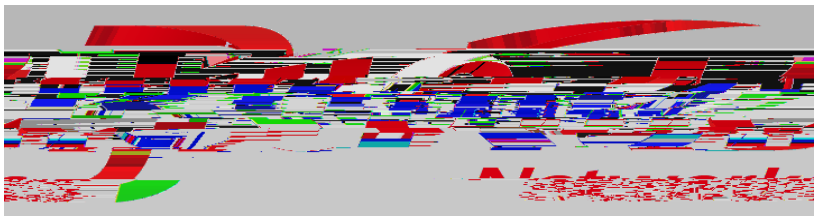

RG-S5750E

RGOS 10.4(2T53)

©2000-2012

http://www.ruijie.com.cn/

http://webchat.ruijie.com.cn

8:30 6 “ ”

http://www.ruijie.com.cn/service.aspx

7 × 24 4008-111-000

http://support.ruijie.com.cn

service@ruijie.com.cn

! ?Ô

RGOS®10.4 (2T53)

1.

Courier New 5

2.

Arial

[] []
{x|y|…}
[x|y|…]
//

3.

4.

1 CLI

1.1

1.1.1 alias

alias no

alias *mode command-alias original-command871017*

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

mode	
command-alias	
original-command	

EXEC

EXEC h p s u un help ping show undebug undebug

no alias exec

alias ?

```
Ruijie(config)# alias ?
aaa-gs              AAA server group mode
acl                 acl configure mode
bgp                 Configure bgp Protocol
config              globle configure mode
                                        *
*command-alias=original-command
```

EXEC ”s” ”show” ”s?” ’s’

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

”sv” ”show version ”

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


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

”ia”

”ip address”

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

”ip address ”

show aliases

”def-route” ”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
```

show aliases	

-	-

1.1.2 privilege

privilege

no

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

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

mode	CLI
[all]	
level *level*	0-15
reset	
command-string	

privilege CLI
privilege ?
CLI

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

CLI 1 ”test” reload

```
Ruijie(config)# enable secret level 1 0 test
Ruijie(config)# privilege exec level 1 reload
            1    CLI                reload
Ruijie> reload ?
<cr>
       reload                      1                all
Ruijie(config)# privilege exec all level 1 reload
            1    CLI                reload
Ruijie> reload ?
at                  reload at a specific time/date
cancel              cancel pending reload scheme
in                  reload after a time interval
<cr>
```


enable secret	CLI

-	-

1.2

1.2.1 show aliases

EXEC show aliases

show aliases [*mode*]

mode	

EXEC

EXEC

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

alias	

-	-

2

2.1

2.1.1 disable

disable

disable [*privilege-level*]

enable

-	-

-	-

-	-

2.1.3 enable password

enable password no

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

Password	EXEC
Level	
0|7	0 7
encrypted-password	

1 26

2.1.6 execute

execute

execute {[flash:] *filename*}

flash:	
filename	

PC

TFTP Flash

CLI

line_rcms_script.text

Telnet

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

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


2.1.7 ip http authentication

Http Server Web Web
ip http authentication

ip http authentication { enable | local }

HTTP no ip http port

HTTP 8080

```
Ruijie(config)# ip http port 8080
```

[redacted]	
enable service	

-	-

2.1.9 ip telnet source-interface

IP Telnet ip telnet source-interface

ip telnet source-interface *interface-name*

2.1.10 lock

EXEC lock

lock

-	-

lock

“ Locked ”

line lockable

line

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

lockable	

-	-

2.1.11 lockable

lock line lockable

lock no

lockable

aaa authentication login	

-	-

2.1.14 login local

AAA login local

no

login local

no login local

-	-

line

AAA
username

VTY

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

username	

-	-

2.1.15 privilege mode

CLI

-	-

–?•a'Agp `  t„`%äŽñ5–t„c”^HŽö r• à ÀN

login	

-	-

2.1.17 service password-encryption

service password-encryption no

service password-encryption

-	-

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

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

enable password	

-	-

2.1.18 telnet

Telnet EXEC telnet

telnet *host* [*port*] [/source {ip *A.B.C.D* | ipv6 *X:X:X:X::X* | interface *interface-name}*]

Host	Telnet IPV4 IPV6
Port	Telnet TCP 23
/source	Telnet IP
ip *A.B.C.D*	Telnet IPV4
ipv6 *X:X:X:X::X*	Telnet IPV6
interface *interface-name*	Telnet

telnet

1 telnet IPV4 192.168.1.1 vlan 1 VRF vpn1

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

2 telnet IPV6 2AAA:BBBB::CCCC

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

ip telnet so urce-interface	IP Telnet
show session	TTY
exit	

-	-

2.1.19 username

username

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

username *name* privilege *privilege-level*

no username *name*

name	

password	
0|7	0 7

encrypted-password

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

-	-

-	-

2.2.2 banner motd

banner motd

no banner motd

banner motd *c message c*

c	
message	

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

-	-

-	-

2.2.3 clock set

clock set

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

hh:mm:ss	24 : :
day	1-31
month	1-12
year	1993-2035

clock set

S2026G S2026F S2028 RSR10

2003 3 17 10 20 30

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

show clock	

-	-

2.2.4 clock update-calendar

clock update-calendar

-	-

calendar

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

-	-

-	-

2.2.5 exec-timeout

LINE exec-timeout no exec-timeout
LINE

exec-timeout *minutes* [*seconds*]

no exec-timeout

minutes	
seconds	

10 min

LINE

LINE

line vty 0 5 30

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

-	-

-	-

2.2.6 hostname

hostname

hostname *name*

name	32

Ruijie

CHAP

F Td82AF5F Td C4>]T6E9BE36D10553>DB>6<207FF4 1 Tf2>6<0Td (Ruijie)Tj /Cme

prompt *string*

string	32

EXEC

RGOS

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

-	-

-	-

2.2.8 reload

reload

reload [*text* | in [*hh:*] *mm* [*text*] | at *hh:mm* [*month day* | *day month*] [*text*] | cancel]

text	1-255
in [*hh:*] *mm*	24
at *hh:mm*	
month	

10

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

-	-

-	-

2.2.9 service config

no

service config

no service config

-	-

boot config boot network

service config boot config
/config.text boot network

service config boot network
boot config /config.text

Boot ROM
RSR10 RSR20 RSR50 NPE50

```
Ruijie(config)# service config
```

```
Ruijie(config)# boot network tftp://192.168.7.24/config.text
```

boot config	
boot network	

-	-

2.2.10 session-timeout

LINE session-timeout
no session-timeout LINE

session-timeout *minutes* [output]

no session-timeout

minutes	
output	

0 min

LINE

LINE
LINE

line vty 0 5 30

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

-	-

-	-

2.2.11 speed

speed *speed*

no speed

speed *speed*

Speed	bps 9600 19200 38400 57600 115200 9600

9600

57600 bps

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

-	-

-	-

2.2.12 write

running-config

write [memory | network | terminal]

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

-	-

2.3

2.3.1 show clock

show clock

show clock

-	-

detail

show clock

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

clock set	

-	-

2.3.2 show line

show line

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

console	
aux	aux

vty

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

-	-

-	-

2.3.4 show running-config

show running-config

show running-config

-	-

-	-

-	-

2.3.5 show version

show version

show version [slots | devices]

slots	
devices	

```
Ruijie# show version
System description : Ruijie Dual Stack Multi-Layer Switch(S3760-24)
By Ruijie Network
System start time: 1970-6-14 11:49:53
System uptime: 3:17:1:17
System hardware version: 2.0
System software version: RGOS 10.3.00(4), Release(34679)
System boot version: 10.2.34077
System CTRL version: 10.2.24136
System serial number: 1234942570001
```

-	-

-	-

3 LINE

3.1 LINE

3.1.1 access-class

Line ACL access-class *acl-no* { in | out } Line no access-class *access-list-number* {in | out } LINE ACL

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

3.1.2 line

LINE

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

aux	
console	
tty	
vty	telnet/ssh
First-line	first-line
Last-line	last-line

LINE

LINE VTY 1 3 LINE

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

-	-

-	-

3.1.3 line vty

VTY no

VTY

line vty *line-number*

no line vty *line-number*

-	-

VTY 5 0--4

VTY

	default transport inpu t no transport input LINE transport input none

line vty 0 4 telnet

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

show running	

-	-

4 SSH

4.1 SSH

4.1.1 crypto key generate

crypto key generate {rsa | dsa}

rsa	RSA
dsa	DSA

SSH Server

SSH Server SSH enable service ssh-server SSH Server SSH 1 RSA SSH 2 RSA DSA RSA SSH1 SSH2 DSA SSH2

no crypto key generate crypto key zeroize

```
Ruijie# configure terminal
Ruijie(config)# crypto key generate rsa
```

show ip ssh	SSH Server
crypto key zeroize {rsa | dsa }	DSA RSA SSH Server

-	-

4.1.2 crypto key zeroize

SSH

crypto key zeroize {rsa | dsa}

rsa	RSA

SSH Server SSH Server
show ip ssh SSH Server

2

```
Ruijie# configure terminal
Ruijie(config)# ip ssh ssh authentication-retries 2
```

disconnect ssh [vty] *session-id*

session-id	SSH

SSH SSH VTY
SSH SSH

```
Ruijie# disconnect ssh 1

Ruijie# disconnect ssh vty 1
```

show ssh	SSH
Clear line vty *line_number*	VTY

-	-

4.2.2 show crypto key mypubkey

SSH Server

show crypto key mypubkey {***rsa***/***dsa***}

rsa	RSA
dsa	DSA

SSH Server

```
Ruijie# show crypto key mypubkey rsa
```

SSH ı γ b

5 FTP Server

5.1

5.1.1 debug ftpserver

FTP no

debug ftpserver

no debug ftpserver

-	-

FTP no FTP

ftp-server enable

no ftp-server enable

-	-

FTP FTP

ftp-server topdir FTP

FTP

1 FTP syslog

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

2 FTP

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

-	-

-	-

5.1.3 ftp-server password

FTP no

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

no ftp-server password

type	0 7 0 7
password	

FTP

1 25 4
52

FTP

1 pass

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

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

2 8001

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

3

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

-	-

-	-

5.1.4 ftp-server topdir

FTP no
FTP

ftp-server topdir *directory*

no ftp-server topdir

directory	FTP

FTP
FTP FTP

FTP

1 FTP syslog

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

2

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

-	-

-	-

5.1.5 ftp-server timeout

FTP Session idle timeout no 30

ftp-server timeout *time*

no ftp-server timeout

time	1-3600

30

FTP

FTP

FTP FTP

FTP FTP

0

1 5

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

2 30

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


	-	-

5.2.1 show ftp-server

FTP

show ftp-server

-	-

FTP

IP Port

IP Port

FTP

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

-	-

	-	-

6

6.1

6.1.1 cd

cd [*filesystem:*][*directory*]

filesystem	“ ”
directory	

flash

cd
“ / ”
pwd

```
  1               usb0
Ruijie# cd usb0:/
  2               sd
Ruijie# cd sd0:/
```

pwd	

6.1.2 copy

bþT'† HI rïÂ ñ ˜U` v J"F@€BÌ"Å•Œ´/³ ñn1µ Ä K€8>T1 /TT0

```
  7         U        sd
Ruijie#copy usb0:/config.text sd0:/config.text
  8         sd        U
Ruijie#copy sd0:/config.text usb0:/config.text
```

del	
rename	
dir	

6.1.3 delete

delete ***url***

url	url

url URL flash:/ usb0:/ usb1:/ slave:/ url

.

```
  1               tmpfile
Ruijie# delete tmpfile
  2             rgos.bin.bak
Ruijie# delete slave:/rgos.bin.bak
  3      sd      aaa.bin
Ruijie# delete sd0:/aaa.bin
```


copy	
dir	

6.1.4 dir

dir [*filesystem:*][*directory*]

filesystem	":"
directory	

.

```
  1
Ruijie# dir slave0:/
Directory of slave:/
   Mode Link     Size             MTime Name
-------- ---- --------- ------------------- -----------------
          1  10838016 2008-01-01 00:01:53 rgos.bin
          1      399 2008-01-01 00:01:37 config.text
          1      399 2008-01-01 00:17:58 cfg.txt
------------------------------------------------------------
3 Files (Total size 11210782 Bytes), 0 Directories.
Total 33030144 bytes (31MB) in this device, 20463616 bytes (19MB)
available.
  2
Ruijie# dir
Directory of temp:/
   Mode Link     Size             MTime Name
-------- ---- --------- ------------------- -----------------
```

pwd	

6.1.6 rename

rename *url1 url2*

url1	URL
url2	URL

usb0/1, flash, slave

```
  1    log.txt              ,      config.txt
Ruijie# rename tmp/log.txt ../config.txt

  2         log.txt      usb0
Ruijie# rename slave:/log.txt usb0:/log.txt

  3              log.txt      log.txt.bak
Ruijie# rename log.txt log.txt.bak
  4    sd         rgos.bin      flash
Ruijie# rename sd0:/rgos.bin flash:/rgos_bak.bin
  5    U        test.txt      sd
Ruijie# rename usb0:/test.txt sd0:/test2.txt
```

del	
copy	

6.1.7 rmdir

rmdir *directory*

directory	,

,

tmp

```
Ruijie# rmdir tmp
```

mkdir	

6.2

6.2.1 pwd

pwd

1

```
Ruijie# pwd
flash:/
```

cd	

6.2.2 show file systems

show file systems

7

7.1

7.1.1 clear logging

clear logging

-	-

Ruijie# clear logging

logging on	
show logging	
logging buffered	

-	-

7.1.2 more flash

FLASH

more flash:filename

show logging

clear logging

FLASH

Syslog Server

8

level	0 7 1

Debugging (7)

show logging

6

```
Ruijie(config)# logging console informational
```

logging on	
show logging	

-	-

7.1.5 logging count

no

logging count

no logging count

-	-

no logging count

```
Ruijie(config)# logging count
```

show logging count	
show logging	# Oïa&…p$ 9r P gP9 , P gP —& &…p lx

max-file-size	128K 6M bytes 128K
level	FLASH 6 1

FLASH

Syslog Server
FLASH
txt

	FLASH FLASH FLASH logging file flash

FLASH trace.txt 64K,
6

```
Ruijie(config)# logging file flash:trace
```

logging on	

show logging

Debugging (7)

Logging monitor terminal monitor

config)# logging monitor informational

logging on	
show logging	

-

7.1.9 logging on

logging on ing on

Console VTY
FLASH Syslog Server

1 Log

```
Ruijie(config)# no logging on
```


logging buffered	
logging	Syslog Server
logging file flash:	FLASH
logging console	
logging monitor	VTY (telnet)
logging trap	Syslog Server

-	-

7.1.10 logging rate-limit

no

logging rate-limit {*number* | *all number* | *console* {*number* | *all number*}} [*except severity*]

no logging rate-limit

number	1—10000
all	0—7
console	
except	error(3) error
severity	0—7

debug 10 warning

```
Ruijie(config)#logging rate-limit all 10 except warnings
```

show logging count	
show logging	

-	-

7.1.11 logging server

Syslog Sever Syslog server
Syslog Server no

logging server {*ip-address* [vrf *vrf-name*] | ipv6 *ipv6-address*}

no logging server {*ip-address* [vrf *vrf-name*] | ipv6 *ipv6-address*}

ip-address	IP
vrf vrf-name	VRF VPN
ipv6 ipv6-address	IPV6

syslog server

Syslog server 5 Syslog Server Syslog Server

1 202.101.11.1 syslog server

```
Ruijie(config)# logging server 202.101.11.1
```

2 IPV6 AAAA:BBBB::FFFF

```
Ruijie(config)# logging server ipv6 AAAA:BBBB::FFFF
```

logging on	
show logging	
logging trap	syslog server

-	-

7.1.12 logging source ip| ipv6

IP no

IP

logging source {ip *ip-address* | ipv6 *irTw [(v6)4ds*

no logging source interface

interface-type	
interface-number	

Syslog Server IP IP
IP IP

IP IP IP

Loopback 0 Syslog

```
Ruijie(config)# logging source interface loopback 0
```

logging	Syslog Server

-	-

7.1.14 logging synchronous

no

logging synchronous

no logging synchronous

-	-

```
Ruijie(config)#line console 0
Ruijie(config-line)#logging synchronous
                          UP-DOWN
Ruijie#configue terminal
Oct  9 23:40:55 %LINK-5-CHANGED: Interface GigabitEthernet 0/1,
changed state to down
Oct  9 23:40:55 %LINEPROTO-5-UPDOWN: Line protocol on Interface
GigabitEthernet 0/1, changed state to DOWN
Ruijie# configue terminal        //
```

show running-config	

-	-

7.1.15 logging trap

Syslog Server

no Syslog Server

logging trap *level*

no logging trap

level	1

Informational(6)

Syslog Server logging

Syslog Server logging trap

show logging

6 202.101.11.22 Syslog Server

```
Ruijie(config)# logging 202.101.11.22
Ruijie(config)# logging trap informational
```

logging on	

logging	Syslog Server
show logging	

-	-

7.1.16 service sequence-numbers

no

service sequence-numbers

no service sequence-numbers

-	-

1

```
Ruijie(config)# service sequence-numbers
```

logging on	
service timestamps	

-	-

7.1.17 service sysname

uptime	* * * * 07:00:10:41
datetime	Jul 27 16:53:07
msec	: : . Jul 27 16:53:07.299
year	2007 Jul 27 16:53:07

RTC

Uptime
Datetime

Log Debug Datetime

```
Ruijie(config)# service timestamps debug datetime msec
Ruijie(config)# service timestamps log datetime msec
Ruijie(config)# end
Ruijie(config)# Oct 8 23:04:58.301 %SYS-5-CONFIG_I: Configured from
console by console
```

logging on	
service sequence-numbers	

-	-

7.1.19 terminal monitor

VTY VTY

no

terminal monitor

terminal no monitor

-	-

VTY

VTY VTY

VTY

```
Ruijie# terminal monitor
```

-	-

-	-

7.2

7.2.1 show logging

show logging

-	-

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
```

show logging count

-	-

8.1.2 memory-lack exit-policy

lower BGP OSPF RIP PIM-SM

memory-lack exit-policy (bgp |ospf |pim-sm| rip)

no memory-lack exit-policy

bgp|ospf|pim-sm|rip	BGP OSPF PIM RIP
no	

lower (show memory lower

BGP

bgp

1 BGP

```
Ruijie(config)# memory-lack exit-policy bgp
```

show memory	

-


```
16    0%    3%    1%    ll_mt
17    0%    0%    0%    ll main process
18    0%    0%    0%    bridge_relay
19    0%    0%    0%    d1x_task
20    0%    0%    0%    secu_policy_task
21    0%    0%    0%    dhcpa_task
22    0%    0%    0%    dhcpsnp_task
23    0%    0%    0%    igmp_snp
24    0%    0%    0%    mstp_event
25    0%    0%    0%    GVRP_EVENT
26    0%    0%    0%    rldp_task
27    0%    2%    1%    rerp_task
28    0%    0%    0%    reup_event_handler
29    0%    0%    0%    tpp_task
30    0%    0%    0%    ip6timer
31    0%    0%    0%    rtadvd
32    0%    0%    0%    tnet6
33    2%    0%    0%    tnet
34    0%    0%    0%    Tarptime
35    0%    0%    0%    gra_arp
36    0%    0%    0%    Ttcptimer
37    8%    1%    0%    ef_res
38    0%    0%    0%    ef_rcv_msg
39    0%    0%    0%    ef_inconsistent_daemon
40    0%    0%    0%    ip6_tunnel_rcv_pkt
41    0%    0%    0%    res6t
42    0%    0%    0%    tunrt6
43    0%    0%    0%    ef6_rcv_msg
44    0%    0%    0%    ef6_inconsistent_daemon
45    0%    0%    0%    imid
46    0%    0%    0%    nsmd
47    0%    0%    0%    ripd
48    0%    0%    0%    ripngd
49    0%    0%    0%    ospfd
50    0%    0%    0%    ospf6d
51    0%    0%    0%    bgpd
52    0%    0%    0%    pimd
53    0%    0%    0%    pim6d
54    0%    0%    0%    pdmd
55    0%    0%    0%    dvmrpd
56    0%    0%    0%    vty_connect
57    0%    0%    0%    aaa_task
58    0%    0%    0%    Tlogtrap
59    0%    0%    0%    dhcp6c
60    0%    0%    0%    sntp_recv_task
61    0%    0%    0%    ntp_task
62    0%    0%    0%    sla_deamon
63    0%    3%    1%    track_daemon
64    0%    0%    0%    pbr_guard
65    0%    0%    0%    vrrpd
66    0%    0%    0%    psnpd
67    0%    0%    0%    igsnpd
```

```
 68     0%     0%     0%    coa_recv
 69     0%     0%     0%    co_oper
 70     0%     0%     0%    co_mac
 71     0%     0%     0%    radius_task
 72     0%     0%     0%    tac+_acct_task
 73     0%     0%     0%    tac+_task
 74     0%     0%     0%    dhcpd_task
 75     0%     0%     0%    dhcps_task
 76     0%     0%     0%    dhcpping_task
 77     0%     0%     0%    dhcpc_task
 78     0%     0%     0%    uart_debug_file_task
 79     0%     0%     0%    ssp_init_task
 80     0%     0%     0%    rl_listen
 81     0%     0%     0%    ikl_msg_operate_thread
 82     0%     0%     0%    bcmDPC
 83     0%     0%     0%    bcmL2X.0
 84     3%     3%     3%    bcmL2X.0
 85     0%     0%     0%    bcmCNTR.0
 86     0%     0%     0%    bcmTX
 87     0%     0%     0%    bcmXGS3AsyncTX
 88     0%     2%     1%    bcmLINK.0
 89     0%     0%     0%    bcmRX
 90     0%     0%     0%    mngpkt_rcv_thread
 91     0%     0%     0%    mngpkt_recycle_thread
 92     0%     0%     0%    stack_task
 93     0%     0%     0%    stack_disc_task
 94     0%     0%     0%    redun_sync_task
 95     0%     0%     0%    conf_dispatch_task
 96     0%     0%     0%    devprob_task
 97     0%     0%     0%    rdp_snd_thread
 98     0%     0%     0%    rdp_rcv_thread
 99     0%     0%     0%    rdp_slot_change_thread
100     4%     2%     1%    datapkt_rcv_thread
101     0%     0%     0%    keepalive_link_notify
102     0%     0%     0%    rerp_msg_recv_thread
103     0%     0%     0%    ip_scan_guard_task
104     0%     0%     0%    ssp_ipmc_hit_task
105     0%     0%     0%    ssp_ipmc_trap_task
106     0%     0%     0%    hw_err_snd_task
107     0%     0%     0%    rerp_packet_send_task
108     0%     0%     0%    idle_vlan_proc_thread
109     0%     0%     0%    cmic_pause_detect
110     1%     1%     1%    stat_get_and_send
111     0%     1%     0%    rl_con
112    75%    80%    90%    idle
                  3                5         1         5
    CPU                 LISR  HISR                    CPU
```

5Sec	5 CPU
1Min	1 CPU
5Min	5 CPU

2 LISR CPU HISR CPU
3 CPU idle CPU
Windows “ System Idle Process ”
idle 5 CPU 75% CPU 75%

-	-

-	-

8.2.2 show memory

show memory

show memory

-	-

show memory

```
Ruijie#show memory
System Memory Statistic:
  Free pages: 1079
    watermarks : min 379, lower 758, low 1137, high 1516
  System Total Memory : 128MB, Current Free Memory : 5283KB
  Used Rate : 96%
```

1. 4k
2.

min	
lower	**memory-lack exit-policy**
low	OVERFLOW
high	OVERFLOW

3.

-	-

-

```
OSPF            24000000
RIP             10000000
PIM             50000000
LDP             20000000
Total           206000000
```

9 POE

9.1

9.1.1 Poe disconnect-mode m ode/no poe disconnect-mode

mode	[ac/dc]

/

```
Ruijie(config-if)#
Ruijie(config-if)# poe enable
Ruijie(config-if)# no poe enable
Ruijie(config-if)#
```

-	-

´

-	-

9.1.3 Poe-power lower lower/no poe-power lower

5 20.6410.6410.645252-2229.2 -29.72 513.6803 90 g/21235422C58 1 1CD411E 1 T729118C2B091 1F

9.1.4 Poe-power upper lower/no poe-power upper

upper	[55000-57000]

POE 56000

```
Ruijie# configure
Ruijie(config)# poe-power upper 56000
Ruijie(config)# end
```

-	-

-	-

9.1.5 Poe AT on/off

on/off	[AT/AF]

AF

AT

```
Ruijie(config-if)# poe AT on
Ruijie(config-if)# end
```


-	-

-	-

9.2

9.2.1 show poe interfaces

-	-

poe

```
Ruijie# show poe interface gigabitethernet 0/2
Interface : Gi0/2
Port power enabled : ENABLE
Port connect status : OFF
Port PD Class : no PD devices
Port max power : 15400 mW
Port current power : 0 mW
Port peak power : 0 mW
Port current : 0 mA
Port voltage : 48082 mV
Port trouble cause : normal
```

-	-

-	-

9.2.2 show poe powersupply

-	-

POE

```
Ruijie# show poe powersupply
PSE Total Power : 379971 mW
PSE Total Power Consumption : 0 mW
PSE Available Power : 379971 mW
PSE Peak Value : 0 mW
PSE Min Allow Voltage : 45000 mV
PSE Max Allow Voltage : 57000 mV
PSE Disconnect Sense Mode : ac
```

-	-

-	-

10

10.1

10.1.1 ping

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

vrf-name	VRF
ip-address	IPv4
length	
times	
seconds	
data	
source	IPv4 127.0.0.1
df-bit	IP DF DF 1 DF 0
validate	

2 5 100Byte IP

Ping
ping ping ping
2 5
100Byte IP ‘ ! ’
‘ . ’ ping
ping
ping
DNS VRF RSR

1 ping

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

2 ping

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

-	-

-	-

10.1.2 ping ipv6

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

ip-address	IPv6
length	
times	
seconds	
data	IPv6

Ping ipv6

ping ipv6 ping ipv6

ping ipv6

2 5 100Byte IP

‘!’ ‘.’

‘C’ ping ipv6

ping

ping ipv6

DNS

1 ping ipv6

```
Ruijie# ping ipv6  TdBo:1
Sending 5, 100-byte ICMP Echoes to  TdBo:1, timeout is 2 seconds:
  < press Ctrl+C to break >
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/10
ms
```

2 ping

```
Ruijie# ping  ipv6 20dBo:1 length 1500 ntimes 100 timeout 3 data ffff
source  TdBo:2
 Sending 100, 1000-byte ICMP Echoes to  TdBo:1, 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
```

-	-

-	-

10.1.3 traceroute

traceroute .

seconds	
minimum maximum	TTL

Traceroute

DNS

VRF RSR

traceroute

1 traceroute

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

IP 61.154.22.36

1 6

2 traceroute

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

IP 202.108.37.42

1 17 4

```
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
```

(M *ü °•ÿQN0

clear counters [*interface-id*]

interface-id	

shutdown	

-	-

11.1.4 descriptioin

no

description *string*

no description

string	

show interfaces

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

show interfaces	

-	-

11.1.5 duplex

no

duplex {auto | full | half}

no duplex

auto	
full	
half	

show interfaces

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

show interfaces	

-	- Y4 ï&

7.19

show interfaces	

-	-

11.1.7 interface aggregateport

no

interface aggregateport *port-number*

port-number	Aggregate port ´ = “ q

mod-num/port-num	/

no show interfaces show interfaces fastEthernet

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

-	-

11.1.10 interface vlan

switch virtual interface SVI

no SVI

interface vlan *vlan-id*

no interface vlan *vlan-id*

vlan-id	VLAN ID

show interfaces show interfaces vlan

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

show interfaces	

-	-

11.1.11 medium-type

no

medium-type { fiber | copper }

no medium-type

fiber	

copper	

Ap SVI

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

show interfaces	

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

-	-

11.1.12 mtu

mtu

Mtu *num*

num	64 9216(65536)

1500

mtu

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

show interfaces	

-	-

11.1.13 shutdown

no

shutdown

no shutdown

-	-

Ap SVI
show interfaces

no shutdown

1 Ap 1

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

2 Ap 1

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

clear interface	
show interfaces	

-	-

11.1.14 snmp trap link-status

LinkTrap Link
SNMP LinkTrap, no SNMP LinkTrap

snmp trap link-status

no snmp trap link-status

Link SNMP LinkTrap

Ap SVI LinkTrap
Link SNMP LinkTrap,

1 Link trap

```
Ruijie(config)# interface gigabitEthernet 16.48 fW nfq0 8Tr 90 1 5.0.-8Tr 90
```

auto	

Ap Ap
Ap show interfaces
SFP
10M 100M

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

show interfaces	

-	-

11.1.16 switchport

switchport 2
no switchport 3

switchport

no switchport

-	-

2

switchport
2 3
2

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

show interfaces	

-	-

11.2

11.2.1 show interfaces

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

interface-id	aggregateport SVI loopback
counters	
description	link
status	
switchport	
trunk	trunking port Aggregate port
transceiver	
alarm	“ None ”

interface gigabitEthernet	
interface aggregateport	
interface vlan	switch virtual interface SVI
shutdown	
speed	
switchport priority	802.1q
switchport protected	

-	-

12 AP

12.1

12.1.1 aggregateport load-balance

AP no

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

no aggregateport load-balance

Aggregate Port no

Aggregate Port

port-group *port-group-number*

no port-group

port-group-number	Aggregate Port Aggregate Port

Aggregate Port

AP VLAN trunk port native VLAN AP

1/3 AP 3

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

-	-

-	-

12.1.3 port-group mode

LACP ID no

LACP

port-group *key* mode active | passive

no port-group

Key	ID, key
active	LACP
passive	LACP LACP LACP .

LACP

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

lacp port-priority	LACP

10.3(5)	

12.1.4 lacp port-priority

LACP no

lacp port-priority *port-priority*

no lacp port-priority

port-priority	0-65535

32768

, ,

,,

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# lacp port-priority 4096
```

port-group *key* mode active | passive	LACP ID

10.3(5)	

12.1.5 lacp system-priority

LACP no

lacp system-priority *system-priority*

no lacp system-priority

system-priority	LACP 0-65535

32768

LACP MAC MAC
MAC

```
Ruijie(config)# lacp system-priority 4096
```

port-group *key* mode active | passive	LACP ID
lacp port-priority	LACP

10.3(5)	

12.2

12.2.1 show aggregateport

aggregateport

show aggregateport

show aggregateport [*aggregate-port-number*] summary

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

aggregate port aggregate port

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

```
Ruijie# show LACP summary
Flags:S - Device is sending Slow LACPDUs   F - Device is sending fast
LACPDUs.
A - Device is in active mode.   P - Device is in passive mode.
Aggregate port 3:
Local information:
                    LACP port      Oper    Port     Port
Port    Flags    State    Priority     Key    Number  State
-------------------------------------------------------------
Gi0/1     SA       bndl       4096        0x3     0x1      0x3d
Gi0/2     SA       bndl       4096        0x3     0x2      0x3d
Gi0/3     SA       bndl       4096        0x3     0x3      0x3d
Partner information:
                    LACP port        Oper    Port     Port
Port    Flags    Priority    Dev ID     Key    Number   State
-------------------------------------------------------------
Gi0/1    SA    61440    00d0.f800.0002   0x3    0x1     0x3d
Gi0/2    SA    61440    00d0.f800.0002   0x3    0x2     0x3d
Gi0/3    SA    61440    00d0.f800.0002   0x3    0x3     0x3d
```

Local information	LACP
Port	ID
Flags	‘ S’ LACP LACPPDU ’A’
State	“ bndl ” Down sups
LACP Port Priority	LACP
Oper Key	Key
Port Number	
Port State	LACP
Partner infomation	LACP
Dev ID	MAC

port-group *key* mode	LACP ID

10.3(5)	
10.4(2b2)	key

13 SPAN

13.1

13.1.1 monitor session

SPAN . no

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

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

switch port routed port AP SPAN
SPAN disabled port SPAN

show monitor SPAN

session 1 SPAN
session 1
S7600 session 1 SPAN

SPAN 1
1 gigabitEthernet 1/1
gigabitEthernet 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
```

show monitor	SPAN

show monitor SPAN 1

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

monitor session	SPAN

14 NLB GROUP

VRF VRF

5 16

1

```
Ruijie(config)# nlb-group 1 vrf vpn-1 ip 192.168.10.1 reflector-port
gigabitethernet 0/1
Ruijie(config)# nlb-group 1 destination-port gigabitethernet 0/2,
0/3
```

2 1

```
Ruijie(config)# no nlb-group 1 vrf vpn-1 ip 192.168.10.1
reflector-port gigabitethernet 0/1
```

3 1

```
Ruijie(config)# no nlb-group 1 destination-port gigabitethernet
0/2, 0/3
```

show nlb-group	

10.4 2b2	

14.2

14.2.1 show nlb-group

show nlb-group [*group_number*]

group-number	

show nlb-group

```
Ruijie# show nlb-group 1
group-number   1
cluster-vrf: vpn-1
cluster-ip: 192.168.10.1
destination-port: Gi 0/2, Gi 0/3, Gi 0/3
```

group-number	
destination-port	
cluster-vrf	VRF
cluster-ip	IP
reflector-port	

nlb-group	

10.4 2b2	

15 MAC

15.1

15.1.1 address-bind

ip mac

address-bind *ip-address mac-address*

no address-bind *ip-address*

ip-address	IP

address-bind install

no address-bind install

ip 3.3.3.3 mac 00d0.f811.1112

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

show address-bind	

-	-

15.1.4 address-bind ipv6-mode

ip IP

address-bind ipv6-mode compatible

address-bind ipv6-mode loose

address-bind ipv6-mode strict

-	-

:

	MAC MAC IPV6	

IP 192.168.5.2 00d0.f822.33aa
IPV6

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

-	-

-	-

15.1.5 address-bind uplink

ip mac .

address-bind uplink *intf-id*

no address-bind uplink *intf-id*

intf-id	

IP MAC IP IP
MAC IP MAC
(address-bind install)

fa 0/1

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


show address-bind uplink

-	-

15.1.6 clear mac-address-table dynamic

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

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

show mac-address-table dynamic

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

show mac-address-table dynamic	

-	-

15.1.7 clear mac-address-table filtering

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

filtering	
address *mac-addr*	

vlan *vlan-id*	VLAN

show mac-address-table filtering

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

-	-

15.1.9 mac-address-table aging-time

no

mac-address-table aging-time *seconds*

no mac-address-table aging-time

seconds	

300

show mac-address-table aging-time

show mac-address-table dynami c

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

show mac-address-table aging-time	
show mac-address-table dynamic	

MAC Trap

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

snmp-server enable traps	trap
show mac-address-t able notification	MAC
snmp trap mac-notification	MAC

-	-

15.1.12 mac-address-table static

no

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*

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

show mac-address-table static

clear mac-address-table static

00d0.f800.073c VLAN 4 gigabitethernet 1/1

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

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

-	-

15.1.13 mac-manage-learning uniform

MAC uniform .

-	-

MAC uniform
MAC MAC

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

-	-

uniform MAC
no MAC

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

-	-

15.1.15 mac-manage-learning dispersive

MAC dispersive ъ

-	-

15.1.16 snmp trap mac-notification

MAC no

snmp trap mac-notification {added | removed}

no snmp trap mac-notification {added | removed }

added	
removed	

vlan *vlan-id*	VLAN

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

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

-	-

15.2.4 show mac-address-table aging-time

show mac-address-table aging-time

-	-

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

mac-address-table aging-time	

15.2.7 show mac-address-table filtering

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

```
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
```

show mac-address-table static	
show mac-address-table filtering	
show mac-address-table dynamic	
show mac-address-table address	
show mac-address-table vlan	VLAN
show mac-address-table count	

-	-

15.2.9 show mac-address-table notification

MAC

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

interface *interface-id*	MAC
history	MAC

MAC

```
Ruijie# show mac-address-table notification interface
Interface        MAC Added Trap  MAC Removed Trap
```

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

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

-	-

15.2.10 show mac-address-table static

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

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

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

```
1    00d0.f800.1003    STATIC   gigabitethernet 1/1
```

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

-	-

15.2.11 show mac-address-table vlan

VLAN

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

vlan-id	VLAN ID

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

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

1

```
Ruijie# show mac-address-learning
```


16 VLAN

16.1

16.1.1 name

VLAN no

name *vlan-name*

no name

vlan-name	VLAN

VLAN VLAN VLAN ID VLAN 2 ”VLAN0002”

VLAN

show vlan vlan

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

show vlan	VLAN

-	-

16.1.2 switchport access

access port VLAN
no VLAN

switchport access vlan *vlan-id*

no switchport access vlan

vlan-id	VLAN ID

switch port access VLAN VLAN 1

VLAN ID VLAN ID VLAN
VLAN VLAN ID VLAN

trunk port

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

switchport mode	switch port
switchport trunk	trunk port native VLAN Trunk VLAN

-	-

16.1.3 switchport mode

switch port access port trunk port hybrid port uplink port 802.1Q no

switchport mode {access | trunk | hybrid | uplink | dot1q-tunnel }

no switchport mode

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

switch port access

switch port access VLAN
switchport access vlan VLAN
switch port trunk VLAN
VLAN VLAN trunk port VLAN
VLAN switchport trunk VLAN

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

switchport access	access port VLAN
switchport trunk	trunk port native VLAN Trunk VLAN

-	-

16.1.4 switchport trunk

trunk port native VLAN Trunk VLAN
no trunk

switchport trunk {allowed vlan { all | [add | remove | except] *vlan-list* }| native vlan *vlan-id*}
no switchport trunk {allowed vlan | native vlan }

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

VLAN all Native VLAN VLAN 1

Native VLAN

Trunk native VLAN native VLAN
UNTAG VLAN VLAN ID
IEEE 802.1Q PVID native VLAN VLAN ID Trunk
native VLAN UNTAG
VLAN
Trunk 2

end Ctrl+C

exit

```
Ruijie(config)# vlan 1
Ruijie(config-vlan)#
```

show vlan	VLAN

-	-

switchport access	Vlan

-	-

17 Super-vlan

17.1

17.1.1 subvlan

super vlan subvlan subvlan

subvlan *vlan-id-list*

no subvlan [*vlan-id-list*]

no subvlan-address-range

start-ip	SubVLAN IP
end-ip	SubVLAN IP

-

VLAN

end Ctrl+C
exit

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

show supervlan	supervlan

-	-

17.1.3 supervlan

VLAN supervlan

supervlan

no supervlan

-	-

VLAN

end Ctrl+C
exit

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

show supervlan	supervlan

-	-

17.1.4 proxy-arp

VLAN ARP

proxy-arp

no proxy-arp

-	-

VLAN

end Ctrl+C

exit

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

show supervlan	supervlan

SuperVLAN SubVLAN

show supervlan

show supervlan id *vlan-id*

vlan-id	VLAN ID

```
Ruijie# show supervlan
supervlan id  supervlan arp-proxy  subvlan id  subvlan arp-proxy
subvlan ip range
-----------  -----------  -----------  -----------  ----------
```

18 Protocol VLAN

18.1

18.1.1 protocol-vlan ipv4 addr mask addr vlan id

IP VLAN

addr	IP x.x.x.x
id	VLAN ID 1- VLAN

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

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

-	-

18.1.2 protocol vlan ipv4

IP VLAN

-	-

Ruijie(config-if)# protocol vlan ipv4

no protocol vlan ipv4	-

RGOS10.1

-	-

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

profile

no protocol-vlan profile *num*	-

RGOS10.1

-	-

18.1.4 protocol-vlan profile num vlan id

profile

num	profile
id	VLAN ID 1- VLAN

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

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

RGOS10.1

-	-

18.2

18.2.1 show protocol-vlan

Protocol VLAN

show vlan protocol-vlan

-	-

Ruijie# **show protocol-vlan**

-	-

RGOS10.1

-	-

cos-value 6

Voice VLAN CoS DSCP

1 Voice VLAN CoS 5

```
Ruijie(config)# voice vlan cos 5
```

show voice vlan	Voice VLAN

10.4	

19.1.4 voice vlan dscp

Voice VLAN DSCP no

voice vlan dscp *dscp-value*

no voice vlan dscp

dscp-value	Voice VLAN DSCP

dscp-value 46

Voice VLAN CoS DSCP

1 Voice VLAN DSCP 40

```
Ruijie(config)# voice vlan dscp 40
```

show voice vlan	Voice VLAN

10.4	

19.1.5 voice vlan enable

Voice VLAN no

Voice VLAN

vo1 1 T401E4D4.4 1 Tle/C2_0V7j /TT1 1 Tf -0.0006 Tc 0.0045 Tw 10.021 Td - (V7j<4B72 0 D1>_0 4 1 ToD4.4

Voice VLAN Voice VLAN

Voice VLAN IP
Voice VLAN

1 Voice VLAN
Voice VLAN Voice VLAN
2
native VLAN Voice VLAN
3 Trunk Port/Hybrid Port VLAN
Voice VLAN VLAN Voice
VLAN Voice VLAN
Voice VLAN

1 Voice VLAN
Voice VLAN
2 Voice VLAN
Voice VLAN

1 FastEthernet 0/1 Voice VLAN

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-vlan)# voice vlan mode auto
```

show voice vlan	Voice VLAN Voice VLAN

10.4	

19.1.8 voice vlan security enable

Voice VLAN no

voice vlan security enable

no voice vlan security enable

Voice VLAN

Voice VLAN
MAC MAC
Voice VLAN OUI Voice VLAN

Voice VLAN
Voice VLAN

untagged Voice VLAN tag
MAC Voice VLAN tag
VLAN Voice VLAN /

1 Voice VLAN

```
Ruijie(config)# voice vlan security enable
```

show voice vlan	Voice VLAN

10.4	

19.2

19.2.1 show voice vlan

Voice VLAN Voice VLAN

show voice vlan

Voice VLAN Voice VLAN

voice vlan *vlan-id*	Voice VLAN	Voice

20 GVRP

20.1

20.1.1 gvrp applicant state

GVRP no

-	-

vlan

show gvrp configuration

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

show gvrp configuration	GVRP

-	-

20.1.3 gvrp enable

GVRP no

gvrp enable

no gvrp enable

-	-

GVRP

show gvrp configuration

```
Ruijie(config)# gvrp enable
```

show gvrp configuration	GVRP

leave *timer_value*	Leave Message VLAN Join Message VLAN Join Message Empty VLAN
leaveall *timer_value*	LeaveAll timer LeaveAll Message LeaveAll Message LeaveAll Message LeaveAll Message Leave timer leaveall leaveall + join

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

show gvrp configuration

no gvrp timer join leave leaveall timer

```
Port:GigabitEthernet 3/8 app mode:normal reg mode:normal
Port:GigabitEthernet 3/9 app mode:normal reg mode:normal
Port:GigabitEthernet 3/10 app mode:normal reg
mode:normal
Port:GigabitEthernet 3/11 app mode:normal reg
mode:normal
Port:GigabitEthernet 3/12 app mode:normal reg
mode:normal
```

-	-

-	-

20.2.3 show gvrp statistics

GVRP

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

interface-id	ID

show gvrp statistics GVRP

```
Ruijie# show gvrp statistics gigabitethernet 1/1
Interface      GigabitEthernet 3/1
RecValidGvrpPdu        0
RecInvalidGvrpPdu      0
RecJoinEmpty    0
RecJoinIn      0
RecEmpty       0
RecLeaveEmpty   0
RecLeaveIn     0
RecLeaveAll    0
SentGvrpPdu    0
SentJoinEmpty   0
SentJoinIn     0
SentEmpty      0
SentLeaveEmpty  0
```

```
SentLeaveIn    0
SentLeaveAll   0
JoinIndicated  0
LeaveIndicated  0
JoinPropagated  0
LeavePropagated  0
```

clear gvrp statistics	GVRP

-	-

20.2.4 show gvrp status

GVRP VLAN VLAN

show gvrp status

-	-

show gvrp status GVRP

```
Ruijie# show gvrp status
```

-	-

-	-

21 VACL

21.1

Vlan access map *map_name* *map_sn*
map map

1 vlan access map map *map_sn*
map map map *map_sn* *10*

2 *map_sn* vlan access map *map_name* *Map_name*
map

3 map_sn vlan access map map map
map map map

4 map 6553 map

21.1.1 action forward/drop/redirect

map actions vacl no map
actions forward

action forward

no action forward

map actions vacl no map
actions forward

action drop

no action drop

map actions vacl no map
actions forward

action redirect { GigabitEthernet | Aggregateport | FastEthernet } { port_id }

no action redirect {GigabitEthernet | Aggregateport | FastEthernet } {***port_id*** }

actions forward	
actions drop	
actions redirect	

map forward map

vacl

map ip acl map acl map 8 acl map acl map ace acl acl map ip acl (mac acl) ip acl (mac acl) ip acl (mac acl) ip acl (mac acl) map ip acl (mac acl) mac acl (ip acl) ip acl (mac acl) mac acl (ip acl)

map match

```
Ruijie(config)# vlan access-map dd
Ruijie(config-access-map)# match ip address 10 20 sp1 30 sp2
Ruijie(config-access-map)# exit
Ruijie(config)# vlan access-map dd 20
```

vlan access map

```
Ruijie(config)# vlan access-map ddd 20
Ruijie(config-access-map)#
```

-	-

-	-

21.1.4 vlan filter

map vlan map vlan no

vlan filter *map_name* vlan-list *vlan_id*

no vlan filter *map_name* vlan-list *vlan_id* Q Nð òG& ø•bb‘ a(Q ‰V& Yf C …– A•i. A˜YR„ Ž 5–Y!aU Nð

21.2

21.2.1 show vlan access map

map

show vlan access map

map

show vlan access map *map_name*

map_name	map

1 show vlan access map

```
Ruijie(config)# show vlan access-map
Vlan access-map aa  10
match mac address:   700, 710, m1, 720,
action: forward
Vlan access-map aa  20
match ip address:   10, match ip address:   10, match ip address:   10,
3/C22 82( )102( )96(10, )10drop[(mataa )1   matcaa  20
FE>6<34A71D7002D6>]TJ/TT0 1 Tf( )Tj/TT3 1 Tf-0.0013 Tc -21.054 -1.310.02 0 0 15803D4>6<03FE>5.72 59
matcaa  20
```

-	-

21.2.2 show vlan filter

map vlan

show vlan filter

-	-

Show vlan filter access-map *aa*

```
Ruijie(config)# show vlan filter
VLAN Map aa
Configured on VLANs: 1,  5,  6,
Ruijie(config)#
```

show vlan filter *access-map map_name*	map vlan
show vlan filter vlan *vlan_id*	vlan map

-	-

22 MSTP

22.1

22.1.1 bpdu src-mac-check

bpdu mac no bpdu mac

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

no bpdu src-mac-check

H.H.H	mac bpdu
no	bpdu

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

-	-

P"!iŽû •A • $3h"`1š4\@

interface-id	

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

show spanning-tree interface	STP

1 spanning-tree

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

2 BridgeForwardDelay

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

show spanning-tree	STP

< G!

BPDU filter enabled disabled

BPDU filter

spanning-tree bpdufilter [enabled | disabled]

enabled	BPDU filter
disabled	BPDU filter

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

show spanning-tree interface	STP

-	-

22.1.6 spanning-tree bpduguard

BPDU Guard enabled disabled

BPDU Guard

spanning-tree bpduguard [enabled | disabled]

enabled	BPDU Guard
disabled	BPDU Guard

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

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

show spanning-tree interface	STP

-	-

22.1.7 spanning-tree compatible enable

MSTI

spanning-tree guard loop

no spanning-tree guard loop

-	-

loop guard

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

-	-

-	-

22.1.9 spanning-tree guard none

guard no guard

spanning-tree guard none

no spanning-tree guard none

-	-

guard

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

-	-

-	-

22.1.10 spanning-tree guard root

root guard no root guard root guard

spanning-tree guard root

no spanning-tree guard root

-	-

root guard

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

-	-

-	-

22.1.11 spanning-tree link-type

“ ” no

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

no spanning-tree link-type

poinit-to-point	point-to-point.

shared	shared

point-to-point

shared.

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


-	-

22.1.13 spanning-tree max-hops

BPDU Max-hops Count BPDU
Region Instance no

spanning-tree max-hops *hop-count*

no spanning-tree max-hops

hop-count	BPDU 1 40

hop-count 20

Region Root Bridge BPDU Hot Count Root Bridge
Hop Count 1 0 BPDU
Hops 0 BPDU
max-hops Instance

MST Instance Max-hops 10

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

show spanning-tree mst

show spanning-tree	MSTP

-	-

22.1.14 spanning-tree mode

STP no

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

no spanning-tree mode

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

MSTP

.

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

show spanning-tree	

-	-

22.1.15 spanning-tree mst configure

MST MSTP Region no
name revision vlan map

spanning-tree mst configuration

no spanning-tree mst configuration

-	-

instance vlan Vlan Instance 0
nre

instance *instance-id* vlan *vlan-range* Vlan MST Instance
instance-id 0 64 vlan 1 4095 vlan-range vlan
VLAN ID VLAN ID ‘ ’ VLAN ID
instance 10 vlan 2,3,6-9 VLAN 2 3 6 7 8 9 Instance
10 VLAN Instance 0 VLAN Instance
no no instance *instance-id* [vlan *vlan-range*] (no
Instance 1 64)
S20 32 instance(instance-id 0 32)
S23 64M 64 instance
instance
name *name* MST 32 no name

revision *version* MST 0 65535 no revision

show MST region

MST VLAN 3, 5-10 MST Instance 1.

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

VLAN 3 Instance 1 MST

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

Instance 1

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

MST show

show spanning-tree mst	MST region
instance instance-id vlan vlan-range	Vlan MST Instance
name	MST
revision	MST
show	MST MST

-	-

22.1.16 spanning-tree mst cost

Instance no

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

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

instance-id	Instance 0 64
cost	1 200 000 000

Instance-ID 0

Interface

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

.

cost

Instance 3 400

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

show spanning-tree mst interface interface-id

show spanning-tree mst	MSTP
spanning-tree mst port-priority	
spanning-tree mst priority	instance

-	-

22.1.17 spanning-tree mst port-priority

Instance

Region no

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

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

Instance-id	Instance 0 64
priority	0 16 32 48 64 80 96 112 128 144 160 176 192 208 224 240 16 16

Instance-id 0

priority 128

.

Region

Instance 20 Gigabitethernet 1/1 10

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

show spanning-tree mst instance interface *interface-id*

show spanning-tree mst	MSTP
spanning-tree mst cost	
spanning-tree mst priority	Instance

-	-

22.1.18 spanning-tree mst priority

Instance no

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

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


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

show spanning-tree interface	STP

show spanning-tree interface	STP

-	-

22.1.23 spanning-tree portfast default

Portfast no Portfast

spanning-tree portfast default

no spanning-tree portfast default

-	-

Portfast

Ruijie(config)# spanning-tree reset

show spanning-tree	STP
show spanning-tree interface	STP

-	-

22.1.25 spanning-tree tc-guard

tc- guard no tc- guard tc-guard tc

spanning-tree tc-guard

no spanning-tree tc-guard

-	-

tc- guard

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

-	-

-	-

22.1.26 spanning-tree tc-protection

tc- protection no tc- protection

spanning-tree tc- protection

no spanning-tree tc- protection

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

-	-

22.2

22.2.1 show spanning-tree

show spanning-tree [summary | forward-time | hello-time | max-age | inconsistentports| tx-hold-count |

	-

STP

show spanning-tree interface *interface-id*

interface-id
bpdufilter
portfast
bpduguard
link-type

spanning-tree bpdufilter
spanning-tree portfast
spanning-tree bpduguard
spanning-tree link-type

-	-

MST Instance

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

dot1q-tunnel

switchport mode dot1q-tunnel

no switchport mode

no	dot1q-tunnel

dot1q-tunnel

dot1q-tunnel

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


show vlan

```
ruijie(config)#interface gigabitEthernet 0/1
ruijie(config-if)#switchport modg2swlink
ruijie(config)#end
```

show vlan	-

RGOS10.1

gvrp	gvrp
no	

gvrp stp

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

show l2protocol-tunnel {gvrp|stp }	-

RGOS10.3

-	-

23.1.7 l2protocol-tunnel ***proto-type*** enable

l2protocol-tunnel { stp|gvrp } enable

no l2protocol-tunnel { stp|gvrp } enable

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

show l2protocol-tunnel { gvrp|stp	

-	-

23.2

23.2.1 show dot1q-tunnel

dot1q-tunnel

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

intf-id	

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

-	-

RGOS10.3

-	-

23.2.2 show frame-tag tpid

tpid

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

intf-id	

tpid

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

-	-

RGOS10.1

-	-

23.2.3 show interface dot1q-tunnel

dot1q-tunnel

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

intf-id	

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

-	-

RGOS10.3

-	-

23.2.4 show l2protocol-tunnel

show l2protocol-tunnel {gvrp|stp }

gvrp	gvrp
stp	stp

```
ruijie# show l2protocol-tunnel stp
Destination mac      : 01d0f8000005
L2protocol-tunnel : Stp Enable
ruijie# show l2protocol-tunnel gvrp
Destination mac      : 01d0f8000006
L2protocol-tunnel : gvrp Disable
```

-	-

RGOS10.3

-	-

24 RLDP

24.1

24.1.1 rldp detect-interval

RLDP

rldp detect-interval *interval*

no rldp detect-interval

interval	2-15

3

stp × stp

5s :

```
Ruijie(config)# rldp detect-interval 5
```


stp

no rldp detect-max

num	, 2-10

2

5

```
Ruijie(config)# rldp detect-max 5
```

rldp detect-interval	

-	-

24.1.3 rldp enable

RLDP

rldp enable

no rldp enable

rldp port	RLDP

-	-

24.1.4 rldp port

rldp

rldp port { unidirection-detect | bidir ection-detect | loop-detect } {warning | shutdown-svi | shutdown-port | block }

no rldp port { unidirection-detect | bidir ection-detect | loop-detect }

unidirection-detect	
bidirection-detect	
loop-detect	
warning	
shutdown-svi	shutdown svi
shutdown-port	shutdown
block	

RLDP RLDP

-	-

24.1.5 rldp reset

rldp shutdown disable rldp

rldp reset

-	-

Ruijie# rldp reset

rldp enable	Rldp

-	-

24.2

24.2.1 show rldp

rldp

show rldp [interface *interface-id*]

Interface-id	

EXEC

-	-

-	-

24.2.2 debug rldp

rldp no

debug rldp [packet | event | error]

undebug rldp [packet | event | error]

packet	rldp
event	

25 IP

25.1

25.1.1 ip address

IP no IP

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

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

ip-address	32 IP 8
network-mask	32 “1” “0” 8
secondary	IP

IP IP IP

IP

IP IP IP IP

IP

32 IP

“ 1 ” IP “ 0 ”

IP A “ 255.0.0.0 ”

RGOS

IP

IP 10.10.10.1 255.255.255.0

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

-	- ûqÖ@$ Dp CBÅÄVÁp ƒ$ñ‡'µ°ï´z4]X

10.4(2	10.4(2)

25.2.3 arp gratuitous-send interval

arp no

arp gratuitous-send interval *seconds*

no arp gratuitous-send

seconds	ARP <1-3600>

ARP

ѣ ARP Ѧ

seconds	<1-3600>,ARP 1 —— 3600 1

ARP 1

25.2.7 arp trusted aging

ARP no

arp trusted aging

no arp trusted aging

-	-

1000 ARP

ARP ip proxy-arp no

ARP

ip proxy-arp

no ip proxy-arp

-	-

10.2(3) (10.2(3)) ARP

ARP

ARP IP MAC

ARP ARP IP IP

IP ARP

MAC MAC ARP

FastEthernet 0/1 ARP

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

-	-

-	-

25.2.11 service trustedarp

ARP service trustedarp no ARP

service trustedarp

no service trustedarp

-	-

ARP

ARP ARP GSN
GSN

service trustedarp

```
config
service trustedarp
```

-	-

-	-

25.3

25.3.1 ip broadcast-addresss

ip broadcast-addresss no

ip broadcast-addreess 25-22 25-22 (dre)-10(

ip broadcast-addresss *ip-address*

-	-

25.4 IP

25.4.1 clear arp-cache

ARP ARP clear arp-cache

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

trusted	ARP
vrf *vrf_name*	VRF ARP
ip	IP IP ARP trusted ARP ARP
mask	mask ARP IP ; trusted ARP ARP
interface *interface-name*	ARP

ARP

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

1 ARP

```
clear arp-cache
```

2 ARP 1.1.1.1

```
clear arp-cache 1.1.1.1
```

3 SVI1 ARP

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

-	-

25.4.2 clear ip route

IP IP clear ip route

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

*	
network	
netmask	

192.168.12.0

```
clear ip route 192.168.12.0
```

show ip route	IP

-	-

25.4.3 show arp

ARP

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

2 show arp 192.168.195.68

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

3 show arp 192.168.195.0 255.255.255.0

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

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

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

-	-

-	-

25.4.4 show arp counter

ARP arp

show arp counter

-	-

-	-

-	-

25.4.5 show arp detail

ARP

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

interface-type interface-number	ARP
ip	ip ip ARP
ip mask	ip mask ARP
mac-address	mac ARP
static	arp
complete	arp
incomplete	arp

ARP ARP

show arp detail

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

Hardware	IP
Type	ARPA
Interface	IP

```
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	

-	-

-	-

25.4.9 show ip redirects

show ip redirects

-	-

show ip redirects

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

ip default-gateway	

-	-

25.5 IP

25.5.1 ip mask-reply

RGOS ICMP ICMP ip mask-reply no ICMP

ip mask-reply

no ip mask-reply

-	-

ICMP

ICMP ICMP

FastEthernet 0/1 ICMP

```
interface fastEthernet 0/1
ip mask-reply
```

-	-

-	-

25.5.2 ip mtu

IP n9 η

bytes	IP

mtu ź ¾ Ä Ń D лъ

C IP IP MTU IP MTU C C ź mtu
MTU Ů IP MTU MTU

mtu

-	-

25.5.3 ip redirects

RGOS ICMP ip redirects no ICMP

ip redirects

no ip redirects

-	-

ICMP

RGOS ICMP

FastEthernet 0/1 ICMP

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

-	-

-	-

25.5.4 ip source-route

RGOS IP ip source-route no

ip source-route

no ip source-route

-	-

RGOS IP IP IP
RFC 791

ICMP
RGOS IP

IP
no ip source-route

-	-

-	-

25.5.5 ip unreachables

RGOS ICMP ip unreachables
no ICMP

ip unreachables

no ip unreachables

-	-

RGOS
ICMP
RGOS ICMP

ICMP

FastEthernet 0/1 ICMP

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

-	-

-	-

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	[0,64] [128,128] IPv6 [0,64] [128,128]

1 IPv6

```
Ruijie(config-if)# ipv6 address 2001:1::1/64
Ruijie(config-if)# no ipv6 address 2001:1::1/64
Ruijie(config-if)# ipv6 address 2002:1::/64 eui-64
Ruijie(config-if)# no ipv6 address 2002:1::/64 eui-64
```

2

```
Ruijie(config-if)# ipv6 address my-prefix 0:0:0:7272::72/64
```

my-prefix 2001:1111:2222::/48 IPv6 2001:1111:2222:7272::72/64

Ipv6 address autoconfig	
ipv6 general-prefix	
show ipv6 general-prefix	

RGOS10.4	IPv6 RGOS10.4

26.1.3 ipv6 address autoconfig

IPv6 ipv6 address autoconfig no

ipv6 address autoconfig [default]

no ipv6 address autoconfig

default	default

RA RA

EUI-64

RA “ ” DHCPv6

“ ” “ ” DNS IPv6 NTP IPv6

no ipv6 address autoconfig IPv6

```
Ruijie(config-if)# ipv6 address autoconfig default
Ruijie(config-if)# no ipv6 address autoconfig
```

ipv6 address *ipv6-prefix/prefix-length* [eui-64]	IPv6

RGOS10.4	RGOS10.4

26.1.4 ipv6 enable

IPv6 no IPv6

ipv6 enable

no ipv6 enable

26.1.5 ipv6 general-prefix

IPv6 ipv6 general-prefix

ipv6 general-prefix *prefix-name ipv6-prefix/prefix-length*

no ipv6 general-prefix *prefix-name ipv6-prefix/prefix-length*

prefix-name	
ipv6-prefix	RFC4291
prefix-length	

IPv6

my-prefix

```
Ruijie(config)# ipv6 general-prefix my-prefix 2001:1111:2222::/48
```

ipv6 address prefix-name sub-bits/prefix-length	
show ipv6 general-prefix	

RGOS10.4	RGOS10.4

26.1.6 ipv6 hop-limit

ipv6 hop-limit value

no ipv6 hop-limit

(NS) no

ipv6 nd ns-interval *milliseconds*

no ipv6 nd ns-interval

milliseconds	1000-4294967295

(RA) 0( )
1000ms(1)

(RA)

```
Ruijie(conifg-if)# ipv6 nd ns-interval 2000
```

show ipv6 interface	

-	-

26.1.10 ipv6 nd prefix

(RA) no

ipv6 nd prefix *ipv6-prefix*/*prefix-length* | default [[*valid-lifetime preferred-lifetime*] | [at *valid-date preferred-date*] | infinite | no-advertise]] [off-link] [no-autoconfig]

no ipv6 nd prefix *ipv6-prefix/prefix-length* | default { [off-link] [no-autoconfig] | [no-advertise] }

ipv6-prefix	IPV6 RFC4291
prefix-length	IPV6 '/'
valid-lifetime	
preferred-lifetime	
at *valid-date preferred-date*	

infinite	
default	
no-advertise	

IPV6

off-link

-	-

26.1.11 ipv6 nd ra-lifetime

(RA) “ ” no

ipv6 nd ra-lifetime *seconds*

no ipv6 nd ra-lifetime

seconds	

1800

“ ” (RA)
0
0 (RA)
(ra-interval)

```
Ruijie(conifgf)# interface vlan 1
Ruijie(conifg-if)# ipv6 nd ra-lifetime 2000
```

show ipv6 interface	ra-info
ipv6 nd ra-interval	
ipv6 nd ra-hoplimit	
ipv6 nd ra-mtu	MTU

-	-

26.1.12 ipv6 nd ra-interval

(RA) no

ipv6 nd ra-interval {*seconds* | *min-max min_value max_value*}

no ipv6 nd ra-interval

seconds	(RA)
min-max	
min_value	
max_value	

200 200 20

min-max

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 nd ra-interval 110
Ruijie(config-if)# ipv6 nd ra-interval min-max 110 120
```

K)• Ä

show ipv6 interface	ra-info
ipv6 nd ra-lifetime	
ipv6 nd ra-interval	
ipv6 nd ra-hoplimit	

-	-

26.1.15 ipv6 nd reachable-time

NDP

no

ipv6 nd reachable-time *milliseconds*

no ipv6 nd reachable-time

milliseconds	0-3600000

(RA) 0( )
30000ms(30)

(RA)

0

```
Ruijie(conifg-if)# ipv6 nd reachable-time 1000000
```

show ipv6 interface	

-	-

26.1.16 ipv6 nd suppress-ra

(RA) no

(RA)

ipv6 nd suppress-ra

no ipv6 nd suppress-ra

-	-

IPv6

ipv6 suppress-ra

```
Ruijie(conifgf)# interface vlan 1
Ruijie(config-if)# ipv6 suppress-ra
```

show ipv6 interface	ra-info

ă ṡ T گ

```
Ruijie(config)# no ipv6 ns-linklocal-src
```


IPV6 no

ipv6 route *ipv6-prefix*/*prefix-length* {*ipv6-address* | *interface-id* [*ipv6-address*]}

no ipv6 route *ipv6-prefix*/*prefix-length* {*ipv6-address* | *interface-id* [*ipv6-address*]}

IPv6

tunnel destination	
tunnel ttl	TTL

GRE , no IPv6

tunnel mode gre [ip | ipv6]

no tunnel mode

ip	IPv4
ipv6	IPv6

IPv6

tunnel mode gre ip
ipv6 gre tunnel source, tunnel destination,
destination gre UP

gre

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode gre  ip
Ruijie(config-if)# tunnel source vlan 1
Ruijie(config-if)# tunnel destination 1.1.1.1
```

tunnel source	
tunnel destination	
tunnel ttl	TTL

-	-

26.1.26 tunnel source

, no

tunnel source {*ipv4-address* | *ipv6-address* | *interface-type interface-number*}

no tunnel source

ipv4-address	IPv4 IPv4

IPv6

value	TTL

255

IPv6 over IPv4 IPv4 TTL IPv4 over IPv6 IPv6 over IPv6 IPv6

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel ttl 64
```

tunnel mode	
tunnel source	
tunnel destination	

ipv6 neighbor	
show ipv6 neighbors	

-	-

26.2.2 show ipv6 general-prefix

show ipv6 general-prefix

show ipv6 general-prefix

-	-

show ipv6 general-prefix
DHCPv6

```
Ruijie# show ipv6 general-prefix
There is 1 general prefix.
IPv6 general prefix my-prefix, acquired via Manual configuration
       2001:1111:2222::/48
       2001:1111:3333::/48
```

ipv6 general-prefix	

RGOS10.4	RGOS10.4

26.2.3 show ipv6 interface

IPV6

show ipv6 interface [*interface-id*] [ra-info]

interface-id	aggregateport SVI
ra-info	RA

IPV6 ND

```
Ruijie# show ipv6 interface vlan 1
Interface vlan 1 is Up, ifindex: 2001
address(es):
Mac Address: 00:00:00:00:00:01
INET6: fe80::200:ff:fe00:1 , subnet is fe80::/64
INET6: 2001::1 , subnet is 2001::/64 [TENTATIVE]
Joined group address(es):
ff01:1::1
ff02:1::1
ff02:1::2
ff02:1::1:ff00:1
MTU is 1500 bytes
ICMP error messages limited to one every 10 milliseconds
ICMP redirects are enabled
ND DAD is enabled, number of DAD attempts: 1
ND reachable time is 30000 milliseconds
ND advertised reachable time is 0 milliseconds
ND retransmit interval is 1000 milliseconds
ND advertised retransmit interval is 0 milliseconds
ND router advertisements are sent every 200 seconds<240--160>
ND router advertisements live for 1800 seconds
```

INET6: 2001::1 , subnet is 2001::/64

[TENTATIVE] INET6 [ ]

ANYCAST	
TENTATIVE	(DAD)
DUPLICATED	
DEPRECATED	

AUTOIFID	EUI-64
PRE	
GEN	

```
Ruijie# show ipv6 interface vlan 1 ra-info
vlan 1: DOWN
RA timer is stopped
waits: 0, init/962t: 3Rstatistic: 0RA(out/in/inconsistent): 4/0/, iRS(input)
RLink-layr iaddres: 0,0:,0:,0:,0:,0:,1
wPhysical MTU:150.0
wND routr iadvertisements live for 8030 seconds
wND routr iadvertisements are sent every20.0 seconds<240--160>
wFlag: 0!M!O, Adv MTU:150.0
wND advertisedreachabletimeris s0 milliseconds
wND advertisedretransmittimeris s0 millisecondsRND advertisedrCurHopLimitts
RPrefixe: 0(total:15)
```

Def	
Auto | CFG	Auto IPV6 , CFG

!Adv

)j /C2_0 1 Tf 0 1.329 Td [<F 147. /C20 1 Tf -0

```
fe80::200:ff:fe00:2  00d0.0000.0002  vlan 1
  2
Ruijie# show ipv6 neighbors verbose
IPv6 Address  Linklayer Addr Interface
2001::1      00d0.f800.0001 vlan 1
       State: Reach/H Age: - asked: 0
fe80::200:ff:fe00:1    00d0.f800.0001 vlan 1
       State: Reach/H Age: - asked: 0
```

IPv6 Address	IPV6
Linklayer Addr	Mac incomplete
Interface	
State	state/H(R) STATE INCMP(Incomplete)— (NS) (NA) REACH(Reachable) — STALE — NUD (Neighbor Unreachability Detection) DELAY— STALE STALE DELAY DELAY_FIRST_PROBE_TIME seconds(5) DELAY PROBE (NS) NUD PROBE— NUD RetransTimer milliseconds (NS) MAX_UNICAST_SOLICIT(3) ?— /R— /H—
Age	’-‘ ’expired’ NUD
Asked	(NS)

```
  3
Ruijie# show ipv6 neighbors static
IPv6 Address    Linklayer Addr  Interface              State
2001:1::1       00d0.f822.33ab   GigabitEthernet 0/14   ACTIVE
```

```
2001:2::2        00d0.f822.33ac   VLAN 1                    INACTIVE
```

IPv6 Address	IPV6
Linklayer Addr	Mac
Interface	
State	STATE ACTIVE— INACTIVE— IPV6 mac

ipv6 neighbor	

-	-

26.2.5 show ipv6 route

IPV6

show ipv6 route [static] [local] [connected]

static	
local	
connected	

```
Ruijie# show ipv6 route
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
       I1 - ISIS L1, I2 - ISIS L2, IA - IIS interarea
L    ::1/128
```

```
      via ::1, loopback 0
C     fa::/64
      via ::, vlan 1
L     fa::1/128
      via ::, loopback 0
C     2001::/64
      via ::, vlan 2
L     2001::1/128
      via ::, loopback 0
L     fe80::/10
      via ::1, Null0
C     fe80::/64
      via ::, vlan 1
L     fe80::200:ff:fe00:1/128
      via ::, loopback 0
C     fe80::/64
      via ::, vlan 2
```

ipv6 route	

-	-

26.2.6 show ipv6 router

IPv6

show ipv6 router

show ipv6 router *[interface-type interface-number]*

interface-type interface-number	

show ipv6 router #

```
Preference=MEDIUM
Reachable time 0 msec, Retransmit time 0 msec
Prefix 6001:3::/64 onlink autoconfig
  Valid lifetime 2592000 sec, preferred lifetime 604800 sec
Prefix 6001:2::/64 onlink autoconfig
  Valid lifetime 2592000 sec, preferred lifetime 604800 sec
```


DHCP DHCP
client-identifier no

client-identifier *unique-identifier*

no client-identifier

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

DHCP

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

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

MAC 00d0.f822.33b4 DHCP

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

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

-	-

27.1.3 client-name

DHCP DHCP client-name no
DHCP

client-name *client-name*

no client-name

client-name	DHCP ASCII river DHCP river.i-net.com.cn

DHCP

DHCP DHCP

river

```
client-name river
```

host	IP DHCP
ip dhcp pool	DHCP DHCP

-	-

27.1.4 default-router

DHCP DHCP default-router no

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

no default-router

DHCP DHCP DHCP
IP

192.168.12.1
```
default-router 192.168.12.1
```

ip dhcp pool	DHCP DHCP

-	-

27.1.5 dns-server

DHCP DNS DHCP dns-server

domain-name	DHCP
ip address dhcp	DHCP IP
ip dhcp pool	DHCP DHCP

-	-

27.1.6 domain-name

DHCP DHCP domain-name no

domain-name *domain-name*

no domain-name

domain-name	DHCP

DHCP

DHCP

DHCP i-net.com.cn

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

dns-server	DHCP DNS
ip dhcp pool	DHCP DHCP

-	-

27.1.7 hardware-address

DHCP DHCP hardware-address no

hardware-address *hardware-address type*

no hardware-address

hardware-address	DHCP MAC
type	DHCP ethernet ieee802 1 10M ethernet 6 IEEE 802

ethernet

DHCP

DHCP

ethernet MAC 00d0.f838.bf3d

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

client-identifier	DHCP
host	IP DHCP
ip dhcp pool	DHCP DHCP

-	-

27.1.8 host

DHCP IP DHCP host no
DHCP IP

host *ip-address* [*netmask*]

no host

ip-address	DHCP IP
netmask	DHCP

IP

DHCP

DHCP IP A
255.0.0.0 B 255.255.0 C
255.255.255.0
DHCP

IP 192.168.12.91 255.255.255.240
`host 192.168.12.91 255.255.255.240`

client-identifier	DHCP
hardware-address	DHCP
ip dhcp pool	DHCP DHCP

-	-

27.1.9 ip address dhcp

PPP HDLC FR DHCP IP
ip address dhcp no

ip address dhcp

no ip address dhcp

-	-

DHCP IP

RGOS DHCP IP DHCP
1 DHCP 1 2 DHCP 3
3 DHCP 6 DNS 4 DHCP 15 DHCP
44 WINS

ip dhcp pool	DHCP DHCP
network DHCP	DHCP

-	-

27.1.11 ip dhcp ping packet

DHCP ping ip dhcp ping packet no

ip dhcp ping packet [*number*]

no ip dhcp ping packet

number	0 10 0 ping

-	-

27.1.12 ip dhcp ping timeout

DHCP ping ip dhcp ping timeout no

ip dhcp ping timeout *milli-seconds*

no ip dhcp ping timeout

no ip dhcp pool *pool-name*

pool-name	mypool 1

DHCP

DHCP
Ruijie(dhcp-config)#
IP DNS

mypool0 DHCP
ip dhcp pool mypool0

host	IP DHCP
ip dhcp excluded-address	DHCP IP
network DHCP	DHCP

-	-

27.1.14 lease

DHCP DHCP lease
no

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

no lease

days	
hours	
minutes	
infinite	

DHCP

DHCP DHCP

DHCP 1
lease 0 1
DHCP 1
lease 0 0 1

ip dhcp pool	DHCP DHCP

-	-

27.1.15 netbios-name-server

DHCP NETBIOS WINS DHCP
netbios-name-server no WINS

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

no netbios-name-server

ip-address	WINS

ip address dhcp	DHCP IP
ip dhcp pool	DHCP DHCP

-	-

27.1.16 netbios-node-type

DHCP NetBIOS DHCP
netbios-node-type no NetBIOS

netbios-node-type *type*

no netbios-node-type

type	NetBIOS 0~FF b-node p-node m-node 8 h-node b-node p-node m-node h-node

NetBIOS

DHCP

DHCP NetBIOS 1 Broadcast
NetBIOS 2 Peer-to-peer WINS
NetBIOS 3 Mixed
WINS 4 Hybrid WINS
NetBIOS NetBIOS

WINS
WINS NetBIOS

Hybrid

DHCP NetBIOS

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

ip dhcp pool	DHCP DHCP
netbios-name-server	DHCP NETBIOS WINS

-	-

27.1.17 network DHCP

DHCP DHCP network no

network *net-number net-mask*

no network

net-number	DHCP IP
net-mask	DHCP IP

ip dhcp excluded-address	DHCP IP
ip dhcp pool	DHCP DHCP

-	-

27.1.18 next-server

DHCP DHCP

next-server no

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

no next-server

ip-address	IP TFTP

-	-

P

27.1.19 option

DHCP DHCP option no option

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

no option

code	DHCP ʎ ɾ Æ ʀ ă -

no debug ip dhcp client

-	-

dhcp client

dhcp

```
debug ip dhcp client
```

-	-

-	-

27.2.5 debug ip dhcp server

DHCP Server debug ip dhcp server

debug ip dhcp server

no debug ip dhcp server

-	-

dhcp server

dhcp

```
debug ip dhcp server
```

-	-

-	-

27.2.6 show dhcp lease

DHCP EXEC show dhcp lease

show dhcp lease

-	-

IP IP IP

show dhcp lease

```
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
DHCP Lease server: 192.168.5.70, state: 3 Bound
DHCP transaction id: 168F
Lease: 600 secs,  Renewal: 300 secs,  Rebind: 525 secs
Temp default-gateway addr: 192.168.5.1
Next timer fires after: 00:04:29
Retry count: 0   Client-ID: redgaint-00d0.f8fb.5740-Fa0/0
```

-	-

-	-

27.2.7 show ip dhcp binding

DHCP EXEC show ip dhcp binding

show ip dhcp binding [*ip-address*]

ip-address	IP

IP IP IP

show ip dhcp binding

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

IP address	DHCP IP
Client-Id/Hardware address	DHCP client identifier
Lease expiration	Infinite IDLE DHCP
Type	Automatic Manual

DHCP

show ip dhcp conflict

```
Ruijie# show ip dhcp conflict
IP address    Detection Method
192.168.12.1    Ping
dhcpd excluded ipaddress
192.168.12.100
```

IP address	DHCP IP
Detection Method	
dhcpd excluded ipaddress	

clear ip dhcp confict	DHCP

-	-

27.2.9 show ip dhcp server statistics

DHCP EXEC show ip dhcp server statistics

show ip dhcp server statistics

-	-

DHCP

show ip dhcp server statistics

```
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
```

Address pools	
Automatic bindings	
Manual bindings	
Expired bindings	
Malformed messages	DHCP
Message Received or Sent	DHCP

clear ip dhcp server statistics	DHCP

-	-

28 DHCP Relay

28.1

28.1.1 ip dhcp relay check server-id

DHCP Relay check server-id no
DHCP Relay check server-id

[no] ip dhcp relay check server-id

-	-

DHCP Relay DHCP option server-id
DHCP DHCP DHCP

DHCP relay check server-id

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

Service dhcp	DHCP

-	-

28.1.2 ip dhcp relay information option dot1x

DHCP Relay option dot1x no

[no] ip dhcp relay information option dot1x

-	-

DHCP

```
DenyAccessEachOtherOfUnauthrize
Ruijie(config-ext-nacl)# permit ip any host 192.168.3.1
//
Ruijie(config-ext-nacl)# permit ip any host 192.168.4.1
Ruijie(config-ext-nacl)# permit ip any host 192.168.5.1
Ruijie(config-ext-nacl)# permit ip host 192.168.3.1 any
//      IP
Ruijie(config-ext-nacl)# permit ip host 192.168.4.1 any
Ruijie(config-ext-nacl)# permit ip host 192.168.5.1 any
Ruijie(config-ext-nacl)# deny ip 192.168.3.0 0.0.0.255 192.168.3.0
0.0.0.255
//
Ruijie(config-ext-nacl)# deny ip 192.168.3.0  0.0.0.255
192.168.4.0  0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.3.0  0.0.0.255
192.168.5.0  0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.4.0  0.0.0.255
192.168.4.0  0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.4.0  0.0.0.255
192.168.5.0  0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.5.0  0.0.0.255
192.168.5.0  0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.5.0  0.0.0.255
192.168.3.0  0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.5.0  0.0.0.255
192.168.4.0  0.0.0.255
Ruijie(config-ext-nacl)# exit
Ruijie(config)# ip dhcp relay information option dot1x ac
```

cess-group *DenyAccessEachOtherOfUnauthrize*

[redacted] 10.5 136.68 3812.903.2.012 0. /T(0 1 Tf -0.002

option dot1x

DHCP opion82

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

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

-	-

28.1.5 ip dhcp relay information option vpn

DHCP Relay DHCP Relay Aware VRF
no

-	-

option82 option dot1x

DHCP DHCP Relay Aware VRF

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

ip dhcp relay information option82	DHCP option82
ip dhcp relay information option dot1x	DHCP option dot1x

-	-

28.1.6 ip dhcp relay suppression

DHCP Relay no DHCP relay

[no] ip dhcp relay suppression

-	-

DHCP

1 DHCP relay

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


servi8£EÄ

	-	-
	/	

20 DHCP

DHCP DHCP Relay DHCP

DHCP

DHCP

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

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

-	-

29 DHCPv6 client

29.1

29.1.1 ipv6 dhcp client pd

DHCPv6 client ipv6 dhcp client pd
no

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

no ipv6 dhcp client pd

prefix-name	IPv6
rapid-commit	

DHCPv6 DHCPv6
ipv6 DHCPv6 Server
client IPv6

rapid-commit two-message
solicit rapid-commit

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

clear ipv6cp client	DHCPv6
show ipv6hcp interface	DHCPv6 ü y · ÞG¡

	-	-

29.2

29.2.1 clear ipv6 dhcp client

DHCPv6 clear ipv6 dhcp client

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

	interface-type interface-number	

Q ¸ Ä

30 DHCPv6 Relay Agent

30.1

30.1.1 ipv6 dhcp relay destination

DHCPv6 Relay Agent

no Relay Agent

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

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

ipv6-address	Relay Agent
interface-type	
interface-number	

Dhcpv6 Relay DHCPv6

DHCPv6 Relay Destination

Relay Agent Destination 20 Destination

Interface VLAN 1 DHCPv6 Relay 3001::2

```
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface vlan 1
Ruijie(config-if)#ipv6 dhcp relay destination 3001::2
Ruijie(config-if)#end
```

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

10.4	

30.2

30.2.1 show ipv6 dhcp relay destination

DHCPv6 Relay Agent

show ipv6 dhcp relay destination

all	
interface *interface-type interface-number*	

Relay Agent Relay DHCPv6

1 Relay

```
Ruijie# show ipv6 dhcp relay destination all
Interface: Vlan1   //     Relay
Destination address(es)                    Output Interface
3001::2
FF02::1:2                                Vlan2
//          ɐ          ǘ     ť                    …          ʌ     -          -Œ
```

DHCPv6 Relay

show ipv6 dhcp relay statistics

-	-

DHCPv6 Relay

DHCPv6 Relay Agent

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

DHCPv6 Relay

clear ipv6 dhcp relay statistics

-	-

DHCPv6 Relay

DHCPv6 Relay Agent

0

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

show ipv6 dhcp relay statistics	

10.4	

31 DNS

31.1

31.1.1 ip domain-lookup

DNS no DNS

ip domain-lookup

no ip domain-lookup

-	-

DNS

DNS DNS

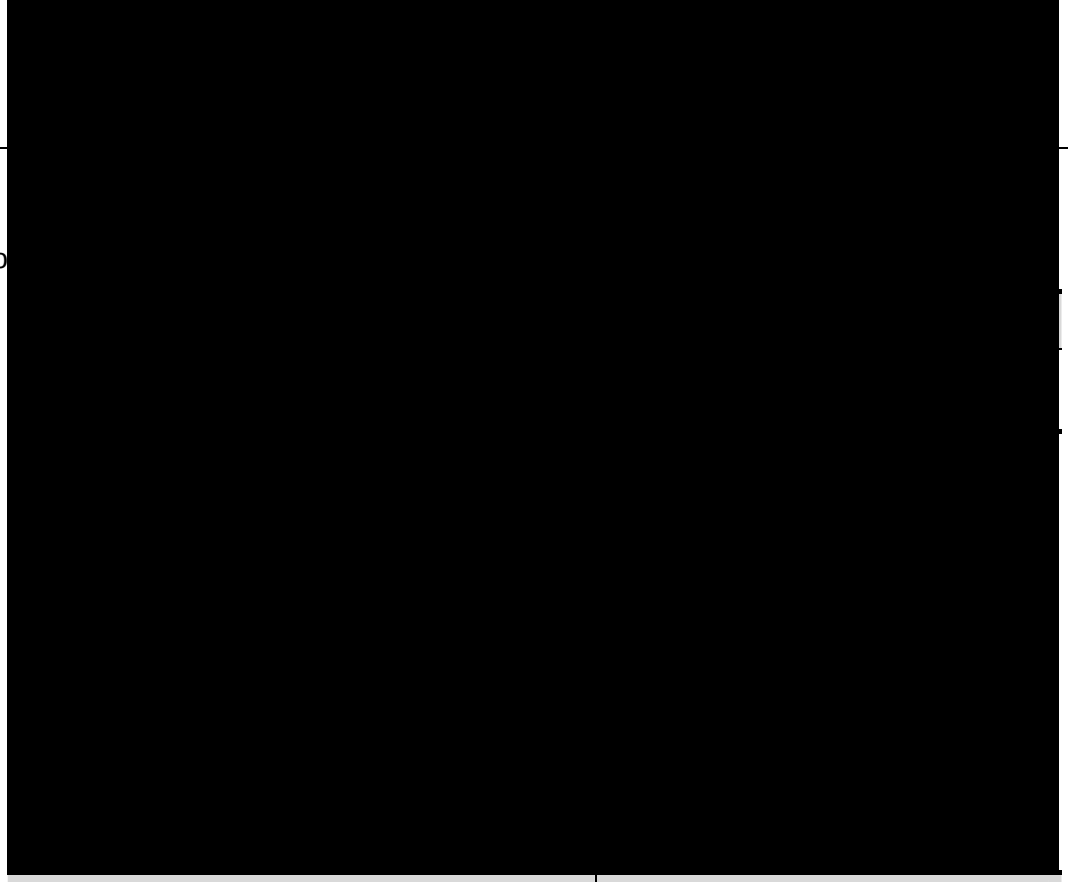
DNS

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

show hosts	DNS

-	-

clear ho



show hosts	

```
switch          static      192.168.5.243
www.ruijie.com   dynamic      192.168.5.123
```

ip host	IP
Ipv6 host	IPV6

32 VRRP

32.1

32.1.1 vrrp authentication

VRRP no

vrrp group authentication *string*

no vrrp *group* authentication

group	VRRP
string	VRRP (8)

VRRP VRRP

VRRP

/ VRRP

IPv6 VRRP IPv6

VRRP 1

```
vrrp 1 authentication x30dn78k
```

Ruijie(config-if)# vrrp *group ip ipaddress* [secondary]	VRRP IP

M €

VRRP no

vrrp *group* description *text*

no vrrp group description

group	VRRP
text	VRRP

VRRP

secondary IP IP
VRRP IP no VRRP IP
IP

0 VRRP VRRP 1
IP 10.0.1.20 IP 10.0.2.20

```
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
```

Ruijie# show vrrp [brief | group]	VRRP

-	-

32.1.4 vrrp ipv6

IPv6 VRRP IPv6 no
VRRP IPv6

vrrp *group* ipv6 *ipv6-address*

no vrrp *group* ipv6 *ipv6-address*

group	VRRP
ipv6-address	IPv6

FastEthernet 0/0 IPv6 VRRP
VRRP 1 IPv6 FE80::1 2001::1

```
interface FastEthernet 0/0
no switchport
ipv6 enable
ip6 address 2001::2/64
vrrp 1 ipv6 FE80::1
vrrp 1 ipv6 2001::1
```

Ruijie# show vrrp [brief | group]	VRRP

RGOS10.4	RGOS10.4

32.1.5 vrrp preempt

VRRP no VRRP

vrrp *group* preempt [delay *seconds*]

no vrrp *group* preempt [delay]

group	VRRP
delay *seconds*	Master 0

VRRP VRRP VRRP

VRRP Master
VRRP VRRP
Master VRRP VRRP
IP VRRP
VRRP

VRRP (200)
15

```
vrrp 1 preempt delay 15
vrrp 1 priority 200
```

32.1.7 vrrp timers advertise

VRRP no

VRRP

VRRP VRRP Master

VRRP

Master VRRP

ipv6-linklocal-addree	IPv6
interval-value	3
timeout-value	1
priority	VRRP 10

VRRP VRRP
IPv4 IPv6

(Routed Port SVI Loopback Tunnel)
IPv4 IPv4 IPv6
IPv6

1 VRRP 1 Routed Port Fa1/1 Fa1/1
VRRP 30 Fa1/1 VRRP 1

```
vrrp 1 track FastEthernet 1/1 30
```

2 1000::1

```
vrrp 1 track 1000::1
```

3 VLAN 1 FE80::1

```
vrrp 1 track FE80::1 vlan 1
```

```
#       VRRP      BFD             192.168.1.3
Ruijie#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)#interface FastEthernet 0/1
Ruijie(config-if)#no switchport
Ruijie(config-if)#ip address 192.168.1.1 255.255.255.0
Ruijie(config-if)#bfd interval 50 min_rx 50 multiplier 3
Ruijie(config)#interface FastEthernet 0/2
Ruijie(config-if)#no switchport
Ruijie(config-if)#ip address 192.168.201.17 255.255.255.0
Ruijie(config-if)#vrrp 1 priority 120
Ruijie(config-if)#vrrp 1 ip 192.168.201.1
Ruijie(config-if)#vrrp 1 track bfd FastEthernet 0/1 192.168.1.3 30
Ruijie(config-if)#end
```

Ruijie(config-if)# vrrp *group* ip *ipaddress* [secondary]	VRRP IP
Ruijie(config-if)# vrrp *group* priority level	VRRP

	AÈ â

-	-

32.2.2 debug vrrp errors

VRRP no

debug vrrp errors

no debug vrrp errors

-	-

VRRP

VRRP

```
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
```

-	-

-	-

32.2.3 debug vrrp events

-	-

VRRP

VRRP

```
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
```

```
Ruijie#
VRRP: Grp 2 sending Advertisement checksum DD4D
VRRP: Grp 2 sending Advertisement checksum DD4D
VRRP: Grp 2 sending Advertisement checksum DD4D
```

2 , VRRP VRRP 1
IP VRRP 1

```
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
```

```
Ruijie#
%VRRP-6-STATECHANGE: FastEthernet 0/0 Grp 2 state Master -> Init
Ruijie#
```

```
FastEthernet 0/0 - Group 1
State is Backup
Virtual IP address is 192.168.201.1 configured
Virtual MAC address is 0000.5e00.0101
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 100
Master Router is 192.168.201.213 , pritority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
FastEthernet 0/0 - Group 2
State is Master
Virtual IP address is 192.168.201.2 configured
Virtual MAC address is 0000.5e00.0102
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 120
Master Router is 192.168.201.217 (local), priority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
```

Ruijie(config-if)# vrrp *group* ip *ip address* [secondary]	VRRP IP

-	-

33 UDP-Helper

33.1

33.1.1 ip forward-protocol

UDP no UDP

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

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

UDP

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

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


udp-helper enable	UDP
ip forward-protocol	UDP

-	-

33.1.2 ip helper-address

UDP no UDP

ip helper-address *address*

no ip helper-address *address*

address	UDP 20

UDP

20
, UDP-Helper UDP

no ip helper-address

UDP :

udp-helper enable UDP no udp-helper enable
UDP

UDP

udp-helper enable

no udp-helper enable

-	-

UDP

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

UDP

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

ip forward-protocol	UDP

-	-

34

34.1

34.1.1 distribute-list in

distribute-list in

no

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*]

access-list-number	1-99 1300-1999 100-199 2000-2699
access-list-name	
prefix *prefix-list-name*	
gateway *prefix-list-name*	
i*nterface-type interface-number*	( )

OSPF OSPF

RIP Fastethernet 0/0
172.16

```
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
```

access-list	
prefix-list	

-	-

34.1.2 distribute-list out

distribute-list out

no

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

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

access-list-number	1-99 1300-1999 100-199 2000-2699
access-list-name	
prefix *prefix-list-name*	
Interface	( )
protocol	( )

OSPF OSPF

RIP 192.168.12.0/24

```
Ruijie(config)# router rip
Ruijie(config-router)# network 200.4.4.0
```

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

access-list	
prefix-list	
redistribute	

-	-

34.1.3 initialization route pbr

initialization route pbr *max_num*

no initialization route pbr

max_num	

64

100

```
Ruijie(config)# initialization route pbr ?
  <1-256>  Max number of policy-based route entry
Ruijie(config)# initialization route pbr 100
```

-	-

-	-

34.1.4 initialization route tunnel-termination

Ipv6

initialization route tunnel-termination *max_num*

no initialization route tunnel-termination

max_num	Ipv6

32 Ipv6

Ipv6 100

```
Ruijie(config)# initialization route tunnel-termination ?
  <32-128>  Max number of tunnel termination entry
Ruijie(config)# initialization route tunnel-termination 100
```

-	-

-	-

34.1.5 ip community-list

no

ip community-list {{standard | expanded } *community-list-name* | *community-list-number* } {permit | deny } [*community-number..*]

no ip community-list {{standard | expanded } *community-list-name* | *community-list-number*}

standard	

expanded	
community-list-name	80
community-list-number	1-99 100-199
permit	
deny	
community-number	AA:NN(2) 0-4294967295 internet Internet local-as AS no-advertise BGP peers no-export EBGP peers 1..255 32

BGP

```
Ruijie(config)# ip community-list standard test deny 100:20 200:20
Ruijie(config)# ip community-list standard test2 permit internet
```

match community	
set comm-list delete	BGP
show ip community-list	
show ip bgp community-list	BGP

no ip prefix-list *prefix-lis-name*[seq *seq-number*] { deny | permit } *ip-prefix* [ge *minimum-prefix- length*][le *maximum-prefix- length*]

prefix-lis-name	
seq-number	1 2147483647 5 5
deny	
permit	
ip-prefix	IP 0 32
minimum-prefix-length	( ) ge
maximum-prefix-length	( ) le

ip prefix-list IP permit deny

ge le
ip-prefix
ge le ip-prefix
ge minimum-prefix-length 32 le ip-prefix
maximum-prefix- length
minimum-prefix-length maximum-prefix- length ip-prefix
minimum-prefix-length maximum-prefix-length ip-prefix <
minimum-prefix-length < maximum-prefix-length <= 32

OSPF RIP
IP IP (
IP 201.1.1.0/24)

```
Ruijie# configure terminal
Ruijie(config)# ip prefix-list pre1 permit 201.1.1.0/24
Ruijie(config)# router ospf
Ruijie(config-router)# distribute-list prefix pre1 out rip
Ruijie(config-router)# end
```

--	-

-	-

```
Ruijie# configure terminal
Ruijie(config)# ip prefix-list sequence-number
```

-	-

-	-

34.1.10 ip route

ip route no

ip route [vrf *vrf_name*] *network net-mask* {*ip-address* | *interface* [*ip-address*]} [*distance*] [tag *tag*] [*permanent*] [weight *number*] [*disable*inter 458

1

OSPF
110 125 OSPF

vrf vrf
1 show ip route weight
weight WCMP
weight
WCMP 32
WCMP

ip route 0.0.0.0
0.0.0.0 Fastethernet 0/0
Fastethernet 0/0 ARP CPU

172.16.100.0/24
192.168.12.1 115

```
ip route 172.16.100.0 255.255.255.0 192.168.12.1 115
```

172.16.100.0/24
fastethernet 0/0

```
Ruijie(config)# ip route 172.16.100.0 255.255.255.0 fastethernet 0/0 192.168.12.1
```

show ip route	IP

-	-

34.1.11 ip routing

RGOS IP no IP

ip routing

no ip routing

minimum-prefix-length maximum-prefix- length ipv6-prefix
minimum-prefix-length maximum-prefix-length ipv6-prefix <
minimum-prefix-length < maximum-prefix-length <= 128

RIP OSPF 1
IP IPv6 (
IP 2222::/64)

```
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
```

-	-

-	-

-	-

34.1.15 ipv6 prefix-list sequence-number

IPv6 ipv6 prefix-list description no

ipv6 prefix-list sequence-number

-	-

IPv6

```
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list sequence-number
```

-	-

-	-

no ipv6 static route-limit

number	1-10000

1000

RGOS IPv6

```
Ruijie# no ipv6 unicast-routing
```

ipv6 route	ipv6
show ipv6 route	IPv6

	as-path
10.1	

34.1.19 match as-path

AS_PATH as-path1b01J /C4>]TJ /16<TT0 1 Tf ( )T match as-path

no

match as-path *as-path-acl-list-num* *as-path-acl-list-num…..*

no match as-path *as-path-acl-list-num……*

as-path-acl-list-num	1…500 1…500

match origin	
set as-path prepend	AS_PATH
set comm-list delete	
set community	
set metric	

-	-

34.1.21 match interface

match interface no

match interface *interface-type interface-number* [*…interface-type interface-number*]

no match interface *interface-type interface-number* [*…interface-type interface-number*]

interface-type	
interface-number	

match interface

OSPF

RIP RIP

OSPF

route maps

1 match 1 set

match set

OSPF RIP fastethernet 0/0 RIP

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
```

```
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match interface fastethernet 0/0
```

match ip address	
match ip next-hop	
match ip route-source	
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	

-	-

34.1.22 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 *prefix-list-name* [*prefix-list-name...*]}

no match ip address {*access-list-number* [*access-list-number...* | *access-list-name...*] | *access-list-name* [*access-list-number...*| *access-list-name*] | prefix-list *prefix-list-name* [*prefix-list-name...*]}

access-list-number	1-99 1300-1999 100-199 2000-2699
access-list-name	
prefix-list *prefix-list-name*	

match ip address

OSPF

RIP RIP

OSPF IP

route maps

1 match 1 set

match set

OSPF RIP 10

RIP OSPF type-1 40

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# access-list 10 permit 200.168.23.0 0.0.0.255
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ip address 10
Ruijie(config-route-map)# set metric 40
Ruijie(config-route-map)# set metric-type type-1
```

access-list	
match interface	
match ip next-hop	
match ip route-source	
match metric	
match route-type	
match tag	

34.1.23 match ip next-hop

IP match ip next-hop 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...*]}

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...*]}

access-list-number	1-99 1300-1999 100-199 2000-2699
access-list-name	
prefix-list *prefix-list-name*	

match ip next-hop

OSPF

OSPF

RIP RIP OSPF

IP

route maps

1 match 1 set

match set

OSPF RIP RIP

10 20 OSPF

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# access-list 10 permit host 192.168.10.1
Ruijie(config)# access-list 20 permit host 172.16.20.1
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ip next-hop 10 20
```

access-list	
match ip address	

match interface	
match ip route-source	
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	

-	-

34.1.24 match ip route-source

IP match ip route-source no

match ip route-source {*access-list-number* [*access-list-number...* |*access-list-name...*] |*access-list-name* [*access-list-number...*| *access-list-name*] | prefix-list *prefix-list-name* [*prefix-list-name...*]}

no match ip route-source {*access-list-number* [*access-list-number...* | *access-list-name...*] | *access-list-name* [*access-list-number...*| *access-list-name*] | prefix-list *prefix-list-name* [*prefix-list-name...*]}

access-list-number	
access-list-name	
prefix-list *prefix-list-name*	

match ip route-source

OSPF

RIP RIP

match set

OSPF RIP RIP IP
5 OSPF

```
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
```

access-list	
match ip address	
match interface	
match ip next-hop	
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	

-	-

34.1.25 match ipv6 address

IPv6 PBR IPv6 ACL

IPv6 match ipv6 address no

match ipv6 address { *access-list-name* | prefix-list *prefix-list-name* }

no match ipv6 address

access-list-name	

prefix-list *prefix-list-name*	IPv6

route map sequence IPV6 ACL

Route map sequence 10

IPv6 PBR prefix-list

OSPF RIP RIP

match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	
set ipv6 default next-hop	
set ipv6 next-hop	
show ipv6 policy	

-	-

34.1.26 match ipv6 next-hop

IPv6
match ipv6 address no

match ipv6 next-hop { *access-list-name* | prefix-list *prefix-list-name* }

no match ipv6 next-hop

access-list-name	
prefix-list *prefix-list-name*	IPv6

OSPF

RIP

OSPF RIP 10
RIP OSPF type-1 40

```
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
```

ipv6 access-list	IPv6
match interface	
match ipv6 address	IPv6
match ipv6 route-source	IPv6
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	

OSPF

RIP RIP

OSPF IP

route maps

1 match 1 set

match set

OSPF RIP 10

RIP OSPF type-1 40

```
Ruijie(config)# ipv6 router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# exit
Ruijie(config)# ipv6 access-list v6acl
Ruijie(config-ipv6-acl)# 10 permit ipv6 5200::/64 any
Ruijie(config-ipv6-acl)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ipv6 route-source v6acl
Ruijie(config-route-map)# set metric 50
```

ipv6 access-list	IPv6
match interface	
match ipv6 address	IPv6
match ipv6 route-source	IPv6
match metric	
match route-type	
match tag	
set metric	
set metric-type	
set tag	

-	-

34.1.28 match length

IP match length no

match length *min-length max-length*

no match length *min-length max-length*

min-length	IP
max-length	IP

ṡ

set ip precedence	IP

-	-

34.1.29 match metric

match metric no

match metric *metric*

no match metric

metric	0-4294967295

OSPF

RIP RIP

OSPF IP

route maps

1 match 1 set

match set

OSPF RIP 10 RIP OSPF

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map
redist-rip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redist-rip permit 10
Ruijie(config-route-map)# match metric 10
```

access-list	
match ip address	
match interface	

match ip next-hop	
match ip route-source	
match route-type	

match tag

match as-path	AS_PATH
match metric	
match origin	
set as-path prepend	AS_PATH
set metric	
set origin	

-	-

34.1.31 match route-type

match route-type no

```
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
```

access-list	
match ip address	
match interface	
match ip next-hop	
match ip route-source	
match metric	
match tag	
set metric	
set metric-type	
set tag	

1

maximum-paths

show running config

ipv4 ipv6 ipv4

ipv6

ipv6

10

```
Ruijie(config)# maximum-paths 10
Ruijie(config)# no maximum-paths
```

-	-

-	-

34.1.34 route-map

route-map no

route-map *route-map-name* [permit | deny] [*sequence-number*]

no route-map *route-map-name* [permit | deny] [*sequence-number*]

route-map-name	
permit	permit match set set permit match set

34.1.36 set as-path prepend

match AS_PATH set as-path prepend no

set as-path prepend *as-number*

no set as-path prepend [*as-number*]

as-number	AS_PATH AS

AS_PATH as-path 15 as

```
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
```

match as-path	AS_PATH
match community	
match metric	
match origin	
set community	COMMUNITY
set metric	
set metric-type	

-	-

34.1.37 set comm-list delete

match COMMUNITY_LIST community set comm-list delete no

set comm-list *community-list-number* | *community-list-name* delete

no comm-list *community-list-number* | *community-list-name* delete

community-list-number	1-99 100-199
community-list-name	80

```
Ruijie(config)# router bgp 100
Ruijie(config-router)# neighbor 172.16.233.33 remote-as 101
Ruijie(config-router)#
```

match metric	
match origin	
set as-path prepend	AS_PATH
set origin	
set metric-type	

-	-

34.1.39 set dampening

match set dampening

no

set dampening *half-life reuse suppress max-suppress-time*

no set dampening

half-life	1..45( ) 15
reuse	1..20000 750
suppress	1..20000 2000
max-suppress-time	1..255( ) 4* half-life

```
Ruijie(config)# route-map tag
```

match as-path	AS_PATH
match community	
match metric	
match origin	
set as-path prepend	AS_PATH
set metric	
set local-preference	

-	-

match community	
match metric	
match origin	
set as-path prepend	AS_PATH
set metric	
set metric-type	

-	-

34.1.41 set ip default next-hop

match IP set ip next-hop
no

set

1 1.1.1.1
6.6.6.6 2.2.2.2
7.7.7.7

```
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
```

route-map	
match ip address	
set default interface	
set default interface	
set interface	
set ip next-hop	IP
set ip precedence	IP

-	-

34.1.42 set ip dscp

match DSCP set ip dscp no

set ip dscp *dscp_value*

no set ip dscp

dscp_value	IP IP DSCP

route-map	
match ip address	
set default interface	
set default interface	
set interface	
set ip default next-hop	IP
set ip precedence	IP

-	-

34.1.43 set ip next-hop

match IP set ip next-hop
no

set ip next-hop *ip-address* [*weight*] [*…ip-address* [*weight*]]

no set ip next-hop *ip-address* [*weight*] [*…ip-address* [*weight*]]

ip-address	IP
weight	

set WCMP WCMP
weight WCMP

set ip next-hop IP 32
ip address weight 4 nexthop

next-hop weight set
WCMP WCMP
weight nexthop weight
1

match ip address

match interface	
match ip address	
match ip next-hop	
match ip route-source	
match metric	
match route-type	
match tag	
set metric-type	
set tag	
set ip tos	IP tos

-	-

34.1.46 set ip tos

match IP TOS, set ip tos

no tos

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* }

-	-

IPv6

set ipv6 default nexthop

match IPv6

set ipv6 next-hop

set ipv6 default next-hop

64

set ipv6 next-hop verify-availability set ipv6 next-hop verify-availability

fastEthernet 0/0

2001:0db8:2001:1760::/64 2002:0db8:2003:1::95

```
Ruijie(config)# ipv6 access-list acl_for_pbr
Ruijie(config -ipv6-acl)#permit ipv6 any 2001:0db8:2001:1760::/64
Ruijie(config)#route-map rm_if_0_0
Ruijie(config-route-map)#match ipv6 address acl_for_pbr
Ruijie(config-route-map)# set ipv6 default next-hop
2002:0db8:2003:1::95
Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ipv6 policy route-map rm_if_0_0
```

match ipv6 address	
ipv6 policy route-map	
set ipv6 next-hop	

RGOS 10.4	RGOS 10.4

34.1.48 set ipv6 next-hop

match IPv6 IPv6 set ipv6 next-hop no

set ipv6 next-hop *global-ipv6-address* [*weight*] [*global-ipv6-address* [*weight*]...]

no set ipv6 next-hop global-ipv6-address [*weight*] [*global-ipv6-address* [*weight*]...]

set interface	
set ipv6 default next-hop	
set ipv6 next-hop	
show ipv6 policy	
show route-map	

10.4	

34.1.51 set level

match set level

no

set level {level 1 | level 2 | level 1-2 | stub-area | backbone }

no set level

-	-

OSPF RIP backbone

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set level backbone
```

match interface	
match ip address	
match ip next-hop	
match ip route-source	

match metric	
match route-type	
match tag	
set metric-type	
set tag	

-	-

34.1.52 set local-preference

match LOCAL_PREFERENCE set local-preference no

set local-preference *number*

no set local-preference

number	0-4294967295

local-preference local-preference

```
Ruijie(config)# route-map SET_PREF permit 10
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set local-preference 6800
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_PREF permit 20
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set local-preference 50
```

match as-path	AS_PATH
match metric	
match origin	
set as-path prepend	AS_PATH

set metric	
set metric-type	

-	-

34.1.53 set metric

match set metric no

set metric [+ *metric-value* | - *metric-value* | *metric-value*]

no set metric

	ɞ Γ Ş ʉ d̯

```
Ruijie(config-route-map)# set originator-id 5.5.5.5
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_ORIGIN 20 permit
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set originator-id 5.5.5.6
```

match as-path	AS_PATH
match metric	
match origin	
set as-path prepend	AS_PATH
set metric	
set local-preference	

-	-

34.1.58 set tag

match set tag no

set tag *tag*

no set tag

tag	

OSPF RIP 100

```
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
```

match interface	
match ip address	
match ip next-hop	
match ip route-source	
match metric	
match route-type	
match tag	
set metric	
set metric-type	

-	-

34.1.59 set weight

match BGP set weight no

set weight *number*

no set weight

number	0-65535

BGP

neighbor weight

32768

BGP

BGP in 1.1.1.1

100

```
Ruijie(config)# router bgp 1
Ruijie(config-router)# neighbor 1.1.1.1 route-map nei-rmap-in in
```

```
Ruijie(config-router)# exit
Ruijie(config)# route-map nei-rmap-in permit 10
Ruijie(config-route-map)# set weight 100
```

match as-path	AS_PATH
match community	
match metric	
match origin	
set community	COMMUNITY
set metric	
set metric-type	

set comm-list delete	BGP

-	-

34.2.3 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
```

-	-

-	-

vrf *vrf_name*	VRF
network	
mask	
count	
protocol	connected, static bgp, isis , ospf , rip
process-id	
weight	

1 show ip rout e

```
Ruijie# show ip route
Codes:  C - connected, S - static, R - RIP, B - BGP
O - OSPF, IA - OSPF inter area
N1-OSPF NSSA external type 1,N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
i - IS-IS,su - IS-IS summary,L1 - IS-IS level-1,L2 - IS-IS level-2
ia - IS-IS inter area, * - candidate default
Gateway of last resort is no set
S    20.0.0.0/8 is directly connected, VLAN 1
S    22.0.0.0/8 [1/0] via 20.0.0.1
O E2 30.0.0.0/8 [110/20] via 192.1.1.1, 00:00:06, VLAN 1
R    40.0.0.0/8 [120/20] via 192.1.1.2, 00:00:23, VLAN 1
B    50.0.0.0/8 [120/0] via 192.1.1.3, 00:00:41
C    192.1.1.0/24 is directly connected, VLAN 1
C    192.1.1.254/32 is local host.
```

show ip route

O	C S R RIP B BGP O OSPF i IS-IS

E2	E1 OSPF E2 OSPF N1 OSPF NSSA 1 N2 OSPF NSSA 2 IA OSPF su IS-IS L1 IS-IS 1 L2 IS-IS 2 ia IS-IS
20.0.0.0/8	
[1/0]	
Via 20.0.0.1	IP
00:00:06	

how ip route *network*

w ip route *30.0.0.0*

ry for 30.0.0.0/8

0, metric 20

criptor Blocks:

00:01:11 ago, via VLAN 1, generated by OSPF, extern 2

criptor	IP BGP

how ip route count

w ip route count

oute info ----------

active route: 5

how ip route weight

w ip route weight

-[distance/metric/weight]-----------

0/8 [1/0/2] via 192.1.1.20

.0.0/16 [1/0/4] via 192.0.0.1

-	-

34.2.5 show ipv6 prefix-list

IPv6 show ipv6 prefix-list

show ipv6 prefix-list [*prefix-name*]

prefix-name	IPv6

IPv6

```
Ruijie# show ipv6 prefix-list
ipv6 prefix-list p6: 2 entries
permit 13::/20
permit 14::/20
```

-	-

-	-

show ipv6 route

```
Ruijie(config)# show ipv6 route
IPv6 routing table name is Default(0) global scope - 7 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
```

-	-

-	-

35.1.3 bfd all-interfaces (RIP)

RIP BFD RIP bfd all-interfaces no

bfd all-interfaces

no bfd all-interfaces

RIP BFD RIP (RIP)
BFD BFD RIP

RIP BFD RIP IP
BFD
ip rip bfd [disable] BFD
bfd all-interfaces

router rip	RIP
ip rip bfd [disable]	RIP BFD

-	-

35.1.4 default-metric (RIP)

RIP default-metric no

default-metric *metric-value*

route-map *map-name*

ip-address	IP
wildcard	IP

120

RIP

RIP

RIP

RIP 160, 192.168.12.1
123

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

-	-

-	-

35.1.7 distribute-list in RIP

distribute-list in

no

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

isis [*area-tag*]	( ) isis *area-tag* isis
ospf *process-id*	( ) ospf *process-id* ospf
rip	( ) rip
static	( )

RIP 192.168.12.0/24

```
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
```

exit

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

address-family	

-	-

35.1.10 ip rip authentication key-chain

RIP RIP ip rip authentication key-chain no

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

no ip rip authentication key-chain

name-of-keychain	RIP

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ip rip authentication mode	RIP
ip rip authentication text-password	RIP RIP RIPv2 RIP
ip rip receive version	RIP RIP
ip rip send version	RIP RIP
key chain	

-	-

35.1.11 ip rip authentication mode

RIP ip rip authentication mode no
RIP

ip rip authentication mode {text | md5}

no ip rip authentication mode

text	RIP
md5	RIP MD5

RIP RIP RIP
RIP

MD5

RIPv1 RIP RIPv2

Serial 0 RIP MD5

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


RIP

ip rip authentication key-chain

RIP no

default RIP

Fastethernet 0/0 RIP

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

ip rip send enable	RIP
passive-interface	RIP

-	-

35.1.16 ip rip receive version

RIP RIP ip rip receive version

no

ip rip receive version [1] [2]

no ip rip receive version

1	RIPv1
2	RIPv2

version

vesion RIP

RIPv1 RIPv2

-	-

35.1.17 ip rip send enable

RIP RIP ip rip send enable
no RIP RIP
ip rip send enable
no ip rip send enable

-	-

RIP

RIP no
default

no ip rip send supernet-routes

RIP

RIPv1 RIPv2 RIPv1

RIPv2 no

RIPv2

Fastethernet 0/0 RIP

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

ip rip send enable	RIP
version	RIP

-	-

35.1.19 ip rip send version

RIP RIP ip rip receive version no

ip rip send version [1] [2]

no ip rip send version

1	RIPv1
2	RIPv2

version

vesion RIP
RIPv1 RIPv2
version

Fastethernet 0/0 RIPv1 RIPv2

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

version	RIP

-	-

35.1.20 ip rip split-horizon (RIP)

RIP ip rip split-horizon no RIP

ip rip split-horizon

no ip rip split-horizon

-	-

IP

X.25

IP
RIP
show ip rip neighbor
RIP

Fastethernet 0/0 RIP

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

```
Ruijie(config-if)# no ip rip split-horizon
```

neighbor RIP	RIP IP
Validate-update-source	RIP

-	-

35.1.21 ip rip summary-address

RIP ip rip summary-address no

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

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

ip-address	IP
ip-network-mask	IP

RIP

ip rip summary-address RIP

RIPv2 FastEthernet 1/0 172.16.0.0/16

```
Ruijie(config)# interface FastEthernet 1/0
Ruijie(config-if)# ip rip summary-address 172.16.0.0 255.255.0.0
Ruijie(config-if)# ip address 172.16.1.1 255.255.255.0
mmary-address 17(co7 0work-address 172ter T*33535.(mmary-address 17(coversio
```

RIP

network *network-number* [*wildcard*]

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

network-number	IP RIP
wildcard	IP 0 1

network-number *wildcard*
RIP
wildcard RGOS
RIP
RIP RIP
RIP

RIP 192.168.12.0/24
172.16.0.0/24 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
```

-	-

10.4(1)	*wildcard*

35.1.24 neighbor (RIP)

RIP IP neighbor no

neighbor *ip-address*

no neighbor

ip-address	IP

RIPv1 IP 255.255.255.255 RIPv2
224.0.0.9
passive-interface
RIP
passive

RIP 192.168.1.2

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

passive-interface	passive

-	-

35.1.25 offset-list(RIP)

RIP metric offset-list
no offset

offset-list {*access-list-number* | *name*} {in | out} *offset* [*interface-type interface-number]*

no offset-list {*access-list-number* | *name*} {in | out} *offset* [*interface-type interface-number*]

access-list-number	*name*	
in	acl metric
out	acl metric
offset	metric 0-16
interface-type	acl
interface-number	

offset

RIP offset-list offset-list
RIP offset-list metric

acl 7 RIP metric 7

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

fastEthernet1/0 acl 8 RIP
metric 7

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

-	-

-	-

35.1.26 output-delay

RIP

output-delay no

output-delay *delay*

no output-delay

delay	<8-50>

RIP 512 25
25

output-delay

RIP 30

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


-	-

-	-

35.1.27 passive-interface

passive-interface

no

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

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

default	passive
interface-type interface-num	

passive

passive-interface default passive no passive-interface *interface-type interface-num* passive passive RIP RIP neighbor ip rip send enable ip rip receive enable

passive ethernet0/0 passive

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

ip rip receive enable	RIP
ip rip send enable	RIP

-	-

35.1.28 redistribute RIP

redistribute

no

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

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

bgp	bgp
connected	
isis *area-tag*	isis *area-tag* isis
ospf *process-id*	ospf *process-id* ospf <1-65535>
static	
level-1 | level-1-2 | level-2	IS-IS level
match	OSPF
metric *metric-value*	metric metric-value metric 1-16
route-map *route-map-name*	

OSPF
ISIS level-2

metric 1
route-map

RIP

RIP OSPF

isis level level-2
level level
level 1, level 2 level-1-2
ospf match ospf
match match

no match

RIP

RIP default-information originate

RIP

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

default-metric *metric*	
default-information originate	RIP

-	-

35.1.30 timers basic

RIP timers basic no

-	-

35.1.31 validate-update-source

RIP

validate-update-source no

validate-update-source

no validate-update-source

-	-

RIP RIP

IP

RIP

validate-update-source

ip unnumbered RIP

validate-update-source

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

RIP version no

version {1 | 2}

no version

1	RIP 1
2	RIP 2

RIPv1 RIPv2 RIPv1

RIP ip rip receive version ip rip send version RIP

RIP 2

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

ip rip receive version	RIP RIP
ip rip send version	RIP RIP
show ip rip	rip

-	-

35.2

35.2.1 show ip rip

RIP show ip rip

show ip rip [vrf *vrf-name*]

vrf *vrf-name*	VRF RIP

RIP rip
rip metric distance
VRF VRF VRF-id

1 RIP

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

2 vrf RIP

```
Ruijie(config-router)# sh ip rip vrf 1
VRF 1  VRF-id:1
Routing Protocol is "rip"
Sending updates every 30 seconds
Invalid after 180 seconds, flushed after 120 seconds
Outgoing update filter list for all interface is: not set
Incoming update filter list for all interface is: not set
Default redistribution metric is 1
Redistributing:
Default version control: send version 1, receive any version
Routing for Networks:
Distance: (default is 120)
```

-	-

-	-

35.2.2 show ip rip database

RIP show ip rip database

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

vrf *vrf-name*	VRF RIP
network-number	
network-mask	
count	RIP

RIP

```
  1                   RIP
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
  2                   RIP               192.168.121.0/24

Ruijie# show ip rip database 192.168.121.0 255.255.255.0
192.168.121.0/24    redistributed
[1] via 192.168.2.22, FastEthernet 0/1
  3                   RIP
Ruijie# show ip rip database count
              All    Valid   Invalid
database       5      5      0
auto-summary    5      5      0

connected      1      1      0
rip            4      4      0
```

show ip rip	

-	-

35.2.4 show ip rip interface

RIP show ip rip interface

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

vrf *vrf-name*	VRF RIP

RIP RIP

RIP

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

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

show ip rip	

-	-

35.2.5 show ip rip peer

RIP RIP (RIP)
RIP RIP

show ip rip peer

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

ip-address	RIP
vrf *vrf-name*	VRF RIP

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show ip rip	

-	-

36 RIPNG

36.1

36.1.1 default-metric (RIPng)

RIPng default-metric

no

default-metric *metric*

no default-metric

metric	1 16 metric 16 RGOS

1

redistribute

RIP

RIP

RIPng default-metric

default-metric

default-metric 1

OSPF 100 RIP 3

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

redistribute	

36.1.2 distance IPv6

RIPng distance no

distance *distance*

no distance

eth0 **prefix-list** *allowpre*

```
Ruijie(config)# ipv6 router rip
Ruijie(config-router)#distribute-list prefix-list allowpre in eth0
```

redistribute	

-	-

36.1.4 ipv6 rip default-information

IPv6 RIPng default-information no

ipv6 rip default-information only originate [metric *metric-value*]

no ipv6 rip default-information

only	ipv6
originate	ipv6
metric *metric-value*	1-15

metric 1

IPv6 RIPng RIPng

ethernet0/0 RIPng

```
Ruijie(config)# interface ethernet 0/0
Ruijie(config-if)# ipv6 rip default-information only
```

show ipv6 rip	RIPng
show ipv6 rip database	RIPng

RIPng

RIPng

```
Ruijie(config)# ipv6 router rip
```

ipv6 rip enable	RIPng

-	-

36.1.8 passive-interface RIPng

passive-interface

no

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

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

default	passive
interface-type interface-num	

passive

passive-interface default passive no passive-interface *intface-type interface-num* passive

passive ethernet0/0 passive

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

-	-

-	-

36.1.9 redistribute

RIPng redistribute

no

redistribute {bgp | connected | isis [*area-tag*] | ospf *process-id* | static } [metric *metric-value* | route-map *route-map-name*]

no redistribute {bgp | connected | isis [*area-tag*] | ospf *process-id* | static } [metric *metric-value* | route-map *route-map-name*]

bgp	BGP
connected	
isis [*area-tag*]	ISIS *area-tag* ISIS
ospf *process-id*	OSPF *process-id* ospf *process-id* 1-65535
static	
metric *metric-value*	RIPng
route-map *route-map-name*	

default-metric metric 1
route-map

RIPng

RIP OSPF

RIPng

mymap 8

```
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# redistribute static route-map
mymap metric 8
```

default-metric	RIPng

RIPNG

RIPng timers no

timers *update invalid flush*

no timers

update	update invalid flush 30
invalid	invalid invalid invalid Invalid 180
flush	RIPng invalid flush invalid flush 120

30 180 120

RIPng RIP

RIPng show ipv6 rip

36.2

36.2.1 show ipv6 rip

RIPng show ipv6 rip

show ipv6 rip

-	-

```
Ruijie# show ipv6 rip
Routing Protocol is "RIPng"
  Sending updates every 10 seconds with +/-50%, next due in 8 seconds
  Timeout after 30 seconds, garbage collect after 60 seconds
  Outgoing update filter list for all interface is:
    distribute-list prefix aa out
  Incoming update filter list for all interface is: not set
  Default redistribution metric is 1
  Default distance is 120
  Redistribution:
     Redistributing protocol connected route-map rm
     Redistributing protocol static
     Redistributing protocol ospf 1
  Default version control:  send version 1, receive version 1
  Interface              Send   Recv
     VLAN 1              1      1
     Loopback 1           1      1
  Routing Information Sources:
     None
```

show ipv6 rip	RIPng

-	-

36.2.2 show ipv6 rip database

RIPng show ipv6 rip database

show ipv6 rip database

-	-

RIPng

```
Ruijie# show ipv6 rip database
Codes: R - RIPng,C - Connected,S - Static,O - OSPF,B - BGP
sub-codes:n - normal,s - static,d - default,r - redistribute,
          i - interface, a/s - aggregated/suppressed
S(r)   2001:db8:1::/64, metric 1, tag 0
          Loopback 0/::
S(r)   2001:db8:2::/64, metric 1, tag 0
          Loopback 0/::
C(r)   2001:db8:3::/64, metric 1, tag 0
          VLAN 1/::
S(r)   2001:db8:4::/64, metric 1, tag 0
          Null 0/::
C(i)   2001:db8:5::/64, metric 1, tag 0
          Loopback 1/::
S(r)   2001:db8:6::/64, metric 1, tag 0
          Null 0/::
```

show ipv6 rip	RIPng

37 OSPF2

37.1

37.1.1 area

no OSPF

area area-id

no area area-id

37.1.2 area authentication

OSPF area authentication no OSPF

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

no area *area-id* authentication

area-id	OSPF IP
message-digest	MD5 message digest 5

RGOS OSPF OSPF message-digest MD5 message-digest OSPF ip ospf authentication-key ip ospf message-digest-key MD5

OSPF 0 MD5 backbone

```
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
```

ip ospf authentication-key	OSPF
ip ospf message-digest-key	OSPF MD5

37.1.3 area default-cost

STUB NSSA OSPF
area default-cost no

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

no area *area-id* default-cost

area-id	STUB NSSA
cost	STUB NSSA 1-16777214

ABR ABR STUB
NSSA ABR

ABR stub NSSA LSA
area default-cost LSA

config-

50

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.1CC8<32afc129.87 4 5 99.1work network 172.1C
```

area-id	
acl-name	acl
prefix-name	prefix-list
access | prefix	prefix list ACL
in | out	|

ABR
ABR

area 1 172.22.0.0/8

```
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
```

-	-

-	-

37.1.5 area nssa

OSPF NSSA area nssa no NSSA NSSA

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

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

area-id	NSSA
no-redistribution	NSSA ABR NSSA

default-information-originate	7 LSA NSSA NSSA ABR ASBR
metric *value*	LSA metric 0-16777214
metric-type <*1-2*>	LSA E-1 E-2
no-summary	nssa (ABR) summary LSAs Type-3 LSA

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

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

area-id	OSPF IP
ip-address net-mask	
advertise | not-advertise	
cost *cost*	0-16777215

RFC1583 RFC1583
cost cost

ABR

advertise not-advertise
cost
OSPF

area range

172.16.16.0/20

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.0.0 0.0.15.255 area 0
Ruijie(config-router)# network 172.16.17.0 0.0.15.255area 1
Ruijie(config-router)# area 1 range 172.16.16.0 255.255.240.0
```

discard-route	discard
summary-address	OSPF

-	-

37.1.7 are

OSPF area stub no

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

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

area-id	STUB
no-summary	ABR ABR

OSPF area stub ABR
(LSA) 1 1 LSA 2 2 LSA 3 3
LSA OSPF
ABR OSPF
ABR area stub no-summary
ABR
OSPF area stub area default-cost
area stub area default-cost ABR

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*

router-id OSPF router-id show ip ospf neighbor Loopback

area virtual-link OSPF

area authentication

1 1 2.2.2.2

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

2 1 1.1.1.1

10 OSPF MD5

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

area authentication	OSPF
show ip ospf	OSPF

, ,
. ( )
. default auto-cost no auto-cost

ip ospf cost cost cost

ip ospf bfd [disable]	OSPF BFD

-	-

37.1.11 clear ip ospf process

OSPF

clear ip ospf [*process-id*] process

process-id	OSPF OSPF OSPF

RFC2328

OSPF

OSPF 1

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

-	-

-	-

37.1.12 compatible rfc1583

AS RFC1583
RFC2328

commpatible rfc1583

no commpatible rfc1583

-	-

RFC1583

rfc 2328

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

show ip ospf	ospf

-	-

37.1.13 default-information originate OSPF

OSPF default-information originate no

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

metric 1
metric-type 2

redistribute default-information OSPF ASBR
ASBR OSPF
ASBR default-information originate

always OSPF

show ip ospf database OSPF 0.0.0.0
OSPF show ip route

default-information originate
default-metric
OSPF 1 2
1
2 show ip route 1
STUB

OSPF OSPF
1 50

```
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
```

show ip ospf database	OSPF
show ip route	IP
redistribute	

-	-

37.1.14 default-metric

OSPF default-metric

no

default-metric *metric*

no default-metric

metric	OSPF 1-16777214

20

default-metric redistribute

default-metric default-information originate OSPF

OSPF 50

```
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 1
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
```

redistribute	
show ip ospf	ospf

-	-

37.1.15 discard-route

discard no discard

discard-route {internal |external }

no discard-route {internal |external }

internal	area range discard
external	summary-address discard

discard

ABR ASBR discard

area range discard

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

area range	OSPF
summary-address	OSPF

-	-

37.1.16 distance ospf

OSPF

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

no distance [ospf]

distance	1-255
intra-area *distance*	1-255
inter-area *distance*	1-255
external *distance*	1-255

110

110

110

110

OSPF

OSPF

OSPF 160

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# distance ospf external 160
```

-	-

37.1.18 distribute-list out

redistribute

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

no distribute-list {[*access-list-number* | *name*] | prefix *prefix-list-name*} out [bgp |]

pG (3Tf 0.7.9414 Tw 10.02 0 0.8525.9 90.72 723034 0 Td (pref(g)]TJ /TT0 15Tf -33 Tw 8[.229 0 Td 0 (pref

RestartStatusChange | VirtIfStateChange | VirtNbrRestartHelperStatusChange | VirtNbrStateChange]]

no enable traps [error [IfAuthFailure | IfConf igError | IfRxBadPacket | VirtIfAuthFailure | VirtIfConfigError | VirtIfRxBadPacket] | lsa [LsdbApproachOverflow | LsdbOverflow | MaxAgeLsa | OriginateLsa] | retransmit [IfTxRetransmit | VirtIfTxRetransmit] | state-change [IfStateChange | NbrRestar tHelperStatusChange | NbrStateChange | RestartStatusChange | VirtIfStateChange | VirtNbrRestartHelperStatusChange | VirtNbrStateChange]]

error	error traps error traps IfAuthFailure IfConfigError IfRxBadPacket VirtIfAuthFailure VirtIfConfigError VirtIfRxBadPacket
lsa	lsa traps lsa traps LsdbApproachOverflow LSA LsdbOverflow LSA MaxAgeLsa LSA OriginateLsa LSA
retransmit	retransmit traps retransmit traps IfTxRetransmit VirtIfTxRetransmit

OSPFv2 100 TRAP

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

show ip ospf	OSPF
enable mib-binding	OSPFv2 MIB
snmp-server enable traps ospf	OSPF .96 82 1 Tf 0 TÔ<0Ö 4705B6 /TT02RE2

```
Ruijie(config-router)# graceful-restart grace-period 60
```

OSPF 1 GR

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# graceful-restart helper disable
Ruijie(config-router)# no graceful-restart helper disable
Ruijie(config-router)# graceful-restart helper
strict-lsa-checking
```

graceful-restart	OSPF

10.4(2)	

37.1.23 ip ospf authentication

no

ip ospf authentication [message-digest | null]

no ip ospf authentication

message-digest	MD5

null

-	-

37.1.25 ip ospf bfd

OSPF BFD ip ospf bfd [disable] no ip ospf bfd

ip ospf bfd [disable]

no ip ospf bfd

disable	OSPF BFD

OSPF BFD

bfd all-interfaces

ip ospf bfd BFD

OSPF bfd all-interfaces OSPF

BFD ip ospf bfd disable BFD

router ospf *process-id* [vrf *vrf-name*]	OSPF OSPF
bfd all-interfaces	OSPF BFD

R Λ →

cost ,X8…C P Vwv ò F ™gH” , F.û –t‰ò(4gHŸ"•&V H”f,` 3Â ta (637-24 6.68Tr17(st1 Tf -0.0016 2

LSA
LSA
LSA

LSA serial 1/0

```
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
```

-	-


```
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
```

OSPF Hello ip ospf hello-interval
no

ip ospf hello-interval *seconds*

no ip ospf hello-interval

seconds	OSPF hello 1-65535

10
PPP HDLC 10
10
X.25 30

hello hello OSPF
hello
hello

serial 1/0 OSPF Hello 15

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip address 172.16.10.1 255.255.255.0
Ruijie(config-if)# encapsulation ppp
Ruijie(config-if)# ip ospf hello-interval 15
```

ip ospf dead-interval	OSPF

-	-

37.1.31 ip ospf message-digest-key

OSPF MD5 ip ospf message-digest-key
no OSPF MD5

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

no ip ospf message-digest-key

key	16

key-id	1 255

MD5

ip ospf message-digest-key OSPF
OSPF

OSPF area authentication
, ip ospf authentication
,
RGOS MD5
OSPF MD5
OSPF

FastEthernet 0/0 OSPF
hello5

```
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

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

area authentication	OSPF
ip ospf authentication	

no ip ospf mtu-ignore

-	-

mtu

OSPF MTU MTU ,
MTU MTU,
, MTU

serial 1/0 MTU

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip ospf mtu-ignore
```


PPP SLIP X.25
NBMA X.25

OSPF
FDDI
X.25
HDLC PPP SLIP
OSPF
(NBMA) NBMA
SVC X.25
PVC OSPF NBMA
Designated Router
NBMA
OSPF
OSPF

,

X.25 OSPF
X.25 map Frame-relay map X.25
OSPF X.25
OSPF

X.25 IP
broadcast

1

```
Ruijie(config)# interface Serial1/0
Ruijie(config-if)# ip address 172.16.24.4 255.255.255.0
Ruijie(config-if)# encapsulation frame-relay
Ruijie(config-if)# ip ospf network broadcast
```

2

```
Ruijie(config)# interface Serial1/0
Ruijie(config-if)# ip address 172.16.24.4 255.255.255.0
Ruijie(config-if)# encapsulation frame-relay
Ruijie(config-if)# ip ospf network point-to-multipoint
```

3 DR/RDR

ʊ

```
Ruijie(config-if)# ip ospf network broadcast
Ruijie(config-if)# ip ospf priority 0
```

dialer map ip	IP
frame-relay map	IP DLCI
neighbor OSPF	IP NBMA
X25 map	IP X.25

-	-

37.1.34 ip ospf priority

OSPF ip ospf priority no

ip ospf priority *priority*

no ip ospf priority

priority	OSPF 0-255

OSPF hello OSPF DR/BDR
DR BDR
DR BDR
DR/BDR OSPF broadcast non-broadcast

DR BDR DR BDR

fastethernet 0/0 0

```
Ruijie(config)# interface fastethernet 0/0
Ruijie(config-if)# ip ospf priority 0
```


ip ospf network	OSPF

-	-

37.1.35 ip ospf retransmit-interval

LSU ip ospf retransmit-interval no

ip ospf retransmit-interval *seconds*

no ip ospf retransmit-interval

seconds	LSU 1-65535

5

OSPF LSU ip ospf transmit delay

no

ip ospf transmit delay *seconds*

no ip ospf transmit delay

seconds	OSPF LSU 1-65535

1

LSU LSAs Age
ip ospf transmit delay
LSU
area virtual-link transmit-delay
RGOS Age 3600 LSA
LSA

serial1/ 0 5

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip ospf transmit delay 10
```

area virtual-link	OSPF

-	-

37.1.37 log-adj-changes

no default

log-adj-changes [detail]

no log-adj-changes [detail]

detail	

detail Full Full

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# log-adj-changes detail
```

show ip ospf	ospf

-	-

37.1.38 max-concurrent-dd

DD

max-concurrent-dd *<1-65535>*

no max-concurrent-dd

<1-65535>	DD

R•ÆpK œ D " h l!ø ’v m ñ !)x 7€2)W6W 6U

-	-

37.1.39 neighbor

OSPF neighbor no

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

no neighbor *ip-address*

ip-address	IP
poll-interval *seconds*	1-2147483647 (NBMA)
priority *priority*	0-255 (NBMA)
cost *cost*	cost 1-65535 (point-to-multipoint)

120

0

RGOS IP

IP

NBMA

Hello OSPF Hello Hello

OSPF 0 Hello

0 DR/BDR DR/BDR DR/BDR

Hello

, ,

, cost

OSPF IP 172.16.24.2

1 150

```
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
```

ip ospf priority	OSPF

ip ospf network	OSPF

-	-

37.1.40 network area

OSPF OSPF network area

no OSPF

network *ip-address wildcard* area *area-id*

no network *ip-address wildcard* area *area-id*

ip-address	IP
wildcard	IP 0 1
area-id	OSPF OSPF OSPF

OSPF

ip-address *wildcard*

OSPF OSPF IP network area

IP network area IP IP

OSPF

n Û1•pl¢,,X · bÅ T •

-	-

37.1.41 overflow database

OSPF LSA

overflow database <*1-4294967294*> hard | soft

no overflow database

<*1-4294967294*>	LSA
hard	soft	hard LSA OSPF soft LSA

OSPF LSA

L

max-dbsize	external lsa AS 0-2147483647
wait-time	overflow 0-65535

external-LSA
external-LSA external-LSA

external-LSA *max-dbsize*
external-LSA external-LSA *wait-time*
external-LSA

OSPF OVERFLOW

OSPF OVERFLOW

OSPF OVERFLOW

OSPF NULL

OVERFLOW

clear ip ospf process OSPF OSPF

OVERFLOW

no OSPF OVERFLOW

OSPF

1 OSPF OVERFLOW

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# no overflow memory-lack
```

OSPF

serial 1/0

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

show ip ospf interface	

-	-

37.1.45 redistribute

redistribute {bgp | connected | isis [*area-tag*] | ospf *process-id* | rip | static } [{level-1 | level-1-2 | level-2} | match {internal | external [1|2] | nssa-external [1|2]} | metric *metric-value* | metric-type {*1*|*2*} | route-map *route-map-name* **|** subnets | tag *tag-value*]

no redistribute {bgp | connected | isis [*area-tag*] | ospf *process-id* | rip | static } [{level-1 | level-1-2 | level-2 } | match {internal | external [1|2] | nssa-external [1|2]} | metric | metric-t ype {*1*|*2*} | route-map *route-map-name* **|** subnets | tag *tag-value*]

bgp	bgp
connected	
isis [*area-tag*]	isis *area-tag* isis
ospf *process-id*	ospf *process-id* ospf 1-65535
rip	rip
static	
level-1 | level-1-2 | level-2	IS-IS level level-2 IS-IS
match	OSPF OSPF
metric *metric-value*	OSPF external LSA metric metric-value metric 0-16777214

metric-type { *1*|*2*}	E-1 E-2
route-map *route-map-name*	
subnets	
tag *tag-value*	OSPF tag 0-4294967295

OSPF
ISIS level-2

BGP metric 1 LSA metric 20 metric-type E-2
route-map

ASBR OSPF type-5 LSA OSPF
isis level level-2
level

-	-

37.1.46 router ospf

OSPF OSPF router ospf
no OSPF

router ospf

router ospf *process-id* [vrf *vrf-name*]

no router ospf *process-id*

process-id	OSPF 1
vrf-name	VRF OSPF VRF

OSPF

RGOS10.1 OSPF OSPF

vrf *vpn_1* OSPF 10

```
Ruijie(config)# router ospf 10 vrf vpn_1
```

show ip protocols	
show ip ospf	ospf

iD00117205BTr 10.02 0 0 10.02.02 0 0 10.02 236.22 321.( )Tj 10BB4>4 0 10.02 12803 5412.3003 Tm (

no router-id

router-id	ID, IP

OSPF loopback IP
IP loopback OSPF IP

IP

LSA
router-id

router-id 0.0.0.36

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

show ip protocols	

-	-

OSPF

OSPF

area range area range OSPF
summary-address OSPF
NSSA summary-address NSSA ABR

100.100.0.0/16

```
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
```

area range	OSPF
redistribute	

-	-

37.1.49 timers lsa arrival

LSA 2s

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# timers arrival-time 2000
```

show ip ospf	OSPF

10.4(3)	LSA
10.4(2b10)	

37.1.50 timers pacing lsa-group

LSA no

timers pacing lsa-group *seconds*

no timers pacing lsa-group

seconds	LSA : 10-1800

240

LSA (LSA age) LSA LSA
CPU CPU LSA

4
LSA LSA
CPU LSA
LSA 10000 LSA
40 100 10~20

120

```
Ruijie(config)#router ospf 20
Ruijie(config-router)#timers pacing lsa-group 120
```

show ip ospf	ospf

10.4(3)	10.4(3) timers pacing lsa-group timers lsa-group-pacing
10.4(2b10)	

37.1.51 timers pacing lsa-transmit

LSA timers pacing lsa-transmit no

timers pacing lsa-transmit *transmit-time transmit-count*

no timers pacing lsa-transmit

transmit-time	LSA 10-1000
transmit-count	LS-UPD 10-1000

37.1.52 timers spf

OSPF SPF

LSA timers throttle lsa all no

timers throttle lsa all *delay-time hold-time max-wait-time*

no timers throttle lsa all

delay-time	LSA 0-600000
hold-time	2 LSA 1-600000
max-wait-time	LSA LSA LSA 1-600000

delay-time 0
hold-time 5000
max-wait-time 5000

OSPF SPF SPF
timers throttle spf no

timers throttle spf *spf-delay spf-holdtime spf-max-waittime*

no timers throttle spf

spf-delay	SPF 1-600000 OSPF SPF spf-delay
spf-holdtime	SPF 1-600000
spf-max-waittime	SPF 1-600000

spf-delay 1000
spf-holdtime 5000
spf-max-waittime 10000

timers spf	SPF RGOS throttle spf	10.4 SPF timers timers spf

10.4(1)	

37.2

37.2.1 show ip ospf

OSPF show ip ospf

show ip ospf

```
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 4. Checksum 0x0278E0
Number of opaque AS LSA 0. Checksum 0x000000
Number of non-default external LSA 4
External LSA database is unlimited.
Number of LSA originated 6
Number of LSA received 2
Log Neighbor Adjency Changes : Enabled
Graceful-restart disabled
Graceful-restart helper support enabled
Number of areas attached to this router: 1
Area 0 (BACKBONE)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 1
Area has no authentication
SPF algorithm last executed 00:01:26.640 ago
SPF algorithm executed 4 times
Number of LSA 3. Checksum 0x0204bf
Area 1 (NSSA)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 0
```

```
Log Neighbor Adjency Changes : Enabled
Graceful-restart disabled
Graceful-restart helper support enabled
Number of areas attached to this router: 1
BFD enabled
Area 0 (BACKBONE)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 1
Area has no authentication
SPF algorithm last executed 00:01:26.640 ago
SPF algorithm executed 4 times
Number of LSA 3. Checksum 0x0204bf
Area 1 (NSSA)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 0
Number of fully adjacent virtual neighbors through this area is 0
Area has no authentication
SPF algorithm last executed 02:09:23.040 ago
SPF algorithm executed 4 times
Number of LSA 6. Checksum 0x028638
NSSA Translator State iselected
```

Router ID	
Process uptime	OSPF router-id 0.0.0.0
Bound to VRF	OSPF VRF
Conforms to RFC2328	RFC2328
RFC1583Compatibility flag	RFC1583 RFC2328 ASBR
Support Tos	TOS0
Supports opaque LSA	opaque-LSA
Graceful-restart	RFC3623 Graceful Restart GR Restart
Graceful-restart helper	RFC3623 Graceful Restart GR Help
Router Type	OSPF normal ABR ASBR
SPF Delay	SPF
SPF-holdtime	SPF
Pacing lsa-group	LSA
Incomming current DD exchange neighbors	incomming exstart
Outgoing current DD exchange neighbors	outgoing 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
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	
Number of areas attached to this router	
Area type	, Default, Stub,NSSA
Number of interfaces in this area	
Number of fully adjacent neighbors in this area	Full
Number of fully adjacent virtual neighbors through this area	Full
Area authentication	
SPF algorithm last executed	SPF
SPF algorithm executed times	SPF
Number of LSA	LSA
Checksum Sum	LSA 463.94 0.48 26.7 re30013 Tc0F>6<DF5506

-	-

37.2.2 show ip ospf border-routers

ABR/ASBR OSPF show ip ospf border-routers

show ip ospf [*process-id*] border-routers

process-id	ospf

ABR ASBR OSPF OSPF
show ip route OSPF OSPF

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
```

Codes	i I
I	
1.1.1.1	OSPF
[2]	cost
via 10.0.0.1	
FastEthernet 0/1	
ABR, ASBR	ABR ASBR ABR ASBR
Area 0.0.0.1	

-	-

-	-

37.2.3 show ip ospf database

OSPF show ip ospf database

LSAs

show ip ospf [*process-id area-id*] database [adv-router *ip-address* | {asbr-summary | external | network | nssa-external | opaque-area | opaque-as | opaque-link | router | summary } [*link-state-id*] [{adv-router *ip-address* | self-originate}] | database-summary | max-age | self-originate]

area-id	
adv-router	
link-state-id	OSPF
self-originate	
max-age	LSA

router OSPF 02 129.72 364.7

OSPF
OSPF

1 show ip ospf database

Seq#	LSA
Cksum	
Link-Count	
Route	LSA
Tag	

2 show ip ospf database asbr-summar y

```
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
Op7
Op7
Op7
Op7
Op7TypTj

Adver9 0 Td(  )Tj-0.0013 Tc -25.15 -1.353 Td(OSPF Router with ID (1.1.1.35F0
Op7 1 656.78 150.48 1.5  0. 1 Tf-0.0008 Tc 1.252 0 Td0 1 .742 0 10.02 14BT/1
```

```
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: AS-external-LSA
Link State ID: 20.0.0.0 (External Network Number)
Advertising Router: 1.1.1.1
LS Seq Number: 8000000a
Checksum: 0x7627
Length: 36
Network Mask: /24
Metric Type: 2 (Larger than any link state path)
TOS: 0
Metric: 20
Forward Address: 0.0.0.0
External Route Tag: 0
```

show ip ospf database external

OSPF Router with ID	OSPF
Type-5 AS External Link States	
LS age	
Options	
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	
Network Mask	
Metric Type	
TOS	TOS 0
Metric	
Forward Address	IP 0.0.0.0
External Route Tag	32 OSPF OSPF

4 show ip ospf database network

```
Ruijie# show ip ospf database network
OSPF Router with ID (1.1.1.1) (Process ID 1)
Network Link States (Area 0.0.0.0)
LS age: 572
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: network-LSA
```

```
Link State ID: 192.88.88.27 (address of Designated Router)
Advertising Router: 1.1.1.1
LS Seq Number: 80000001
Checksum: 0x5366
Length: 32
Network Mask: /24
Attached Router: 1.1.1.1
Attached Router: 3.3.3.3
```

show ip ospf database network

OSPF Router with ID	OSPF
Network Link States	
LS age	
Options	
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	
Network Mask	
Attached Router	

5 show ip ospf database route r

```
Ruijie# show ip ospf database router
OSPF Router with ID (1.1.1.1) (Process ID 1)
Router Link States (Area 0.0.0.0)
LS age: 322
Options: 0x2 (*|-|-|-|-|-|E|-)
Flags: 0x3 : ABR ASBR
LS Type: router-LSA
Link State ID: 1.1.1.1
Advertising Router: 1.1.1.1
LS Seq Number: 80000012
Checksum: 0x6d3a
Length: 48
Number of Links: 2
Link connected to: Stub Network
(Link ID) Network/subnet number: 100.0.1.1
(Link Data) Network Mask: 255.255.255.255
Number of TOS metrics: 0
TOS 0 Metric: 0
```

show ip ospf database router

OSPF Router with ID	OSPF
Router Link States	
LS age	
Options	
Flag	router
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	
Number of Links	
Link connected to (Link ID)	

LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	

Network Mask	
Metric Type	
TOS	TOS 0
Metric	
NSSA:Forward Address	IP 0.0.0.0
External Route Tag	32 OSPF OSPF

8 show ip ospf database external

```
Ruijie# show ip ospf database external
OSPF Router with ID (1.1.1.1) (Process ID 1)
AS External Link States
LS age: 1290
Options: 0x2 (*|-|-|-|-|-|E|-)
LS Type: AS-external-LSA
Link State ID: 20.0.0.0 (External Network Number)
Advertising Router: 1.1.1.1
LS Seq Number: 8000000a
Checksum: 0x7627
Length: 36
Network Mask: /24
Metric Type: 2 (Larger than any link state path)
TOS: 0
Metric: 20
Forward Address: 0.0.0.0
External Route Tag: 0
```

show ip ospf database external

OSPF Router with ID	OSPF
Type-7 AS External Link States	
LS age	
Options	
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	
Network Mask	

Metric Type	
TOS	TOS 0
Metric	
Forward Address	IP 0.0.0.0
External Route Tag	32 OSPF OSPF

9 show ip ospf database database-summary

```
Ruijie# show ip ospf database database-summary
OSPF process 1:
Router Link States      : 4
Network Link States     : 2
Summary Link States     : 4
ASBR-Summary Link States : 0
AS External Link States  : 4
NSSA-external Link States: 2
```

show ip ospf database database-summary

OSPF Process

interface-type	
interface-number	

OSPF OSPF

show ip ospf interface FastEthernet *1/0*

```
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
```

BFD :

```
Ruijie# show ip ospf interface fa 1/0
FastEthernet 1/0 is up, line protocol is up
Internet Address 192.88.88.27/24, Ifindex 4, Area 0.0.0.0, MTU 1500
Matching network config: 192.88.88.0/24
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1, BFD enabled
Designated Router (ID) 1.1.1.1, Interface Address 192.88.88.27
Backup Designated Router (ID) 3.3.3.3, Interface Address
192.88.88.72
Timer intervals configured,Hello 10,Dead 40,Wait 40,Retransmit 5
Hello due in 00:00:03
Neighbor Count is 1, Adjacent neighbor count is 1
Crypt Sequence Number is 70784
Hello received 1786 sent 1787, DD received 13 sent 8
LS-Req received 2 sent 2, LS-Upd received 29 sent 53
LS-Ack received 46 sent 23, Discarded 1
```

show ip ospf interface serial *1/0*

FastEthernet 0/0 State	UP Down
Internet Address	IP
Area	OSPF
MTU	MTU
Matching network config	OSPF network area
Process ID	
Router ID	OSPF
Network Type	OSPF
Cost	OSPF
Transmit Delay is	OSPF

-	-

37.2.5 show ip ospf neighbor

OSPF show ip ospf neighbor

show ip ospf [*process-id*] neighbor [[detail] | [[*interface-type interface-number*] [*neighbor-id*]]]

detail	
interface-type interface-number	
neighbor-id	

OSPF

show ip ospf neighbor

```
Ruijie# show ip ospf neighbor
OSPF process 1, 1 Neighbors, 1 is Full:
Neighbor ID     Pri     State     BFD State       Dead Time
Address       Interface
3.3.3.3         1       Full/BDR   Up             00:00:32
192.88.88.72  FastEthernet 1/0
Ruijie# show ip ospf neighbor detail
Neighbor 3.3.3.3, interface address 192.88.88.72
In the area 0.0.0.0 via interface FastEthernet 1/0
Neighbor priority is 1, State is Full, 11 state changes
DR is 192.88.88.27, BDR is 192.88.88.72
Options is 0x52 (*|O|-|EA|-|-|E|-)
Dead timer due in 00:00:32
Neighbor is up for 05:11:27
Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
Crypt Sequence Number is 0
Thread Inactivity Timer on
Thread Database Description Retransmission off
Thread Link State Request Retransmission off
Thread Link State Update Retransmission off
Thread Poll Timer on
Graceful-restart helper disabled
```

BFD ″BFD session state up″

```
Ruijie# show ip ospf neighbor
OSPF process 1, 1 Neighbors, 1 is Full:
Neighbor ID     Pri   State     Dead Time   Address     Interface
3.3.3.3  1   Full/BDR  00:00:32  192.88.88.72  FastEthernet 1/0
Ruijie# show ip ospf neighbor detail
Neighbor 3.3.3.3, interface address 192.88.88.72
In the area 0.0.0.0 via interface FastEthernet 1/0
Neighbor priority is 1, State is Full, 11 state changes
DR is 192.88.88.27, BDR is 192.88.88.72
Options is 0x52 (*|O|-|EA|-|-|E|-)
Dead timer due in 00:00:32
Neighbor is up for 05:11:27
Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
Crypt Sequence Number is 0
Thread Inactivity Timer on
Thread Database Description Retransmission off
Thread Link State Request Retransmission off
Thread Link State Update Retransmission off
Thread Poll Timer on
Graceful-restart helper disabled
BFD session state up
```

BDR	BDR (Hello BDR)
Options	Hello E 0 STUB STUB
Dead timer due in	
Neighbor up time	
Database Summary List	DD
Link State Request List	LS
Link State Retransmission List	
Crypt Sequence Number	MD5
Thread Inactivity Timer	
Thread Database Description Retransmission	DD
Thread Link State Request Retransmission	LS
Thread Link State Update Retransmission	LS
Thread Poll Timer	Poll Timer
Graceful-restart helper	GR Helper

-	-

-	-

37.2.6 show ip ospf route

OSPF

show ip ospf [*process-id*] route [count]

process-id	OSPF OSPF
count	OSPF countcount

OSPF count OSPF

```
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

codes	
100.0.0.0/24	
[1]	cost
via	

-	-

-	-

37.2.7 show ip ospf summary-address

OSPF show ip ospf summary-address

show ip ospf [*process-id*] summary-address

process-id	OSPF OSPF

NSSA ABR

show ip ospf summary-address

```
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
```

Summary Address	
Summary Mask	
Advertise	
Status	
Aggregated subnets	

-	-

-	-

37.2.8 show ip ospf virtual-link

OSPF show ip ospf virtual-link

show ip ospf [*process-id*] virtual-links *ip-address*

process-id	OSPF OSPF
ip-address	ID

show ip ospf neighbor

show ip ospf virtual-links

```
Ruijie# show ip ospf virtual-links
Virtual Link VLINK0 to router 1.1.1.1 is up
Transit area 0.0.0.1 via interface FastEthernet 0/1
Local address 10.0.0.37/32
```

```
Remote address 10.0.0.27/32
Transmit Delay is 1 sec, State Point-To-Point,
Timer intervals configured,Hello 10,Dead 40,Wait 40,Retransmit 5
Hello due in 00:00:05
Adjacency state Full
```

Virtual Link VLINK0 to router	
Virtual Link state	.
Transit area	
via interface	
Local address	
Remote Address	
Transmit Delay	
State	
Time intervals configured	Hello Dead Wait Retransmit
Adjacency State	FULL

Retransmit	

38 OSPFv3

38.1

38.1.1 area default-cost

stub ABR stub no

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

no area *area-id* default-cost

area-id	stub IPv4
cost	stub 1-16777214

default-cost 1

stub ABR

stub 50 100

```
ipv6 router ospf 1
area 50 stub
area 50 default-cost 100
```

area stub	stub

-	-

38.1.2 area range

no

area *area-id* range *ipv6-prefix*/*prefix-length* [advertise|not-advertise]

no area *area-id* range *ipv6-prefix*/*prefix-length*

area-id	IPv4
ipv6-prefix/*prefix-length*	
advertise	
not-advertise	

ABR

advertise

not-advertise

cost

OSPF

area range

1

```
ipv6 router ospf 1
area 1 range 2001:DB8:1:2::/64
```

summary-prefix	

	-

38.1.3 area stub

stub stub no

stub

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

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

area-id	stub IPv4
no-summary	stub ABR 3 LSA ABR stub 3 LSA ”]ÔäÐ›à ü.23fTf

-	-

38.1.5 auto-cost

OSPFv3

no

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

no auto-cost [reference-bandwidth]

reference-bandwidth *ref-bw*	Mbps 1-4294967

100Mbps

no auto-cost reference-bandwidth

ipv6 ospf cost

10M

```
ipv6 router ospf 1
auto-cost reference-bandwidth 10
```

ipv6 ospf cost	
show ipv6 ospf	OSPFv3

-	-

38.1.6 bfd all-interfaces (OSPFv3)

OSPFv3 BFD OSPFv3 bfd all-interfaces no

bfd all-interfaces

no bfd all-interfaces

-	-

OSPFv3 Hello OSPFv3 BFD
FULL BFD BFD BFD
OSPFv3

ipv6 ospf bfd [disable] BFD
bfd all-interfaces

ipv6 router ospf *process-id*	OSPFv3 OSPFv3
ipv6 ospf bfd [disable]	OSPFv3 BFD

OSPFv3

```
enable
clear ipv6 ospf process
```

-	-

-	-

38.1.8 default-information originate

OSPFv3 default-information originate no

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

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

always	OSPFv3
metric *metric*	0-16777214 1
metric-type *type*	OSPFv3 1 2 1 2
route-map *map-name*	route-map , route-map

1
2

redistribute default-information OSPFv3 ASBR

redistribute OSPFv3 ASBR default-information originate

always OSPFv3

redistribute	
show ipv6 ospf	OSPFv3

-	-

38.1.10 distance

OSPFv3 no

distance {*distance* | ospf { intra-area *distance* | inter-area *distance* | external *distance* }}
no distance [ospf]

distance	1-255
intra-area *distance*	1-255
inter-area *distance*	1-255
external *distance*	1-255

110

110
110
110

OSPFv3

OSPFv3

255

OSPFv3 160

```
Ruijie(config)# ipv6 router ospf 20
Ruijie(config-router)# distance ospf external 160
```


ipv6 router ospf	OSPFv3

-	-

38.1.11 ipv6 ospf area

OSPFv3 no

no

ipv6 ospf cost *cost* [instance *instance-id*]

no ipv6 ospf cost [instance *instance-id*]

cost	1-65535
instance *instance-id*	OSPFv3 0-255

seconds	1-65535( )	
instance *instance-id*	OSPFv3	0-255

ipv6 ospf hello-interval 4

hello 4 hello

hello

OSPFv3 MTU MTU
MTU MTU
MTU

ethernet 1/0 MTU

```
Ruijie(config)# interface ethernet 1/0
Ruijie(config-if)# ipv6 ospf mtu-ignore
```

ipv6 router ospf	OSPFv3
ipv6 mtu	IPv6 MTU

-	-

38.1.16 ipv6 ospf hello-interval

Hello no

ipv6 ospf hello-interval *seconds* [instance *instance-id*]

no ipv6 ospf hello-interval [instance *instance-id*]

seconds	Hello 1-65535( )
instance *instance-id*	OSPFv3 0-255

10 NBMA 30

Hello

hello 20s

```
ipv6 ospf hello-interval 20
```

ipv6 ospf dead-interval	
show ipv6 ospf interface	OSPFv3

ipv6 ospf area	OSPFv3

-	-

38.1.18 ipv6 ospf network

no

ipv6 ospf network {broadcast | non-broadcast | point-to-point | point-to-multipoint [non-broadcast]} [instance *instance-id*]

no ipv6 ospf network [broadcast | non-broadcast | point-to-point | point-to-multipoint [non-broadcast]] [instance *instance-id*]

broadcast	
non-broadcast	
point-to-point	
point-to-multipoint	
point-to-multipoint non-broadcast	
instance *instance-id*	OSPFv3 0-255

OSPFv3

```
ipv6 ospf network point-to-point
```

ipv6 ospf priority	
show ipv6 ospf interface	OSPFv3
ipv6 ospf area	OSPFv3

	-	-

38.1.19 ipv6 ospf priority

no

ipv6 ospf priority *number-value* [instance

no ipv6 ospf retransmit-interval [instance *instance-id*]

LSA

OSPFv3

-	-

38.1.26 redistribute

OSPFv3

no

redistribute {bgp | connected | isis [*area-tag*] | ospf *process-id* | rip | static } [{level-1 | level-1-2 | level-2} | match {internal | external [1|2]} | metric *metric-value* | metric-type {*1*|*2*} | route-map *route-map-name* | tag *tag-value*]

no redistribute {bgp | connected | isis [*area-tag*] | ospf *process-id* | rip | static } [{level-1 | level-1-2 | level-2} | match { internal | external [1|2]} | metric | metric-type {*1*|*2*} | route-map *route-map-name* | tag *tag-value*]

bgp	bgp
connected	
isis [*area-tag*]	isis *area-tag* isis
ospf *process-id*	ospf *process-id* ospf 1-65535
rip	rip
static	
level-1 | level-1-2 | level-2	IS-IS level
match	OSPFv3 internal external [1|2] E1 E2
metric *metric-value*	OSPFv3 external 2 LSA metric metric-value metric 0-16777214
metric-type { *1*|*2*}	E-1 E-2
route-map *route-map-name*	map-tag 32
tag *tag-value*	OSPFv3 tag 0-4294967295

metric-type 2

ISIS level-2

OSPFv3 OSPFv3

route-map

router-id	IPv4

OSPFv3 loopback IPv4
IPv4 loopback OSPFv3
IPv4

OSPFv3 Router ID IPv4

OSPFv3

OSPFv3
Router ID OSPFv3

OSPFv3 1.1.1.1

```
router-id 1.1.1.1
```

ipv6 ospf priority	
show ipv6 ospf	OSPFv3

-	-

38.1.28 summary-prefix

OSPFv3 summary-prefix
no

summary-prefix *ipv6-prefix*/*prefix-length* [not-advertise | tag *<0-4294967295>*] 9 1 E1350E2CD Tf 04.61

OSPFv3
OSPFv3

area range area range OSPFv3
summary-prefix OSPFv3
summary-prefix (ASBR)

2001:DB8::/64 2001:DB8::/64

```
summary-prefix 2001:DB8::/64
```

area range	OSPFv3
redistribute	

-	-

38.1.29 timers spf

OSPFv3 SPF SPF
timers spf no

timers spf *spf-delay spf-holdtime*
no timers spf

spf-delay	SPF 0-214748364 ( ) OSPF SPF
spf-holdtime	SPF 0-214748364 ( ) SPF

spf-max-waittime	SPF 1-600000

spf-delay 1000
spf-holdtime 5000
spf-max-waittime 10000

spf-delay SPF SPF
SPF *spf-holdtime* SPF
spf-max-waittime
SPF SPF
spf-holdtime
spf-delay *spf-holdtime* *spf-max-waittime*
SPF
timers spf SPF
SPF
timers throttle spf

spf-holdtime *spf-delay* *spf-holdtime* *spf-delay* *spf-max-waittime* *spf-holdtime* *spf-max-waittime* *spf-holdtime* timers throttle spf timers spf timers spf timers throttle spf timers throttle spf

OSPFv3 SPF 5
1000 90000 SPF
5ms 1s 3s 7s 15s 31s 63s 89s 179s 179+90 ……

```
Ruijie(config)# ipv6 router ospf 20
Ruijie(config-router)# timers spf 5 1000 90000
```

clear ipv6 ospf	OSPFv3
show ipv6 ospf	OSPFv3
timers spf	SPF

-	-

38.2

38.2.1 show ipv6 ospf

OSPFv3

show ipv6 ospf [*process-id*]

```
BFD is enabled
Area BACKBONE(0)
Number of interfaces in this area is 1(1)
SPF algorithm executed 4 times
Number of LSA 3.  Checksum Sum 0x1DDF1
Number of Unknown LSA 0
```

ipv6 router ospf	OSPFv3
default-information originate	
default-metric	
router-id	OSPFv3
timers spf	OSPFv3 SPF SPF

-	-

38.2.2 show ipv6 ospf database

OSPFv3

show ipv6 ospf [*process- id*] database [*lsa-type* [adv-router *router-id*]]

process- id	OSPFv3
lsa-type	LSA AS-external-LSAs Link-LSAs Inter-Area-Prefix-LSAs Inter-Area-Router-LSAs Intra-Area-Prefix-LSAs Network-LSAs Router-LSAs LSA
adv-router *router-id*	router LSA

OSPFv3

```
Ruijie# show ipv6 ospf database
OSPFv3 Router with ID (1.1.1.1) (Process 1)
Link-LSA (Interface FastEthernet 1/0)
Link State ID   ADV Router     Age  Seq#      CkSum  Prefix
0.0.0.2         1.1.1.1        197 0x80000001 0x7cd8     0
0.0.0.5         2.2.2.2        206 0x80000001 0x8c86     0
Link-LSA (Interface Loopback 1)
Link State ID   ADV Router     Age  Seq#      CkSum  Prefix
0.0.64.1        1.1.1.1         82 0x80000001 0xb760     0
Router-LSA (Area 0.0.0.0)
Link State ID   ADV Router     Age  Seq#      CkSum   Link
0.0.0.0         1.1.1.1      17 0x80000006 0x62a1     1
0.0.0.0         2.2.2.2        156 0x80000003 0x8653     1
Network-LSA (Area 0.0.0.0)
Link State ID   ADV Router     Age  Seq#      CkSum
0.0.0.5         2.2.2.2        157 0x80000001 0xf8f6
Router-LSA (Area 0.0.0.1)
Link State ID   ADV Router     Age  Seq#      CkSum   Link
0.0.0.0         1.1.1.1         17 0x80000002 0x0529     0
Inter-Area-Prefix-LSA (Area 0.0.0.1)
Link State ID   ADV Router     Age  Seq#      CkSum
0.0.0.1         1.1.1.1         77 0x80000002 0x83b4
AS-external-LSA
Link State ID   ADV Router     Age  Seq#      CkSum
0.0.0.1         1.1.1.1         1 0x80000001 0x6035 E2
```

ipv6 router ospf	OSPFv3

-	-

38.2.3 show ipv6 ospf interface

OSPFv3

show ipv6 ospf interface [*interface-type interface-number*]

interface-type interface-number	

OSPFv3

```
Ruijie# show ipv6 ospf interface
FastEthernet 1/0 is up, line protocol is up
Interface ID 2
IPv6 Prefixes
fe80::2d0:22ff:fe22:2223/64 (Link-Local Address)
OSPFv3 Process (1), Area 0.0.0.0, Instance ID 0
Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State BDR, Priority 1
Designated Router (ID) 2.2.2.2
Interface Address fe80::c800:eff:fe84:1c
Backup Designated Router (ID) 1.1.1.1
Interface Address fe80::2d0:22ff:fe22:2223
Timer interval configured,Hello 10,Dead 40,Wait 40,Retransmit 5
Hello due in 00:00:02
Neighbor Count is 1, Adjacent neighbor count is 1
Hello received 26 sent 26, DD received 5 sent 4
LS-Req received 1 sent 1, LS-Upd received 3 sent 6
LS-Ack received 6 sent 2, Discarded 0
```

BFD , “**BFD enabled**”

```
Ruijie# show ipv6 ospf interface
FastEthernet 1/0 is up, line protocol is up
Interface ID 2
IPv6 Prefixes
fe80::2d0:22ff:fe22:2223/64 (Link-Local Address)
OSPFv3 Process (1), Area 0.0.0.0, Instance ID 0
Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State BDR, Priority 1  BFD enabled
Designated Router (ID) 2.2.2.2
Interface Address fe80::c800:eff:fe84:1c
Backup Designated Router (ID) 1.1.1.1
Interface Address fe80::2d0:22ff:fe22:2223
Timer interval configured,Hello 10,Dead 40,Wait 40,Retransmit 5
Hello due in 00:00:02
Neighbor Count is 1, Adjacent neighbor count is 1
Hello received 26 sent 26, DD received 5 sent 4
LS-Req received 1 sent 1, LS-Upd received 3 sent 6
LS-Ack received 6 sent 2, Discarded 0
```


-	-

38.2.4 show ipv6 ospf neighbor

OSPFv3

```
Dead timer due in 00:00:36
Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
BFD session state up
```

ipv6 router ospf	OSPFv3
ipv6 ospf area	OSPFv3
area virtual-link	OSPFv3
show ipv6 ospf interface	OSPFv3

-	-

38.2.5 show ipv6 ospf route

OSPFv3

show ipv6 ospf [*process- id*] [count] route

process- id	OSPFv3
count	OSPFv3

ipv6 router ospf	OSPFv3

-	-

38.2.6 show ipv6 ospf summary-prefix

OSPFv3

show ipv6 ospf [*process-id*] summary-prefix

process- id	OSPFv3

OSPFv3

```
Ruijie# show ipv6 ospf summary-prefix
OSPFv3 Process 1, Summary-prefix:
2001:db8::/64,Metric 16777215,Type0,Tag0,Match count0,advertise
```

ipv6 router ospf	OSPFv3
summary-prefix	OSPFv3

-	-

38.2.7 show ipv6 ospf topology

OSPFv3

show ipv6 ospf [*process- id*] topology [area *area-id*]

process- id	OSPFv3
area-id	

OSPFv3

```
Ruijie# show ipv6 ospf topology
OSPFv3 Process (1)
OSPFv3 paths to Area (0.0.0.0) routers
Router ID       Bits  Metric    Next-Hop
Interface
1.1.1.1          EB  --
2.2.2.2          E   1         2.2.2.2
FastEthernet 1/0
OSPFv3 paths to Area (0.0.0.1) routers
Router ID       Bits  Metric    Next-Hop
Interface
1.1.1.1          B   --
```

ipv6 router ospf	OSPFv3
area range	OSPFv3

-	-

38.2.8 show ipv6 ospf virtual-links

OSPFv3

show ipv6 ospf [*process- id*] virtual-links

process- id	OSPFv3

OSPFv3

```
Ruijie# show ipv6 ospf virtual-links
Virtual Link VLINK1 to router 2.2.2.2 is down
Transit area 0.0.0.1 via interface FastEthernet 1/0, instance ID 0
Local address *
Remote address 2001:DB8::1/128
Transmit Delay is 1 sec, State Down,
Timer intervals configured,Hello 10,Dead 40,Wait 40,Retransmit 5
Hello due in inactive
Adjacency state Down
```

ipv6 router ospf	OSPFv3
area virtual-link	OSPFv3
show ipv6 ospf neighbor	OSPFv3

-	-

39 BGP CLI

39.1

39.1.1 address-family ipv4

address-faimly IPv4 VRF BGP vrf
no vrf exit-address-family
BGP

address-family ipv4 vrf *vrf-name*

no address-family ipv4 vrf *vrf-name*

BGP IPv6 BGP IPv6
IPv6 BGP IPv6 IPv6

multicast BGP IPV6
RPF
BGP

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv6
```


39.1.4 address-family vpnv4

-	-

39.1.5 aggregate-address IPv4

BGP IPv4 no

aggregate-address *ip-address mask* {as-set |summary-only }

no aggregate-address *ip-addres mask* {as-set |summary-only }

ip-address	
mask	
as-set	AS
summary-only	

BGP BGP IPv4 BGP IPv4 VRF

BGP
aggregate-address summary-only

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# aggregate-address 10.0.0.0 255.0.0.0 as-set
```

ipv6-network	
length	
as-set	AS
summary-only	

BGP IPv6

BGP
aggregate-address summary-only

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# address-family ipv6
Ruijie(config-router-af)# aggregate-address 2008::/90  as-set
```

router bgp	BGP

-	-

39.1.7 bgp always-compare-med

BGP Multi Exit Discriminator MED no

Å . - þ K

IGP

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp always-compare-med
```

show ip bgp	BGP
bgp bestpath med confed	AS MED
bgp bestpath med missing-as-worst	MED
bgp deterministic-med	AS

-	-

39.1.8 bgp bestpath as-path ignore

AS no

bgp bestpath as-path ignore

no bgp bestpath as-path ignore

-	-

AS

BGP

(RFC1771) BGP AS
AS
AS AS

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath as-path ignore
```

show ip bgp	BGP

-	-

39.1.9 bgp bestpath compare-confed-aspath

ASPATH ASPATH

no

bgp bestpath compare-confed-aspath

no bgp bestpath compare-confed-aspath

-	-

ebgp peer ASPATH

BGP

EBGP peer

ASPATH ASPATH

ASPATH 0

bgp bestpath compare-routerid

no bgp bestpath compare-routerid

-	-

EBGP peers

BGP

EBGP peers

router ID

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp bestpath compare-routerid
```

show ip bgp	BGP
bgp router-id	BGP Router ID

-	-

39.1.11 bgp bestpath med confed

AS MED no

bgp bestpath med confed [missing-as-worst]

no bgp bestpath med confed [missing-as-worst]

missing-as-worst	MED

AS MED

BGP

	-	-

39.1.14 bgp client-to-client reflection

no

cluster-id	IP 4 (ip)

router-id

BGP

router ID

ID

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# bgp cluster-id 10.0.0.1
```

bgp client-to-client reflection	
neighbor route-reflector-client	

-	-

39.1.16 bgp confederation identifier

AS no

bgp confederation identifier *as-number*

no bgp confederation identifier

as-number	AS 1..65535

,ÕG!5B

BGP CLI

BGP

show ip bgp	BGP
bgp bestpath always-compare-med	AS MED
bgp bestpath med confed	AS MED
bgp bestpath med missing-as-worst	MED

-	-

39.1.21 bgp enforce-first-as

AS_PATH AS UPDATE

no

bgp enforce-first-as

no bgp enforce-first-as

-	-

BGP

UPDATE AS

```
Ruijie(config-router)# bgp enforce-first-as
```

show ip bgp	BGP

-	-

39.1.22 bgp fast-external-fallover

EBGP peer BGP

no

bgp fast-external-fallover

no bgp fast-external-fallover

-	-

BGP

EBGP

```
Ruijie(config-router)# bgp faster-external-fallover
```

router bgp	BGP

-	-

39.1.23 bgp graceful-restart

BGP bgp graceful-restart no BGP

bgp graceful-restart

no bgp graceful-restart

-	-

BGP

BGP

BGP Open

GR

bgp graceful-restart GR Open GR

GR BGP GR GR
BGP BGP GR
BGP Peer GR
BGP BGP
BGP
S5750E/P GR

```
Ruijie(config-router)# bgp graceful-restart restart-time 150
Ruijie(config-router)# no bgp graceful-restart restart-time
```

bgp graceful-restart	BGP

10.4(2)	

39.1.25 bgp graceful-restart stalepath-time

BGP bgp graceful-restart stalepath-time no stalepath-time

bgp graceful-restart stalepath-time *time*

no bgp graceful-restart stalepath-time

time	GR stale 1 3600

360

BGP

GR Helper stalepath-time GR Helper GR Restarter Restarter EOR GR Helper GR Restarter Restarter “ Stale ” GR Helper GR Restarter “ Stale ” M

delay-time	nexthop 0..100

5

BGP BGP IPv4/IPv6/VPNv4 BGP IPv4 VRF

nexthop bgp nexthop trigger enable

```
Ruijie(config-router)# bgp nexthop trigger delay 30
```

-	-

39.1.29 bgp redistribute-internal

BGP IBGP IGP RIP OSPF ISIS

bgp redistribute-internal

no bgp redistribute-internal

-	-

route-id

BGP

BGP ID——IP

```
Ruijie(config-router)# bgp router-id 10.0.0.1
```

show ip bgp dampening dampened-paths	
bgp dampening	

-	-

39.1.31 bgp scan-rib disable

BGP no

bgp scan-rib disable

no bgp scan-rib disable

-	-

39.1.32 bgp scan-time

BGP

bgp scan-time *time*

no bgp scan-time [*time*]

time	5..60

60

BGP BGP IPv4/IPv6/VPNv4 BGP IPv4 VRF

BGP bgp scan-rib enable

```
Ruijie(config-router)# bgp scan-time 30
```

bgp scan-rib enable	BGP

[redacted]

0 3600 120

1 3600

BGP

R

t

9

GP

[redacted]

in	soft
out	soft BGP speaker
soft	
soft in	
soft out	

vrf

clear bgp ipv4 unicast	BGP IPv4

-	-

39.1.35 clear bgp ipv4 unicast

BGP IPv4 clear ip bgp

clear ip bgp	clear ip bgp

clear ip bgp

clear ip bgp

clear ip bgp	BGP IPv4

-	-

39.1.36 clear bgp ipv4 unicast dampening

clear bgp ipv4 unicast dampening [*address* [*mask*]]

address	IP
mask	

BGP

BGP

```
Ruijie# clear bgp ipv4 unicast dampening 192.168.0.0 255.255.0.0
```

show ip bgp dampening dampened-paths	
bgp dampening	

-	-

39.1.37 clear bgp ipv4 unicast external

EBGP

clear bgp ipv4 unicast external [[soft] [in | out]]

in	soft

out	soft BGP speaker
soft	
soft in	
soft out	

BGP

```
Ruijie# clear bgp ipv4 unicast external in
```

clear ip bgp	BGP
show ip bgp neighbors	BGP

-	-

39.1.38 clear bgp ipv4 unicast flap-statistics

clear bgp ipv4 unicast flap-statistics [*address* [*mask*]]

address	IP
mask	

```
Ruijie# clear bgp ipv4 unicast flap-statistics
```

bgp dampening	
show ip bgp	BGP

-	-

39.1.39 clear bgp ipv4 unicast peer-group

clear bgp ipv4 unicast peer-group *peer-group-name* [[soft] [in | out]]

peer-group-name	
in	soft
out	soft BGP speaker
soft	
soft in	
soft out	

BGP

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-	-

39.1.40 clear bgp ipv6 unicast

BGP IPv6

clear bgp ipv4 unicast

clear bgp ipv4 unicast	clear bgp ipv4 unicast

clear bgp ipv4 unicast

clear bgp ipv4 unicast

clear bgp ipv4 unicast	BGP IPv4

-	-

39.1.41 clear bgp vpnv4 unicast

BGP VPNV4

clear bgp ipv4 unicast

clear bgp ipv4 unicast	clear bgp ipv4 unicast

clear bgp ipv4 unicast

clear bgp ipv4 unicast

clear bgp ipv4 unicast	BGP IPv4

-	-

39.1.42 clear ip bgp

BGP IPv4

clear ip bgp {* | *as number* } [soft [in | out]]

*	BGP BGP ipv4 unicast OVERFLOW
address	peer BGP
as number	AS
in	
out	
soft	
soft in	
soft out	

BGP

BGP

BGP BGP

peer neighbor soft-reconfiguration inbound BGP BGP speaker

show ip bgp neighbors BGP

neighbor soft-reconfiguration inbound

BGP router

```
Ruijie# clear bgp ipv4 unicast *
```


neighbor soft-reconfiguration inbound

BG1 Tf 10.02 0 0 10.02 129.72 633.8003 Tm ( )

-	-

39.1.44 clear ip bgp external

IPv4 EBGP

clear ip bgp external [[soft] [in | out]]

in	soft
out	soft BGP speaker
soft in	
soft out	

BGP

```
Ruijie# clear ip bgp external in
```

clear ip bgp	BGP
show ip bgp neighbors	BGP

-	-

39.1.45 clear ip bgp flap-statistics

IPv4

clear ip bgp flap-statistics [*address*[*mask*]]

address	IP

	mask	

gp vrf *vrf-name* [* | *address*] [[soft] [in | out]]

vrf-name	vrf
*	vrf BGP
address	vrf peer BGP
in	soft
out	soft BGP speaker
soft	
soft in	
soft out	

vrf BGP

ar ip bgp vrf my-vrf in

no

BGP

network default-informnation originate
network IGP

```
Ruijie(config-router)# default-informnation originate
```

redistribute	

-	-

39.1.51 distance bgp

BGP no

distance bgp *external-distance internal -distance local-distance*

no distance bgp [*external-distance internal -distance local-distance*]

external-distance	EBGP peers 1..255
internal-distance	IBGP peers 1..255
local-distance	peers IGP network backdoor 1..255

external-distance 20
internal-distance 200
local-distance 200

BGP

BGP
external-distance IGP (OSPF RIP)
internal-distance local-distance IGP

```
Ruijie(config-router)# distance bgp 20 20 200
```

neighbor soft-reconfiguration inbound	BGP session BGP ( )
show ip bgp	BGP

-	-

39.1.52 exit-address-family

BGP address-family

exit-address-family

-	-

BGP address-family

bgp address-family bgp

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

address-family ipv4	address-family ipv4

-	-

39.1.53 ip as-path access-list

AS no

ip as-path access-list *path-list-num* {permit | deny} *regular-expression*

no ip as-path access-list *path-list-num*

path-list-num	AS AS 1---500
permit	
deny	
regular-expression	1..255

IP

```
Ruijie(config-router)# ip as-path access-list hsd deny ^123$
```

as-path

neighbor filter-list

neighbor distribute-list

- -

39.1.54 maximum-prefix

no

maximum-prefix *maximum*

no maximum-prefix

Maximum <1 - 4294967295>

No

ipv4/ipv6 multicast 10000.

ipv4/ipv6 unicast vpnv4 unicast, ipv4 vrf *memory-limit.*

memory-limit (system-memory/256M)*100000 system-memory 256M memory-limit 100000

BGP BGP IPv4 BGP IPv6 BGP IPv4 VRF BGP VPNv4

BGP redistribute BGP , table overflow overflow

router bgp	BGP
neighbor remote-as	BGP

-	-

39.1.56 neighbor advertisement-interval

1842 l 141.7519.1842 l 141.75 l W* n q 0 841.98 595.2 -841.98 re W n 0.852 g 135.950712.96 155.1 20.64 re f Q Q 0.852 g 141.7519.1

PE PE PE AS no

neighbor {*peer-address* | *peer-group-name*} allowas-in number

no neighbor {[*peer-address* | *peer-group-name*} allowas-in

peer-address	
peer-group-name	32
number	AS 3 [1,10]

allowas-in

BGP BGP IPv4 BGP IPv4VRF

spoke_hub PE PE
PE vrf vrf

peer-group-name	32

as-override

BGP BGP IPv4 BGP IPv4VRF

BGP AS
AS BGP AS
vpn CE AS
CE PE PE CE AS
CE
EBGP

```
Ruijie(config)# router bgp 60
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 100
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# neighbor 10.0.0.1 as-override
```

router bgp	BGP
neighbor remote-as	BGP

-	-

39.1.59 neighbor default-originate

BGP speaker ( ) no

neighbor {

BGP

router bgp	BGP
neighbor remote-as	BGP ( )

-	-

39.1.61 neighbor distribute-list

BGP ACL no ACL

neighbor {*peer-address* | *peer-group-name*} distribute-list *access-list-number* {in | out}

no neighbor {*peer-address* | *peer-group-name*} distribute-list *access-list-number* {in | out}

peer-address	IPv4 IPv6
peer-group-name	32
access-list-number	ACL
in	ACL
out	ACL

BGP BGP IPv4 BGP IPv6 BGP IPv4 VRF BGP VPNv4

(in) (out) neighbor prefix-list

BGP

neighbor remote-as	BGP
ip access-list	IP ACL IP ACL

-	-

39.1.62 neighbor ebgp-multihop

EBGP BGP no

neighbor {*peer-address* | *peer-group-name*} ebgp-multihop [*ttl*]

no neighbor {*peer-address* | *peer-group-name*} ebgp-multihop

peer-address	IPv4 IPv6
peer-group-name	32
ttl	1..255

EBGP BGP ebgp-multihop ttl 255

BGP BGP IPv4 BGP IPv6 BGP IPv4 VRF

BGP EBGP peers

BGP

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remote-as 65100
Ruijie(config-router)# neighbor 10.0.0.1 ebgp-multihop
```

router bgp	BGP
neighbor remote-as	BGP

39.1.64 neighbor local-as

BGP AS AS Remote AS BGP no AS

neighbor {*peer-address* | *peer-group-name*} local-as *as-number* [no-prepend [replace-as [dual-as]]]

no neighbor {*peer-address* | *peer-group-name*} local-as

peer-address	IPv4 IPv6
peer-group-name	32
as-number	AS 1 65535
no-prepend	AS-PATH AS
replace-as	AS-PATH AS BGP AS
dual-as	BGP AS Local AS BGP

Local AS Local AS Local AS BGP AS-PATH Local AS Local AS AS-PATH

BGP BGP IPv4 BGP IPv6 BGP IPv4 VRF BGP VPNv4

10.4	

39.1.65 neighbor maximum-prefix

BGP no

neighbor {*peer-address* | *peer-group-name*} maximum-prefix *maximum* [*threshold*] [warning-only]

no neighbor {*peer-address* | *peer-group-name*} maximum-prefix

peer-address	IPv4 IPv6
peer-group-name	32
maximum	
threshold	
warning-only	BGP

BGP BGP IPv4 BGP IPv6 BGP IPv4 VRF

BGP warning-only BGP

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 maximum-prefix 1000
```

router bgp	BGP
neighbor remote-as	BGP

-	-

39.1.66 neighbor next-hop-self

BGP BGP speaker
no

neighbor {*peer-address* | *peer-group-name*} next-hop-self

no neighbor {*peer-address* | *peer-group-name*} next-hop-self

peer-address	IPv4 IPv6
peer-group-name	32

BGP BGP IPv4 BGP IPv6 BGP
IPv4 VRF

(

BGP CLI

peer-group-name	32

BGP

remote-as update-source local-as reconnect-interval times advertisemet-interval default-originate next-hop-self remove-private-as send-community distribute-list out filter-list out prefix-list out route-map out unsuppress-map route-reflector-client

peer-group
IBGP EBGP peer-group

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor Red-Giant peer-group
Ruijie(config-router)# neighbor 10.0.0.1 peer-group Red-Giant
```

router bgp	BGP
neighbor remote-as	BGP
neighbor peer-group (creating)	BGP
show ip bgp peer-group	BGP

-	-

39.1.70 neighbor peer-group (creating)

BGP no

neighbor *peer-group-name* peer-group

no neighbor *peer-group-name* peer-group

peer-group-name	32

BGP

BGP

BGP

BGP

neighbor prefix-list in

```
Ruijie(config)# ip prefix-list bgp-filter deny 10.0.0.1/16
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 prefix-list bgp-filter in
```

router bgp	BGP
neighbor remote-as	BGP
ip prefix-list	ip

-	-

39.1.72 neighbor remote-as

BGP ( ) no 4˜)4˜ (

-	-

39.1.73 neighbor remove-private-as

EBGP AS AS

no

neighbor {*peer-address* | *peer-group-name*} remove-private-as

no neighbor {*peer-address* | *peer-group-name*} remove-private-as

peer-address	IPv4 IPv6
peer-group-name	32

BGP BGP IPv4 BGP IPv6 BGP IPv4 VRF

EBGP AS AS EBGP AS AS AS 64512 65535

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 remove-private-as
```

router bgp	BGP
neighbor remote-as	BGP

-	-

39.1.74 neighbor route-map

no

neighbor {*peer-address* | *peer-group-name* } route-map *map-tag* {in | out }

no neighbor {*peer-address* | *peer-group-name* } route-map *map-tag* {in | out}

peer-address	IPv4 IPv6
peer-group-name	32
map-tag	
in	
out	

BGP BGP IPv4 BGP IPv6 BGP
IPv4 VRF BGP VPNv4

```
Ruijie(config-router)# neighbor ip-address route-map map-tag in
```

neighbor soft-reconfiguration inbound	BGP
show ip bgp	BGP

-	-

39.1.75 neighbor route-reflector-client

no

neighbor *peer-address* route-reflector-client

no neighbor *peer-address* route-reflector-client

peer-address	IPv4 IPv6

BGP

IBGP speakers BGP speaker
IBGP peer IBGP peers
IBGP speakers
IBGP IBGP peers

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 route-reflector-client
```

router bgp	BGP
neighbor remote-as	BGP
bgp cluster-id	ID
bgp client-to-client reflection	

-	-

39.1.76 neighbor send-community

39.1.o .76

BGP CLI

neighbor remote-as	BGP

-	-

39.1.78 neighbor shutdown

BGP BGP no BGP

( )

neighbor {*peer-address* | *peer-group-name*} shutdown

no neighbor

39.1.79 neighbor soft-reconfiguration inbound

BGP no

neighbor {*peer-address* | *peer-group-name*} soft-reconfiguration inbound

no neighbor {*peer-address* | *peer-group-name*} soft-reconfiguration inbound

peer-address	IPv4 IPv6
peer-group-name	32

BGP

BGP BGP ( )

show ip bgp neighbors

BGP

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 soft-reconfiguration
inbound
```

router bgp	BGP
neighbor remote-as	BGP
show ip bgp neighbors	BGP
clear ip bgp	BGP

-	-

39.1.80 neighbor soo

“ ” , no “ ”

neighbor {*peer-address* | *peer-group-name*} soo soo-value

no neighbor {*peer-address* | *peer-group-name*} soo

peer-address	
peer-group-name	32
soo-value	soo soo_value 1 soo_value as_num nn an_num nn 2 soo_value ip_addr:nn ip_addr IP nn

soo ϵ -

keepalive	BGP KEEPALIVE message 0..65535
holdtime	BGP 0..65535

keepalive: 60
holdtime: 180

BGP

keepalive holdtime
peer peer-group peer peer group

BGP

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 80 240
```

router bgp	BGP
timers bgp	keepalive holdtime

-	-

39.1.82 neighbor unsuppress-map

aggregate-address no

neighbor {*peer-address* | *peer-group-name*} unsuppress-map *map-tag*

BGP

BGP

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# neighbor 10.0.0.1 unsuppress-map
unspress-route
```

router bgp	BGP

TCP

-	-

39.1.85 neighbor weight

BGP no

neighbor {*peer-address*|*peer-group-name*} weight *number*

no neighbor {*peer-address*|*peer-group-name*} weight

peer-address	
peer-group-name	32
number	0 - 65535

0

32768

BGP

route-map set weight

```
Ruijie(config-router)# neighbor 10.1.1.1 weight 73
```

router bgp	BGP
neighbor remote-as	BGP

-	-

39.1.86 network(BGP)

BGP speaker no

network *network-number* mask *mask* [route-map *map-tag*] [backdoor]

no network *network-number* mask *mask* [route-map] [backdoor]

network-number	
mask	
map-tag	route-map route map 32
backdoor	

BGP

IGP BGP

route-map

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# network 10.0.0.1 mask 255.255.0.0
```

router bgp	BGP
redistribute	
network synchronization	Network

-	-

39.1.87 network synchronization

BGP speaker network

no network

network synchronization

no network synchronization

-	-

BGP

network

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# network synchronization
```

router bgp	BGP
redistribute	
network (BGP)	

-	-

39.1.88 overflow memory-lack

BGP OVERFLOW no

overflow memory-lack

no overflow memory-lack

no	BGP OVERFLOW

BGP OVERFLOW

BGP

BGP OVERFLOW

BGP OVERFLOW

BGP NULL

OVERFLOW

clear bgp {addressfamily|all} * BGP BGP

OVERFLOW

1 BGP OVERFLOW

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# no memory-lack overflow
```

clear bgp { *addressfamily*|all } *	BGP
show bgp { *addressfamily*|all } summary	BGP

10.3(4b3)	

39.1.89 redistribute

BGP no

redistribute *protocol-type* [route-map *map-tag*] [metric *metric-value*]

no redistribute *protocol-type* [route-map *map-tag*] [metric *metric-value*]

protocol-type	, connected static rip
route-map *map-tag*	route-map route-map
metric *metric-value*	metric

BGP BGP IPv4 BGP IPv6 BGP IPv4 VRF

IP

no no redistribute

no

metric route-map route-map route-map route-map metric metric

```
Ruijie(config-router)# redistribute static route-map static-rmap
Ruijie(config-router)# no redistribute static route-map
static-rmap
Ruijie(config-router)# no redistribute static
```

show ip protocols	

-	-

39.1.90 redistribute OSPF

OSPF BGP no

redistribute ospf *process-id* [route-map *map-tag*] [metric *metric-value*] [match internal external [1|2] nssa-external [1|2]]

no redistribute ospf *process-id* [route-map *map-tag*] [metric *metric-value*] [match {internal |external [1|2]|nssa-external [1|2]}]

process-id	OSPF
route-map *map-tag*	route-map route-map
metric *metric-value*	metric
match	OSPF
internal	OSPF internal ospf match
external [1|2]	OSPF external 1 2 1 2
nssa-external [1|2]	OSPF nssa-external 1 2 1 2

OSPF

BGP BGP IPv4 BGP IPv6 BGP IPv4 VRF

no	no
	redistribute
no	
OSPF	match OSPF
	route-map
metric	metric route-map
route-map	route-map route-map
metric	metric

```
Ruijie(config-router)# redistribute ospf 2 route-map static-rmap
Ruijie(config-router)# no redistribute ospf 4 match external
route-map ospf-rmap
Ruijie(config-router)# no redistribute ospf 78
```

show ip protocols	

-	-

39.1.91 redistribute ISIS

ISIS ISIS BGP

no

redistribute isis [*isis-tag*] [route-map *map-tag*] [metric *metric-value*] [level-1| level-1-2 | level-2]

no redistribute isis [*isis-tag*] [route-map *map-tag*] [metric *metric-value*] [level-1| level-1-2 | level-2]

isis-tag	ISIS
route-map *map-tag*	route-map route-map
metric *metric-value*	metric
level-1	isis level-1
level-1-2	isis level-1 isis level-2

ISIS

BGP BGP IPv4 BGP IPv6

IP

no	no redistribute no
ISIS	level ISIS route-map metric route-map route-map route-map route-map metric metric

```
Ruijie(config-router)# redistribute isis route-map static-rmap
Ruijie(config-router)# no redistribute isis test route-map
isis-rmap
Ruijie(config-router)# no redistribute isis
```

show ip protocols	

BGP

```
Ruijie(config)# router bgp 65000
```

Ip routing	IP
bgp router-id	BGP
network	BGP speaker

-	-

39.1.93 synchronization

BGP IGP no BGP IGP

synchronization

no synchronization

-	-

BGP

BGP IGP

AS (AS AS)
AS router BGP BGP speaker
(BGP speaker)

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# synchronization
```

router bgp	BGP

keepalive: 60
holdtime: 180

BGP

keepalive holdtime
peer peer-group peer peer group

BGP

```
Ruijie(config)# router bgp 65000
Ruijie(config-router)# timers bgp 80 240
```

neighbor timers	*keepalive* *holdtime*

-	-

39.2

39.2.1 5.38 119 Tc 2 Tr 389how

	show bgp ipv4 unicast	show bgp ipv4 unicast
	show bgp ipv4 unicast	

network-mask	
community *community-number*	community *community-number* AA:NN(/2) internet no-export local-as no-advertise
community-list *community-name*	BGP *community-name*
exact -match	

360.808 135.96 661.224661883 34.006e f 61.2 641.06446505B534.006e f9.61883 48 re f 135.96 661

```
*>i172.16.0.0/24    192.168.195.183         0        100     i
*>i202.201.0.0      192.168.195.183         0        100     i
*>i202.201.1.0      192.168.195.183         0        100     i
*>i202.201.2.0      192.168.195.183         0        100     i
*>i202.201.3.0      192.168.195.183         0        100     i
*>i202.201.18.0     192.168.195.183         0        100     i
Total number of prefixes 8
Ruijie# show bgp ipv4 unicast community 11:2222
111:12345
BGP table version is 2, local router ID is 192.168.183.1
Status codes: s suppressed, d damped, h history, * valid, > best,
i - internal,
            S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
   Network         Next Hop           Metric     LocPrf  Path
*>i202.201.0.0      192.168.195.183         0        100     i
*>i202.201.1.0      192.168.195.183         0        100     i
*>i202.201.2.0      192.168.195.183         0        100     i
*>i202.201.3.0      192.168.195.183         0        100     i
Total number of prefixes 4
Ruijie(config)# ip as-path access-list 5 permit .*
Ruijie# show bgp ipv4 unicast filter-list 5
BGP table version is 2, local router ID is 192.168.183.1
Status codes: s suppressed, d damped, h history, * valid, > best,
i - internal,
            S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
   Network         Next Hop           Metric     LocPrf  Path
*>192.168.88.0      0.0.0.0             32768 ?
Total number of prefixes 1
Ruijie# show ip bgp cidr-only
BGP table version is 2, local router ID is 192.168.183.1
Status codes: s suppressed, d damped, h history, * valid, > best,
i - internal,
            S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
   Network         Next Hop           Metric     LocPrf  Path
*>i64.12.0.0/16     192.168.195.183         0        100     i
*>i172.16.0.0/24    192.168.195.183         0        100     i
Total number of prefixes 2
Ruijie# show bgp ipv4 unicast label
Network         Next Hop        In Label/Out Label
1.1.1.1/32      192.167.1.1      17/18
1.1.1.2/32      192.167.1.1      nolabel/19
```

Network	
Nexthop	
In Label	
Out Label	

show ip bgp	BGP IPv4

39.2.4 show bgp ipv4 unicast neighbors

BGPIPv4

show bgp ipv4 unicast neighbors *neighbor-address*

-	-

Using BFD to detect fast fallover

show bgp ipv6 unicast regexp *regexp*

show bgp ipv6 unicast route-map *map-tag*

-	-

show bgp ipv4 unicast	BGP IPv4

-	-

39.2.8 show bgp ipv6 unicast dampening parameters

BGP

BGPIPv6

show bgp ipv6 unicast neighbors *neighbor-address*

-	-

BGPIPv6

```
Address       Refcnt Path
[0x1d7806a0:0]  (67)
[0x1d7389a0:13]  (20) 10
```

show bgp ipv6 unicast paths	IPv4

-	-

39.2.11 show bgp ipv6 unicast summary

BGPIPv6

show bgp ipv6 unicast summary

-	-

BGPIPv6

show bgp ipv4 unicast summary show bgp ipv4 unicast summary

-	-

router bgp	BGP
show bgp ipv4 unicast summary	BGPIPv4

-	-

39.2.12 show bgp vpnv4 unicast

vrf rd vpn

show bgp vpnv4 unicast all [*network* | neighbor [| *address*] | summary | label]

show bgp vpvn4 unicast vrf *vrf_name* [*network* | summary | label]

show bgp vpvn4 unicast rd *rd_value* [*network* | summary | label]

network	
neighbor	
summary	
label	
vrf_name	vrf
rd_value	RD 100 1 202.118.239.165:1

vrf rd vpn

MPLS BGP bgp vrf MP-BGP

MP-BGP vpn show bgp vpnv4 unicast vrf

MP-BGP show bgp vpnv4 unicast all

```
Ruijie# show bgp vpnv4 unicast all
BGP table version is 0, local router ID is 192.168.183.1
Status codes: s suppressed, d damped, h history, * valid, > best,
i - internal,
            S Stale
Origin codes: i - IGP, e - EGP, ? - incomplete
Route Distinguisher: 78:90 (Default for VRF this)
   Network         Next Hop           Metric     LocPrf  Path
*> 202.210.10.0    177.36.51.3              0            10 i
*>i208.208.1.0     192.168.195.183          0        100     i
*>i208.208.2.0     192.168.195.183          0        100     i
*> 211.158.0.0     0.0.0.0                 0               i
*>i211.158.1.0     192.168.195.183          0        100     i
*> 212.210.0.0     0.0.0.0                 0               i
*> 212.210.1.0     0.0.0.0                 0               i
Total number of prefixes 7
Ruijie# show bgp vpnv4 unicast vrf this summary
BGP router identifier 192.168.183.1, local AS number 23
BGP VRF this Route Distinguisher: 78:90
```

```
BGP table version is 1
2 BGP AS-PATH entries
1 BGP community entries
Neighbor        V    AS MsgRcvd MsgSent   TblVer  InQ OutQ Up/Down
State/PfxRcd
177.36.51.2     4    10       0       0        0    0    0    never
Active
177.36.51.3     4    10      85      87        1    0    0 01:12:25
5
Total number of neighbors 2
```

-	-

-	-

39.2.13 show ip bgp

show ip bgp show bgp ipv4 unicast show bgp ipv4 unicast
show ip bgp

show bgp ipv4 unicast	show bgp ipv4 unicast

[redacted]

show bgp ipv4 unicast

[redacted]

show bgp ipv4 unicast

[redacted]

-	-

39.2.14

access-list	
route-map	
set vrf	IP VRF
set ip next-hop	
set ip default next-hop	
set interface	
set default interface	
set ip tos	IP TOS
set ip dscp	IP DSCP
set ip precedence	IP
match ip address	
match length	

-	-

40.1.2 ip policy

set ip [default][

nexthop,

FastEthernet 0/0 nexthop

1 IP ACL

```
Ruijie(config)#access-list 1 permit 10.0.0.1
Ruijie(config)#access-list 2 permit 20.0.0.1
```

2

```
Ruijie(config)#route-map lab1 permit 10
Ruijie(config-route-map)#match ip address 1
Ruijie(config-route-map)#set ip next-hop
196.168.4.6
Ruijie(config-route-map)#set ip next-hop
196.168.4.7
Ruijie(config-route-map)#set ip next-hop
196.168.4.8
Ruijie(config-route-map)#exit
Ruijie(config)#route-map lab1 permit 20
Ruijie(config-route-map)#match ip address 2
Ruijie(config-route-map)#set ip next-hop
196.168.5.6
Ruijie(config-route-map)#set ip next-hop
196.168.5.7
Ruijie(config-route-map)#set ip next-hop
196.168.5.8
Ruijie(config-route-map)#exit

Ruijie(config)#interface FastEthernet 0/0
Ruijie(config-if)#ip policy route-map lab1
Ruijie(config-if)#exit
Ruijie(config)#ip policy redundance
```


	-

40.1.3 ip policy route-map

ip policy route-map

set ip dscp	IP DSCP
set ip precedence	IP
match ip address	
match length	

-	-

40.1.4 ipv6 local policy route-map

no

ipv6 local policy route-map *route-map-name*

no ipv6 local policy route-map

route-map-name	route-map
no	

IPv6 ping

IPv6

1

1 2003:1000::10/80 2001:100::/64

aaa ACL6 2003:1001::2

```
Ruijie(config)#ipv6 local policy route-map pbr-aaa
```

match ipv6 address	IPv6 PBR ACL6
match length	
route-map	
set default interface	
set interface	
set ipv6 default next-hop	
set ipv6 next-hop	
set ipv6 precedence	IPv6
show ipv6 policy	
show route-map	

10.4	

40.1.5 ipv6 policy

set next-hop ipv6 policy .

ipv6 policy {load-balance | redundance }

no ipv6 policy

load-balance	
redundance	

set

set ipv6 next-hop

```
Ruijie#show ip policy
Banlance Mode
```

Interface	
Route map	

show route-map	

10.4	

41 BFD

41.1

41.1.1 bfd

bfd BFD no BFD

bfd interval *milliseconds* min_rx *milliseconds* multiplier *multiplier-value*

no bfd interval *milliseconds* min_rx *milliseconds* multiplier *multiplier-value*

Interval *milliseconds*	BFD BFD *milliseconds* 50ms 10000ms echo
min_rx *milliseconds*	BFD BFD *milliseconds* 50ms 10000ms illiseB20 161B4411724C190431524C9 T0.0721>-5<354

41.1.2 bfd all

route

bfd all-in

no bfd a

bfd	BFD

10.3(4b3)	

41.1.3 bfd cpp

bfd cpp BFD no BFD

bfd cpp

no bfd cpp

BFD

BFD

1000ms

slow-timer 14000
Ruijie(config)# **bfd slow-timer** 14000

bfd echo	BFD Echo

10.3(4b3)	

41.1.5 ip ospf bfd

ip ospf bfd OSPF BFD disable
no

ip ospf bfd [disable]

no ip ospf bfd

disable	( ) OSPF BFD

disable OSPF BFD

OSPF BFD
OSPF [no] bfd all-interfaces
BFD
ip ospf bfd [disable]
OSPF BFD

Routed Port FastEthernet 0/2 OSPF BFD .
Ruijie(config)# **interface** FastEthernet 0/2
Ruijie(config-if)# **no switchport**
Ruijie(config-if)# **ip ospf bfd disable**

bfd	BFD
bfd all-interfaces	BFD

10.3(4b3)	

41.1.6 ip rip bfd

ip rip bfd RIP BFD disable
no

ip rip bfd [disable]

no ip rip bfd

disable	( ) RIP BFD

disable RIP BFD

RIP BFD
RIP [no] bfd all-interfaces
BFD
ip rip bfd [disable]
RIP BFD

#

10.3(4b3)	

41.1.7 ip route static bfd

ip route static bfd BFD no

ip route static bfd [vrf vrf-name] interface-type interface-number gateway [source ip-address]

no ip route static bfd [vrf *vrf-name*] *interface-type interface-number gateway* [source *ip-address*]

vrf vrf-name	( ) VRF
interface-type interface-number	
gateway	IP BFD IP BFD
source ip-address	( ) BFD IP , IP

BFD

BFD

```
# BFD BFD 172.16.0.2
Ruijie(config)# interface FastEthernet 0/1
Ruijie(config-if)# no switchport
Ruijie(config-if)# ip address 172.16.0.1 255.255.255.0
Ruijie(config-if)# bfd interval 50 min_rx 50 multiplier 3
Ruijie(config-if)# ip route static bfd FastEthernet 0/1 172.16.0.2
Ruijie(config-if)# ip route 10.0.0.0 255.0.0.0 FastEthernet 0/1
```

router address-family , neighbor fall-over BGP BFD
BGP , no

neighbor *ip-address* fall-over bfd

no neighbor *ip-address* fall-over bfd

ip-address	BGP

BGP BFD

IP BFD

BGP BFD BFD 172.16.0.2

```
Ruijie(config)# router bgp 44000
Ruijie(config-router)# bgighbors-Tj/TT4 1 Tf-858 09 T
Ruijie(config-router)#
```

	client	( )
	bgp	BGP

NeighAddr	IP
LD/RD	
RH/RS	
Holdown(mult)	hello
State	
Int	
Session state is UP and using echo function with 50 ms interval	echo echo (Echo)
Local Diag	
Demand mode	
Poll bit	
MinTxInt	

MinRxInt

42 VRF

42.1 VRF

42.1.1 clear ip route vrf

VRF

clear ip route vrf *vrf-name* {* | *network* [*mask*]}

vrf-name	VRF
*	VRF
network	
mask	

```
Ruijie# clear ip route vrf redvrf *
```

no ip vrf *vrf-name*

vrf-name	VRF

VRF

```
Ruijie(config)# ip vrf redvrf
```

-	-

RGOS10.1	RGOS10.1

42.2

42.2.1 show ip route vrf

VRF

show ip route vrf *vrf-name* [*network*[*mask*]]

vrf-name	VRF
network	
mask	

VRF

VRF

```
Ruijie# show ip route vrf redvrf
```

clear ip route vrf	VRF

brief	VRF

43 IPv4

43.1 IPv4

43.1.1 clear ip mroute

IP

clear ip mroute {* | *group-address* [*source -address*]}

*	
group-address	
source -address	

IP

230.0.0.1

```
Ruijie# clear ip mroute statistics 230.0.0.1
```

show ip mroute	-
clear ip mroute	-

-	-

43.1.3 ip mroute

no

	Distance	*Distance*	0

```
Ruijie(config-std-nacl)# exit
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ip multicast boundary mul-boun
```

-	-

-	-

43.1.5 ip multicast route-limit

ip multicast route-limit *limit* [*threshold*]

no ip multicast route-limit *limit* [*threshold*]

limit	1~2147483647 1024
threshold	2147483647.

limit 1024

threshold 2147483647

IPv6

500

```
Ruijie(config)# ip multicast route-limit 500
```

-	-

-	-

43.1.6 ip multicast-routing

no

ip multicast-routing

no ip multicast-routing

-	-

IPv4 IPv4

IPv4 IGMP snooping

IGMP snooping

v4

```
Ruijie(config)# ip multicast-rounting
```

-	-

-	-

43.1.7 ip multicast static

no

ip multicast static *source-address group-address interface-type interface-number*

no ip multicast static *source-address group-address interface-type interface-number*

source -address	
group-address	
interface-type interface-number	

PIM-DM PIM-SM

(192.168.43.4 225.1.1.5) GigabitEthernet 2/6 FastEthernet 3/2

```
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
```

-	-

-	-

43.1.8 ip multicast ttl-threshold

TTL Time-To-Live no

ip multicast ttl-threshold *ttl-value*

no ip multicast ttl-threshold

ttl-value	TTL , 0~255

ttl-value 0

TTL TTL TTL

```
Incoming interface: FastEthernet 2/1
Outgoing interface list:
FastEthernet 1/3
  3
Ruijie# show ip mroute count
IP Multicast Statistics
Total 1 routes using 132 bytes memory
Route limit/Route threshold: 2147483647/2147483647
Total NOCACHE/WRONGVIF/WHOLEPKT recv from fwd: 1/0/0
Total NOCACHE/WRONGVIF/WHOLEPKT sent to clients: 1/0/0
Immediate/Timed stat updates sent to clients: 0/0
Reg ACK recv/Reg NACK recv/Reg pkt sent: 0/0/0
Next stats poll: 00:01:10
Forwarding Counts: Pkt count/Byte count, Other Counts: Wrong If pkts
Fwd msg counts: WRONGVIF/WHOLEPKT recv
Client msg counts: WRONGVIF/WHOLEPKT/Imm Stat/Timed Stat sent
Reg pkt counts: Reg ACK recv/Reg NACK recv/Reg pkt sent
(10.10.1.52, 224.0.1.3), Forwarding: 2/19456, Other: 0
Fwd msg: 0/0, Client msg: 0/0/0/0, Reg: 0/0/0
  4
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	
Outgoing interface list	
Forwarding Counts Pkt count/Byte count,	/
Other Counts: Wrong If pkts	

ip multicast-routing	
ip pim dense-mode	PIM-DM
ip pim sparse-mode	PIM-SM

-	-

43.2.2 show ip mroute static

v4

show ip mroute staitc

192.168.1.54 RPF

```
Ruijie# show ip rpf 192.168.1.54
RPF information for 192.168.1.54
RPF interface: VLAN 1
RPF neighbor: 0.0.0.0
RPF route: 192.168.1.0/24
RPF type: unicast (connected)
RPF recursion count: 0
Doing distance-pD7ursion count: 0 7g distan2d lookups across tables interfac

RPF neighbor: 0.0.0.0
RPF route: 192.168.1.0/24
RPF type: unicast (connected)
RPF recursion coustance-pD7urs0
```

svi1

```
Ruijie# show ip mvif vlan 1
Interface        Vif   Owner    TTL  Local          Remote
Uptime
Idx   Module       Address         Address
VLAN 1        1    PIM-DM   2   192.168.1.1     0.0.0.0
00:13:16
```

-	-

43.3.2 debug nsm mcast fib-msg

no

debug nsm mcast fib-msg

```
Ruijie# debug nsm mcast register
```

-	-

-	-

43.3.4 debug nsm mcast stats

no

debug nsm mcast stats

-	-

```
Ruijie# debug nsm mcast stats
```

-	-

-	-

43.3.5 debug nsm mcast vif

no

debug nsm mcast vif


```
Ruijie# debug nsm mcast vif
```

-	-

-	-

44 IPv6

44.1 IPv6

44.1.1 clear ipv6 mroute

IPv6

clear ipv6 mroute { * | *v6group-address* [*v6source -address*]}

*	IPv6
v6group-address	IPv6 IPv6
v6source -address	IPv6 IPv6

IPv6

```
Ruijie# clear ipv6 mroute *
```

show ipv6 mroute	-
clear ipv6 mroute statistics	-

-	-

44.1.2 clear ipv6 mroute statistics

IPv6

distance	RPF 0

IPv6

IPv6 IPv6 rpf

ip

rpf bgp

rpf distance distance
rpf distance rpf

2233 /64 3333 3333

```
Ruijie(config)# ipv6 mroute 2233    /64 3333::3333
```

-	-

-	-

44.1.4 ipv6 multicast boundary

IPv6 IPv6 no IPv6

ipv6 multicast boundary *access-list-namer*

no ipv6 multicast boundary *access-list-name*

access-list-name	IP access-list ACL

IPv6 IPv6

IPv6 IPv6 ACL ACL
ACL ACL

IPv6 MLD PIM-SMv6

svi1 IPv6

```
Ruijie(config)# ipv6 access-list mul-boun
Ruijie(config-std-nacl)# permit ipv6 ::/0 ::/0
Ruijie(config-std-nacl)# exit
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 multicast boundary mul-boun
```

-	-

-	-

44.1.5 ipv6 multicast route-limit

IPv6 no

ipv6 multicast route-limit *limit* [*threshold*]

no ipv6 multicast route-limit *limit* [*threshold*]

limit	IPv6 1~2147483647 1024
threshold	IPv6 2147483647.

limit 1024

threshold 2147483647

IPv6

IPv6 100 90

```
Ruijie(config)# ipv6 multicast route-limit 100 90
```

-	-

-	-

44.1.6 ipv6 multicast-routing

IPv6 no IPv6

ipv6 multicast-routing

no ipv6 multicast-routing

-	-

IPv6

IPv6 IPv6

IPv6 IGMP snooping

IGMP snooping

IPv6

```
Ruijie(config)# ipv6 multicast-rounting
```

-	-

source -address	
group-address	
interface-type interface-number	

PIM-SMV6

(2222::3333 ff66::100) GigabitEthernet 2/6 FastEthernet 3/2

```
Ruijie(config)# ipv6 multicast static 2222::3333 ff66::100 G2/6
Ruijie(config)# ipv6 multicast static 2222::3333 ff66::100 F3/2
```

-	-

-	-

44.1.8

RPF MBGP RPF
MBGP
MBGP

Ruijie(config)# **ipv6 multicast rpf longest-match**

-	-

-	10.4 2

44.2 IPv6

44.2.1 show ipv6 mroute

IPv6

show ipv6 mroute *[v6group-address] [v6source-address]* [summary] [count]

v6group-address	IPv6
v6source-address	IPv6
summary	IPv6
count	IPv6

IPv6

show ipv6 rpf *v6source-address*

v6group-address	IPv6 IPv6

IPv6 RPF

2222::3333 RPF

```
Ruijie# show ipv6 rpf 2222::3333
  RPF interface: GigabitEthernet 0/1
  RPF neighbor: ::
  RPF route: 2222::/64
  RPF type: unicast (connected)
  RPF recursion count: 0
  Doing distance-preferred lookups across tables
  Distance: 0
  Metric: 0
```

-	-

-	-

44.2.3 show ipv6 mroute static

IPv6

show ipv6 mroute staitc

-	-

```
Ruijie#show ipv6 mroute static
Mroute: 2233::/64, RPF neighbor: 3333::3333
  Protocol: , distance: 0
```

-	-

-	-

44.2.4 show ipv6 mvif

IPv6

show ipv6 mvif { *interface-type interface-number* }

interface-type interface-number	

svi1

```
Ruijie#show ipv6 mvif
Interface              Mif   Owner           Uptime
                       Idx   Module
Register               0                     03d03h09m
VLAN 1                  1    PIMSMV6          03d03h09m
```

-	-

-	-

44.3 IPv6

44.3.1 debug nsm mcast6 all

IPv6 no IPv6

debug nsm mcast6 all

-	-

IPv6

IPv6

```
Ruijie# debug nsm mcast6 fib-msg
```

-	-

-	-

44.3.3 debug nsm mcast6 register

IPv6 no

debug nsm mcast6 register

IPv6 no

debug nsm mcast6 stats

-	-

-	-

-	-

45 IGMP

45.1

45.1.1 ip igmp access-group

no

ip igmp access-group *access-list*

no ip igmp access-group

access-list	<1-199>|<1300-2699>	WORD

ip igmp access-group

IGMPv3 ACL
MLD report S1,S2,S3…Sn,G (0,G)
ACL
ACL (0, G)
S1,S2,S3…Sn,G

1 Eth0 225.2.2.2.

```
Ruijie# configure terminal
Ruijie(config)# access-list 1 permit 225.2.2.2 0.0.0.0
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp access-group 1
```

2 Eth0 ACL
1.1.1.1, 233.3.3.3 igmp

```
Ruijie# configure terminal
Ruijie(config)# ip access-list extended ext_acl
Ruijie(config-ext-nacl)# permit ip host 0.0.0.0 host 233.3.3.3
Ruijie(config-ext-nacl)# permit ip host 1.1.1.1 host 233.3.3.3
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp access-group ext_acl
```

-	-

-	-

45.1.2 ip igmp join-group

no

ip igmp join-group *group-address*

no ip igmp join-group *group-address*

group-address	

Eth0 233.3.3.3

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp join-group 233.3.3.3
Ruijie(config-if)# exit
```

-	-

-	-

45.1.3 ip igmp immediate-leave group-list

IGMPversion2 IGMPversion3

no

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

no ip igmp immediate-leave group-list

access-list	

IGMP 2s

E Dž 1 ¯ ʌ Ầ -

n ɹ¯ IGMP

last member query count 2

IGMPv2 ip igmp last-member-query-count

3

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

-	-

-	-

45.1.5 ip igmp last-member-query-interval

no

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

ip igmp immediate-leave	-

45.1.7 ip igmp limit ( )

igmp no

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

no ip igmp limit *number* [*except access-list*]

proxy-service

gmp

mroute-proxy

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

-	-

-	-

45.1.9 ip igmp proxy-service

mroute-proxy

mroute-proxy

ip igmp proxy-service

no ip igmp proxy-service

-	-

proxy-service

32 IGMP Proxy

proxy-service proxy-service

mroute-proxy

proxy-service .

switchport ip igmp mroute-proxy

interface

proxy-service

```
Ruijie(config-if)# ip igmp proxy-service
```

-	-

-	-

45.1.10 ip igmp query-interval

no

ip igmp query-interval *seconds*

no ip igmp query-interval

no ip igmp query-max-response-time

seconds	s 1 25

10s

IGMPv2

1 Ethernet 0 20s

```
Ruijie(config-if)# ip igmp query-max-response-time 20
```

2 Ethernet 0

```
Ruijie(config-if)# no ip igmp query-max-response-time
```

-	-

-	-

45.1.12 ip igmp query-timeout

no

ip igmp query-timeout *seconds*

no ip igmp query-timeout

seconds	s 60 300

255s

IGMPv2 ip igmp query-interval Ruijie 255s

1 Ethernet 0 200s

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

2 Ethernet 0

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

-	-

-	-

45.1.13 ip igmp robustness-variable

no

ip igmp robustness-variable *number*

no ip igmp robustness-variable

igmp ssm-map

ip igmp ssm-map enable

no ip igmp ssm-map enable

-	-

ip igmp ssm-map static

igmp ssm-map

```
Ruijie(config)# ip igmp ssm-map enable
```

-	-

ACL 11 192.168.2.2

```
Ruijie(config)# ip igmp ssm-map static 11 192.168.2.2.
```

-	-

-	-

45.1.16 ip igmp static-group

no

ip igmp static-group *group-address*

no ip igmp static-group *group-address*

group-address	

Eth0 236.6.6.6

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ip igmp static-group 236.6.6.6
Ruijie(config-if)# exit
```

-	-

-	-

45.1.17 ip igmp version

IGMP no

ip igmp version {*1* | *2* | *3*}

no ip igmp version

{*1*	*2*	*3*}	<1-3>

2

igmp igmp

2

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

-	-

-	-

45.2

45.2.1 clear ip igmp group

IGMP

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

group-address	32 IP D 8
interface-type	
interface-number	

IGMP

IGMP

clear ip igmp group

Ruijie# **clear ip igmp group**

show ip igmp groups	-
show ip igmp interface	-

-	-

45.2.2 clear ip igmp interface

IGMP

clear ip igmp interface *ifname*

ifname	

IGMP ifname

Ruijie# **clear ip igmp interface eth1**

-	-

-	-

45.2.3 show ip igmp groups

IGMP

show ip igmp groups [*group-address* | *interface-type interface-number*] [*detail*]

group-address	32 IP D 8
interface-type	
interface-number	
detail	

1

```
Ruijie# show ip igmp groups
IGMP Connected Group Membership
```

```
192.168.55.66 00:00:42 00:03:38 Yes R
```

-	-

-	-

45.2.4 show ip igmp interface

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

interface-type	
interface-number	

```
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
```


-	-

-	-

45.2.5 show ip igmp ssm-mapping

IGMP ssm-map

show ip igmp ssm-mapping (*A.B.C.D*)

A.B.C.D

IGMP ssm-map

46 MLD

46.1

46.1.1 clear ipv6 mld group

MLD

ACL

ACL deny report ACL
MLDv2

	ACL MLD report S1,S2,S3…Sn,G (0,G) ACL ACL (0, G) S1,S2,S3…Sn,G

Eth0/1 report acl

```
Ruijie(config)#ipv6 access-list acl
Ruijie(config-ipv6-acl)#permit ipv6 ::/64 ff66::100/64
Ruijie(config-ipv6-acl)#permit ipv6 2222::3333/64 ff66::100/64
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 mld access-group acl
```

-	-

-	-

46.1.4 ipv6 mld immediate-leave group-list

group-list

done

no

ipv6 mld immediate-leave group-list *word*

no ipv6 mld immediate-leave group-list

Word	IPv6 ACL

MLD

MLD

2s

```
Ruijie# configure terminal
Ruijie(config)#ipv6 access-list acl
Ruijie(config-ipv6-acl)#permit ipv6 2222::3333/64 ff66::100/64
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 mld immediate-leave group-list acl
```

ipv6 mld last-member-query-interval	-

-	-

46.1.5 ipv6 mld join-group

no

Ipv6 mld join-group *group-address*

no ipv6 mld join-group *group-address*

group-address	ipv6

MLD

0xFF*1 0xFF3* 0xFF*2

```
Ruijie# configure terminal
Ruijie(config)# interface fast 0/1
Ruijie(config-if)# ipv6 mld join-group ff55::100
```

no

ipv6 mld last-member-query-interval *interval*

no ipv6 mld last-member-query-interval

interval	<1-255> 0.1s

10 (0.1s)

MLD

MLD mld last-member-query-count

2

```
Ruijie# configure terminal
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# ipv6 mld last-member-query-interval 200
```

ipv6 mld immediate-leave	-

-	-

46.1.8 ipv6 mld limit ( )

MLD MLD ´

MLD
report
except access-list
.

300
```
Ruijie(config-if)# ipv6 mld limit 300
```
300 acl
```
Ruijie(config-if)# ipv6 mld limit 300 except acl
```

300 acl

mroute-proxy

mroute-proxy

ipv6 mld proxy-service

no ipv6 mld proxy-service

-	-

proxy-service

32 MLD Proxy

proxy-service proxy-service
mroute-proxy proxy-service
.

switchport ipv6 mld mroute-proxy
interface

proxy-service

```
Ruijie(config-if)# ipv6 mld proxy-service
```

Ethernet 0 120s

```
Ruijie(config-if)# ipv6 mld query-interval 120
```

Ethernet 0

```
Ruijie(config-if)# no ipv6 mld query-interval
```

-	-

-	-

46.1.13 ipv6 mld query-max-response-time

no

ipv6 mld query-max-response-time *seconds*

no ipv6 mld query-max-response-time

seconds	s 1 25

-	-

46.1.14 ipv6 mld querier-timeout

no

.

ipv6 mld querier-timeout *seconds*

no ipv6 mld querier-timeout

seconds	60 300

255s

ip mld query-interval

255s

200s

```
Ruijie(config-if)# ipv6 mld querier-timeout 200
```

Ethernet 0

```
Ruijie(config-if)# no ipv6 mld querier-timeout
```

-	-

-	-

46.1.15 ipv6 mld robustness-variable

no

ipv6 mld robustness-variable *number*

no ipv6 mld robustness-variable

number	2-7

2

ə

3

```
Ruijie# configure terminal
Ruijie(config)# interface ethernet 0
Ruijie(config-if)# ipv6 mld robustness-variable 3
```

-	-

-	-

46.1.16 ipv6 mld ssm-map enable

mld ssm-map

Ipv6 mld ssm-map enable

no ipv6 mld ssm-map enable

-	-

-	-

46.1.17 ipv6 mld ssm-map static

ssm-map

ipv6 mld ssm-map static *access-list X:X:X:X::X*

no ipv6 mld ssm-map static *access-list X:X:X:X::X*

access-list	ipv6 ACL
X:X:X:X::X	

ipv6 mld ssm-map enable mldv2

ACL te 4444::1234

```
Ruijie(config)# ipv6 mld ssm-map static te 4444::1234
```

-	-

-	-

46.1.18 ipv6 mld static-group

no

ipv6 mld static-group *group-address*

no ipv6 mld static-group *group-address*

group-address	ipv6

join-group

```
Ruijie(config)# interface ethernet 0/1
Ruijie(config-if)# ipv6 mld version 1
```

-	-

-	-

46.2

46.2.1 show ipv6 mld groups

MLD

show ipv6 mld groups [*group-address* | *interface-type interface-number*] [detail]

group-address	128 IPv6
interface-type	
interface-number	
detail	

1

```
Ruijie#
```

```
Group mode:    Exclude (Expires: 00:02:47)
Last reporter:  fe80::2d0:f8ff:fe22:3378
Source list is empty
```

-	-

-	-

46.2.2 show ipv6 mld interface

show ipv6 mld interface [*interface-type interface-number*]

interface-type	
interface-number	

```
Ruijie# show ipv6 mld interface
Interface VLAN 2 (Index 4098)
 MLD Enabled, Inactive, Version 2 (default)
 MLD interface limit is 1024
 MLD interface has 0 group-record states
 MLD interface has 1 join-group records
 MLD interface has 0 static-group records
 MLD activity: 0 joins, 0 leaves
 MLD query interval is 125 seconds
 MLD querier timeout is 255 seconds
 MLD max query response time is 10 seconds
 Last member query response interval is 10 (1/10s)
 Last member query count is 2
 Group Membership interval is 260
 Robustness Variable is 2
```

-	-

-	-

46.2.3 show ipv6 mld ssm-mapping

show ipv6 mld ssm-mapping [*group-address*]

group-address	

```
Ruijie# show ipv6 mld ssm-mapping ff66::1234
Group address: ff66::1234
Database    : Static
Source list  : 5555::1234
Ruijie# show ipv6 mld ssm-mapping
SSM Mapping : Enabled
Database    : Static mappings configured
```

-	-

-	-

47 IGMP snooping

47.1

47.1.1 deny

profile profile deny

deny

deny	profile

profile deny

profile

profile range profile
profile

224.2.2.2 profile

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

permit

IGMP snooping

-	-

47.1.5 ip igmp snooping ivgl

igmp snooping ivgl ip igmp snooping ivgl
no igmp snooping

ip igmp snooping ivgl

no ip igmp snooping

-	-

disable

VLAN VLAN
VLAN
VLAN

	pim snooping igmp snooping IVGL no ip igmp snooping igmp snooping pim snooping pim snooping

igmp snooping ivgl

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

-	-

-	-

47.1.6 ip igmp snooping vlan

vlan igmp snooping ivgl ip igmp snooping vlan no igmp snooping

ip igmp snooping vlan vid

100s

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


-	-

47.1.8 ip igmp snooping fast-leave enable

igmp snooping ip igmp snooping fast-leave enable no igmp snooping fast-leave

ip igmp snooping fast-leave enable

no ip igmp snooping fast-leave enable

-	-

disable

IP IGMP

IP IGMP

igmp snooping fast-leave

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

-	-

-	-

47.1.9 ip igmp snooping query-max-response-time

query

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

no ip igmp snooping query-max-response-time

IP

Server Server IP

ip

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

ip igmp snooping source-check default-server	IP IP

interface-id	id

IP

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

-	-

-	-

47.1.15 ip igmp snooping vlan mrouter learn pim-dvmrp

IGMP Query/Dvmrp/PIM Hellp

ip igmp snooping vlan mrouter learn no

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

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

vid	vlan id

· €'e6R°T IÄ@ L

IGMP snooping

profile

no profile

ip igmp snooping filter *profile-number*

no ip igmp snooping filter *profile-number*

profile-number	profile <1-65536>

IGMP Profile IGMP Report
IGMP Profile
profile filter

0/1 profile 1

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

ip igmp profile	profile

-	-

47.1.18 ip igmp snooping max-groups

, ip igmp snooping max-groups no

ip igmp snooping max-groups *number*

no ip igmp snooping max-groups

number	<0 – 1024>

IGMP Report

0/1 100

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

ip igmp snooping filter	

-	-

47.2

47.2.1 show ip igmp snooping

igmp snooping

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

	igmp snooping
gda-table	
interfaces	igmp snooping filtring
mrouter	
statistics [vlan *vlan-id*]	snooping
vlan	vlan snooping

-	-

47.2.2 show ip igmp profile [profile-number]

undebug igmp-snp warning

	IGMP Snooping
event	IGMP Snooping
packet	IGMP Snooping
msf	IGMP Snooping
warning	IGMP Snooping

EXEC

-	-

-	-

48 MLD snooping 2 54.0.02 0 08D13

48.1.2 range

profile profile profile range
no

range low-ipv6-address [high-ipv6-address]

no range *low-ipv6-address* [*high-ipv6-address*]

low-ipv6-address	
high-ipv6-address]	

profile

low-ipv6-address high-ipv6-address
profile deny

FF77::1~FF77::100 profile :

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)# range FF77::1 FF77::100
```

ipv6 mld profile	profile
deny	profile deny
permit	profile permit

10.4	

48.1.3 deny

profile profile deny

deny

profile deny

profile

profile range

FF77::100 profile :

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)# range FF77::100
Ruijie(config-profile)# deny
```

ipv6 mld profile	profile
range	
permit	profile permit

10.4	

48.1.4 permit

profile profile permit

permit

profile deny

profile

profile range

FF77::1 profile :

```
Ruijie(config)# ipv6 mld profile 1
Ruijie(config-profile)# range FF77::1
Ruijie(config-profile)# permit
```


ipv6 mld profile	profile
range	

ipv6 mld snooping dyn-mr-aging-time *time*
no ipv6 mld snooping dyn-mr-aging-time

ipv6 mld snooping dyn-mr-aging-time *time*
no ipv6 mld snooping dyn-mr-aging-time

time	1-3600

300s

MLD IPv6 PIM Hello

500s

```
Ruijie(config)# ipv6 mld snooping dyn-mr-aging-time 500
```


10.4	

48.1.7 ipv6 mld snooping query-max-response-time

ipv6 mld snooping query-max-response-time *time* MLD
no ipv6 mld snooping query-max-response-time

ipv6 mld snooping query-max-response-time *time*
no ipv6 mld snooping query-max-response-time

time	MLD 1-65535

10s

MLD

0

mld snooping

MLD

0

mld snooping

MLD

MLD 15s

```
Ruijie(config)# ipv6 mld snooping query-max-response-time 15
```


10.4	

48.1.8 ipv6 mld snooping vlan

ipv6 mld snooping vlan *vid* vlan mld snooping no ipv6 mld snooping vlan *vid* vlan mld snooping

ipv6 mld snooping vlan *vid*

no ipv6 mld snooping vlan *vid*

vid	vlan id 1-4094

mld snooping vlan mld snooping

mld snooping vlan mld snooping vlan mld snooping

VLAN 1 mld snooping

```
Ruijie(config)# no ipv6 mld snooping vlan 1
```


	10.4	

48.1.9 ipv6 mld snooping vlan mrouter learn

MLD query PIM
ipv6 mld snooping vlan mrouter learn no

ipv6 mld snooping vlan *vid*

ipv6 mld snooping vlan mrouter interface	

10.4	

48.1.12 ipv6 mld snooping fast-leave enable

mld snooping fast-leave ipv6 mld snooping fast-leave enable no mld snooping fast-leave

ipv6 mld snooping fast-leave enable

no ipv6 mld snooping fast-leave enable

IPv6

mld snooping suppression ipv6 mld snooping suppression enable no mld snooping suppression

ipv6 mld snooping suppression enable
no ipv6 mld snooping suppression enable

MLD
IPv6 MLD
MLD

suppression MLD v1 report
MLD v2 report

mld snooping suppression

```
Ruijie(config)# ipv6 mld snooping suppression
```


10.4	

48.1.14 ipv6 mld snooping filter

profile no profile

ipv6 mld snooping filter *profile-number*
no ipv6 mld snooping filter *profile-number*

profile-num	profile

MLD Profile MLD Report
MLD Profile
profile filter

0/1 profile 1

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ipv6 mld snooping filter 1
```

ipv6 mld profile	profile

10.4	

48.1.15 ipv6 mld snooping max-groups

, ipv6 mld snooping max-groups no

ipv6 mld snooping max-groups *number*
no ipv6 mld snooping max-groups

Number	0 – 1024

1024

MLD Report

0/1 100

```
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ipv6 mld snooping max-group 100
```

ipv6 mld snooping filter	

mld

mld

```
Ruijie# debug mld-snp
```


10.4	

48.2

48.2.1 show ipv6 mld snooping

mld snooping

Show ipv6 mld snooping [gda-table | interfaces | mrouter | statistics [vlan *vlan-id*]]

	mld snooping
gda-table	
interfaces	mld snooping Filtering
mrouter	
statistics [vlan *vlan-id*]	snooping

```
Ruijie# show ipv6 mld snooping statistics
GROUP    Interface    Last report       Last leave     Last
                        time          time         reporter
-------------- ----------- ------------  -------------   -
FF88::1 VL1:Gi4/2   0d:0h:0m:7s     ----    2003::1111
                      Report pkts: 1          Leave pkts: 0
```

3 **show ipv6 mld snooping mrouter** mld snooping

```
Ruijie# show ipv6 mld snooping mrouter
Vlan   Interface       State     MLD profile number
----     --------        -------     ------------------
1  GigabitEthernet 0/7   static       1
1  GigabitEthernet 0/12  dynamic      0
```

4 **show ipv6 mld snooping gda-table** GDA

```
Ruijie# show ipv6 mld snooping gda-table
Abbr: M - mrouter
     D - dynamic
     S - static
VLAN  Address            Member ports
-------------------------------------------------------------
1      FF88::1          GigabitEthernet 0/7(S)
```

5 show ipv6 mld snooping interface mld snooping Filtering

```
Ruijie# show ipv6 mld snooping interface GigabitEthernet 0/7
Interface         Filter Profile number     max-groups
----------       ----------------------    -----------
GigabitEthernet 0/7          1              4294967294
```


10.4	

48.2.2 show ipv6 mld profile

MLD profile

show ipv6 mld profile [*profile-number*]

	profile
profile-number	profile

mld profile

1 **show ipv6 mld profile** MLD profile

```
Ruijie# show ipv6 mld profile 1
MLD Profile 1
permit
range FF77::1 FF77::100
range FF88::123
```


10.4	

49 PIM-DM

49.1 PIM-DM

49.1.1 ip pim dense-mode

PIM-DM ip pim dense-mode no
PIM-DM

ip pim dense-mode

no ip pim dense-mode

PIM-DM

PIM-DM

PIM-DM
PIM-DM
PIM-DM IGMP

“ Failed to enable PIM-DM on <
>, resource temporarily unavailable, please try again ”

“ PIM-DM Configure failed! VIF limit
exceeded in NSM!!! ”

PIM-DM
PIM-DM PIM-SM DVMRP
v4

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim dense-mode
```


49.1.2 ip pim neighbor-filter

ip pim neighbor-filter
PIM-DM Peering

no

ip pim neighbor-filter *access-list*

no ip pim neighbor-filter *access-list*

access-list	access-list acl 1-99 acl

ip pim neighbor-filter
ACL PIM
ACL PIM
peering PIM
PIM
PIM

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim neighbor-filter 14
```

-	-

49.1.3 ip pim override-interval

hello override-interval ip pim override-interval

no hello override-interval

ip pim override-interval *interval-milliseconds*

no ip pim override-interval

interval-milliseconds	<1-65535>

2500

override-interval

override-interval 3000

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim override-interval 3000
```


49.1.4 ip pim query-interval

hello interval ip pim query-interval

no hello interval

ip pim query-interval *interval-seconds*

no ip pim query-interval

interval-seconds	<1-65535>

30

hello interval

49.1.6 ip pim state-refresh disable

PIM-DM ip pim state-refresh disable
no PIM-DM

ip pim state-refresh disable

no ip pim state-refresh disable

Hello
Hello SR Cap

ip pim state-refresh disable

PIM-DM

PIM-DM

```
Ruijie# configure terminal
Ruijie(config)# ip pim state-refresh disable
```


49.1.7 ip pim state-refresh origination-interval

PIM-DM ip pim state-refresh origination-interval no

ip pim state-refresh origination-interval *interval-seconds*

no ip pim state-refresh origination-interval

interval-seconds	<1-100>

60

```
Ruijie# configure terminal
Ruijie(config)# interface fastethernet 0/1
Ruijie(config-if)# ip pim state-refresh
origination-interval 65
```


49.2 PIM-DM

49.2.1 show ip pim dense-mode interface

```
Address       Interface        VIFIndex  Ver/   Nbr
                                         Mode   Count
10.10.10.10   FastEthernet 0/45    3     v2/D    1
50.50.50.50   VLAN 4               2     v2/D    1
```


Address

```
Assert State: NoInfo
Downstream IF List:
FastEthernet 0/45:
Downstream State: NoInfo
Assert State: Loser, AT:170
```


49.2.3 show ip pim dense-mode neighbor

PIM-DM show ip pim dense-mode neighbor

show ip pim dense-mode neighbor [*s h o u m b e j / / T T 0 1 T f - 0 . 0 2 8 c 0*

49.2.4 show ip pim dense-mode nexthop

PIM-DM show ip pim dense-mode nexthop

show ip pim dense-mode nexthop

/ /

PIM-DM

```
Ruijie# show ip pim dense-mode nexthop
Destination  Nexthop   Nexthop   Nexthop   Metric Pref
```


49.2.5 show ip pim dense-mode track

PIM-DM show ip pim dense-mode track

show ip pim dense-mode track

/ /

PIM
clear ip pim dense-mode track
PIM

show ip pim dense-mode track

```
Ruijie# show ip pim dense-mode track
              PIM packet counters
Elapsed time since counters cleared: 00:04:03
                        received    sent
Valid PIMDM packets:      1           8
Hello:                    1           8
Join/Prune:               0           0
Graft:                    0           0
Graft-Ack:                0           0
Assert:                   0           0
State-Refresh:            0           0
PIM-SM-Register:          0           0
PIM-SM-Register-Stop:     0           0
PIM-SM-BSM:               0           0
PIM-SM-C-RP-ADV:          0           0
Unknown Type:             0
Errors:
Malformed packets:        0
Bad checksums:            0
Unknown PIM version:      0
Send errors:                 0
```

clear ip pim dense-mode track	PIM

49.2.6 clear ip pim dense-mode track

PIM-DM clear ip pim dense-mode track

clear ip pim dense-mode track

50 PIM-SM

50.1 PIM-SM

50.1.1 clear ip mroute

clear ip mroute {* | *group_address* [*source_address*] }

*	pimsm
group_address	pimsm
group_address source_address	pimsm

pimsm

```
Ruijie# clear ip mroute *
Ruijie# clear ip mroute 224.2.2.2
Ruijie# clear ip mroute 224.2.2.2 2.2.2.2
```

-	-

-	-

50.1.2 clear ip mroute statistics

clear ip mroute statistics {* | *group_address* [*source_address*] }

*	pimsm
group_address	pimsm
group_address source_address	pimsm

pimsm

```
Ruijie# clear ip mroute statistics *
Ruijie# clear ip mroute statistics 224.2.2.2
Ruijie# clear ip mroute statistics 224.2.2.2 2.2.2.2
```

-	-

-	-

50.1.3 clear ip pim sparse-mode bsr rp-set

clear ip pim sparse-mode bsr rp-set *

*	rp-set

rp-set

```
Ruijie (config)# ip multicast-routing
```

<100-199>|<2000-2699>	IP	acl
WORD	IP	acl

BSR RP

BSR BSR BSR C-RP

```
Ruijie# configure terminal
Ruijie(config)# ip pim accept-crp list 100
```

-	-

-	-

50.1.8 ip pim accept-crp-with-null-group

ip pim accept-crp-with-null-group

-	-

BSR prefix-count 0 C-RP-ADV

BSR BSR BSR prefix-count 0 C-RP-ADV C-RP

```
Ruijie# configure terminal
Ruijie(config)# ip pim accept-crp-with-null-group
```

-	-

PIM-SM BSR BSR RP
BSR BSR BSR
C-BSR BSR PIM-SM 224.0.0.13
BSR
BSR PIM
BSR
BSR
BSR BSR BSR
PIM ы

-	-

-	-

50.1.12 ip pim dr-priority

ip pim dr-priority *priority-value*

priority-value	<0-4294967294> 1

DR 1

DR

-	-

rp-set rp

rp rp

```
Ruijie# configure terminal
Ruijie(config)# ip pim ignore-rp-set-priority
```

-	-

[redacted]re-rp-set-priority

-	-

50.1.15 ip pim mib

ip pim mib dense-mode

-	-

sparse-mode mib

Ÿ Ƀ ȯ z 5 Ő - ʰ

```
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
```

access-list	-

-	-

50.1.17 ip pim neighbor-tracking

ip pim neighbor-tracking

-	-

50.1.18 ip pim override-interval

ip pim override-interval *interval-milliseconds*

J/P-override-interval J/P-override-interval
Join-Prune holdtime

propagation-delay 600

```
Ruijie# configure terminal
Ruijie(config)# interface g0/3
Ruijie(config-if)# ip pim propagation-delay 600
```

ip pim override-interval	-
ip pim neighbor-tracking	-

-	-

50.1.20 ip pim probe-interval

ip pim probe-interval *interval-seconds*

interval-seconds	<1-65535>

5s

DR RP
NULL-Register

Warning 3* +
65535 Warning

6s

```
Ruijie# configure terminal
Ruijie(config)# ip pim probe-interval 6
```


RP pimsm

cpu

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-decapsulate-forward
```

-	-

-	-

50.1.23 ip pim register-checksum-wholepkt

ip pim register-checksum-wholepkt [group-list *access-list*]

access-list	access-list <1 99> <1300 1999> acl group-list access-list

pim pim

pim

pim

```
Ruijie# configure terminal
Ruijie(config)#ip pim register-checksum-wholepkt
Ruijie(config)#ip pim register-checksum-wholepkt group-list 99
Ruijie(config)# access-list 99 permit 225.1.1.1 0.0.0.255
```

access-list	-

-	-

50.1.24 ip pim register-rate-limit

ip pim register-rate-limit *rate*

rate	register <1-65535>

S G

DR RP

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-rate-limit 3000
```

-	-

-	-

50.1.25 ip pim register-rp-reachability

ip pim register-rp-reachability

-	-

RP

RP

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-rp-reachability
```

-	-

-	-

50.1.26 ip pim register-source

ip pim register-source {*local_address* | *interface-type interface-number*}

local_address	ip
interface-type interface-number	ip ip

IP DR

IP

RP Register-Stop

PIM

```
Ruijie# configure terminal
Ruijie(config)# ip pim register-source 192.168.195.80
Ruijie(config)# ipv6 pim register-source g 0/3
```

-	-

-	-

ACL RP
RP RP
ACL ACL
224/4
RP RP
RP IP
RP IP
ä

permit ace deny ace

```
Ruijie# configure terminal
Ruijie(config)# ip pim rp-candidate g 0/3
Ruijie(config)# ip pim rp-candidate g 0/3 priority 200 group-list
3 interval 70
Ruijie(config)# access-list 3 permit 225.1.1.1 0.0.0.255
```

access-list	-

-	-

50.1.30 ip pim rp-register-kat

ip pim rp-register-kat *seconds*

seconds	KAT <1-65535>

RP KAT 210s

rp kat

```
Ruijie# configure terminal
Ruijie(config)# ip pim rp-register-kat 250
```

-	-

-	-

50.1.31 ip pim sparse-mode

rp spt

SPT group-list

group-list SPT

-	-

50.1.34 ip pim triggered-hello-delay

ip pim triggered-hello-delay *interval-seconds*

interval-seconds	<1-5>

Triggered-Hello-Delay 5s

Triggered-Hello-Delay
Triggered-Hello-Delay
hello

Triggered-Hello-Delay 3s

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ip pim triggered-hello-delay 3
```

-	-

-	-

50.2 PIM-SM

50.2.1 show debugging

show debugging

	-	-

/

/

```
State: Elected BSR
```

-	-

50.2.4 show ip pim sparse-mode local-members

show ip pim sparse-mode local-members [*interface-type interface-number*]

interface-type interface-number

	( )

/ /

```
Ruijie# show ip pim sparse-mode mroute
Ruijie# show ip pim sparse-mode mroute 40.40.40.11
Ruijie# show ip pim sparse-mode mroute 235.0.0.1
Ruijie# show ip pim sparse-mode mroute 235.0.0.1 40.40.40.11
```

sh ip pim sparse-mode mroute

```
Ruijie (config-if)#sh ip pim sparse-mode mroute
```

-	-

-	-

50.2.6 show ip pim sparse-mode neighbor

show ip pim sparse-mode neighbor [detail]

detail	

/ /

```
Ruijie# show ip pim sparse-mode neighbor
Ruijie# show ip pim sparse-mode neighbor detail
```

show ip pim sparse-mode neighbor

```
Ruijie (config-if)#sh ip pim sparse-mode neighbor
```

-	-

-	-

50.2.7 show ip pim sparse-mode nexthop

show ip pim sparse-mode nexthop

-	-

/ /

metric

```
Ruijie# show ip pim sparse-mode nexthop
```

-	-

-	-

50.2.8 show ip pim sparse-mode rp mapping

show ip pim sparse-mode rp mapping

-	-

/ /

rp

```
Ruijie #show ip pim sparse-mode rp mapping

Ruijie (config)#sh ip pim sparse-mode rp mapping
PIM Group-to-RP Mappings
Group(s): 224.0.0.0/4
RP: 30.30.200.1
Info source: 30.30.200.1, via bootstrap, priority 192
Uptime: 00:00:51, expires: 00:01:39
RP: 30.30.100.1
Info source: 30.30.200.1, via bootstrap, priority 192
Uptime: 00:19:14, expires: 00:01:38
Group(s): 224.0.0.0/4, Static
RP: 100.100.100.100
Uptime: 00:45:35
```

-	-

-	-

50.2.9 show ip pim sparse-mode rp-hash

show ip pim sparse-mode rp-hash *group-address*

group-address	

/ /

RP

```
Ruijie# show ip pim sparse-mode rp-hash 225.1.1.1

Ruijie# show ip pim sparse-mode rp-hash 225.1.1.1
RP: 30.30.100.1
Info source: 30.30.100.1, via bootstrap
```

-	-

-	-

50.2.10 show ip pim sparse-mode track

show ip pim sparse-mode track

-	-

/ /

PIM

-	-

-	-

51 PIM-SMv6

51.1 PIM-SMv6

51.1.1 clear ipv6 mroute

clear ipv6 mroute {* | ipv6_group_address | ipv6_group_address ipv6_source_address }

*	
ipv6_group_address	
ipv6_group_address *ipv6_source_address*	

```
Ruijie# clear ipv6 mroute *
Ruijie# clear ipv6 mroute ff66::6666
Ruijie# clear ipv6 mroute ff66::6666 3333::3333
```

-	-

-	-

51.1.2 clear ipv6 mroute statistics

clear ipv6 mroute statistics {* | *ipv6_group_address* [*ipv6_source_address*] }

*	
ipv6_group_address	
ipv6_group_address *ipv6_source_address*	

```
Ruijie# clear ipv6 mroute statistics *
Ruijie# clear ipv6 mroute statistics ff66::6666
Ruijie# clear ipv6 mroute statistics ff66::6666 3333::3333
```

-	-

-	-

51.1.3 clear ipv6 pim sparse-mode bsr rp-set

clear ipv6 pim sparse-mode bsr rp-set *

*	RP-SET

RP

```
Ruijie# clear ipv6 pim sparse-mode bsr rp-set *
```

-	-

-	-

51.1.4 clear ipv6 pim sparse-mode track

clear ipv6 pim sparse-mode track

-	-

PIMv6

```
Ruijie# clear ipv6 pim sparse-mode track
```

show ipv6 pim sparse-mode track	-

-	-

51.1.5 ipv6 multicast-routing

ipv6 multicast-routing

-	-

IPv6

IPv6

```
Ruijie(config)# ipv6 multicast-routing
```

-	-

Ã+ ÃÀ=är ˆï ,ƒ nGï4ƒ¼ Afu€´

-	-

51.1.6 ipv6 pim accept-bsr list

ipv6 pim accept-bsr list *WORD*

WORD	v6 acl

BSR RP

BSR BSR BSR C-RP

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim accept-crp list crp-list
```


- -

-	-10.4 2

51.1.9 ipv6 pim accept-register

ipv6 pim accept-register {list *ipv6_access-list* | route-map *map-name*}

ipv6_access-list	ipv6_access-list acl
map-name	

RP

RP

RP

RP Register-Stop

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim accept-register list register-access-list
Ruijie(config)# ipv6 access-list register-access-list
                                fe80::2d0:f8ff:fe22:33ad
Ruijie(config-ipv6-acl)# deny ipv6 fe80::2d0:f8ff:fe22:33ad/128
any
```

ipv6 access-list	-

-	-

51.1.10 ipv6 pim bsr-border

ipv6 pim bsr-border

-	-

BSR

BSM BSR BSM
BSM

g 0/3 BSR

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim bsr-border
```

-	-

-	-

-	-

-	-

51.1.12 ipv6 pim dr-priority

ipv6 pim dr-priority *priority-value*

priority-value	<0-4294967294> 1

DR 1

DR l

-	-

RP-SET RP

RP RP

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim ignore-rp-set-priority
```

-	-

-	-

51.1.14 ipv6 pim jp-timer

ipv6 pim jp-timer *interval-seconds*

Interval-seconds	<1-65535>

Join/Prune 60s

Join/Prune

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim jp-timer 100
```


-	-

51.1.15 ipv6 pim neighbor-tracking

ipv6 pim neighbor-tracking

-	-

join join join

join
join

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim neighbor-tracking
```

ipv6 pim propagation-delay	-

interval-milliseconds	<1-32767>

Hello Propagation_Delay 500

propagation-delay

J/P-override-interval J/P-override-interval
Join-Prune holdtime

propagation-delay 600

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim propagation-delay 600
```

ipv6 pim override-interval	-
ipv6 pim neighbor-tracking	-

-	-

51.1.20 ipv6 pim query-interval

ipv6 pim query-interval *interval-seconds*

Interval-seconds	<1-65535>

Hello 30s

Hello

-	-

-	-

51.1.21 ipv6 pim register-checksum-wholepkt

ipv6 pim register-checksum-wholepkt [group-list *ipv6_access-list*]

ipv6_access-list	*ipv6_access-list* acl group-list ipv6_access-list

ipv6 pim register-rate-limit *rate*

rate	register <1-65535>

S G

DR RP

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-rate-limit 3000
```

-	-

-	-

51.1.23 ipv6 pim register-rp-reachability

ipv6 pim register-rp-reachability

-	-

RP

RP

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-rp-reachability
```

-	-

-	-

51.1.24 ipv6 pim register-source

ipv6 pim register-source {*ipv6_local_address* | *interface-type interface-number*}

ipv6_local_address	IPV6
interface-type interface-number	ipv6

IPV6 DR

IPv6

RP IPv6

Register-Stop

ă PIM-SMv6

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-source 3333::3333
Ruijie(config)# ipv6 pim register-source g 0/3
```

-	-

-	-

51.1.25 ipv6 pim register-suppress

60

DR DR ipv6 pim rp-register-kat
RP RP keepalive

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim register-suppression 100
```

-	-

-	-

51.1.26 ipv6 pim rp-address

ipv6 pim rp-address *ipv6_rp-address* [*ipv6_access_list*]

ipv6_rp-address	RP IPv6
ipv6_access_list	*ipv6_access-list* acl

RP

RP RP BSR

BSR RP
RP ACL
ACL RP
RP IPv6 RP

ACL

RP RP
RP IPV6
RP IPV6

RP

RP RP

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim rp-address 3333::3333 acl
Ruijie(config)# ipv6 access-list acl
                rp              ff66::6666/64
Ruijie(config-ipv6-acl)# permit ipv6 any ff66::6666/64
```

ipv6 access-list	-

-	-

51.1.27 ipv6 pim rp-candidate

ipv6 pim rp-candidate *interface-type interface-number*

seconds	KAT <1-65535>

RP KAT 210s

RP KAT

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim rp-register-kat 250
```

-	-

-	-

51.1.30 ipv6 pim sparse-mode

ipv6 pim sparse-mode

-	-

PIM-SMv6

PIM-SMv6

PIM-SMv6

/128 ff66::6666/64

ipv6 access-list	-

ipv6 pim static-rp-preferred

-	-

BSR RP RP

RP BSR RP

RP

```
Ruijie# configure terminal
Ruijie(config)# ipv6 pim static-rp-preferred
```

-	-

-	-10.4 2

51.1.34 ipv6 pim triggered-hello-delay

ipv6 pim triggered-hello-delay *interval-seconds*

interval-seconds	<1-5>

Triggered-Hello-Delay 5s

Triggered-Hello-Delay
Triggered-Hello-Delay
hello

Triggered-Hello-Delay 3s

```
Ruijie# configure terminal
Ruijie(config)# interface g 0/3
Ruijie(config-if)# ipv6 pim triggered-hello-delay 3
```


-

-

/ /

BSR .

```
Ruijie# show ipv6 pim sparse-mode bsr-router
PIMv2 Bootstrap information
This system is the Bootstrap Router (BSR)
BSR address: 3333::8888
Uptime:00:03:31, BSR Priority: 64, Hash mask length: 126
Next bootstrap message in 00:00:47
Role: Candidate BSR  Priority: 64, Hash mask length: 126
State: Elected BSR
Candidate RP: 3333::8888(GigabitEthernet 0/5)
Advertisement interval 60 seconds
Next Cand_RP_advertisement in 00:00:37
```

-	-

-	-

51.2.3 show ipv6 pim sparse-mode interface

show ipv6 pim sparse-mode interface [*interface-type interface-number* [detail]]

interface-type interface-number	interface-type interface-number
detail	

/ /

PIM-SMv6

```
Ruijie# show ipv6 pim sparse-mode interface detail
```

```
GigabitEthernet 0/5 (vif 1):
Address fe80::2d0:f8ff:fe22:33ad, DR fe80::2d0:f8ff:fe22:34b3
Hello period 30 seconds, Next Hello in 6 seconds
Triggered Hello period 5 seconds
Secondary addresses:
   3333::8888
   4444::4444
  Neighbors:
   fe80::2d0:f8ff:fe22:34b3
```

-	-

-	-

51.2.4 show ipv6 pim sparse-mode local-members

show ipv6 pim sparse-mode local-members [*interface-type interface-number*]

interface-type interface-number	

/ /

PIM-SMv6 MLD

```
Ruijie# show ipv6 pim sparse-mode local-members
PIM Local membership information
GigabitEthernet 0/5:
  (*, ff66::6666) : Include
```

-	-

-	-

51.2.5 show ipv6 pim sparse-mode mroute

show ipv6 pim sparse-mode mroute { *ipv6_group_address* | *ipv6_source_address* }

ipv6_group_address	IPv6
ipv6_source_address	IPv6

/ /

-	-

-	-

51.2.6 show ipv6 pim sparse-mode neighbor

show ipv6 pim sparse-mode neighbor [detail]

detail	

/ /

PIM-SMv6

-	-

/ /

RP

```
Ruijie# show ipv6 pim sparse-mode rp mapping
PIM Group-to-RP Mappings
This system is the Bootstrap Router (v2)
Group(s): ff00::/8
  RP: 3333::1
    Info source: 3333::1, via bootstrap, priority 192
        Uptime: 00:12:40, expires: 00:01:50
```

-	-

-	-

51.2.9

-	-

-	-

51.2.10 show ipv6 pim sparse-mode track

show ipv6 pim sparse-mode track

-	-

/ /

PIM

clear ipv6 pim sparse-mode track	-

52 AAA

52.1

52.1.1 aaa authentication dot1x

AAA 802.1X

dot1x authentication	802.1X
username	

-	-

52.1.2 aaa authentication enable

AAA Enable aaa authentication enable Enable no

aaa authentication enable default *method1* [*method2*...]

no aaa authentication enable default

default	Enable Enable
method	“ local none group ” 4
local	
none	
group	RADIUS TACACS+

AAA Enable AAA Enable aaa authentication enable Enable

Enable Enable

AAA Enable RADIUS RADIUS

```
Ruijie(config)# aaa authentication enable default group radius local
```

aaa new-model	AAA

enable	
username	

-	-

52.1.3 aaa authentication login

AAA Login aaa authentication login Login
no

aaa authentication login {default | *list-name*} *method1* [*method2*...]

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

default	Login
list-name	Login
method	“ local none group ” 4
local	
none	
group	RADIUS TACACS+

AAA AAA Login
aaa authentication login Login

Login Login

list-1 AAA Login
RADIUS RADIUS

```
Ruijie(config)# aaa authentication login list-1 group radius local
```


aaa new-model	AAA
username	
login authentication	Login

-	-

52.1.4 aaa authentication ppp

AAA PPP aaa authentication ppp PPP
no

aaa authentication ppp {default | *list-name*} *method1* [*method2*...]

no aaa authentication ppp {default | *list-name*}

default	PPP
list-name	PPP
method	“ local none group ” 4
local	
none	

aaa new-model	AAA
ppp authentication	PPP
username	

-	-

52.1.5 login authentication

Login login authentication Login no

login authentication {default | *list-name*}

no login authentication

default	Login
list-name	Login

Login

Login

Login Login

list-1 AAA Login

VTY 0 - 4

```
Ruijie(config)# aaa authentication login list-1 local
Ruijie(config)# line vty 0 4
Ruijie(config-line)# login authentication list-1
```

aaa new-model	AAA
username	
login authentication	Login

-	-

52.2

52.2.1 aaa authorization commands

NAS CLI AAA

aaa authorization commands

no AAA

aaa authorization commands *level* {default | *list-name*} *method1* [*method2*...]

no aaa authorization commands *level* {default | *list-name*}

level	0~15
default	
list-name	
method	“ none group ” 4
none	
group	TACACS+

AAA

RGOS AAA

14 14

TACACS+ 15

```
Ruijie(config)# aaa authorization commands 15 default group tacacs+
```


aaa new-model	AAA
authorization commands	

AAA aaa authorization console no AAA

aaa authorization console

no aaa authorization console

-	-

RGOS

```
Ruijie(config)# aaa authorization console
```

aaa new-model	AAA
aaa authorization commands	AAA
authorization commands	

method “ local none group ”

AAA

cmd 15 TACACS+
none VTY 0 – 4

```
Ruijie(config)# aaa authorization commands 15 cmd group tacacs+ none
```

exec-1 Exec RADIUS
none VTY 0 – 4

```
Ruijie(config)# aaa authorization exec exec-1 group radius none
Ruijie(config)# line vty 0 4
Ruijie(config-line)# authorization exec exec-1
```

aaa new-model	AAA
aaa authorization commands	AAA Exec

-	-

52.3

52.3.1 aaa accounting commands

NAS

aaa accounting commands no

aaa accounting commands *level* {default | *list-name*} start-stop *method1* [*method2*...]

no aaa accounting commands *level* {default | *list-name*}

level	0~15
default	
list-name	
method	“ none group ” 4
none	
group	TACACS+

RGOS

none

TACACS+ 15

```
Ruijie(config)# aaa accounting commands 15 default start-stop group
tacacs+
```

Exec

xec

Start

Stop

Stop

default start-stop group radius

	AAA
	AAA
	Exec

-	-

52.3.3 aaa accounting network

aaa

accounting network no

aaa accounting network {default | *list-name*} start-stop *method1* [*method2*...]

RGOS start-stop

RADIUS

```
Ruijie(config)# aaa accounting network default start-stop group
radius
```

aaa new-model	AAA
aaa authorization network	AAA
aaa authentication	AAA
username	

-	-

52.3.4 aaa accounting update

aaa accounting update

no

aaa accounting update

no aaa accounting update

-	-

AAA AAA

aaa new-model	AAA
aaa accounting network	

-	-

52.3.5 aaa accounting update periodic

aaa accounting update periodic

no

aaa accounting update periodic *interval*

no aaa accounting update periodic

interval	1

5 minutes

AAA AAA

1

```
Ruijie(config)# aaa new-model
Ruijie(config)# aaa accounting update
Ruijie(config)# aaa accounting update periodic 1
```

aaa new-model	AAA
aaa accounting network	

-	-

52.3.6 accounting commands

accounting commands

no

accounting commands *level* {default | *list-name*}

no accounting commands *level*

level	0~15
default	
list-name	

cmd 15 TACACS+
none VTY 0 – 4

```
Ruijie(config)# aaa accounting commands 15 cmd group tacacs+ none
Ruijie(config)# line vty 0 4
Ruijie(config-line)# accounting commands 15 cmd
```

aaa new-model	AAA

default	Exec
list-name	Exec

Exec
Exec
Exec Exec

exec-1 Exec RADIUS
none VTY 0 – 4

```
Ruijie(config)# aaa accounting exec exec-1 group radius none
Ruijie(config)# line vty 0 4
Ruijie(config-line)# accounting exec exec-1
```

aaa new-model	AAA
aaa accounting commands	AAA Exec

-	-

AAA default
domain-name
32

```
Ruijie(config)#
```

aaa new-model	AAA
show aaa domain	

-	-

52.4.3 access-limit

IEEE802.1x no

access-limit *num*

no access-limit

num IEEE802.1x L" K,| ð S P wE15Ü

accounting network {default | *list-name*}

no accounting network

default	
list-name	

default

Network

Network

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# accounting network default
```

aaa new-model	AAA
aaa domain enable	AAA
show aaa domain	

-	-

52.4.5 authentication dot1x

IEEE802.1x no

authentication dot1x {default | *list-name*}

no authentication dot1x

default	
list-name	

default

IEEE802.1x

IEEE802.1x

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# authentication dot1x default
```

aaa new-model	AAA
aaa domain enable	AAA
show aaa domain	

-	-

52.4.6 authorization network

ñ

show aaa domain

show aaa domain [default | *domain-name*]

default	
domain-name	

domain.com

```
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
```

aaa new-model	AAA
aaa domain enable	AAA

-	-

52.4.9 username-format

NAS no

username-format {without-domain | with-domain}

without-domain	
with-domain	

NAS

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# username-domain without-domain
```

aaa new-model	AAA
aaa domain enable	AAA
show aaa domain	

-	-

52.5 AAA

52.5.1 aaa group server

AAA no

aaa group server { radius | tacacs+ } *name*

no aaa group server {radius | tacacs+ } *name*

name	“ radius ” “ tacacs+ ” RADIUS TACACS+

AAA RADIUS TACACS+

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Group Name:  ss
Group Type:  radius
Referred:   1
Server List:
```

show aaa group	aaa

-	-

52.5.2 ip vrf forwarding

AAA vrf no

ip vrf forwarding *vrf_name*

no ip vrf forwarding

vrf_name	vrf

vrf

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12
Ruijie(config-gs-radius)# server 192.168.4.13
Ruijie(config-gs-radius)# ip vrf forwarding vrf_name
Ruijie(config-gs-radius)# end
```

aaa group server	aaa
show aaa group	aaa

-	-

52.5.3 server

AAA no

server *ip-addr* [authen-port *port1*] [acct-port *port2*]

no server *ip-addr* [authen-port *port1*] [acct-port *port2*]

ip-addr	ip
port1	RADIUS
port2	RADIUS

-	-

52.5.4 show aaa group

AAA

show aaa group

-	-

AAA

```
Ruijie# show aaa group
Group Name:  ss
Group Type:  radius
Referred:   2
Server List:
IP Address: 192.168.217.64
Authentication Port: 1812
Accounting Port: 1813
Referred:  1
```

aaa group server	AAA

-	-

52.6 AAA

52.6.1 aaa local authentication attempts

login

aaa local authentication attempts *max-attempts*

max-attempts	1~2147483647

3

Login

```
Ruijie# configure terminal
Ruijie(config)# aaa local authentication attempts 6
```

Show running-config	
Show aaa lockout	login

-	-

52.6.2 aaa local authentication lockout-time

login

aaa local authentication lockout-time *lockout-time*

lockout-time	1~2147483647

15

login

```
Ruijie# configure terminal
Ruijie(config)# aaa local authentication lockout-time 5
```


Show running-config	
Show aaa lockout	login

-	-

52.6.3 aaa new-model

RGOS AAA aaa new-model AAA no AAA

aaa new-model

no aaa new-model

-	-

AAA

AAA AAA aaa new-model 8

clear aaa local user lockout {all | user-name < *word*>}

<*word*>	ID

Ruijie# **clear aaa local user lockout all**

show running-config	
show aaa lockout	login

-	-

52.6.5 debug aaa

AAA no

debug aaa event

no debug aaa event

-	-

EXEC

-	-

-	-

52.6.6

53 RADIUS

53.1 RADIUS

53.1.1 ip radius source-interface

radius ip radius source-interface no

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

-	-

53.1.3 radius-server attribute 31

RADIUS Calling-Station-ID MAC radius-server attribute 31 no

radius-server attribute 31 mac form at {ietf | normal | unformatted}

no radius-server attribute 31 mac format

ietf	ETF RFC3580 ‘ - ’ 00-D0-F8-33-22-AC
normal	MAC ‘ . ’ 00d0.f833.22ac
unformatted	00d0f83322ac

unformatted

RADIUS 802.1x IETF Calling-Station-ID IETF

RADIUS Calling-Station-ID IETF

```
Ruijie(config)# radius-server attribute 31 mac format ietf
```

-	-

10.3(5)	

53.1.4 radius-server deadtime

t t

deadtime RGOS RADIUS radius-server deadtime no

radius-server deadtime *minnutes*

no radius-server deadtime

minnutes	

5

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S*üA¹ Q ¸ ÍG¡ ¥ y [,XCY Ê ÊKÈE¯> A× H Ä

ßM6,X/ _ Ú!O u ÊKÈ n 10
Ruijie(config)# radius-server deadtime 10

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server key	RADIUS
radius-server timeout	RADIUS

´

	-

53.1.5 radius-server host

? RADIUS radius-server no RADIUS

radius-server host { ipv4-address | ipv6-address} auth-port port-number] acct-port *port-number]*

no radius-server host { ipv4-address | ipv6-address}

ipv4-address	
ipv6-address	R
auth-port	R
port-number	R

port-number	RADIUS	UDP	0

RADIUS aaa

```
Ruijie(config)# radius-server key aaa
```

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server timeout	RADIUS

-	-

53.1.7 radius-server retransmit

RADIUS

radius-server retransmit no

radius-server retransmit *retries*

no radius-server retransmit

retries	RADIUS

3

AAA

RADIUS

4

```
Ruijie(config)# radius-server retransmit 4
```

radius-server host	RADIUS
radius-server key	RADIUS
radius-server timeout	RADIUS

-	-

53.1.8 radius-server timeout

RADIUS radius-server timeout no

radius-server timeout *seconds*

no radius-server timeout

seconds	1-1000

5

10

```
Ruijie(config)# radius-server timeout 10
```

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server key	RADIUS

-	-

53.1.9 radius set qos cos

radius qos cos

radius set qos cos

no radius set qos cos

-	-

qos dscp

qos cos dscp

```
Ruijie(config)# radius set qos cos
```

radius vendor-specific extend	Radius id

-	-

53.1.10 radius vendor-specific extend

id

radius vendor-specific extend

no radius vendor-specific extend

-	-

id

id

```
Ruijie(config)# radius vendor-specific extend
```

radius attribute	
radius set	qos cos

-	-

53.2 RADIUS

53.2.1 debug radius

RADIUS no RADIUS

debug radius [event | detail]

no debug radius [event | detail]

-	-

EXEC

-	-

-	-

53.2.2 show radius parameter

RADIUS

show radius parameter

-	-

radius

```
Ruijie# show radius parameter
Server Timout:   5 Seconds
Server Deadtime: 5 Minutes
Server Retries:  3
Server Key:      ******
```

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server key	RADIUS
radius-server timeout	RADIUS

-	-

53.2.3 show radius server

RADIUS

show radius server

-	-

radius

```
Ruijie# show radius server
server ip : 192.168.4.12
acct  port: 23
```

```
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
```

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server key	RADIUS
radius-server timeout	RADIUS

-	-

TACACS+

ip tacacs source-interface *interface*

no ip tacacs source-interface

Interface	TACACS+

TACACS+

TACACS+ nas
TACACS+ ip TACACS+

TACACS+ fastEthernet 0/0 ip
TACACS+

```
Ruijie(config)# ip tacacs source-interface fastEthernet 0/0
```

tacacs-server host	TACACS+
ip address	ip

-	-

TACACS+ VRF vpn1

```
Ruijie(config)# aaa group server tacacs+ tac1
Ruijie(config-gs-radius)# server 1.1.1.1
Ruijie(config-gs-radius)# ip vrf forwarding vpn1
```

aaa group server tacacs+	TACACS+
server	TACACS+ server

-	-

54.1.4 server(TACACS+)

TACACS+

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

no server {*ip-address* | *ipv6-address*}

ip-address	TACACS+	IP
ipv6-address	TACACS+	IPV6

TACACS+

aaa group server tacacs+ TACACS+ TACACS+ tacacs-server host

TACACS+

tac1 TACACS+ 1.1.1.1 TACACS+

```
Ruijie(config)# aaa group server tacacs+ tac1
Ruijie(config-gs-tacacs+)# server 1.1.1.1
```

aaa group server tacacs+	TACACS+

ip vrf forwarding	TACACS+ VRF

-	-

54.1.5 tacacs-server host

TACACS+ IP

tacacs-server host {*ip-address* | *ipv6-address*} [port *integer*] [timout integer] [key *string*]

no tacacs-server host *ip-address*

Ip-address	TACACS+ IP
ipv6-address	TACACS+ IPV6
port *integer*	TACACS+ TCP
timeout *integer*	TACACS+
key *string*	TACACS+ client

TACACS+

TACACS+ AAA TACACS+ tacacs-server TACACS+

TACACS+

```
Ruijie(config)# tacacs-server host 192.168.12.1
Ruijie(config)# tacacs-server host 2001::1
```

seconds	1-1000

5

st2_0 1 Tf 0 Tc -1Td [<073c Tm 3<2FA6>T-6<04BD>6<30315472135910 1 Tf -0.0002 Tc 11373c 4.1.5

-	-

-	-

54.2.2 show tacacs

TACACS+

show tacacs

-	-

TACACS+

```
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
```

tacacs-server host	TACACS+

-	-

55 802.1X

55.1 dot1x

55.1.1 dot1x auto-req

802.1X dot1x auto-req no

[no] dot1x auto-req

-	-

802.1x show dot1x auto-req

802.1x

```
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req
Ruijie(config)# end
Ruijie# show dot1x auto-req
Ruijie(config)# dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num  : 0
Req-Interval: 30 Second
```

show dot1x auto-req	


```
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
```

show dot1x auto-req	

-	-

```
802.1X Status:       Enabled
Authentication Mode:  EAP-MD5
Authed User Number:   0
Re-authen Enabled:    Disabled
Re-authen Period:     1000 sec
Quiet Timer Period:   1000 sec
Tx Timer Period:      3 sec
Supplicant Timeout:   3 sec
Server Timeout:       5 sec
Re-authen Max:        3 times
Maximum 2Request:      3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:     Disabled
Authorization Mode:   Group Server
```