syslog server ۹ ⁝

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Ԧ ʒ ˥ ۱	
۱	
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72.1.12 logging source ip| ipv6

ˆفخ سم ج ώ Ю Ԧ ʒ Â Ԧ ʒ no ۱ ۱ Â

logging source {**ip** *ip-address* | **ipv6** *ipv6-address*}

no logging source {**ip** | **ipv6**}

۱	
ip-address	˩ IPV4 ў ۱ IPV4 سم فخ’
ipv6-address	˩ IPV6 ў ۱ IPV6 سم فخ’

Ԧ ʒ ώ

ą Ю˘ ۱ Syslog Server سم فخ ۱ ۱ سم فخ Â ۸ ۹ ۶ ۴

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72.1.13 logging source interface

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Ԩ Â

logging source interface *interface-type interface-number*

no logging source interface

Ԩ	Ԩ	
	interface-type	Ԩ ص
	interface-number	Ԩ Ԩ

Ԩ

Ԩ ڎ

ą Ю Ԩ Syslog Server ڤ Ԩ Ԩ ڤ Â й ۞ ۶
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ώ б ą ˅ ج ώ ˅ ج
Ю ƪ ʒ Â ˜Ω ώ б ą ˅ G ƪ ʒ no Â

logging synchronous

no logging synchronous

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-	-

ą Ю˘ ώ б ą ˅ ˜Ω Â

ƪ ʒ

G ƪ ʒ ώ б ą ˅ ˅ ˅Ω ج ώ Â

```
Ruijie(config)#line console 0
Ruijie(config-line)#logging synchronous
      ج ώƪ ʒ ˘ . ˄ UP-DOWN ą ˘ ‡ ώ ƪ ʒ. '
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        //      ώ ƪ ʒ        ˘    a
```

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show running-config	ą

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ƪ ʒ ˥ ˅	
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72.1.15 logging trap

ĭ ˅ Syslog Server ą ⁞˘ ج ώ Ю ƪ ʒ Â ƪ ʒ no ˅ Syslog Server Â

logging trap *level*

no logging trap

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٩	ш Â ⌟ Л υ G ⁞ ⌋ ˘ ≠ ⌟ Л υ *level* G Â ̃Ω ¥ ϟ ш ˘ ٩ 1 Â

Informational(6)

Ъυ ϡ ώ

G ϟ ⌟ Syslog Server˘ ˝I G ώ Ъυ ϡ logging Syslog Server Â Л˘ G logging trap ⌟ ϟ ш ⁞ Â
show logging Ъυ ϡ ⌟ Л υ ̃Ω ٩ Ω Â

Ю R ⁞ й 6 ϟ ⌟ فخسم й 202.101.11.22 Syslog Server˙

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Ъ ३	ώ	
G	¢ ج ą è ╗ Э ą Л ˘ ┘ Л ج ą è ╗ Э Λ˘ Λ ÿ 1 Â ╗ Э Λ Л Λ˘ ┘ Л ąш ą x ˘ Л ┤ н ˝I Λ Â	

W R

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```
Ю R ъ ę 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)# service sysname
Ruijie(config)# end
Mar 22 15:35:57 S3250 %SYS-5-CONFIG: Configured from console by console
```

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show logging	ъ ъ ę б ă Ш è ę

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72.1.18 service timestamps

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service timestamps *message-type* [*uptime* | *datetime* [*msec* | *year*]]

no service timestamps *message-type*

default service timestamps *message-type*

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⌠	
message-type	ъ˘ ч log Ω debug Â log ę ъ ш ⋮ ъ 0 6 ę ˘ debug ę ш ⋮ ń 7 ę Â
uptime	ŭ ╟ ˘ ' * * ⌠ * ˘ R' 07:00:10:41
datetime	ńń ˘ ' ' ⌠ ' ˘ R' Jul 27 16:53:07
msec	ńń ˘ ' ⌠ : . R' Jul 27 16:53:07.299
year	ńń ` ˘ ' ' ⌠ ' R' 2007 Jul 27 16:53:07

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```
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
```