RG-S3750

RGOS 10.2(5)

Ὼ ʌ ˘ Ậ ˡ Â

Ὼ ʌ ˩˘ a Ʌυ Ậ
ˡ ⁸ à à à à à ὲ à ὲ ˡ
Â

à 

à RGOS® à à

à Red-Giant® à

à 锐捷® Ὼ ʌ Ậ
˘ a Â

Ậ ⁸ ˘ ὲ ˘ a ʎ ˘ Ὼ ʌ
Â Ὼ ʌ Ậ ὲ ˩˘
Ậ à a ˘ Ʌυ ˘ Ὼ
ʌ a Â

ЎĄ ¨ ѝ' RGOS®10.2(5) Â

Ю

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1.

' 5 Л Â

注意、说明 Л ╗ б Â

' Courier New ˘ ˘ 5 Л˘
Â ÿ ˘ ╗ Â

2. ⅋

⅋ Ariaĭ é ЊЖ Ю'

' ⅋ ^ ⅋ a ┘ ǂ ~ ╗ Â

' ʒ ˆ ʒ ʒ ˚ ˜

[ ] ' [ ] ˚ ˘ ʒ ˩ Â

{ x | y | ... }' ÿ ч ˩ Â

[x | y | ...]' ÿ ч ˩ a Â

//' ˥ ˀ Â

3.

˘

Ю Ю'

注意' à à Y Â

& 说明' Ě ض ' ɾ

CLI ʒ

alias

ʒ ɻˇ ɻ Ʌʊ Ю alias ʒ Â
ʒ no ɻ Ʌʊ ʒ ɻ Ю
ʒ ɻ Â

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

ð Ô

mode ' ɻ ʒ ʒ ʒ Â
command-alias ' ĩ ה ƺ Ȯ ɻ Ʌʊ̈ ʒ ʒ

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

ʒ ɻ ╠ ˘ ɻ /\^ *˜˜ з ЛЬЮ
'

command-alias=original-command

˘ EXEC Ю˘ ʒ ɻ ”s” ”show” Â ”s?”
ɻЛ∪ ɻ’s’ ɻ ╠ '

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

ɻ ʒ ʒ a ˘ /\ ʒ Â
˘ EXEC Ю ɻ”sv”ʒ ʒ”**show version**”˘ '

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

ɻ ÿ ʒ ˘ a Â Э
˘ ʒ ˘ a ɻ'

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

ʒ ɻ ≠ ɻЛ∪ ɻ ʒ ╠ ˘ Ю
ʒ ɻ”ia”ʒ ”ip address”˘ Ю'

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

”ip address” ʒ /\ ˘ з ɻ
ʒ Â

ʒ ɻ ˘ a Â

show aliases ʒ ɻЛ∪ ɻ Â

ð Ô

ЛЬЮ ˘ Ю˘ ʒ ɻ”def-route”ʒ
”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
```

exec	
interface	
ip-dhcp-pool	DHCP
keychain	KeyChain
keychain-key	KeyChain-key
time-range	Time-Range

ð Ô

ЛЬЮ ˘ CLI 1 ʒ й ”test” **reload** ʒ ˘ ˩Л Æ Â

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

˘ 1 CLI ˘ ˩Л **reload** ʒ'

```
Ruijie> reload ?
```

mode ' ɹ ৡ ৡ ৡ Â

ð Ô

ð ৡ Ô

EXEC

ð Ô

ৡ ˘ ৡ ɹ Â

ð Ô

ЛЬЮ ˘ EXEC Ю ৡ ɹ'

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

ð ৡ Ô

ৡ	
alias	ৡ ɹ

ϡ

ϡ

ѝ ϡ ˆ CLI˜ ЛЬЮ ϡ'

- **disable**
- **enable**
- **enable password**
- **enable secret**
- **password**
- **login**
- **login local**
- **login authentication**
- **username**
- **lock**
- **lockable**
- **telnet**
- **enable service**

disable

ÿ æ ˘
ϡ disable Â

disable [*privilege-level*]

ð Ô

privilege-level

ð ϡ Ô

ð Ô

ϡ ÿ Â ╗ Э ˘
æ Â

& 说明:

disable ϡ Л Â

ð Ô

ÞO æ '

```
Ruijie# disable 10
```

ð ϡ Ô

ϡ	
enable	ÿ ˘ Â

enable

˘ ϡ enable Â

ϡ ê ϡ ÌÂ

enable password

a ˩ ϡ˘ ϡ **enable password** Â

ϡ **no** ϡ Â

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

no enable password

ð Ô

Password ' EXEC ϡ Â

Level ' Â

0|7 ' ϡ ╗ ˘ 0 ╗ ˘ 7 ╗ Â

encrypted-password ' ϡ Â

ð ϡ Ô

ð Ô

╗ Â ÞØ ⁸ ╗

ѝ 15 ʒ Âsecurity ʒ ѝ ╗ ʒ˘ ⅄Лъѝ 0˙ 15
ʒ Â ˘ ⅄ ⅄ ЛъЭ ч ʒ˘ password
ʒ a Â 15 password ʒ˘ ˘
╟ ѝ security ʒ’ 15 password ʒ security
ʒ ⅄˘ ’ ʒ Лъ╗ ˘ password
ʒ ╗ ˘ security ʒ ╗ Â

ð Ô

Ю ʒ ѝ pw10ď

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

ð ʒ Ô

ʒ	
enable password	a ⅄ ʒ Â

password

line ʒ˘ line ʒ **password** Â ʒ **no** line ʒ Â

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

ð Ô

password ' line ʒ Â
0|7 ' ʒ ╗ ˘ 0 ╗ ˘ 7 ╗ Â
encrypted-password ' ʒ Â

ð ʒ Ô

line

ð Ô

ʒ line ʒ Â

ð Ô

Ю line ʒ ѝ redď

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

ð ʒ Ô

GKA,ñ þ

¾	
login	ÿ ˘ Â

login

AAA Ю˘ Э ¾ ˘
¾ **login** Â ¾

ð Ô

Â

ð ʒ Ô

line

ð Ô

AAA Ĺ ʒ
Â **username** ʒ Â

ð Ô

Ю VTY Э Â

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

ð ʒ Ô

ʒ	
username	Â

login authentication

AAA Ю AAA Ĺ ˘
ʒ Â ʒ **no** Â

login authentication {**default** | *list-name*}

no login authentication {**default** | *list-name*}

ð Ô

default ' ȷ
list-name ' ȷ

ð ʒ Ô

line

ð Ô

AAA Ĺ ʒ 8
Â

ð Ô

Ю VTY Э radius Â

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa authentication login default radius
Ruijie(config)# line vty 0
Ruijie(config-line)# login authentication default
```

aaa new-model	AAA

aaa authentication login

Ю Ɉ ϡˇ й 15 '

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

ð ϡ Ô

ϡ	
login local	Â

lock

Э ϡˇ EXEC ϡ **lock** Â

lock

ð Ô

ð ϡ Ô

ð Ô

ɻ Л Ъ ϡ ˇ ɻ ˇ в Л Ъ Â Л ЪЮ в '

1. **lock** ϡˇ ϡ'
2. ϡˇ ɻ Л Ъ Â ɻˇ ϡˇ ɻˇ ˇ Ґ Locked Ь '
3. ˇ ϡ'

Э в ℸ ˇ line Ю **lockable** ϡˇ line Э в Â

ð Ô

Ю й в '

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

ð ϡ Ô

ϡ	
lockable	Э в Â

lockable

Э **lock** ϡˇ ⅃Л line Ю **lockable** ϡˇ Ю a **lock** ϡ Â **no** ϡ ⅄ Â

lockable

no lockable

ð Ô

ð ϡ Ô

line

ð Ô

ϡ Э в ˇ в ⅃Л EXEC Ю **lock** ϡ Â

ð Ô

Ю ⁸ ⅄ Э в ℸ ˇ в ⁸ ⅄'

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

ð ϡ Ô

ϡ	
lock	в Â

telnet

ﾉ telnet ﾚ ˇ EXEC ~ Ю
telnet ﾔ Â

telnet *host* [*port*] [*keyword*]

ð Ô

Host ў IP ў ﾉ'

Port TCP /ﾊ ˇ и 23'

Keyword ﾉ ˇ Ю '

/source-interface	ÿ telnet '

ð ﾔ Ô

ð Ô

ﾔ ﾉ telnet ﾚ Â

ð Ô

Ю ﾔ telnet 192.168.1.11˜ ˇ и vlan 1'

Ruijie# **telnet** *192.168.1.11* **/soource-interface vlan** *1*

ð ﾔ Ô

ﾔ	
Show session	TTY '
exit	'

enable service

б ﾋ SSH Server/Telnet Server/Web Server/Snmp Agent˜˜ Ю˜ ﾉ Л ﾔ **enable service** ﾔ'

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

ð Ô

ssh-server	б	SSH Server
telnet-server	б	Telnet Server
web-server	б	Http Server
snmp-agent	б	Snmp Agent

ð Ô

ʒ Web Â **no ip http authentication** ʒ ù Â

ð Ô

Ю ʒ' **ip http authentication local**, Web local '

```
Ruijie(Config˜ # ip http authentication local
```

ð ʒ Ô

ʒ	
enable service	б Ь

ip http port

HTTP Ь ˘ Ю˜ ˩Л ʒ **ip http port** ʒ'

ip http port *number*

ð Ô

number ' HTTP Server ˘ ù 80 Â

ð ʒ Ô

ð Ô

ʒ HTTP Ь Â **no ip http port** ʒ ù Â

ð Ô

Ю ʒ˘ HTTP Ь ù 8080'

```
Ruijie(Config˜ # ip http port 8080
```

ð ʒ Ô

ʒ	
enable service	б Ь

ϡ

ЛЬЮ ϡ'

- **clock set**
- **clock update-calendar**
- **exec-timeout**
- **hostname**
- **session-timeout**
- **show clock**
- **show cpu**
- **show cpu slot**
- **show memory**
- **show memory slot**
- **show running-config**
- **show startup-config**
- **reload**
- **show reload**
- **prompt**
- **banner motd**
- **banner login**
- **speed**
- **show line**
- **write**

clock set

˘ ↓ Л Ь ϡ **clock set** ч
'

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

ð Ô

hh:mm:ss ' ˘ ѝ ^ 24 ⁸ ~ : ↑ :

day ' ^ 1-31˜˜ Â

month ' ^ 1-12˜˜

year ' Ѽ ^ 1993-2035˜˜ a Â

ð ϡ Ô

ð Ô

ϡ ˘ Â

˚ ˘ clock set Э
˘ Ю Л˘ Â

ð Ô

Ю ѝ 2008 1 30 Э ’ 05 54¦ 43 '

```
Ruijie# clock set 05:54:43 1 30 2008
Ruijie# show clock
05:54:43 CHN-BJ Wed 2008-01-30
```

ð ϡ Ô

ϡ	
show clock	

clock update-calendar

˚ clock ˚ clock˘ privileged EXEC Ю **clock update-calendar** ϡ˘ ˚ clock ˚ clock Â

clock update-calendar

ð Ô

ð ϡ Ô

ð Ô

Л ˚ ^ calendar˜ 'I ˚ ˘ ˚ a
˘ ѝ ˚ ˘ Ю ≠
Â

˚ ˚ a Л ˘ ˚ ˘ ϡ
˚ ⁸ ˚ Â

ð Ô

Ю ϡ Л Л˘ ˚ clock ⁸ ˚ clock Â

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

exec-timeout

LINE Ю ˘ **exec-timeout** ֽ Â
no exec-timeout ֽ˘ ˩ LINE Ю ˘ a Â

exec-timeout *minutes* [*seconds*]

no exec-timeout

ð Ô

minutes' ↑ '

seconds' ^ ˩ ~ '

ð Ô

ϋ 10 min Â

ð ֽ Ô

LINE

ð Ô

˘ ˘ ˘

LINE ϋ ˩ Â

ð Ô

Ю line vty 0 ϋ 5↑ 30 :'

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

hostname

ў ˩˘ ֽ **hostname** Â

hostname *name*

ð Ô

name' ў ˩˘ à Л Â
ϋ 63 Â

ð Ô

ў ˩'

ɹ Â

ð Ô

Ю ў ɹ ѝ BeiJingAgendaʹ

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

session-timeout

LINE Э ˘
session-timeout ʒ Â **no session-timeout** ʒ˘ ɻ LINE Ю
˘ a Â

session-timeout *minutes* [*seconds*]

no session-timeout

ð Ô

*minutes*ʹ ↑ ʼ

*seconds*ʹ ^ ɻ ~ ʼ

ð Ô

ѝ 0 min Â

ð ʒ Ô

LINE

ð Ô

˘ ÿ LINE Э ˘
˘ ˘ LINE ѝ ɻ Â

ð Ô

Ю line vty 0 ѝ 5↑ 30 ˸ʹ

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

show clock

˘ ʒ **show clock** Â

show clock [**detail**]

ð Ô

detail Â

ð ʒ Ô

ð Ô

ϡ ϟΠ ˘ detail Â

ð Ô

Ю **show clock** ϡ '

```
Ruijie# show clock detail
05:54:43 CHN-BJ Wed 2008-01-30
Clock read from calendar when system boot.
```

ð ϡ Ô

ϡ	
clock set	

show cpu

CPU Â

show cpu

ð Ô

ð ϡ Ô

ð Ô

ϡ ϟΠ CPU Â

ð Ô

Ю **show cpu** ϡ '

```
Ruijie# show cpu
CPU utilization in five seconds: 0%
CPU utilization in one minute  : 35%
CPU utilization in five minutes: 33%
  NO   5Sec   1Min   5Min   Process
  0     0%     0%     0%    LISR INT
  1     0%     0%     0%    HISR INT
  2     0%     0%     0%    ktimer
  3     0%     0%     0%    atimer
  4     0%     0%     0%    printk_task
```

```
 5     0%     0%     0%    waitqueue_process
 6     0%     0%     0%    tasklet_task
 7     0%     0%     0%    kevents
 8     0%     0%     0%    snmpd
 9     0%     0%     0%    snmp_trapd
10     0%     0%     0%    mtdblock
11     0%    35%    33%    gc_task
12     0%     0%     0%    Context
13     0%     0%     0%    kswapd
14     0%     0%     0%    bdflush
15     0%     0%     0%    kupdate
16     0%     0%     0%    buffcopy
17     0%     0%     0%    ll_mt
18     0%     0%     0%    ll main process
19     0%     0%     0%    ISDN MAIN
20     0%     0%     0%    tnet
21     0%     0%     0%    Tarptime
22     0%     0%     0%    gra_arp
23     0%     0%     0%    Ttcptimer
24     0%     0%     0%    gk process
25     0%     0%     0%    rl_con
26   100%    65%    67%    idle
```

show cpu

CPU utilization in five seconds	5 CPU
CPU utilization in one minute	1 CPU
CPU utilization in five minutes	5 CPU
NO	
Process	
5Sec	5 CPU
1Min	1 CPU
5Min	5 CPU

ð ʒ Ô

ʒ	

show cpu slot

´ CPU Â

show cpu slot [*slot-number*]

ð Ô

slot-number ѝ ´ ʌ˘ ´ CPU

ð ϟ Ô

ð Ô

ϟ Э ˘ ϟ ˩ Л∪ ũ / CPUw ð

ð Ô

ð ʒ Ô

ð Ô

ʒ ˩ Л Â

ð Ô

Ю **show memory** Л

```
Ruijie# show memory
Physical Memory: 256M total
 Image: 78M
 Application Memory: 178M (57M used˝ 121M available)
 Utilization: 52.7%
```

show memory '

Physical Memory	
Image	
Application Memory	˩ˆ used ѝ ˆ ˇ available ѝ ˩ ˆ ' available ˩ ˇ a
Utilization	

ð ʒ Ô

ʒ	
show memory slot	´

show memory slot

´ Â

show memory slot [*slot-number*]

ð Ô

slot-number ѝ ´ Л˘ ´

ð ϡ Ô

ð Ô

ϡ Э ˘ ϡ ˩ Л ´
Â

ð Ô

1' 1 Л Э ´ Â

```
Ruijie# show memory slot 1
Physical Memory: 256M total
 Image: 45M
 Application Memory: 211M (55M used˝ 156M available)
 Utilization: 39.1%
```

2' ´ Â

```
ruijie# show memory slot
slot 1 memory information'
 Physical Memory: 256M total
  Image: 45M
  Application Memory: 211M (55M used˝ 156M available)
  Utilization: 39.1%
slot 3 memory information'
 Physical Memory: 256M total
  Image: 45M
  Application Memory: 211M (57M used˝ 154M available)
  Utilization: 39.8%
```

ð ϡ Ô

ϡ	
show memory	

show running-config

˘ ϡ **show running-config** Â

show running-config

ð ϡ Ô

show reload

╠ ˘ Ю ϟ **show reload** Â

show reload

ð Ô

ð ϟ Ô

ð Ô

ϟ ˩ Л∪ ╠ Â

ð Ô

Ю ╠ '

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

prompt

ϟ ˘ Ю ϟ **prompt** Â ˩ ϟ ˘ **no prompt** ϟ Â

prompt *string*

ð Ô

string ' ϟ ˘ ˩ Л∪ 32

ð ϟ Ô

ð Ô

ϟ ˘ Л∪ ˩ ѝ ˘ ˩ ˩ ˩ Â ϟ EXEC Â

ð Ô

Ю ϟ ѝ rgnoś

```
Ruijie(config)# prompt rgnos
Ruijie(config)# end
```

rgnos

banner motd

Ю **banner motd**

no banner motd

banner motd *c message c*

c

a

message

Ю

Ю

Ruijie(config)
Ruijie(config)# **banner motd** *$ hello,world $*

banner login

Ю **banner login**

no banner login

banner login *c message c*

c

message

Â

ð Ô

ЮО '

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

speed

˘ ЮЎ ʒ **speed** *speed* Â
˘ **no speed** ʒ Â

speed *speed*

ð Ô

Speed ˘ Æ bps Â ˘
и 9600 à 19200 à 38400 à 57600 à 115200 ˘
9600 Â

ð ʒ Ô

ð Ô

9600

ð Ô

ʒ Â

ð Ô

ЮО и 57600 bps'

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

show line

˘ ЮЎ ʒ **show line** Â

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

ð Ô

console ' 8 ⁄

aux ' aux

vty ' vty

line-num ' line

ð ϡ Ô

ð Ô

ð Ô

ϡ˘ Â

ð Ô

Ю console '

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

write

ˆ ╟ ˜ ˘

ϡ **write** Â

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

ð Ô

memory ' ˆ running-config˜ NVRAM˝ ˩ copy running-config startup-config Â

network ' TFTP ┗ Э˘ ˩ copy running-config tftp Â

terminal ' ˘ ˩ **show running-config** Â

ð ϡ Ô

ð Ô

ϡ ϡ ϡ˘ è ⊿˘ Л
Ю ˘ Â

ϡ a ╗ ⊿ ╗ **memory** Â

ð Ô

Ю '
Ruijie# **write**
Building configuration...
[OK]

ð ϡ Ô

ϡ	
show running-config	
copy	˚ 8

LINE ३

LINE ३

line

LINE ˘ ЛЬЮ ३'

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

ð Ô

First-line' first-line /ł

Last-line' last-line /ł

ð Ô

ð ३ Ô

ð Ô

LINE

ð Ô

LINE VTY 1 3 LINE '

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

ð ३ Ô

line vty

३ ┘Л╚ ╗ ┘Л╚ VTY Â ३ **no** ┘Л╚ ┘Л╚ VTY Â

line vty *line-number*

no line vty *line-number*

ð Ô

Ю˜ ٫ VTY й 5˜ Л й 0--4 Â

ð ٪ Ô

ð Ô

╕ ٫ VTY ˘ ٫Л Э ٪ Â

ð Ô

٫ VTY ╕ 20˜ ٫ VTY Л й 0--19 Â

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

٫ VTY 10˜ ٫ VTY Л й 0—9 Â

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

ð ٪ Ô

transport input

Line Ю ٫Л ˘ **transport input** ٪ Line Ю ٫Л Â **default transport input** й LINE Ю й Â

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

default transport input

ð Ô

all	Line Ю˜ Â
ssh	Line Ю˜ SSH Â
telnet	Line Ю˜ Telnet Â
none	Line Ю˜ a Â

ð Ô

˘ VTY Â è TTY й NONE˜ a Â ٫Л Л˘ ٫Л **default transport input** ٪ й Â

ð ٪ Ô

Line

ð Ô

¾ Line Ю Â VTY Ю˘
Â ˇ ˩ Л∪
VTY Э ╖ Â **show running** ¾ Line Ю Â
' **default transport input** ¾ Â**no transport input** ¾˘ LINE Ю Â б **transport input none** ˩ Â

ð Ô

line vty 0 4 Ю˘ telnet '

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

ð ¾ Ô

¾	
show running	Â

ð Ô

˚ RGOS10.1 Л∪ Э

access-class

Line Ю ACL^ ⁸ ˜ Â **access-class** *acl-no* { **in | out** } ¾ Line Ю ⁸ Â no **access-class** *access-list-number* {**in | out**} ¾ ˩ LINE Ю ACL Â

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

ð Ô

access-list-number	access-list Ю⁋ ⁸ Â
in	˩ ⁸ Â
out	⁸ Â

ð Ô

˘ Line Ю ⁸ Â ˘

Â

ǔ CLI

copy tftp

ℸ Â ping ℸ ˘ ⅃Ⱡ Ю
˘ ^ ѝ 2 ~ ˘ 5 ѝ 100Byte
IP ˘ ˘ Ị ! Ⱡ ˘
Ị . Ⱡ ⅄ Â ping ℸ ˘
Ю ˘ ping ˘ ⅃Ⱡ ȁ ˘
˘ ping ℸ ˘ ⅄ ≠ Â
⅄ ℸ ˘ ″I ⅄ ㄴ ˘ έ DNS
ǂ Â

ð Ô

ping '

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

ping '

```
Ruijie# ping 192.168.5.197 length 1500 ntimes 100 timeout
3 data ffff source 192.168.4.10

Sending 100, 1000-byte ICMP Echoes to 192.168.5.197,
timeout is 3 seconds:
  < press Ctrl+C to break >
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Success rate is 100 percent (100/100), round-trip
min/avg/max = 2/2/3 ms
```

ð ⅄ Ô

ʒ Э Â

Ip-address	IPv4 Â
number	

```
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
Ruijie#
```

ÿ Э ˇ ˩ Л∪ ˇ ÿ IP й
202.108.37.42 ў ˇ ˆ 1¨ 17˜˜ з
4 Â

```
Ruijie# traceroute www.ietf.org

Translating " www.ietf.org "...[OK]
< press Ctrl+C to break >
Tracing the route to 64.170.98.32

1     192.168.217.1   0 msec  0 msec  0 msec
2     10.10.25.1        0 msec  0 msec  0 msec
3     10.10.24.1        0 msec  0 msec  0 msec
4     10.10.30.1       10 msec 0 msec  0 msec
5     218.5.3.254       0 msec  0 msec  0 msec
6     61.154.8.49      10 msec 0 msec  0 msec
7     202.109.204.210   0 msec  0 msec  0 msec
8     202.97.41.69      20 msec 10 msec 20 msec
9     202.97.34.65      40 msec 40 msec 50 msec
10    202.97.57.222     50 msec 40 msec 40 msec
11    219.141.130.122   40 msec 50 msec 40 msec
12    219.142.11.10     40 msec 50 msec 30 msec
13    211.157.37.14     50 msec 40 msec 50 msec
14    222.35.65.1       40 msec 50 msec 40 msec
15    222.35.65.18      40 msec 40 msec 40 msec
16    222.35.15.109     50 msec 50 msec 50 msec
17    *      *      *
18   64.170.98.32     40 msec 40 msec 40 msec
```

ð ⊿ Ô

ϡ

ϡ

ЛЪЮ ϡ'

- **interface aggregateport**
- **interface fastEthernet**
- **interface giagbitEthernet**
- **interface tenGigabitEthernet**
- **interface vlan**
- **medium-type**
- **descriptioin**
- **shutdown**
- **speed**
- **duplex**
- **flowcontrol**
- **mtu**
- **clear counters**
- **clear interface**
- **switchport**
- **snmp trap link-status**
- **line-detect**

interface aggregateport

ϡ ϡ˘ ˘
Â ϡ no Â

interface aggregateport *port-number*

ð Ô

port-number ' Aggregate port Л˘ ᾱ Â

ð ϡ Ô

ð Ô

Ⅎ Л ˘ è ╗ aggregate port Âaggregate

port ѝ ˘

aggregate port ᾱ Â **show interfaces** **show interfaces aggregateport** ʒ Â

ð Ô

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

ð ʒ Ô

ʒ	
show interfaces	Â

ð ⁄ Ô

interface fastEthernet

ʒ ʒ˘ Л ˘ Â

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

ð Ô

mod-num/port-num ⁄ / Э ⁄˘ ᾱ Â

ð ʒ Ô

ð Ô

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

ð Ô

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

ð ʒ Ô

ʒ	
show interfaces	Â

ð ⁄ Ô

interface giagbitEthernet

ৡ ৡ˘ ˜I Л ˘ Â

interface gigabitEthernet *mod-num/port-num*

ð Ô

mod-num/port-num ' Л / Э Л˘
ā Â

ð ৡ Ô

ð Ô

ৡ **no** ˘ a Â **show interfaces**
show interfaces gigabitEthernet ৡ

ð Ô

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

ð ৡ Ô

ৡ	
show interfaces	Â

interface tenGigabitEthernet

ৡ ৡ˘ 10G Л ˘

interface tenGigabitEthernet *mod-num/port-num*

ð Ô

mod-num/port-num ' Л / Э Л˘
ā Â

ð ৡ Ô

ð Ô

ৡ **no** ˘ a Â **show interfaces**
show interfaces tenGigabitEthernet ৡ

ð Ô

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

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

no medium-type

ð Ô

fiber ' ″I

copper '

ð Ô

Â

ð ϡ Ô

ˆ ˘ a Ap SVI˜

ð Ô

ɻ ɻ Л∪ ″I ч ˘ è Â

ɻ˜ ˘ à ɬ à ⁸

˘ Â ɻ ɻ˜

ὴ è ˘ ɻ Л∪ Â

ð Ô

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

ð ϡ Ô

ϡ	
show interfaces	Â

ð ɻ Ô

24SFP/12GT ´ 12 SFP 12 10/100/1000M BASE-T

╟ ⁋ Â

a ╟ SFP 10/100/1000M BASE-T Â

descriptioin

ɹ Â ϡ no .

description *string*

no description

ð Ô

string ɹ Â

ð Ô

ɻ Â

ð ϡ Ô

ð Ô

show interfaces ϡ ˘ ɻ Â

ð Ô

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

ð ϡ Ô

ϡ	
show interfaces	Â

shutdown

˘ ϡ Â ϡ **no**

shutdown

no shutdown

ð ϡ Ô

ð Ô

ˆ Л∪ à Ap à SVI ˜˜ ϡ ˘ è Ÿ ˘ a Â **show interfaces** ϡ Â

ð Ô

Ap 1'

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

Ap 1'

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

ð ϡ Ô

ϡ	
clear interface	˚ Æ Â
show interfaces	Â

& 说明:

no shutdown ˘ ┘
Â

speed

Â ϡ **no**

ð Ô

10 ' ù 10Mbps Â
100 ' ù 100Mbps Â
1000' ù 1000Mbps Â
10G' ù 10Gbps Â
auto ' ù Â

ð Ô

Â

ð ϡ Ô

ð Ô

Ap ˘ Ap ¤ ˘ ┘Ո
˘ a Â Ap Â
show interfaces ϡ Â a ┘˘ ≠
a ┘ Â ˘ SFP a ù 10M 100M Â

ð Ô

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

ð ϡ Ô

ֽ	
show interfaces	Â

duplex

Ю˜ ֽ ˧ Â ֽ **no**
ѝ

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

no duplex

ð Ô

auto ' ˧ ˧ Â
full ' ˧ Â
half' ˧ *Â*

ð Ô

˧ ˧ Â

ð ֽ Ô

ð Ô

˧ б Â˧Л **show interfaces** ֽ
˧ Â

ð Ô

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

ð ֽ Ô

ֽ	
show interfaces	Â

flowcontrol

ֽ ⁸ Â ֽ no ѝ

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

no flowcontrol

ð Ô

auto ' ⁸ Â

off ' ⁸ Â

on ' ⁸ Â

ð Ô

⁸ Â

ð ϡ Ô

ð Ô

show interfaces ⁸ ⁸ Â

ð Ô

¨l Л Ъ 1/1 ⁸ '

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

ð ϡ Ô

ϡ	
show interfaces	Â

mtu

mtu

Mtu *num*

ð Ô

num' 64 9216(65536 a ⅄ a ⅄)

ð Ô

ѝ 1500 Â

ð ϡ Ô

ð Ô

mtu ˜ Â

ð Ô

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

ð ϡ Ô

ϡ	
show interfaces	Â

carrier-delay

Ю ϡ **carrier-delay** ˘
ϡ **no** Â

carrier-delay [*seconds*]

no carrier-delay

ð Ô

seconds ' ˩ ˘ Л∪ и Æ˘ 0˙ 60

ð Ô

2

ð ϡ Ô

ð Ô

/ DCD ÿ Down Up
˘ DCD ˩ ˘ ѫ
˩ a Э Â

DCD ˘ ѫ ˘ ˩Л∪ ╗
˘ Л∪ ˩Л∪ Â √˘ DCD
˘ ѫ ˘ Л∪
Â

ð Ô

Л∪Ю и 5 '

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

clear counters

clear counters [*interface-id*]

ð Ô

interface-id ' Â

ð Ô

ð Ô

show interfaces Ю **clear counters** Â

ð Ô

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

ð Ô

show interfaces	Â

clear interface

clear interface *interface-id*

ð Ô

interface-id ' Â

ð Ô

ð Ô

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

ð Ô

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

ð Ô

switch port ỳ access˘ VLAN ỳ VLAN 1

ð ϡ Ô

ð Ô

VLAN ID Â VLAN ID˘
VLAN˘ ỳ VLAN Â
VLAN ID˘ ╗ VLAN Â

trunkport˘

ð Ô

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

ð ϡ Ô

ϡ	
switchport mode	γ ˆ switch port˜ Â
switchport trunk	ỳ trunkport native VLAN Trunk ┘ VLAN Â

Trunk ˩ VLAN Â vlan-list
˩ Л Ъ VLAN˘ ≠ ˩ Л Ъ VLAN˘ Л Ъ
VLAN ID ˘ Л Ъ VLAN ID ˘
ˆ -˜ /ˈ Â ' 10-20 Â ˩ Л Ъ ˆ ,˜
/ˈ ˘ ' 1-10,20-25,30,33

allowed vlan allB4C6814D402C80F56>. ID
vlan-list

```
Protected is disabled
Vlan lists is
1,3-4094
```

ð ʒ Ô

ʒ	
show interfaces	Â

ϡ	
Ruijie(config-if)# **snmp trap link-status**	link trap ℸ ˙
Ruijie(config-if)# **no snmp trap link-status**	link trap ℸ ˙

line-detect

line-detect ϡ˘ ⅃ Ո Â

line-detect

ð Ô

ð ϡ Ô

ð Ô

line-detect ϡ ў ˘ ˆ ˜ ˘ Æ Æ Â

ð Ô

```
Ruijie(config)#interface gigabitEthernet 0/1
Ruijie(config-if-GigabitEthernet 0/1)#line-detect

Interface : GigabitEthernet 0/1
start cable-diagnoses,please wait...
cable-daignoses end!this is result:
4 pairs
pair state     length(meters)
---- ---------- --------------
A    Ok        1
pair state     length(meters)
---- ---------- --------------
B    Ok        2
pair state     length(meters)
---- ---------- --------------
C    Short     1
pair state     length(meters)
---- ---------- --------------
D    Short     1
```

pairs	Â
state	Opeñ ˜ Â Ю˝ ”I ↰ A àB ч й OK˝ C à D ч й Short Â ”I ↰ A à B à C à D й OK Â
length	Æ й Â state й OK Â ↰ ˇ Л↻ ↲ Â й Short Open length Â

show interfaces

ð Ô

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

Aggregate Port ¾

¾

port-group

ù Aggregate Port Â ¾ no
Aggregate Port Â

port-group *port-group-number*

no port-group

ð Ô

a Aggregate Port

ð Ô

port-group-number	Aggregate Port /Ì˘ Aggregate Port /Ì

ð ¾

ѝ Â

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

no aggregateport load-balance

ð Ô

dst-mac	MAC ֿ Â AP ˘ MAC ل ل ˘ MAC a ل ֿ a ل
src-mac	MAC ֿ Â AP ˘ a ل MAC ֿ a ل ˘ ل MAC ل
ip	IP б IP ֿ Â a ل IP—— IP a ل ˘ ل IP—— IP ل Â Ь ˚ Ю˘ Â
dst-ip	IP ֿ Â AP ˘ IP ل ل ˘ IP a ل ֿ a ل
src-ip	IP ֿ Â AP ˘ a ل IP ֿ a ل ˘ ل IP ل
src-dst-mac	MAC б MAC ֿ Â a ل MAC—— MAC a ل ˘ ل MAC—— MAC ل Â

ð Ô

MAC ֿ ˆ 86 ˜

ˆ 29 ˜

ð ֽ Ô

ð Ô

show aggregateport load-balance ֽ

ð Ô

aggregateport load-balance	AP	Â

name

VLAN ¸ Â ¾ **no** Â

name *vlan-name*

no name

ð Ô

vlan-name	VLAN ¸

ð Ô

VLAN ¸

ð ¾ Ô

VLAN

ð Ô

show vlan ¾ vlan

ð Ô

switch port ½ access

ð ¾ Ô

ð Ô

switch port access˘ ½ VLAN
Â ¬Ú **switchport access vlan** ¾ VLAN
Â

switch port trunk˘ ¬Ú VLAN Â
¬Ú VLAN ¬ VLAN ¤ ˘ trunk port
¬ VLAN VLAN Â ¬Ú **switchport trunk**
¾ ¼ ¬ VLAN

ð Ô

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

ð ¾Ô

¾	
switchport access	½ statics accessport˘ ½ VLAN Â
switchport trunk	½ trunkport native VLAN Trunk ¬ VLAN Â

switchport access

¾ ½ access port˘ ½ VLAN
Â ¾ **no** VLAN Â

switchport access vlan *vlan-id*

no switchport access vlan

ð Ô

vlan-id	¶ VLAN ID Â

ð Ô

switch port ½ access˘ VLAN ½ VLAN 1

ð ¾ Ô

ð Ô

VLAN ID Â VLAN ID˘
VLAN˘ ù VLAN Â
VLAN ID˘ ╗ VLAN Â

trunkport˘

ð Ô

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

ð ¾ Ô

¾	
switchport mode	γ ˆ switch port˜ Â
switchport trunk	ù trunkport native VLAN Trunk ┘ VLAN Â

switchport trunk

ù trunkport native VLAN Trunk ┘ VLAN Â ¾ **no** trunk ù Â

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

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

ð Ô

allowed vlan *vlan-list*	Trunk ┘ VLAN Â vlan-list ┘Ո VLAN˘ ≠ ┘Ո VLAN˘ Ո VLAN ID ˘ Ո VLAN ID ˘ ˆ -˜ /ł Â ' 10-20 Â ┘ Ո ˆ ,˜ /ł ˘ ' 1-10,20-25,30,33 all Ⱨ ┘ VLAN VLAN˝ add VLAN ╗ ┘ VLAN , remove VLAN ÿ ┘ VLAN , except VLAN VLAN ╗ ┘ VLAN '
native vlan *vlan-id*	Native VLAN Â

ð Ô

ℸ VLAN allˇ Native VLAN VLAN 1

ð ⅋ Ô

ð Ô

Native VLANˇ

ὶ Trunkˇ native VLAN Â native VLANˇ Э UNTAG ˘ ὶ VLAN Â ˘ VLAN IDˆ IEEE 802.1Q PVID˜ native VLAN VLAN ID Â ℸ ˘ Trunk Э native VLAN ˘ UNTAG Â

ℸ VLAN '

Trunk ℸ Л∪ VLAN 1 4094˜ Â ˘ ≠ ℸ Л∪ Trunk ℸ VLAN ⁸ VLAN a Trunk Â

show interfaces switchport ⅋ Â

¾

show vlan

VLAN Â

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

ð Ô

vlan-id	VLAN ID /ì Â

ð Ô

ð ¾ Ô

ð Ô

˘ **end** ¾˘ **Ctrl+C** Â

˘ **exit** ¾

ð Ô

```
Ruijie# show vlan id 1
VLAN[1] "VLAN0001"
GigabitEthernet 3/1
GigabitEthernet 3/2
GigabitEthernet 3/3
GigabitEthernet 3/4
GigabitEthernet 3/5
GigabitEthernet 3/6
GigabitEthernet 3/7
GigabitEthernet 3/8
GigabitEthernet 3/9
GigabitEthernet 3/10
GigabitEthernet 3/11
GigabitEthernet 3/12
```

ð ¾ Ô

¾	
name	VLAN ¿ Â

switchport access	╕ Vlan Â

Super-vlan ¾

¾

supervlan

¾ VLAN ù **supervlan** Â

supervlan

no supervlan

no subvlan [*vlan-id-list*]

ð Ô

Vlan-id-list	VLAN subvlan ID, ˻ vlan

ð ֧ Ô

VLAN

ð Ô

no subvlan

˘ **end** ¾˘ **Ctrl+C** Â

˘ **exit** ¾

ð Ô

```
Ruijie(config)#
```

¾

show supervlan

¾ SuperVLAN è SubVLAN Â

show supervlan

show supervlan id *vlan-id*

ð Ô

vlan-id	VLAN ID

ð ¾ Ô

ð Ô

ð Ô

```
Ruijie# show supervlan
```

Protocol VLAN ٣

٣

- **protocol-vlan ipv4** *addr* **mask** *addr* **vlan** *id*
- **protocol-vlan profile** *num* **frame-type** [*type*] **ether-type** [*type*]
- **protocol-vlan profile** *num* **vlan** *id*

protocol-vlan ipv4 addr mask addr vlan id

IP à Л VLAN

ð Ô

addr ' IP ˇ Л x.x.x.x

id ' VLAN IDˇ 1- VLAN

ð Ô

ð ٣ Ô

ð Ô

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

ð ٣Ô

show protocol-vlan ipv4

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

no protocol-vlan ipv4

ð ✓ Ô

˚ RGOS10.1 ЛЭ

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

Л profile

ð Ô

num ' profile

type ' Л

ð Ô

ð ¾ Ô

ð Ô

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

ð ¾Ô

show protocol-vlan profile

show protocol-vlan profile *num*

no protocol-vlan profile

no protocol-vlan profile *num*

ð Ô

RGOS10.1 ЛЭ

protocol-vlan profile num vlan id

profile

ð Ô

num' profile

id VLAN ID 1- VLAN

ð ¾ Ô

ð Ô

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

ð ¾Ô

show protocol-vlan profile

show protocol-vlan profile *num*

no protocol-vlan profile

no protocol-vlan profile *num*

RGOS10.1

show protocol-vlan

show protocol-vlan

Protocol VLAN

show vlan protocol-vlan

```
Ruijie# show protocol-vlan
```

RGOS10.1

PrivateVLAN ¾

¾

- **private-vlan type**
- **private-vlan association**
- **private-vlan mapping**
- **switchport mode private-vlan**
- **switchport private-vlan host-association**
- **switchport private-vlan mapping**

private-vlan type

VLAN й VLAN

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

ð Ô

community ' й community VLAN
isolated ' й isolated VLAN
primary ' й primary VLAN
no ' VLAN

ð Ô

VLAN

ð ¾ Ô

VLAN

ð Ô

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

ð ¾Ô

show vlan private-vlan

ð Ô

RGOS10.1 Л Э

private-vlan association

secondary VLAN б primary VLAN ֳ

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

no private-vlan association

ð Ô

svlist ' й secondary VLAN list

no ' ы primary VLAN б secondary VLAN

ð Ô

ð ֳ Ô

Primary VLAN

ð Ô

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

ð ֳ Ô

show vlan private-vlan

ð ы Ô

˚ RGOS10.1 Л Э

private-vlan mapping

secondary VLAN Ь SVI ֳ

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

no private-vlan mapping

ð Ô

svlist ' secondary VLAN list

no '

ð ֳ Ô

Primary VLAN

ð Ô

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

no: ÿ VLAN ў

ð ٪ Ô

ð Ô

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

ð ٪Ô

show vlan private-vlan

ð ٫ Ô

˚ RGOS10.1 Л Э

switchport private-vlan mapping

private VLAN secondary VLAN

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

no switchport private-vlan mapping

ð Ô

p_vid primary VID

svlist secondary VLAN list

no ٫ secondaryVLAN

ð Ô

secondary VLAN

ð ٪ Ô

VLAN

ð Ô

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

ð ٪Ô

Private VLAN ψ ∫ ʎ ƆƆ ƛ

switchport mode hybrid

switchport mode hybrid

no switchport mode

ѝ hybrid

ð Ô

no hybrid

ð Ô

ð ҃ Ô

ð Ô

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

ð ѧ Ô

˚ RGOS10.1 Л Э

switchport hybrid native vlan

switchport hybrid native vlan *vid*

no switchport hybrid native vlan

hybrid vlan

ð Ô

no ' hybrid VLAN

ð Ô

ð ҃ Ô

ð Ô

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

ð ѧ Ô

˚ RGOS10.1 Л Э

switchport hybrid allowed vlan

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

no switchport hybrid allowed vlan

hybrid

ð Ô

no ' hybrid

ð Ô

ð ʒ Ô

ð Ô

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

ð ⊿ Ô

˚ RGOS10.1 Л Э

```
Ruijie# show frame-tag tpid
Port    tpid
------  ---------
Gi0/3   0x9100
```

ð ʒ Ô

show frame-tag tpid

ð ˬ Ô

˚ RGOS10.1 Л Ъ Э

inner-priority-trust enable

/ ˬ tag ˝l tag ⁸

inner-priority-trust enable

no inner-priority-trust enable

ð Ô

no ' ˬ tag ˝l tag ⁸

ð ʒ Ô

ð Ô

```
Ruijie(config)# interface gigabitEthernet 0/2
Ruijie(config-if)# inner-priority-trust enable
```

ð ʒ Ô

show inner-priority-trust

ð ˬ Ô

˚ RGOS10.1 Л Ъ Э˘ S37 a ℸ

ʒ

- **show frame-tag tpid**
- **show inner-priority-trust**

show frame-tag tpid

private VLAN

show frame-tag tpid [

MAC ৡ

ৡ

ЛЪЮ ৡ

- **mac-address-table aging-time**
- **clear mac-address-table dynamic**
- **clear mac-address-table filtering**
- **clear mac-address-table static**
- **mac-address-table static**
- **mac-address-table filtering**
- **mac-address-table notification**
- **snmp trap mac-notification**
- **address-bind**
- **address-bind ip-address**
- **address-bind uplink**
- **address-bind ipv6-mode**

mac-address-table aging-time

╟ Â ৡ no Â

mac-address-table aging-time *seconds*

no mac-address-table aging-time

ð Ô

seconds ' ╟ ˘ Лъ ѝ Æ Â ¤ Â

ð Ô

300 Â

ð ৡ Ô

ð Ô

show mac-address-table aging-time ৡ Â

show mac-address-table dynamic ৡ ╟ Â

MAC 3

clear mac-address-table filtering

Â

clear mac-address-table filtering [**address** *mac-addr*

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

ð ৡ Ô

ð Ô

ㄱ Л Ъ **show mac-address-table static** ৡ

ð Ô

Ю MAC и 00d0.f800.073c '

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

ð ৡ Ô

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

mac-address-table static

Â ৡ **no** Â

mac-address-table static *mac-addr* **vlan** *vlan-id* **interface** *interface-id*

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

ð Ô

mac-addr	MAC Â
vlan-id	VLAN Â
interface-id	(ㄱ Л Ъ AggregatePort)

ð Ô

Â

ð ¾ Ô

ð Ô

¯ ╟ ╖ ↓ Â ╟ ˘
a ˘ ' Æ˘
≠ a Â a ѝ Â **show mac-address-table static** ¾ ˘ **clear mac-address-table static** ¾

ð Ô

Ю 00d0.f800.073c˘ VLAN 4 ↓ ѝ ˘ gigabitethernet 1/1 Э'

```
Ruijie(config)# mac-address-table static 00d0.f800.073c vlan 4 interface gigabitethernet 1/1
```

ð ¾ Ô

¾	
show mac-address-table static	Â
clear mac-address-table static	Â

ð ↓ Ô

mac-address-table filtering

Â ¾ **no** Â

mac-address-table filtering *mac-address* **vlan** *vlan-id*

no mac-address-table filtering *mac-address* **vlan** *vlan-id*

ð Ô

mac-address	Â
vlan *vlan-id*	VLAN ID˘ ¤ Â

ð Ô

Â

ð ¾ Ô

ð Ô

a ù Â **show mac-address-table filtering** ¾ Â

ð Ô

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

ð ¾ Ô

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

mac-address-table notification

MAC ¶ Â ¾ **no** ¶ Â

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

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

ð Ô

interval *value* ù 1	MAC Trap ˘ Â
history-size *value*	MAC ˘ ù 50 Â

ð Ô

ù 1 ˘ ù 50 Â

ð ¾ Ô

ð Ô

MAC ¶ ╟ ˘ Ù a Trap Â Ù Ú Ю ¾ **snmp-server**

enable traps mac-notification MAC Trap
¶ Â

ð Ô

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

ð ¾ Ô

¾	
snmp-server enable traps	trap Â
show mac-address-table notification	MAC ¶ Â
snmp trap mac-notification	MAC ¶ Â

snmp trap mac-notification

MAC ¶ Â ¾ **no** ¶ Â

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

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

ð Ô

added	¶ Â
removed	Â

ð Ô

¶ Â

ð ¾ Ô

ð Ô

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

ð Ô

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

Ruijie(config-if)# **snmp trap mac-notification added**

ð ¾Ô

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

address-bind

ip mac .

address-bind *ip-address mac-address*

no address-bind *ip-address*

ð Ô

ip-address	IP Â
mac-address	mac Â

ð ¾ Ô

ð Ô

IP MAC ˘ IP ý IP ˘ MAC a ý IP MAC ˘

ð Ô

Ю ip ý 3.3.3.3 mac 00d0.f811.1112

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

ð ¾Ô

¾	

show address-bind

ð ⊀ Ô

address-bind ip-address

Â

address-bind *ip-address mac-address*

no address-bind *ip-address*

ð Ô

ip-address	IP Â
mac-address	mac Â

ð ʒ Ô

ð Ô

IP MAC ˘
IP ѝ IP ˘ MAC a ѝ IP
MAC ˘

ð Ô

Ю ip ѝ 3.3.3.3 mac 00d0.f811.1112

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

ð ʒ Ô

ʒ	
show address-bind	

ð ⊀ Ô

address-bind uplink

ip mac .

address-bind uplink *intf-id*

no address-bind uplink *intf-id*

ð Ô

intf-id	ѝ

ð ʒ Ô

ð Ô

IP MAC ˘
IP ѝ IP ˘ MAC a ѝ IP
MAC ˘ ˘ ѝ ˘ ʒ
(address-bind install)˘ a Â

ð Ô

Ю fa 0/1 ѝ

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

ð ʒ Ô

```
Ruijie(config)# address-bind install
```

ð ʒ Ô

ʒ	
show address-bind uplink	
show address-bind summary	

ð ʌ Ô

RGOS10.1 Лъ Э

address-bind ipv6-mode

ip IP

address-bind ipv6-mode compatible

address-bind ipv6-mode loose

ш

address-bind ipv6-mode strict

ð Ô

ð ʒ Ô

ð Ô

ш Â

ð Ô

ǰ й : ˘ ˘ ш Ь ˘ й ш
Â è ˘ Ю '

Ipv4 IPV6 Ø Ø Ă ·

ð Ô

ˇ IP ѝ 192.168.5.2 ѝ 00d0.f822.33aaˇ
IPV6 Â

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

ʒ

ЛЪЮ ʒ

- **show mac-address-table address**
- **show mac-address-table aging-time**
- **show mac-address-table count**
- **show mac-address-table dynamic**
- **show mac-address-table filtering**
- **show mac-address-table interface**
- **show mac-address-table notification**
- **show mac-address-table static**
- **show mac-address-table vlan**
- **show address-bind**
- **show address-bind summary**
- **show address-bind [ip-address** *ip* **| mac-address** *mac***]**

show mac-address-table address

MAC ˆ ╟ ˇ ˜ Â

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

ð Ô

address *mac-addr*	MAC Â

interface *interface-id*	/1
vlan *vlan-id*	VLAN /1

ð ¾ Ô

ð Ô

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

ð ¾Ô

¾	
show mac-address-table static	Â
show mac-address-table filtering	Â
show mac-address-table dynamic	╟ Â
show mac-address-table interface	Â
show mac-address-table vlan	VLAN
show mac-address-table count	Â
show mac-address-table static	Â
show mac-address-table filtering	Â

show mac-address-table aging-time

╟ Â

show mac-address-table aging-time

ð ¾ Ô

ð Ô

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

ð ¾Ô

¸	
mac-address-table aging-time	╟ Â

show mac-address-table count

Â

show mac-address-table count

ð ¸ Ô

ð Ô

```
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
```

ð ¸Ô

¸	
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 vlan	VLAN Â

show mac-address-table dynamic

╟ Â

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

ð Ô

mac-addr	MAC Â
vlan-id	VLAN Â
interface-id	(⅃ Ⅱ∪ AggregatePort)

ð Ô

ð ৡ Ô

ð Ô

```
Ruijie# show mac-address-table dynamic
Vlan    MAC Address      Type       Interface
----   ------------    ------   ------------------
1    0000.0000.0001     DYNAMIC  gigabitethernet 1/1
1    0001.960c.a740     DYNAMIC  gigabitethernet 1/1
1    0007.95c7.dff9     DYNAMIC  gigabitethernet 1/1
1    0007.95cf.eee0     DYNAMIC  gigabitethernet 1/1
1    0007.95cf.f41f     DYNAMIC  gigabitethernet 1/1
1    0009.b715.d400     DYNAMIC  gigabitethernet 1/1
1    0050.bade.63c4     DYNAMIC  gigabitethernet 1/1
```

ð ৡ Ô

ৡ	
clear mac-address-table dynamic	╟ Â

show mac-address-table filtering

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

ð Ô

mac-addr	

÷ ätgaiv •'ä l

ð Ô

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

ð ¾Ô

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

show mac-address-table interface

ˆ ╟ ˇ ~ Â

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

ð Ô

interface-id	(˧ Л AggregatePort) Â
vlan-id	VLAN Â

ð ¾ Ô

ð Ô

```
Ruijie# show mac-address-table interface
gigabitethernet 1/1
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
1    00d0.f800.1004  STATIC   gigabitethernet 1/1
```

ð ¾Ô

¾	

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 vlan	VLAN Â
show mac-address-table count	Â

show mac-address-table notification

MAC ╖ Â

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

ð Ô

interface *interface-id*	/ı Â Э MAC ╖ Â
history	MAC Â

ð Ô

MAC ╖

ð ¾ Ô

ð Ô

```
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
```

ð ৡ Ô

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

show mac-address-table static

Â

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

ð Ô

mac-addr	MAC Â
vlan-id	VLAN Â
interface-id	(┘ Л AggregatePort)

ð ৡ Ô

ð Ô

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

ð ৡ Ô

ৡ	
mac-address-table static	Â

clear mac-address-table static	Â

show mac-address-table vlan

VLAN Â

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

ð Ô

vlan-id	VLAN ID Â

ð ¾ Ô

ð Ô

```
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
```

ð ¾Ô

¾	
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

show address-bind

Â

show address-bind

ð ¾ Ô

ð Ô

ð Ô

```
Ruijie# show address-bind
Total Bind Addresses in System : 2
IP Address      Binding MAC Addr
-----------     -----------------
3.3.3.3         00d0.f811.1112
3.3.3.4         00d0.f811.1117
```

ð ¾Ô

¾	
address-bind	Â

show address-bind summary

Ло ™ address-bind install ¾

show address-bind summary

ð ¾ Ô

ð Ô

ð Ô

```
Ruijie# show address-bind summary
Total Bind Addresses in System : 0
Max Bind Addresses limit in System : 1000
System Address bind status:SUCCESS
```

ð ¾Ô

¾	
address-bind	Â

show address-bind [**ip-address** *ip* **| mac-address** *mac*]

IP MAC

show address-bind [ip-address *ip* **| mac-address** *mac***]**

ð ¾ Ô

ð Ô

ð Ô

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

ð ¾ Ô

¾	
address-bind	Â

DHCP Snooping ֽ

DHCP snooping ֽ

DHCP snooping Ю ֽ ЛЪЮ '

- **ip dhcp snooping**
- **ip dhcp snooping bootp-bind**
- **ip dhcp snooping verify mac-address**
- **ip dhcp snooping binding**
- **ip dhcp snooping database write-delay**
- **ip dhcp snooping database write-to-flash**
- **ip dhcp snooping information option**

ip dhcp snooping

DHCP Snooping ╖ ˘ Ю ֽ Â
ֽ no ˘ DHCP snooping ╖ Â

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

ð Ô

ð Ô

╖

ð ֽ Ô

ð Ô

DHCP snooping ╖ ˄˘ ˩Л **show ip dhcp snooping**
ֽ DHCP snooping ╖ Â

ð Ô

Ю DHCP snooping ╖ '

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

```
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
-------------------------    -------
FastEthernet0/11             yes
```

ð ¾Ô

¾	
show ip dhcp snooping	DHCP snooping

ip dhcp snooping bootp-bind

DHCP Snooping Bootp ╗ ˘ ЮО ¾Â ¾ no ˘ DHCP snooping Bootp ╗ Â

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

ð Ô

ð Ô

╗

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ð Ô

ЮЎ DHCP Snooping ╗ Bootp Â ╗ ЛЎ DHCP Snooping ╗ Bootp Â Bootp Bootp ╗ ЛЎ DHCP Snooping ╗ ╗ Â

ð Ô

ЮО DHCP Snooping Bootp '

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping bootp-bind
Ruijie(config)# end
```

```
Ruijie# show ip dhcp snooping

Switch DHCP snooping status ' ENABLE
Verification of hwaddr field status ' DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                    Trusted
-------------------------    -------
FastEthernet0/11             yes
```

ð ¾ Ô

¾	
show ip dhcp snooping	DHCP snooping

ip dhcp snooping verify mac-address

MAC ╖ ˘ ЮО ¾ Â
¾ no ˘ MAC ╖ Â

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

ð Ô

ð Ô

╖

ð ¾ Ô

Â

ð Ô

MAC ╖ ˘ DHCP CLIENT ˘
MAC DHCP CLIENT MAC ⊿ Â
MAC ˘ Â

ð Ô

ЮО DHCP MAC '

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping verify mac-address
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
-------------------------    -------
FastEthernet0/11             yes
```

ð ¢ Ô

¢	
show ip dhcp snooping	DHCP snooping

ip dhcp snooping binding

¶ DHCP snooping ˘ Ю
¢ Â ¢ no ˘ Â

[**no**] **ip dhcp snooping binding** *mac-address* **vlan** *vlan-id* **ip** *ip-address* **interface** *interface-id*

ð Ô

mac-address ' MAC
vlan-id ' VLAN
ip-address ' IP
interface-id '

ð Ô

Ю a

ð ¢ Ô

ð Ô

¢˘ ¶ DHCP snooping Â
Л∪ a DHCP ˘ ÿ Â

ð Ô

Ю '

```
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping binding 00d0.f801.0101
```

```
vlan 1 ip 192.168.4.243 interface fastethernet 0/1
Ruijie(config)# end
Ruijie# show ip dhcp snooping binding
Total number of bindings: 1
MacAddress   IpAddress  Lease  Type  VLAN  Interface
-----------------------------------------------------
00d0.f801.0101 192.168.1.1 - static 1 fastethernet 0/1
```

ð ¢ Ô

¢	
show ip dhcp snooping binding	DHCP snooping

ip dhcp snooping information option

DHCP ╗ option82 ╗ ˘
ЮO ¢ Â ¢ no ˘ ╗ Â

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

ð Ô

ð Ô

╗

ð ¢ Ô

ð Ô

¢˘ DHCP ╗ option82 ˘ DHCP

```
DHCP snooping Support Bootp bind status: ENABLE
Interface                    Trusted
-------------------------    -------
FastEthernet0/11             yes
```

ð ¾ Ô

¾	
show ip dhcp snooping	DHCP snooping

ip dhcp snooping database write-delay

DHCP Snooping ╟
FLASH ╖ ˘ Ю ¾ Â ¾ no
˘ FLASH ╖ Â

ip dhcp snooping database write-delay *time*

[**no**] **ip dhcp snooping database write-delay**

ð Ô

time ' ч DHCP snooping FLASH Â

ð Ô

DHCP snooping FLASH

```
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                    Trusted
-------------------------    -------
FastEthernet0/11             yes
```

ð ৡ Ô

DHCP snooping ʒ

DHCP snooping Ю ʒ ЛЪЮ '

ip dhcp snooping trust

ip dhcp snooping address-bind

ip dhcp snooping trust

DHCP snooping й TRUST ˘
Ю ʒ Â ʒ no ˘ й UNTRUST Â

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

ð Ô

ð Ô

Ю˘ й UNTRUST

ð ʒ Ô

ð Ô

ʒ˘ DHCP Ь й TRUST Â
TRUST DHCP ˘ UNTRUST
DHCP Â

ð Ô

Ю **fastethernet** *0/1* й TRUST '

```
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
-------------------------    -------
FastEthernet0/11             yes
```

ð ֽ Ô

ֽ	
show ip dhcp snooping	DHCP snooping

ip dhcp snooping address-bind

Ю
ֽ Â ֽ no ˘ Â

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

ð Ô

ð Ô

ð ֽ Ô

ð Ô

Э DHCP Snooping IP ˘ MAC IP ˘ a VLAN ID Â

ð Ô

Ю **fastethernet 0/1**

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip dhcp snooping address-bind
Ruijie(config-if)# end
```

ð ֽ Ô

DHCP snooping ֽ

- **show ip dhcp snooping**
- **show ip dhcp snooping binding**

show ip dhcp snooping

DHCP Snooping ˘ Ю ֽ Â

show ip dhcp snooping

ð Ô

ð Ô

ð ֽ Ô

ð Ô

ֽ˘ ˩Л DHCP Snooping Â

ð Ô

Ю DHCP Snooping '

```
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
-------------------------    -------
FastEthernet0/11             yes
```

ð ֽ Ô

ֽ	
ip dhcp snooping	DHCP snooping
ip dhcp snooping verify mac-address	DHCP snooping mac
ip dhcp snooping write-delay	flash

ð ৡ Ô

ð Ô

ৡˇ DHCP snooping ╖ Â

ð Ô

Ю DHCP snooping '

```
Ruijie# debug ip dhcp snooping event
Ruijie# debug ip dhcp snooping packet
```

ð ৡ Ô

IGMP Snooping ३

३

ð Ô

profile deny Â

ð ֽ Ô

profile Â

ð Ô

"I profile Ю range ֽ Â ∧ ˘ и
profile ˘ profile Э Â

⊿ profile ˘ ˘ ѝ˘ ѫ
denў ѫ permit Â

ð Ô

Ю 224.2.2.2 profile :

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

profile Â

ð Ô

"I profile Ю range ֳ Â ∧ ˘ и
profile ˘ profile Э Â

⊿ profile ˘ ˘ ѝ˘ ѫ
denў ѫ permit Â

ð Ô

Ю 224.2.2.2 profile :

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

ð ֳ Ô

ֳ	
ip igmp profile	profile
range	

range

profile ˘ profile Ю ֳ rangeў
⊿Л ˘ ≠ ⊿Л Â ֳ
no Ю ¬ я Ю Ï,Ì G Q ¸ Ð Ï,Ì G Q ¸ Ð

Э Â

ð Ô

Ю й 224.2.2.2~224.2.2.244 profile :

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

ð ֽ Ô

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

ip igmp profile

ֽ ֽ˘ profile-numberˇ igmp profile Â

ip igmp profile *profile-number*

no ip igmp profile *profile-number*

ð Ô

profile-number profile Л˘ 1-65535

ð Ô

Â

ð ֽ Ô

Â

ð Ô

profile Ьж ˘ Ьж è ֽ Â

ð Ô

Ю Л й 1 profile profile Â

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

ð ֽ Ô

ֽ	

range	profile
ip igmp snooping filter *profile-num*	Э ,

ip igmp snooping filter

˘ Ю

٣ profile Â ٣ no profile Â

ip igmp snooping filter *profile-number*

no ip igmp snooping filter *profile-number*

ð Ô

ð Ô

Â

ð Ô

disable Â

ð ¾ Ô

Â

ð Ô

˘ ╟ IGMP Snooping Â VLAN
˘ VLAN Â

ð Ô

Ю Э igmp snooping ivgl '

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

ð ¾ Ô

¾	
ip igmp snooping svgl	igmp snooping svgl
ip igmp snooping ivgl-svgl	igmp snooping

ip igmp snooping limit-ipmc vlan server

╕ IP ˘ ¾ **ip igmp snooping**

Â

ð Ô

¨I IP ╖ ╕ Â

ð Ô

Ю ╕ ip Â

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

ð ֽ Ô

ֽ	
ip igmp snooping source-check default-server	IP ↓ IP

ip igmp snooping max-groups

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

ip igmp snooping max-groups *number*

no ip igmp snooping max-groups

ð Ô

number й 0 – 4294967294 Â

ð Ô

a ⁸ Â

ð ֽ Ô

Â

ð Ô

˘ Э˘ ˘

a Ą à IGMP Report Â

ð Ô

Ю ¨I 0/1 Э 100 '

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

ð ֽ Ô

profile-num profile Л

ð Ô

Â

ð ֳ Ô

Â

ð Ô

profile ″I Â Л˘ profile
Э Â

ð Ô

Ю Э profile

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

ð ֳ Ô

ֳ	
ip igmp snooping vlan mrouter interface	

ip igmp snooping vlan mrouter learn pim-dvmrp

╟ IGMP query/dvmrp PIM ˘ Л╚ ╟
˘ ֳ **ip igmp snooping vlan mrouter learn** Â ֳ no ∨ ╟ ¯ Â

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

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

ð Ô

vid vlan id Â

ð Ô

╥ Â

ð ֳ Ô

Â

ð Ô

╥ Ю˝ ╟ ¯ ˘ ∟ Л╚
igmp snooping Â

ð Ô

Ю

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

ð Ô

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

ip igmp snooping dyn-mr-aging-time

Â

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

no ip igmp snooping dyn-mr-aging-time

ð Ô

time

ip igmp snooping vlan static interface

igmp snooping Ю˘ ˘
a ↓ IGMP Â ٪ **ip igmp snooping vlan static interface** Â ٪ no Â

ip igmp snooping vlan *vid* **static** *ip-addr* **interface** *interface-id*

no ip igmp snooping vlan *vid* **static** *ip-addr* **interface** *interface-id*

ð Ô

vid vlan id

ip-addr

interface-id id

ð Ô

Â

ð ٪ Ô

Â

ð Ô

↓Л♭ й Â

ð Ô

Ю Э '

```
Ruijie(config)# ip igmp snooping vlan 1 static 224.0.0.2
interface fastEthernet 0/1
```

ð ٪ Ô

٪	
ip igmp snooping vlan mrouter interface	

ip igmp snooping fast-leave enable

igmp snooping fast-leave˘ ٪ **ip igmp snooping fast-leave enable** Â ٪ no igmp snooping fast-leave Â

ip igmp snooping fast-leave enable

no ip igmp snooping fast-leave enable

ð Ô

Â

ð Ô

disable Â

ð ֽ Ô

Â

ð Ô

ֽ ˅ fast-leave ╖ ╟˅ IGMP leave ˘
ÿ Â

ð Ô

Ю Э igmp snooping fast-leave'

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

ð ֽ Ô

```
Ruijie(config)#
```

MSTP ¾

¾

spanning-tree

MSTP˘ ¬ MSTP ¬ ˘ MSTP
Â ¾ no spanning-tree ¶ ˘ no ¾
8 ˘ a spanning tree Â

spanning-tree [**forward-time** *seconds*

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

BridgeForwardDelay'

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

ð ¾Ô

show spanning-tree STP Â

spanning-tree mst cost STP PathCost Â

spanning-tree tx-hold-count STP TxHoldCount Â

spanning-tree bpdufilter

BPDU filter Â ¬Ú ¾ enabled disabled BPDU filter Â

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

ð Ô

enabled ' BPDU filter Â

Disabled ' BPDU filter Â

ð Ô

Â

ð ¾ Ô

Â

ð Ô

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

ð ¾Ô

show spanning-tree interface STP Â

spanning-tree bpduguard

BPDU Guard Â ¬Ú ¾ enabled disabled BPDU Guard Â

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

ð Ô

enabled ′ BPDU Guard Â

disabled ′ BPDU Guard Â

ð Ô

Â

ð ¾ Ô

Â

ð Ô

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

ð ¾Ô

show spanning-tree interface STP Â

spanning-tree link-type

a

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

ð ৡ Ô

show spanning-tree interface STP

spanning-tree max-hops

Ю ৡ ৲ Л Ъ BPDU ^ Max-hops Count˜˜ BPDU Region ৶ ৶ ˘ Instance Â no ৲ Л Ъ ৡ Â

spanning-tree max-hops *hop-count*

no spanning-tree max-hops

ð Ô

hop-count ' BPDU ৲ Л Ъ ˘ ѝ 1˙ 40

ð Ô

hop-count ѝ 20

ð ৡ Ô

.

ð Ô

Region ˘ Root Bridge BPDU Hot Count ˘ ÿ Root Bridge ˘ ˘ Hop Count 1˘ ѝ 0 BPDU ˘ Hops ѝ 0 BPDU Â

৲ max-hops Instance Â

ð Ô

Ю MST Instance Max-hops ѝ 10'

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

≠ ৲ Л Ъ **show spanning-tree mst** ৡ Э

ð ৡ Ô

show spanning-tree MSTP Â

spanning-tree mode

ЮֽSTP Â no ٦Л
Â

spanning-tree mode [**stp** | **rstp** | **mstp**]

no spanning-tree mode

ð Ô

stp ' Spanning tree protocol(IEEE 802.1d)

rstp ' Rapid spanning tree protocol(IEEE 802.1w)

mstp ' Multiple spanning tree protocol(IEEE 802.1s)

ð Ô

MSTP

ð ֽ Ô

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ð Ô

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

ð ֽÔ

show spanning-tree

spanning-tree mst configure

ЮֽЛ MST ˘ MSTP Region Â
no ٦Л ֽЮ ˆ name à revision à vlan map˜
Â

spanning-tree mst configuration

no spanning-tree mst configuration

ð Ô

instance vlan Vlan Instance 0 Â

name ѝ Â

revision ѝ 0 Â

ð ¾ Ô

.

ð Ô

˘ **end** ¾˘ Ctrl+C Â

˘ **exit** ¾ Â

MST ˘ ˩ Л Л ЮО ¾ '

instance *instance-id* v**lan** *vlan-range*' Vlan ╗ MST Instance Â instance-id ѝ 0¨ 64 Âvlan ѝ 1¨ 4095 Âvlan-range ˩ Л vlan ˘ VLAN ID /ˈ ˘ VLAN ID ˩ Л ¦˙ Ľ ч VLAN ID ˘ ' instance 10 vlan 2,3,6-9 ЮЖ VLAN 2˝ 3˝ 6˝ 7˝ 8˝ 9 ╗ Instance 10 Â VLAN Instance 0 Â VLAN ÿ Instance **no** ¾' **no instance** *instance-id* [**vlan** *vlan-range*] Â(no ¾ Instance ѝ 1¨ 64)

name *name*' MST ˘ ˩ Л ˩ Л 32 Â ˩ Л no name è Â

revision *version*' MST ˘ 0¨ 65535 Â˩ Л **no revision** è Â

show' MST region Â

ð Ô

ЮО MST ˘ VLAN 3, 5-10 MST Instance 1 Â

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

VLAN 3 ÿ Instance 1 ˘ Ж MST ˘

Ю

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

Instance 1 ˘ Ю'

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

↓Л↻ MST ٪ show Э Â

ð ٪Ô

show spanning-tree mst ' MST region

instance instance-id vlan vlan-range ' Vlan ╗ MST Instance

name ' MST ↓

revision ' MST Л

show ' MST Ю MST

spanning-tree mst cost

Ю ٪ Instance Â no ↓Л↻ ٪ Â

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

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

ð Ô

instance-id ' Instance Л˘ й 0 64

cost ' ˘ й 1 200 000 000

ð Ô

Instance-ID й 0

й Interface ╟ Â

• 1000 Mbps—20000

• 100 Mbps—200000

• 10 Mbps—2000000

ð ٪ Ô

.

ð Ô

cost

ð Ô

Instance 3 ѝ 400 Ю'

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

≠ ⅃Л

⅃ ˘ Л Л

ð Ô

Ю Instance 20 Gigabitethernet 1/1 ″I й 10′

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

⅃Л **show spanning-tree mst instance interface** *interface-id* ⅋ Э

ð ⅋Ô

show spanning-tree mst ' MSTP Â

spanning-tree mst cost '

spanning-tree mst priority ' a ⅃ Instance ″I

spanning-tree mst priority

Ю ⅋ ⅃Л Instance ″I Â no ⅃Л ⅋ Â

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

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

ð Ô

instance-id ' Instance Л˘ й 0′ 64

priority ' ″I ˘ ⅃ 0, 4096,8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152,53248, 57344 61440 Â 16 ˘ й 4096

ð Ô

instance-id й 0

priority й 32768

ð ⅋ Ô

.

ð Ô

Ю Instance 20 ″I й 8192′

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

¬Л∪ **show spanning-tree mst instance interface interface-id**
¾ Э

ð ¾Ô

show spanning-tree mst ' MSTP Â

spanning-tree mst cost '

spanning-tree mst port-priority ' a ¬ Instance ″I

spanning-tree reset

spanning-tree й Â ¾ no Â

spanning-tree reset

ð Ô

¾ Â

ð ¾ Ô

Â

ð Ô

spanning-tree portfast

Portfast Â ¬Ú ¾ disabled
Portfast Â

spanning-tree portfast [**disabled**]

ð Ô

disabled Portfast Â

ð Ô

Â

ð ¾ Ô

Â

ð Ô

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

ð ¾Ô

show spanning-tree interface ' STP Â

spanning-tree portfast bpduguard default

BPDU guard Â ¬Ú ¾ no BPDU guard Â

spanning-tree portfast bpduguard default

no spanning-tree portfast bpduguard default

ð Ô

¾ Â

ð Ô

BPDU Guard.

ð ¾ Ô

Â

ð Ô

BPDU guardď Э BPDUˇ error-disabled Â **show spanning-tree** ৡ Â

ð Ô

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

ð ৡ Ô

show spanning-tree interface STP Â

spanning-tree portfast bpdufilter default

BPDU filter Â ৲ Л৬ ৡ no BPDU filter Â

spanning-tree portfast bpdufilter default

no spanning-tree portfast bpdufilter default

ð Ô

ৡ Â

ð Ô

BPDU filter

ð ৡ Ô

Â

ð Ô

BPDU Filter ৲ˇ a ≠ a BPDU Â **show spanning-tree** ৡ Â

ð Ô

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

ð ৡ Ô

show spanning-tree interface STP Â

spanning-tree portfast default

Portfast Â ¯ no
Portfast Â

spanning-tree portfast default

no spanning-tree portfast default

ð Ô

¯ Â

ð Ô

Portfast Â

ð ¯ Ô

Â

ð Ô

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

ð ¯ Ô

show spanning-tree interface STP Â

spanning-tree tc-protection tc-guard

tc- guard Â ¯ no tc- guard Â
tc-guard ╖ ˘ tc Â

spanning-tree tc-protection tc-guard

no spanning-tree tc-protection tc-guard

ð Ô

¯ Â

ð Ô

tc- guard Â

ð ¯ Ô

Â

ð Ô

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

spanning-tree tc-guard

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

spanning-tree tc-guard

no spanning-tree tc-guard

ð Ô

¾ Â

ð Ô

tc- guard Â

ð ¾ Ô

Â

ð Ô

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

spanning-tree guard root

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

spanning-tree guard root

no spanning-tree guard root

ð Ô

¾ Â

ð Ô

root guard ¶ Â

ð ¾ Ô

Â

ð Ô

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

spanning-tree loopguard default

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

spanning-tree loopguard default

no spanning-tree loopguard default

ð Ô

¢ Â

ð Ô

loop guard ¶ Â

ð ¢ Ô

Â

ð Ô

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

spanning-tree guard loop

Э loop guard Â ¢ no loop guard Â
loop guard ¶ ˘ a bpdu ¬
Â

spanning-tree guard loop

no spanning-tree guard loop

ð Ô

¢ Â

ð Ô

loop guard ¶ Â

ð ¢ Ô

Â

ð Ô

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

spanning-tree guard none

Э guard Â ¾ no ¼ Э guard ╖ Â

spanning-tree guard none

no spanning-tree guard none

ð Ô

¾ Â

ð Ô

guard ╖ Â

ð ¾ Ô

Â

ð Ô

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

spanning-tree autoedge

Autoedge Â ¼Ո ¾ disabled
Autoedge Â

spanning-tree autoedge [**disabled**]

ð Ô

disabled Autoedge Â

ð Ô

Â

ð ¾ Ô

Â

ð Ô

ð Ô

Â

ð ¾ Ô

ð Ô

```
Ruijie(config)# clear spanning-tree detected-protocols
```

ð ¾Ô

show spanning-tree interface STP Â

spanning-tree compatible enable

MSTI ˇ Л

б è Â

spanning-tree compatible enable

no spanning-tree compatible enable

ð Ô

ð Ô

ð ¾ Ô

ð Ô

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

ð ¾Ô

¾

show spanning-tree

Â

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

ð Ô

summary ′ MSTP instance è Â

Inconsistentports ′ block Â

forward-time ′ BridgeForwardDelay Â

hello-time ' BridgeHelloTime Â

max-age ' BridgeMaxAge Â

max-hops ' instance Â

tx-hold-count ' TxHoldCount Â

pathcost method ′ Â

ð ¾ Ô

Â

ð Ô

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

ð ¾Ô

spanningtree pathcost method '

spanning-tree forward-time ' BridgeForwardDelay Â

spanning-tree hello-time ' BridgeHelloTime Â

spanning-tree max-age ' BridgeMaxAge Â

spanning-tree max-hops ' instance

spanning-tree tx-hold-count ' TxHoldCount Â

show spanning-tree interface

STP Â ˩ Â

show spanning-tree interface *interface-id*

ð Ô

Instance Â

switch	╖ ˘ ѝ a

ð ৡ Ô

ð Ô

switch port routed port ⅃ Л∪ ѝ Â SPAN a Â⅃ Л∪ SPAN disabled port Э˘ ˘ SPAN a Э Â

a ⅃ Â

˘ a ˘ Â

show monitor ৡ ⅃ Л∪ SPAN Â

ð Ô

Ю SPAN ' 1. ″I ˘ ″I 1 ˘ ⅄ 1 8

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

ð ৡ Ô

ৡ	
show monitor	SPAN Â

ð ⅄ Ô

show monitor

SPAN Â

show monitor [**session** *session_number*]

ð Ô

SPAN

ð Ô

session *session_number* ' SPAN ⅂

ð ¾ Ô

ð Ô

ð Ô

Ю **show monitor** ¾ SPAN 1

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

ð ¾ Ô

¾	
monitor session	SPAN ^ ~ ^ ~ Â

IP ʒ

ʒ

ЛЪЮ ʒ'

- **ip address**
- **ip unnumbered**

ip address

ʒ IP ˇ ˩ Л Ъ no IP Â ʒ Ю'

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

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

ð Ô

ѝ ľ 255.0.0.0 ŁÂ ⅃ Ո

३

३ '

- **arp**
- **arp retry**
- **arp trusted**
- **arp unresolved**
- **arp gratuitous-send**
- **arp timeout**
- **ip proxy-arp**
- **service trustedarp**

arp

३˘ ˩Л ARP ă ╗ IP MAC
Â ३ no ˩Л MAC Â

arp *ip-address MAC-address type* [**alias**]

no arp *ip-address MAC-address type* [**alias**]

ð Ô

ip-address	б MAC IP ˘ˆ ѝ ⁸ ˘ Â
MAC-address	˘ 48 Æ
type	ARP Â Л ˘ ѝ arpa Â
alias	ˆ ˩ ˜ ЊЖ ˩˘ RGOS IP arp Â

ð Ô

ARP ă Â

ð ३ Ô

ð Ô

RGOS ARP ă ˘ 32 Æ IP 48 Æ MAC Â

ў ╟ ARP ˘ Л∪ a ARP
Â **clear arp-cache** ȝ ⅃Л∪ ╟ ˉ ARP Â

ð Ô

ЛЮ ˘ ѝЛ∪ Э ў ARP Â

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

ð ȝ Ô

ȝ	
clear arp-cache	ARP ă

arp retry interval

ȝ˘ ⅃Л∪ arp ˘ ⅃ IP
˘ 2 ARP Â ȝ no ⅃Л∪
1 ARP Â

arp retry interval *seconds*

no arp retry interval

ð Ô

seconds	<1-3600>,ARP ⅃Л∪ ѝ 1 ——3600 ˘ ѝ 1

ð Ô

ARP ѝ 1 Â

ð ȝ Ô

ð Ô

ARP ˘ è ˘
⅃Л∪ ARP ˘ a ╟ ARP
Â

ð Ô

ЛЮ ˘ ARP ѝ 30s

```
arp retry interval 30
```

ð ȝ Ô

ȝ	
Arp retry times *number*	ARP

arp retry times

ȝˇ ˩Л arp ˇ ˩ IP
ˇ ARP Â ȝ no ˩Л
5 ARP Â

arp retry times *number*

no arp retry times

ð Ô

number	˩ ARP ˇ <1-100> Â ѝ 1 ˇ a ARP ˇ 1 ARP

ð Ô

ARP ˇ ARP 5 ˇ ˥ Â

ð ȝ Ô

ð Ô

ARP ˇ è ˇ
˩Л ARP ˇ a
Â

ð Ô

ЛЬЮ ˇ ARP a Â

```
arp retry times 1
```

ЛЬЮ ˇ ARP 1 Â

```
arp retry times 2
```

ð ȝ Ô

ȝ	
arp retry interval *seconds*	arp

arp trusted NUM

ȝˇ ˩Л υ ˩ ARP Â ȝ no
Â

arp trusted *number*

no arp trusted

ð Ô hF(REbDbáDbR a>hF

ð Ô

GSN ┘ ARP a Â

ð ৡ Ô

ð Ô

ৡ ⁄ ┘ ARP ˘ ╟ ARP

ð Ô

ЛЪЮ ˘ й 500 Â

```
arp unresolved 500
```

ð ʒ Ô

arp gratuitous-send interval

ʒ˘ ˩ Л Ъ arp Â ʒ no
Э ℸ

arp gratuitous-send interval *seconds*

no arp gratuitous-send

ð Ô

seconds	ARP ˘ Æ ˘ ˩ <1-3600> Â

ð Ô

ARP ℸ Â

ð ʒ Ô

ð Ô

й Ю ˘ Ю ˈI
й˘ ˩ Л Ъ ARP ˘ ˈΩ
Â

ð Ô

ЛЪЮ ˘ SVI 1 ARP Â

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

ЛЪЮ ˘ SVI 1 ARP

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# no arp gratuitous-send
```

ð ʒ Ô

arp timeout

ARP ă ш ARP ˘ ⅃ Л∪ ☃ Â
☃ no ⅃ Л∪ Â

arp timeout *seconds*

no arp timeout

ð Ô

seconds	˘ Л∪ и Æ˘ 0-2147483

ð Ô

и 3600 Â

ð ☃ Ô

ð Ô

ARP ╟ ˉ IP MAC Â
˘ ARP ă ˘ ARP
≠ ˘ Л∪ Â ˘ a
ARP Â

ð Ô

ЛЮ ˘ ÿ Л∪ FastEthernet 0/1 ╟ ARP
и 120 Â

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

ð ☃ Ô

☃	
clear arp-cache	ARP ă
show interface	

ip proxy-arp

Э ☃ ARP ╖ ˘ ⅃ Л∪ **ip proxy-arp** ☃ Â ☃
no ⅃ Л∪ ☃ ARP ╖ Â

ip proxy-arp

no ip proxy-arp

ð Ô

10.2ˆ 3˜ ˅ˇ ৡ ARP Â

ð ৡ Ô

ð Ô

ৡ ARP ╖ ˩ ˥ Ʊ ў ˇ è
IP MAC Â ARP ˇ ARP
IP

ЛЬЮ ˘ Ю˘ service trustedarp ╖ Â

config
service trustedarp

ð ✓ Ô

३ γ Лυ s32 Э a Â

३

б

ð ✓ Ô

ʒ γ Э a Â

ip directed-broadcast

IP ˘ ʒ **ip directed-broadcast** Â ʒ no ✓ Â

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

no ip directed-broadcast

ð Ô


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

ð ⊀ Ô

ʒ γ Э a Â

IP ʒ

б IP ʒ '

- **clear arp-cache**
- **show arp**
- **show arp counter**
- **show arp timeout**
- **clear ip route**
- **show ip arp**
- **show ip interface**

clear arp-cache

ÿ ARP ά ╟ ARP ˘ Л∪ IP ά ˘ ʒ clear arp-cache Â

clear arp-cache [*A.B.C.D*] | **interface** *interface-name*]

ð ʒ Ô

ð Ô

⊣ Л∪ ʒ ⁹ ARP Â

注意:

RNFP(Ruijie Network Foundation Protection,)
Э˘ mac (IP) ARP ˘ ч
clear arp 1s ˘ ⊣ γ
ARP a Â

ð Ô

ЛЮ ˘ ARP ╟ ά Â

```
clear arp-cache
```

ЛЬЮ ˇ ╟ ARP 1.1.1.1

```
clear arp-cache 1.1.1.1
```

```
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 ЊЖ ЮЎ

Protocol	˘ й Internet Â
Address	б ˚ IP Â
Age (min)	ARP ă ˘ Лџ Â ˘ “-” Â
Hardware	б IP ˚ Â
Type	˚ ˘ Лu й ARPA Â
Interface	б IP Â

ЛuЮ show arp 192.168.195.68

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

ЛuЮ **show arp** *192.168.195.0 255.255.255.0*

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

VLAN 1

ЛЪЮ **show arp** *001a.a0b5.378d*

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

ð ✓ Ô

ֽ γ Э a Â

show arp counter

ARP arp

show arp counter

ð Ô

ð ֽ Ô

ð Ô

ЛЪЮ ѝ **show arp counter**

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

ARP ă Ђ Ю'

ð ✓ Ô

ֽ γ Э a Â

show arp timeout

╟ ARP

show arp timeout

ð Ô

ð ֽ Ô

ð Ô

ЛЬЮ ѝ **show arp timeout** '

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

ARP ă Ћ Ю'

ð ⊿ Ô

ʒ γ Э a Â

clear ip route

IP IP ˘ ⊣ Л Ь

clear ip route ʒ Â

clear ip route { * | *networ** | *ƒ..P8ÐlUtÐ*

ð ⊿ Ô

ʒ γ Э a Â

show ip arp

ˆ ARP˜ ă ˘ ʒ Â

show ip arp

ð Ô

ð ʒ Ô

ð Ô

ЛЬЮ ѝ **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
```

	˘ “-” Â
Hardware	б IP ˚ Â
Type	˚ ˘ Л∪ й ARPA Â
Interface	б IP Â

ð ⁄ Ô

ʒ γ Э a Â

show ip interface

ʒ ˩ Л∪ IP Â ʒ Ю'

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

ð Ô

Interface-type	
Interface-number	/ℓ

ð ʒ Ô

ð Ô

˩ ˘ RGOS Â
˩ RGOS ˚ ˩Л∪ Â ÿ ˩
˩ й a ˩ ˘ RGOS ˚ ÿ
Â

˩ ˘ ˩ ˘
Ľ UP Ł ˩ ˘ Ľ UP ŁÂ

a ˩ ˘ ˩ a ˘ й
Â

ð Ô

ЛЮ й **show ip interface**

```
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.
```

IP interface state is:	“UP”
IP interface type is:	
IP interface MTU is:	MTU
IP address is:	IP
IP address negotiate is:	IP
Forward direct-boardcast is:	
ICMP mask reply is:	ICMP
Send ICMP redirect is:	ICMP
Send ICMP unreachabled is:	ICMP
DHCP relay is:	DHCP
Fast switch is:	IP
Route horizontal-split is:	
Help address is:	helper IP
Proxy ARP is:	ARP
Outgoing access list is	
Inbound access list is	

show ip redirects

¾ Â ¾ Ю'

show ip redirects

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¾ γ Э Â

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Ю й **show ip redirects** Â

```
Ruijie# show ip redirects
Default Gateway: 192.168.195.1
```

ð ¾ Ô

¾	
ip default-gateway	˘ γ Â

IP

IP

IP

- **ip mask-reply**
- **ip mtu**
- **ip redirects**
- **ip source-route**
- **ip unreachables**

ip mask-reply

RGOS ICMP ICMP

ip mask-reply

३ γ Э a Â

ip mtu

IP ^ MTU˜˜ ३ **ip mtu** Â ३ no ┘Л∪ Â

ip mtu *bytes*

no ip mtu

ð Ô

bytes	IP ˘ Л∪ ѝ Æ˘ 68~1500 Â

ð Ô

б ३ mtu ┘ Â

ð ३ Ô

ð Ô

IP IP MTU ˘ RGOS ˚ ┆ Â ┘ Э ˘ è IP MTU

ð Ô

RGOS IP Â IP ˘ IP ш
à à ˘ RFC 791
Â ε ˘
╟ ' ˘ ICMP
˘ ⊿ Â

RGOS ˚ Ю IP Â

ð Ô

ЛЪЮ ˘ IP Â

```
no ip source-route
```

ð ⊿ Ô

ʒ γ Э a Â

ip unreachables

RGOS ˚ ICMP a ⊣ ˘ ʒ **ip unreachables** Â ʒ no ⊣Л ICMP a ⊣ Â

ip unreachables

no ip unreachables

ð Ô

Â

ð ʒ Ô

ð Ô

RGOS ˚ й ˘ a
Э ˘ ICMP a ⊣ Â

RGOS ˚ ˘ a ˘
ICMP ў a ⊣ Â

ʒ ICMP a ⊣ Â

ð Ô

ЛЪЮ ˘ FastEthernet 0/1 ICMP a ⊣ Â

```
interface fastEthernet 0/1
```

no ip unreachables

ð Ô

Â

DHCP ३

DHCP ३

DHCP ЛЬЮ ३'

- **bootfile**
- **client-identifier**
- **client-name**
- **default-router**
- **dns-server**
- **domain-name**
- **hardware-address**
- **host**
- **ip address dhcp**
- **ip dhcp excluded-address**
- **ip dhcp ping packet**
- **ip dhcp ping timeout**
- **ip dhcp pool**
- **lease**
- **netbios-name-server**
- **netbios-node-type**
- **networkˆ DHCPn 0s ÆE0 Td.002os-node-type**
  - **lea2_1 1 Tf0 Tc 0 Tw -2.011 -1.731 Td<007A>Tj/TT0 1 Tf0.749 0 Td( )Tj/TT**

file-name	Ѭ ╟ ˚ ɻ Â

ð Ô

Ѭ ╟ ˚ ɻ Â

ð ʒ Ô

DHCP

ð Ô

DHCP ╟ Ю à ˚ ˘ DHCP
Ŀ ╟ ˚ ɻ˘ DHCP ɻ Л
Ŀ ˆ TFTP˜ Ю ˚ Â è Ŀ **next-server** ʒ
Ѭ Â

ð Ô

ЛЮ ˘ Ѭ router.conf ѝ ╟ ˚ ɻ Â

```
bootfile router.conf
```

ð ʒ Ô

ʒ	
ip dhcp pool	Ѭ DHCP ɻ ˘ DHCP Â
next-server	DHCP ╟ Ю Ŀ IP Â

client-identifier

Ѭ DHCP ˆ Л Ѽ ⁸ ˜˜ DHCP
ʒ **client-identifier** Â ʒ **no** ɻ Л
Â

client-identifier *unique-identifier*

no client-identifier

ð Ô

unique-identifier	DHCP ˘ Л Ѽ ⁸ Â 0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31 Â

ð Ô

Â

ð ʒ Ô

DHCP

ð Ô

DHCP DHCP Ł ʃ IP ˘
˚ ʒ Â à MAC
ɻ ˘ MAC ѝ 00d0.f822.33b4 à ɻ ѝ GigabitEthernet
0/1 ѝ

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

ð Ô

¼Ø ¼ Â

ð ¾ Ô

DHCP

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DHCP ¼Ø ˘ ¼Ú ¾ ¼Ø DHCP

Ы Â

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DHCP

ð Ô

Ю DHCP ÿ DHCP Â
DHCP й IP б¶
Â

ð Ô

ЛЮ Ы 192.168.12.1 й Â

```
default-router 192.168.12.1
```

ð ¾Ô

¾	
ip dhcp pool	Ы DHCP Â DHCP Â

dns-server

Ы DHCP DNS DHCP ¾
dns-server Â ¾ **no** Л DNS Ы Â

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

no dns-server

ð Ô

ip-address	Ы DNS IP Â Â
ip-address2…ip-address8	Л 8 DNS Â
use-dhcp-client *interface-type interface-number*	RGOS DHCP DNS й DHCP DNS Â

ð Ô

Ы DNS Â

ð ¾ Ô

DHCP

ð Ô

Ⱨ DNS Ŀ ˘ ˝I ˘ DHCP б
DNS Ŀ ˘ Ю DNS Ŀ Â

RGOS ˚ ˩ ≠ DHCP ˘ ˩Л DNS
Ŀ ˘ DHCP Â

ð Ô

ЛЮ ˘ ѝ DHCP DNS Ŀ 192.168.12.3 Â

```
dns-server 192.168.12.3
```

ð ֽ Ô

ֽ	
domain-name	Ⱨ DHCP ˩ ˩ Â
ip address dhcp	DHCP ˩ IP Â
ip dhcp pool	Ⱨ DHCP ˩ ˘ DHCP Â

e

Ⱨ DHCP ˩ ˩˘ DHCP ֽ **domain-name** Â
ֽ **no** ■*ü Ƨ Ϭ ˩ ˩˘

˘ ÿ ¸ ¬Ո Â

ð Ô

ՈЮ ˘ DHCP Ю ¸ ¸ i-net.com.cn Â

```
domain-name i-net.com.cn
```

ð ¾ Ô

¾	
dns-server	Ю DHCP DNS Ł
ip dhcp pool	Ю DHCP ¸ ˘ DHCP Â

hardware-address

Ю DHCP ˚ ˘ DHCP ¾ **hardware-address** Â ¾ **no** ¬Ո ˚ Ю Â

hardware-address *hardware-address type*

no hardware-address

ð Ô

hardware-address	Ю DHCP MAC Â
type	DHCP ˚ ¬ ˘ ¬Ո Ю Â Õ ethernet Õ ieee802 Õ 1ˆ 10M ethernet˜ Õ 6ˆ IEEE 802˜

ð Ô

˚ Â

Ю ˚ ˘ ѝ ethernet Â

ð ¾ Ô

DHCP

ð Ô

DHCP Ю ˘ ¬Ո ¾ Â

ð Ô

ЛυЮ ˇ Ⱨ ὶ ethernet MAC 00d0.f838.bf3d Â

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

ð ȝ Ô

ȝ	
client-identifier	Ⱨ DHCP ˆ Лυ Ὼ ⁸ ˜ Â
host	Ⱨ IP Â DHCP Â
ip dhcp pool	Ⱨ DHCP ȷ ˇ DHCP Â

host

Ⱨ DHCP ў IP ˇ DHCP ȝ **host** Â ȝ **no** ȷ Лυ DHCP IP Ⱨ Â

host *ip-address* [*netmask*]

no host

ð Ô

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

ð Ô

Ⱨ ў IP Â

ð ȝ Ô

DHCP

ð Ô IP

A Â ’ ὶ 0Tr 8.011 0 Td( )1Tc4.171 0 Td<02D7>Tj/TT0 1 Tf10 Td5(B)Tj/C2_0 1 Tf0.92 0 Td[<324F0D

ЛЬЮ ˘ IP й 192.168.12.91˘ й 255.255.255.240 Â

```
host 192.168.12.91 255.255.255.240
```

ð ⅋ Ô

⅋	
client-identifier	ℍ DHCP ˆ Л Ώ ⁸ ˜ Â
hardware-address	ℍ DHCP ˚ Â
ip dhcp pool	ℍ DHCP ⅄ ˘ DHCP Â

ip address dhcp

Л PPP àHDLC àFR DHCP IP ˘ ⅋ **ip address dhcp** Â ⅋ **no** ⅃ Л ⅄ Â

ip address dhcp

no ip address dhcp

ð Ô

a DHCP IP Â

ð ⅋ Ô

ð Ô

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

RGOS ˚ PPP à FR à HDLC Э dhcp ˘ Ł ˘ Ł ╗

ð Ô

ЛЬЮ ˘ FastEthernet 0 ╟ IP Â

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

ð ⅋ Ô

३	
dns-server	ᏂᏁ DHCP DNS ᒪ
ip dhcp pool	ᏂᏁ DHCP ﾉ ˘ DHCP Â

ip dhcp excluded-address

ᏂᏁ IP ˘ DHCP ᒪ a è† DHCP ˘

networkˆ DHCP˜	lȻ DHCP /l Â

ip dhcp ping packet

DHCP Ŀ ă ˘ ping ˘
ȝ **ip dhcp ping packet** Â ȝ **no** Â

ip dhcp ping packet [*number*]

no ip dhcp ping packet

ð Ô

no lease

ð Ô

days	⅏ ˘ Л∪ ѝ Æ Â
hours	ˆ ˩ ˜ ⅏ ˘ Л∪ ѝ Æ Â ⅏ ⅏ Â
minutes	ˆ ˩ ˜ ⅏ ˘ Л∪ ѝ Æ Â ⅏ ⅏ Â
infinite	⅏ ⁸ Â

ð Ô

ѝ Â

ð ३ Ô

DHCP

ð Ô

˘ DHCP Â DHCP Ł

˘ a ˩ Â

ð Ô

ЛЮ ˘ DHCP ѝ 1 ѝ 1

no netbios-name-server

ð Ô

ip-address	Ø WINS L IP

type	ⱨ NetBIOS ˘ ч Â ⱨ˝ ÿ 0~FF˝ Ὼ 8 ˘ ↓ ЛЬЮ ' Õ 1˝ ȝ b-node' Õ 2˝ ȝ p-node' Õ 4˝ ȝ m-node' Õ 8˝ ȝ h-node Â ⱨ' Õ b-node˘ ' Õ p-node˘ ' Õ m-node˘ ' Õ h-node˘ Â

ð Ô

ⱨ NetBIOS Â

ð ȝ Ô

DHCP

ð Ô

DHCP NetBIOS ' 1˜ Broadcast˘
˘ NetBIOS ɻ ' 2˜ Peer-to-peer˘
˘ WINS Ŀ NetBIOS ɻ ' 3˜ Mixed˘
˘ ″I ɻ ˘ ɻ б WINS Ŀ
ɻ ' 4˜ Hybrid˘ ˘ ″I WINS Ŀ
NetBIOS ɻ ˘ ˘ NetBIOS
ɻ Â

Ю˘ й Â
WINS Ŀ ˘ й ' WINS Ŀ ˘ й
Â NetBIOS й Hybrid Â

ð Ô

ЛЬЮ ˘ DHCP NetBIOS й Â

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

ð ȝ Ô

ȝ	
ip dhcp pool	ⱨ DHCP ɻ ˘ DHCP Â
netbios-name-server	DHCP NETBIOS WINS ɻ Ŀ

next-server

Ю DHCP ╟ ╟ Ь ˘ DHCP
¾ **next-server** Â ¾ **no** ┘Л ╟ Ь
Ю Â

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

no next-server

ð Ô

ip-address	Ю ╟ Ь IP ˘ ў TFTP Ь Â Â
ip-address2…ip-address8	ˆ ┘ ~ ┘Л 8 ╟ Ь Â

ð Ô

Â

ð ¾ Ô

DHCP

ð Ô

Ю ╟ Ь ˘ ″I ˘ DHCP б
╟ Ь ˘ Ю ╟ Ь Â

ð Ô

ЛЮ ˘ ў DHCP ╟ Ь 192.168.12.4 Â

```
next-server 192.168.12.4
```

ð ¾ Ô

¾	
bootfile	Ю DHCP ╟ ˚ ┘
ip dhcp pool	Ю DHCP ┘ ˘ DHCP Â
ip help-address	Ю Helper
option	RGOS ˚ DHCP Ь Â

option

DHCP ¼ ˘ DHCP ¾ **option** Â ¾ **no** ¬ Л∪ option ⊮ Â

option *code* { **ascii** *string* | **hex** *string* | **ip** *ip-address* }

no option

ð Ô

code	⊮ DHCP ¾ Â
ascii *string*	⊮ ASCII Â
hex *string*	⊮ Ώ ⁸ Â
ip *ip-address*	⊮ IP Â

ð Ô

Â

ð ¾ Ô

ð Ô

DHCP ⁸˘ TCP/IP ў Â DHCP ж option ˘ ⁑ и ¬ ¬ ˘ ¬ Л∪ ⊮˝ DHCP 312 option DHCP Â∕ DHCP ≠ и Â DHCP option ⊮˝ RFC 2131 Â

ð Ô

ЛЮ ˘ ¾ 19 ⊮˝ ¤ DHCP IP Â0 IP ' 1 IP Â Л∪ Ю ˘ DHCP IP Â

```
option 19 hex 1
```

ЛЮ ˘ ¾ 33 ⊮˝ DHCP ˘ DHCP ч ' 1˜ 172.16.12.0˝ 192.168.12.12’ 2˜ 172.16.16.0˝ 192.168.12.16 Â

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

ð ¾ Ô

ip dhcp pool	DHCP DHCP

service dhcp

Э DHCP **service dhcp** **no** DHCP

service dhcp

no service dhcp

DHCP

DHCP

DHCP

DHCP IP DNS

DHCP DHCP DHCP DHCP

Э DHCP

DHCP

б ৡ

- **clear ip dhcp binding**
- **clear ip dhcp conflict**
- **debug ip dhcp client**
- **debug ip dhcp server**
- **clear ip dhcp server statistics**
- **show dhcp lease**
- **show ip dhcp binding**
- **show ip dhcp conflict**
- **show ip dhcp server statistics**

clear ip dhcp binding

DHCP ˘ **clear ip dhcp binding** ৡ Â

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

ð Ô

*	DCHP Â
ip-address	IP Â

ð Ô

ы Â

ð ৡ Ô

ð Ô

ৡ DHCP ╠ ˘ DHCP ┘Л **no ip dhcp pool** ৡ Â

ð Ô

ЛЬЮ ˘ IP ы 192.168.12.100 DHCP Â

```
clear ip dhcp binding 192.168.12.100
```

ð ৡ Ô

ৡ	

show ip dhcp binding	DHCP ┗ Â

clear ip dhcp conflict

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

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

ð Ô

*	DCHP ă Â
ip-address	IP ă Â

ð Ô

ы Â

ð ঳ Ô

ð Ô

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

ð Ô

ЛЬЮ ˘ ă Â

```
clear ip dhcp conflict *
```

ð ঳Ô

঳	
ip dhcp ping packets	Нж DHCP ┗ ↑ IP ڳ

clear ip dhcp server statistics

ð Ô

ѝ Â

ð ֽ Ô

ð Ô

DHCP ╘ ˘ DHCP à ╟ à
˘ DHCP Âclear
ip dhcp server statistics ֽ ┘Л ˘ ÿ Â

ð Ô

ЛЮЮ ˘ DHCP ╘ Â

```
clear ip dhcp server statistics
```

ð ֽ Ô

ֽ	
show ip dhcp server statistics	DHCP ╘ Â

debug ip dhcp client

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

debug ip dhcp client

no debug ip dhcp client

ð Ô

ð Ô

ð ֽ Ô

ð Ô

ֽ dhcp client ╘ ў ˘ Л
Â

ð Ô

ЛЬЮ ˘ Э dhcp Â

```
debug ip dhcp client
```

ð ʒ Ô

debug ip dhcp server

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

debug ip dhcp server

no debug ip dhcp server

ð Ô

ð Ô

ð ʒ Ô

ð Ô

ʒ dhcp server ў ˘ Лъ Â

ð Ô

ЛЬЮ ˘ Э dhcp Ь Â

```
debug ip dhcp server
```

ð ʒ Ô

show dhcp lease

DHCP ˘ EXEC ʒ **show dhcp lease** Â

show dhcp lease

ð Ô

ð Ô

ѝ Â

ð ʒ Ô

ð Ô

Ⱶ IP ˘ Â Ⱶ IP ˘
IP Â

ð Ô

ЛЬЮ ѝ **show dhcp lease** Â

```
Ruijie# show dhcp lease
Temp IP addr: 192.168.5.71  for peer on Interface:
FastEthernet0/0
Temp  sub net mask: 255.255.255.0
2.[(Gse)T: 6  Tsecs,  R6( )enewal: 3  Tsecs,  Rebind195 Twsecs
```

ЛЬЮ ѝ **show ip dhcp binding** Â

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

Ӎ Ю Â

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

ð ȝ Ô

ȝ	
clear ip dhcp binding	DHCP

show ip dhcp conflict

DHCP Ŀ ă ˘ EXEC ȝ **show ip dhcp conflict** Â

show ip dhcp conflict

ð Ô

ð Ô

ѝ Â

ð ȝ Ô

ð Ô

ȝ ˩ Лъ DHCP Ŀ ă Â

ð Ô

ЛЬЮ ѝ **show ip dhcp conflict** ȝ Â

```
Ruijie# show ip dhcp conflict
IP address    Detection Method
192.168.12.1    Ping

dhcpd excluded ipaddress
192.168.12.100
```

ЮÂ

IP address	a ৲ DHCP IP Â
Detection Method	ă Â
dhcpd excluded ipaddress	Â

ð ৡ Ô

ৡ	
clear ip dhcp confict	DHCP ă

show ip dhcp server statistics

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

show ip dhcp server statistics

ð Ô

ð Ô

ѝ Â

ð ৡ Ô

ð Ô

ৡ ৲ Л∪ DHCP ┗ Â

ð Ô

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

```
Ruijie# show ip dhcp server statistics
```

```
Address pools           4
Automatic bindings       4
Manual bindings          0
Expired bindings         0
Malformed messages 2

Message                 Received
BOOTREQUEST              216
DHCPDISCOVER             33
DHCPREQUEST              25
DHCPDECLINE              0
DHCPRELEASE              1
DHCPINFORM               150

Message                 Sent
BOOTREPLY                16
DHCPOFFER                9
DHCPACK                  7
DHCPNAK                  0
```

ÍÆ ÍO Â

Address pools	
Automatic bindings	╟ Â
Manual bindings	Â
Expired bindings	Â
Malformed messages	DHCP ↓ a Â
Message Received or Sent	DHCP ╘ Â

ð ¾Ô

¾	
clear ip dhcp server statistics	DHCP ╘ Â

ip helper-address

ֽ ˩ Л ╗ DHCP ┗ Â ֽ no ˇ
┗ Â

┗ ˩ Л ˇ ≠ ˩ Л Â ֽ ˩ Л
Ю˘ ≠ ˩ Л Ю ˇ ˛ ╗ Ю DHCP
┗ Â

ð Ô

┗ Â

ð ֽ Ô

/

ð Ô

˩ Л dhcp ┗ ˇ DHCP
┗ Â ˩ Л ÿ Â

ð Ô

ЛЮ ˇ DHCP ┗ й 61.154.26.49 Â

```
ip helper-address 61.154.26.49
```

ð ֽ Ô

ֽ	

ð ¢ Ô

ð Ô

¢ б option dot1x ¢ Â

ð Ô

ЛЬЮ ˘ Â

```
Ip dhcp relay information option82
```

ð ¢ Ô

¢	
Service dhcp	DHCP ¢
ip dhcp relay information option dot1x	DHCP option dot1x ¶

ip dhcp relay check server-id

¢ **ip dhcp relay check** *server-id* ¶ ˘ ¢
no **ip dhcp relay information check** *server-id* ¶ Â

ð Ô

ð ¢ Ô

ð Ô

¢˘ DHCP REQUEST
server-id option server Â

ð Ô

ЛЬЮ ˘ Â

```
Ip dhcp relay check server-id
```

ð ¢ Ô

¢	
Service dhcp	DHCP ¢

ip dhcp relay suppression

¾ DHCP ¶ ˘ ¾ no
DHCP ¶ DHCP relay ⁸ ¶ Â

ð Ô

ð ¾ Ô

ð Ô

¾ Л˘ DHCP request a relay Â

ð Ô

ЛЬЮ ˘ 1 relay ⁸ ¶ Â

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

ð ¾ Ô

¾	
service dhcp	DHCP ¾

DNS ঳

ip domain-lookup

╠ DNS ⅄ Â ঳ no DNS ⅄ ╖ Â

ip domain-lookup

no ip domain-lookup

ð Ô

ѝ DNS ⅄ ╖ Â

ð ঳ Ô

ð Ô

঳ ѝ DNS ⅄ ╖ ˘ ঳˘ ╠ DNS ⅄ Â

ð Ô

Ю DNS ⅄ ╖ '

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

ð ঳ Ô

host-name	ў ɹ
ip-address	IP

ð ʒ Ô

ð Ô

ў ˘ ɻ Л **no ip host host-name ip-address** ʒ

ð Ô

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

ð ʒ Ô

ʒ	
show hosts	DNS Â

ð Ô

ʒ RGOS10.1 Э Â

clear host

╟ ў ɹ ă ˘ ɻ Л ʒ Â

clear host [*host-name*]

ð Ô

host-name	ɻ Л ╟ ў ɹ ă Â “*” ʒ ╟ ў ɹ ă Â

ð ʒ Ô

ð Ô

ў ɹ ă ˘ ч ' 1˜ ip host ' 2˜ DNS ╟ ⌐ Â ʒ˘ DNS ╟ ⌐ ў ɹ Â

ð Ô

SNTP ৡ

ৡ

ৡ

¸ **sntp enable**

¸ **sntp server**

¸ **sntp interval**

sntp enable

ৡ SNTP ╖ ˘ ৡ **no** ѝ —Disable Â

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

ð Ô

ð Ô

SNTP Disable

ð ৡ Ô

ð Ô

show sntp ৡ SNTP

ð Ô

```
RedGiant(config)# sntp enable
```

ð ৡ Ô

ৡ	
show sntp	SNTP
clock update-calendar	˚ ⊿ ˚
clock set	˚

ð ⊿ Ô

RGOS10.0 Л Э

sntp server

ʒ SNTP Server

ð Ô

seconds ' ⊿ ˘ Æ ὶ Ľ Ł ὶ 60 --65535 Â

ð Ô

ὶ 1800s

ð ৡ Ô

ð Ô

show sntp ৡ SNTP Â

ð Ô

```
RedGiant(config)# sntp interval 3600
```

ð ৡ Ô

ৡ	
sntp enable	SNTP
show sntp	SNTP
clock update-calendar	˚ ⊿ ˚

ð ⊿ Ô

˚ RGOS10.0 ЛЪЭ

ৡ

б ЛЪЮ ৡ:

¸ **show sntp**

show sntp

ৡ SNTP Â

ð Ô

ð ৡ Ô

ð Ô

show sntp ʃ SNTP

ð Ô

```
RedGiant# show  sntp
SNTP state          : Enable
SNTP server         : 192.168.4.12
SNTP sync interval   : 60
Time zone           : +8
```

ð ʃ Ô

ʃ	
sntp enable	SNTP
show sntp	SNTP

ð ʌ Ô

RGOS10.0 Л Э

NTP ʒ

NTP ʒ

NTP ЛЬЮ ʒ'

- **no ntp**
- **ntp authenticate**
- **ntp authentication-key**
- **ntp disable**
- **ntp server**
- **ntp synchronize**
- **ntp trusted-key**

no ntp

ntp ˩ Ꞙ б Ꞙ ˩ ˇ ntp Â

no ntp

ð Ô

Â

ð Ô

Ю NTP Ꞙ Â

ð ʒ Ô

Â

ð Ô

Ю NTP ℸ ˇ NTP Ꞙ NTP
ˢ ˇ NTP ℸ Â

ð Ô

ЛЬЮ ˇ NTP Ꞙ Â

no ntp

ð ʒ Ô

ৡ	
ntp server	NTP Ŀ

ntp authenticate

NTP Ŀ NTP ⁸ Â

ntp authenticate

no ntp authenticate

ð Ô

Â

ð Ô

ЮNTP ⁸ Â

ð ৡ Ô

Â

ð Ô

⁸˘ a ⅃ ╗ Â

⁸˘ ⅃ è ˘ ⅃ Ŀ ╗

Â

ntp authentication-key à **ntp trusted-key**

Â

ð Ô

è ѝ ⅄˘

⁸ Â

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

ð ৡ Ô

ৡ	
ntp authentication-key	
ntp trusted-key	Â

ntp authentication-key

ù NTP Ł NTP Â

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

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

ð Ô

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

ð Ô

Â

ð ¾ Ô

Â

ð Ô

ˇ md5 ╗ ˇ key-id ˇ ˩Ո **ntp trusted-key** key-id ù Â

Э ù 1024 ˇ Ł

ð Ô

ՈЮ ID ù 6

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

ð ¾Ô

¾	
ntp authenticate	8
ntp trusted-key	

ntp server NTP

ntp disable

NTP ╖ Â

ntp disable

ð Ô

Â

ð Ô

Ю ┘Л┐ ┘ NTP Â

ð ¾ Ô

Â

ð Ô

Ю˘ Э ┘ NTP ┘Л┐
˘ ╖ ˘ ┘Л┐ Э NTP Â

注意:

IP ˘ è
Э ¾ Â

ð Ô

Л┐Ю ˘ NTP Â

no ntp

ð ¾ Ô

ntp server

й NTP NTP Ь Â

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

no ntp server *ip-addr*

ð Ô

ip-addr	NTP Ь IP ’

version	ˆ ˩ ˜ NTP ˆ 1-3˜˜ NTPv3 ,
if-name	ˆ ˩ ˜ NTP ˆ Ь ˜’
keyid	ˆ ˩ ˜ б Ꞗ ╗
prefer	ˆ ˩ ˜ Ꞗ ѝ Prefer Ꞗ

ð Ô

NTP Ꞗ Â

ð ʒ Ô

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W ’ ' ╕

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ð ֽ Ô

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ð Ô

NTP б Ь л й 8 ˘ Л й ֿ
л ˘ ╟ л ˘ л ˘ л Л

ð Ô

ЛЮ ˘ NTP л Â

```
Ntp synchronize
```

ð ֽ Ô

ֽ	
ntp server	NTP Ь л

ntp trusted-key

ID й

ntp trusted-key *key-id*

no ntp trusted-key *key-id*

ð Ô

key-id	ID Â

ð Ô

Ю Â

ð ֽ Ô

Â

ð Ô

NTP н л ˘ ID ˘
a ˘ Л ,

ð Ô

ЛЬЮ ˘ ѝ Ь Â

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

ð ʒ Ô

debug ntp

ð ৡ Ô

Â

show ntp status

NTP Â

show ntp status

ð Ô

Â

ð Ô

ѝ Â

ð ৡ Ô

ð Ô

NTP Ŀ ˘ NTP ˘ ╗ ⅄

Ŀ ৡ a Â

ð Ô

ЛЬЮ ˘ NTP Â

show ntp status

ð ৡ Ô

UDP-Helper ¾

¾

udp-helper enable

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

ЮЎ UDP Â

udp-helper enable

no udp-helper enable

ð Ô

ip helper-address

UDP ┗ Â no UDP
┗ Â

ip helper-address *address*

no ip helper-address *address*

ð Ô

address	UDP ┗ ˘ ù ↑ ⁸ ˘ 20 ┗ Â

ð Ô

UDP ┗

ð ֽ Ô

ð Ô

┘Л ù 20 ┗ Â ┗
Э , ╟ UDP-Helper ╖ Л˘ ÿ
UDP ˘ Л Э
┗ Э Â

no ip helper-address ┘ ┗ Â

ð Ô

Ю UDP ┗ :

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

ð ֽ Ô

ֽ	
ip forward-protocol	UDP

ð Ô

ֽ RGOS10.1 Э Â

ip forward-protocol

¾ UDP Â ¾ **no** ¼ UDP ╖ 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*]

ð Ô

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

ð Ô

UDP Â

ð ¾ Ô

ð Ô

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

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

ð ¾Ô

¾	
udp-helper enable	UDP
ip forward-protocol	UDP

ð Ô

¾ RGOS10.1 Э Â

SNMP ⅋

⅋

SNMP ЛЪЮ ⅋'

- **no snmp-server**
- **show snmp**
- **snmp-server chassis-id**
- **snmp-server community**
- **snmp-server contact**
- **snmp-server enable traps**
- **snmp-server host**
- **snmp-server location**
- **snmp-server packetsize**
- **snmp-server queue-length**
- **snmp-server system-shutdown**
- **snmp-server trap-source**
- **snmp-server trap-timeout**

no snmp-server

SNMP ⅋ ╖ ˘ ⅋ **no snmp-server** Â

no snmp-server

ð Ô

SNMP ⅋ ╖

ð ⅋ Ô

ð Ô

⅋ SNMP ⅋ Ł Â

ð Ô

ЮО SNMP ⅋ Ł'

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

snmp-server chassis-id

SNMP /Ì˘ ¾ **snmp-server chassis-id** Â ¾ no ù Â

snmp-server chassis-id *text*

no snmp-server chassis-id

ð Ô

text

ro ' NMS MIB ৶ ˘ a Â

rw ' NMS MIB ৶ ৶ ৶ Â

number ' ʌˆ 0-99˜˜ ˘
MIB NMS Â

ipaddr ' NMS ˘ MIB NMS Â

ð Ô

ѝ

ð ৡ Ô

ð Ô

ৡ ѝ SNMP ৡ ╖ ৡ˘
à MIB NMS Â

SNMP ৡ ╖ ˘ **no snmp-server** ৡ ৶ Â

ð Ô

Ю ⁸ MIB ˘ ѝ 192.168.12.1
NMS MIB '

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

ð ৡ Ô

ৡ	
access-list	Ⱶ

snmp-server contact

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

snmp-server contact text

no snmp-server contact

ð Ô

text '

ð Ô

ù Â

ð ʒ Ô

ð Ô

Ю SNMP ù i-net800@i-net.com.cn '

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

ð ʒ Ô

ʒ	
show snmp-server	SNMP
no snmp-server	SNMP ʒ ╖

snmp-server enable traps

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

snmp-server enable traps [*snmp*]

no snmp-server enable traps

ð Ô

snmp ' SNMP Y˚ Â

ð Ô

Ю˝

ð ʒ Ô

ð Ô

ʒ б ʒ **snmp-server** ˘ Â

ð Ô

Ю ў ╟ SNMP Y˚ '

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

ð ৡ Ô

ৡ	
snmp-server host	SNMP ў

snmp-server host

SNMP ў ^ NMS˜˘ ৡ
snmp-server host Â ৡ no ৸ SNMP ў Â

snmp-server host *host-addr* **traps** [*version* {*1* | *2c* | *3* [*auth* | *noauth* | *priv*]] *community-string* [**udp-port**
port-num][*notification-type*]

no snmp-server host *host-addr*

ð Ô

host-addr ' SNMP ў

version ' snmp ˘ V1 à V2C à V3

auth | *noauth* | *priv* ' V3 Â

community-string ' ৸^ V3 ˜ Â

port-num ' snmp ў

notification-type ' ў ╟ ˘ snmp Â

ð Ô

Ю˘ SNMP ў Â

˘ Â

ð ৡ Ô

ð Ô

ৡ б ৡ snmp-server enable traps ˘ ў ╟ NMS
Â

৸Л∪ a ৸ SNMP ў ˘ ў ৸Л∪
a ৸ ˘ a ৸ ˘ a ৸ ў [৸] Л
˘ ৸ ў a ৸ ˘
a ৸ Â

ð Ô

Ю SNMP ў ˘ SNMP Y˘ '

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

ð ¾Ô

¾	
snmp-server enable traps	

snmp-server location

SNMP Æ ˘ ¾ **snmp-server location** Â ¾ no ↓ SNMP Æ Â

snmp-server location *text*

no snmp-server location

ð Ô

text ' Â

ð Ô

й

ð ¾ Ô

ð Ô

Ю '

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

ð ¾Ô

¾	
snmp-sever contact	SNMP

snmp-server packetsize

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

snmp-server packetsize *byte-count*

no snmp-server packetsize

ð Ô

byte-count ˘ ÿ 484 17876 Â

ð Ô

1500

ð ¾ Ô

ð Ô

Ю SNMP ù 1492'

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

ð ¾Ô

¾	
snmp-server queue-length	SNMP

snmp-server queue-length

˘ ¾ **snmp-server queue-length** Â

snmp-server queue-length *length*

ð Ô

length ' ˘ ÿ 1 1000 Â

ð Ô

10

ð ¾ Ô

ð Ô

˘ ┘Л ¾

8 Â

ù 4 Â

ð Ô

Ю ù 4 '

```
Ruijie(config)# snmp-server queue-length 4
```

ð Ô

٣	
snmp-server packetsize	SNMP

snmp-server system-shutdown

SNMP ٣ ˘ ٣ **snmp-server system-shutdown** Â ٣ no ٧ SNMP ٣ Â

snmp-server system-shutdown

no snmp-server system-shutdown

ð Ô

SNMP ٣

ð ٣ Ô

ð Ô

٣ SNMP ٣ ˘ RGOS reload/reboot Л NMS Â

ð Ô

Ю SNMP ٣ '

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

snmp-server trap-source

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

snmp-server trap-source *interface*

no snmp-server trap-source

ð Ô

interface ' й SNMP

ð Ô

SNMP ÿ ˘ IP й Â

ð ٣ Ô

ð Ô

ЮЎ SNMP ÿ ˘ IP
ѝ ˘ ѝ ˘ ˩Л ֽ IP
ѝ SNMP Â

ð Ô

Ю Л 0 IP ѝ SNMP '

```
Ruijie(config)# snmp-server trap-source fastethernet 0
```

ð ֽ Ô

ֽ	

snmp-server user

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

snmp-server user *username groupname* {*v1* | *v2* | *v3* [*encrypted*] [*auth* {**md5** | **sha**} **auth-password**] [*priv* **des56** *priv-password*]} [**access** {**num** | **name**}]

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

ð Ô

username ' ɻ Â

groupname' ɻ

v1 | **v2** | **v3** ' SNMP Â v3 ɻ Â

encrypted ' ỳ Â ˘ Л Â Л ˘ 16 ⁸ Â MD5 ỳ 16 ˘ SHA ỳ 20 Â Л ч Â ╗ Â

auth ' Â**md5** MD5 Â**sha** SHA Â

auth-password: ৡ ˆ a 32 ˜ Â ৡ Â

priv ' Â **des56** 56 Æ DES ╗ Â

priv-password ' ỳ ╗ ৡ ˆ a 32 ˜ Â ৡ ╗ Â

ð Ô

Â

ð ৡ Ô

ð Ô

Ю snmpV3 ˘ md5 ˘ DES ╗ '

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

ð ৡ Ô

ৡ	

show snmp user	SNMP

snmp-server group

SNMP ˘ ¾ **snmp-server group** Â ¾ no Â

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

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

ð Ô

v1 | *v2c* |*v3* ' SNMP Â

auth' a ˘ v3 Â

noauth' a ≠ a ˘ v3 Â

priv' ˩ ˘ v3 Â

readview' Â

writeview' Â

ð Ô

ð ¾ Ô

ð Ô

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

ð ¾ Ô

¾	
show snmp group	SNMP

snmp-server view

SNMP ˘ ¾ **snmp-server view** Â ¾ no Â

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

no872135423p-server vieww

show snmp ¾ SNMP ’

show snmp mib snmp mib ’

show snmp user snmp ’

show snmp view snmp ’

show snmp group snmp ’

ð Ô

ÞO SNMP ’

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

ð ¾Ô

¾	
snmp-server *chassis-id*	SNMP /Ì

RMON ३

३

RMON ЛuЮ ३'

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

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

¸ **rmon alarm** *number variable interval* {**absolute** | **delta** } **rising-threshold** *value* [*event-number*owner-s1F09 0 T[-e9Td( ])J/T8(C0111G1.54322

rmon alarm

MIB ↓ ¾ Â no ↓ Â

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

no rmon alarm *number*

ð Ô

ð ¾ Ô

ð Ô

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

ð Ô

ЛυЮ ˘ MIB ↓ ifInNUcastPkts.6 Â

Ruijie(config)# **rmon alarm** *10 1.3.6.1.2.1.2.2.1.12.6 30* **delta rising-threshold** *20 1* **falling-threshold** *10 1* **owner** *zhangsan*

ð ¾ Ô

¾

ð ¾ Ô

ð Ô

ð Ô

ЛЪЮ ˘ ЊЖ Y ˚ ╟ ' Y ˚ à trap Â

```
Ruijie(config)# rmon event 1 log trap rmon description
"ifInNUcastPkts is too much " owner zhangsan
```

ð ¾ Ô

¾	
rmon alarm *number variable interval* {**absolute** | **delta** }**rising-threshold** *value* [*event-number*] **falling-threshold** *value* [*event-number*] [**owner** *ownername*]	≠

Â

show rmon statictics

ð Ô

```
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
```

ð ¾Ô

¾	
rmon collection stats *index* [**owner** *owner-string*]	¶

show rmon history

Â

show rmon history

```
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
```

ð ¾Ô

¾	

```
Event : 1
Description : firstevent
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
```

ð ३ Ô

३	
rmon alarm *number variable interval* {**absolute** | **delta** } **rising-threshold** *value* [*event-number*] **falling-threshold** *value* [*event-number*] [**owner** *ownername*]	╗

show rmon event

Â

show rmon event

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ЛЬЮ ˘ '

```
Ruijie# show rmon event
Alarm : 1
Interval : 1
Variable : 1.3.6.1.2.1.4.2.0
Sample type : absolute
```

```
Last value : 64
Startup alarm : 3
Rising threshold : 10
Falling threshold : 22
Rising event : 0
Falling event : 0
Owner : zhangsan
```

ð ¾Ô

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

RIP ٶ

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auto-summary (RIP)

RIP ╟ ╖ ˘ ٶ **auto-summary** Â
ٶ **no** ╟ ╖ Â

auto-summary

no auto-summary

ð Ô

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ð Ô

╟ ╖ Â

ð ٶ Ô

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ð Ô

RIP ╟ ˘ ˘ ╟
Â RIPv1 RIPv2 Ю ╟ Â

RIP ╟ ╖ ˘ Â
˘ a ˘ ٨ Л

Â

˘ ў ЛЮ '

¸ RIP ˘ ˝I '

¸ RIP ˘ ˘ Â

¸ ٨ é ˘ a ٨
˘ ╟ ╖ Â RIPv2 ˘ RIPv1

Ô

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

ð ֳ Ô

ֳ	
version	׀ RIP ˚ Â v1 v2 ч ˘ ˩ v1&v2 Â

ð ˩ Ô

ð Ô

default-metric (RIP)

׀ RIP ˘ ֳ **default-metric** Â ֳ **no** Â

default-metric *metric*

no default-metric

ð Ô

metric	˘ ѝ 1 16 Â metric 16˝ RGOS ѝ a ˩ Â

ð Ô

ѝ 1 Â

ð ֳ Ô

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ð Ô

ֳ б ֳ **redistribute** Â ÿ ˥ ˘ ˦ RIP ˘ a ˩ ˢ a ˘ Â ˘ ׀ ˦ RIP Â ˦ ˘ ׀ ˘ RIP default-metric ׀ d ’

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

ð ¾Ô

¾	
redistribute	ÿ ↑ ⁄ Â

ð ⁄ Ô

ð Ô

default-information originate(RIP)

RIP 532B05(config-[tion originate(RIP)

ˇ a Â
ˇ ⅃ Л∪ **show ip rip database** RIP
Â

RIP ⁸ˇ ⅃ Л∪ **route-map** ˇ
' **set metric** Â

⅃ Л∪ **metric** ˇ ″I æ
route-map **set metric** ' **metric** ˇ
RIP Â

注意:

RIP ¾ ˇ ѫ RIP a ¨Ą ⁻
Â

ip default-network ˇ ÿ
default-information originate ¾ RIP Â

ð Ô

ЛυЮ RIP Â

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

ð ¾ Ô

¾	
ip rip default-information	
redistribute	è RIP

ð ⅄ Ô

ð Ô

distance

RIP ˇ ¾ **distance** Â
¾ **no** Â

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

no distance [*distance ip-address wildcard*]

ð Ô

distance	RIP ˘ <1-255>
ip-address	IP
wildcard	lȜ IP Æ˘ ˚ ˙ ˘ ˝ a Â rθ€ 3&Ã%sÃ bâQ¡Ã ‰0Ä$h€ hè\% &t'W< bï…Â

access-list-number	Â ˘ ┘Л Â
prefix *prefix-list-name*	Â
gateway *prefix-list-name*	Â
interface-type interface-number	(┘) ↑ ˘ Â

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ð Ô

ѝ ˘ ┘Л ↑ ⁸ ˘
Â

˘ Â

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ЛЬЮ ˘ RIP ÿ Fastethernet 0/0 ˘
⁸ ˘ 172.16 Â config)#( )config-router)#( )config-router)#(

distribute-list out Â ϡ **no** Ⱨ Â

distribute-list {[*access-list-number* | *name*] | **prefix** *prefix-list-name*} **out** [*interface* | *protocol* [*process-id* | *process-name*]]

no distribute-list {[*access-list-number* | *name*] | **prefix** *prefix-list-name*} **out** [*interface* | *protocol* [*process-id*| *process-name*]]

ð Ô

access-list-number	Â ˘ ⅃ Л Â
prefix *prefix-list-name*	Â
interface	(⅃) ↑ ˘ 8 Â
protocol	(⅃) ↑ ˘ ↑ Â
process-id	(⅃) *protocol* ѝ OSPF ˘ OSPF id Â
process-name	(⅃) *protocol* ѝ ISIS ˘ ISIS ⅄ Â

ð Ô

8 Â

ð ϡ Ô

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ð Ô

ϡ a ⅃ ˘ 8 ' ˘ 8 ' è ˘ 8 Â

ð Ô

ЛЮ ˘ RIP 192.168.12.0/24 Â

```
Ruijie(config)# router rip
Ruijie(config-router)# network 200.4.4.0
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# distribute-list 10 out
Ruijie(config-router)# version 2
Ruijie(config)# access-list 10 permit 192.168.12.0
0.0.0.255
```

ð ϡ Ô

¾	
access-list	Â
prefix-list	Â
redistribute	Â

ð Ô

ò Ô

ip rip authentication key-chain

RIP ˘ RIP ˘ ¾ **ip rip authentication key-chain** Â ¾ **no** Â

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

no ip rip authentication key-chain

ð Ô

ip rip authentication mode ⊮ RIP

ip rip authentication key-chain	RIP	RIP	È

ƻ	
ip rip authentication mode	Ⱨ RIP Â
ip rip authentication key-chain	RIP ˇ RIP Â RIPv2 RIP Â

ð ⊿ Ô

ò Ô

ip rip default-information

ÿ RIP ˇ ƻ **ip rip default-information** Â ƻ **no** ⊿ Â

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

no ip rip default-information

ð Ô

only	ˇ a è Â
originate	ˇ ≠ è Â
metric *metric-value*	ˇ ⊿ ' 1-15 Â

ð Ô

Â

╟ ⊿ˇ *metric* и 1 Â

ð ƻ Ô

Â

ð Ô

ƻ ⊿ˇ ÿ Â

⊿ Ⱨ **ip rip default-information** RIP **default-information originate**ˇ Â

注意:

1 à **ip rip default-information**ˇ RIP a Ą ⌐ Â ⌐ ˇ Â

2 à Э **ip rip default-information** a
Ю Â

ð Ô

ЛЬЮ ethernet0/0 Э
Â

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

ð ¾ Ô

¾	
default-information originate	RIP

ð Ô

ð Ô

ip rip receive enable

RIP Э RIP ¾ **ip rip receive enable** Â ¾ **no** RIP Э RIP Â

ip rip receive enable

no ip rip receive enable

ð Ô

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ð Ô

RIP Â

ð ¾ Ô

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RIP Ю ¾ **no** Â ¾ ¾ Â ¾ ¾ **default** RIP Â

ð Ô

ЛЬЮ ˘ Fastethernet 0/0 RIP Â

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

ð ¾Ô

¾	
ip rip send enable	RIP
passive-interface	RIP ╟

ð ⅄ Ô

ð Ô

ip rip receive version

Ⅎ RIP Э RIP ˘
¾ **ip rip receive version** Â ¾ **no** Â

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

no ip rip receive version

ð Ô

1	ˆ ⅃ ˜ RIPv1 Â
2	ˆ ⅃ ˜ RIPv2 Â

ð Ô

϶ ⅄ ¤ **version** ¾ Â

ð ¾ Ô

Â

ð Ô

¾ ˘ ⅃Л **vesion** ¾ Â ¾
RIP ϶˘ ⅃Л ⅃ RIPv1 RIPv2
Â ¾ a ϶ ⅄ ¤ version Â

ð Ô

ЛЬЮ ˘ Fastethernet 0/0 ⅃Л RIPv1 RIPv2
Â

```
Ruijie(config)# interface fastethernet 0/0
```

```
Ruijie(config-if)# ip rip receive version 1 2
```

ð ¾Ô

¾	

version Ø RIP Â

passive-interface	RIP ╟

ð ✓ Ô

ð Ô

ip rip send version

IM RIP Э RIP ˘

¾ **ip rip receive version** Â ¾ **no** Â

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

ð Ô

ip rip v2-broadcast

RIP version 2 Л Э ˘ ˩ Л ֽ **ip rip v2-broadcast** ֽ Â ֽ no Â

ip rip v2-broadcast

no ip rip v2-broadcast

ð Ô

Â

ð Ô

й ˩ ā **version** ֽ Â

ð ֽ Ô

Â

ð Ô

ֽ ˘ ˩ Л **vesion** ֽ Â ֽ RIP й˘ ˩ Л ˩ RIPv1 RIPv2 Â ֽ a й ˩ ā version Â

ð Ô

ЛЮ ˘ Fastethernet 0/0 Л RIPv2 Â

```
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# ip rip v2-broadcast
```

ð ֽ Ô

ֽ	
version	Ⱶ RIP Â

ð ˩ Ô

ð Ô

ip split-horizon (RIP)

RIP ᛏ ℼ ˘ ֽ **ip split-horizon** Â ֽ no RIP ᛏ ℼ Â

ip split-horizon

no ip split-horizon

ð Ô

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ð Ô

Â جي

summary-address rip Â ¾ no
Â

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

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

ð Ô

ip-address	IP
ip-network-mask	ù IP

ð Ô

RIP ╟ Â

ð ¾ Ô

Â

ð Ô

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

ð Ô

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

```
Ruijie(config)# interface FastEthernet 1/0
Ruijie(config-if)# ip summary-address rip 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
```

ð ¾ Ô

¾	
auto-summary	RIP ╟

ð Л Ô

ð Ô

network (RIP)

Ⅸ RIP ˘ ⅓
network Â ⅓ **no** Ⅸ Â

network *network-number* [*wildcard*]

no network *network-number* [*wildcard*]

ð Ô

network-number	Л Â Л ѝ Л˘ IP ┘ RIP Â
wildcard	Ⅸ IP Æ˘ 0 ┐ ˘ 1 a Â

ð Ô

ð ⅓ Ô

Â

ð Ô

┘ Л└ ┘ *network-number* *wildcard* ˘ б RIP Â

wildcard ˘ RGOS ˘ б RIP Â

RIP Ⅸ ˘ ┘ Л└ RIP ˘ RIP Â

ð Ô

Л└ Ю ˘ Ⅸ б RIP ч Л˘ 192.168.12.0/24 172.16.0.0/24 б RIP '

```
Ruijie(config)# router rip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# network 172.16.0.0 0.0.0.255
```

ð ⅓ Ô

ð ⅄ Ô

ð Ô

neighbor (RIP)

¤ RIP IP ˇ ⅃ Л∪ ¢ **neighbor** Â
¢ **no** ¤ Â

neighbor *ip-address*

no neighbor

ð Ô

ip-address	IP Â Â

ð Ô

¤ Â

ð ¢ Ô

Â

ð Ô

RIPv1 IP ^ 255.255.255.255~ ˇ RIPv2
^ 224.0.0.9~ Â a
Э ˇ ⅃ ˇ ⅃ Л∪
¢ **passive-interface** и ╟ ˇ ⅄ ¤
⅃ Л∪ Â ¢ a RIP Â
passive ˇ ⅄ ≠ a Â

ð Ô

ð ¢ Ô

ð ⅄ Ô

ð Ô

offset-list(RIP)

╕ RIP metric

access-list-number	acl Ñ
in	acl metric
out	acl metric
offset	metric Ù ╟
interface-type	acl
interface-number	Ñ

ð Ô

offset Â

ð ¾ Ô

Â

ð Ô

RIP Ù offset-list Ï
offset-list

ð Ô

delay	˘ Æ ѝ ˘ <8-50>

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Å ‹ Á I

interface-type interface-num	б Л

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Ю˘ ѝ passive Â

ð ϡ Ô

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ð Ô

passive-interface default ϡ ѝ passive ˘ ↓ Лυ **no passive-interface** *intface-type interface-num* ϡ ѝ passive Â

ip rip send enable ϡ **ip rip receive enable** ϡ ѝ RIP Ю˘ ϡ ѝ passive ˘ a Ѧ RIP ˘ ↓Лυ RIP ’ ˘ **ip rip send enable** ϡ **ip rip receive enable** ϡ ⁸ Â

ð Ô

ЛυЮ ѝ passive ˘ Л ethernet0/0 ѝ passive

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

ð ϡ Ô

ϡ	
ip rip receive enable	RIP
ip rip send enable	RIP

ð Л Ô

ð Ô

redistribute^ RIP˜

ǂ ˘ Ю **redistribute** ϡ Â ↓ ǂ ˘ ϡ **no** Â

redistribute {**bgp** | **isis** [*process-name*] |**ospf** <*1-65535*> | **connec**

ted | **static**}[**metric** *value*] [**route-map** *route-map-name*][**match i nternal** | **external** *type* | **nssa-external** *type*]

no redistribute {**bgp** | **isis** [*process-name*] |**ospf** <*1-65535*> | **connected** | **static**}[**metric** *value*] [**route-map** *route-map-name*] [**match internal** | **external** *type* | **nssa-external** *type*]

ð Ô

bgp	**isis**	**ospf**	**connected**	**static**	ϯ
metric	ϯ metric
route-map	ϯ
match	ϯ ospf
process-name	ISIS ϳ
<1-65535>	OSPF ϱ

ð Ô

ЮЎ

ϯ OSPFЎ ϯ ’

ϯ ISISЎ ϯ level-2 ’

è ЮЎ ϯ ’

ϯ ϱ metric ϧ 1’

a route-map Â

ð ϡ Ô

Â

ð Ô

ϡ ϯ RIP Â

ϑ ϯ ϱЎ ϱ

ospf ' Л match й match ˘
† ¬ † ' no ¾
match й Â

ð Ô

ЛЬЮ ¾ † RIP

```
Ruijie(config-router)# redistribute static
```

ð ¾ Ô

¾	
default-metric *metric*	†

ð Л Ô

ð Ô

router rip

RIP ˘ ¾
router rip Â ¾ **no** RIP Â

router rip

no router rip

ð Ô

Â

ð Ô

RIP Â

ð ¾ Ô

Â

ð Ô

RIP ˘ Нж Л Â Э ╠
˘ **async default routing** Â

ð Ô

ЛЬЮ ˘ RIP ˘
Â

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

ð ¾ Ô

¦	
network (RIP)	Ю RIP Л Â

ð Ô

ð Ô

timers basic

RIP ˘ ¦ **timers basic** Â ¦ no Â

timers basic *update invalid flush*

no timers basic

ð Ô

update	˘ Л Â*update* Ю ˘ *invalid Flush* æ Â 30 Â
invalid	˘ Л ˘ ÿ Â*invalid* Ю й Â й Ь ˘ ˘ й ˘ *invalid* ' *invalid* ˘ æ Â *Invalid* й 180 Â
flush	˘ Л ˘ ÿ RIP *invalid* Â *flush* ˘ *invalid* Â *Flush* й 120 Â

ð Ô

Ю й 30 ˘ й 180 ˘ й 120 Â

ð ¦ Ô

Â

ð Ô

Л Э ˘ й ¬ Л Â й Э ˘ RIP Â a RIP ˘ Â

RIP ˘ й Л **show ip rip** ¦ Â

ð Ô

ЛЬЮ ˘ RIP 10 Â 30
˘ ˩ ѝ ˘ invalid ’
invalid ˥˘ 90 ˘ Â

```
Ruijie(config)# router rip
Ruijie(config-router)# timers basic 10 30 90
```

注意:

æ Э ˘ ˘ ѝ
Â ЛЬ 2Mbps ЛЬ Э ˘ ˩ ЛЬ
˘ ˩ ЛЬ Â

ð ֽ Ô

ð ˥ Ô

ð Ô

validate-update-source

RIP ˘ ˘
ֽ **validate-update-source** Â ֽ **no**
Â

validate-update-source

no validate-update-source

ð Ô

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˩ ЛЬ RIP ˘ Â ѝ
RIP ˘ ˩ IP Â

Э ˦ ˘ RIP ˘
a ֽ **validate-update-source** Â

˥ ip unnumbered ˘ RIP a

ð Ô

ЛЬЮ ˇ RIP Л й 2Â

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

ð ֽÔ

ֽ	

ЛЬЮ ˘ RIP ˘ à

Â

```
Ruijie# show ip rip
Routing Protocol is "rip"
Sending updates every 10 seconds, next due in 4 seconds
Invalid after 20 seconds, flushed after 10 seconds
Outgoing update filter list for all interface is: not
set
Incoming update filter list for all interface is: not
set
Default redistribution metric is 2
Redistributing: connected
Default version control: send version 2, receive version
2
Interface            Send  Recv
FastEthernet 1/1      2     2
FastEthernet 1/0      2     2
Routing for Networks:
192.168.26.0 255.255.255.0
192.168.64.0 255.255.255.0
Distance: (default is 50)
```

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ð ⁄ Ô

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show ip rip database

RIP ˘ **show ip rip database** Â

show ip rip database [*network-number* {*network-mask*}]

ð Ô

network-number	ˆ ˩ ˜ ⁄ Â
network-mask	Â ⁄ ˘

ð Ô

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à à Â

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˘ RIP
Â ȷ ȴ ˘
≠ ÿ Â

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ЛЬЮ ˘ RIP Â

```
Ruijie# show ip rip database
192.168.1.0/24    auto-summary
192.168.1.0/30    directly connected, Loopback 3
192.168.1.8/30    directly connected, FastEthernet 0/0
192.168.121.0/24    auto-summary
192.168.121.0/24    redistributed
[1] via 192.168.2.22, FastEthernet 0/1
```

ЛЬЮ ˘ RIP 192.168.121.0/24
Â

```
Ruijie# show ip rip database 192.168.121.0 255.255.255.0
192.168.121.0/24    redistributed
[1] via 192.168.2.22, FastEthernet 0/1
```

ð ȝ Ô

ȝ	
show ip rip	Â

ð ȷ Ô

ð Ô

show ip rip external

RIP ˫ ˘ **show ip rip external** ȝ Â

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

ð Ô

bgp | connected | isis | ospf | static	ˆ ȴ ~ ˫
process-name	ISIS ȷ
<1-65535>	OSPF ȑ

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ð ৡ Ô

Â

ð ३ Ô

à à Â

ð Ô

OSPF ֽ

ֽ

area

ʁ ˇ ֽ **no** OSPF ʁ Â

area area-id

no area area-id

ð Ô

area-id	OSPF ʁ /ł Â ʁ /ł ┘ Л ⁸ ˇ ≠ ┘ Л IP Â

ð Ô

OSPF ʁ Â

ð ֽ Ô

Â

ð Ô

┘ Л ֽ **no** ˇ OSPF ʁ ʁ
ˇ **area authentication** à**area default-cost** à**area filter-list** à
area nssa ʁ ֽ Â

Ю Ю˘ OSPF ʁ '

1. ў ʁ ˇ Â ″I
ˇ ў ʁ Â
2. ʁ ˇ **network area** ֽ Â ″I
╕ ʁ ֽˇ ʁ Â

ð Ô

ЛЬЮ ˇ OSPF ʁ 2 '

```
Ruijie(config)# router ospf 2
```

```
Ruijie(config)# no area 2
```

ð ȝ Ô

ȝ	
network area	ⱵȚ OSPFˇ Ո OSPF ʊ

ð ȷ Ô

ð Ô

area authentication

OSPF ʊ ˇ ȝ **area authentication** Â
ȝ **no** OSPF ʊ Â

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

no area *area-id* **authentication**

ð Ô

area-id	OSPF ʊ ʃ Â ʊ ʃ ȷ Ո ⁸ ˇ ≠ ȷ Ո IP Â
message-digest	ˆ ȷ ˜ MD5 message digest 5˜ Â

ð Ô

Â

ð ȝ Ô

Â

ð Ô

RGOS ˚ ȷ Ո Ь ˈ ˝ ˜ ˚ ˇ a ˇ
ȝ OSPF ˇ OSPF ȕ˚ ’ ˇ
³ Î ñ u Ð C 5

message-digest-key ȷ Ʌ MD5 ȝ Â

ð Ô

ɅЬЮ ˘ OSPF ʁ ʊ ʁ ˜ MD5 ˘ ȝ ȕ backbone Â

```
Ruijie(config)# interface FastEthernet 0/0
Ruijie(config-if)# ip address 192.168.12.1
255.255.255.0
Ruijie(config-if)# ip ospf message-digest-key 1 md5
backbone
```

OSPF

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 192.168.12.0
0.0.0.255 area 0
Ruijie(config-router)# area 0 authentication
message-digest
```

ð ȝ Ô

ȝ	

cost	STUB ש NSSA Â

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

ð Ô

area-id	ʁ Â
acl-name	acl ɻ
prefix-name	prefix-list ɻ
access	**prefix**	prefix list ACL
in	**out**	˚	ʁ

ð Ô

ð ʒ Ô

Â

ð Ô

ʒ ABR ʁ ˜ Э Â

ABR Э a ɻ ʁ ˚ ˘ ʒ Â

ð Ô

ЛЬЮ ʒ˘ area 1 ˉ 172.22.0.0/8 ʁ 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
```

ð ʒ Ô

ð ɻ ف ɣ ɹ φ

area *area-id* **nssa** [**no-redistribution**] [**default-information-originate** [**metric** <*0-16777214*> | **metric-type** <*1-2*>]] [**no-summary**]

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

ð Ô

area-id	NSSA ш ш /ı Â
no-redistribution	ˆ ˩ ˜ nssa ABR ˘ ˫ ٪ ш a nssa ш ˘ ˩Л Э Â
default-information-originate	ˆ ˩ ˜ 7 LSA nssa ш ˘ NSSA ABR ASBR Э Â
no-summary	ˆ ˩ ˜ nssa (ABR) Ь LSA nssa ш Â

ð Ô

ЮЖ NSSA ш Â

ð ٪ Ô

Â

ð Ô

default-information-originate Type-7 LSA˘ nssa ABR ASBR Э ˘ ABR Э ˘ Type-7 LSA ˘ ASBR Э(˩ ≠ a ABR) ˘ Type-7 LSA Â

no-redistribution ASBR Э OSPF redistribute ٪ è a NSSA ш Â NSSA ASBR ABR ˘ ˩Л nssa Â

ѝ NSSA ш ˆ LSA˜ ˘ ˩Л ABR Э no-s mmary ˘ ABR NSSA ш summary LSAsˆ Type-3 LSA˜ Â

ı **area default-cost** NSSA ш ABR Э Â ٪ ш NSSA ш Â ЮЎ NSSA ѝ 1 Â

ð Ô

ЛЬЮ ˘ ш 1 й ˘ ш
Â

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

ð ʒ Ô

ʒ	

RFC1583 ˘ cost ˘
cost Â

ð ʒ Ô

Â

ð Ô

ʒ ABR Э ˘ ш
˘ л è ш Â й ш
˘ ш Э é ˘ ш
Â з ⅃Л advertise not-advertise

ā Ω ˘ ˘ Ω Â
⅃Л Ⱨ ш ʒ˘ OSPF
˘ ˘ Â

ð Ô

ЛЬЮ ˘ ш ˝ 172.16.16.0/20 Â

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.0.0 0.0.15.255
area 0
Ruijie(config-router)# network 172.16.17.0 0.0.15.255
area 1
Ruijie(config-router)# area 1 range 172.16.16.0 255.2
55.240.0
```

ð л Ô

ð Ô

area stub

OSPF ш й ˘ ʒ
area stub Â ʒ **no** Â

area *area-id* **stub** [**no-summary**]

no area *area-id* **stub** [**no-summary**]

ð Ô

ˆ ˩ ˜ ABR

no-summary

area virtual-link

Ⱶ OSPF ˘ ʒ **area virtual-link** Â
ʒ **no** Ⱶ Â

area *area-id* **virtual-link** *router-id* [**authentication** [**message-digest** | **null**]] [**dead-interval** *seconds*] [**hello-interval** *seconds*] [**retransmit-interval** *seconds*] [**transmit-delay** *seconds*] [[**authentication-key** *key*] | [**message-digest-key** *key-id* **md5** *key*]]
no area *area-id* **virtual-link** *router-id*

ð Ô

area-id	OSPF ʁ /ı Â ʁ /ı ┘Ո IP Â
router-id	Â ┘Ո show ip ospf ʒ Â
dead-interval *seconds*	ˆ ┘ ˜ Ⱶ ˘ Ո й Æ˘ й 40 Â б Â
hello-interval *seconds*	ˆ ┘ ˜ OSPF Hello ˘ Ո й Æ˘ й 10 Â б Â
retransmit-interval *seconds*	ˆ ┘ ˜ OSPF ˆ LSA˜ ˘ Ո й Æ˘ й 5 Â Э Â

ð Ô

dead-interval ' 40 '

hello-interval ' 10 '

retransmit-interval ' 5 '

transmit-delay ' 1 '

a ;

è Â

ð ʒ Ô

Â

ð Ô

OSPF ˘ ш б ˘ ˘
˘ Â
ч ш ˆ ABR˜ ˘ ч ABR ˩
ш ѝ ш Â ˆ Stub Area˜ NSSA a ѝ ш
Â ≠ ˩ Л∪ è ш Â

router-id ѝ OSPF ˘ a router-id ˘
show ip ospf neighbor ʒ Â˩ Л∪ Loopback
Â

area virtual-link ʒ ⊮ ˘
ш OSPF ˘ ʒ **area authentication** Â

ð Ô

Л∪Ю ˘ Л∪ш 1 ѝ ш ˘ б 2.2.2.2 Â

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network
```

digest

```
Ruijie(config-router)# area 1 virtual-link 1.1.1.1 me
ssage-digest-key 1 md5 hello
```

ð ʒ Ô

ʒ	
area authentication	OSPF ʁ Â
show ip ospf	OSPF ˘ Â

ð ʌ Ô

ð Ô

auto-cost

ʒ ╟ ʒ˙ ╥ ʌ ˘ ╟ ʒ˙ ˘ ʒ **no** ɔ Ɲ ╟ ʒ˙ ╥ ˘ ɔ Ɲ Â

auto-cost [**reference-bandwidth** *ref-bw*]

no auto-cost [**reference-bandwidth**]

ð Ô

ref-bw	Â Ɲ Mbps ѝ Æ˘ : 1-4294967

ð Ô

ѝ 100Mbps Â

ð ʒ Ô

Â

ð Ô

ʒ ╟ ʒ˙ , a ɔ ╟ ʒ ˙ ╥ , . Э ɔ ╟ ʒ˙ ( ) ɔ . **default auto-cost no**

auto-cost

ð Ô

ЛЬЮ ¾ OSPF 1

```
Ruijie# clear ip ospf 1 process
```

ð ¾ Ô

ð ¼ Ô

ð Ô

compatible rfc1583

¼ AS ˘ ˘
¾ RFC1583 ¨I RFC2328
¨I Â

commpatible rfc1583

no commpatible rfc1583

ð Ô

¾	

ð Ô

RFC1583 Â

ð ¾ Ô

Â

ð Ô

ЛЬЮ ˘ rfc 2328 Â

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

ð ¾ Ô

¾	
show ip ospf	ospf

ð ¼ Ô

ð Ô

default-information originateˆ OSPF˜

OSPF ˘ ¾

default-information originate Â ¾ **no** Â

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

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

ð Ô

always	ˆ ˩ ˜ OSPF

a ↓ Â ч ˘ ↓
˘ 1 2 ″I ˘ Л **show ip route**
1 Â

STUB ʁ a ↓Л Â

ð Ô

ЛЬЮ ˘ OSPF ˘ OSPF
˘ ̀ й 1˝ й 50 Â

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

ð ȝ Ô

ȝ	
show ip ospf database	OSPF Â
show ip route	IP Â

ð ↓ Ô

ð Ô

default-metric

OSPF ↑ ˘ ȝ
default-metric Â ȝ **no** Â

default-metric *metric*

no default-metric

ð Ô

metric	ЬЖ OSPF ↑ Â

ð Ô

й 20 Â

ð ȝ Ô

Â

ð Ô

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

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

ð Ô

ЛЮ ˘ OSPF ↑ и 50 Â

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

ð ʒ Ô

ʒ	
redistribute	↑ è Â
show ip ospf	ospf

ð ˩ Ô

ð Ô

distance ospf

a ˩ OSPF

distance ospf {**intra-area** <*1-255*> | **inter-area** <*1-255*> | **external** <*1-255*>}

no distance ospf

ð Ô

intra-area <*1-255*>	ш ˘ и 110
inter-area <*1-255*>	ш ˘ и 110
external <*1-255*>	˘ и 110

ð Ô

ѝ 110 Â

ð ৡ Ô

OSPF Â

ð Ô

OSPF

LSA ˘ ˚ б SPF ˘
Â a ˘ ≠ a
˘ OSPF Â ╖ ABR
ASBR˝ ┘Л 8 Â

ð Ô

```
Ruijie(config)# access-list 3 permit 172.16.0.0
0.0.127.255
Ruijie(config)# router ospf 25
Ruijie(config-router)# redistribute rip metric 100
Ruijie(config-router)#distribute-list 3 in ethernet 1/0
Ruijie(config-router)#distribute-list 3 in ethernet 1/1
```

ð ¾Ô

ð ┘ Ô

ð Ô

distribute-list out

ĺ ˘ ╖ **redistribute** ¾

distribute-list {l*istname* | **gateway** *plist-name* | **prefix** *plist-name*} **out** [**bgp** | **connected** | **isis** *area-tag* | **ospf** *process-id* | **rip** | **static**]

no distribute-list {l*istname* | **gateway** *plist-name* | **prefix** *plist-name* } **out** [**bgp** | **connected** | **isis** *area-tag* **| ospf** *process-id*| **rip** | **static**]

ð Ô

listname	acl
gateway *plist-name*	gateway
prefix *plist-name*	prefix-list
[**bgp** | **connected** | **isis** *area-tag* **| ospf** *process-id* | **rip** | **static**]	

ð Ô

и ˘ Â

ð ¾ Ô

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distribute-list out б **redistribute route-map** ֽ ˘ ÿ è
ƚ OSPF ˘ a ƚ ˘
б **redistribute** ֽ Â

/ OSPFv2 Э˘ Â

SNMP OSPFv2 ˘ ˩ Л Ъ
ʒ MIB Э Â

ð Ô

ЛЪЮ ˘ SNMP / й 100 OSPFv2 '
```
Ruijie(config)# router ospf 100
Ruijie(config-router)# enable mib-binding
```

ð ʒ Ô

ʒ	
show ip ospf	OSPF
enable traps	OSPF TRAP ╖

ð ˩ Ô

ð Ô

enable traps

OSPFv2 16 TRAP ˘ ↑ й 4 ˘ Ю
ʒ ˩ Л Ъ ╟ TRAP Â ʒ **no** ˩ Л Ъ
TRAP Â

enable traps [**error** [**ifauthfailure | ifconfigerror | ifrxbadpacket | virtifauthfailure | virtifconfigerror | virtifrxbadpacket**] | **lsa** [**lsdbapproachoverflow | lsdboverflow | maxagelsa | originatelsa**] | **retransmit** [**iftxretransmit | virtiftxretransmit**] | **state-change** [**ifstatechange | nbrstatechange | virtifstatechange | virtnbrstatechange**]]

no enable traps [**error** [**ifauthfailure | ifconfigerror | ifrxbadpacket | virtifauthfailure | virtifconfigerror | virtifrxbadpacket**] | **lsa** [**lsdbapproachoverflow | lsdboverflow | maxagelsa | originatelsa**] | **retransmit** [**iftxretransmit | virtiftxretransmit**] | **state-change** [**ifstatechange | nbrstatechange | virtifstatechange | virtnbrstatechange**]]

ð Ô

error	б error traps ˘ ⅃ Л Ю error traps ' **ifauthfailure** **ifconfigerror** **ifrxbadpacket** **virtifauthfailure** **virtifconfigerror** **virtifrxbadpacket**
lsa	б lsa traps ˘ ⅃ Л Ю lsa traps ' **lsdbapproachoverflow** LSA Э ⍞ **lsdboverflow** LSA Э **maxagelsa** LSA **originatelsa** LSA
retransmit	б retransmit traps ˘ ⅃ Л Ю retransmit traps ' **iftxretransmit** Э **virtiftxretransmit** Э
state-change	б state-change traps ˘ ⅃ Л Ю state-change traps ' **ifstatechange** ⅃ **nbrstatechange** ⅃ **virtifstatechange** ⅃ **virtnbrstatechange** ⅃

ð Ô

Ю˘ TRAP Â

ð ʒ Ô

Â

ð Ô

ʒ ⅃ **snmp-server** ʒ ⁸˘ ˝I . ٧ جي $ Ò

MIB ʒ a ⅋˘ a ⅄ ⅄ TRAP Â

ð Ô

ЛЮ ˘ OSPFv2 100 TRAP '

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

show ip ospf	OSPF
enable mib-binding	OSPFv2 MIB

ð ⅄ Ô

ð Ô

ip ospf authentication

ʒ ˘ **no** ⅃Ծ ѝ Â

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

no ip ospf authentication

ð Ô

message-digest	Э MD5 ╗ Â
null	a Â

ð Ô

Э , Э ѡ
Â

ð ʒ Ô

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ð Ô

ʒ ⅄ a .
no ˘ ѡ
Э ¤ ˘ ѝ **null** ⁸ ѝ
a , Э ѡ , ″l
Э Â

ð Ô

ЛЬЮ ˘ FastEthernet 0/0 OSPF ѝ MD5
Â

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

ð ¢ Ô

¢	
area authentication	OSPF ¥ Â
ip ospf authentication-key	OSPF Â
ip ospf message-digest-key	OSPF MD5 Â

ð ¬ Ô

ð Ô

ip ospf authentication-key

OSPF ˘ ¢ **ip ospf authentication-key** Â ¢ **no** Â

ip ospf authentication-key *key*

no ip ospf authentication-key

ð Ô

Key	˘ ¬ Л 8 Â

ð Ô

Â

ð ¢ Ô

Â

ð Ô

ip ospf authentication-key ¢ ˘ OSPF Â a ˘ ч ¬ a OSPF ˘ ≠ a Â

a ¬ ¬ Л a ˘ ¬ Э ˘ Â

OSPF ¥ ˘ ¢ **area authentication** Â

Э ≠ ¬ Л , Ю ¢ **ip ospf authentication** , ¥ ″I ¬

.

ð Ô

ЛЪЮ ˘ FastEthernet 0/0 OSPF ѝ 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
```

ð ৡ Ô

ৡ	
area authentication	OSPF ѱ Ⱨ Â
Ip ospf authentication	Э Ⱨ

ð ⁄ Ô

ð Ô

ip ospf cost

OSPF ˆ OSPF ˜˜ ৡ **ip ospf cost** Â ৡ **no** Â

ip ospf cost *cost*

no ip ospf cost

ð Ô

cost	OSPF Â

ð Ô

ѝ /Bandwidthˆ ѝ 100Mbps˜ Â

ð ৡ Ô

Â

ð Ô

ЮЎ OSPF ѝ 100Mbps/Bandwidthˇ è Bandwidth ѝ ˘ ৡ bandwidth Â

ѡ OSPF ѝ'

¸ 64K ˇ cost ѝ 1562ʼ

¸ E1 ˇ cost ѝ 48ʼ

¸ 10M Л ˇ cost ѝ 10ʼ

¸ 100M Л ˇ cost ѝ˝ Â

ip ospf cost ֵ OSPF ˇ Â

Э LSA , ⅃ Л Э ╖

.

ð Ô

ЛЬЮ ˘ LSA serial 1/0 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
```

ð ⅄ Ô

ð Ô

ip ospf dead-interval

OSPF ˘ ʒ **ip ospf dead-interval** Â ʒ **no** Â

ip ospf dead-interval *seconds*

no ip ospf dead-interval

ð Ô

seconds	Ⱨ ˘ Л ѝ Æ Â

ð Ô

ѝ **ip ospf hello-interval** " Â

ð ʒ Ô

Â

ð Ô

OSPF Hello Â OSPF ˘

Hello ˘ ÿ

Â ѝ hello 4 ˘ hello

˘ ╟ Â

ʒ ⅃ Л OSPF ˘ ↑ Â

ч '

¸ ˘ a hello '

¸ ⅄ Э Â

ð Ô

ЛυЮ ˇ serial 1/0 OSPF ѝ
30 Â

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip address 172.16.10.1
255.255.255.0
Ruijie(config-if)# encapsulation ppp
Ruijie(config-if)# ip ospf dead-interval 30
```

ð ʒ Ô

ʒ	
ip ospf hello-interval	OSPF Hello Â

ð ⁄ Ô

ð Ô

ip ospf disable all

a Ạ ospf Â

ip ospf disable all

no ip ospf disable all

ð Ô O S P F

OSPF

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ð ʒ Ô

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ð Ô

ʒ j **network80.48 θ45A>Tj/TT5 1 l6d.4 Tr 6.01[<1C030ƀA1CF144**

ð ३ Ô

ð ✓ Ô

ð Ô

ip ospf hello-interval

¾	
ip ospf dead-interval	OSPF Â

ð ¼ Ô

ð Ô

ip ospf message-digest-key

OSPF MD5 ˘ ¾ **ip ospf message-digest-key** Â ¾ no OSPF MD5 Â

ip ospf message-digest-key *key-id* **md5** *key*

no ip ospf message-digest-key

ð Ô

ὴ ὲ ˇ ἦ a ᾿
OSPF ˇ Â
Ὰˇ ᾿ Ɲ Â

ð Ô

ƝƱƗ ˇ FastEthernet 0/0 ╗ OSPF ˇ
Ὰὴ ˇ ὴ 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
```

╗ Ᾰˇ Â

```
Ruijie(config)# interface Serial1/0
Ruijie(config-if)# no ip ospf message-digest-key 10 md5
hello10
```

ð ʒ Ô

ʒ	
area authentication	OSPF ʊ ᾗ Â
ip ospf authentication	Ɔ ᾗ

ð Ᾰ Ô

ð Ô

ip ospf mtu-ignore

Ᾰ **mtu** Ɲ Ɱ ʒ Â
ʒ **no** Â

ip ospf mtu-ignore

no ip ospf mtu-ignore

ð Ô

ʒ	

ð Ô

mtu Â

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Â

ð Ô

OSPF MTU
MTU

¸ ' PPP à SLIP à à X.25
,
¸ NBMA ' ^ ~ à X.25 ^
~,
¸ ' Л ,
¸ ѝ Â

ð ֳ Ô

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ЛЬЮ ˘ й ˘
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
```

ЛЬЮ ˘ й ˘
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
```

ЛЬЮ ˘ й ˘ DR/RDR˜
ÂЛЬЮ
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
```

ð ʒ Ô

ʒ	
dialer map ip	Њ IP б Л Л Â
frame-relay map	Њ IP б DLCI Â
neighborˆ OSPF˜	Њ IP ˘ NBMA Â
X25 map	Њ IP б X.25 Â

ð Л Ô

ð Ô

ip ospf priority

OSPF ˝I ˘ ʒ **ip ospf priority** Â
ʒ **no** Â

ip ospf retransmit-interval

ʜ LSU ~ ˘
ʒ **ip ospf retransmit-interval** Â ʒ **no** Â

ip ospf retransmit-interval *seconds*

no ip ospf retransmit-interval

ð Ô

Seconds	LSU ˘ Л ѝ æ Â ч Â ѝ 5 Â

ð Ô

ѝ 5 Â

ip ospf transmit delay

ÍÆ OSPF LSU ˘ ¾ **ip ospf transmit delay** Â ¾ **no** Â

ip ospf transmit delay *seconds*

no ip ospf transmit delay

ð Ô

Seconds ÍÆ

log-adj-changes

٣ ٦ ˘ ٣ **no** **default**
٦ Л℧ ╖ Â

log-adj-changes [**detail**]

no log-adj-changes [**detail**]

<1-65535>	DD

ð Ô

ѝ 5Â

ð ȝ Ô

Â

ð Ô

б ȴ ˘ è ȴ ˘ ȝ˘
ȴ ⁸ OSPF ȴ DD Â

ð Ô

ЛЪЮ ˘ DD ѝ 4Â

```
Ruijie(config)# router ospf 10
Ruijie(config-router)# max-concurrent-dd 4
```

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neighbor

ЊЖ OSPF ˘ ȝ **neighbor**Â ȝ **no**
Â

neighbor *ip-address* [**poll-interval** *seconds*] [**priority** *priority*] [**cost** *cost*]

no neighbor *ip-address*

ð Ô

ip-address	IP Â
poll-interval *seconds*	ˆ ȴ ˜ ˘ Лъ ѝ Æ˘ 120 ÂNon-broadcast(NBMA) Â
priority *priority*	ˆ ȴ ˜ ˝I ˘ ѝ˚ Â Non-broadcast(NBMA)
Cost *cost*	ˆ ȴ ˜ ˘ ЊЖ, Э cost Âpoint-to-multipoint [non-broadcast] Â

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RGOS ˚ ȕ ˘ Â
IP ˘ ȕ ў IP Â

NBMA Э ȴ ȕ a ˘
Hello ˘ OSPF Hello ˘ Hello
ȕ Â OSPF ˘ ˝I
a ȕ 0 Hello ˘ ˝I ȕ 0 a
б DR/BDR Â DR/BDR Ʌʊ ȷ˘ DR/BDR
Hello Â

Э, ȕ a ɛ Ʌʊ ╟
, ȝ ȕ è , ȷ
ȴ Ʌʊ cost .

ð Ô

ɅʊЮ ˘ OSPF ˘ è IP ȕ
172.16.24.2˝ ˝I ȕ 1˘ ȕ 150 Â

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# network 172.16.24.0 0.0.0.255
area 0
Ruijie(config-router)# neighbor 172.16.24.2 priority 1
poll-interval 150
```

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ȝ	
ip ospf priority	OSPF ˝I Â
ip ospf network	OSPF

ð ȷ Ô

ð Ô

network area

Ⱨ OSPF˝ Ʌʊ OSPF ʊ ˘
ȝ **network area** Â ȝ **no** OSPF ʊ Ⱨ Â

network *ip-address*

router ospf	OSPF Â

Â

overflow database external *max-dbsize wait-time*

no overflow database external

ð Ô

max-dbsize	external lsa ˆ ˩ AS ˩˜˘ ˩ ' 0-2147483647 Â
wait-time	ÿ ˘ ˩ ' 0-65535 Â

ð Ô

a ⁸ external-LSA Â

⁸ external-LSA ˘ external-LSA ˥˘ a Ą Â

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external-LSA *max-dbsize* ˘ ˘ ЮŎ a Ą╖ external-LSAŎ external-LSA Â *wait-time* ˥˘ ˘ ╖ external-LSA Â

```
Ruijie# config terminal
Ruijie(config)# router ospf 10
Ruijie(config-router)# overflow database external 10 3
```

ð ٪ Ô

ð ˥ Ô

ð Ô

passive-interface

٪ ѝ ╟ Â ٪ **no** Â

passive-interface [**default** | *type number*]

no passive-interface [**default** | *type number*]

ð Ô

type number	ì ╟ Â
default	ì ╟ Â

ð Ô

Ю ì ╟ , OSPF

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ì è ╟ ˉ ˇ ┘Л
ì ╟ Â

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ЛЮ ˇ serial 1/0 ì ╟ Â

```
Ruijie(config)# router ospf 30
Ruijie(config-router)# passive-interface serial1/0
```

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ʒ	

show ip ospf interface

metric-type {**1**|**2**} | **route-map** *map-tag* | **tag** *<0-4294967295>* | **subnets**]

ð Ô

bgp | **isis** *area-tag* | **ospf** *process-id* | **rip** | **connected** | **static**	¦ Â
metric	OSPF extern2 LSA metric Â
Level-1/ level-1-2/ level-2	¦ IS-IS ˘ level ¦ ˘ level-2 IS-IS ¦ Â
match	¦ OSPF ˘ ¦ ˘ OSPF ¦ '
metric-typ	ŭ E-1 E-2 Â
route-map	¦ Â
tag	¦ OSPF tag Â
subnets	˩ ¦ Â

ð Ô

ð ʒ Ô

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ʒ ˥˘ ˩ ŭ ASBR˘ OSPF ˘ Ʌʊ type-5 LSA è OSPF Â

¦ ˘ BGP metric ŭ 1˘ è LSA metric ŭ 20ơ

¦ **isis** ˘ a level ˘ ¦ level-2 ˘ ¦ ˘ level ˘ ¦ level Â ˘ ŭ ˘ ˩ level 1, level 2 ˘ ŭ level-1-2 Â Â

¦ **ospf** ˘ a match ˘ ¦ ospf ' ˥ match ŭ match ˘ ¦ ¬ ¦ ' no ʒ match ŭ Â Â

¦ ˘ route-map ˘ route-map match ¦ ¬ ' ¦ OSPF ISIS ˘

ï match level ˘ Ą route-map
Â

ð Ô

ЛЬЮ ¾ ï OSPF

```
Ruijie(config-router)# redistribute static subnets
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
```

Show run Ю'

```
router ospf 1
redistribute ospf 2 match external 1 internal subnets
redistribute isis isis-001 level-1-2
```

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router ospf

OSPF ˘ ¾ **router ospf**Â ¾
no Ня OSPF Â

router ospf *process-id*

no router ospf *process-id*

ð Ô

process-id	ospf /

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a OSPF Â

ð ¾ Ô

Â

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RGOS10.1 Э ╗ ' Л˘ ѝ ospf Â
a ⅄ ospf ˘ ⅄Л ѝ ч a Â

ð Ô

ЛЬЮ ˘ OSPF 10 Â

```
Ruijie(config)# router ospf 10
```

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ٹ	
show ip protocols	Â
show ip ospf	ospf Â

ð ⅄ Ô

ð Ô

router-id

ID, ٹ **no** ⅄Л Router ID˘ Router ID Â

router-id *router-id*

no router-id

ð Ô

router-id	ID,Л IP Â

ð Ô

ЛЬЮ ˘ router-id ỳ 0.0.0.36Â

```
Ruijie(config)# router ospf 20
Ruijie(config-router)# router-id 0.0.0.36
```

ð ȝ Ô

ȝ	
show ip protocols	Â

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summary-address

OSPF ˘ ȝ
summary-address Â ȝ **no** ЮЖ Â

summary-address *ip-address net-mask* [**not-advertise | tag** *<0-4294967295>* |]

ð Ô

ip-address	IP Â
net-mask	Â
not-advertise	a Ὼ ˘ ỳ Ὼ Â

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ÿ è ƚ ˘ OSPF ˘
ƚ Лъ OSPF Â
˘ ⊿Лъ
˘ ÿ Â

б **area rang** ȝ a ⊿˘ area range OSPF ш ˘
summary-address OSPF Â

NSSA ʁ˘ **summary-address** ʒ NSSA ABR Э
˘ з ʃ Â

ð Ô

ЛЬЮ ʒ˘ 100.100.0.0/16 Â

```
redRuijie(config)# router ospf 20
Ruijie(config-router)# summary-address 100.100.0.0
255.255.0.0
Ruijie(config-router)# redistribute static subnets
Ruijie(config-router)# network 200.2.2.0 0.0.0.255 area
1
Ruijie(config-router)# network 172.16.24.0 0.0.0.255
area 0
Ruijie(config-router)# area 1 nssa
```

ð ʒ Ô

ʒ	
area range	OSPF ʁ Э Â

ð ʌ Ô

ð Ô

timers lsa-group-pacing

ʒ LSA ʃ ʌ 9 ЛЬ
˘ ʒ **no** Â

timers lsa-group-pacing *seconds*

no timers lsa-group-pacing

ð Ô

seconds	LSA ˘ ˘ Â : 10-1800

ð Ô

: 240 Â

ð ʒ Ô

Â

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ˆ LSA˜ ˘ ˘ ˘

Лъ Â ѝ 4ǂ Â a Â
б LSA ˧ Â ˘
10000 LSA˘ æ Â 40~100 ˘
10~20ǂ ˧ Â

ð Ô

ЛъЮ ˘ ѝ 120 Â

```
Ruijie(config)#router ospf 20
```

Process uptime	OSPF ˆ router-id ѝ 0.0.0.0 a ˜
Bound to VRF	OSPF VRF
Conforms to RFC2328	б RFC2328
RFC1583Compatibility flag	RFC1583 RFC2328 ASBR
Support Tos	TOS0
Supports opaque LSA	opaque-LSA
Router Type	OSPF normal à ABR à ASBR Â
SPF Delay	↓ SPF
SPF-holdtime	ч SPF
LsaGroupPacing	LSA ˘ ˘
Incomming current DD exchange neighbors	˘ incomming exstart
Outgoing current DD exchange neighbors	˘ outgoing ÿ exstart
Number of external LSA	LSA
External LSA Checksum Sum	LSA
Number of opaque LSA	opaque-LSA
Opaque LSA Checksum Sum	opaque-LSA
Number of non-default external LSA	external-LSA
External LSA database limit	external-LSA ⁸
Exit database overflow state interval	overflow
Database overflow state	OSPF overflow
Number of LSA originated	LSA
Number of LSA received	LSA
Log Neighbor Adjency Changes	↓ (ÕXÊEg¥M21þRÅRÕÊ©®NÎ

Area type ש ,

ЛЬЮ ѝ **show ip ospf border-routers** ֽ

```
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
```

ЮÂ

Codes	ֽ ЮÂi ѡ ˘ I ѡ Â
I	ѝ ѡ Â
1.1.1.1	OSPF Â
[2]	ˆ cost˜ Â
via 10.0.0.1	Ю Â
FastEthernet 0/1	Â
ABR, ASBR	˘ ABR ASBR ч ˘ ɻЛЬɻ ABR ASBR Â
Area 0.0.0.1	˗ ѡ Â
select	ASBR ˘ select Â

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show ip ospf database

OSPF ˘ ֽ **show ip**

ip-address]

show ip ospf [*process-id area-id*] **database** [**router**] [**self-originate**]

show ip ospf [*process-id area-id*] **database** [**network**][*link-state-id*]

show ip ospf [*process-id area-id*] **database** [**network**] [*link-state-id*] [**adv-router** *ip-address*]

show ip ospf [*process-id area-id*] **database** [**network**] [*link-state-id*] [**self-originate**]

show ip ospf [*process-id area-id*] **database** [**summary**] [*link-state-id*]

show ip ospf [*process-id area-id*] **database** [**summary**] [*link-state-id*

```
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
```

Router Link States	ЛЬЮ ὶ Â
Net Link States	ЛЬЮ ὶ Â
Summary Net Link States	ЛЬЮ ὶ Â
NSSA-external Link States	ЛЬЮ ὶ
AS External Link States	ЛЬЮ ὶ Â
Link ID	Â
ADV Router	Â
Age	Â
Seq#	Л˘ LSA Â
Cksum	Â
Link-Count	
Route	LSA
Tag	Â

ЛЬЮ ὶ **show ip ospf database asbr-summary** ʒ '

```
Ruijie# show ip ospf database asbr-summary
OSPF Router with ID (1.1.1.35) (Process ID 1)
ASBR-Summary Link States (Area 0.0.0.1)
LS age: 47
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: ASBR-summary-LSA
Link State ID: 3.3.3.3 (AS Boundary Router address)
Advertising Router: 1.1.1.1
LS Seq Number: 80000001
Checksum: 0xbe8c
Length: 28
Network Mask: /0
TOS: 0  Metric: 1
```

show ip ospf database asbr-summary ʒ
ЮÂ

OSPF Router with ID	ЛЬЮ б OSPF Л

AS Summary Link States ЛЬЮ

Type-5 AS External Link States	ЛЬЮ ѝ Â
LS age	Â
Options	Â
LS Type	Â
Link State ID	Â
Advertising Router	Â
LS Seq Number	Л Â
Checksum	Â
Length	˘ Лъ ѝ Æ Â
Network Mask	Â
Metric Type	Â
TOS	TOS ˘ ѝ 0 Â
Metric	Â
Forward Address	˘ IP Â ѝ 0.0.0.0˝ Â
External Route Tag	˘ 32 Â OSPF a ˘ ѐ ǂ OSPF Â

ЛЬЮ ѝ **show ip ospf database network** ȝ '

```
Ruijie# show ip ospf database network
OSPF Router with ID (1.1.1.1) (Process ID 1)
Network Link States (Area 0.0.0.0)

LS age: 572
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: network-LSA
Link State ID: 192.88.88.27 (address of Designated
Router)
Advertising Router: 1.1.1.1
LS Seq Number: 80000001
Checksum: 0x5366
Length: 32
Network Mask: /24
Attached Router: 1.1.1.1
Attached Router: 3.3.3.3
```

OSPF ३

OSPF Router with ID	ЛьЮ б OSPF Л Â
Summary Net Link States	ЛьЮ ѝ Â
LS age	Â
Options	Â
LS Type	Â
Link State ID	Â

OSPF Router with ID	ЛЪЮ б OSPF /ł Â
NSSA-external Link States	ЛЪЮ ѝ Â
LS age	Â
Options	Â
LS Type	Â
Link State ID	Â
Advertising Router	Â
LS Seq Number	/ł Â
Checksum	Â
Length	˘ Лъ ѝ Æ Â
Network Mask	Â
Metric Type	Â

TOS TOS

```
Metric Type: 2 (Larger than any link state path)
TOS: 0
Metric: 20
Forward Address: 0.0.0.0
External Route Tag: 0
```

show ip ospf database external ʒ ЮÂ

OSPF Router with ID	ЛЪЮ б OSPF л Â
Type-7 AS External Link States	ЛЪЮ й Â
LS age	Â
Options	Â
LS Type	Â
Link State ID	Â
Advertising Router	Â
LS Seq Number	л Â
Checksum	Â
Length	˘ Лъ й æ Â
Network Mask	Â
Metric Type	Â
TOS	TOS ˘ й 0Â
Metric	Â
Forward Address	˘ IP Â й 0.0.0.0 Â
External Route Tag	˘ 32 ÂOSPF a ˘ è ¦ OSPF Â

ЛЪЮ й **show ip ospf database database-summary** ʒ '

```
Ruijie# show ip ospf database database-summary
OSPF process 1:
Router Link States      : 4
Network Link States     : 2
Summary Link States     : 4
ASBR-Summary Link States : 0
```

```
AS External Link States  : 4
NSSA-external Link States: 2
```

show ip ospf database database-summary ¾

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ЛЬЮ ѝ **show ip ospf interface FastEthernet** *1/0* ʒ '

Ruijie# **show ip ospf interface fa** *1/0*

```
FastEthernet 1/0 is up, line protocol is up
Internet Address 192.88.88.27/24, Ifindex 4, Area 0.0.0.0,
MTU 1500
Matching network config: 192.88.88.0/24
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST,
Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 1.1.1.1, Interface Address
192.88.88.27
Backup Designated Router (ID) 3.3.3.3, Interface Address
192.88.88.72
Timer intervals configured, Hello 10, Dead 40, Wait 40,
Retransmit 5
Hello due in 00:00:03
Neighbor Count is 1, Adjacent neighbor count is 1
Crypt Sequence Number is 70784
Hello received 1786 sent 1787, DD received 13 sent 8
LS-Req received 2 sent 2, LS-Upd received 29 sent 53
LS-Ack received 46 sent 23, Discarded 1
```

show ip ospf interface serial *1/0* ʒ ЮÂ

FastEthernet 0/0 State	˘ UP ˘ Down Â
Internet Address	IP Â
Area	OSPF ѡ Â
MTU	MTU

Matching network config OSPF

Priority	″I
Designated Router(ID)	DR
DR's Interface address	DR
Backup designated router(ID)	BDR
BDR's Interface address	BDR

Time intervals configured Hello˘ Dead˘ Wat

neighbor-id	ˆ ˩ ˜ Â

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ꝛ ˩ Л Ъ ˇ ꝛ OSPF
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ЛЪЮ ѝ **show ip ospf neighbor** ꝛ '

```
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
```

show ip ospf neighbor ꝛ ЮЪ

Neighbor ID	Â

Pri	″I ˆ DR ˜
State	
Dead Time	Dead
Address	
Interface	
interface address	
In the area	ˉ ש

Thread Poll Timer	˘ Poll Timer ╟

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show ip ospf route

ospf Â

show ip ospf [*proce* **ount**]

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process-id	ospf Â
count	ospf 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 ¾ ЮЎ

codes	

via	Ю б

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show ip ospf summary-address

OSPF ʈ ˘ ʒ
show ip ospf summary-address Â

show ip ospf summary-address

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ʒ NSSA ABR Э ˘ з
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ЛЬЮ ѝ **show ip ospf summary-address** ʒ '

```
Ruijie# show ip ospf summary-address
Summary Address Summary Mask    Advertise     Status
Aggregated subnets
--------------- --------------- ------------ --------
202.101.0.0           255.255.0.0           advertise
Inactive 0
Ruijie#
```

Summary Address	
Summary Mask	Â
Advertise	Ὼ

Status	
Aggregated subnets	

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show ip ospf virtual-link

OSPF ˘ ঳ **show ip ospf virtual-link** Â

show ip ospf [*process-id*] **virtual-link**

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Virtual Link VLINK0 to router	Л
Virtual Link state	.
Transit area	ш Â
via interface	Â
Local address	
Remote Address	
Transmit Delay	Â
State	
Time intervals configured	Hello˘ Dead˘ Wait˘ Retransmit
Adjacency State	Â FULL и Â

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distribute-list in

ª ˘ ΠU ˘ ʒ

distribute-list in Â ʒ **no** ⊮ 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*]

ð Ô

access-list-number	/ı /ı ' 1-99˘ 1300-1999 /ı ' 100-199˘ 2000-2699
access-list-name	ɻ
prefix *prefix-list-name*	
gateway *prefix-list-name*	
i*nterface-type interface-number*	(ɻ) ǂ ˘

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Â ʒ OSPF ˘ ѝ
OSPF a έ ˘ Â
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ЛЬЮ ˘ RIP ÿ Fastethernet 0/0 ˘
⁸ ˘ 172.16 Â

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

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ʒ	
access-list	Ⱶ
prefix-list	Ⱶ

ð ⅃ Ô

ð Ô

distribute-list out

⁸ ˘ Л∪ ˘ ʒ
distribute-list out Â ʒ **no** Ⱶ Â

distribute-list {[*access-list-number* | *access-list-name*] | **prefix** *prefix-list-name*} **out** [*interface* | *protocol* | *process-id*]

no distribute-list {[*access-list-number* | *name*] | **prefix** *prefix-list-name*} **out** [*interface* | *protocol* | *process-id*]

ð Ô

access-list-number	1-99 1300-1999 100-199 2000-2699
access-list-name	
prefix *prefix-list-name*	
Interface	
protocol	

redistribute	↑

ip default-network

˘ ʒ **ip default-network** Â ʒ no ┘Л Â

ip default-network *network*

no ip default-network *network*

ð Ô

network	Л Â

ð Ô

ѝ 0.0.0.0/0 Â

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ѝ ˘ **default-network** ЛЬЮ ˚ ' a ˘ ┘ Â

Л“*” Л ˘ Â connected Ю ˘ Â

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ЛЬЮ ˘ 192.168.100.0 ѝ ˘ ˘ Л ╠ Â

```
Ruijie(config)# ip route 192.168.100.0 255.255.255.0
serial 0/1
Ruijie(config)# ip default-network 192.168.100.0
```

ЛЬЮ ˘ 200.200.200.0 ѝ ˘ 200.200.200.0 ˘ ѝ Â

```
Ruijie(config)# ip default-network 200.200.200.0
```

ð ʒ Ô

ʒ	
show ip route	IP Â

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ʒ γ Э a Â

ip prefix-list

╗ ˘ **ip prefix-list**
ʒ Â ʒ **no** Â

ip prefix-list *prefix-lis-name* [**seq** *seq-number*] { **deny** | **permit** }
ip-prefix [**ge** *minimum-prefix-length*][**le** *maximum-prefix- length*]

no ip prefix-list *prefix-lis-name*[**seq** *seq-number*] { **deny** | **permit**}
ip-prefix [**ge** *minimum-prefix- length*][**le** *maximum-prefix- length*]

ð Ô

prefix-lis-name	⊿
seq-number	Л∪ /⁄ Âε 1 2147483647 Â ʒ /⁄˘ и ⁑ /⁄ Â /⁄ 5˝ ⊿ /⁄ /⁄ 5
deny	⁻
permit	⁻
ip-prefix	Л∪ Â ⊿ Л∪ IP Â ÿ 0 32
minimum-prefix-length	ˆ ⊿ ~ ( ) ' **ge** ʒ
maximum-prefix-length	ˆ ⊿ ~ ( ) ' **le** ʒ

ð Ô

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ip prefix-list ʒ IP Â permit deny

ᾱ ϩ ⅠO ↓ ╟ Â

ⅠⅯ ϩ ϩ Âge le

ⅠⅯ ϩ ˘ ip-prefix

╗ ϩ Â ϟ ge le ˘ ip-prefix

ϩ Â ge˘ ϩ

minimum-prefix-length 32 Â le

ð Ô

ЛЬЮ ѝ IP ╗ **Deny routes from Net-A'**

```
Ruijie# configure terminal
Ruijie(config)# ip prefix-list pre description Deny routes from Net-A
```

ip prefix-list sequence-number

ѝ ╗ ˘ **ip prefix-list description** ϡ Â ϡ **no** ↓ ╗ Â

ip prefix-list sequence-number

ð Ô

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ЛЬЮ ѝ ╗ '

```
Ruijie# configure terminal
Ruijie(config)# ip prefix-list sequence-number
```

ip route

˘ ϡ ip route Â ϡ no Â

ip route *network net-mask* {*ip-address* | *interface* [*ip-address*]} [*distance*] [**tag** *tag*] [*permanent*] [**weight** *number*] [*disable* | *enable*]

ð Ô

Interface	ˆ ˩ ˜ Ю
distance	ˆ ˩ ˜
tag	ˆ ˩ ˜ Tag
permanent	ˆ ˩ ˜
number	ˆ ˩ ˜
disable/enable	ˆ ˩ ˜

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ѝ 1˘ ˘ ˩ Л∪ ╟
˘ ╟ a ˘ Â
˩ Л∪ ˘ ˘
ѝ ╟ Â OSPF ѝ 110˝ ˩ Л∪
ѝ 125˝ OSPF ˘
˩ Л∪ Э Â

ѝ 1˘ ˩ Л∪ **show ip route weight** ʒ
Â weight WCMP ╗ ˘
˩ ˘ ǂ
˘ weight ǂ ˘ ǂ
Â WCMP ⁸ ѝ 32˝
a ˩˘ Л∪ è WCMP ⁸ б ʌ ’
⁸ ˘ ⁸ a Â

⁸ ˘ a Â
˘ ˘ Â

Л∪ ˘ Ю ѝ ˆ ip route 0.0.0.0 0.0.0.0 Fastethernet 0/0˜ Â
˘ Fastethernet 0/0 ˘ ў
ARP ˘ ´ CPU Â Л∪ a
Л∪ Â

ð Ô

ЛЮ ˘ ╗ 172.16.100.0/24 ˘
Ю ѝ 192.168.12.1˘ ѝ 115 Â

```
ip route 172.16.100.0 255.255.255.0 192.168.12.1 115
```

ÿ è Â ÂЛЪЮ

172.16.10 .0/24 fastethernet 0/0 ÿ

Â

Ruijie(config)#ip route 172.16.10 .0 255.255.255.0

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Э a Â

ip static route-limit

Э ˘ ৡ **ip static route-limit** Â
ৡ no ৸ Л Â

ip static route-limit *number*

no ip static route-limit

ð Ô

number	Э ˘ 1-10000

ð Ô

й 1000 Â

ð ৡ Ô

Â

ð Ô

Э й ⁸ ˘ **ip static route-limit** Э Л Ю ˘ a Э Â **show running-config** ৸ Л Э Â

ð Ô

ЛЮ ˘ Э й 900 ˘ Л Â

```
Ruijie(config)# ip static route-limit 900
Ruijie(config)# no ip static route-limit
```

ð Л Ô

ৡ γ Э a Â

ipv6 prefix-list

IPv6 ╗ ˘ **ipv6 prefix-list** ৡ Â ৡ **no** Â

Ipv6 prefix-list *prefix-lis-name* [**seq** *seq-number*] { **deny** | **permit** } *ipv6-prefix* [**ge** *minimum-prefix-length*][**le** *maximum-prefix- length*]

no ipv6 prefix-list *prefix-lis-name*[**seq** *seq-number*] { **deny** | **permit**} *ipv6-prefix* [**ge** *minimum-prefix- length*][**le** *maximum-prefix- length*]

ð Ô

prefix-lis-name	ɻ Â
seq-number	Л∪ ∕ʜ Âὲ 1 2147483647 Â ϡ ∕ʜ˘ ѝ ϯ ∕ʜ Â ∕ʜ 5¯ ∕ɻ ∕ʜ ∕ʜ 5
deny	ϩ
permit	ϩ
ipv6-prefix	Л∪ Â ɹ Л∪ IP Â ÿ 0 32
minimum-prefix-length	ˆ ɹ ˜ ( ) ' **ge** ϡ
maximum-prefix- length	ˆ ɹ ˜ ( ) ' **le** ϡ

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ipv6 prefix-list ϡ IPv6 Â permit deny ᾱ ϩ Ю ɹ ╟ Â

Ⱨ ϩ ϩ Âge le

Q9ϯoP'vⱧK+nP%ѐxf0nTc 3.286 0 Td<1748 902112B04A80929>-6<342117EA35D4

ЛЪЮ ѝ ǂ ˘ RIP ǂ OSPF
1 ǂ IP ˘
IPv6 ЊЖ(IP 2222::/64
ǂ)˘ Ю '

```
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
```

ipv6 prefix-list description

ѝ IPv6 ╗ ˘ **ipv6 prefix-list description** ʒ Â ʒ **no** Â

ipv6 prefix-list *prefix-lis-name* **description** *descripton-text*

ð Ô

prefix-lis-name	IPv6 ɻ
descripton-text	IPv6

ð Ô

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ð ʒ Ô

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ð Ô

ЛЪЮ ѝ IPv6 pre ╗ **Deny routes from Net-A'**

```
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre description Deny
routes from Net-A
```

ipv6 prefix-list sequence-number

ѝ IPv6 ╗ ˘ **ipv6 prefix-list description** ʒ Â ʒ **no** ↓ ╗ Â

ipv6 prefix-list sequence-number

ð Ô

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ЛЪЮ й IPv6 ╖ '

```
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list sequence-number
```

match as-path

ǂ AS_PATH ˘ ʒ

match as-path Â ʒ **no** Â

match as-path *as-path-acl-list-num as-path-acl-list-num…..*

no match as-path *as-path-acl-list-num……*

ð Ô

as-path-acl-list-num	/ı Â /ı 1…500

ð Ô

Â

ð ʒ Ô

Â

ð Ô

match as-path ʒ Л ┘Лυ /ı Â

˘ ┘Лυ 1 **match** ʒ 1
set ʒ Â **match** ʒ˘ ┐ ' **set** ʒ˘
a Â

ð Ô

```
Ruijie(config)# route-map ROUTEMAP2IBGP
```

match community ʒ ʌ ˩ Л∪ Л ʌ ˘ ч a 6 Â

exact-match ˘ a ٦ Â

˘ ˩ Л∪ 1 **match** ʒ 1 **set** ʒ Â **match** ʒ˘ ٦ ’ **set** ʒ˘ a Â

ð Ô

```
Ruijie(config)# ip community-list 1 permit 100:2 100:30
Ruijie(config)# route-map set_lopref
Ruijie(config-route-map)# match community 1 exact-match
Ruijie(config-route-map)# set  local-preference 20
```

ð ʒ Ô

ʒ	
ip community-list	
match as-path	٦ AS_PATH
match metric	٦
match origin	٦
set as-path prepend	↑ AS_PATH Â
set comm-list delete	٦
set community	
set metric	↑

match interface

٦ Ю й ˘ ʒ **match interface** Â ʒ **no** Â

match interface *interface-type interface-number* [*…interface-type interface-number*]

no match interface *interface-type interface-number* [*…interface-type interface-number*]

ð Ô

interface-type	

match ip route-source	
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	

match ip address

match ip address **no**

match ip address {*access-list-number* [*access-list-number...* | *access-list-name...*] |*access-list-name* [*access-list-number...*| *access-list-name*] | **prefix-list** |

ð Ô

match ip address ϛ ʃ ˧Ո ʃ ˦ Ê

˧Ո ÿ ˦ ˦ ˦ ˦ Ê ˧

Ո OSPF ˦ ʃ RIP ˘

match metric	┐
match route-type	┐
match tag	┐
set metric	┼
set metric-type	┼
set tag	┼

ð ✓ Ô

ð Ô

match ip next-hop

┼ ЮO IP ˘

match ip next-hop Â ┐ **no** Â

match ip next-hop {*access-list-number* [*access-list-number...* | *access-list-name...*] |*access-list-name* [*access-list-number...*| *access-list-name*] | **prefix-list** *prefix-list-name* [*prefix-list-name...*]}

no match ip next-hop {*access-list-number* [*access-list-number...* | *access-list-name...*] | *access-list-name* [*access-list-number...*| *access-list-name*] | **prefix-list** *prefix-list-name* [*prefix-list-name...*]}

ð Ô

access-list-number	/ł /ł ' 1-99˘ 1300-1999 /ł ' 100-199˘ 2000-2699
access-list-name	⅄
prefix-list *prefix-list-name*	┐ ⅄

ð Ô

Â

ð ┐ Ô

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ð Ô

match ip next-hop ʒ ﾉ ﾉ Л Л ﾉ Â

ﾉ Л Л ÿ ｷ ﾉ ｻ Â
ﾉ Л Л OSPF ｷ ﾉ ｻ Â ﾉ Л Л
OSPF ｷ ﾉ RIP ˇ ≠ ﾉ Л Л RIP
ｷ ﾉ OSPF Â ｷ ﾉ
Л Л IP Â

ｷ ˇ ^ route maps˜ ˇ ч
ｷ ˚ ʁ Â

ˇ ﾉ Л Л 1 **match** ʒ 1
set ʒ Â **match** ʒˇ ˥ ’ **set** ʒˇ
a Â

ð Ô

ЛЛЮ ˇ OSPF ｷ RIP Â RIP Ю
10 20˝ OSPF è ｷ 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
uiji223(address     6 Td(j/TT1 1 Tf0.00p subne737w -10001C4>090D0.0
```

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m *lis*
a ar
a efix

n *ess* . |
a na
a efix

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ЛЬЮ ˘ OSPF ¦ RIP Â RIP
IP 5˝ OSPF è ¦ 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
```

ð ϡ Ô

ϡ	
access-list	Нѫ
match ip address	ϩ
match interface	ϩ Ю
match ip next-hop	ϩ Ю
match metric	ϩ
match route-type	ϩ
match tag	ϩ
set metric	¦
set metric-type	¦
set tag	¦

ð ⊿ Ô

ð Ô

match ipv6 address

¦ IPv6 ˘
ϡ **match ipv6 address** Â ϡ **no** Â

match ipv6 address { *access-list-name* | **prefix-list** *prefix-list-name* }

no match ipv6 address

access-list-name	

ð Ô

ɹ Л ÿ ǂ ɻ ╖ Â ɹ
Л OSPF ǂ ɻ RIP ˘ ≠ ɹ Л RIP
ǂ ɻ OSPF Â ǂ ɹ
Л IP Â

ǂ ˘ ˆ route maps˜ ˘ ч
ǂ ˚ ⁸ Â

˘ ɹ Л 1 **match** ʒ 1
set ʒ Â **match** ʒ˘ ¬ ’ **set** ʒ˘
a Â

ð Ô

ǂ ˘ ɹ Л ǂ Э Â a
˘ è ˘ ʒ a ɻ Â
ɻ ǂ Э˘ a ɻ ˘ è
ʒ ≠ a ɻ Â

ЛЮ ˘ OSPF ǂ RIP ˘ ǂ
10 RIP ˘ OSPF ˘ ѝ
type-1˜ ѝ 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
```

ð ʒ Ô

ʒ	
ipv6 access-list	Ьѫ IPv6
match interface	¬ Ю
match ipv6 address	¬ IPv6 Ю
match ipv6 route-source	¬ IPv6
match metric	¬
match route-type	¬
match tag	¬

set metric

ð Ô

ǂ ˇ ⅄Ⅎ ǂ Э Â a
ˇ è ˇ ϡ a ⅄ Â
⅄ ǂ Э˘ a ⅄ ˇ è
ϡ ≠ a ⅄ Â

ⅎЮ ˇ OSPF ǂ RIP ˇ ǂ
10 RIP ˇ OSPF ˇ й
type-1˘ й 40 Â

```
Ruijie(config)# ipv6 router ospf
Ruijie(config-router)#  redistribute  rip  subnets
route-map redrip
Ruijie(config-router)# exit
Ruijie(config)# ipv6 access-list v6acl
Ruijie(config-ipv6-acl)# 10 permit ipv6 5200::/64 any
Ruijie(config-ipv6-acl)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ipv6 route-source v6acl
Ruijie(config-route-map)# set metric 50
```

ð ϡ Ô

ϡ	660 1 Tf2 A2A750F560529 4682AFC

match length

IP ˘ ⅋ **match length** Â ⅋ **no** ⅃ Л∪ ⊮ Â

match length *min-length max-length*

no match length *min-length max-length*

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min-length	IP
max-length	IP

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ЛЮ ˘ serial 1/0 ˘ 500

˘ ÿ fastethernet 1/0

ð ৡ Ô

ৡ	
route-map	Hক
match ip address	ৗ
set default interface	˘
set interface	
set ip default next-hop	HO IP ˘
set ip next-hop	HO IP
set ip precedence	IP ″I

match metric

ৗ ˘ ৡ **match metric** Â ৡ **no** Â

match metric *metric*

no match metric

ð Ô

metric	৸ ' 0-4294967295

ð Ô

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ð ৡ Ô

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set ʒ Â **match** ʒ˘ ¬ ' **set** ʒ˘ a Â

ð Ô

ЛЪЮ ˘ OSPF ¦ RIP Â й 10 RIP ˘ OSPF ¦ Â

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets
route-map redist-rip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255
area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redist-rip permit 10
Ruijie(config-route-map)# match metric 10
```

ð ʒ Ô

ʒ	
access-list	Њ
match ip address	¬
match interface	¬ Ю
match ip next-hop	¬ Ю
match ip route-source	¬
match route-type	¬
match tag	¬
set metric	¦
set metric-type	¦

ð Ô

egp	EGP
igp	IGP
Incomplete	a

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ৡ ר ˙ Â

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```
Ruijie(config)# route-map MY_ 10.5 89
```

ʒ **no** Â

match route-type {**local | internal | external** [**type-1 | type-2**] **| level-1 | level-2**}

no match route-type {**local | internal | external** [**type-1 | type-2**] **| level-1 | level-2**}

ð Ô

local	
Internal	OSPF
external	(BGP OSPF)
type-1	**type-2**	OSPF 1 2
level-1	**level-2**	ISIS 1 2

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˩ Л Ъ ÿ ˫ ˥ ╖ Â ˩ Л Ъ OSPF ˫ ˥ RIP ˘ ≠ ˩ Л Ъ RIP ˫ ˥ OSPF Â ˫ ˩ Л Ъ IP Â

˫ ˘ ˆ route maps˜ ˘ ч ˫ ˚ ⁸ Â

˘ ˩ Л Ъ 1 **match** ʒ 1 **set** ʒ Â **match** ʒ˘ ¬ ’ **set** ʒ˘ a Â

ð Ô

ЛЪЮ ˘ RIP ˫ OSPF ÂRIP ˫ OSPF Â

```
Ruijie(config)# router rip
Ruijie(config-router)# redistribute ospf route-map redrip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# exit
```

```
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match route-type internal
```

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ʒ

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match tag ϧ ʌ ˩ Л Ъ tag Â

˩ Л Ъ ÿ ˥ ʌ Â ˩ Л Ъ
OSPF ˥ ʌ RIP ˘ ≠ ˩ Л Ъ RIP
˥ ʌ OSPF Â ˥ ˩ Л Ъ
IP Â

˥ ˘ ^ route maps˜ ˘ Ч
˥ ˚ ⁸ Â

˘ ˩ Л Ъ 1 **match** ϧ 1
set ϧ Â **match** ϧ˘ ¬ ’ **set** ϧ˘
a Â

ð Ô

ЛЪЮ ˘ RIP ˥ OSPF ÂRIP ˥ OSPF
ѝ 50 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
```

ð ϧ Ô

ϧ	
access-list	Ѭ
match ip address	¬
match interface	¬ Ю
match ip route-source	¬
match metric	¬
match ip next-hop	¬ Ю
match route-type	¬
set metric	˥
set metric-type	˥
set tag	˥

ð Ô

route-map-name	⊮ ⅄ Â ϯ ϧ ⅄ Â ⅃ Ⅱ ⊮ ˘ /
permit	ˆ ⅃ ~ ⊮ permit ˘ match ⊮ ר Â set ϧ ϯ ϐ ’ ˘ set ϧ ϐ Â Â ⊮ permit ˘ a match ⊮ ר Â γ Â set ϧ
deny	ˆ ⅃ ~ ⊮ deny ˘ match ⊮ ר Â a ˘ a ϯ ˘ ɜ Â ⊮ deny ˘ a match ⊮ ר Â Ю Â set ϧ Â
sequence-number	/ Â æ / ¨ı ˘ / Â

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RGIOS ˚ ў ч ˈ ˝ ~ ϯ ϐ ’ ˘ ~
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˝ ~ ϯ ϐ

⅃ Ⅱ ÿ ϯ ⅄ ╗ Â ⅃
Ⅱ OSPF ϯ ⅄ RIP ˘ ≠ ⅃ Ⅱ RIP
ϯ ⅄ OSPF Â ϯ ⅃
Ⅱ IP Â

ϯ

ˇ Л ЛЬЮ '

1) ˇ *sequence-numbeř* ѝ 10ʼ

2) ˇ *sequence-numbeř* a ˇ ,

ˇ Лˇ Â

ð Ô

ЛЬЮ ˇ OSPF ʃ RIP ˇ ʃ ѝ 4 RIP ˇ OSPF ˇ ѝ type-1ˇ ѝ 40ˇ ѝ 40Â

```
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
```

ð ʒ Ô

ʒ	
Redistribute	ʃ

ð Л Ô

ð Ô

set aggregator as

ʔ match AS ˇ ʒ **set aggregator as**Â ʒ **no** Â ʒ Â

set aggregator as *as-num ip_addr*

no set aggregator as [*as-num ip_addr*]

ð Ô

as-number	AS Ⴍ
ip_addr	

ð Ô

Â

ð ৡ Ô

Â

ð Ô

ৡ BGP ˘ Â

ৡ ˆ as,ip-addr˜˜ a ⅄

ð Ô

```
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
```

ð ৡ Ô

ৡ	
match as-path	٦ AS_PATH
match community	٦
match metric	٦
match origin	٦
set community	٭ COMMUNITY
set metric	٭
set metric-type	٭

set as-path prepend

٦ match ╗ AS_PATH ˘
ৡ **set as-path prepend** Â ৡ **no** Â
ৡ Â

set as-path prepend *as-number*

no set as-path prepend [*as-number*]

ð Ô

as-number	╗ AS_PATH AS ⁄

ð Ô

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ð ϡ Ô

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ð Ô

ϡ ┐ ╗ AS_PATH

┘Л as-path ╗ 15 as Â

ð Ô

```
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 repend
```

community-list-number	/l ' /l ѝ 1-99 ' /l ѝ 100-199
community-list-name	ɻ ɻ a 80

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ʒ ˥ 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
```

match community	ϩ
match metric	ϩ
match origin	ϩ
set as-path prepend	ϯ AS_PATH
set comm-list delete	ϩ
set local-preference	ϯ ΅I

set community

ϩ match COMMUNITY ˘
ϡ **set community** Â ϡ **no**

set community {*community-number*[*community-number …*] **additive** | **none**}

no set community { *community-number*[*community-number …*] **additive** | **none**}

ð Ô

community-number	Â ϻ AA:NN(/Ή:2)˘ ˘ 0-4294967295˘ ЛЬЮ Ня ' internet˘ Internet ˘ Â local-as˘ a AS ˘ 3 ي

Â

ð Ô

˥ Â

ð Ô

```
Ruijie(config)# route-map SET_COMMUNITY 10
```

reuse	æ ˘ ⁸ Â 1..20000˝ ѝ 750 Â
suppress	˘ ⁸ Â 1..20000˝ 2000 Â
max-suppress-time	⁸ Â 1..255(ʃ ʖ˝ ѝ 4* half-life

ð Ô

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ð ϡ Ô

Â

ð Ô

ϧ Â

ð Ô

```
Ruijie(config)# route-map tag
Ruijie(config-route-map)# match as path 10
Ruijie(config-route-map)# set dampening 30 1500 10000
120
Ruijie(config-route-map)# exit
Ruijie(config)# router bgp 100
Ruijie(config-router)#     neighbor     172.16.233.52
route-map tag in
```

ð ϡ Ô

ϡ	
match as-path	ϧ AS_PATH
match community	ϧ
match metric	ϧ
match origin	ϧ
set as-path prepend	ʅ AS_PATH
set metric	ʅ
set local-preference	ʅ ʺI

set default interface

match

set default interface **no**

set default interface *interface-type interface-number* [*…interface-type interface-number*]

no set default interface *interface-type interface-number* [*…interface-type interface-number*]

interface-type	
interface-number	

```
Ruijie(config-if)# exit
Ruijie(config)# route-map smallpak permit 10
Ruijie(config-route-map)# match length 0 500
Ruijie(config-route-map)#  set  default  interface
fastethernet 1/0
```

ð ϡ Ô

ϡ	
route-map	Ⱶ
match ip address	ϩ
match length	ϩ
set interface	
set ip default next-hop	Ⱶ IP ˘
set ip next-hop	Ⱶ IP
set ip precedence	IP ˝I

ð ⊿ Ô

a ϡ

ϡ

set extcommunity

ϩ match ˘
ϡ **set extcommunity** Â ϡ **no** Â ϡ
Â

set extcommunity {**rt** *extend-community-value* | **soo** *extend-community-value*}

no set extcommunity {**rt** | **soo**}

ð Ô

rt	RT
soo	SOO
extend-community-value	

ð Ô

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ৗ Â

ð Ô

```
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
```

ð ৡ Ô

ৡ	
match as-path	ৗ AS_PATH
match community	ৗ

set default interface	

˘ next-hop ʌ weight ˘ set ϧ
╟╞ ѝ WCMP Â WCMP
Ю˘ weight nexthop ˘ è weight
ѝ 1 Â

set ip next-hop **set ip default next-hop** ϧ ѡ '
set ip next-hop ϧ ˝I ' **set ip**
default next-hop ˝I Â

ϧ ѝ ⁸ ╖ Â ˚ Э
ѝ ˘ ϧ Ю
(nexthop) Э Â

˘ ˘ з Â
˘ ⱵѪ 1 ϩ
Â ʌ˘
˘ a ˘
ⱵѪ Â

ϟ Л Ъ set Â

ð Ô

ЛЪЮ ч a ϟ ǂ a ϟ Э Â

ϟ 1 Э ÿ 1.1.1.1 ˘ ˚ a
˘ 6.6.6.6 ' ÿ 2.2.2.2 ˘
˚ a ˘ 7.7.7.7 Â è
˚ a Â

```
Ruijie(config)#access-list 1 permit ip 1.1.1.1 0.0.0.0
Ruijie(config)#access-list 2 permit ip 2.2.2.2 0.0.0.0

Ruijie(config)#interface async 1
Ruijie(config-if)#ip policy route-map equal-access

Ruijie(config)#route-map equal-access permit 10
Ruijie(config- route-map)#match ip address 1
Ruijie(config-route-map)#set ip default next-hop
6.6.6.6
Ruijie(config)#route-map equal-access permit 20
Ruijie(config-route-map)#match ip address 2
Ruijie(config-route-map)#set ip default next-hop
7.7.7.7
Ruijie(config)#route-map equal-access permit 30
Ruijie(config- route-map)#set default interface null 0
```

ð ϧ Ô

ϧ	

route-map	Hক
match ip address	ৗ
set default interface	˘
set default interface	˘
set interface	
set ip next-hop	HO IP ˘
set ip precedence	IP ˝I

set ip dscp

ৗ match DSCP ˘ ৡ **set ip dscp** Â ৡ **no** Â

set ip dscp *dscp_value*

no set ip dscp

ð Ô

dscp_value	IP IP DSCP

ð Ô

Â

ð ৡ Ô

Â

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ð Ô

ð ৡ Ô

ৡ	
route-map	Hক
match ip address	ৗ

set default interface	˘
set default interface	˘
set interface	
set ip default next-hop	ЮO IP ˘
set ip precedence	IP ″I

ð ✓ Ô

ð Ô

set ip next-hop

ϩ match ЮO IP ˘
ϡ **set ip next-hop** Â ϡ **no** Â ϡ
Â

set ip next-hop *ip-address* [*weight*] [*…ip-address* [*weight*]]
no set ip next-hop *ip-address* [*weight*] [*…ip-address* [*weight*]]

ð Ô

ip address ʌ ╕ weight ˘ ⅃Л∪ a 4 nexthop Â

˘ next-hop ʌ weight ˘ **set** ϡ ╟╠ и WCMP Â WCMP Ю˘ weight nexthop ˘ è weight и 1Â

╕ ⁸ Â ˘ ᾱ ˘ ᾱ Ю Â ˘ ˘ ɜ Â ˘ ⊮ 1 ϩ Â ʌ˘ ˘ a ˘ ⊮ Â

⅃Л∪ set Â

ð Ô

ЛЬЮ ˘ serial 1/0 Э Â 10.0.0.0/8 ˘ 192.168.100.1’ и 172.16.0.0/16 ˘ 172.16.100.1’ è Â

```
Ruijie(config)#interface serial 1/0
Ruijie(config-if)#ip policy route-map load-balance

Ruijie(config)#access-list 10 permit 10.0.0.0
0.255.255.255
Ruijie(config)#access-list 20 permit 172.16.0.0
0.0.255.255

Ruijie(config)#route-map load-balance permit 10
Ruijie(config-route-map)#match ip address 10
Ruijie(config-route-map)#set ip next-hop 192.168.100.1

Ruijie(config)#route-map load-balance permit 20
Ruijie(config-route-map)#match ip address 20
Ruijie(config-route-map)#set ip next-hop 172.16.100.1

Ruijie(config)#route-map load-balance permit 30
Ruijie(config-route-map)#set interface Null 0
```

ð ϡ Ô

ϡ	

ЛЪЮ ˘ serial 1/0 Э Â
10.0.0.0/8 ˘ 192.168.100.1’
ѝ 172.16.0.0/16 ˘ 172.16.100.1’ è
Â

```
Ruijie(config)#interface serial 1/0
Ruijie(config-if)#ip policy route-map load-balance

Ruijie(config)#access-list 10 permit 10.0.0.0
0.255.255.255
Ruijie(config)#access-list 20 permit 172.16.0.0
0.0.255.255

Ruijie(config)#route-map load-balance permit 10
Ruijie(config-route-map)#match ip address 10
Ruijie(config-route-map)#set ip next-hop
192.168.100.1

Ruijie(config)#route-map load-balance permit 20
Ruijie(config--route-map)#match ip address 20
Ruijie(config-route-map)#set ip next-hop 172.16.100.1

Ruijie(config)#route-map load-balance permit 30
Ruijie(config-route-map)#set interface Null 0
```

ð ʒ Ô

ʒ	
route-map	Ⱨ
match ip address	ɔ
set default interface	˘
set default interface	˘
set interface	
set ip default next-hop	Ю IP ˘
set ip precedence	IP ″I

ð ⊿ Ô

ð Ô

set ip precedence

ֽ match IP ״I ,
ֽ **set ip precedence** Â ֽ **no** ˘ ״I
Â

set ip precedence {*<0-7>* | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

no set ip precedence {*<0-7>* | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

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ð ֽ Ô

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ð Ô

IP ״I IP a ˩
״I Â

˘ ˩Л **set ip precedence** ֽ˘
˥ ˘ з ֽ IP
״I Â

ð Ô

ЛЮ ˘ ÿ FastEthernet 0/0 ѝ
192.168.217.68 precedence ѝ 4 Â

```
Ruijie(config)#access-list 1 permit 192.168.217.68
0.0.0.0
Ruijie(config)#route-map name
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set ip precedence 4
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map name
```

ð ֽ Ô

ֽ	
match interface	ֽ Ю
match ip address	ֽ
match ip next-hop	ֽ Ю
match ip route-source	ֽ

match metric	ৗ
match route-type	ৗ
match tag	ৗ
set metric-type	ৄ
set tag	ৄ
set ip tos	IP tos

set ip tos

ৗ match IP TOS,
ৡ **set ip tos** Â ৡ **no** ˘ tos 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* }

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IP TOS IP
a ৶ ৳ Â

ৗ IP Э TOS Â

ð Ô

Л Ю ˘ ÿ fastEthernet 0/0 ѝ 192.168.217.68 tos ѝ 4 Â

```
Ruijie(config)#access-list 1 permit 192.168.217.68 0.0.0.0
Ruijie(config)#route-map name
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set ip tos 4
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map name
```

ð ৡ Ô

match interface	
match ip address	
match ip next-hop	
match ip route-source	
match metric	
match route-type	

```
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
```

ð ϡ Ô

ϡ	
match as-path	ϩ AS_PATH
match metric	ϩ
match origin	ϩ
set as-path prepend	ϯ AS_PATH
set metric	ϯ
set metric-type	ϯ

set metric

ϩ match ˘ ϡ **set metric** Â ϡ **no** Â

set metric [+ *metric-value* | **-** *metric-value* | *metric-value*]

no set metric

ð Ô

+	╗ˆ metric Э ╗˜
-	ˆ metric Э ˜
metric-value	ϯ

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a ⅄ ϯ a Â

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˘ ˘

Â ὲ set metric à Л ¦ + Ľ ¦ - Ľ metric

ʌ ѝ 1-16 Â

ɹ Лъ ÿ ʈ ʌ ╗ Â ɹ
Лъ OSPF ʈ ʌ RIP ˘ ≠ ɹ Лъ RIP
ʈ ʌ OSPF Â ʈ ɹ
Лъ IP Â

ʈ ˘ ˆ route maps˜ ˘ ч
ʈ ˚ ⁸ Â

˘ ɹ Лъ 1 **match** ʒ 1
set ʒ Â **match** ʒ˘ ¬ ’ **set** ʒ˘
a Â

ð Ô

ЛъЮ ˘ OSPF ʈ RIP ˘ ʈ
ѝ 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
```

ð ʒ Ô

ʒ	
match interface	¬ Ю
match ip address	¬
match ip next-hop	¬ Ю
match ip route-source	¬
match metric	¬
match route-type	¬
match tag	¬
set metric-type	ʈ
set tag	ʈ

ð ʌ Ô

ð Ô

set metric-type

match

set metric-type **no**

set metric-type *type*

no set metric-type

3	A

Л IP Â

ˆ route maps˜ ˇ ч
ˇ ¸ Л 1 **match** ʒ 1
set ʒ Â **match** ʒˇ ˥ ’ **set** ʒˇ
a Â

ð Ô

Л Ю ˇ ˥ ˝ Ю й
192.168.1.2 Â

```
Ruijie(config)# route-map redrip permit 10
```

igp	IGP
incomplete	a

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```
Ruijie(config)# route-map SET_ORIGIN 10 permit
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set origin igp
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_ORIGIN 20 permit config-route-map)#
```

tag	˚

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ЛЬЮ ˘ OSPF ˚ RIP ˘ ˚
ѝ 100 Â

```
Ruijie(config)# router ospf
Ruijie(config-router)#  redistribute  rip  subnets
route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255
area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set tag 100
```

ð ʒ Ô

ʒ	
match interface	٦ Ю
match ip address	٦
match ip next-hop	٦ Ю
match ip route-source	٦
match metric	٦
match route-type	٦
match tag	٦
set metric	˚
set metric-type	˚

ð ⅄ Ô

set weight

ה match BGP ˘ ֿ
set weight Â ֿ **no** Â

set weight *number*

no set weight

ð Ô

number	Â ' 0-65535

ð Ô

Â

ð ֿ Ô

Â

ð Ô

ֿ BGP Â

Ю˘ ÿ ˘ neighbor weight
' 32768 Â

Л Л ֿ BGP ˛ Â

ð Ô

ЛЮ ˘ BGP in Э ˘ ÿ
1.1.1.1 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
```

ð ֿ Ô

ֿ	
match as-path	ה AS_PATH
match community	ה

match metric	
match origin	
set community	COMMUNITY
set metric	
set metric-type	

show ip prefix-list

show ip prefix-list

show ip prefix-list [*prefix-name*]

prefix-name	

```
Ruijie# show ip prefix-list
ip prefix-list pre: 2 entries
seq 5 permit 192.168.64.0/24
seq 10 permit 192.2.2.0/24
```

show ip route

IP ˘ **show ip route** ʒ Â

show ip route [*network* [*mask*] | **count** | **protocol** [*process-id*] | **weight**]]

ð Ô

```
S    20.0.0.0/8 is directly connected, VLAN 1
S    22.0.0.0/8 [1/0] via 20.0.0.1
O E2 30.0.0.0/8 [110/20] via 192.1.1.1, 00:00:06, VLAN
1
R    40.0.0.0/8 [120/20] via 192.1.1.2, 00:00:23, VLAN
1
B    50.0.0.0/8 [120/0] via 192.1.1.3, 00:00:41
C    192.1.1.0/24 is directly connected, VLAN 1
C    192.1.1.254/32 is local host.
```

show ip route

O	Â ┘ ┘ ╪' C' ' S' ' R' RIP ' B' BGP ' O' OSPF ' ï IS-IS Â
E2	Â ┘ ┘ ╪' E1' OSPF ˝ ' E2' OSPF ˇ ' N1' OSPF NSSA 1' N2' OSPF NSSA 2' IA' OSPF ' su' IS-IS ' L1' IS-IS 1 ' L2' IS-IS 2 ' ia' IS-IS Â
20.0.0.0/8	
[1/0]	˛
Via 20.0.0.1	Ю IP

show ip route *network* ¾ Ю'

Routing Descriptor Blocks	Ю IP à à à à à à BGP

ЛЬЮ й **show ip route count** ¾ '

```
Ruijie# show ip route count
--------- route info ----------
the num of active route: 5
```

ЛЬЮ й **show ip route weight** ¾ '

```
Ruijie# show ip route weight
------------[distance/metric/weight]-----------
S    23.0.0.0/8 [1/0/2] via 192.1.1.20
S    172.0.0.0/16 [1/0/4] via 192.0.0.1
```

show ipv6 prefix-list

IPv6 ˘ **show ipv6 prefix-list** ¾ Â

show ipv6 prefix-list [*prefix-name*]

ð Ô

prefix-name	IPv6 ɻ

ð Ô

IPv6 Â

ð ¾ Ô

à à à à

ð Ô

ɻ ˘ ˘

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ð Ô

```
Ruijie# show ipv6 prefix-list
ipv6 prefix-list p6: 2 entries
```

```
permit 13::/20
permit 14::/20
```

show route-map

ˇ ʒ **show route-map** Â

show route-map *route-map-name*

ð Ô

route-map-name	ˆ ˩ ˜

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```
Ruijie# show route-map
route-map AAA, permit, sequence 10
Match clauses:
ip address 2
Set clauses:
metric 10
```

route-map	ɻ
Permit	permit
sequence 10	ʃʅ
Match clauses	ŀ ˥ Â permit deny ɑ set
Set clauses	ŀ match ˥ ɻ

IGMP ¾

IGMP L

ÞO ¾ '

- **clear ip igmp group**
- **clear ip igmp interface**
- **ip igmp access-group**
- **ip igmp join-group**
- **ip igmp static-group**
- **ip igmp immediate-leave group-list**
- **ip igmp last-member-query-count**
- **ip igmp last-member-query-interval**
- **ip igmp limit ( )**
- **ip igmp querier-timeout**
- **ip igmp query-interval**
- **ip igmp query-max-response-time**
- **ip igmp robustness-variable**
- **ip igmp ssm-map enable**
- **ip igmp ssm-map static**
- **ip igmp version**
- **ip igmp limit ( )**
- **show ip igmp groups**
- **show ip igmp interface**

clear ip igmp group

¾ IGMP ╟ Â

ð ¾ Ô

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

ð Ô

IGMP ʒ		
	group-address	32 Æ IP D ˘ 8 Æ ˘ ᒍ 8 ˘

ð Ô

ֽ Э IGMP Â ˩ Л υ a ifname Â

ð Ô

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

ip igmp access-group

ֽ IP Э ⁸ Â ֽ no ˩ Л υ ˩ ╗ Â

ð ֽ Ô

ip igmp access-group *access-list*

no ip igmp access-group

ð Ô

access-list	⁸ ˩ , <1-199>| <1300-2699> | WORD

ð Ô

ð ֽ Ô

ð Ô

ў ˩ Л υ ╗ ˘ ˩ Л υ **ip igmp access-group** ⁸ Â

注意:

⁸ ֽ IP ⁸ ˘ Э ^ S,G˜ igmp report б IP ⁸ permit deny ˀ ^ source˘ destination˜ ┐ Â ˘ igmp report ^ S1,S2,S3…Sn,G˜ ˘ ֽ (0,G) ⁸ ┐ Â G igmp report , G ˘ Ю igmp report ^ S˜ G˜ ⁸ ┐ ˘ ^ S.G˜

ÿ igmp report ˘ Â Л
ֽ˘ IP ⁸ (0, G)˘
Л Л ^ S1,S2,S3…Sn,G˜ Â

^ 0˝ G˜ ^ *,G˜˜ ˘ IP ⁸
ʌ Л Л ѝ Ю' **permit host 0.0.0.0 host** *group-number*
group-number˘ a **permit any host** *group-number* Â

ð Ô

Ю ˘ ў Ь Eth0 ╗ 225.2.2.2.

```
Ruijie# configure terminal
Ruijie(config)# access-list 1 permit 225.2.2.2 0.0.0.0
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp access-group 1
```

ip igmp join-group

ֽ ╗ ˘ ֽ ╗ no Л Â

ð ֽ Ô

ip igmp join-group *group-address*

no ip igmp join-group *group-address*

ð Ô

group-address

Ю ˘ Eth0 ╗ 233.3.3.3 Â.

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp join-group 233.3.3.3
Ruijie(config-if)# exit
```

ip igmp static-group

ʒ ╗ ˘ ʒ ╗ no ↓ Â

ð ʒ Ô

ip igmp static-group *group-address*

no ip igmp static-group *group-address*

ð Ô

group-address	Э ╗

ð Ô

╗

ð ʒ Ô

ð Ô

ʒ ╗ ˘ ╗ Â

ð Ô

Ю ˘ Eth0 ╗ 236.6.6.6 Â

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp static-group 236.6.6.6
Ruijie(config-if)# exit
```

ip igmp immediate-leave group-list

IGMPversion2 IGMPversion3 ˘ ʒЛ Â ʒ ў Ю Â ʒ no ↓ ╖ Â

ð ʒ Ô

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

no ip igmp immediate-leave group-list

ð Ô

access-list	8 ɻ

ð Ô

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ʒ ЮЎ ɻˇ
Â ў ɻˇ Â ɬ
ã ɻ IGMP ɿ ˇ Ю 2s Â

ʒˇ ɻˇ a Â
ɬˇ IGMP ă ѝ ˇ IGMP
Â ɿ Л Â

ð Ô

Ю ѝ ℸ ˇ
Â

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

ð ʒ Ô

ip igmp last-member-query-interval

ip igmp last-member-query-count

last-member-query-count leave ɻˇ
Â ʒ **last-member-query-count** Â
no ʒ Â

ð ˛ Ô

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

no ip igmp last-member-query-count

ð Ô

number	Л , ѝ <2-7>

ð Ô

last member query count ѝ 2 Â

ð ˛ Ô

Â

ð Ô

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

ð Ô

Л ѝ 3.

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

ip igmp last-member-query-interval

˛ ˘ ˘ ˛ ╗ no ˛ Â

ð ˛ Ô

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

no ip igmp last-member-query-interval

ð Ô

interval	ѝ <1-255>˘ Æ ѝ 0.1s

ð Ô

1s

ð ʒ Ô

ð Ô

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

ð Ô

ЛЬЮ 20 '

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

ð ʒ Ô

ip igmp immediate-leave

ip igmp limit ( )

ʒ igmp states Â ↓ ˘ no Â

ð ʒ Ô

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

no ip igmp limit

ð Ô

number	IGMP ˘ έ
except	^ ↓ ~ access-list a б ˘ a ↓ limit ⁸
access-list	^ ↓ ~ ↓

ð Ô

й 1024 Â

ð ʒ Ô

ð Ô

ʒ IGMP ˇ ˇ
ʃ a IGMP ˇ a Â

ʒ ˩ Л ˇ ˩ Л ˇ
Â

ð Ô

ЛЮ ˇ ѝ 300Â

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

ip igmp query-interval

ʒ ˇ ˩ Л no
ѝ Â

ð ʒ Ô

ip igmp query-interval *seconds*

no ip igmp query-interval

ð Ô

seconds	Â Æ sˇ 1˙ 18000

ð Ô

125 Â

ð ʒ Ô

ð Ô

˩ Л ˇ ˩ Â

ð Ô

Ethernet 0 ˇ ѝ 120s Â

```
Ruijie(config-if)# ip igmp query-interval 120
```

Ethernet 0 ˇ ѝ Â

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

ð Ô

ЛЬЮ ↓ ѝ З′

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

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

no ip igmp limit *number* [*except access-list*]

ð Ô

number	IGMP ˘ é
except	ˆ ˩ ˜ access-list a б ˘ a ˩ limit ⁸
access-list	ˆ ˩ ˜ ˩

ð Ô

ѝ 65536 Â

ð ʒ Ô

ð Ô

ʒ IGMP ⁸˘
⁸ ˦ a IGMP ˘ a Â

ʒ ˩ Л˅ ˘ ˩ Л˅ ˘
Â

ð Ô

Л˅Ю ⁸ ѝ 300

```
Ruijieˆ config˜ # ip igmp limit 300
```

ip igmp proxy-service

ʒ ╟ Ю mroute-proxy ┺╖ Â Э
ʒ˘ ѝ mroute-proxy Э ˘ Ю
˘ Ю Э Â

ip igmp proxy-service

no ip igmp proxy-service

ð Ô

a ѝ proxy-service

ð ʒ Ô

ð Ô

ֽ ˩ ⁸˘ 32 Â
proxy-service Ю ˩Л 255 Ю Â
˥˘ proxy-service ˘ Â
proxy-service ÿ mroute-proxy
Â ˘ proxy-service˘
ў ѝ˘ a ѝ.

switchport ˘ Ю **ip igmp**
mroute-proxy interface ֽ ╟ Â

ð Ô

ѝ proxy-service

```
Ruijie(config-if)# ip igmp proxy-service
```

ip igmp mroute-proxy

ֽ ˘ ˩Л è Э Â

ip igmp mroute-proxy *interfname*

no ip igmp mroute-proxy

ð Ô

interfname	Э ˥

ð Ô

Ⅶ

ð ֽ Ô

ð Ô

Э ѝ proxy-service ˥˘ ˩Л è
gmp Â

ð Ô

mroute-proxy

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

ip igmp ssm-map enable

ʒ Ю ╠ **igmp ssm-map** ╖ ˘ ʒ й'

ip igmp ssm-map enable

no ip igmp ssm-map enable

ð Ô

╖ a ╠ Â

ð ʒ Ô

ð Ô

ʒ ˘ ╠ ⁸ ╖
Â ʒ ʒ **ip igmp ssm-map static** Â

ð Ô

igmp ssm-map ╖ Â

```
Ruijie(config)# ip igmp ssm-map enable
```

ip igmp ssm-map static

ʒ Ю ssm-map ˘ ʒ й'

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

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

ð Ô

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

ð Ô

ð ʒ Ô

ð Ô

ʒ б **ip igmp ssm-map enable** ˘ ʒ ˘

v3 ЛьЮ Э Â

ð Ô

ACL й 11 Э 192.168.2.2, ʒ й'

```
Ruijie(config)# ip igmp ssm-map static 11 192.168.2.2.
```

show ip igmp groups

ʒ б ÿ IGMP ˉ Â

ð ʒ Ô

show ip igmp groups [*group-address* | *interface-type*

interface-number] [*detail*]

ð Ô

group-address	32 Æ IP D ˘ 8 Æ ˘ Лυ 8 ˘
interface-type	
interface-number	Л
detail	

ð Ô

ð ʒ Ô

Â

ð Ô

ʒ a à Э
Â Â

ð Ô

Ю '

```
-s/TT3 1 Tf-0.000d5.46 TdIP
```

```
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
```

Ю '

```
Ruijie# show ip igmp groups 224.1.1.1 detail
Interface: eth1
Group: 224.1.1.1
Uptime: 00:00:42
Group mode: Include
Last reporter: 192.168.50.111
TIB-A Count: 2
TIB-B Count: 0
Group source list: (R - Remote, M - SSM Mapping)
Source Address Uptime v3 Exp Fwd Flags
192.168.55.55 00:00:42 00:03:38 Yes R
192.168.55.66 00:00:42 00:03:38 Yes R
```

show ip igmp interface

¾ Â

ð ¾ Ô

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

ð Ô

interface-type	
interface-number	/1

ð Ô

ð ¾ Ô

ð Ô

Ю й '

```
Ruijie# show ip igmp interface
Interface vlan 1(Index 4294967295)
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
```

show ip igmp ssm-mapping

ʒ IGMP ssm-map

PIM-DM ¾

PIM-DM ¾

PIM-DM ЛЪЮ ¾'

- **ip pim dense-mode**
- **ip pim neighbor-filter**
- **ip pim query-interval**
- **ip pim state-refresh disable**
- **ip pim state-refresh origination-interval**
- **show ip pim dense-mode interface**
- **show ip pim dense-mode neighbor**
- **show ip pim dense-mode nexthop**
- **show ip pim dense-mode mroute**

ip pim dense-mode

Э PIM-DM **ip pim dense-mode** ¾ Â
¾ no Э PIM-DM Â

ip pim dense-mode

no ip pim dense-mode

ð Ô

¾ Â

ð Ô

PIM-DM Â

ð ¾ Ô

ð Ô

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim dense-mode
```

& 说明:

╟ PIM-DM ˘ Ю ╟ ╖ ˘
╟ PIM-DM ≠ a Â

╟ PIM-DM ˩ ˘ IGMP Э ╟ ╟ a ╟
Â

ʒ ˘ ľ Failed to enable PIM-DM on < ˩
>, resource temporarily unavailable, please try again Ł Ą
ʒ Â

ʒ ˘ ľ PIM-DM Configure failed! VIF limit exceeded in NSM!!! Ł ˩
Э Â ÿ Ю PIM-DM ˘

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim neighbor-filter 14
```

& 说明:

ip pim neighbor-filter ֽ '

1. ACL ˚ ѝ PIM ˘ ACL ѝ PIM Â
2. ˆ peering˜ ˘ PIM Â б PIM ˘ a б ˘ ≠ a PIM Â

ip pim query-interval

hello interval ˘ **ip pim query-interval** ֽ Â

ֽ no ˧ Л∪ hello interval Â

ip pim query-interval *interval-seconds*

no ip pim query-interval

ð Ô

interval-seconds	˧ ѝ <1-65535>˘ Æ ѝ

ð Ô

30 Â

ð ֽ Ô

ð Ô

hello interval˙ hello holdtime ѝ hello interval 3.5 Â

ð Ô

```
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim hello-interval 123
```

ip pim state-refresh disable

Э PIM ˘ **ip pim state-refresh disable** ¸ Â ¸ no PIM-DM ╖ Â

ip pim state-refresh disable

no ip pim state-refresh disable

ð Ô

Â

ð Ô

Â

ð ¸ Ô

Â

ð Ô

⁹ ╖ ˘ a ⁹ ' Hello a ⁹ ˘ Hello a SR Cap Â

ð Ô

ЛЬЮ PIM Â

```
Ruijie# configure terminal
Ruijie(config)# ip pim state-refresh disable
```

注意:

ip pim state-refresh disable ¸ '

⁹ ╖ ┘ PIM-DM ˘ a ˘ Л Ь Ю a ⁹ ╖ Â

---

ip pim state-refresh origination-interval

PIM-DM ˘ **ip pim state-refresh origination-interval** ¾ Â ч Â ¾ no ˩ Л∪ ѝ Â

ip pim state-refresh origination-interval *interval-seconds*

no ip pim state-refresh origination-interval

ð Ô

interval-seconds	˩ <1-100>˘ Æ ѝ Â

ð Ô

60 Â

ð ¾ Ô

ð Ô

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim state-refresh
origination-interval 65
```

show ip pim dense-mode interface

PIM-DM ˘ **show ip pim dense-mode interface** ¾ Â

show ip pim dense-mode interface [*interface-type interface-number*] [**detail**]

ð Ô

ЛЬЮ ѝ **show ip pim dense-mode neighbor** ҃ '

```
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
```

Ю'

Neighbor-Address	
Interface	б
Uptime/Expires	Лъ
Ver	PIM

show ip pim dense-mode nexthop

PIM-DM Ю ˘ **show ip pim dense-mode nexthop** ҃ Â

show ip pim dense-mode nexthop

ð Ô

Â

ð ҃ Ô

/ /

ð Ô

ЛЬЮ ҃ PIM-DM Ю '

```
Ruijie# show ip pim dense-mode nexthop
Destination  Nexthop   Nexthop   Nexthop   Metric Pref
               Num       Addr      Interface
1.1.1.111      1       50.50.50.1  VLAN 4     0     1
```

Ю'

Destination	
Nexthop Num	Ю
Nexthop Addr	Ю

PIM-SM ʒ

PIM-SM ʒ

PIM-SM ЛьЮ ʒ'

- **clear ip mroute**
- **clear ip mroute statistics**
- **clear ip pim sparse-mode bsr rp-set**
- **ip multicast-routing**
- **ip pim accept-register list**
- **ip pim bsr-candidate**
- **ip pim cisco-register-checksum**
- **ip pim dr-priority**
-

- **show ip pim sparse-mode bsr-router**
- **show ip pim sparse-mode interface**
- **show ip pim sparse-mode local-members**
- **show ip pim sparse-mode mroute**
- **show ip pim sparse-mode neighbor**
- **show ip pim sparse-mode nexthop**
- **show ip pim sparse-mode rp mapping**
- **show ip pim sparse-mode rp-hash**

clear ip mroute

ð ¾ Ô

clear ip mroute {* | *group_address* [*source_address*] }

ð Ô

*	pimsm Â
group_address	pimsm Â
group_address source_address	pimsm Â

ð ¾ Ô

ð Ô

╟ pimsm

ð Ô

```
Ruijie# clear ip mroute *
Ruijie# clear ip mroute 224.2.2.2
Ruijie# clear ip mroute 224.2.2.2 2.2.2.2
```

clear ip mroute statistics

ð ¾ Ô

clear ip mroute statistics {* | *group_address* [*source_address*] }

ð Ô

*	pimsm Â
group_address	pimsm Â
group_address *source_address*	pimsm Â

ð ¸ì Ô

ð Ô

╟ pimsm

ð Ô

```
Ruijie# clear ip mroute statistics *
Ruijie# clear ip mroute statistics 224.2.2.2
Ruijie# clear ip mroute statistics 224.2.2.2 2.2.2.2
```

clear ip pim sparse-mode bsr rp-set

ð ¸ì Ô

clear ip pim sparse-mode bsr rp-set *

ð Ô

*	rp-set Â

ð ¸ì Ô

ð Ô

╟ ╟ ¯ RP Â

ð Ô

```
Ruijie# clear ip pim sparse-mode bsr rp-set *
```

ip multicast-routing

ð ¸ì Ô

ip multicast-routing

ð Ô

ð Ô

˘ a ╠

ð ¸ Ô

ð Ô

╠ ˘ ¸ Â Э ╠ pimsm ˘ ≠
¸˘ ˘ **ip pim sparse-mode** ¸˘ pimsm
╠ Â

ð Ô

```
Ruijie(config)# ip multicast-routing
```

ip pim accept-register list

ð ¸ Ô

ip pim accept-register list *access-list*

ð Ô

access-list	access-list˙ <100˝ 199> à <2000˝ 2699>˘ ♩ acl

ð Ô

˘ a ¸˘ RP Э a ⁸ Ą

ð ¸ Ô

ð Ô

RP Э ⁸ Ą ˘ ¸ Â

ð Ô

```
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
```

ð ¸ Ô

access-list

ip pim bsr-candidate

ð ¾ Ô

ip pim bsr-candidate *interface-type interface-number* [*hash-mask-length*][*priority-value*]

ð Ô

interface-type interface-number	
hash-mask-length	˩ ˘ ˩ ѝ <0-32>˘ ѝ RP ⁸ HASH ˘ 10
priority-value	˩ ˘ ˩ ѝ <0-255>˘ BSR ˝I ˘ 64

ð Ô

˘ a ¾˘ a BSR

ð ¾ Ô

ð Ô

PIM-SM ˘ BSR Â BSR RP Â BSR Ѽ BSR Â BSR ˘ C-BSR ѝ BSR˘ PIM-SM Л 224.0.0.13 ˘ BSR ˝I Â

¾ ˩ Л ǂ BSR PIM ˘ ˝I BSR ˩ ˘ ˘ ѝ BSR ˘ ' Â

BSR ѝ BSR˘ ÿ ˥ BSR ˘ ˥ BSR ˝I ˆ ˝I ˘ IP ˜ Â

ð Ô

```
Ruijie# configure terminal
Ruijie(config)# ip pim bsr-candidate g 0/3
Ruijie(config)# ip pim bsr-candidate g 0/3 30 192
```

ip pim cisco-register-checksum

ð ३ Ô

ip pim cisco-register-checksum [**group-list** *access-list*]

ð Ô

access-list	access-list <1˘ 99> à <1300˘ 1999>˘ ل acl Â group-list access-list ˘ ˘ Â

ð Ô

˘ ”Ą PIM ”Ą
˘ PIM ˘

priority-value	″I ˘ ˘ ″I Â ѝ ' <0-4294967294>˘ ѝ ' 1 Â

ð Ô

˘ DR ″I ѝ 1

ð ֳ Ô

ð Ô

DR ˘ Ю '

¸ ⊿ hello ″I ˘ ѫ
DR ˘ ″I ″I ˘ ″I ˘ ѝ DR'
⊿ ″I ˘ ѫ˘ IP ˘ DR Â

¸ ⊿ hello ″I
˘ ѫ DR ˘ IP ˘ DR Â

ð Ô

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim dr-priority 10000
```

ip pim ignbre-rp-set-priority Ơ

l·

config-if)# interface g

ip pim jp-timer

ð ¾ Ô

ip pim jp-timer interval-seconds

ð Ô

Interval-seconds	↓ <1-65535>˘ Æ Ù

ð Ô

˘ join/prune 60s

ð ¾ Ô

ð Ô

join/prune

ð Ô

```
Ruijie# configure terminal
Ruijie(config)# ip pim jp-timer 50
```

ip pim mib

ð ¾ Ô

ip pim mib dense-mode

ð Ô

ð Ô

˘ sparse-mode MIB

ð ¾ Ô

ð Ô

dense-mode MIB ˘ ¾

ð Ô

```
Ruijie# configure terminal
Ruijie(config)# ip pim mib dense-mode
```

ip pim neighbor-filter

ð ¾ Ô

ip pim neighbor-filter *access_list*

ð Ô

access_list	access-list acl ù 1-99 ≠ ¼ acl

ð Ô

˘ ╗

ð ¾ Ô

ð Ô

˘ ╗ PIM ˘ ⁸ Â
˘ PIM-SM a б ^ peering˜
˘ б Â

ð Ô

```
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
```

ð ¾ Ô

access-list

ip pim query-interval

ð ¾ Ô

ip pim query-interval *interval-seconds*

ð Ô

interval-seconds	¼ ù <1-65535>˘ Æ ù

ð Ô

ip pim register-rp-reachability

ð ¸¹ Ô

ip pim register-rp-reachability

ð Ô

ð

ô ſ ð Ô

˩ Â RP ̏Ą ˘ Ꮑ ̏Ą IP ӥ Register-Stop Â

注意:

a ╟ PIM-SM Â

ð Ô

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-source 192.168.195.80
Ruijie(config)# ipv6 pim register-source g 0/3
```

ip pim register-suppression

ð ʒ Ô

ip pim register-suppression *seconds*

ð Ô

seconds	̏Ą ⁸ ˘ ⅄ <11-21843>˘ Æ ӥ Â

ð Ô

˘ ̏Ą ⁸ 60 Â

ð ʒ Ô

ð Ô

DR Э ㅒ DR Э ̏Ą ⁸ ʼ ip pim rp-register-kat ʒ ˘ RP Э ㅒ RPkeepalive Â

ð Ô

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-suppression 100
```

ip pim rp-address

ð ʒ Ô

ip pim rp-address *rp-address* [*access_list*]

ð Ô

rp-address	RP IP
access_list	˘ access-list acl ѝ <1-99> à <1 300-1999>' ≠ acl Â ˘ Â

ð Ô

˘ rp

ð ֽ Ô

ð Ô

RP˝ ≠ RP BSR ⁸ Â ֽ Ю '

¸ BSR ⁸ RP ˘ ″I ╟ Â

¸ RP ЛЦ ^ ACL˜ ^ a ACL˜˜ RP a Â

¸ RP ⊾ ˘ IP RP ″I Â

¸ ACL Ⱶ ÂACL ˘ ѝ 224/4 Â

¸ Л˘ RP RP ˘ RP ˘ IP Â ѝ RP˝ ˘ ≠ IP ″I Э Â

¸ RP ˘ ÿ RP ѝ RP Â

ð Ô

```
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
```

ð ֽ Ô

access-list

ip pim rp-candidate

ð ३ Ô

ip pim rp-candidate *interface-type interface-number [***priority** *priority-value][i***nterval** *interval-seconds][***group-list** *access_list]*

ð Ô

interface-type interface-number	
priority-value	↓ ˘ ↓ ѝ <0-255>˘ priority priority-value ˘ ˝I 192
Interval-seconds	↓ ˘ ↓ ѝ <1-16383>˘ interval interval-seconds ˘ interval-seconds 60s
access_list	↓ ˘ acl ѝ 1-99’ ≠ ↓ acl’ group-list access_list ˘ Â

ip pim rp-register-kat

ð ¾ Ô

ip pim rp-register-kat *seconds*

ð Ô

seconds	KAT Â ¼ <1-65535>˘ Æ ¸ Â

ð Ô

a group-list ˘ SPT¦ Â

ð Ô

```
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
```

ð ¾Ô

access-list

ip pim ssm

ð ¾ Ô

ip pim ssm { **default** | **range** *access_list}*

ð Ô

default	ù' 232/8
access_list	acl ù 1-99' ≠ ı acl

ð Ô

╟ SSM

ð ¾ Ô

ð Ô

╟ PIM-SSM ╟ PIM-SM˝ ¾

ð Ô

Ю ¾ 232/8 Â

```
Ruijie# configure terminal
Ruijie(config)# ip pim SSM default
```

Ю ¾ ù 10 Â

```
Ruijie(config)# ip pim SSM range 10
Ruijie(config)# access-list 10 permit 232.0.0.1
0.0.0.255
```

ð ¾Ô

```
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
```

show ip pim sparse-mode interface

ð ৡ Ô

show ip pim sparse-mode interface [*interface-type interface-number* [**detail**]]

ð Ô

interface-type interface-number	┘ ˘ ˘ ৡ
detail	┘ ˘

ð ৡ Ô

/

interface-type	˅ ˇ
interface-number	ˇ ʒ

ð Ô

detail	¸ ˘

ð ¾ Ô

/ /

ð Ô

Â

ð Ô

```
Ruijie# show ip pim sparse-mode neighbor detail
Nbr 5.5.5.3 (VLAN 1)
 Expires in 81 seconds
```

show ip pim sparse-mode nexthop

ð ¾ Ô

show ip pim sparse-mode nexthop

ð Ô

ð ¾ Ô

/ /

ð Ô

ÞO ˘ ÞO /¹˘ ˘ metric Â

show ip pim sparse-mode rp mapping

ð ¾ Ô

show ip pim sparse-mode rp mapping

ð Ô

ð ¾ Ô

/ /

ð Ô

Э RP˝ Л∪ Ŀ

ð Ô

```
Ruijie (config)#sh ip pim sparse-mode rp mapping
PIM Group-to-RP Mappings
Group(s): 224.0.0.0/4
```

३

३

ð Ô

ЛЬЮ ѝ ѝ 230.0.0.1 '

```
Ruijie# clear ip mroute 230.0.0.1
```

ð ϡ Ô

ϡ	
show ip mroute	Â

ð ѵ Ô

Â

clear ip mroute statistics

ϡ IP Â

clear ip mroute statistics {***** | *group-address* [*source -address*]}

ð Ô

*	Â
group-address	Â
source -address	Â

ð Ô

Â

ð ϡ Ô

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ð Ô

IP Â

ð Ô

ЛЬЮ ѝ ѝ 230.0.0.1
'

```
Ruijie#
```

ʔ	
show ip mroute	Â
clear ip mroute	Â

ð Ô

Â

ip mroute

Â ʔ no Â

ip mroute *source-address mask* [*protocol as-number*] {*rpf-addrress* | *interface-type interface-number*} [*distance*]

no ip mroute *source-address mask* [*protocol as-number*] {*rpf-addrress* | *interface-type interface-number*} [*distance*]

ð Ô

clear

ЛЬЮ 172.30.10.13

```
Ruijie(config)# ip mroute 172.16.0.0 255.255.0.0
172.30.10.13
```

ip multicast route-limit

ð Ô

ttl-value	TTL , ┘ 0~255 Â

ð Ô

ttl-value и 1 Â

ð ϧ Ô

Â

ð Ô

┘ Л∪ и TTL Â TTL
˘ ┘ Л∪ ˘ ÂTTL
˘ ┘ Ь Э Â TTL и 0 ˘
a и Â

ð Ô

ЛЮ Э TTL и 5

```
Ruijie(config-if)# ip multicast ttl-threshold 5
```

ip multicast-routing

ϧ ╟ Â ϧ **no** Â

ip multicast-routing

no ip multicast-routing

ð Ô

Â

ð ϧ Ô

Â

ð Ô

ϧ ╟ IPv4 Â ╟ IPv4 ˘
≠ a ╟ Â

Y ' ╟ IPv4 ╖ ˘ ϧ Â ╖ IGMP snooping ╖ ˘ ╟ IGMP snooping ╖ ˘ ϗ ϧ a Â

ð Ô

ЛЪЮ ╟ Â

```
Ruijie(config)# ip multicast-rounting
```

& 说明:

a ⅄ ⅄ / Э a ⅄ a ⅄ v4

ip multicast boundary

IP IP Â **no** Â

ip multicast boundary *access-list*

no ip multicast boundary *access-list*

ð Ô

access-list	IP access-list ѝ ACL

ð ˝ ɒ

ip multicast static

ʒ γ ⁸ Â ʒ no ⅃ Л ⅃ Â

ip multicast static *source-address group-address interface-type interface-number*

no ip multicast static *source-address group-address interface-type interface-number*

ð Ô

source -address	Â
group-address	Â
interface-type interface-number	γ

ð Ô

ð ʒ Ô

Â

ð Ô

⅃ Л ʒ˘ ≠
Â ѝ ⁸˘ ⅃
Â ὲ a Â

ʒ ⁸ Э ѝ˘ a
Â ˆ ' PIM-DM PIM-SM˜
╟ ˘ Л ѝ Ÿ ⅃ Â

ð Ô

Л Ю (192.168.43.4 ˘ 225.1.1.5) ÿ GigabitEthernet 2/6 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
```

ð ⅄ Ô

ʒ Э Â

```
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
```

ЛЬЮ

```
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
```

ЛЬЮ

```
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-

Timers:Uptime/Stat Expiry	
Interface State	
Owner	
Incoming interface	б а
Outgoing interface list	Э
Forwarding Counts' Pkt count/Byte count,	/
Other Counts: Wrong If pkts	

```
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
```

IP ʒ

ЮO ʒ ╟ IP '

- **debug nsm mcast all**
- **debug nsm mcast fib-msg**
- **debug nsm mcast vif**
- **debug nsm mcast register**
- **debug nsm mcast stats**

debug nsm mcast all

Â ʒ **no**

debug nsm mcast all

ð Ô

Â

ð Ô

ð ʒ Ô

ð ɔ

Â

debug nsm mcast fib-msg

Â ϗ **no**

debug nsm mcast fib-msg

ð Ô

Â

ð Ô

ð ϗ ѩ ȯ < ⊥ **no 6** İ ѭ

ð ʒ Ô

ð Ô

˘ ˩ Ⱡ Â

ð Ô

```
Ruijie# debug nsm mcast vif
```

ð ˩ Ô

Â

ð ʒ Ô

Â

debug nsm mcast register

¨Ą ¨Ą Â

ʒ **no**

debug nsm mcast register

ð Ô

Â

ð Ô

ð ʒ Ô

ð Ô

˘ ˩ Ⱡ ¨Ą ¨Ą

Â

ð Ô

¨Ą ¨Ą

```
Ruijie# debug nsm mcast register
```

ð ˩ Ô

Â

ð ৡ Ô

Â

debug nsm mcast stats

Â

ৡ **no**

debug nsm mcast stats

ð Ô

Â

ð Ô

ð ৡ Ô

ð Ô

˘ ⅃ Ո

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ð Ô

Ruijie# **debug nsm mcast stats**

ð ⅄ Ô

Â

ð ৡ Ô

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8 ३

३

ЛυЮ ३

- **strom-control**
- **switchport protected**
- **switchport port-security**
- **switchport port-security aging**
- **switchport port-security mac-address**
- **port-security arp-check**

strom-control

8 Â ३ **no** 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*}]

ð Ô

broadcast ' 8 ╖

multicast ' ﾉ 8 ╖

unicast ' ﾉ 8 ╖

percent ' Лυ ｷ 20 20%

packets ' Лυ pps ｨ Æ packets per second

Rate-bps '

64k-2M ' Лυ 64k ｨ Æ

2-100M ' Лυ 1M ｨ Æ

100M Лυ Э ' Лυ 8M ｨ Æ

ð Ô

ЮЎ à 8 ╖

ð ¾ Ô

Â

ð Ô

Э à ˘
˘ ˩ ╗ Â
˩ Â

˩ Л↯ à 8 Â à
˘

^ ~ Â

show storm-control ¾ Â

ð Ô

Ю GigabitEthernet 1/1 Э 8
╗ ˘ 3 ѝ 4M

```
Ruijie# configure terminal
Ruijie(config)# interface GigabitEthernet 1/1
Ruijie(config-if)# storm-control multicast 4096
Ruijie(config-if)# end
```

ð ¾ Ô

¾	
show storm-control	8 Â

ð ˩ Ô

86 **pps** ѝ Æ

switchport protected

¾ ѝ Â ¾ **no** Â

switchport protected

no switchport protected

ð Ô

ð ¾ Ô

ð Ô

ù Л˘ Ю a
γ ЛЛ 3 ˘ б ЛЛ Â
show interfaces

ð Ô

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport protected
```

ð Ô

show interfaces	Â

ð Л Ô

S32 S37 Э˘ a ˘ Ю a acĭ
≠ a ù л ˘ ù Э è
Â

switchport port-security

Ћ ˘ Â no
˘ Â

switchport port-security [**violation** {**protect** | **restrict** | **shutdown**}]

no switchport port-security [**violation**]

ð Ô

port-security	
violation protect	˘ Â
violation restrict	˘ 3 trap Â
violation shutdown	˘ ã Trap 3 Â

ð Ô

Â

ð Ô

ð Ô

˘ ⅃Л⊍ ⁸ Э MAC
Л⊍ IP(⅃) ш ⁸ Â й (
╖) ⅄˘ й
˘ a è Â ˘ ⅃Л⊍ ⁸
Э ˘ й 1 з й
˘ ˆ è й M
~ Â

ð Ô

Ю Gigabitethernet 1/1 Э ╖ ˘
й shutdown

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport port-security
Ruijie(config-if)# switchport port-security
violation shutdown
```

ð ३ Ô

३	
show port-security	Â

switchport port-security aging

३ й Э Â ╖ ˘
˘ ˘ ⅃Л⊍ ╟ ╕
Э Â ३ no ╟ ⌐
˘ ╖ Â

switchport port-security aging {**static** | **time time** }

no switchport port-security aging {**static** | **time }**

ð Ô

Static	⅃ ╟ ⌐ ˘ ╟ ⌐ Â
time time	Э ˘ 0 · 1440ơ Æ ↑ Â й 0ơ ╖ Э Â

ð Ô

a

ð ¾ Ô

ð Ô

ˌ Л Ъ Ю ¾ **no switchport port-security aging time** ╖ ˘ ¾ **no switchport port-security aging static** ╟ ⌐
Â

show port-security ¾

ð Ô

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport port-security aging time 8
Ruijie(config-if)# switchport port-security aging static
```

ð ¾ Ô

¾	
show port-security	Â

switchport port-security mac-address

Â ¾ no ˘
Â

switchport port-security [**mac-address** *mac-address* [**ip-address** **ip-address**]] | [**maximum** *value*]

no switchport port-security [**mac-address** *mac-address*] | [**maximum**]

ð Ô

mac-address *mac-address*	Â
ip-address *ip-address*	и IP Â
maximum *value*	Â

ð Ô

ð ¾ Ô

ð ¾ ð ¼ ¢ ¾ [illegible]

ð Ô

¿ IP MAC ´ ¨ б
ACL Э ´ ¨ ˘
Э ACL 802.1x ¶ ˘ IP ˘
Э IP

ð Ô

Ю ù gigabitethernet 1/1 '
00d0.f800.073c˘ ù è IP ' 192.168.12.202'

```
Ruijie# configure terminal
```

Arp-check Ь ˘ ╟˘ Â ╟ Ю˘
Э ˘ Arp Â Ю˘ a arp Â
Ю˘ Э Â

ð Ô

```
Ruijie(config-if)# arp-check
```

ð ¾ Ô

¾	
show port-security	Â

¾

ЛЬЮ ¾

- **show storm-control**
- **show port-security**

show storm-control

8 Â

show storm-control [*interface-id*]

ð Ô

interface-id	8 Â

switchport port-security mac-address	Â

802.1X ३

show dot1x auto-req	ў ╟

dot1x auto-req req-interval

dot1x auto-req user-detect

ˇ Э ˇ
ˇ no й

dot1x auto-req user-detect

no dot1x auto-req user-detect

ð Ô

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ð Ô

ˇ Э ˇ
ˇ Л **show dot1x auto-req** ৡ

ð Ô

Ю Э Л

```
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req user-detect
Ruijie(config)# end
Ruijie# show dot1x auto-req

Auto-Req: Enabled
User-Detect : Enabled
Packet-Num  : 0
Req-Interval: 60 Second
```

ð ৡ Ô

ৡ	
show dot1x auto-req	ў ╠

dot1x ৡ

dot1x ЛЮ ৡ

¸ **dot1x timeout quiet-period**

- **dot1x timeout re-authperiod**
- **dot1x timeout server-timeout**
- **dot1x timeout supp-timeout**
- **dot1x timeout tx-period**

dot1x timeout quiet-period

ৡ ˆ ৡ ˜ ʌ
ˆ ˜ Â ৡ **no** ѝ

dot1x timeout quiet-period *seconds*

no dot1x timeout quiet-period

ð Ô

*seconds*ʻ ʌ Â
0 65535 Â Æ s

ð Ô

10 Â

ð ৡ Ô

Â

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ʌ˘ a ˘ Â ɻ Ո
show dot1x ৡ ℸ Â

ð Ô

Ю ѝ 1000sʻ

```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout quiet-period 1000
Ruijie(config)# end
Ruijie# show dot1x

802.1X Status:      Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   EP0v4..00v4..00v4..00v43..0E53>-6<2AFC18DB092E
```

```
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
```

ð ৡ Ô

ৡ	
show dot1x	802.1x

dot1x timeout re-authperiod

ʃ˘ ৡ

˘ Â ৡ **no** ѝ Â

dot1x timeout re-authperiod *seconds*

```
Quiet Timer Period:   1000 sec
Tx Timer Period:      3 sec
Supplicant Timeout:   3 sec
Server Timeout:       5 sec
Re-authen Max:        3 times
Maximum Request:      3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:     Disabled
Authorization Mode:   Group Server
```

ð ʒ Ô

ʒ	
show dot1x	802.1x

dot1x timeout server-timeout

ʒ Ł Â ʒ
no ŭ Â

dot1x timeout server-timeout *seconds*

no dot1x timeout server-timeout

ð Ô

seconds Ł ˘ 1
65535 Â

ð Ô

5

ð ʒ Ô

Â

ð Ô

˩ Л **show dot1x** ʒ ╖ Â

ð Ô

Ю Ł ŭ 10s

```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout server-timeout 10
Ruijie(config)# end
Ruijie# show dot1x
```

```
802.1X Status:       Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Disabled
Re-authen Period:     1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:      3 sec
Supplicant Timeout:   3 sec
Server Timeout:       10 sec
Re-authen Max:        3 times
Maximum Request:      3 times
Filter Non-RG Supp-1.45 sec
```

```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout supp-timeout 10
Ruijie(config)# end
Ruijie# show dot1x

802.1X Status:       Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Disabled
Re-authen Period:     1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:      3 sec
Supplicant Timeout:   10 sec
Server Timeout:       10 sec
Re-authen Max:        3 times
Maximum Request:      3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:     Disabled
Authorization Mode:   Group Server
```

ð ʒ Ô

ʒ	
show dot1x	802.1x

dot1x timeout tx-period

ʌ˘ ʒ ˘

Â ʒ no й ٭

ৰ Ô

ЮЛЪ **show dot1x** ৡ ℼ Â

ЮЮ ѝ 10ѕ

```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout tx-period 10
Ruijie(config)# end
Ruijie# show dot1x

802.1X Status:       Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Disabled
Re-authen Period:     1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:      10 sec
Supplicant Timeout:   10 sec
Server Timeout:       10 sec
Re-authen Max:        3 times
Maximum Request:      3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:     Disabled
Authorization Mode:   Group Server
```

ৰ ৡ Ô

ৡ	
show dot1x	802.1x

dot1x ৡ

ЛЪЮ ৡ

- **dot1x re-authentication**
- **dot1x reauth-max**

dot1x re-authentication

ৡ Â ৡ no Â

[**no**] **dot1x re-authentication**

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Â ˩ Л **show dot1x** ৡ ℸ Â

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Ю ℸ '

```
Ruijie# configure terminal
Ruijie(config)# dot1x re-authentication
Ruijie(config)# end
Ruijie# show dot1x

802.1X Status:       Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Enabled
Re-authen Period:     1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:      10 sec
Supplicant Timeout:   10 sec
Server Timeout:       10 sec
Re-authen Max:        3 times
Maximum Request:      3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:     Disabled
Authorization Mode:   Group Server
```

ð ৡ Ô

dot1x reauth-max

ৡ Â ৡ **no**
Â

dot1x reauth-max *count*

no dot1x reauth-max

ð Ô

count Â

ð Ô

ѝ 3

ð ৡ Ô

Â

ð Ô

ৡ˘ ┘Л Â┘Л
show dot1x ৡ ℸ Â

ð Ô

Ю ℸ '

```
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
```

ð ৡ Ô

٪	
show dot1x	802.1x

dot1x ٦ ٪

٦ ЛЬЮ

¸ **dot1x probe-timer**

¸ **dot1x client-probe enable**

dot1x probe-timer

.

dot1x probe-timer{**interval** | **alive**}*interval*

no dot1x probe-timer

ð Ô

no'

alive'

interval'

interval hello

ð Ô

Hello й 20

й 250

ð ٪ Ô

Â

ð Ô

˘ ٬ Л Ь **show dot1x** ٪ 802.1x Â

ð Ô

hello й 30 , й 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
```

ð ৲ Ô

৲	
Show dot1x probe-timer	

dot1x client-probe enable

Ⅶ

[**no**] **dot1x client-probe enable**

ð Ô

ð Ô

ð ৲ Ô

Â

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Ⅶ

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Ⅶ '

```
Ruijie# configure terminal
Ruijie(config)# dot1x client-probe enable
Ruijie(config)# end
Ruijie# show dot1x

802.1X Status:       Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Enabled
Re-authen Period:     1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:      10 sec
Supplicant Timeout:   10 sec
```

```
Server Timeout:      10 sec
Re-authen Max:       5 times
Maximum Request:     3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Enabled
Eapol Tag Enable:    Disabled
Authorization Mode:   Group Server
```

ð ¯ì Ô

¯ì	
show dot1x	dot1x

dot1x è è ¯ì

è dot1x ЛЪЮ ¯ì

- **dot1x authentication**
- **dot1x accounting**
- **dot1x auth-address-table**
- **dot1x auth-mode**
- **dot1x default**
- **dot1x dynamic-vlan enable**
- **dot1x eapol-tag**
- **dot1x max-req**
- **dot1x private-supplicant-only**
- **dot1x port-control auto**
- **dot1x port-control-mode**
- **dot1x stationarity enable**

dot1x authentication

AAA ЮЎ AAA Ь ˇ
¯ì Â ¯ì **no** Â

dot1x authentication {**default** | *list-name*}

no dot1x authentication {**default** | *list-name*}

ð Ô

default ¸

list-name ¸ ¸

ð Ô

5 AAA ˘ AAA Ł Â

ð ¯ Ô

Â

ð Ô

5 c AAA Ł˘ ¯ dot1x 8
Â

ì AAA Ł ЮЎ ≠ ¯ **aaa domain enable** ˘ **dot1x authentication** *auth* ¯ *auth* a
˘ Â ε ľ
ì AAA Ł ŀÂ

ð Ô

Ю Э group radius Â

```
Ruijie# configure terminal
Ruijie(config)# aaa new-model
Ruijie(config)# aaa authentication dot1x default group radius
Ruijie(config)# interface fastEthernet0/1
Ruijie(config-if)# dot1x authentication default
Ruijie(config-if)# end
Ruijie#
```

ð ¯ Ô

¯	
aaa new-model	AAA Ł
aaa authentication dot1x	

dot1x accounting

AAA ЮЎ ì Л∪ AAA Ł Ł ˘
¯ Â ¯ **no** ì Â

dot1x accounting {**default** | *list-name*}

no dot1x accounting {**default** | *list-name*}

ð Ô

default ì

list-name ì ì

ð Ô

AAA ˘ default Â

ð ৡ Ô

Â

ð Ô

AAA Ŀ˘ ৡ dot1x
Â

ɻ AAA Ŀ ЮŸ ≠ ৡ **aaa domain enable** ˘ **dot1x accounting** ৡ a ˘
Â ɛ ľ ɻ
AAA Ŀ ŀÂ

ð Ô

Ю Э group radius Â

```
Ruijie# configure terminal
Ruijie(config)# aaa new-model
Ruijie(config)#aaa accounting network acct start-stop
group radius
Ruijie(config)# dot1x accounting acct
Ruijie(config)# end
Ruijie#
```

ð ৡ Ô

ৡ	
aaa new-model	AAA Ŀ
aaa authentication dot1x	

dot1x auth-address-table

ৡ 802.1X Â ৡ **no** ɹ
Â

dot1x auth-address-table address *mac-addr* **interface** *interface*

no dot1x auth-address-table address *mac-addr* **interface** *interface*

ð Ô

mac-addr

Interface' /I Â

ð Ô

ˬ ˘ Â

ð ¾ Ô

Â

ð Ô

802.1X Â **show dot1x auth-address table** ¾ Â

ð Ô

Ю Э ╗ Â

```
Ruijie# configure terminal
Ruijie(config)# dot1x auth-address-table address 00d0f8000000 interface ehternet 1/1
Ruijie(config)# end
Ruijie#
```

ð ¾ Ô

¾	
show dot1x auth-address-table	802.1X Â

dot1x auth-mode

802.1x Â

dot1x auth-mode {**eap-md5** | **chap** | **pap**}

no dot1x auth-mode

ð Ô

eap-md5' 802.1x EAP-MD5

chap' 802.1x CHAP

pap' 802.1x PAP

ð Ô

EAP-MD5

ð ¾ Ô

Â

ð Ô

ৰ Ռ **show dot1x** ৡ 802.1x

ð Ô

Ю 802.1x '

```
Ruijie# configure terminal
Ruijie(config)# dot1x auth-mode chap
Ruijie(config)# end
Ruijie#
```

ð ৡ Ô

ৡ	
show dot1x	802.1x Â

dot1x default

802.1x ↑ Â

dot1x default

ð Ô

ৡ Â

ð Ô

ð ৡ Ô

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ð Ô

ৰ Ռ **show dot1x** ৡ 802.1x Â

ð Ô

Ю 802.1x '

```
Ruijie# configure terminal
Ruijie(config)# dot1x default
Ruijie(config)# end
```

ð ৡ Ô

ৡ	
show dot1x	802.1x Â

dot1x dynamic-vlan enable

╠ vlan Â ¯ **no** ┘Л
Â

dot1x dynamic-vlan enable

no dot1x dynamic-vlan enable

ð Ô

¯ Â

ð Ô

и

ð ¯ Ô

Â

ð Ô

┘Л **show dot1x dynamic-vlan** ¯ ╖ Â

ð Ô

Ю 802.1x ╠ vlan '

```
Ruijie# configure terminal
Ruijie(config)# dot1x dynamic-vlan enable
Ruijie(config)# end
Ruijie#
```

ð ¯ Ô

¯	
show dot1x	802.1x Â

dot1x eapol-tag

EAPOL TAG ╖ Â

dot1x eapol-tag

no dot1x eapol-tag

ð Ô

¯ Â

ð Ô

ý

ð ˀ Ô

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ð Ô

˩Л **show dot1x** ˀ ╖ Â

ð Ô

Ю 802.1X tag '

```
Ruijie# configure terminal
Ruijie(config)# dot1x eapol-tag
Ruijie(config)# end
Ruijie#
```

ð ˀ Ô

ˀ	
show dot1x	802.1x Â

dot1x max-req

DOT1X Ŀ ˘ DOT1X Ŀ ˘ DOT1X ¨Ą Ŀ Â ˀ Ŀ Â ˀ **no** Â

dot1x max-req *count*

no dot1x max-req

ð Ô

count Â

ð Ô

ý 3 Â

ð ˀ Ô

Â

ð Ô

˩Л **show dot1x** ˀ ╖ Â

ð Ô

Ю 802.1x 7 '

```
Ruijie# configure terminal
Ruijie(config)# dot1x max-req 7
Ruijie(config)# end
Ruijie#
```

ð ৡ Ô

ৡ	
show dot1x	802.1x Â

dot1x private-supplicant-only

˘ ˘ **no**

Â

dot1x private-supplicant-only

no dot1x private-supplicant-only

ð Ô

ৡ Â

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a Â

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ð Ô

ㄴЛυ **show dot1x private-supplicant-only** ৡ ℸ

Â

ð Ô

Ю '

```
Ruijie# configure t
Ruijie(config)# dot1x private-supplicant-only
Ruijie(config)# end
Ruijie#
```

ð ৡ Ô

ৡ	

show dot1x private-supplicant-only	Â

dot1x port-control auto

˘ ╗ Â ¯ **no**
Â

dot1x port-control auto

no dot1x port-control

ð Ô

¯ Â

ð Ô

a ╗ 802.1x Â

ð ¯ Ô

Â

ð Ô

┘Л **show dot1x** ¯ ╗ Â

ð Ô

Ю 802.1x б '

```
Ruijie# configure terminal
Ruijie(config)# interface g0/1
Ruijie(config-if)# dot1x port-control auto
Ruijie(config-if)# end
Ruijie#
```

ð ¯Ô

¯	
show dot1x	802.1x Â

dot1x port-control-mode

802.1x ⁸ Ю MAC ⁸ ˘
˘ è ┘
˘ ⁸ ˘
┘ ˘ Ю

˘ ¯ Ю'

dot1x port-control-mode {**mac-based** | **port-based**}

no dot1x port-control-mode

ð Ô

mac-based' mac 802.1X 8

port-based' 802.1X 8

ð Ô

ѝ mac-based 8

ð ¯ Ô

Â

ð Ô

ЛЧ **show dot1x port-control** ¯ 802.1x Â

ð Ô

Ю 802.1x б '

```
Ruijie(config)# interface g 0/1
Ruijie(config-if)# dot1x port-control auto
Ruijie(config-if)# dot1x port-control-mode
port-based
Ruijie(config-if)# end
Ruijie#
```

ð ¯ Ô

¯	
show dot1x port-control	802.1x Â

dot1x stationarity enable

802.1x 8 Ю˘ Ю˘ ╟ ЛЧ
˘ Ю˘ ѝ a ÿ 802.1X è
˘ ЛЧ ЛЧЮ ¯ Â

dot1x stationarity enable

no dot1x stationarity enable

ð Ô

ð Ô

ѝ ╟ ┘Л

ð ৡ Ô

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ৡ˘ Â

ð Ô

Ю 802.1x б '

```
Ruijie# configure terminal
Ruijie(config)# dot1x stationarity enable
Ruijie(config)# end
Ruijie#
```

ð ৡ Ô

dot1x ৡ

- **show dot1x**
- **show dot1x auth-address-table**
- **show dot1x auto-req**
- **show dot1x private-supplicant-only**
- **show dot1x max-req**
- **show dot1x port-control**
- **show dot1x probe-timer**
- **show dot1x re-authentication**
- **show dot1x reauth-max**
- **show dot1x summary**
- **show dot1x timeout**
- **show dot1x user id**

show dot1x

802.1x Â

show dot1x

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ৡ Â

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ЮO '

```
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
```

dot1x timeout server-timeout	Â
dot1x timeout supp-timeout	Â
dot1x timeout tx-period	Â

show dot1x auth-address-table

¾ 802.1X Â

show dot1x auth-address-table[*addressmac-addr*][*interface interface*]

ð Ô

mac-addr

interface

ð Ô

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Ю

```
Ruijie# show dot1x auth-address-table
interface:g3/1
-----------------------------------
mac addr: 00D0.F800.0001
Ruijie#
```

ð ¾ Ô

¾	
dot1x auth-mode	802.1x Â
dot1x max-req	Â
dot1x port-control auto	Â
dot1x reauth-max	

dot1x re-authentication	Â
dot1x timeout quiet-period	Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	Â
dot1x timeout supp-timeout	Â
dot1x timeout tx-period	Â

show dot1x auto-req

ÿ ╟ 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
Ruijie#
```

ð ¾Ô

¾	

dot1x auth-mode	802.1x Â
dot1x max-req	Â
dot1x port-control auto	╗ Â
dot1x reauth-max	
dot1x re-authentication	Â
dot1x timeout quiet-period	⁄ Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	╘ Â
dot1x timeout supp-timeout	Â
dot1x timeout tx-period	˘ Â

show dot1x private-supplicant-only

╗ Â

show dot1x private-supplicant-only

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ÞO '

```
Ruijie# show dot1x private-supplicant-only
private-supplicant-only:: disabled
Ruijie#
```

ð ¾ Ô

³	
dot1x auth-mode	802.1x Â
dot1x max-req	Â
dot1x port-control auto	╗ Â
dot1x reauth-max	
dot1x re-authentication	Â
dot1x timeout quiet-period	⁄ Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	╘ Â
dot1x timeout supp-timeout	Â

ð ¾ Ô

¾	
dot1x auth-mode	802.1x Â
dot1x max-req	Â
dot1x port-control auto	╗ Â
dot1x reauth-max	
dot1x re-authentication	Â
dot1x timeout quiet-period	Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	Ł Â
dot1x timeout supp-timeout	Â
dot1x timeout tx-period	Â

show dot1x port-control

б Â

show dot1x port-control [**interface** *interface*]

ð Ô

interface'

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ð ¾ Ô

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Ю '

```
Ruijie# show dot1x port-control
interface dyn-user static-user max-user qos
```

```
ctrl-mode status
------------------------------------------------------------
------
Gi0/1      0          1             6000      dscp: 0
mac-base Authed
Ruijie#
```

ð ʽÔ

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ð Ô

Ю

```
Ruijie# show dot1x probe-timer

Hello Interval: 20 Seconds
Hello Alive: 250 Seconds
Ruijie#
```

ð ¾Ô

¾	
dot1x auth-mode	802.1x Â
dot1x max-req	Â
dot1x port-control auto	╗ Â
dot1x reauth-max	
dot1x re-authentication	Â
dot1x timeout quiet-period	⁄ Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	╘ Â
dot1x timeout supp-timeout	Â
dot1x timeout tx-period	˘ Â

show dot1x re-authentication

show dot1x re-authentication

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```
Ruijie# show dot1x re-authentication
reauth-enabled: disabled
Ruijie#
```

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```
Ruijie# show dot1x reauth-max
reauth-max: 2 times
Ruijie#
```

ð ৡ Ô

ৡ	
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

show dot1x summary

ৡ 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#
```

ð ৲Ô

৲	
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

show dot1x user id

¯ 802.1X

show dot1x user id <*id*>

ð Ô

id show summary id

ð Ô

Â

ð ¯ Ô

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Ю '

```
Ruijie# show dot1x user id 1

User name: caikov
```

¾	
dot1x auth-mode	802.1x Â
dot1x max-req	Â
dot1x port-control auto	╗ Â
dot1x reauth-max	
dot1x re-authentication	Â
dot1x timeout quiet-period	⁄ Â
dot1x timeout re-authperiod	Â
dot1x timeout server-timeout	╘ Â
dot1x timeout supp-timeout	Â
dot1x timeout tx-period	˘ Â

show dot1x timeout

¾ 802.1X

show dot1x timeout quiet-period

show dot1x timeout re-authperiod

show dot1x timeout server-timeout

show dot1x timeout supp-timeout

show dot1x timeout tx-period

ð Ô

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```
Ruijie# show dot1x timeout quiet-period
quiet-period: 60 sec
Ruijie#
```

ð ৡ Ô

ৡ	
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	Ł Â
dot1x timeout supp-timeout	Â
dot1x timeout tx-period	˘ Â

AAA ¾

¾

- **aaa authentication dot1x**
- **aaa authentication enable**
- **aaa authentication login**
- **aaa authentication ppp**
- **login authentication**

aaa authentication dot1x

AAA 802.1X ˘ ¾ **aaa authentication dot1x** 802.1X Â ¾ **no** 802.1X Â

aaa authentication dot1x {**default** | *list-name*} *method1* [*method2*...]

no aaa authentication dot1x {**default** | *list-name*}

ð Ô

default ' ˘ ˩ Hπ й 802.1X Â list-eult ðð 802.1X ˧ ¾ O

ð Ô

AAA 802.1X ¼ AAA 802.1X
Â **aaa authentication dot1x** ¾
¬ 802.1X Â

¬ ˇ ª Â

ð Ô

Ю Ня ª ѝ rds_d1x AAA 802.1X Â
″I RADIUS ¼ ˇ RADIUS
¼ ¬ ˇ Â

```
Ruijie(config)# aaa authentication dot1x rds_d1x group
radius local
```

ð ¾ Ô

¾	

ð Ô

Â

aaa authentication ppp {**default** | *list-name*} *method1* [*method2*...]

no aaa authentication ppp {**default** | *list-name*}

ð Ô

default ' ˘ Л Нж й PPP
Â

list-name ' Нж PPP ˘ Л Л Â

method ' Ю ˘ 4 '

local	Л
none	a
group	Ь ˘ RADIUS Ь

ð Ô

ð ¾ Ô

Â

ð Ô

AAA PPP Ь˘ AAA PPP
Â **aaa authentication ppp** ¾ Л
PPP Â

Л ˘ Л Â

ð Ô

Ю Нж Л й rds_ppp AAA PPP Â
¨I
ÀÁÆÇA• Ý

login authentication

Э Login ~ ╖
Ю **login authentication** ¾ Login Â ¾
no Э Â

login authentication {**default** | *list-name*}

no login authentication

ð Ô

default ' ˘ Login Â

list-name ' Ⱶ Login Â

ð Ô

ð ¾ Ô

Â

ð Ô

Login ˘ ╟ Э Â
Э Login ˘ ↓ ¾ Â
Ⱶ ˘ ˘ Э Login
a ˘ Ⱶ Login Â

ð Ô

Ю Ⱶ ↓ и list-1 AAA Login Â
Â ↓ VTY 0 - 4 Э Â

```
Ruijie(config)# aaa authentication login list-1 local
Ruijie(config)# line vty 0 4
Ruijie(config-line)# login authentication list-1
```

ð ¾ Ô

¾	
aaa new-model	AAA ┗
username **login authentication**	Ⱶ Login

¾

- **aaa authorization commands**
- **aaa authorization config-commands**
- **aaa authorization console**
- **aaa authorization exec**
- **aaa authorization network**
- **authorization commands**
- **authorization exec**

aaa authorization commands

NAS CLI Э ˘ AAA ¾ ╖
¾ ˘ έ ¾ Â
¾ **aaa authorization commands** Â ¾ **no** AAA ¾ ╖ Â

aaa authorization commands *level* {**default** | *list-name*} *method1* [*method2*...]

no aaa authorization commands *level* {**default** | *list-name*}

ð Ô

level ' ¾ ˘ 0~15˝ ā ¾ ⁄ Â

default ' ˘ ⁄ Ⱨ ѝ ¾ Â

list-name ' Ⱨ ¾ ˘ ↓ Л Â

method ' Ю ˘ 4 '

ð Ô

AAA

Â

14 14

~ Â

Э a Â

ð Ô

Ю TACACS+ 15

```
Ruijie(config)# aaa authorization commands 15 default
group tacacs+
```

ð Ô

aaa new-model	AAA
authorization commands	Э

aaa authorization config-commands

AAA Ю

aaa authorization config-commands Â

no AAA Ю Â

aaa authorization config-commands

no aaa authorization config-commands

ð Ô

Ψ a

ˆ ˜ Ю ৡ ˇ ⅃ Л৬ ৡ
no ╖ ˇ è Ю ৡ a
ৡ ⅃ Л৬ Â

ð Ô

Ю Ю ৡ ╖ '

```
Ruijie(config)# aaa authorization config-commands
```

ð ৡ Ô

ৡ	
aaa new-model	AAA ┺
aaa authorization commands	Ⱨ AAA ৡ

aaa authorization console

AAA ⁸ ⅄ ˇ ৡ ˇ
ৡ **aaa authorization console** Â ৡ **no** AAA
⁸ ⅄ ৡ ╖ Â

aaa authorization console

no aaa authorization console

ð Ô

ৡ Â

ð Ô

a ⁸ ⅄ ৡ Â

ð ৡ Ô

Â

ð Ô

Ψ⁋ ⁸ ⅄ è ˇ ⅃ Л৬ ⁸
⅄ ˇ ৡ Â ⁸ ⅄ ৡ ╖
ˇ ⁸ ⅄ ৡ a Â

ð Ô

Ю ⁸ ⅄ ৡ ╖ '

```
Ruijie(config)# aaa authorization console
```

ð ৡ Ô

¾	
aaa new-model	AAA ˪
aaa authorization commands	˧˭ AAA ¾
authorization commands	Э ¾

aaa authorization exec

AAA NAS CLI Exec ˘ è
˘ ¾ **aaa authorization exec** Â ¾ **no**
AAA Exec ╗ Â

aaa authorization exec {**default** | *list-name*} *method1* [no

ð Ô

ÞO RADIUS ¼ Exec '

```
Ruijie(config)# aaa authorization exec default group
radius
```

ð ¾ Ô

¾	
aaa new-model	AAA ¼
authorization exec	Э
username	Þ

aaa authorization network

AAA ¼ ^ PPP à SLIP ~
˘ ¾ **aaa authorization network** Â ¾ **no** AAA ¶ Â

aaa authorization network {**default** | *list-name*} *method1* [*method2*...]

no aaa authorization network {**default** | *list-name*}

ð Ô

default ' ˘ Л Þ й Network Â

method ' ÞO ˘ 4 '

none	a
group	¼ ˘ RADIUS ¼

ð Ô

AAA Network ¶ Â

ð ¾ Ô

Â

ð Ô

¼ PPP àSLIP Â

ɻ Л Ь a ɻ ˘ б ˘

ð Ô

ð Ô

Ю TACACS+ none 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
```

ð Ô

aaa new-model	AAA
aaa authorization commands	AAA

authorization exec

Exec **authorization exec** **no** Exec

authorization exec {**default** | *list-name*}

no authorization exec

ð Ô

default ' Exec

list-name ' Exec

ð Ô

AAA Exec

ð Ô

ð Ô

Exec

Э Exec ˘ ↓ ¾ Â
Ы ˘ ˘ Э Exec
a ˘ Ы Exec Â

ð Ô

Ю ↓ й exec-1 Exec ˘

aaa accounting exec

╟˘ NAS ╟ ˘
¾ **aaa accounting exec** Â ¾ **no** ↓ Exec
╖ Â

aaa accounting exec {**default** | *list-name*} **start-stop** *method1* [*method2*...]

no aaa accounting exec {**default** | *list-name*}

ð Ô

default ' ˘ Л Ня ий Exec
Â

list-name ' Ня Exec ˘ ↓Л Â

method ' Ю ˘ 4 '

none	a
group	Ł ˘ RADIUS TACACS+ Ł

ð Ô

╖

ð ¾ Ô

Â

ð Ô

Л˘ Exec ╖ ˘
ий none˘ a Exec
Â

╖ Л˘ NAS CLI ˘
^ Start˜ Ł ˘ ˘ ^ Stop˜
St23.263rt в Õ

group radius

ð ¾Ô

¾	
aaa new-model	AAA ⊨

```
Ruijie(config)# aaa accounting network default
start-stop group radius
```

aaa new-model	AAA
aaa authorization network	AAA
aaa authentication	AAA
username	

aaa accounting update

aaa accounting update

no aaa accounting update

```
Ruijie(config)# aaa new-model
Ruijie(config)#
```


aaa new-model	AAA
aaa accounting network	

aaa accounting update periodic

aaa accounting update periodic **no**

aaa accounting update periodic *interval*

no aaa accounting update periodic

interval

5 minutes

AAA a AAA

Ruijie(config)# **aaa new-model**
Ruijie(config)# **aaa accounting update**
Ruijie(config)# **aaa accounting update periodic** *1*

aaa new-model	AAA
aaa accounting network	

accounting commands

accounting commands **no**

accounting commands *level* {**default** | *list-name*}

no accounting commands *level*

ð Ô

level ' ¸ ˘ 0~15¯ ¤ ¸ Â

default ' ˘ ¸ Â

list-name ' Ћ ¸ Â

ð Ô

¶

ð ¸ Ô

Â

ð Ô

¸ ˘ ╟ Э Â Э ¸ ˘ ↓ ¸ Â Ћ ˘ ˘ Э ¸ a ˘ Ћ ¸ Â

ð Ô

Ю ↓ й cmd ¸ ˘ 15 ¸ ˘ TACACS+ й Ь ˘ Ь none Â ↓ VTY 0 – 4 Э'

```
Ruijie(config)# aaa accounting commands 15 cmd group
tacacs+ none
Ruijie(config)# line vty 0 4
Ruijie(config-line)# accounting commands 15 cmd
```

ð ¸ Ô

¸	
aaa new-model	AAA Ь
aaa accounting commands	Ћ AAA ¸

accounting exec

Exec Э˘ ¸ **accounting exec** Â ¸ **no** ↓ Э Exec ¶ Â

accounting exec {**default** | *list-name*}

no accounting exec

ð Ô

default ' ˘ Exec Â

list-name ' Ю Exec Â

ð Ô

Ъ

ð ¾ Ô

Â

ð Ô

Exec ˘ ╟ Э Â
Э Exec ˘ ↓ ¾ Â
Ю ˘ ˘ Э Exec
a ˘ Ю Exec Â

ð Ô

Ю ↓ й exec-1 Exec ˘ RADIUS й
Ь ˘ Ь none Â ↓ VTY 0 – 4 Э'

```
Ruijie(config)# aaa accounting exec exec-1 group radius none
Ruijie(config)# line vty 0 4
Ruijie(config-line)# accounting exec exec-1
```

ð ¾ Ô

¾	
aaa new-model	AAA Ь
aaa accounting commands	Ю AAA Exec

- **accounting network**
- **authentication dot1x**
- **authorization network**
- **state**
- **show aaa domain**
- **username-format**

aaa domain

˘ Â ¾ **no** ↵ ¾ Â

aaa domain {**default** | *domain-name*}

no aaa domain {**default** | *domain-name*}

ð Ô

default' ˘ Â

domain-name' ↓ Â

ð Ô

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ð ¾ Ô

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ð Ô

↓ AAA Ł Âdefault ϶ ˘ ≠
˘ Â*domain-name* ϶
↓ ˘ ↓˘ Â
32 Â

ð Ô

Ю ↓ '

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)#
```

ð ¾ Ô

¾	
aaa new-model	AAA Ł
aaa domain enable	↓ AAA Ł
show aaa domain	

aaa domain enable

¼ AAA ¼ ˘ Ю й Â
˘ ”I ¼ AAA ¼ Â ¾ **no**
Â

aaa domain enable

no aaa domain enable

ð Ô

ð Ô

¼ AAA ¼ Â

ð ¾ Ô

Â

ð Ô

¼ AAA ¼ ˘ Â

ð Ô

¼ AAA ¼ '
```
Ruijie(config)# aaa domain enable
```

ð ¾ Ô

¾	
aaa new-model	AAA ¼
show aaa domain	

access-limit

8˘ IEEE802.1x ' ¾ **no**
¼ ¾ Â

access-limit *num*

no access-limit

ð Ô

num ¸ ¯ ¸ IEEE802.1x Â

ð Ô

ÞO a ¸ Â

ð ¾ Ô

Â

ð Ô

¾ ¸ Â

ð Ô

ÞO ¿ ù ruijie.com ù 20¸

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# access-limit 20
```

ð ¾ Ô

¾	
aaa new-model	AAA Ł
aaa domain enable	¿ AAA Ł
show aaa domain	

accounting network

ÞO Network ˘ ¾ **no** ¼ ¾ Â

accountingnetwork {**default |** *list-name*}

no accounting network

ð Ô

default¸ ˘ Â*list-name*¸ ¿ Â

ð Ô

˘

default Â

ð ¾ Ô

Â

ð Ô

ù Network Â

ð Ô

Ю Network '

state

ˇ ¾ **no** Â

state {**block** | n o a t

ð ʒ Ô

Â

ð Ô

a ɹˇ Â

ð Ô

Ю ɹ ѝ domain.com Â

```
Ruijie# show aaa domain domain.com

=============Domain domain.com=============
State: Active
Username format: Without-domain
Access limit: No limit
802.1X Access statistic: 0

Selected method list:
 authentication dot1x default
```

username-format

Ю NAS б ʟ ɹ ˘
ʒ no Â

username-format {**without-domain**

Ю '

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# username-domain
without-domain
```

ð ৡ Ô

ৡ	
aaa new-model	AAA Ł
aaa domain enable	ɹ AAA Ł
show aaa domain	

AAA Ł ৡ

- **aaa group server**
- **server**
- **show aaa group**

aaa group server

AAA Ł Â ৡ **no** Ł Â

aaa group server {**radius** | **tacacs+**} *name*

no aaa group server {**radius** | **tacacs+**} *name*

ð Ô

name ' Ł ৸ ɹˇ a ѝ ľ

```
Ruijie# show aaa group
Group Name:  ss
Group Type:  radius
Referred:    1
Server List:
```

ð ¾Ô

¾	
show aaa group	aaa ˪

```
Server List:
IP Address: 192.168.4.12
Authentication Port: 6
Accounting Port: 5
Referred:  1
```

aaa group server	aaa
show aaa group	aaa

show aaa group

AAA

show aaa group

```
Ruijie# show aaa group
Group Name:  ss
Group Type:  radius
Referred:   2
Server List:
IP Address: 192.168.217.64
Authentication Port: 1812
Accounting Port: 1813
Referred:  1
```

ð ¾Ô

¾	
aaa group server	AAA Ł

AAA È ¾

- **aaa local authentication attempts**
- **aaa local authentication lockout-time**
- **aaa new-model**
- **clear aaa local user lockout**
- **debug aaa**
- **show aaa method-list**
- **show aaa user lockout**

aaa local authentication attempts

login

aaa local authentication attempts *max-attempts*

ð Ô

max-attempts ˘ ¼ 1~2147483647 Â

ð Ô

ù 3

ð ¾ Ô

Â

ð Ô

¾ Login

ð Ô

Ю '

```
Ruijie# configure terminal
Ruijie(config)# aaa local authentication attempts 6
```

ð ¾Ô

¾	
show running-config	

show aaa lockout	login

aaa local authentication lockout-time

login ˘

aaa local authentication lockout-time *lockout-time*

ð Ô

lockout-time' ˆ Æ' ˜˜ ¼ 1~2147483647

ð Ô

ù 15

ð ¾ Ô

Â

ð Ô

login ˘

ð Ô

Ю '

```
Ruijie# configure terminal
Ruijie(config)# aaa local authentication lockout-time
5
```

ð ¾Ô

¾	
show running-config	

show aaa lockout Õ -

ð Ô

¦ Â

ð Ô

AAA ┗

ð ¦ Ô

Â

ð Ô

¦ AAA ¦˘ AAA ┗˘

aaa new-model AAA ┗ Â AAA˘ AAA

¦ a ┘ Â

ð Ô

Ю AAA ┗ Â

ð Ô

Ю '

```
Ruijie# clear aaa local user lockout all
```

ð ¾Ô

¾	
show running-config	
show aaa lockout	login

debug aaa

AAA Ł Â ¾ **no** Â

debug aaa event

no debug aaa event

ð Ô

ÞO 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
```

ð ¾Ô

¾	
aaa authentication	Hx
aaa authorization	Hx
aaa accounting	Hx

show aaa user lockout

Â **6(aaa user lockout>]TJTT0 1 Tf 0.0020 Tc 0 Tw 08.72 0 T**

३	
show running-config	
show aaa lockout	login

RADIUS ֳ

RADIUS ֳ

RADIUS ЛЪЮ ֳ'

- **ip raius source-interface**
- **radius-server host**
- **radius-server key**
- **radius-server retransmit**
- **radius-server timeout**
- **radius-server dead-time**
- **radius attribute**
- **radius set qos cos**
- **radius vendor-specific extend**

ip radius source-interface

radius ˘ ֳ **ip radius source-interface** Â ֳ **no** RADIUS Â

ip radius source-interface *interface*

no radius source-interface

ð Ô

Interface' DAdius

Ю radius ÿ fastEthernet 0/0 ¼ ip ¾ radius '

```
Ruijie(config)# ip radius source-interface
fastEthernet 0/0
```

ð ¯ì Ô

¯ì	
radius-server host	ÞÆ RADIUS Ł
ip address	ip

radius-server host

RADIUS Ł ÿ ˘ ¯ì **radius-server** Â ¯ì **no** RADIUS Ł ÿ Â

radius-server host {*hostname* | *ip-address*} [**auth-port** *port-number*] [**acct-port** *port-number*]

no radius-server host {*hostname* | *ip-address*}

ð Ô

hostname: RADIUS Ł ÿ DNS ¸ Â

ip-address: RADIUS Ł ÿ IP Â

auth-port: RADIUS UDP

port-number: RADIUS UDP /ı˘ ¾ 0˝ ÿ a Â

acct-port: Radius UDP

port-number: RADIUS UDP /ı˘ ¾ 0˝ ÿ a Â

ð Ô

RADIUS ÿ Â

ð ¯ì Ô

Â

ð Ô

¾ RADIUS AAA Ł˘ ÞÆ RADIUS Ł Â ¼ Л **radius-server** ¯ì ÞÆ RADIUS Ł Â

ð Ô

Ю Ѭ RADIUS Ŀ ў '

```
Ruijie(config)# radius-server host 192.168.12.1
```

ð ˀÔ

ˀ	
aaa authentication	Ѭ AAA
radius-server key	Ѭ RADIUS Ŀ ˀ
radius-server retransmit	Ѭ RADIUS
radius-server timeout	Ѭ RADIUS

radius-server key

Ѭ Ŀ ^ ~ б RADIUS Ŀ
ˀ˘ ˀ **radius-server key** Â ˀ no
ɻ ˀ Â

radius-server key *text-string*

no radius-server key

ð Ô

text-string ˀ

ð Ô

ˀ Â

ð ˀ Ô

Â

ð Ô

ˀ RADIUS Ŀ Â й
RADIUS Ŀ ˘ RADIUS Ŀ
Э Ѭ ɻ ˀ Â

ð Ô

Ю Ѭ RADIUS Ŀ ˀ й aaaˈ

```
Ruijie(config)# radius-server key aaa
```

ð ˀÔ

ˀ	

radius-server host	ЬЖRADIUS Ь ў
radius-server retransmit	ЬЖ RADIUS
radius-server timeout	ЬЖ RADIUS

radius-server retransmit

ѝ RADIUS Ь √ Л∪ ˘
ֽ **radius-server retransmit** Â ֽ **no**
Â

radius-server retransmit *retries*

no radius-server retransmit

ð Ô

retries' RADIUS Â

ð Ô

ѝ 3 Â

ð ֽ Ô

Â

ð Ô

AAA Ю Ь
√ Â Ь √ Ь
RADIUS ˘ Â

ð Ô

Ю ѝ 4'

```
Ruijie(config)# radius-server retransmit 4
```

ð ֽ Ô

ֽ	
radius-server host	ЬЖRADIUS Ь ў
radius-server key	ЬЖ RADIUS ֽ
radius-server timeout	ЬЖ RADIUS

radius-server timeout

RADIUS ┗ ˘
٪ **radius-server timeout** Â ٪ **no** ˘ Â

radius-server timeout *seconds*

no radius-server timeout

ð Ô

seconds' ˆ Æ ѝ ˜ Â ˩ ѝ 1-1000 Â

ð Ô

5

ð ٪ Ô

Â

ð Ô

٪ Â

ð Ô

Ю ⊮ѝ 10 '

```
Ruijie(config)# radius-server timeout 10
```

ð ٪ Ô

٪	
radius-server host	⊮RADIUS ┗ ў
radius-server retransmit	⊮ RADIUS ج

minnutes' ˆ Æ ù¦ ˜ Â ˩ ù 1-1000 Â

ð Ô

5¦

ð ٪ Ô

Â

ð Ô

٪ Â

ð Ô

Ю ⊮ù 10¦ '

```
Ruijie(config)# radius-server deadtime 10
```

ð ٪Ô

٪	
radius-server host	⊮RADIUS ⊾ ў
radius-server retransmit	⊮ RADIUS
radius-server key	⊮ RADIUS ٪
radius-server timeout	⊮ RADIUS

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**

ð Ô

id ' ╖ id <1-255>

type ' type

ð Ô

ʌ

id	╖	type
1	max down-rate	1
2	qos	2

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

ð ৡ Ô

Â

ð Ô

ৡ Â

ð Ô

Ю max up-rate Ћ№ и 211'

```
Ruijie(config)# radius attribute 16 vendor-type 211
```

ð ৡ Ô

ৡ	
radius set qos cos	radius Ю qos и cos

radius set qos cos

radius Ю qos й cos

radius set qos cos

no radius set qos cos

ð Ô

ð Ô

qos й dscp

ð ֽ Ô

Â

ð Ô

ֽ˘ ˩Л Ю qos й cos ˘ й dscp

ð Ô

Ю '

```
Ruijie(config)# radius set qos cos
```

ð ֽ Ô

ֽ	
radius vendor-specific extend	Radius й a ʁ id

radius vendor-specific extend

й a ʁ id Â

radius vendor-specific extend

no radius vendor-specific extend

ð Ô

ð Ô

Л id

ð ֽ Ô

Â

ʒ ˧ id Â

Ю '

```
Ruijie(config)# radius vendor-specific extend
```

ʒ	
radius attribute	/ı
radius set	qos cos

RADIUS ʒ

¸ **debug radius** [

Â

ð Ô

ð ¾ Ô

Â

ð Ô

¾ radius ¸ Â

ð Ô

```
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
```

ð ¾ Ô

¾	
radius-server host	¼ RADIUS ¸ ÿ
radius-server retransmit	¼ RADIUS
radius-server key	¼ RADIUS ¾
radius-server timeout	¼ RADIUS

show radius parameter

RADIUS ¸ Â

show radius parameter

ð Ô

ð Ô

ð ¾ Ô

Â

ð Ô

¸ radius ˪ Â

ð Ô

```
Ruijie# show radius parameter
Server Timout:   5 Seconds
Server Deadtime: 5 Minutes
Server Retries:  3
Server Key:      ******
```

ð ¸Ô

¸	
radius-server host	ÌØRADIUS ˪ ў
radius-server retransmit	ÌØ RADIUS
radius-server key	ÌØ RADIUS ¸
radius-server timeout	ÌØ RADIUS

show radius vendor-specific

RADIUS Â

show radius vendor-specific

ð Ô

Â

ð Ô

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

TACACS+ ३

TACACS+ ३

TACACS+ ЛЪЮ ३'

- **aaa group server tacacs+**
- **ip tacacs source-interface**
- **ip vrf forwarding(TACACS+)**
- **server(TACACS+)**
- **tacacs-server host**
- **tacacs-server key**
- **tacacs-server timeout**

aaa group server tacacs+

३ TACACS+ Ь ˘ a ﾉ TACACS+ Ь ˆ a ﾉ Â

aaa group server tacacs+ *group-name*

no aaa group server tacacs+ *group-name*

ð Ô

group-name' TACACS+ Ь ﾉ

ð Ô

TACACS+ Ь Â

ð ३ Ô

Â

ð Ô

TACACS+ Ь ˆ ˘ à à ﾉЛъ a ﾉ Ь Â

ð Ô

Ю н ar1-TACACS+ Ь ` Ы

```
Ruijie(config-gs-tacacs+)# server 1.1.1.1
```

ð ¾Ô

¾	
server	TACACS+ ¦ server
ip vrf forwarding	TACACS+ ¦ VRF ¿

¾ TACACS+ ¦ ¦ Â

server *ip-address*

no server *ip-address*

ð Ô

ip-address TACACS+ ¦ ¦

ð Ô

ð ¾ Ô

TACACS+ ¦ Â

ð Ô

¾ ˘ ¾ **aaa group server taca**
Â

TACACS+ ¦ ¦ ˘
tacacs-server host ¾ ¦ Â
¦ TACACS+ ¦ ˘
Ю ¦

ð Ô

Ю ¿
1.1.1.1 TAC

```
Ruijie(config)# aa
Ruijie(config-gs-
```

ð ¾Ô

aaa group server tacacs+	TACACS+ ¦

ip vrf forwarding	TACACS+ ¼ VRF ¿

ip tacacs source-interface

¾ TACACS+ Â

ip tacacs source-interface *interface*

no ip tacacs source-interface

ð Ô

Interface' TACACS+

ð Ô

TACACS+ Â

no tacacs-server host *ip-address*

ð Ô

Ip-address TACACS+ ┗ ў IP Â

port *integer* TACACS+ TCP

timeout *integer* TACACS+ ў Â

key *string* TACACS+ client б ┗ Â

ð Ô

TACACS+ ┗ ў Â

ð ৡ Ô

Â

ð Ô

ѝ TACACS+ AAA ┗˘ ㄲ TACACS+ ┗ Â ┘Л∪ **tacacs-server** ৡ ㄲ TACACS+ ┗ Â

ð Ô

Ю ㄲ TACACS+ ┗ ў '

```
Ruijie(config)# tacacs-server host 192.168.12.1
```

ð ৡ Ô

ৡ	
aaa authentication	ㄲ AAA
tacacs-server key	ㄲ TACACS+ ┗ ৡ
tacacs-server timeout	ㄲ TACACS+ ┗

tacacs-server key

ৡ TACACS+ Â

tacacs-server key [**0** | **7**] *string*

no tacacs-server key

ð Ô

string ৡ

0 | **7** ৡ ╗ ˘ 0 ╗ ˘ 7 ╗ Â

ð Ô

ˀ Â

ð ˀ Ô

Â

ð Ô

ˀ TACACS+ Ł Âй
TACACS+ Ł ˘ TACACS+
Ł Э Ћ ˩ ˀ Â й Ł a ˩
˘ host ˀ key ˘ ˩ Л
key Ł key Â

ð Ô

Ю Ћ TACACS+ Ł ˀ й aaa'

```
Ruijie(config)#tacacs-server key aaa
```

ð ˀ Ô

ˀ	
tacacs-server host	Ћ TACACS+ Ł ў
tacacs-server timeout	Ћ TACACS+

tacacs-server timeout

ˀ б TACACS+ Ł ˘ Ł Â

tacacs-server timeout *seconds*

no tacacs-server timeout

ð Ô

seconds ' ˆ Æ й ˜ Â ˩ й 1-1000 Â

ð Ô

5

ð ˀ Ô

Â

ð Ô

ˀ Â й Ł
a ˩ ˘ host ˀ timeout ˘ ˩ Л
timeout Ş ˩ Л

Â

ð Ô

¾ TACACS+ Ł Â

ð Ô

```
Ruijie# show tacacs
Tacacs+ Server : 172.19.192.80/49
Socket Opens: 0
Socket Closes: 0
Total Packets Sent: 0
Total Packets Recv: 0
Reference Count: 0
```

ð ¾ Ô

¾	
tacacs-server host	ĦŘ TACACS+ Ł Ł ў

SSH ٪

SSH ٪

SSH ЛьЮ ٪'

- **crypto key generate**
- **crypto key zeroize**
- **ip ssh version**
- **ip ssh time-out**
- **ip ssh authentication-retries**
- **transport input**

crypto key generate

Ь Ώ ˘ ЮЎ ٪'

crypto key generate {**rsa | dsa**}

ð Ô

rsa	RSA
dsa	DSA

ð Ô

Ю SSH Server Ώ Â

ð ٪ Ô

ð Ô

SSH Server Ь ˘ ٪ SSH Ь Ώ Â ل **enable service ssh-server** ٪˘ SSH Server ╖ ÂSSH 1 RSA ' SSH 2 RSA DSA Â ˘ RSA ˘ SSH1 б SSH2 ل Ль ' DSA ˘ SSH2 ل Ль Â

注意:

˘ a ¯Ø **no crypto key generate**˘ ¯Ø **crypto key zeroize** ¯Ø Â

ð Ô

Ruijie# **configure terminal**
Ruijie(config)# **crypto key generate rsa**

ð ¯Ø Ô

¯Ø	
show ip ssh	Sty1(#)C81-B62(5)C8957.8.40 57669(2.-32(60

ð Ô

Ruijie# **configure terminal**
Ruijie(config)# **crypto key zeroize rsa**

ð ٪ Ô

٪	
show ip ssh	SSH Server Â
crypto key generate {rsa|dsa}	DSA б RSA Â

ð Ô

˚ RGOS10.1 Л Э

ip ssh version

SSH server Â ٪ no ѝ Â

ip ssh version {**1** | **2**}

no ip ssh version

ð Ô

1	SSH Server SSH1
2	SSH Server SSH2

ð Ô

Ю SSH 1 2 Â Л˘ ↓ SSH Â **no ip ssh version** ٪ ≠ ↓ Л ѝ Â

ð ٪ Ô

ð Ô

٪ ⁸ SSH Server SSH Â Ю˘ SSH Server SSH1 б SSH2˝ SSH 1 SSH 2 ↓ Л Â 1 2˝ SSH Â **show ip ssh** ٪ SSH Server Â

ð Ô

2'

Ruijie# **configure terminal**
Ruijie(config)# **ip ssh version** *2*

ð ¯ Ô

¯	
show ip ssh	SSH Server Â

ð Ô

˚ RGOS10.1 Л Э

ip ssh time-out

SSH Server Â ¯ **no**
ù Â

ip ssh time-out *time*

no ip ssh time-out

ð Ô

time	Â

ð Ô

Ю˘ ù 120s Â Л˘ **no ip ssh time-out** ¯˘ ù Â

ð ¯ Ô

ð Ô

¯ SSH Server Â ÿ Ы
˘ 120s ╖ ˘ ù Â
show ip ssh ¯ SSH server Â

ð Ô

ù 100s'

Ruijie# **configure terminal**
Ruijie(config)# **ip ssh time-out** *100*

ð ৡ Ô

ৡ	
show ip ssh	ssh-server Â

ð Ô

˚ RGOS10.1 Л Э

ip ssh authentication-retries

SSH Server Â ৡ no
ѝ Â

ip ssh authentication-retries *retry times*

no ip ssh authentication-retries

ð Ô

retry times	Â

ð Ô

Ю ѝ 3 Â Л˘ **no ip ssh authentication-retries** ৡ ≠ ˩ Л ѝ Â

ð ৡ Ô

ð Ô

ৡ SSH Server Â SSH Server
˘ Ÿ ℸ˘ ѝ Â **show ip ssh** ৡ SSH Server Â

ð Ô

ѝ 2

Ruijie# **configure terminal**
Ruijie(config)# **ip ssh ssh authentication-retries** *2*

ð ৡ Ô

ৡ	
show ip ssh	SSH Server Â

ð Ô

˚ RGOS10.1 ЛЪЭ

SSH б ʒ

SSH ЛЪЮ ʒ'

- **show ip ssh**
- **show ssh**
- **show crypto key mypubkey**
- **disconnect ssh**

show ip ssh

SSH Server Â

show ip ssh

ð Ô

ð Ô

ð ʒ Ô

ð Ô

SSH Server Â ' à SSH Server à à Â

' SSH ˘ Ł ˘ Ÿ SSH й a ˩ Â

ð Ô

Ruijie# **show ip ssh**

ð ʒ Ô

ʒ	
Ip ssh version {**1**	**2**}	SSH Server Â
ip ssh time-out time	SSH Server Â

Ip ssh authentication-retries retry times	SSH Server Â

ð Ô

˚ RGOS10.1 Л Э

show ssh

SSH Â

show ssh

ð Ô

ð Ô

ð ৡ Ô

ð Ô

SSH Â ' ´ VTY Л à
SSH à ╗ à à à Ù Â

ð Ô

Ruijie# **show ssh**

ð ৡ Ô

ð Ô

˚ RGOS10.1 Л Э

show crypto key mypubkey

SSH Server Ὼ Ὼ ᛏ Â

show crypto key mypubkey {***rsa|dsa***}

ð Ô

SSH ʃ˘ SSH Â
VTY ʃ˘ SSH Â SSH
Â

ð Ô

Ruijie# **disconnect ssh** *1*
Ruijie# **disconnect ssh vty** *1*

ð ¾ Ô

¾	
show ssh	SSH Â
Clear line vty *line_number*	VTY Â

ð Ô

˚ RGOS10.1 Л Э

GSN ৡ

ৡ

ৡ

- **security gsn enable**
- **security community**
- **snmp-server host**
- **scurity event interval**

ৡ

- **security address-bind enable**

security gsn enable

ৡ ⁸ GSN ╖ Â no

security gsn enable

no security gsn enable

ð Ô

ð Ô

ð ৡ Ô

ð Ô

GSN ˘ ৡ GSN Â

ð Ô

```
Ruijie# configure terminal
Ruijie(config)# security gsn enable
```

ð ৡ Ô

RGOS10.1

security community

smp

security { [

no smp-server host

ð Ô

ip-address ' smp server ip

ð Ô

smp server

ð ¢ Ô

ð Ô

¢ Â **show smp-server** Â

ð Ô

```
Ruijie(config)#smp-server host 192.168.4.243
```

ð ¢ Ô

ð Ô

Y ˚ '

```
Ruijie(config)# security event interval 10
```

ð ৡ Ô

ৡ	
show security event interval	Y ˚

ð ⊿ Ô

˚ RGOS10.1 Л Э

security address-bind enable

ৡ

security address-bind enable

˚ RGOS10.1 Л Э

б ʒ

б ЛЮ ʒ :

show smp-server

show security event interval

show smp-server

smp server IP

ð Ô

ð ʒ Ô

ð Ô

smp server IP Â

ð Ô

```
Ruijie# show smp-server
SMP-Server IP' 192.168.20.30
```

ð ʒ Ô

ʒ	
smp-server host	smp server ip Â

ð ʌ Ô

˚ RGOS10.1 Л Э

show security evnet interval

Y ˚ Â

ð Ô

ð ʒ Ô

ð Ô

Y ˚ Â

ð Ô

```
Ruijie# show security event interval
Event sending interval(Seconds):5
```

ð ৡ Ô

ৡ	

security event interval *interval* Y ˚ Â

DAI ʒ

VLAN DAI ╖ ʒ

ʒ '

¸ **ip arp inspection vlan**

ip arp inspection vlan vlan-id

ʒ˘ ┘Л *vlan-id* VLAN DAI ╖ Â
ʒ no ┘Л *vlan-id* VLAN DAI ╖ ˘
*vlan-id*ď VLAN Э DAI ╖ Â

ip arp inspection vlan *vlan-id*

no ip arp inspection vlan [*vlan-id*]

ð Ô

vlan-id	vlan /ı Â

ð Ô

VLAN Э DAI ╖ Â

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ð Ô

ʒ ˘ ″I DAI ╖ ˘ Э Â

ð Ô

ЛЬЮ ˘ ѝ VLAN 1 Э ARP Â

```
Ruijie(config)# ip arp inspection
Ruijie(config)# ip arp inspection vlan 1
```

ð ʒ Ô

ʒ	

show ip arp inspection vlan	VLAN DAI Ⅱ

γ ┘ ֽ

ip arp inspection trust

γ ┘ ˘ ֽ **ip arp inspection trust** Â ֽ **no** γ ѝ a Â

ip arp inspection trust

no ip arp inspection trust

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ð Ô

a Â

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ARP ˚ DAI ˘ ┘Ո è ┘ ˘ a ARP ˘ Â

ð Ô

ՈЮ ˘ gigabitEthernet 0/19 ┘ Â

```
Ruijie(config)# interface gigabitEthernet 0/19
Ruijie(config-if)# ip arp inspection trust
```

ð ֽ Ô

ֽ	
show ip arp inspection interface	DAI ˘ Â

NFPP( ) ˘ ⁸ NFPP ˘ a ¨Ạ DAI ˘ Э ֽ Â

ð ┙ Ô

Ь Â

γ ARP

ʒ '

¸ **ip arp inspection limit-rate**

ip arp inspection limit-rate limit-rate

ЮЖ ARP ˘ ʒ **ip arp inspection limit-rate** Â ʒ **no** ˩ Л∪ Â

ip arp inspection limit-rate {*limit-rate* **| none** }
no ip arp inspection limit-rate

ð Ô

none	a ⁸
limit-rate	˘ ˅ й 1˜ 2048˜

ð Ô

⁸ й 15 ARP / Â й 0ˆ a ⁸˜ Â

ð ʒ Ô

ð Ô

DAI ╖ ˘ ⁸ ˘ ˥ ˘ (Network Foundation Protection Policy) ╖ ˘ Л∪ a ¨Ą ʒ Â

ð Ô

ЛЬЮ ˘ VLAN 2 gigabitEthernet 0/2 ⁸ й 10 ARP / Â

```
Ruijie(config)# ip arp inspection
Ruijie(config)# interface gigabitEthernet 0/2
Ruijie(config-if)# ip arp inspection limit-rate 10
```

DHCP Snooping

VLAN DAI ╗ ˇ ɜ ARP γ
a ↓ ˇ ARP ˇ
DHCP Snooping .
ˇ ÂDHCP Snooping ê DHCP Snooping
Ì

ACL ʒ

ЛЬЮ ʒ ↓ ЛЬЮ ʒ

	ⅈ
id	/ⅈ Â ↓ IP ACL: 1-99,1300-1999 IP ACL: 100-199,2000-2699 MAC ACL: 700–799 ж ACL: 2700–2899
name	ACL ɹ
sn	ACL /ⅈ (″I)
start-sn	/ⅈ
inc-sn	/ⅈ
deny	ɔ ˘
permit	ɔ ˘
prot	/ⅈ˘ IPv6 ↓ й ipv6, icmp, tcp,udp 0-255˝ IPv4˝ ↓ Лъ eigrp, gre, ipinip, igmp, nos, ospf, icmp, udp, tcp, ip ˘ ≠ ↓ Лъ ʒ IP 0-255 /ⅈ˘ icmp/tcp/udp
interface idx	ɔ
src	ˆ ў ~
src-wildcard	Â ↓ Лъ a ˘ 0.255.0.32
src-ipv6-pfix	IPv6
dst-ipv6-pfix	IPv6
pfix-len	Æ Æ
src-ipv6-addr	IPv6
dst-ipv6-addr	IPv6
dscp dscp	Ь , ˘ 0-63
flow-label flow-label	˘ 0-1048575
dst	ˆ ў ~
dst-wildcard	Â ↓ Лъ a ˘ 0.255.0.32
fragment	ɟ
precedence precedence	″I ˆ 0-7˜

time-range tm-rng-name	ʁ˘ ɻ ѝ tm-rng-name
tos tos	Ł ˆ 0-15˜
cos cos	cos (0-7)
cos inner cos	tag cos
icmp-type	ICMP ˆ 0-255˜
icmp-code	ICMP ʒ ˆ 0-255˜
icmp-message	ICMP ɻ
operator port[port]	Operator ѝ ˆ lt- ˘ eq- ˘ gt- ˘ neq- a ˘ range- ˜ port ʎ˘ γ ч ʎ ˘ ὲ ʎ
src-mac-addr	ў
dst-mac-addr	ў
VID vid	vlan id
VID inner vid	tag vid
ethernet-type	Ѧ ˘ ɻ Ѧ 0x

match-all tcpf ך tcp flag Æ

E	DSAP( )	18	S	ip	42
F	SSAP( )	19	T	TCP	46
G	Ctrl	20	U	TCP	48
H	Org Code	21	V	/I	50
I		24	W		54
J	IP /I	26	XY	IP Æ	58

K TPOS‰ 250.0.48.9 T 21z Tf0.1543 Tc 3.02028

¸ **ipv6 traffic-filter**

access-list

¾ ˘ Â ¾ **no** Â

1) 1˜ IP 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**] [**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**] [**time-range** *time-range-name*]

Л 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**] [**time-range** *time-range-name*]

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**] [**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**] [**time-range** *time-range-name*]

5)

access-list *list-remark text*

ð Ô

ЛЬЮ ЛЬ Л й ˘
˘ Л Л a Ѧ Â

id ' Л Â ┘ ^ 1-99˝ 100-199˝ 1300-1999˝ 2000-2699˝ È

precedence ' ˝I ^ 0-7˜

time-range ' ш

time-range-name ' ш ɻ

tos ' Ь

tos ' Ь ^ 0-15˜

icmp-type ' ICMP ^ 0-255˜

icmp-code ' ICMP ʒ ^ 0-255˜

icmp-message ' ICMP ɻ

operator ' ^ lt- ˘ eq- ˘ gt- ˘ neq- a ˘ range- ˜

port [*port*] ' /ˇ *range* ч /ˇ è /Â

host *source-mac-address*

- **syn**
- **fin**

- **critical**
- **flash**
- **flash-override**
- **immediate**
- **internet**
- **network**
- **priority**
- **routine**

- **max-reliability**
- **max-throughput**
- **min-delay**
- **min-monetary-cost**
- **normal**

ICMP

- **administratively-prohibited**
- **dod-host-prohibited**
- **dod-net-prohibited**
- **echo**

- **irc**
- **klogin**
- **kshell**
- **login**
- **nntp**
- **pim-auto-rp**
- **pop2**
- **pop3**
- **smtp**
- **sunrpc**
- **syslog**
- **tacacs**
- **talk**
- **telnet**
- **time**
- **uucp**
- **whois**
- **www**

Ю UDP ɻ ˇ UDP ɻ Ո ɻ Ո ɛ

- **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 Ethernet-type Ю

- **aarp**
- **appletalk**
- **decnet-iv**
- **diagnostic**
- **etype-6000**
- **etype-8042**
- **lat**
- **lavc-sca**
- **mop-console**
- **mop-dump**
- **mumps**
- **netbios**
- **vines-echo**
- **xns-idp**

ð Ô

1) IP

Ю IP й 192.168.1.64 - 192.168.1.127
˘ è '

```
Ruijie(config)# access-list 1 permit 192.168.1.64
0.0.0.63
```

2) IP

Ю IP DNS ICMP '

```
Ruijie(config)# access-list 102 permit tcp any any eq
domain
Ruijie(config)# access-list 102 permit udp any any eq
domain
Ruijie(config)# access-list 102 permit icmp any any echo
Ruijie(config)# access-list 102 permit icmp any any
```

echo-reply

3) MAC

Ю ˘ MAC ѝ 00d0f8000c0c ў
ѝ 100 Л↓ ˘ 1Â '

```
Ruijie(config)# access-list 702 deny host 00d0f8000c0c
any aarp
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group 702 in
```

4) Expert

Ю Expert Extended ACL˘ ж ACL
IP ѝ 192.168.12.3 з MAC ѝ 00d0.f800.0044
TCP Â

```
Ruijie(config)# access-list 2702 deny tcp host
192.168.12.3 mac 00d0.f800.0044 any any
Ruijie(config)# access-list 2702 permit any any any any
Ruijie(config)# show access-lists
expert access-list extended 2702
10 deny tcp  host  192.168.12.3 mac 00d0.f800.0044 any
any
10 permit any any any any
```

ð ֽ Ô

ֽ	
show access-lists	
mac access-group	Э MAC

ð ⁄ Ô

˚ RGOS10.0 Л↓ Э

ip access-list

ֽ IP ACL IP ACL˘ Â ֽ
no ACL

ip access-list {**extended** | **standard**} {*id* | *name*}

no ip access-list {**extended** | **standard**} {*id* | *name*}

ð Ô

id IP /Л˘ ˆ 1-99˝ 1300-1999˜˜ ˆ 100-199˝
2000-2699˜

name ' IP ¸

ð Ô

ACL

ð ¾ Ô

ð Ô

ACL a ¸˘ ACL
¶ Â **deny permit** ¾ Â **show ip access-lists** ¾ ACL Â

ð Ô

ACL'

```
Ruijie(config)# ip access-list extended 123
Ruijie(config-ext-nacl)# show ip access-lists
ip access-list extended 123
Ruijie(config-ext-nacl)#
```

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)#
```

ð ¾ Ô

¾	
show ip access-lists	IP

ð ¸ Ô

˚ RGOS10.0 Л Э

MAC access-list

¾ MAC ACL˘ Â ¾ **no** ACL

mac access-list extended {*id* | *name*}

no mac access-list extended {*id* | *name*}

ð Ô

id' MAC /^ 700-799˜

ð Ô

¾ Â **show ipv6 access-lists** ¾ ACL Â

ð Ô

IPV6

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
Ruijie#
```

ð ʒ Ô

[*sn*] **deny tcp** {*source source-wildcard* | **host** *Source* | **any**} [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)

[*sn*] deny udp {*source source –wildcard* | **host** *source* | **any**} [*operator* **port** [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} [*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

3) MAC

[*sn*] **deny** {**any** | **host** *source-mac-address*}{**any** | **host** *destination-mac-address*} [*ethernet-type*][**cos** [*out*] [**inner** *in*]]

4) Expert

[*sn*] **deny**[**protocol** | [*ethernet-type*][**cos** [*out*] [**inner** *in*]]] [[**VID** [*out*][**inner** *in*]]] {*source source-wildcard* | **host** *source* | **any**}{**host** *source-mac-address* | **any** } {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*][**fragments**] [**time-range** *time-range-name*]

ethernet-type cos

[*sn*] **deny** {[*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*] **deny 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**] [**time-range** *time-range-name*]

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*] [**fragments**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **deny 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**] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)

[*sn*] **deny 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**] [**time-range** *time-range-name*]

5) 5˜ IPV6

[*sn*] **deny 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**] [**time-range** *time-range-name*]

IPV6 ⁸ '

Internet Control Message Protocol (ICMP)

[*sn*]**deny icmp** {*source-ipv6-prefix / prTu Tf8.994 j/TT0 1 Tf0.0022 Tc y*

source-ipv6-prefix ' IPv6 .

destination-ipv6-prefix ' IPv6

prefix-length ' Æ Æ

source-ipv6-address ' IPv6

destination-ipv6-address ' IPv6

dscp ' Ł

dscp ' ˘ 0-63.

flow-label '

flow-label ' ˘ 0-1048575.

protocol ' IPV6 ↵ ŭ IPV6 | icmp | tcp | udp <0-255>

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ð ʒ Ô

ACL Ю

ð Ô

ACL Ю ACL ˚

ð Ô

Ю Expert Extended ACL˘ ж ACL IP ŭ 192.168.4.12 з MAC ŭ 001300498272 TCP Â

```
Ruijie(config)# expert access-list extended 2702
Ruijie(config-exp-nacl)# deny tcp  host
192.168.4.12 host 0013.0049.8272 any any
Ruijie(config-exp-nacl)# permit any any any any
Ruijie(config-exp-nacl)# show access-lists
expert access-list extended 2702
10 deny tcp  host  192.168.4.12 host 0013.0049.8272 any
any
20 permit any any any any
Ruijie(config-exp-nacl)#
```

Ю IP ACL ˘ IP ŭ 192.168.4.12 ў TCP ŭ 100 Ł˘ 1 Â

```
Ruijie(config)# Ruijie(config-expended)#fig)#
```

```
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group ip-ext-acl in
Ruijie(config-if)#
```

Ю MAC ACL ˘ MAC ѝ 0013.0049.8272
ў ѝ 100 Л˘ ˘ 100 ч

ipv6 traffic-filter	Э IPV6
ip access-group	IP ACL
mac access-group	MAC ACL
ip access-list	IP ACL Ⱨ
mac access-list	MAC ACL Ⱨ
expert access-list	ж ACL Ⱨ
ipv6 access-list	IPV6 ACL Ⱨ
permit	Ⱨ ३

ð ⊿ Ô

˚ RGOS10.0 Л Ъ Э

permit

(**permit**) ˚ Л ъ ā
Â ACL Ю˝ ACL
Â

1) 1˜ IP

[*sn*] **permit** {*source source-wildcard* | **host** *source* | **any**}

2) IP

[*sn*] **permit protocol** *source source-wildcard destination*

destination-wildcard [**precedence** *precedence*] [**tos** *tos*] [**fragments**]

[**time-range** *time-range-name*]

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)

[*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**] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)

[*sn*] **permit udp**

precedence] [**tos** *tos*] [**fragments**] [**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*]] [**precedence precedence**] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

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**] [**time-range** *time-range-name*]

IPV6

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** {*source-ipv6-prefix* / *prefix-length* | **any** *source-ipv6-address* | **host**} {*destination-ipv6-prefix* / host | an } {w T

flow-la 0(otocol)].00[22f0.00220c 04.8d0)Tj/[TT]jj/TT2211}Tf9008

ACL Ю

ð Ô

ACL Ю ACL ˚

ð Ô

Ю Expert Extended ACL˘ ж ACL
IP й 192.168.4.12 з MAC й 001300498272
TCP Â

```
Ruijie(config)# expert access-list extended exp-acl
Ruijie(config-exp-nacl)# permit tcp  host
192.168.4.12 host 0013.0049.8272 any any
Ruijie(config-exp-nacl)# deny any any any any
Ruijie(config-exp-nacl)# show access-lists
expert access-list extended exp-acl
10 permit tcp  host  192.168.4.12 host 0013.0049.8272 any
any
20 deny any any any any
Ruijie(config-exp-nacl)#
```

Ю IP ACL ˘ IP й 192.168.4.12 ў
TCP й 100 Ł˘ 1Â

```
Ruijie(config)# ip access-list extended 102
Ruijie(config-ext-nacl)# permit tcp host 192.168.4.12
eq 100 any
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
10 permit tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group 102 in
Ruijie(config-if)#
```

Ю MAC ACL ˘ MAC й 0013.0049.8272
ў й 100 Лъ ˘ 1Â

```
Ruijie(config)# mac access-list extended 702
Ruijie(config-mac-nacl)# permit host 0013.0049.8272 any
aarp
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended
10 permit host 0013.0049.8272 any aarp702
Ruijie(config-mac-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group 702 in
```

Ю ip ACL ˘ IP й 192.168.4.12 ў ˘

1Â '

```
Ruijie(config)# ip access-list standard std-acl
Ruijie(config-std-nacl)# permit host 192.168.4.12
```

list-remark text

ὶ ACL ╕ ˘ **no**

list-remark *text*

ð Ô

Text '

ð Ô

ACL

ð Ô

ὶ ACL ╕

ð Ô

```
Ruijie# ip access-list extended 102
Ruijie(config-ext-nacl)# list-remark this acl is to
filter the host 192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
deny ip host 192.168.4.12 any
1000 hits
this acl is to filter the host 192.168.4.12
Ruijie(config-ext-nacl)#
```

ð Ô

show access-lists	
ip access-list	IP

ð Ô

˚ RGOS10.0 Л Э Â

no sn

ACL

no *sn*

ð Ô

sn ' ὶ ACL Л

ð ¾ Ô

ACL Ю

ð Ô

ACL Ю ACL

ð Ô

```
Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# permit ipv6
host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)# 12 deny ipv6 host any any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
10 permit ipv6 host ::192.168.4.12 any
12 deny ipv6 any any
Ruijie(config-ipv6-nacl)# no 12
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
10 permit ipv6 host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)#
```

ð ¾Ô

¾	
show access-lists	
ip access-list	ip ACL Ы
ipv6 access-list	IPV6 ACL Ы
deny	Ы Ы ACL
permit	Ы Ы ACL

ð ¼ Ô

˚ RGOS10.0 Л Э

ip access-group

é ˘ ¾ **ip access-group** Â ¾ no ¼ Â

ip access-group {*id* | *name*} {**in** | **out**}

no ip access-group { *id* | *name*} {**in** | **out**}

ð Ô

*id ' IP /ˆ 1-199˝ 1300-2699

out ' ÿ

ð Ô

ACL

ð ¾ Ô

ð Ô

ACL Â **show running-config** ¾
Â

ð Ô

Ю access-list accept_00d0f8xxxxxx_only Gigabit
1 Э'

```
Ruijie(config)# interface GigaEthernet 1/1
Ruijie(config-if)# mac access-group
accept_00d0f8xxxxxx_only in
```

ð ¾ Ô

¾	
show access-group	Э ACL Â

ð ¼ Ô

˚ RGOS10.0 Л Э

expert access-group

EXPERT ACL Â ¾ **no**
¼ Â

expert access-group {*id* | *name*} {**in** | **out**}
no expert access-group {*id* | *name*} {**in** | **out**}

ð Ô

id ' Expert Л^ 2700-2899˜

name ' Expert ¼

in '

out ' ÿ

ð Ô

Expert ACL

ð ¾ Ô

ð Ô

ACL Э˘ è ⁸ Â
show access-group ¾

ð Ô

Ю access-list accept_00d0f8xxxxxx_only Gigabit
1 Э'

```
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# expert access-group
accept_00d0f8xxxxxx_only in
```

ð ¾ Ô

¾	
show access-group	Э ACL Â

ð ¼ Ô

˚ RGOS10.0 Л Э

ipv6 traffic-filter

IPV6 ACL Â ¾ no ¼
Â

ipv6 traffic-filter *name* {**in** | **out**}
no ipv6 traffic-filter *name* {**in** | **out**}

ð Ô

name ' IPV6 ¼
in '
out ' ÿ

ð Ô

IPV6 ACL

ð ¾ Ô

ð Ô

ACL Э˘ è ⁸ Â
show access-group ¾

ð Ô

Ю access-list v6-acl Gigabit 1 Э'

```
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

ð ¾ Ô

¾	
show ipv6 traffic-filter	Э ACL Â

ð ⁄ Ô

˚ RGOS10.0 ЛЬЭ

¾

б ЛЬЮ ¾:

- **show access-lists**
- **show ip access-group**
- **show mac access-group**
- **show ipv6 traffic-filter**
- **show expert access-group**
- **show access-group**

show access-lists

ACL ⁄ ACL

show access-lists [*id* | *name*]

ð Ô

id ' /I

name ' ⁄

ð ¾ Ô

ð Ô

acľ *id* *namě* ACL

ð Ô

```
Ruijie# show access-lists n_acl
ip access-list standard n_acl
Ruijie# show access-lists 102
ip access-list extended 102
Ruijie# show access-lists
ip access-list standard n_acl
ip access-list extended 10jie#
```

ð ¾Ô

¾	
ip access-list	IP ACL Ⱶ Â

ð Ô

˚ RGOS10.0 Л Э

show expert access-group

Expert Â

show expert access-group [**interface** <*interface*>]

ð Ô

<*interface*> '

ð ¾ Ô

ð Ô

Expert ACL˘ ˘

Expert ACL

ð Ô

```
Ruijie# show expert access-group interface
gigabitethernet 0/2
expert access-group ee in
Applied On interface GigabitEthernet 0/2.
```

ð ¾Ô

¾	
expert access-list	Expert ACL Ⱶ

ð Ô

˚ RGOS10.0 Л Э

show mac access-group

MAC

show mac access-group[**interface** <*interface*>]

ð Ô

<*interface*> '

ð ¾ Ô

ð Ô

MAC ACL˘ ˘

MAC ACL

ð Ô

```
Ruijie# show mac access-group interface gigabitethernet
0/3
mac access-group mm in
Applied On interface GigabitEthernet 0/3.
```

ð ¾Ô

¾	
mac access-list	MAC ACL ЬЖ

ð ✓ Ô

˚ RGOS10.0 Л Э

show ipv6 traffic-filter

IPV6

show ipv6 traffic-filter [**interface** <*interface*>]

ð Ô

<*interface*> '

ð ¾ Ô

ð Ô

IPv6 ACL˘ ˘ IPv6

ACL

ð Ô

```
Ruijie# show ipv6 traffic-filter interface
gigabitethernet 0/4
ipv6 access-group v6 in
```

```
Applied On interface GigabitEthernet 0/4.
```

ð ¾Ô

¾	
ipv6 access-list	IPV6 ACL Ħ

ð Ô

˚ RGOS10.0 ЛЭ

show access-group

Э ACL

show access-group [**interface** <*interface*>]

ð Ô

<*interface*> '

ð ¾ Ô

ð Ô

Э ACL˘ a Э ACL

ð Ô

```
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.
```

ð ¾Ô

¾	
ip access-group	ip Ħ
mac access-group	MAC Ħ
expert access-group	Expert Ħ
ipv6 traffic-filter	IPV6 Ħ

ð ✓ Ô

RGOS10.0 Л Э

?

, **security global access-group**

?

, **security access-group**

, **security uplink enable**

security global access-group

security global access-group {*id*|*name*}

no security global access-group

ð Ô

id ACL id

name ACL ✓

ð ? Ô

ð Ô

security access-group

security access-group {*id*|*name*}

no security access-group

ð Ô

id ACL id

name ACL ɹ

ð ʒ Ô

ð Ô

Ю

ð Ô

```
Ruijie(config-if)#security access-group 1
```

ð ʒ Ô

ʒ	
show security	

ð ɻ Ô

RGOS10.2 Лъ Э

security uplink enable

security uplink enable

no security uplink enable

ð Ô

ð ʒ Ô

ð Ô

ð Ô

```
Ruijie(config-if)#security uplink enable
```

ð Ô

show security	

ð Ô

RGOS10.2

QOS ֽ

QoS ˘ QoS ЛЬЮ '

1 policy-map

policy-map ˩ ЛЬ class-map

class-map 1 ACL˘ ACL ACE έ ˩

Э ACE ÿ “ ACL” 8

Ю˘ QoS ╗ Â ˩ Â

Policy Map Э˘ ˘

QoS ╗ Â QoS ╗ ˘ ā

Policy Map ˘ ѝ Off ˩ ÂЛЬЮ ѝ

QOS '

CoS	0 0

IP-Precedence to DSCP

IP-Precedence	0	1	2	3	4	5	6	7
DSCP	0	8	16	24	32	40	48	56

DSCP to CoS

DSCP	0	8	16	24	32	40	48	56
CoS	0	1	2	3	4	5	6	7

ֽ

mls qos trust

Qos

mls qos trust [**cos** | **dscp** | *ip-precedence*]

no mls qos trust

ð Ô

cos ' Qos й CoS

dscp ' Qos й DSCP

ip-precedence ' Qos й IP-PRE

no '

ð Ô

a

ð ֽ Ô

ð Ô

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos trust cos
```

ð ֽ Ô

show mls qos interface *interface-id*

ð ֽ Ô

mls qos cos

CoS

mls qos cos *default-cos*

no mls qos cos

ð Ô

default-cos' ѝ 0˙ 7

no'

ð Ô

CoS ѝ 0

ð ৡ Ô

ð Ô

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos cos 7
```

ð ৡ Ô

show mls qos interface *interface-id*

Class Maps

ACL

ip access-list {**extended** | **standard**} { *acl-id* | *acl-name* }

mac access-list extended {*acl-id* | *acl-name*}

expert access-list extended {*acl-id* | *acl-name*}

ipv6 access-list extended *acl-name*

access-list acl-id ৡ ACL

class map˘ class map

[**no**] **class-map** *class-map-name*

class map ֊

[**no**] **match access-group** *acl-name*| *acl-id*

ð Ô

acl-name ' ACL ɹ

[**no**] **class** *class-map-name*

IP ipdscp ˘ IP a

set ip dscp *new-dscp*

no set ip dscp

⁸ ѝ ⭱ ╟

police *rate-bps burst-byte*[**exceed-action** {**drop** | **dscp** *dscp-value*}]

no police

ð Ô

policy-map-name ' policymap ⅄

no policy-map *policy-map-name* ' policy map

class-map-name ' class map ⅄

no class *class-map-name* ' ⭱

new-dscp ' DSCP ' ↃI a ⅄ a ⅄

rate-bps ' ⁸ ˘ Æ kbps

burst-byte' ⁸ ˘ Æ kbyte

drop ' ⭱

dscp-value' ⭱ DSCP ↃI a ⅄ a ⅄

ð ৡ Ô

ð Ô

policy map, ⅄ po

```
Ruijie(config)# policy-map po
```

class-map cm

```
Ruijie(config-pmap)# class cm
```

dscp ѝ 10

```
Ruijie(config-pmap-c)# set ip dscp 10
```

ѝ 1M, ѝ 4096k, ╟ ѝ dscp 16

```
Ruijie(config-pmap-c)# police 1000000 4096
exceed-action dscp 16
```

ð ৡ Ô

show policy-map

ð ✓ Ô

service-policy

policy map Э

service-policy {**input** | **output**} *policy-map-name*

no service-policy {**input** | **output**}

ð Ô

policy-map-name ' policymap ⊥

no ' policy map Э

ð ֧ Ô

ð Ô

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# service-policy input po
```

ð ֧Ô

show mls qos interface

ð ✓ Ô

priority-queue

[**no**] **priority-queue**

ð Ô

priority-queue й SP

no priority-queue й WRR

ð Ô

й WRR

ð ֧ Ô

ð Ô

no '

ð Ô

ð ¸ Ô

ð Ô

```
Ruijie(config)# wrr-queue cos-map 1 0 1
```

ð ¸Ô

show mls qos queueing

ð ¸ Ô

mls qos map cos-dscp

CoS DSCP

mls qos map cos-dscp *dscp1...dscp8*

no mls qos map cos-dscp

ð Ô

dscp ' ¸ a ¸ a ¸

no '

ð Ô

ð ¸ Ô

ð Ô

```
Ruijie(config)# mls qo map cos-dscp 8 10 16 18 24 26 32
34
```

ð ¸Ô

show mls qos maps dscp-cos maps,dscp-cos maps ip-prec-dscp maps

ð ¸ Ô

mls qos map dscp-cos

DSCP CoS

mls qos map dscp-cos *dscp-list* to *cos*

no mls qos map dscp-cos

ð Ô

dscp-list ' ৸ a ৸ a ৸

cos ' ৸ 0 7

no '

ð Ô

ð ৡ Ô

ð Ô

```
Ruijie(config)# mls qos map dscp-cos 8 10 16 18 to 0
```

ð ৡ Ô

show mls qos maps dscp-cos maps,dscp-cos maps ip-prec-dscp maps

ð ৸ Ô

interface rate-limit

8

rate-limit {**input** | **output**} *bps burst-size*

no rate-limit

ð Ô

ð Ô

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# rate-limit input 1000000 4096
```

ð Ô

show mls qos interface

ð Ô

mls qos scheduler

mls qos scheduler [**sp** | **rr** | **wrr** | **drr**]

no mls qos scheduler

ð Ô

sp

rr

wrr

drr

no

ð Ô

й wrr

ð Ô

ð Ô

```
Ruijie(config)# mls qos scheduler sp
```

ð Ô

show mls qos scheduler

ð Ô

drr-queue bandwidth

DRR

drr-queue bandwidth *weight1...weight8*

no drr-queue bandwidth

ð Ô

weight1...weight8 ' ৶

no '

ð Ô

ð ৡ Ô

ð Ô

```
Ruijie(config)# drr-queue bandwidth 1 2 3 4 5 6 7 8
```

ð ৡ Ô

show mls qos queueing

ð ৶ Ô

86

mls qos map ip-prec-dscp

ippre DSCP

mls qos map ip-prec-dscp dscp1...dscp8

no mls qos map ip-prec-dscp

ð Ô

dscp ' ৶ a ৸ a ৸

no '

ð Ô

ð ৡ Ô

ð Ô

```
Ruijie(config)# mls qo map ip-prec -dscp 8 10 16 18 24
26 32 34
```

ð ৡ Ô

show mls qos maps dscp-cos maps,dscp-cos maps ip-prec-dscp maps

ð ৶ Ô

wfq-queue bandwidth

wfq ЮЎ ৡ Â

wfq-queue *queue-id* **bandwidth** *min max*

no wfq-queue *queue-id* **bandwidth**

ð Ô

queue-id ৸

min '

max '

ð Ô

min ঌ kbps

max ঌ kbps

ð ৡ Ô

ð Ô

wfq Э˘ ৡ ৶ Л৬ Â

ð Ô

wfq '

```
Ruijie(config)# mls qos scheduler wfq
Ruijie(config)# show mls qos scheduler
                                '

Ruijie(config-if)# wfq-queue 2 bandwidth 10 10240
Ruijie(config-if)# wfq-queue 4 bandwidth 7 10240
Ruijie(config-if)# show running
```

ð ৡ Ô

ৡ	

show mls qos scheduler	QOS

ð ✓ Ô

RGOS10.1 Л Э

wfq-queue sp

wfq Ю

RGOS10.1 Л Э

ð Ô

show mls qos interface

QoS

show mls qos interface *interface-id* [**policers**]

ð Ô

interface-id '

policers ' police

ð Ô

QOS

ð ֧ Ô

ð Ô

```
Ruijie# show mls qos interface fastEthernet 0/1
```

show mls qos queueing

QoS (cos-to-queue map,wrr weight,drr weight)

show mls qos queueing

ð ֧ Ô

ð Ô

```
Ruijie# show mls qos queueing
```

ð Ô

show mls qos scheduler

"l

show mls qos scheduler

ð ֧ Ô

ð Ô

Ruijie# **show mls qos scheduler**

ð ¸ Ô

show mls qos maps

dscp-cos maps,dscp-cos maps ip-prec-dscp maps

show mls qos maps [**cos-dscp** | **dscp-cos** | **ip-prec-dscp**]

ð Ô

cos-dscp ' cos-dscp maps

dscp-cos ' dscp-cos maps

ip-prec-dscp ' ip-prec-dscp maps

ð Ô

dscp-cos maps dscp-cos maps ip-prec-dscp maps

ð ¸ Ô

ð Ô

Ruijie# **show mls qos maps**

ð ¸ Ô

show mls qos rate-limit

8

show mls qos rate-limit [**interface** *interface-id*]

ð Ô

interface ' interface-id rate-limit ¸

ð ¸ Ô

ð Ô

Ruijie# **show mls qos rate-limit**

ð ¸ Ô

VRRP ३

३

VRRP ३ '

- **vrrp authentication**
- **vrrp description**
- **vrrp ip**
- **vrrp preempt**
- **vrrp priority**
- **vrrp timers advertise**
- **vrrp timers learn**
- **vrrp track**

vrrp authentication

३ VRRP ╖ ˘ è **no** ╖ Â

vrrp group authentication *string*

no vrrp *group* **authentication**

ð Ô

group ' VRRP /ı

string ' VRRP (a 8 ˘ ३ ३)

ð Ô

Ю˘ Э VRRP ╖ Â VRRP ╖ ˘ ३ Â

ð ३ Ô

ð Ô

↓ VRRP ↓ ३ Â ३ a ˘ / VRRP Â

ð Ô

Ю ù VRRP 1 ¾ Â

```
vrrp 1 authentication x30dn78k
```

ð ¾ Ô

¾	
Ruijie(config-if)# **vrrp** *group ip ipaddress* [**secondary**]	VRRP ╖ IP

Ruijie(config-if)# **vrrp** *group* ip *ipaddress* [**secondary**]	VRRP ╖ IP

vrrp ip

ֽ Э VRRP IP ˘ ὲ **no** Э VRRP ╖ ↓ IP Â

vrrp *group* **ip** *ipaddress* [**secondary**]

no vrrp *group* **ip** *ipaddress* [**secondary**]

ð Ô

group ' VRRP /ſ

ipaddress ' IP

secondary ' IP

ð Ô

Ю˝ Э VRRP ╖ Â

ð ֽ Ô

ð Ô

a secondary ˘ ж IP ѝ ў IP Â ˘ VRRP Л IP ˘ no ֽ ↓ VRRP IP ˘ ѝ ˘ ѝ Э ч ↓ IP Â

ð Ô

Ю ˘ Л 0 Э VRRP ╖ Â VRRP /ſ ѝ 1˘ ў IP ѝ 10.0.1.20˝ IP ѝ 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
```

ð ֽ Ô

ֽ	
Ruijie# **show vrrp** [**brief | group**]	VRRP

vrrp preempt

ֽ VRRP ´ ˘ è no VRRP ´ ╖ Â

vrrp *group* **preempt** [**delay** *seconds*]

no vrrp *group* **preempt** [**delay**]

ð Ô

group ' VRRP /ł

delay *seconds* ' ┘ ˘ ₧ Master

Â ѝ 0 Â

ð Ô

Ю˘ Э VRRP ╖ Â VRRP ╖ ˘

VRRP Â 0 T/C2V[illegible]

vrrp priority

ֽ VRRP ″I ˘ è **no** Â

vrrp *group* **priority** *level*

no vrrp *group* **priority**

ð Ô

group ' VRRP /I

level ' VRRP ″I

ð Ô

ЮЎ Э VRRP ╖ Â VRRP ╖ ˘ VRRP è ″I ѝ 100 Â

VRRP 3

˝ ╖ ʌ˘ ÿ ў VRRP ˝ VRRP
˘ Master ˘ a
VRRP Â ֽ ┘ Л┘ б Master VRRP
ˬ Â

ð Ô

Ю VRRP 1 Э ˝ ╖ Â

```
vrrp 1 timers learn
```

ð ֽ Ô

ֽ	
Ruijie(config-if)# **vrrp** *group* **ip** *ipaddress* [**secondary**]	VRRP ╖ IP
Ruijie(config-if)# **vrrp** *group* **timers advertise** [**msec**] *interval*	VRRP

vrrp track

ֽ ╖ ˘ è **no** ╖ Â

vrrp *group* **track** *interface-type number* [*interface -priority*]

no vrrp *group* **track** *interface-type number*

ð Ô

group ' VRRP ʌ

interface-type '

number ' ʌ

interface-priority ' ┘ è VRRP ″I ┘
Â a ˘ ѝ 10

ð Ô

Ю˝ Э VRRP ╖ Â VRRP ╖ ˘
Â

ð ֽ Ô

ð Ô

┘ Л┘ ֽ ˘ Ь
┘ (Routed Port ˘ SVI ˘ Loopback˘ Tunnel) Â

ð Ô

ЮО ˇ VRRP 1 Routed Port Fa1/1 Â Fa1/1 ˇ VRRP ″I 30ư Fa1/1 ⁄ˇ VRRP 1 ″I Â

```
vrrp 1 track FastEthernet 1/1 30
```

ð ٣ Ô

٣	
Ruijie(config-if)# **vrrp** *group* **ip** *ipaddress* [**secondary**]	VRRP ╖ IP
Ruijie(config-if)# **vrrp** *group* **priority** level	VRRP ″I

VRRP б ٣

1

```
%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#
```

ð ¾Ô

¾	
Ruijie# **debug vrrp errors**	VRRP
Ruijie# **debug vrrp events**	VRRP Y˙
Ruijie# **debug vrrp state**	VRRP

debug vrrp errors

¾ VRRP ˘ è no Â

debug vrrp errors

no debug vrrp errors

ð Ô

ÞØ VRRP Â

ð ¾ Ô

ð Ô

ÞO ˘ VRRP Â

```
Ruijie# debug vrrp errors
Ruijie#
VRRP: Grp 1 Advertisement from 192.168.201.213 has
invalid virtual address 192.168.1.1
VRRP: Grp 1 Advertisement from 192.168.201.213 has
invalid virtual address 192.168.1.1
VRRP: Grp 1 Advertisement from 192.168.201.213 has
invalid virtual address 192.168.1.1
```

debug vrrp events

ৡ VRRP Y˚ ˘ è no Â

debug vrrp events

no debug vrrp events

ð Ô

ƗÕ VRRP Y˚ Â

ð ৡ Ô

ð Ô

ƗO ˘ VRRP Y˚ Â

```
Ruijie# debug vrrp events
Ruijie#
VRRP: Grp 1 Event - Advert higher or equal priority
VRRP: Grp 1 Event - Advert higher or equal priority
VRRP: Grp 1 Event - Advert higher or equal priority
```

debug vrrp packets

ৡ VRRP ˘ è **no** Â

debug vrrp packets

no debug vrrp packets

ð Ô

ƗÕ VRRP Â

ð ৡ Ô

ð Ô

ƗO ˘ VRRP ˘ è 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
```

ƗO , VRRP ˘ è

VRRP 1 IP Л∪ 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
```

debug vrrp state

ϡ VRRP ˘ è no Â

debug vrrp state

no debug vrrp state

ð Ô

ЮЎ VRRP Â

ð ϡ Ô

ð Ô

Ю ˘ VRRP Â

```
Ruijie# debug vrrp state
Ruijie#
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Master
-> Backup
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Backup
-> Master

Ruijie# config terminal
Enter configuration commands, one per line.  End with
CNTL/Z.

Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# no shutdown
Ruijie(config-if)# end
Ruijie#
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Master
-> Init

Ruijie#
```

¾

show vrrp

¾ VRRP Â

show vrrp [**brief** | *group*]

ð Ô

brief ' ¸ ˘ VRRP

group ' VRRP /¹

ð ¾ Ô

ð Ô

a ¸ ˘ VRRP Â

ð Ô

VRRP

```
Ruijie# show vrrp
FastEthernet 0/0 - Group 1
State is Backup
Virtual IP address is 192.168.201.1 configured
Virtual MAC address is 0000.5e00.0101
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 100
Master Router is 192.168.201.213 , pritority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
FastEthernet 0/0 - Group 2
State is Master
Virtual IP address is 192.168.201.2 configured
Virtual MAC address is 0000.5e00.0102
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 120
Master Router is 192.168.201.217 (local), priority is
120
Master Advertisement interval is 3 sec
```

```
Master Down interval is 9 sec
Ruijie#
```

VRRP

```
Ruijie# show vrrp brief
Interface        Grp Pri Time  Own Pre State   Master addr     Group addr
```

```
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
```

ð ¾Ô

¾	
Ruijie(config-if)# **vrrp** *group* **ip** *ip address* [**secondary**]	VRRP ╖ IP

RLDP ¾

¾

RLDP ¾ ¾ à ¾
¾ Â

¾ '

- **rldp enable**
- **rldp detect-interval**
- **rldp detect-max**

¾ '

- **rldp port** {**unidirection-detect | bidirection-detect | loop-detect**} {**warning | shutdown-svi | shutdown-port | block**}

¾ '

- **rldp reset**

rldp enable

¾ ⁸ RLDP ╖ Â

rldp enable

no rldp enable

ð Ô

Â

ð Ô

Â

ð ¾ Ô

Â

ð Ô

RLDP ˘ RLDP Â

ð Ô

Ю :

```
Ruijie(config)# rldp enable
```

no rldp detect-max

ð Ô

num ' , ¼ ù 2-10

ð Ô

2 Â

ð ¾ Ô

Â

ð Ô

¾ ˘ Â

ð Ô

Ю ù 5 :

```
Ruijie(config)# rldp detect-max 5
```

ð ¾ Ô

¾	
rldp detect-interval	

rldp port

¾ rldp ˘ ¼ Â

rldp port {**unidirection-detect | bidirection-detect | loop-detect** } {**warning | shutdown-svi | shutdown-port | block**}

no rldp port { **unidirection-detect | bidirection-detect | loop-detect** }

ð Ô

unidirection-detect '

bidirection-detect ' ¼

loop-detect '

warning '

shutdown-svi ' shutdown svi

shutdown-port ' shutdown

block '

ð Ô

Â

ð ३ Ô

б ҄

ЛЬЮ ҄'

- **show rldp** [**interface** *intervace-id*]
- **debug rldp** {**packet | event | error**}

show rldp

rldp Â

show rldp [**interface** *interface-id*]

ð Ô

Interface-id '

ð ҄ Ô

EXEC

debug rldp

rldp Ł Â ҄ no Â

- **debug rldp** [**packet | event | error**]
- **undebug rldp** [**packet | event | error**]

ð Ô

packet ' rldp Â

event ' Ɩ Â

error '

ð ҄ Ô

EXEC

TPP ঳

topology guard

঳ Ю topology guard ঳ ╖
Â ঳ no ╖ Â

[**no**] **topology guard**

ð Ô

ð Ô

╖ й

ð ঳ Ô

঳

ð Ô

╖ ˘ ↓Л Л ˘ Л ↓
Â б ঳ **cpu topology-limit** Â

ð Ô

Ю ╖ '

```
Ruijie(config)# topology guard
Ruijie(config)# no topology guard
```

ð ঳Ô

tp-guard port enable ' ╖ Â

cpu topology-limit ' CPU

tp-guard port enable

╖ ˘ ঳ no
╖ Â

[**no**] **tp-guard port enable**

ð Ô

ð Ô

ð ʒ Ô

ʒ

ð Ô

Ћ Ћ ˘
CPU è ˘
Â ʒ γ ˘ è (AP) a
ʒ Â

ð Ô

Ћ Ћ '

```
Ruijie(config-if)# tp-guard port enable
Ruijie(config-if)# no tp-guard port enable
```

ð ʒ Ô

topology guard ' Ћ

TPP ʒ

show tpp

Â

show tpp

ð Ô

ð Ô

ð ʒ Ô

ʒ

ð Ô

ৡ tpp Â

ð Ô

Ю ╖ '

```
Ruijie# show tpp
```

ð ৡ Ô

topology guard ' ╖

ʒ

ʒ

- **cat**
- **cd**
- **cp**
- **ls**
- **makefs**
- **mkdir**
- **mv**
- **pwd**
- **rm**
- **rmdir**

cd

cd *DIRECTORY*

ð Ô

DIRECTORY

ð Ô

ð ʒ Ô

ð Ô

ls ʒ

ð Ô

Ruijie# **cd** *tmp*

ls

Ю Â

ls *PATHNAME*

ð Ô

PATHNAME Ù ˇ ˇ ù Ю

ð Ô

Ю Â

ð Ô

Â

ð Ô

Â

ð ϡ Ô

Â

ð Ô

ϡ Ю ' a à ÿ ˚ ˘
ж ѝ Э ˚ ˘
Л Л ' b à ˚ Л Л˘
Э ˚ ˘ Л Л ϡ Э Â

ð Ô

Ю ' jffs2 ˚ ˘ dev/mtdblock/1 ˚
'

```
Ruijie# makefs dev /dev/mtdblock/1 fs jffs2
```

ð ϡ Ô

ϡ

mkdir

mkdir *DIRECTORY*

ð Ô

DIRECTORY' Л

ð Ô

Â

ð ϡ Ô

Â

ð Ô

Л Л ( ) Â

Э a ˘ Â

ð Ô

Ю test '

```
Ruijie# mkdir test
```

ð ϡ Ô

mv

mv sour *SOURCE_FILE* **dest** {*DESTINE_FILE* | *DIRECTORY*}

mv dest {*DESTINE_FILE* | *DIRECTORY*} **sour** *SOURCE_FILE*

Ô

SOURCE_FILE

DESTINE_FILE/DIRECTORY

Ô

Ô

Ô

(**type file**);

Ô

log.txt , config.txt,

```
Ruijie# mv sour tmp/log.txt dest ../config.txt
```

log.txt tmp

```
Ruijie# mv dest /mnt/tmp sour tmp/log.txt
```

Ô

pwd

pwd

Ô

pwd	

ð Ô

Â

ð ¾ Ô

Â

ð Ô

Æ Â

ð Ô

ÞO Â

```
Ruijie# pwd
```

ð ¾ Ô

¾

rm

ˇ Â

rm *FILE*

ð Ô

FILE ˇ ¸ ( )

ð Ô

Â

ð ¾ Ô

Â

ð Ô

a , a ˇ ¦ ¥ Â ¸ ˘ ¸ ˘ a ˇ Â

ð Ô

ÞO log.txt ˇ '

```
Ruijie# rm log.txt
```

ð ¾ Ô

ϡ	
rmdir	, ѝ ϡ , Л∪ rm ϡ ≠ ⊣Л∪

rmdir

Â

rmdir *DIRECTORY*

ð Ô

DIRECTORY ′ ⊣ , ѝ

ð Ô

Â

ð ϡ Ô

Â

ð Ô

a , ѝ Â ϡ ,
rm ϡ ⊣ ⊣Л∪ Â

ð Ô

Ю tmp ˘ з ˚ Â

```
Ruijie# rmdir tmp
Ruijie# ls
```

ð ϡ Ô

ϡ

Â

ঽ

ঽ

logging on

a ⊿ Э ˘ ঽ Â
˘ ঽ no Â

logging on

no logging on

ð Ô

ð Ô

a ⊿ Э Â

ð ঽ Ô

ð Ô

RGOS a ⊿Л Console ầVTY Э˘ ≠ ⊿Л

logging console	⁸ ⅄ Э
logging monitor	VTY (telnet)Э
logging trap	Syslog Server

terminal monitor

ʒ VTY Э Â VTY Э
˘ ʒ no Â

terminal monitor

terminal no monitor

ð Ô

ЮЎ VTY Э a VTY Э Â

ð ʒ Ô

ð Ô

ʒ VTY

logging buffered [*buffer-size* | *level*]

no logging buffered

ð Ô

buffer-size ' ă ʁ ˘ ɻ ÿ 4K 128K Bytes Â

levell ' ш ˘ ÿ 0 7 Â ɻ Л ɻ ˘ ≠ ɻ Л Â

ð Ô

ă ʁ ѝ 4k Bytes Â

ш ѝ 7 Â

ð ϧ Ô

ð Ô

ă ʁ ˘ ʁ ˘ Â ă ʁ ˘ ϧ

show logging Â

ă ʁ ˘ ϧ clear logging˘ ă ʁ Â ˘ FLASH Syslog Server Â

RGOS ϯ ѝ ЛЬЮ 8 '

1

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

˘ ˘ 0 Â

Л ɻ˘ æ

Â

ð Ô

Ю ѝ 6Л∪ æ 6 ѝ 10000
ă ѡ '

```
Ruijie(config)# logging buffered 10000 6
```

ð ϡ Ô

ϡ	
logging on	
show logging	ă ѡ
clear logging	ă ѡ

logging

Syslog Sever Ю ϡ Â
Syslog server **Syslog Server**
ϡ no Â

logging *host*

no logging h*ost*

ð Ô

Host ' syslog server

ð Ô

Syslog server

ð ϡ Ô

ð Ô

ϡ Syslog server ÂRGOS
5 Syslog Server Â ⅃ Syslog Server Â

ð Ô

Ю ѝ 202.101.11.1 syslog server

```
Ruijie(config)# logging 202.101.11.1
```

ð ϡ Ô

ʒ	
logging on	
show logging	ă ʁ ˘ Л∪
logging trap	syslog server

logging file flash

FLASH ˘ Ю ʒ Â
ɻ FLASH ˘ ʒ no Â

logging file flash:filename [*max-file-size*] [*level*]

no logging file

ð Ô

Filename ' ˚ ɹ Â a ˚ ˘ ŭ txt Â

max-file-size ' ˚ Â ÿ 128K 6M bytes˘ ŭ 128K Â

levell ' ˚ Â ɻЛ∪ ɹ ˘ ≠ ɻЛ∪ Â FLASH ŭ 6 Â ˘ 1 Â

ð Ô

a FLASH Â

ð ʒ Ô

ð Ô

Syslog Server˘ a ˘ ɻЛ∪ FLASH Â

˚ ɻ ŭ ŭ txt˘ ˚ ɻ ɹ Â

注意:

FLASH˘ ɻ FLASH˘ FLASH˘ logging file flash ╟ ˘ a Â

ð Ô

Ю FLASH ˘ ˚ ɹ ѝ trace.txt˝ ˚
ѝ 64K, ѝ 6Â

```
Ruijie(config)# logging file flash:trace
```

ð ֽÔ

ֽ	
logging on	
show logging	ă ѡ ˘ Л
more flash	FLASH

logging console

⁸ ɻ Э ˘ Ю
ֽÂ ֽ no ⁸ ɻ Э Â

logging console *level*

no logging console

ð Ô

level ' ш ˘ ÿ 0 7Â ɻЛ ɹ ˘ ≠ ɻЛ
Â ш ˘ 1Â

ð Ô

Debugging (7)

ð ֽ Ô

ð Ô

ш Л ɻ˘ Э æ ш
⁸ ɻ ЭÂ

logging on	
show logging	ă ѡ ˘ Ո

logging monitor

VTY ˆ telnet à SSH ˜ Э
˘ Ю ϧ Â ϧ no VTY
Э Â

logging monitor *level*

no logging monitor

ð Ô

level ' ш Â ˩ Ո ˩ ˘ ≠ ˩ Ո Â
ш ˘ 1 Â

ð Ô

Debugging (7)

ð ϧ Ô

ð Ô

VTY Э ˘ ″I ϧ **terminal monitor** VTY Â
logging monitor Ⱨ Â

Logging monitor Ⱨ VTY Â

ð Ô

Ю VTY Э й б'

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

ð ϧ Ô

ϧ	
logging on	
show logging	ă ѡ ˘ Ո

logging trap

Syslog Server ˘ Ю
ʒ Â ʒ no Syslog Server Â

logging trap *level*

no logging trap

ð Ô

level ' ш Â ⅃ Л Ц ⅄ ˘ ≠ ⅃ Л Ц Â
ш ˘ 1 Â

ð Ô

Informational(6)

ð ʒ Ô

ð Ô

Syslog Serverˇ ″I ʒ logging
Syslog Server Â ⅄ˇ logging trap ш
Â

show logging ʒ ⅃ Л Ц Â

ð Ô

Ю й 6 й 202.101.11.22
Syslog Serverʻ

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

ð ʒ Ô

ʒ	
logging on	
logging	Syslog Server
show logging	ă ʁ ˘ Л Ц

logging source interface

˘ Ю ʒ Â ʒ

no logging *type interface number*

ð ϡ Ô

ð Ô

Ю˜ Syslog Server
Â и ˘ ˧ Л Ʊ ϡ
и ˘ ÿ Л
Â

ð Ô

Ю Loopback 0 и Syslog '

```
Ruijie(config)# logging source ip 192.168.1.1
```

ð ϡ Ô

ϡ	
logging	Syslog server

logging facility

˘ Ю ϡ Â ϡ
no ˘ и (23) Â

logging facility *facility-type*

no logging facility

ð Ô

facility-type ' Syslog ˘ ε Â

ð Ô

Local7(23)

ð ϡ Ô

ð Ô

Ю ^ 2˜ Syslog ˧ '

2

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

ϡ	
logging console	⁸ ⅄ Э

logging count

ℸ ˘ Ю ϡ Â
ℸ ˘ ϡ no Â

logging count

no logging count

ð Ô

ð Ô

ð ϡ Ô

ð Ô

ϡ ℸ Âÿ ϡ Â **no logging count** ϡ ˘ ℸ ˘ 3 Â

ð Ô

ℸ '

```
Ruijie(config)# logging count
```

ð ϡ Ô

ϡ	
show logging count	
show logging	б ă ʁ

service sequence-numbers

╗ Э /ˇ Ю ϡ Â ϡ no ⅄ /⅄ Â

service sequence-numbers

no service sequence-numbers

ð Ô

ð Ô

a Л Â

ð ϡ Ô

ð Ô

╗ Э Л ˘ ┘Л ╗ Э Л˘
Л ÿ 1 Â╗ Э Л Л Л˘ ┘Л
˘ Л ″І Л Â

ð Ô

Ю ╗ Э Л'

```
Ruijie(config)# service sequence-numbers
```

ð ϡ Ô

ϡ	
logging on	
service timestamps	

service timestamps

╗ Э ˘ Ю ϡ Â
ϡ no ┘ Э Âdefault
ѝ Â

service timestamps *message-type* [*uptime* | *datetime*]

no service timestamps *message-type* [**uptime** | **datetime**]

default service timestamps *message-type* [**uptime** | **datetime**]

ð Ô

message-type ' ˘ ч Log Debug Â Log ш
0 6 ˘ Debug ш ѝ 7
Â

uptime′ ╟ ˘ ' * * ж * ˘ ' 07:00:10:41

ϡ˘ ˩Л∪ ˘ ᾱ ╗ ˩ Â

ð Ô

Ю ╗ 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
Ruijie#
Mar 22 15:35:57 S3250 %SYS-5-CONFIG: Configured from
console by console
```

ð ϡ Ô

ϡ

ð ϡ Ô

ϡ	
logging file flash:	FLASH Э

clear logging

ă ʁ ˘ Ю ϡ Â

clear logging

ð ϡ Ô

ð Ô

ϡ ă ʁ Â a
Â

ð Ô

Ю ă ʁ Â

```
Ruijie# clear logging
```

ð ϡ Ô

ϡ	
logging on	
show logging	ă ʁ
logging buffered	ă ʁ

ϡ

show logging

à ˘ Л ă ʁ ˘
ϡ Â

show logging

ð Ô

ð ¾ Ô

ð Ô

Ю **show logging** '

```
Ruijie# show logging
Syslog logging: enabled
Console logging: level debugging, 4 messages logged
Monitor logging: level informational, 0 messages logged
Buffer logging: level debugging, 6 messages logged
Timestamp debug messages: datetime
Timestamp log messages: disabled
Sequence log messages: enable
Trap logging: level debugging, 2 message lines logged,0
reserved,0 fail
logging to  202.101.11.22
logging to  192.168.200.112
Log Buffer (Total 4096 Bytes) : have written 680
00001 2004-11-17 10:20:59  Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/0, changed state to up
00002 2004-11-17 10:20:59  Ruijie: %7:%LINE PROTOCOL
CHANGE: Interface FastEthernet 0/0, changed state to UP
00003 2004-11-17 10:57:18  Ruijie: %7:%LINK CHANGED:
Interface  FastEthernet  0/1,  changed  state  to
administratively down
00004 2004-11-17 10:57:21  Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to down
00005 2004-11-17 10:57:41  Ruijie: %7:%LINK CHANGED:
Interface  FastEthernet  0/1,  changed  state  to
administratively down
00006 2004-11-17 10:57:43  Ruijie: %7:%LINK CHANGED:
Interface FastEthernet 0/1, changed state to down
```

'

Syslog logging	' **enabled**, **disabled**
Console logging	⁸ ⅄ Э ˘ Л
Monitor logging	VTY Э ˘ Л

Buffer logging	ă ʁ ˘ Л
Timestamp debug messages	Debug
Timestamp log messages	Log
Sequence log messages	Л
Trap logging	Syslog Server ˘ Л
Log Buffer	ă ʁ

ð ϡ Ô

ϡ	
logging on	
clear logging	ă ʁ

show logging count

˘ Л Л
˘ Ю ϡ Â

show logging count

ð Ô

ð ϡ Ô

ð Ô

ѝ ˘ Ю˘ **logging count** ϡ Â **show logging count** ϡ˘ ˩ Л ˘
˘ Л Â

show logging ϡ˘ ˩ Л Â

ð Ô

Ю **show logging count** '

```
Ruijie# show logging count
Module Name   Message Name Sev Occur     Last Time
=================================================
SYS           CONFIG_I       5   1        Jul 6 10:29:57
```

```
-------------------------------------------------
SYS TOTAL                          1
```

ð ϡ Ô

ϡ	
logging count	╖
show logging	б ă ѡ
clear logging	ă ѡ

ʒ

ЛЪЮ ʒ'

- **device-priority**
- **device-description**
- **stack on**
- **show member**

ʒ

device-priority

ð ʒ Ô

device-priority [*member*] *priority*

ð Ô

member	ID Â ˩ Лъ ˘ member 1
priority	″I ˘ ˩ ѝ [1, 10]

ð ʒ Ô

ð Ô

ʒ ″I ˘ ″I ˩ ѝ 1 10˝ è 10 ″I ˘ ѝ 1 Â

Л write Â

ð Ô

2 ″I ѝ 8

```
Ruijie(config)# device-priority 2 8
```

ð ʒ Ô

ʒ	Ȯ ?

show member	

device-description

ð ϡ Ô

device-description [**member** *member*] *description*

ð Ô

member *member*	ID Â ˩ Л˘ ˘ member 1
description	˘ ѝ 31

ð ϡ Ô

ð Ô

ϡ ˩˘ Л write Â

ð Ô

2 ˩ ѝ red-giant

```
Ruijie(config)# device-description member 2 red-giant
```

ð ϡ Ô

ϡ	
show member	

stack on

ð ϡ Ô

(**no**) **stack on**

ð Ô

ð ϡ Ô

ð Ô

˘ ˧Л∪╗ no ˧ ˘ ϡ S3750
Э Â

ð Ô

GigabitEthernet 0/28 ╖

```
Ruijie(config)# interface GigabitEthernet 0/28
Ruijie(config-if)# stack on
```

ð ϡ Ô

ϡ

show member

ð ϡ Ô

show member [*member*]

ð Ô

member	ID˘ Â

ð ϡ Ô

ð Ô

ϡ ˧Л∪

ð Ô

```
Ruijie# show member
Member  Mac Address    Priority  Software Version
HardwareVersion  Description
------   --------------   -------   ----------------
--------------   ---------
1        00d0.f810.3323  1         RGOS 10.1.00(2),
Release(12889)  1.0            SWITCH
2        00d0.f822.33aa  1         RGOS 10.1.00(2),
Release(12889)  1.0            SWITCH
3        00d0.f822.33ae  1         RGOS 10.1.00(2),
Release(12889)  1.0            SWITCH
```

```
4         00d0.f822.33b0  1          RGOS 10.1.00(2),
Release(12889)  1.0              SWITCH
5         00d0.f822.33b2  1          RGOS 10.1.00(2),
Release(12889)  1.0              SWITCH
6         00d0.f824.23b4  1          RGOS 10.1.00(2),
Release(12889)  1.0              SWITCH
7         00d0.f833.44b4  1          RGOS 10.1.00(2),
Release(12889)  1.0              SWITCH
8         00d0.f855.33ae  1          RGOS 10.1.00(2),
Release(12889)  1.0              SWITCH
```