



RG-NPE

RGOS 10.3(4T76)

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Ruijie
Networks

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RGOS®10.3(4T76)

'
'
'

1.

5

Courier New

5

2.

Arial

[] []

{x|y|...}

[x|y|...]

//

/

/

1)

2)

1 CLI

1.1 alias

alias

no

alias *mode command-alias original-command*

no alias *mode [original-command]*

mode

command-alias

original-command

EXEC

EXEC

h	help
p	ping
s	show
u	undebug
un	undebug

no alias exec

alias ?

Ruijie(config)# **alias ?**

```

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

```

*

**command-alias=original-command*

```

EXEC           "s"   "show"           "s?"
's'

```

Ruijie# **s?**

*s=show show start-chat start-terminal-service

```

EXEC           "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
globe configure mode alias:
def-route          ip route 0.0.0.0 0.0.0.0 192.168.1.1
```

show aliases	

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

1.3 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	

enable



> 1 26

>

EXEC

pw10

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

enable secret	

-	-

2.1.4 enable secret

enable secret

no

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

no enable secret

Secret	EXEC
Level	
0 5	0 5
encrypted-password	

```

password security password 15
security 0 15
password 15 password
security 15 password security
password
security

```

```

pw10
Ruijie(config)# enable secret 0 pw10

```

enable password	

-	-

2.1.5 enable service

SSH Server/Telnet Server/Web Server/Snmp Agent
enable service

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

ssh-sesrver	IPv6	SSH Server IPv4
telnet-server	IPv6	Telnet Server IPv4
web-server	IPv6	Http Server IPv4
snmp-agent	IPv6	Snmp Agent IPv4

end

```
Ruijie# execute flash:line_rcms_script.text  
executing script file line_rcms_script.text .....  
executing done
```

	Web	local
	Ruijie(config)# ip http authentication local	
	enable service	
	-	-

2.1.8 ip http port

	HTTP	ip http port
	ip http port <i>number</i>	
	number	HTTP Server 80
	80	
	HTTP	no ip http port
	HTTP	8080
	Ruijie(config)# ip http port 8080	
	enable service	
	-	-

2.1.9 ip telnet source-interface

	IP	Telnet	ip
telnet source-interface			
ip telnet source-interface <i>interface-name</i>			
interface-name		IP	Telnet

	IP	Telnet	telnet
no ip telnet source-interface			

	Loopback 1	IP	Telnet
Ruijie(config)# ip telnet source-interface <i>Loopback 1</i>			
telnet			Telnet

10.4(2)			
---------	--	--	--

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
no lockable
```

-	-

┌

┌ line

┌ **lock** EXEC

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

┌

lock	

┌

┌

-	-

2.1.12 login

AAA
login no

login

no login

┌

-	-

┌

┌ line

```
AAA
VTY console
```

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

password	line

-	-

2.1.13 login authentication

```
AAA                                AAA
                                   no
```

```
Ruijie(config)# line vty 0
Ruijie(config-line)# login authentication default
```

aaa new-model	AAA
aaa authentication login	

|

-	-	

2.1.15 privilege mode

	CLI	
-	-	

|

|

|

|

-	-	

|

-	-	

2.1.16 password

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

--	--	--

	password	line
--	----------	------

0|7

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*}]
 [/vrf *vrf-name*]

Host	Telnet	IPV4	IPV6
Port	Telnet	TCP	23
/source	Telnet		IP
ip <i>A.B.C.D</i>	Telnet		IPV4
ipv6 <i>X:X:X:X::X</i>	Telnet		IPV6
interface <i>interface-name</i>	Telnet		
/vrf <i>vrf-name</i>		VRF	

```

          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 source-interface	IP Telnet
show session	TTY
exit	

-	-

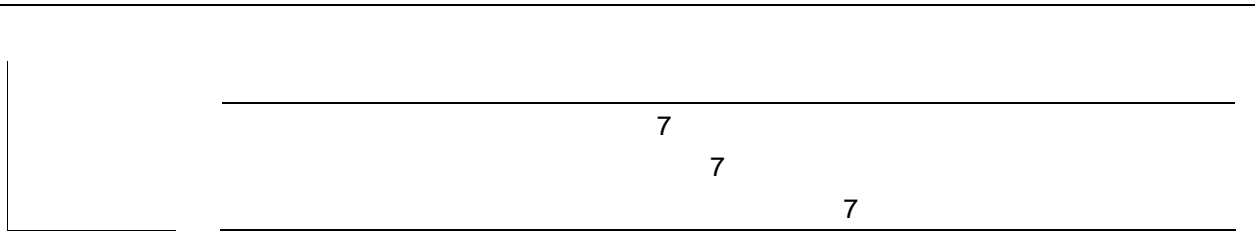
2.1.19 username

```

                                     username
username name [web-auth] {nopassword|password{password |
[0|7]encrypted-password}}
username name privilege privilege-level
no username name

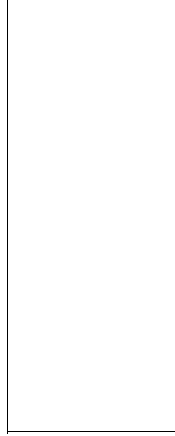
```

Name	
Password	
0 7	0 7
encrypted-password	
privilege-level	
filename	



15

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



L

L

10.3(4t76)	

2.1.21 username export

username export *filename*

L

filename	

L

L

L

web

L

:

Ruijie#**username export** *user.csv*

L

web-auth	web

L

L

10.3(4t76)	

2.2

2.2.1 banner login

banner login

no banner login

banner login *c message c*

c	
message	

|

|

|

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	

/!Q

```
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** **LINE** **exec-timeout** **no**
exec-timeout *minutes* [*seconds*]
no exec-timeout

minutes	
seconds	

┌

10 min

┌

LINE

┌

LINE

line vty 0 5 30

Ruijie(config- Tf 1 Tf0.00078- Tf-0.04 0.97 T2.57Tj/C2_0t

	name	32
	Ruijie	
	CHAP	
	BeiJingAgenda	
	Ruijie(config)# hostname <i>BeiJingAgenda</i>	
	BeiJingAgenda(config)#	
	-	-
	-	-

2.2.7 prompt

	no prompt	prompt
	prompt <i>string</i>	
	string	32
	EXEC	

	-	-

	-	-

2.2.9 service config

no

- service config**
- no service config**

	boot config	
	boot network	

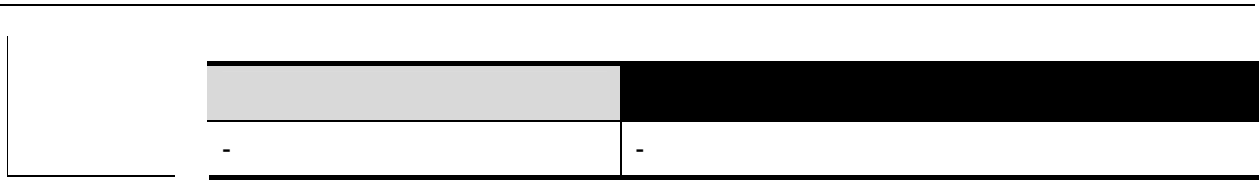
┌

	-	-

2.2.10 session-timeout

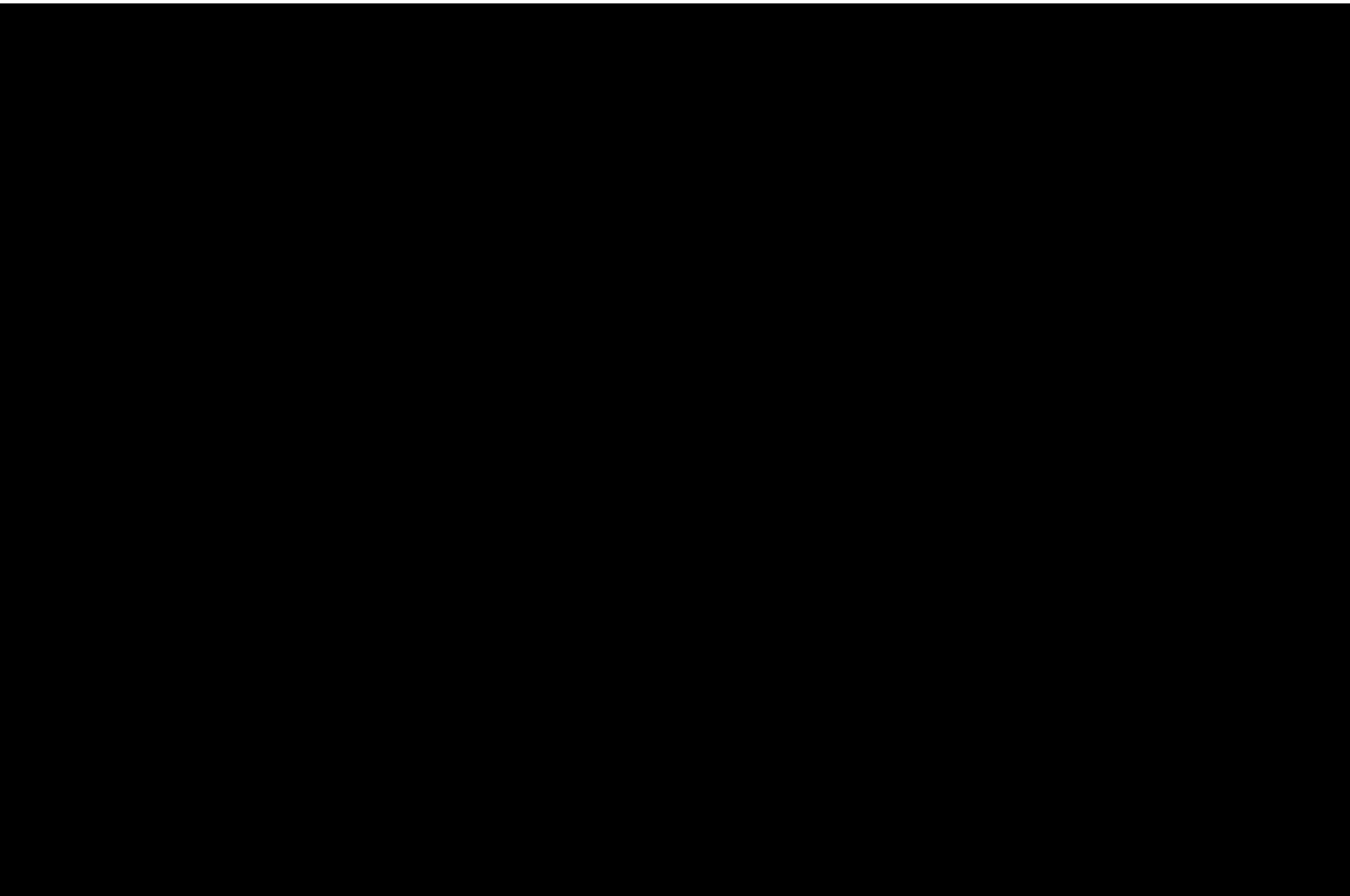
LINE
session-timeout **no session-timeout** LINE

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



2.2.11 speed

speed *speed*



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

```

boot config write
[memory]
boot config
Flash /config.text
boot config
boot config
U SD write [memory]
/config
boot config NPE50

```

```

1 boot config
Ruijie# write
Building configuration...
[OK]
2 boot config U
U write
Ruijie(config)# boot config usb1:config.text
Ruijie# write
Building configuration...
Write to boot config file: [usb1:config.text]
[OK]
Ruijie# usb remove 1
0:1:1:38 Ruijie: USB-5-USB_DISK_REMOVED: USB Device <USB Mass

```

```

Storage Device> Removed!
Ruijie# write
Building configuration...
Write to boot config file: [usb1:config.text]
[Failed]
The device [usb1] does not exist, write to the default config file
[flash:config.text]? [no] yes
Write to the default config file: [flash:config.text]
[OK]

```

boot config	
copy	
show running-config	

-	-

2.3

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	vty
line-num	line

console

```
Ruijie# show line console 0
CON   Type   speed  Overruns
* 0   CON    9600   45927
Line 0, Location: "", Type: "vt100"
Length: 24 lines, Width: 79 columns
Special Chars: Escape Disconnect Activation
                ^^x   none   ^M
```

-

-

	slots	
	devices	

3

3.1

- ' **cd**
- ' **cp**
- ' **ls**
- ' **makefs**
- ' **mkdir**
- ' **mv**
- ' **pwd**
- ' **rm**
- ' **rmdir**

3.1.1 cd

cd *DIRECTORY*

DIRECTORY

“ ”
..

“ ”
.

ls

tmp

Ruijie# **cd** tmp

ls *PATHNAME*

PATHNAME

Ruijie# **ls**

tmp

Ruijie# **ls** *tmp*

3.1.4 makefs

makefs dev *DEVNAME* **fs** *FSNAME*

makefs fs *FSNAME* **dev** *DEVNAME*

DEVNAME ()

FSNAME

a

b

jffs2

dev/mtdblock/1

```
Ruijie# makefs dev /dev/mtdblock/1 fs jffs2
```

3.1.5 mkdir

mkdir *DIRECTORY*

DIRECTORY

()

test

```
Ruijie# mkdir test
```

3.1.6 mv

mv sour *SOURCE_FILE* **dest** {*DESTINE_FILE* | *DIRECTORY*}

mv dest {*DESTINE_FILE* | *DIRECTORY*} **sour** *SOURCE_FILE*

SOURCE_FILE

DESTINE_FILE/DIRECTORY

a (**type** **file**); b '?'
'? ' ,

log.txt , config.txt, ,

Ruijie# **mv sour** *tmp/log.txt* **dest** *../config.txt*

log.txt tmp

Ruijie# **mv dest** */mnt/tmp* **sour** *tmp/log.txt*

3.1.7 pwd

pwd

pwd	

rmdir	, rm

3.1.9 rmdir

rmdir *DIRECTORY*

DIRECTORY ,

, , **rm**

tmp

Ruijie# **rmdir** tmp

Ruijie# **ls**

3.2

4

4.1.2 copy tftp

tftp tftp

copy flash: *filename* **tftp://** *location / filename*

copy tftp:// *location/filename* **flash:** *filename*

copy flash: *filename* **tftp://** *location / filename* **vrf** *vrfname*

copy tftp:// *location/filename* **flash:** *filename* **vrf** *vrfname*

tftp

copy tftp:"//location/filename" flash:filename vrf vrfname

copy tftp://location/filename flash:"filename" vrf vrfname

filename

vrfname vrf

TFTP

TFTP

config.bak : ip 192.168.12. 1
; switch.bin ip
192.168.12.1 :

Ruijie# **copy tftp://192.168.12.1/config.bak flash:**
config.text

Ruijie# **copy flash: switch.bin tftp://192.168.12.1/ config.bak**

5 HTTP

5.1

5.1.1 http check-version

HTTP
http check-version

-	-

┌

┌

┌

```

1      HTTP
Ruijie#http check-version
files need to be updated: bin, web, config, character-db, normal.
bin:
support identification of 31 kinds of popular games.
```

-	-

┌

10.3(4b7) NPE50 NPE80 NPE

10.3(4b7)	

5.1.2 http update

http update { [web] [route-db] [config] [character-db] [normal] [url-db] }

web	WEB
route-db	
config	
character-db	
normal	
url-db	URL

└──

└──

└──

```

1          WEB
Ruijie#http update web character-db
updating files, please wait...
update success!
    
```

-	-

10.3(4b7) NPE50 NPE80 NPE

10.3(4b7)	

5.1.3 http update mode

HTTP

http update mode { auto-update | manual | auto-detect }

HTTP

0.0.0.0

80

1

HTTP

HTTP

1 HTTP

Ruijie#**config**

Ruijie(config)#**http update server 10.83.132.1 port 80**

-	-

10.3(4b7)

NPE50 NPE80 NPE

10.3(4b7)	

5.1.5 http update set oob

HTTP

[no] http update set oob

-	-

HTTP

no

1 HTTP

Ruijie#**config**
Ruijie(config)#**http update set oob**

-	-

10.3(4b7) NPE50 NPE80 NPE

10.3(4b7)	

5.1.6 http update time

HTTP

http update time daily *hh:mm*

hh:mm	

HTTP

	10.3(4b7)	

6

LAN

6.1

6.1.1 bandwidth

bandwidth

no

bandwidth *kilobits*

no bandwidth

kilobits

K

bandwidth

show interface

bandwidth

Serial

clear counters

clea(counters)Tj/TT0 1 Tf0.0020 Tc 0

async	
dialer	
GigabitEthernet	10/100M
Group-async	
loopback	Loopback
null	
serial	

s10

```
Ruijie# clear interface serial 1/0
```

6.1.4 debug vlan

```

debug vlan VLAN no
VLAN
debug vlan
no debug vlan

```

```

VLAN
Ruijie# debug vlan

```

6.1.5 description

```

description no
description string
no description

```

string

2M

```
Ruijie(config)# interface serial 1/0
```

```
Ruijie(config-if)# description ShanDong-Bandwidth2M
```

6.1.6 duplex

duplex

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

show interface	

6.1.9 ip address

ip address IP no fi

w>4 Tc3EFE19

secondary IP

IP

```
Ruijie(config)# interface GigabitEthernet 0/0  
Ruijie(config-line)# ip address 192.168.12.1 255.255.255.0
```

ip unnumbered	IP

serial	
Bri	ISDN

Loopback 0 IP 192.168.12.1/24 0

```
Ruijie(config)# loopback 0
Ruijie(config-if)# ip address 192.168.12.1 255.255.255.0
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip unnumbered loopback 0
```

6.1.11 keepalive

keepalive keepalive **no**
keepalive

keepalive { *keep-period* | *keep-period* { **dns ip** | **ping ip** } }

no keepalive

keep-period RGOS keepalive 0
 RGOS keepalive 10

dns ip ip dns 3 keepalive

ping ip ip ping
 keepalive ip ping 3

keepalive

keepalive

keepalive

keepalive

keepalive

ping

dns

30

30
GigabitEthernet 0/0 180 **show interface GigabitEthernet 0/0**
3 minutes input rate 15 bits/sec, 0 packets/sec
3 minutes output rate 14 bits/sec, 0 packets/sec

GigabitEthernet 0/0 180
Ruijie(config)# **interface GigabitEthernet 0/0**
Ruijie(config-if)# **load-interval 180**

show interface	

6.1.13 mac-address

MAC
MAC MAC MAC
MAC

MAC

```
Ruijie(config)# interface GigabitEthernet 0/0  
Ruijie(config-if)# mac-address 00d0:f8fb:110d
```

6.1.14 media-type

media-type

no

```
Ruijie(config-if)# interface (pe)TJ/C2_0 1 Tf0.0050 Tc 2 Tc 12821f7283634-207.994<9961E  
media-type {
```

```

          mtu
          MTU Maximum
Transmission Unit      no
mtu size
no mtu
size      MTU      64-65535      1500

```

```

MTU      1500

```

```

MTU      MTU

```

```

      FTP      MTU

```

```

      0 MTU      576

```

```

Ruijie(config)# interface GigabitEthernet 0/0
Ruijie(config-if)# mtu 576

```

6.1.16 shutdown

```

          shutdown      no

```

```

shutdown

```

```

no shutdown

```

```

RTS

```

```

Modem

```

```

DTR

```

```

RTS

```

```

DTR

```

show interface is administratively down

GigabitEthernet 0/0

```
Ruijie(config)# interface GigabitEthernet 0/0
Ruijie(config-if)# shutdown
%LINK CHANGED: Interface GigabitEthernet 0/0, changed state to
administratively down
```

show interface	

6.1.17 speed

speed **no**

speed {10 | 100 | 1000|auto }

no speed

10 10M

100 100M

1000 1000M

auto

10M 100M 1000M

speed 0

dulpex	speed	
full	10	10M
Full	100	100M
Half	10	10M
Half	100	100M
Auto	auto	

0/0

```
Ruijie(config)# interface GigabitEthernet 0/0
Ruijie(config-if)# speed auto
```

6.2

6.2.1 show interface

show interface

show interface *type interface-number*

type

interface-number

show interface
Bandwidth Loopback

MTU

WFQ

interface FIFO **show**
Queueing strategy: fifo Output queue

0/40, 0 drops; input queue 0/75, 0 drops 0 40 0
 0 75 0

GigabitEthernet 0/0

```
Ruijie# show interface GigabitEthernet 0/0
GigabitEthernet 0/0 is UP , line protocol is UP
Hardware is Nat-Semi DP83815DVNG GigabitEthernet, address is
0a0b.0c0d.0e0f (bia 0a0b.0c0d.0e0f)
Interface address is: no ip address
ARP type: ARPA,ARP Timeout: 3600 seconds
MTU 1500 bytes, BW 100000 Kbit
Encapsulation protocol is Ethernet-II, loopback not set
Keepalive interval is 10 sec , set
Carrier delay is 2 sec
RXload is 1 ,Txload is 1
Queueing strategy: FIFO
Output queue 0/40, 0 drops;
Input queue 0/75, 0 drops
5 minutes input rate 0 bits/sec, 0 packets/sec
5 minutes output rate 0 bits/sec, 0 packets/sec
782 packets input, 88920 bytes, 0 no buffer
Received 782 broadcasts, 0 runts, 0 giants
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 abort
0 packets output, 0 bytes, 0 underruns
0 output errors, 0 collisions, 1 interface resets
```

7

7.1

7.1.1 interface giagbitEthernet

```
interface gigabitEthernet mod-num/port-num
```

```
mod-num/port-num /
```

no **show interfaces** **show**
interfaces tenGigabitEthernet

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

show interfaces	

7.1.3 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
```

7.1.4 description

```
no
```

```
description string
```

```
no description
```

```
string
```

```
show interfaces
```

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

```
Ruijie(config-if)# description GBIC-1
```

show interfaces	

7.1.5 shutdown

no

shutdown
no shutdown

Ap SVI
show interfaces

Ap 1

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

Ap 1

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

clear interface	
show interfaces	

/

no shutdown

7.1.6 speed

no

10	10Mbps
100	100Mbps
1000	1000Mbps

10G
auto

10Gbps

Ap

Ap

Ap

show interfaces
SFP

10M

100M

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

show interfaces	

7.1.7 duplex

no

duplex {auto | full | half}

no duplex

auto

full

half

show interfaces

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

show interfaces	

7.1.8 mtu

mtu

Mtu num

num 64 9216(65536)

1500

mtu

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

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

show interfaces	

7.1.9 carrier-delay

carrier-delay

no

carrier-delay [*seconds*]

no carrier-delay

seconds 1 60

2

DCD DCD Down Up

DCD

DCD

5

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

Ruijie(coinfig)# **carrier-delay 5**

7.1.10 clear counters

clear counters [*interface-id*]

interface-id

LinkTrap
 Link SNMP LinkTrap LinkTrap, no
snmp trap link-status
no snmp trap link-status

Link SNMP LinkTrap

LinkTrap Ap SVI Link SNMP LinkTrap,

Link trap:

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

Link trap:

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

Ruijie(config-if)# snmp trap link-status	link trap

8

8.1

- > [bridge-map](#)
- > [link-mode](#)
- > [native-vlan](#)
- > [specify interface](#)
- > [sys-mode](#)
- > [vlan-enable](#)
- > [xau-mode slot](#)

8.1.1 bridge-map

bridge-map *bridge-num*

<i>bridge-num</i>	0~2

└───┘

└───┘

└───┘

└───┘

no

```
1 1
Ruijie#config
Ruijie(config)#bridge-map 1
Ruijie(config-bridge-map)#
```

	-	-
10.3(4b7)	NPE50	NPE80 NPE
	10.3(4b7)	

8.1.2 link-mode

no

[no] link-mode *interface-name1 interface-name2* { *forward | sniffer | bypass* }

<i>interface-name1</i>	
<i>interface-name2</i>	
<i>forward</i>	forward
<i>sniffer</i>	sniffer
<i>bypass</i>	bypass

forward		
sniffer		
bypass		
GigabitEthernet 0/1	forward	GigabitEthernet 0/0 GigabitEthernet 0/2

GigabitEthernet 0/3 sniffer

1 GigabitEthernet 0/0 GigabitEthernet 0/1 forward

Ruijie(config)#**bridge-map** 1

Ruijie(config-bridge-map)#**link-mode** GigabitEthernet 0/0
GigabitEthernet 0/1 forward

-	-

10.3(4b7) NPE50 NPE80 NPE

10.3(4b7)	

8.1.3 native-vlan

id native-vlan id no native-vlan
[no] **native-vlan** *vlan-id num*

<i>vlan-id num</i>	Vlan id	1~4094
--------------------	---------	--------

native-vlan id 1 no native-vlan id

vlan native vlan-id vlan-id native vlan-id

1 1 native-vlan id 100

Ruijie(config)#**bridge-map** 1

Ruijie(config-bridge-map)#**native-vlan** 100

	-	-	
	10.3(4b7)	NPE50 NPE80 NPE	
	10.3(4b7)		

8.1.5 sys-mode

no

[no] sys-mode gateway

	-	-

no

IP

NAT

NAT

IP

1

Ruijie#**config**

Ruijie(config)#**no sys-mode gateway**

	-	-

10.3(4b7)

8.1.7 xau-mode

xau-mode slot *slot-num*

no

4

[no] **xau-mode slot** *slot-num*

xau-mode	
slot	slot
<i>slot-num</i>	slot

4

1 XAUI

Ruijie(config)#xau-mode slot 0

-	-

no bypass

[no] VmUgg Vti d' Y couple-num

VmUgg	bypass
Vti d' Y	
couple-num	couple

bypass

1 bypass

Ruijie(config)# bypass couple 0

-	-

10.3(4b7) NPE40

10.3(4b7)	

NPE50E NPE60E

VmUgg VtddYf Vti d' Y couple-num

VmUgg Z] VYf Vti d' Y couple-num

no bypass

[no] VmUgg VtddYf Vti d' Y couple-num

[no] VmUgg Z] VYf Vti d' Y couple-num

VmUgg	bypass
VtddYf	

	Z]Vwf	
	Vti d Y	
	<i>couple-num</i>	<i>couple</i>
		bypass
	1	bypass
	Ruijie(config)# bypass copper couple 0	
	-	-
	10.3(4b7)	NPE50E NPE60E
	10.3(4b7)	

8.2

> [show bridge-map](#)

8.2.1 show bridge-map

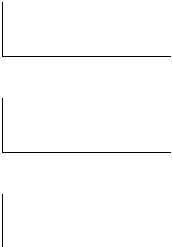
show bridge-map [*bridge-num*]

--	--	--

bridge-num

0~2

<i>sys-mode</i>	<pre> wan lan LAN : GigabitEthernet 0/0 GigabitEthernet 0/3 WAN : GigabitEthernet 0/1 GigabitEthernet 0/2 GigabitEthernet 0/4 </pre>
-----------------	---



```

Ruijie#show sys-mode
System is gateway mode.
copper couple 0 hardware bypass off
copper couple 1 hardware bypass off
fiber couple 0 hardware bypass off
fiber couple 1 hardware bypass off
LAN: GigabitEthernet 0/0 GigabitEthernet 0/3
WAN: GigabitEthernet 0/1 GigabitEthernet 0/2 GigabitEthernet 0/4

```

environment	NPE60 NPE50E NPE60E	NPE60
--------------------	---------------------	-------

NPE60:

Ruijie#sh environment

---environment information---

CPU Temperature is 34

fan works in high speed mode.

FAN 1 is OK!

FAN 2 is OK!

FAN 3 is OK!

FAN 4 is OK!

POWER 1 is not present!

POWER 2 is not present!

9

9.1

- > [copy](#)
- > [description](#)
- > [duplex](#)
- > [flowcontrol](#)
- > [gateway](#)
- > [ip address](#)
- > [mtu](#)
- > [ping oob](#)


```

Ruijie#config
Ruijie(config)#interface mgmt 0
Ruijie(config-if-Mgmt 0)#gateway 192.168.0.1
Ruijie(config-if-Mgmt 0)#end
Ruijie#

```

show interface mgmt	MGMT

NPE40 NPE60

10.3(4b7)	

9.1.3 ip address

MGMT IP

ip address *ip-address subnet-mask*

ip-address	IP
subnet-mask	

MGMT MGMT 0

1 MGMT IP

```

Ruijie#config
Ruijie(config)#interface mgmt 0
Ruijie(config-if-Mgmt 0)#ip address 192.168.0.2 255.255.255.0
Ruijie(config-if-Mgmt 0)#end
Ruijie#

```

	show interface mgmt	MGMT
	NPE40 NPE60	
	10.3(4b7)	

9.1.4 ping oob

ping oob host

	host	IP
		MGMT
	1	192.168.0.1 MGMT
		Ruijie#ping oob 192.168.0.1
		Sending 5, 100-byte ICMP Echoes to 192.168.196.1, timeout is 2 seconds:
		< press Ctrl+C to break >
		!!!!
		Success rate is 100 percent (5/5), round-trip min/avg/max = 10/10/10 ms
	-	-
		NPE40 NPE60

10.3(4b7)	

9.1.5 sntp enable oob

MGMT	SNTP
sntp enable oob	
-	-

┌

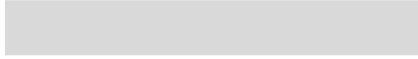
┌

MGMT	SNTP
1	SNTP
Ruijie# config	
Ruijie(config)# sntp enable oob	
-	-

10.3(4b7)	NPE50	NPE80	NPE
10.3(4b7)			

9.1.6 telnet oob

MGMT
telnet oob host



MGMT

```
1          MGMT          192.168.200.1
Ruijie#traceroute oob 192.168.200.1
  < press Ctrl+C to break >
Tracing the route to 192.168.200.1

 1  192.168.196.1  10 msec  10 msec  0 msec
 2  192.168.187.1  10 msec  10 msec  10 msec
 3  192.168.198.43 0 msec  10 msec  0 msec
 4  192.168.200.1  10 msec  10 msec  10 msec
```

-	-

NPE40 NPE60

10.3(4b7)	

10 LINE

10.1 LINE

10.1.1 line

LINE

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

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

LINE

LINE VTY 1 3 LINE

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

10.1.2 line vty

VTY
VTY
no

line vty *line-number*
no line vty *line-number*

VTY 5 0--4

VTY

VTY

none	Line
------	------

VTY TTY NONE
default
transport input

Line

Line VTY
show running Line VTY

default transport input 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
```



11 DLDP

11.1.1 DLDP

DLDP

```
' dldp ip
' dldp passive
```

11.1.2 dldp ip

```
          dldp ip                               100
          no
```

```
dldp ip [nexthopip] [interval value | retry value ]
```

```
no dldp ip [nexthopip]
```

```
ip          ip
```

```
nexthopip: ip
```

```
interval
```

```
retry
```

```
          interval 100
```

Interface

MSTP

10.83.132.1

```
Ruijie(config)# interface GigabitEthernet 1/0
```

```
Ruijie(config-if)# dldp 10.83.132.1
```

```
Ruijie(config-if)#  
    dldp  
Ruijie(config-if)# dldp passive  
Ruijie(config-if)#  
            ip 20.1.1.1      ip 10.1.1.1  
Ruijie(config)# dldp 20.1.1.1 10.1.1.1
```

RGNOS10.3

RGNOS10.3

11.1.3 dldp passive

```
dldp passive      dldp      no
```

```
dldp passive
```

RGNOS10.3

RGNOS10.3

12

12.1

12.1.1 clear counters

clear counters

clear counters [*interfece-type interface-number*]

interface-type Async Dialer GigabitEthernet Group-Async
Loopback Null Serial

interface-number

show interface

```
Ruijie# show interface async 1
Async1 is down, line protocol is down
Hardware is Async Serial
Internet address is 1.1.1.1/24
MTU 1500 bytes, BW 9 Kbit, DLY 100000 usec, rely 255/255, load
1/255
Encapsulation PPP, loopback not set, keepalive not set
DTR is pulsed for 5 seconds on reset
LCP Closed
Closed: ipcp
Last input 18:17:02, output 18:17:02, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/64/0 (size/threshold/drops)
```

```
Conversations 0/1 (active/max active)
Reserved Conversations 0/0 (allocated/max allocated)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
1396 packets input, 20516 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants
1 input errors, 1 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
1467 packets output, 22937 bytes, 0 underruns
0 output errors, 0 collisions, 11 interface resets
0 output buffer failures, 0 output buffers swapped out
0 carrier transitions
Ruijie# clear counters
Clear "show interface" counters on all interfaces [confirm]
Ruijie#
%COUNTERS: Clear counter on all interfaces by console
Ruijie# show interface async 1
Asyncl is down, line protocol is down
Hardware is Async Serial
Internet address is 1.1.1.1/24
MTU 1500 bytes, BW 9 Kbit, DLY 100000 usec, rely 255/255, load
1/255
Encapsulation PPP, loopback not set, keepalive not set
DTR is pulsed for 5 seconds on reset
LCP Closed
Closed: ipcp
Last input 18:17:15, output 18:17:15, output hang never
Last clearing of "show interface" counters 00:00:02
Input queue: 0/75/0 (size/max/drops); Total output drops: 0
Queueing strategy: weighted fair
Output queue: 0/64/0 (size/threshold/drops)
Conversations 0/1 (active/max active)
Reserved Conversations 0/0 (allocated/max allocated)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
0 packets input, 0 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
0 packets output, 0 bytes, 0 underruns
0 output errors, 0 collisions, 0 interface resets
0 output buffer failures, 0 output buffers swapped out
0 carrier transitions
```

show interface	

12.1.2 clear dialer

DDR

clear dialer

clear dialer [*interface-type interface-number*]

interface-type

Async Bri Group-Async Serial

interface-number

DDR

DDR

1

Ruijie# **clear dialer async 1**

12.1.3 clear interface

clear interface

clear interface *interface-type interface-number*

interface-type

Async Dialer GigabitEthernet Group-Async

Loopback Null Serial

interface-number

0

Ruijie# **clear interface serial 1/0**

12.1.4 clear line

clear line

clear line [*line-type*] *line-number*

line-type **Line** **aux** **console** **vty** **tty**

line-number

tty **aux** **vty** **console**

line

GMt@P000mAU"kn=4"CM4"2A4F004#LBQFJw_U0C5 (M#fhfT qM@U0XDEK

-type

Line

İ S*ü Ū + Đ

PPP

debug ppp

debug ppp [authentication | error | event | negotiation | packet]

authentication PPP

error PPP

event PPP

negotiation PPP

packet PPP

PPP

PPP

PPP

Ruijie# **debug ppp event**

12.1.7 dialer enable-timeout

dialer enable-timeout

no

dialer enable-timeout *seconds*

no dialer enable-timeout

seconds

15

10

```
Ruijie(config)# interface async 1
Ruijie(config-if)# dialer enable-timeout 10
```

12.1.8 dialer-group

dialer-group no

dialer-group *group-number*

no dialer-group

group-number

dialer-list

1 IP

```
Ruijie(config)# dialer-list 1 protocol ip permit
Ruijie(config)# interface async 1
Ruijie(config-if)# dialer-group 1
```

dialer-list	

12.1.9 dialer hold-queue

dialer hold-queue **no**

dialer hold-queue *packets* [**timeout** *seconds*]

no dialer hold-queue [*packets* [**timeout** *seconds*]]

packet 0 100

timeout *seconds* 45s

MODEM

50

```
Ruijie(config)# interface async 1
```

```
Ruijie(config-if)# dialer hold-queue 50
```

12.1.10 dialer idle-timeout

dialer idle-timeout **no**

dialer idle-timeout *seconds*

no dialer idle-timeout

seconds

120

1 60

```
Ruijie(config)# int async 1  
Ruijie(config-if)# dialer idle-timeout 60
```

dialer-group	
dialer fast-idle	

12.1.11 dialer-list

dialer-list no

dialer-list *dialer-group* **protocol** { **ip** } { **permit** | **deny** | **list**
access-list-number }

no dialer-list *dialer-group* [**protocol** { **ip** } { **permit** | **deny** | **list**
access-list-number }]

dialer-group

permit

deny h

dialer-group

IP

120

```
Ruijie(config)# access-list 120 permit tcp
192.168.11.0 0.0.0.255 192.168.12.0 0.0.0.255
Ruijie(config)# dialer-list 1 protocol ip permit
Ruijie(config)# dialer-list 2 protocol ip list 120
```

dialer-group	
access-list	

12.1.12 dialer pool

DDR

dialer pool no

dialer pool *number*

no dialer pool *number*

number

1~255

DDR

0 1

```
Ruijie(config)# interface dialer 0  
Ruijie(config-if)# dialer pool 1
```

dialer pool-member	
dialer remote-name	

12.1.13 dialer pool-member

dialer pool-member

no

dialer pool-member *number* [**priority** *priority*]

no dialer pool-member *number* [**priority** *priority*]

number

priority *priority*
255

0 255 0

0

1 1 2 50 100

```
Ruijie(config)# interface async 1
Ruijie(config-if)# dialer pool-member 1 priority 50
Ruijie(config-if)# dialer pool-member 2 priority 100
```

dialer pool	
dialer remote-name	

12.1.14 dialer priority

```
priority no DDR dialer
dialer priority number 1 50
```

PPP

ip address negotiated

no

ip address negotiated

no ip address negotiated

IP

1 IP

Ruijie(config)# **interface async 1**

Ruijie(config-if)# **ip address negotiate**

encapsulation ppp	PPP
ip address	IP
ip unnumbered	IP

12.1.16 ip address-pool

IP

ip address-pool

no

ip address-pool [local]

no ip address-pool

local

IP

IP

peer default ip address

Ruijie(config)# **ip address-pool local**

ip local pool	
peer default ip address	IP

12.1.17 ip route

IP

12.1.18 line

Line

line

line [**aux** | **console** | **vty**] *line-number* [*ending-line-number*]

aux Line

console Line

vty

line-number Line Line

end-line-number Line line

Line

```

Line          Line          Line          aux
\ console \ vty          show line

```

```

Ruijie# sh line 1
Tty   Type   speed  Overruns
* 0   AUX    115200 0
Line 1, Location: "", Type: ""
Length: 24 lines, Width: 80 columns
Special Chars: Escape Disconnect Activation
^^x   none   ^M
Timeouts:   Idle EXEC   Idle Session
00:10:00   never
History is enabled, history size is 10.
Total input: 0 bytes
Total output: 1 bytes
Data overflow: 0 bytes
stop rx interrupt: 0 times
Modem: IDLE

```

```
Tty 0
```

show line

```

aux \ console \ vty          Line
1 Line 1          show line

```

```

0 4          Line          0
4

```

```

Ruijie(config)# line vty 0 4
Ruijie(config-line)# exec-timeout 0 0

```

show line	line

```

address no IP peer default ip
peer default ip address { ip-address | pool [ pool-name-list ] }
no peer default ip address

```

```

ip-address DDR IP IP

```

```

pool pool-name-list

```

```

pool-name-list

```

```

IP

```

```

PPP IP
IP

```

```

' peer default ip address ip-address IP
' peer default ip address pool-name-list
IP

```

```

1 IP

```

```

Ruijie(config)# interface async 1
Ruijie(config-if)# peer default ip address 1.1.1.2

```

ip address-pool	
ip dhcp-server	DHCP
ip local pool	

12.1.20 ppp max-bad-auth

```
                PPP                ppp max-bad-auth
no
ppp max-bad-auth number
no ppp max-bad-auth
```

```
number PPP 0
```

```
2
```

```
3
```

```
1
```

```
4:
```

```
Ruijie(config)# interface async 1
Ruijie(config-if)# ppp max-bad-auth 4
```



PPPoE

PPPoE

RGNOS

PPPoE

RGNOS

PPPoE

```
Ruijie(config)# interface GigabitEthernet 0/0  
Ruijie(config-if)# pppoe enable
```

pppoe-client	PPPoE DDR

12.1.22 pppoe-client

PPPOE

DDR

pppoe-client

no

PPPoE

pppoe-client dial-pool-number *number* {**dial-on-demand**| **no-ddr**}

no pppoe-client dial-pool-number *number*

number

dial-on-demand PPPoE Client

no-ddr PPPoE Client

DDR

```

1          dial-on-demand
          PPPoE

2          no-ddr
          PPPoE

          1          1          PPPOE

Ruijie(config)# interface GigabitEthernet 0/1
Ruijie(config-if)#  pppoe-client  dial-pool-number  1
dial-on-demand

```

pppoe enable	PPPoE

12.2

12.2.1 show dialer

```

          DDR
          show dialer

show dialer [ interface type number ] [ maps ] [ pools ]

interface type number

maps

pools

```

1

```

Ruijie# show dialer interface async 1
Interface Async 1 , Dial-type = IN-BAND ASYNC
Async dialer

```

```

Idle-timer value(120 secs), Fast-Idle-timer value(20 secs)
Enable-timer value(15 secs), Carrier-timer value(30 secs)
DialStr SuccCalls          FailCalls          LastCall-time
LastStat

```

```

default          dialer string          default

```

12.2.2 show ip local pool

show ip local pool

show ip local pool

```

Ruijie# show ip local pool
Pool      Begin          End             Free InUse
star     1.1.1.3       1.1.1.10       8    0

```

ip address-pool	
ip local pool	

12.2.3 show pppoe

PPPoE

show pppoe

show pppoe { session | tunnel }

session tunnel

```
Ruijie# show pppoe tunnel  
pppoe000001EAt39AA206
```

IP

13 IP

13.1

- ' ip address
- ' ip unnumbered

13.1.1 ip address

IP

no

IP

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

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



h

255.0.0.0

RGOS IP IP IP IP IP IP
IP IP IP IP IP
IP IP IP
,
254 C 254 C C
C IP
,
IP IP IP
,
IP



ARP VRRP ARP AnyIP ARP
AnyIP

1 ARP AnyIP
Ruijie(config)# **interface** gi 0/0
Ruijie(config-if-GigabitEthernet 0/0)# **arp any-ip**
2 ARP AnyIP
Ruijie(config)# **interface** gi 0/0
Ruijie(config-if-GigabitEthernet 0/0)# **no arp any-ip**

-	-

10.3(4t76)	10.3(4t76)

13.2.3 arp retry interval

2 ARP arp no IP 1
ARP

arp retry interval *seconds*

no arp retry interval

<i>seconds</i>	<1-3600>,ARP 1 —3600 1

ARP 1

ARP ARP ARP

ARP 30s

arp retry interval 30

Arp retry times <i>number</i>	ARP

13.2.4 arp retry times

ARP arp IP

no 5 ARP

arp retry times *number*

no arp retry times

<i>number</i>	ARP <1-100>
	1 ARP
	1 ARP

ARP ARP 5

ARP ARP

ARP

```
arp retry times 1
```

```
        ARP          1
```

```
arp retry times 2
```

arp retry interval seconds	arp

13.2.5 arp trusted NUM

```
        ARP          no
```

```
arp trusted number
```

```
no arp trusted
```

<i>number</i>	ARP , <10-4096>

```
        ARP          ARP
```

```
        ARP
```

```
        1000        ARP
```

```
arp trusted 1000
```

service trustedarp	ARP

13.2.6 arp trusted aging

ARP no
arp trusted aging
no arp trusted aging

GSN ARP

ARP ARP
arp timeout

service trustedarp	ARP

13.2.7 arp unresolve

ARP no
8192
arp unresolve *number*
no arp unresolve

TVFK1#show ip arp | include 10.2.2.1 | include 10.2.2.2 | include 10.2.2.3 | include 10.2.2.4 | include 10.2.2.5 | include 10.2.2.6 | include 10.2.2.7 | include 10.2.2.8 | include 10.2.2.9 | include 10.2.2.10 | include 10.2.2.11 | include 10.2.2.12 | include 10.2.2.13 | include 10.2.2.14 | include 10.2.2.15 | include 10.2.2.16 | include 10.2.2.17 | include 10.2.2.18 | include 10.2.2.19 | include 10.2.2.20 | include 10.2.2.21 | include 10.2.2.22 | include 10.2.2.23 | include 10.2.2.24 | include 10.2.2.25 | include 10.2.2.26 | include 10.2.2.27 | include 10.2.2.28 | include 10.2.2.29 | include 10.2.2.30 | include 10.2.2.31 | include 10.2.2.32 | include 10.2.2.33 | include 10.2.2.34 | include 10.2.2.35 | include 10.2.2.36 | include 10.2.2.37 | include 10.2.2.38 | include 10.2.2.39 | include 10.2.2.40 | include 10.2.2.41 | include 10.2.2.42 | include 10.2.2.43 | include 10.2.2.44 | include 10.2.2.45 | include 10.2.2.46 | include 10.2.2.47 | include 10.2.2.48 | include 10.2.2.49 | include 10.2.2.50 | include 10.2.2.51 | include 10.2.2.52 | include 10.2.2.53 | include 10.2.2.54 | include 10.2.2.55 | include 10.2.2.56 | include 10.2.2.57 | include 10.2.2.58 | include 10.2.2.59 | include 10.2.2.60 | include 10.2.2.61 | include 10.2.2.62 | include 10.2.2.63 | include 10.2.2.64 | include 10.2.2.65 | include 10.2.2.66 | include 10.2.2.67 | include 10.2.2.68 | include 10.2.2.69 | include 10.2.2.70 | include 10.2.2.71 | include 10.2.2.72 | include 10.2.2.73 | include 10.2.2.74 | include 10.2.2.75 | include 10.2.2.76 | include 10.2.2.77 | include 10.2.2.78 | include 10.2.2.79 | include 10.2.2.80 | include 10.2.2.81 | include 10.2.2.82 | include 10.2.2.83 | include 10.2.2.84 | include 10.2.2.85 | include 10.2.2.86 | include 10.2.2.87 | include 10.2.2.88 | include 10.2.2.89 | include 10.2.2.90 | include 10.2.2.91 | include 10.2.2.92 | include 10.2.2.93 | include 10.2.2.94 | include 10.2.2.95 | include 10.2.2.96 | include 10.2.2.97 | include 10.2.2.98 | include 10.2.2.99 | include 10.2.2.100

ARP 8192

ARP

500

arp unresolved 500

13.2.8 arp gratuitous-send interval

arp no

arp gratuitous-send interval *seconds*

no arp gratuitous-send

<i>seconds</i>	ARP <1-3600>

ARP

ARP

SVI 1

ARP

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

SVI 1

ARP

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

13.2.9 arp timeout

ARP

ARP

no

arp timeout *seconds*

no arp timeout

<i>seconds</i>	0-2147483

3600

ARP

IP

MAC

ARP

ARP

ARP

clear arp-cache	ARP
show interface	

13.2.10 ip proxy-arp

```

                ARP                ip proxy-arp                no
                ARP
ip proxy-arp
no ip proxy-arp

10.2(3)                ARP

                ARP                ARP                IP
                MAC                ARP                IP                IP
                IP                ARP                IP                IP
                ARP                MAC                IP                IP
                ARP                MAC                MAC                IP

                GigabitEthernet 0                ARP

interface GigabitEthernet 0
ip proxy-arp

```

13.2.11 service trustedarp

```

                ARP                service trustedarp                no
                ARP
service trustedarp
no service trustedarp

```

ARP

 ARP ARP GSN
 GSN

 STP MAC
 MAC ARP

- 1) STP
- 2) root port design , updown
- 3) tc

service trustedarp

config
service trustedarp

s32

13.3

- ' ip broadcast-addresss
- ' ip directed-broadcast

13.3.1 ip broadcast-addresss

 ip broadcast-addresss
no
ip broadcast-addresss ip-address
no ip broadcast-addresss ip-address

<i>ip-address</i>	IP

IP 255.255.255.255

IP 1 255.255.255.255 RGOS
 IP 1

IP 0.0.0.0

`ip broadcast-address 0.0.0.0`

13.3.2 ip directed-broadcast

IP **ip directed-broadcast**
 no

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

no ip directed-broadcast

<i>access-list-number</i>	2699 1-199 1300 - IP

IP
172.16.16.255

IP

IP

IP

IP 1

no ip directed-broadcast RGOS

GigabitEthernet 0/1

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

13.4 IP

IP

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

13.4.1 clear arp-cache

ARP
clear arp-cache

ARP

IP

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

ARP

RNFP(Ruijie Network Foundation Protection,
mac (IP) ARP

]

ARP

Age (min)

“ ”

Interface	IP
-----------	----

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
```

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
```

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
```

show ar4

80CFC0460121641920EDB0380CFC04<41B8>.255.0 TO 9B03DE

13.4.4 show arp timeout

ARP

show arp timeout

192.168.12.0

```
clear ip route 192.168.12.0
```

show ip route	IP

13.4.6 show ip arp

ARP

```
show ip arp
```

show ip arp

```
Ruijie# show ip arp
Protocol Address      Age(min)Hardware      Type
Interface
Internet 192.168.7.233    23          0007.e9d9.0488    ARPA
GigabitEthernet 0/0
Internet 192.168.7.112    10          0050.eb08.6617    ARPA
GigabitEthernet 0/0
Internet 192.168.7.79     12          00d0.f808.3d5c    ARPA
GigabitEthernet 0/0
```

```

Internet 192.168.7.1      50      00d0.f84e.1c7f  ARPA
GigabitEthernet 0/0
Internet 192.168.7.215   36      00d0.f80d.1090  ARPA
GigabitEthernet 0/0
Internet 192.168.7.127   0       0060.97bd.ebee  ARPA
GigabitEthernet 0/0
Internet 192.168.7.195   57      0060.97bd.ef2d  ARPA
GigabitEthernet 0/0
Internet 192.168.7.183   --      00d0.f8fb.108b  ARPA
GigabitEthernet 0/0

```

ARP

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

13.4.7 show ip interface

IP

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

<i>Interface-type</i>	
<i>Interface-number</i>	

RGOS

RGOS
RGOSUP
UP**show ip interface**

```

Ruijie# show ip interface GigabitEthernet 0/1
IP interface state is: UP
IP interface type is: BROADCAST
IP interface metric is: 0
IP interface MTU is: 1500
IP address is:
192.168.5.133/24 (primary)
IP address negotiate is: OFF
Forward direct-boardcast is: ON
ICMP mask reply is: ON
Send ICMP redirect is: ON
Send ICMP unreachable 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 unreachable 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	

13.4.8 show ip redirects

show ip redirects

show ip redirects

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

ip default-gateway	

14 IP

14.1 IP

IP

- ' ip default-gateway
- ' ip mask-reply
- ' ip mtu
- ' ip redirects
- ' ip source-route
- ' ip unreachablees

14.1.1 ip default-gateway

ip default-gateway no

ip default-gateway

no ip default-gateway

show ip redirects

192.168.1.1

ip default-gateway 192.168.1.1



<code>show ip redirects</code>	
--------------------------------	--

14.1.2 ip mask-reply

```
RGOS          ICMP          ICMP
      ip mask-reply          no          ICMP
ip mask-reply
no ip mask-reply
```

```
ICMP
```

```
ICMP
```

```
ICMP
```

```
GigabitEthernet 0/1
```

```
ICMP
```

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

14.1.3 ip mtu

```
IP
```

```
MTU
```

```
ip mtu
```

```
no
```

```
ip mtu bytes
```

```
no ip mtu
```

<i>bytes</i>	IP 68~1500

mtu

```

IP          IP MTU      RGOS
          IP MTU      IP MTU
          mtu
MTU          IP MTU      IP MTU
          MTU
  
```

```

GigabitEthernet 0/1      IP MTU      512
  
```

```

interface GigabitEthernet 0/1
ip mtu 512
  
```

mtu	

14.1.4 ip redirects

```

RGOS          ICMP          ip redirects
no            ICMP
  
```

ip redirects

no ip redirects

ICMP

RGOS

ICMP

GigabitEthernet 0/1

ICMP

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

14.1.5 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
```

14.1.6 ip unreachable

```
RGOS  
unreachables
```

```
ICMP  
no
```

```
ip
```


15.2.1 show ip ref packet-statistic

REF

show ip ref packet-statistic [clear]





```

3      unresolve  glean  0.0.0.0      1    0    0    0    0
0000.0000.0000 FastEthernet 0/0
    
```

id	
state	unresolve resolved
type	local forward drop glean
rfct	
chg	
l2addr	
interface	

show ip ref route	REF

NPE

-	-

15.2.3 show ip ref exact-route

IP

show ip ref exact-route [*vrf vrf_name*] *source-ipaddress dest_ipaddress*

vrf	
source-ipaddress	IP
dest_ipaddress	IP

┌

┌ IP IP IP REF

```

1
Ruijie#show ip ref exact-route 20.1.1.1 192.168.52.5
20.1.1.1 --> 192.168.52.5 (vrf global):
id state type ip rfct chg vid tid len l2add
interface
2 unresolve glean 0.0.0.0 1 0 0 0 0
0000.0000.0000 FastEthernet 0/0
    
```

show ip ref route	REF

NPE

-	-

15.2.4 show ip ref route

REF

show ip ref route [vrf vrf_name] [default | (ip mask) | statistic]

vrf	
default	
ip	IP
mask	
statistic	

┌

┌

16

16.1

> [ip session timeout](#)

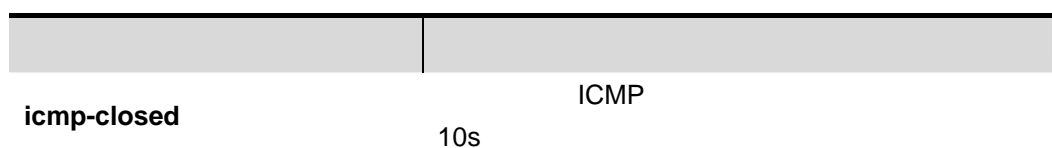
16.1.1 ip session timeout

ip session timeout

no

ip session timeout {icmp-closed | icmp-connected | icmp-started | rawip-closed | rawip-connected | rawip-established | rawip-started | tcp-close-wait | tcp-closed | tcp-established | tcp-fin-wait | tcp-last-ack | tcp-syn-receive | tcp-syn-sent | tcp-time-wait | udp-closed | udp-connected | udp-established | udp-started } num

no ip session timeout {icmp-closed | icmp-connected | icmp-started | rawip-closed | rawip-connected | rawip-established | rawip-started | tcp-close-wait | tcp-closed | tcp-established | tcp-fin-wait | tcp-last-ack | tcp-syn-receive | tcp-syn-sent | tcp-time-wait | udp-closed | udp-connected | udp-established | udp-started }



tcp-close-wait	60s	TCP	close-wait
tcp-closed	10s	TCP	closed
tcp-established	1800s	TCP	established
tcp-fin-wait	60s	TCP	fin-wait
tcp-last-ack	30s	TCP	last-ack
tcp-syn-receive	10s	TCP	syn-receive
tcp-syn-sent	10s	TCP	syn-send
tcp-time-wait	10s	TCP	time-wait
udp-closed	10s	UDP	
udp-connected	30s	UDP	
udp-established	600s	UDP	
udp-started	60s	UDP	
<i>num</i>			

```
% tcp established 600s
ip session timeout tcp-established 600
```

-	-

10.3(4t90)	

16.2

- > [show ip fpm flows](#)
- > [show ip fpm counters](#)
- > [show ip fpm statistics](#)
- > [show ip fpm users](#)

16.2.1 show ip fpm counters

show ip fpm counters

-	-

┌

┌

┌

show ip fpm counters

```

1
Ru Ruijie#show ip fpm counters
Dropped packet counters:
Count      Reason
0          Non-IPv4 packet
0          Bad IPv4 header length
0          Bad IPv4 total length
0          IPv4 fragment with DF bit set
0          Too small IPv4 fragment
0          Bad IPv4 fragment offset
0          IPv4 fragment timeout
0          Bad IPv4 checksum
0          Invalid IPv4 address

```

┌

```

0      Invalid TCP flags
0      Invalid TCP initial flags
0      Invalid TCP initial ACK number
0      Invalid TCP initial window
0      Invalid TCP sequence
0      Invalid ICMP message type
0      Invalid ICMP initial message type
0      Exceptional connection state
0      Dropped by policy
0      Out of capability

```

<end>

Rejected or terminated connection counters:

```

Count      Reason
0          Out of life time
0          Exceptional TCP connection
0          Exceptional UDP connection
0          Exceptional ICMP connection
0          Exceptional RawIP connection
0          Rejected by policy

```

Count	Reason
0	Out of life time
0	Exceptional TCP connection
0	Exceptional UDP connection
0	Exceptional ICMP connection
0	Exceptional RawIP connection
0	Rejected by policy

Count	Reason
-	-

Count	Reason
-	-

16.2.2 show ip fpm flows

```

show ip fpm flows [filter ip_protocol_number source_ip source_ip_mask_len
dest_ip dest_ip_mask_len]

```

Count	Reason
-	-

filter	
<i>ip_protocol_number</i>	
<i>source_ip</i>	ID
<i>source_ip_mask_len</i>	ID
<i>dest_ip</i>	ID
<i>dest_ip_mask_len</i>	ID

show ip fpm flow

```

1
Ruijie#show ip fpm flows
Pr SrcAddr          DstAddr          SrcPort    DstPort    Vrf
SendBytes RecvBytes St
1 192.168.52.68    192.168.52.67    5          2048       0
100          100          2
Ruijie#show ip fpm flows filter 1 192.168.52.0 24 192.168.52.67 24
Pr SrcAddr          DstAddr          SrcPort    DstPort    Vrf
SendBytes RecvBytes St
1 192.168.52.68    192.168.52.67    5          2048       0
100          100          2

```

Pr	
SrcAddr	IP
DstAddr	IP
SrcPort	
DstPort	
Vrf	Vrf
SendBytes	
RecvBytes	
St	

	-	-
	-	-

16.2.3 show ip fpm statistics

show ip fpm statistics

	-	-

show ip fpm statistic

1

```
Ruijie#show ip fpm statistics
The capacity of the flow table:32000
Number of active flows:0
Number of the defragment contexts:0
Number of the buffers hold by FPM:0
Event count (%256):3
```

The capacity of the flow table	
Number of active flows	
Number of the defragment contexts	IP
Number of the buffers hold by FPM	buffer

	Event count	
	-	-
	-	-

16.2.4 show ip fpm users

```
show ip fpm users
```

--	--	--

	-	-
	-	-

17 IP NAT

17.1

IP NAT

- > [address](#)
- > [clear ip nat translation](#)
- > [ip nat](#)
- > [ip nat application](#)
- > [ip nat inside destination](#)
- > [ip nat inside source](#)
- > [ip nat outside source](#)
- > [ip nat p2p-rate-limit](#)
- > [ip nat pool](#)
- > [ip nat translation](#)

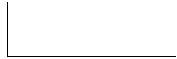
17.1.1 address

```

no NAT NAT address
address start-ip end-ip [ match interface interface ]
no address start-ip end-ip [ match interface interface ]
address interface interface [ match interface interface ]
no address interface interface [ match interface interface ]
    
```

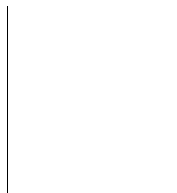
<i>start-ip</i>		IP	
<i>end-ip</i>		IP	
interface <i>interface</i>	NAT	outside	Pool
	interface	interface	match interface
	NAT		

	match interface <i>interface</i>	NAT	outside	
			NAT	pool



NAT			NAT	
NAT				

NPE80 **match** **address**
start-ip end-ip match interface interface
no address start-ip end-ip match interface interface
address interface interface match interface interface
no address interface interface match interface interface



```
% mulnets
ip nat pool mulnets netmask 255.255.255.0
address 172.16.10.1 172.16.10.254
address 192.168.100.1 192.168.100.50
```

ip nat pool	IP NAT
--------------------	--------



-	-
---	---

17.1.2 clear ip nat translation

NAT	
clear ip nat translation { * }	

*	NAT
---	-----



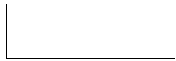


NAT

ftp

NAT

ip nat	NAT
ip nat inside destination	NAT
ip nat inside source	NAT
ip nat outside source	NAT
ip nat pool	IP NAT
show ip nat statistics	IP NAT
show ip nat translations	IP NAT

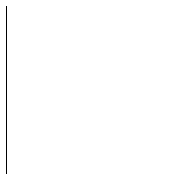


-	-

17.1.3 ip nat

no NAT ip nat
NAT

ip nat { inside | outside }
no ip nat { inside | outside }



inside	
outside	



NAT

```

NAT
    outside      inside
    NAT          inside      outside
    %            192.168.12.0/24
    200.168.12.0/28
    !
    interface GigabitEthernet0
    ip address 192.168.12.6 255.255.255.0
    ip nat inside
    !
    interface GigabitEthernet1
    ip address 200.168.12.17 255.255.255.240
    ip nat outside
    !
    ip nat pool net200 200.168.12.1 200.168.12.15 prefix-length 28
    ip nat inside source list 1 pool net200
    !
    access-list 1 permit 192.168.12.0 0.0.0.255
    
```

clear ip nat translation	NAT
ip nat inside destination	NAT
ip nat inside source	NAT
ip nat outside source	NAT
ip nat pool	IP NAT ip na 394.987 30

NAT

ip nat application

no

ip nat application source list *list-num* **destination** *dest-ip*

{ **dest-change** | **src-change** } *ip-addr* [**vrf** *vrf_name*]

ip nat application source list *list-num* **destination** { **tcp** | **udp**

dest-ip port-num } { **dest-change** *ip-addr port-num* | **src-change**

ip-addr } [**vrf** *vrf_name*]

no ip nat application source list *list-num* **destination** *dest-ip*

{ **dest-change** | **src-change** } *ip-addr* [**vrf** *vrf_name*]

no ip nat application source list *list-num* **destination** { **tcp** | **udp**

dest-ip port-num } { **dest-change** *ip-addr port-num* | **src-change**

ip-addr } [**vrf** *vrf_name*]

<i>list-num</i>	,
<i>dest-ip</i>	NAT
tcp <i>dest-ip port-num</i>	tcp
	NAT
udp <i>dest-ip port-num</i>	udp
	NAT
dest-change <i>ip-addr port-num</i>	
src-change <i>ip-addr</i>	
vrf <i>vrf_name</i>	vrf vrf

NPE80

NAT

IP

(DNS relay)

1

192.168.1.0

DNS

NAT inside

IP	192.168.1.1	NAT	DNS	
DNS	202.101.98.55	DNS		ip nat
application	92.10			

17.1.5 ip nat inside destination

NAT
 no NAT **ip nat inside destination**

ip nat inside destination list *access-list-number* **pool** *pool-name* [**vrf** *vrf_name*]
no ip nat inside destination list *access-list-number* **pool** *pool-name* [**vrf** *vrf_name*]

list <i>access-list-number</i>	pool IP 100-199 ACL
pool <i>pool-name</i>	
vrf <i>vrf_name</i>	vrf vrf

NPE80

NAT TCP NAT TCP NAT TCP
 NAT TCP NAT TCP NAT TCP
 NAT IP NAT
 NAT TCP

```

1 10.10.10.100
WWW 10.10.10.1
10.10.10.2 NAT
!
interface GigabitEthernet0
ip address 10.10.10.254 255.255.255.0
ip nat inside
!
interface GigabitEthernet1
ip address 200.168.12.17 255.255.255.240
ip nat outside
!
    
```

```
ip nat pool net10 10.10.10.1 10.10.10.2 prefix-length 24 type rotary
ip nat inside destination list 100 pool net10
!
access-list 100 permit ip any host 10.10.10.100
```

clear ip nat translation	NAT
ip nat	NAT
ip nat inside source	NAT
ip nat outside source	NAT
ip nat pool	IP NAT
show ip nat statistics	IP NAT
show ip nat translations	IP NAT

-	-

17.1.6 ip nat inside source

NAT NAT ip nat inside source no

ip nat inside source list *access-list-number* { **interface** *interface-type*
interface-number | **pool** *pool-name* } [**overload**] [vrf *vrf_name*]

no ip nat inside source list *access-list-number* [vrf *vrf_name*]

ip nat inside source static *local-ip global-ip* [match] [permit-inside] [vrf
vrf_name] [netmask *mask*]

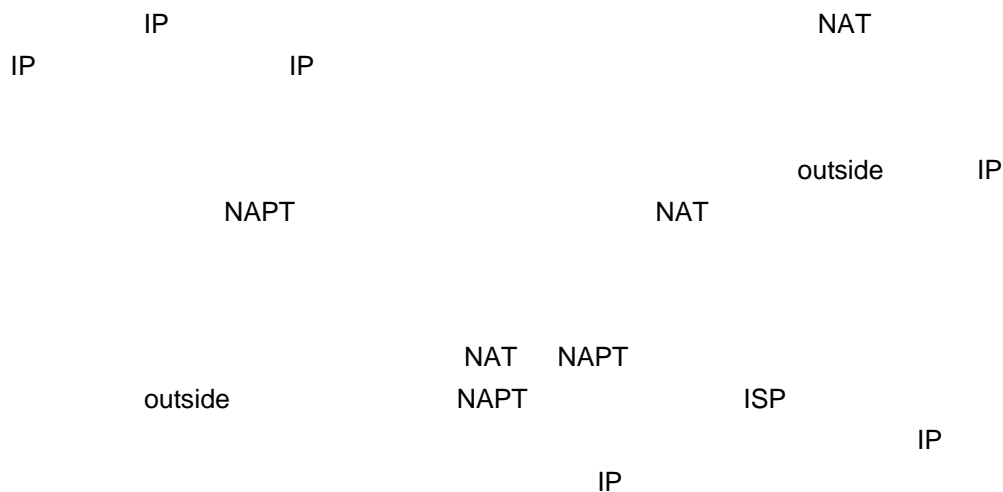
no ip nat inside source static *local-ip global-ip* [permit-inside] [match] [vrf
vrf_name]

ip nat inside source static *protocol local-ip local-port global-ip*
global-port [match] [permit-inside] [vrf *vrf_name*]

no ip nat inside source static *protocol local-ip local-port global-ip*
global-port [match] [permit-inside] [vrf *vrf_name*]

list access-list-number	NAT		
interface interface-type interface-number	outside		
pool pool-name	pool		
Overload	cisco		
static local-ip global-ip	local-ip	global-ip	
static protocol	protocol	TCP	UDP
local-port	TCP	UDP	
global-port			
permit-inside	ip nat inside source static global-ip local-ip		
vrf vrf_name	vrf	vrf	
match			
netmask mask			

NAT



NAT NAT permit-inside
 inside no ip redirects inside

```

1 192.168.12.0/24
200.168.12.0/28 NAT
!
interface GigabitEthernet0
ip address 192.168.12.6 255.255.255.0
ip nat inside
!
interface GigabitEthernet1
ip address 200.168.12.17 255.255.255.240
ip nat outside
!
ip nat pool net200 200.168.12.1 200.168.12.15 prefix-length 28
ip nat inside source list 1 pool net200
!
access-list 1 permit 192.168.12.0 0.0.0.255
  
```

clear ip nat translation	NAT
ip nat	NAT
ip nat inside destination	NAT
ip nat outside source	NAT
ip nat pool	IP NAT
show ip nat statistics	IP NAT
show ip nat translations	IP NAT

-	-

17.1.7 ip nat outside source

no NAT ip nat outside source
 NAT

ip nat outside source list *access-list-number* **pool** *pool-name* [**vrf** *vrf_name*]

no ip nat outside source list *access-list-number* [**vrf** *vrf_name*]

ip nat outside source static *global-ip local-ip* [**vrf** *vrf_name*]

no ip nat outside source static *global-ip local-ip* [**vrf** *vrf_name*]

ip nat outside source static *protocol global-ip global-port local-ip local-port* [**vrf** *vrf_name*]

no ip nat outside source static *protocol global-ip global-port local-ip local-port* [**vrf** *vrf_name*]

list <i>access-list-number</i>	NAT			
pool <i>pool-name</i>	NAT			
static <i>global-ip local-ip</i>	NAT	<i>local-ip</i>	<i>global-ip</i>	
static <i>protocol</i>	NAT	<i>protocol</i>	TCP	UDP
<i>local-port</i>	TCP UDP			
<i>global-port</i>	<i>global-port</i>			
vrf <i>vrf_name</i>	<i>vrf</i>	<i>vrf</i>		

NAT

NPE80

NAT
IP

IP

NAT

NAT

1

NAT

2

NAT

NAT

NAT

IP

DNS

NAT

1

92.168.12.0/24

```
192.168.12.0/24          92.168.12.0/24
interface GigabitEthernet0/0
ip address 92.168.12.55 255.255.255.0
```

BT
no

ip nat p2p-rate-limit
BT

ip nat p2p-rate-limit { in | out } *NUM*

no ip nat p2p-rate-limit { in | out }

```
interface GigabitEthernet 0/4
ip nat p2p-rate-limit out 192000
ip nat outside
ip address 220.181.28.52 255.255.255.0
duplex auto
speed auto
!
```

ip nat { inside | outside }

NAT

Prefix-length <i>prefix-length</i>	NAT
Type	NAT rotary rotary rotary rotary cisco
Hardware	NPE80 NAT

┌

┌

┌

```

1 net192 192.168.12.1
  192.168.12.254 24
ip nat pool net192 192.168.12.1 200.168.12.254 prefix-length 24
    
```

address	
clear ip nat translation	NAT
ip nat	NAT
ip nat inside destination	NAT
ip nat inside source	NAT
ip nat outside source	NAT
show ip nat statistics	IP NAT
show ip nat translations	IP NAT

┌

-	-

17.1.10 ip nat translation

NAT ALG

ip nat translation

no

ALG

ip nat translation { dns | ftp | h323 | mms | pptp | rtsp | sip | tftp }

no ip nat translation { dns | ftp | h323 | mms | pptp | rtsp | sip | tftp }

dns	DNS ALG
ftp	ftp ALG
h323	h323 ALG
mms	mms ALG
pptp	pptp ALG
rtsp	rtsp ALG
sip	sip ALG
tftp	tftp ALG

ALG

NAT ALG

DNS ALG

1 DNS ALG

no ip nat translation dns

©Xy000P#EMX@DNN#rc@H#QB297gpt#CzXg@T#

17.2

- > [show ip nat statistics](#)
- > [show ip nat translations](#)

17.2.1 show ip nat statistics

IP NAT show ip nat statistics

show ip nat statistics [*suspicious-pc* | *per-user* [*NUM*]]

-	-

┌

┌

┌

show ip nat statistics *per-user* [*NUM*]

		PC	
		IP	
NUM	NUM		NUM
NUM			

```
translate ip packet's source-ip use pool abc
```

Total active translations	
max entries permitted	
Outside interfaces	
Inside interfaces	
Rule statistics	NAT
NAT	
hit	
match	NAT
action	NAT

clear ip nat translation	NAT
ip nat	NAT
ip nat inside destination	NAT
ip nat inside source	NAT
ip nat outside source	NAT
ip nat pool	IP NAT
show ip nat translations	IP NAT

-	-

17.2.2 show ip nat translations

NAT

show ip nat translations

show ip nat translations [*acl_num*] [*icmp | tcp | udp*] [*vrf vrf_name*] [*verbose*]

--	--

icmp	icmp nat
tcp	tcp nat
udp	udp nat
acl_num	acl , acl
vrf_name	vrf vrf
verbose	NAT

IP NAT

verbose

timeout

```

1 show ip nat translations verbose
Ruijie# show ip nat translations verbose
timeout for NAT TCP flows: 86400
timeout for NAT TCP flows after a FIN or RST: 60
timeout for NAT TCP flows after a SYN : 60
timeout for NAT UDP flows: 300
timeout for NAT DNS flows: 60
timeout for NAT ICMP flows: 60
Pro Inside global Inside local Outside local Outside
global timeout vrf
tcp 192.168.5.103:1987 192.168.211.21:1987 211.67.71.7:80
211.67.71.7:80 timeout=85139 1
udp 192.168.5.103:1041 192.168.211.183:1041 202.101.98.55:53
202.101.98.55:53 timeout=38 1
    
```

Pro	"udp" UDP "tcp" TCP "icmp" ICMP
Inside global	
Inside local	
Outside local	
Outside global	

timeout	NAT
vrf	vrf

clear ip nat translation	NAT
ip nat	NAT
ip nat inside destination	NAT
ip nat inside source	NAT
ip nat outside source	NAT
ip nat pool	IP NAT
show ip nat translations	IP NAT

-	-

18

18.1

18.1.1 mllb enable

/

mllb enable

no mllb enable

	no	

|

|

|

|

1

Ruijie(config)# **mllb enable**

	-	-

|

NPE

	10.3(4b7)	

18.1.2 mllb policy

mllb policy { bandwidth | latency | load | intelligent}

no mllb policy

bandwidth	
latency	
load	
intelligent	
no	

bandwidth latency load intelligent
mllb policy no mllb policy
bandwidth

1 **load**
Ruijie(config)# **mllb policy load**
2
Ruijie(config)# **no mllb policy load**

mllb enable	
bandwidth	

NPE

10.3(4b7)	

18.1.3 mllb policy intelligent

/

mllb policy intelligent [bandwidth *base1*] [latency *base2*] [load *base3*]

no mllb policy intelligent

bandwidth <i>base1</i>	1-100
latency <i>base2</i>	1-100
load <i>base3</i>	1-100
no	

1.

	percent	
	no	

100

1-100

1 95
 Ruijie(config)# **mllb threshold 95**

	mllb enable	

NPE

	10.3(4b7)	

18.1.5 mllb load-sharing original

IP

mllb load-sharing original

no mllb load-sharing original

		IP
	no	

IP

IP

mllb policy bandwidth

1 IP
Ruijie(config)# **mllb load-sharing original**

mllb enable	

NPE

10.3(4b7)	

18.2

18.2.1 show mllb config

show mllb config

show mllb config

-	-

1

20


```

-----
any          9          0          0
vlan1       0          0          0          1
vlan2       0          0          0          3-5
vlan3       0          0          0          7,9

```

2 vlan1

Ruijie#**show vlan-group vlan1**

```

vlan-group  police_flow  police_url  flow  vlan id
-----
any          9          0          0
vlan1       0          0          0          1

```

show vlan-group

Vlan-group	vlan
Police_flow	
Police_url	url
Flow	
Vlan id	vlan vlan id

vlan-group name vlan vid-list	vlan

10.3(4b7) NPE50 NPE80 NPE

10.3(4b7)	

21

21.1

21.1.1 subscriber export

subscriber export [txt | csv] filename

filename	
1	userfile
Ruijie#subscriber export txt userfile	
-	-
10.3(4b7)	NPE50 NPE80 NPE
10.3(4b7)	

21.1.2 subscriber import

subscriber import [txt | csv] filename

	name
	avoid-monitor deny
	1 1 1 1
	Ruijie# config
	Ruijie(config)# subscriber set 1 attribute avoid-monitor
	2 1
	Ruijie# config
	Ruijie(config)#no subscriber set 1 attribute avoid-monitor
	show subscriber [all static dynamic parent [name root]]
	10.3(4b7) NPE50 NPE80 NPE
	10.3(4b7)

21.1.4 subscriber static

no

subscriber static name *name* **parent** *parent* [[ip-host *ip-addr*] [*mac mac-addr*] | **ip-subnet** *subnet mask* | **ip-range** *start end*]

no subscriber static name *name*

name	
parent	

ip-addr	ip	ip
mac-addr	mac	
subnet	ip	
mask		
start	ip	ip
end	ip	ip

```

ip
mac
ip mac ip mac ip mac
ip mac ip mac ip mac
mac mac ip ip
/ , ip

```

```

1 1 ip 192.168.196.156 1
1
Ruijie#config
Ruijie(config)# subscriber static name 1 parent / / 1 ip-host
192.168.196.156
// /

```

	10.3(4b7)	NPE50	NPE80	NPE
	10.3(4b7)			

21.2

21.2.1 show subscriber

show subscriber [all | static | dynamic | parent [*name* /

Avoid	
Deny	
Ip	ip



subscriber static name *name* **parent**
parent [**ip-host** *ip-addr*] [**mac** *mac-addr*] |
ip-subnet *subnet mask* | **ip-range**

22

22.1

22.1.1 network-group

no

network-group name *name* {**ip-host** *ip-addr* | **ip-subnet** *subnet mask* | **ip-range** *start end* }

no network-group *name*

name		
ip-addr	ip	ip
subnet	ip	
mask		
start	ip	ip
end	ip	ip

ip ip / ip ip
/

```
1 ip network1 192.168.196.0
Ruijie#config
Ruijie(config)#network-group name network1 ip-subnet 192.168.196.0
255.255.255.0
2 network1
Ruijie#config
Ruijie(config)#no network-group name network1
```

show network-group [name]

```

network2      0      0      0      192.168.197.1
network3      0      0      0      192.168.197.2

```

2 network1

```
Ruijie#show network-group network1
```

```

network-group police_flow police_url flow ip
-----
/ 0 0 0
network1 0 0 0 192.168.197.3

```

```
show network-group
```

Network-group	
Police_flow	
Police_url	url
Flow	
Ip	ip

network-group name name {ip-host ip-addr ip-subnet subnet mask ip-range start end] }	

```
10.3(4b7) NPE50 NPE80 NPE
```

10.3(4b7)	

23

23.1

23.1.1 identify-application custom

no

[no] **identity-application custom name** *software-name* **class** *class-name* {**tcp** | **udp**} **sport** *sport-low sport-high* **dport** *dport-low dport-high*

```
im          111          2020          udp
Ruijie#config
Ruijie(config)# identify-application custom name myqq class im udp
sport 111 111 dport 2020 2020
```

	flow-rule num vlan-group vlan-group-name	
	subscriber subscriber-name network-group	
	network-group-name app-group	
	app-group-name time-range time-rang-name	
	10.3(4b7)	NPE50 NPE80 NPE
	10.3(4b7)	

23.1.3 identify-application inhibitive

identify-application inhibitive *app-name*

	app-name	

└───

└───

└───

```

1 MSN
Ruijie#config
Ruijie(config)#identify-application inhibitive MSN

```

	flow-rule num vlan-group vlan-group-name	
	subscriber subscriber-name network-group	
	network-group-name app-group	
	app-group-name time-range time-rang-name	
	10.3(4b7)	NPE50 NPE80 NPE

10.3(4b7)	
-----------	--

23.1.4 identify-application key

identify-application key *app-name*

app-name	

```
1 FTP
```

```
Ruijie#config
```

```
Ruijie(config)#identify-application key FTP
```

identify-application signature update

-	-

1

Ruijie#**config**

Ruijie(config)#**identify-application signature update**

flow-rule num	vlan-group	vlan-group-name	
subscriber	subscriber-name	network-group	
	network-group-name	app-group	
	app-group-name	time-range	time-rang-name

10.3(4b7)

NPE50 NPE80 NPE

10.3(4b7)	

23.2

23.2.1 show identify-application

show identify-application

-	-

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1

	-		-
	10.3(4b7)	NPE50	NPE80 NPE
	10.3(4b7)		

23.2.2 show identify-application class

show identify-application class

	-	-

|
 |
 |
 |

```

1
Ruijie#show identify-application class
      1-0-0-0
IP      2-0-0-0
      3-0-0-0
      4-0-0-0
P2P     5-0-0-0
      6-0-0-0
HTTP    7-0-0-0
      8-0-0-0
      9-0-0-0
    10-0-0-0
      11-0-0-0
      12-0-0-0
      13-0-0-0
  
```

14-0-0-0

	10.3(4b7)	NPE50	NPE80	NPE
	10.3(4b7)			

23.2.4 show identity-application inhibitive

show identity-application inhibitive

-		-

show identity-application key

-	-

1

Ruijie#**show identity-application key**

IP

QQ

MSN

FTP

-	-

10.3(4b7)

NPE50 NPE80 NPE

10.3(4b7)	

23.2.6 show identify-application userdef-rule

show identity-application userdef-rule

-	-

1

Ruijie#**show identity-application userdef-rule**

TYPE	NAME	CLASS	SPL	SPH	DPL	DPH
TCP			1	10	1	100
TCP	myqq		any	any	200	888
UDP	myxunlei	myp2p	18	18	any	any

-	-

10.3(4b7)

NPE50 NPE80 NPE

10.3(4b7)	

23.2.7 show identity-application version

show identity-application version

-	-

1

Ruijie#**show identity-application version**

Version 1.0

Date 2010-1-8

	-	-

10.3(4b7) NPE50 NPE80 NPE

10.3(4b7)	

23.3

23.3.1 identify-application clear key-inhibitive group

identify-application clear key-inhibitive group

-	-

```

1
Ruijie#config
Ruijie(config)#identify-application clear key-inhibitive group

```

flow-rule num vlan-group vlan-group-name subscriber subscriber-name network-group network-group-name app-group app-group-name time-range time-rang-name	

10.3(4b7)	NPE50	NPE80	NPE
10.3(4b7)			

24

24.1

- > [change-priority](#)
- > [channel-default](#)
- > [channel-group](#)
- > [channel-tree](#)
- > [flow-control](#)
- > [flow-policy](#)
- > [flow-rule](#)

24.1.1 change-priority

no

change-priority rule1 rule1-pri-num rule2 rule2-pri-num

rule1-pri-num	
rule2-pri-num	

show flow-control-policy rule [group name]

Pri_num

group1 1 2

Ruijie#**config**

Ruijie(config)#**flow-control** group1

Ruijie(config-flow-control)#**change-priority rule1 1 rule2 2**

	show flow-control-policy rule [group name]	
	NPE40 NPE60	
	10.3(4b7)	

24.1.2 channel-default

no

channel-default *channel-name*

no channel-default

	channel-name	

channel-tree

```

test depart5
Ruijie(config)#flow-control test
Ruijie(config-flow-control)#channel-tree inbound
Ruijie(config-channel-tree)#channel-default depart5

```

	channel-group	
	channel-tree	

NPE40 NPE60

--	--	--

WAN

```
1          group1
Ruijie#config
Ruijie(config)#flow-control group1
Ruijie(config-flow-control)#
2          group2
Ruijie#config
Ruijie(config)# flow-control group2
Ruijie(config-flow-control)#
3          group1
Ruijie#config
Ruijie(config)#no flow-control group1
```

flow-policy	wan

NPE40 NPE60

10.3(4b7)	

24.1.6 flow-policy

wan

no

flow-policy *name*

no flow-policy

--	--	--

flow-rule *num* **vlan-group** *vlan-group-name* **subscriber** *subscriber-name*
network-group *network-group-name* **app-group** *app-group-name* **time-range**
time-rang-name

flow-rule *num* **session-limit** *session-num* **action** {**drop** | **log-drop** | **pass**
[**in-channel** *in-channel-name*] [**out-channel** *out-channel-name*]} [**commet** *string*]

no flow-rule *num*

num	1 8192
vlan-group-name	vlan-group any
subscriber-name	subscriber any
network-group-name	network-group any
app-group-name	app-group any
time-rang-name	time-rang
session-num	0 4000000 0
in-channel-name	in-channel
out-channel-name	out-channel
string	

num

WAN

```

pass out-channel          3M
  2          group2
sina
Ruijie#config
Ruijie(config)#flow-control group1
Ruijie(config-flow-control)#flow-rule 1 vlan-group any subscriber
          network-group sina app-group any time-rang work
Ruijie(config-flow-control)#flow-rule 1 session-limit 0 action
drop
  3          group1          1
Ruijie#config
Ruijie(config)#flow-control group1
Ruijie(config-flow-control)#no flow-rule 1

```

time-range <i>name</i>	
vlan-group <i>name</i>	vlan-group
subscriber static name	subscriber
network-group name	network-group
identify-application custom name	app-group

NPE40 NPE60

10.3(4b7)	

4.2

flow-control <i>Name</i>	
inbound	
outbound	
channel-group <i>channel-nam</i>	

channel-group *channel-name*

1

```
Ruijie#show flow-control test inbound channel-group root
group-name  cir  pir  pri  schedule  CIDR/cir/pir/limit/sess-limit
-----  --  --  --  -----  -----
root          100  100  4   per-net  32/10/10/10/100
```

2

```
Ruijie#show flow-control test inbound
group-name  cir  pir  pri  schedule  CIDR/cir/pir/limit/sess-limit
-----  --  --  --  -----  -----
root          100  100  4   per-net  32/10/10/10/100
part1         100  100  4    fifo
```

group-name	
Cir	
Pir	
Pri	
Schedule	
CIDR/cir/pir/limit/sess-limit	Per-net

-	

NPE40 NPE60

10.3(4b7)

24.2.3 show flow-control-policy rule

show flow-control-policy rule [*group name*]

name

id

```
Ruijie#show flow-control-policy rule
```

```
Pri_num grp_id rule_num ifx  vlan_id  subs_id  net_wk_id  app_id
ichl_id ochl_id ses_num ses_lim effec
1      0      1      0      0      814695740  0      0
NA     2      0      2000  0
2      0      2      0      18661884  18577704  18577496  0
1      NA     0      2000  0
3      1      3      6      18661884  18577704  18577496  4294967290
1      1      0      2000  1
```

group1

```
Ruijie#show flow-control-policy rule group group1
```

```
Pri_num grp_id rule_num ifx  vlan_id  subs_id  net_wk_id  app_id
ichl_id ochl_id ses_num ses_lim effec
1      0      1      0      0      814695740  0      0
NA     2      0      2000  0
2      0      2      0      18661884  18577704  18577496  0
```

25

25.1

25.1.1 flow-audit enable

no

flow-audit enable

no flow-audit enable

|

|

|

|

1

Ruijie#**config**

Ruijie(config)#**flow-audit enable**

2

Ruijie#**config**

Ruijie(config)#**no flow-audit enable**

-	-

| NPE

10.3(4b7)-	

25.2

25.2.1 show flowrate application

```
show flowrate application {interface interface-name | bridge bridge-name}  
s | bridg]49f 0.0002 Tc 0.3 0.00 Td0 1 Tf -36.891 ([460.00 Td[ 1 Tf -0.0002 Tc 0.35 91 0 3 0.00 Tc
```

day-interval

by-group by-type

1 gigabitEthernet 0/1

Ruijie#**show flowrate application interface gigabitEthernet 0/1**

path:GigabitEthernet 0/1

Application Subscriber-num

PASS: Upload(bps) Download(bps) Upload(pps)

Download(pps)

DROP: Upload(bps) Download(bps) Upload(pps)

Download(pps)

App1 46

62597 65955 15 17

0 0 0 0

2 bridge 0

Ruijie# **show flowrate application bridge 0 by-group**

path:bridge-map 0

Application_group

PASS: Upload(bps) Download(bps) Upload(pps)

Download(pps)

DROP: Upload(bps) Download(bps) Upload(pps)

Download(pps)

App_group1

211 249 0 0

0 0 0 0

3 bridge 0 2010 1 9 2010 1

9

Ruijie# **show flowrate application bridge 0 by-group day-interval**

2010 1 9 to 2010 1 9

path:bridge-map 0

day-interval: 2010-1-9 ~ 2010-1-9

Application_group

PASS: Upload(KB) Download(KB) Upload(packets)

Download(packets)

DROP: Upload(KB) Download(KB) Upload(packets)

Download(packets)

P2P

0 6 24 24

0 0 0 0

	/HTTP			
5229	116742	59983	89151	
0	0	0	0	
	/ QQ			
220	135	1349	1290	
0	0	0	0	
27684236	159994	363431164	226927	
0	0	0	0	
	/Lotus-Notes			
793	772	5327	4766	
0	0	0	0	
32	252	567	635	
0	0	0	0	
	/NETBIOS			
2	98	24	1187	
0	0	0	0	
0	2	0	4	
0	0	0	0	

-	-

NPE	day-interval

channel_groupC/	channel_nameC		
down		39632	, 61
0	, 0		
2	NBR		

25.2.4 show flowrate ip

```

show flowrate ip {interface interface-name | bridge bridge-name}
[subscriber-group subscriber-group] {[by-group] [subscriber subscriber-name]}
[ip ip-address] [application application-name] [application-group
application-group] [application-type application-type] }[day-interval begin-year
begin-month begin-day to end-year end-month end-day] [hour-interval
begin-hour1 to end-hour1 begin-hour2 to end-hour2] [order-by {{pass | drop}
{upload | download} | ip | subscriber} {desc | asc}[top n [detail]]]

```

interface-name	
hour	
subscriber-name	
subscriber-group	
Ip-address	IP
application-name	
application-group	
application-type	
begin-hour	
begin-day	
begin-month	
begin-year	
end-day	
end-month	
end-year	
begin-hour	
end-hour	
begin-hour2	2
end-hour2	2
n	n

IP
day-interval, hour-interval

```

begin-year begin-month begin-day end-year end-month end-day begin-hour
end-hour begin-hour2 end-hour2                2
order-by top n n

```

```

1 gigabitEthernet 0/1
Ruijie#show flowrate ip interface gigabitEthernet 0/1
Subscriber Application-num
PASS: Upload(bps) Download(bps) Upload(pps) Download(pps)
DROP: Upload(bps) Download(bps) Upload(pps) Download(pps)
/User_groupA/User_nameA 1
230 134 0 0
Applic3 Tc -29.647 -10(/UsSS: )-rpA/User_nameEA 1

```

	0	0	0	0
	-		-	
	NPE	day-interval		
	10.3(4b7)			

25.2.5 show flowrate ip-application

```

IP                                     IP
show flowrate ip-application {interface interface-name | bridge bridge-name}
[subscriber-group subscriber-group] [subscriber subscriber-name] [ip
ip-address] [application-group application-group] [application-type
application-type] [application application-name] [day-interval begin-year to i76 0.24 0.4]

```

begin-hour2
end-hour2
n

2
2
n

day-interval IP IP

```
1 gigabitEthernet 0/1 IP
Ruijie#show flowrate ip-application interface gigabitEthernet 0/1
path:GigabitEthernet 0/1
Subscriber Application
PASS Upload(bps) Download(bps) Upload(pps) Download(pps)
DROP: Upload(bps) Download(bps) Upload(pps) Download(pps)
/user_groupA/user_nameA applicationA
46003 2093107 93 173
0 0 0 0
/user_groupB/user_nameB applicationB
46001 2093102 193 173
0 0 0 0
/user_groupC/user_nameC applicationC
4003 1093107 63 73
0 0 0 0
2 bridge 0 2010 1 9
```

```
Ruijie# show flowrate ip-application bridge 0 day-interval 2010 1
9 to 2010 1 9
path:bridge-map 0
day-interval: 2010-1-9 ~ 2010-1-9
time-interval(min): 60
count:5
```

```
Subscriber Application
PASS: Upload(KB) Download(KB) Upload(packets)
Download(packets) TD(time-ici(c18iFF5>6<14E300(wnload(KB) )-6(
```

```

0          0          0          0
/User_groupB/User_nameB      NETBIOS-DGM
0          56         0          346
0          0          0          0
/User_groupC/User_nameC      NETBIOS-NS
0          31         0          699
0          0          0          0
/User_groupD/User_nameD      TCP
0          6          0          29
0          0          0          0
/User_groupE/User_nameE      UDP
0          82         0          156
0          0          0          0

```

-	-

NPE day-interval

10.3(4b7)	

25.2.6 show online ip

IP

IP

```

show online ip {interface interface-name | bridge bridge-name} [subscriber
subscriber-name] [subscriber-group subscriber-group] [ip ip-address]
[{day-interval begin-year begin-month begin-day to end-year end-month end-day
[hour-interval begin-hour to end-hour begin-hour2 to end-hour2]}] [] ]

```

[[

IP	AuthType	LoginTime	OnlineTime(min)
PASS-Upload(KB)	PASS-Download(KB)		DROP-Upload(KB)
DROP-Download(KB)			
/User_groupA/User_nameA			
192.168.196.37		2010-1-7 20:43	1255
485103	7718860	0	0
/User_groupB/User_nameB			
192.168.203.27		2010-1-8 9:5	514
65293	2320266	0	0
/User_groupC/User_nameC			
192.168.196.63		2010-1-7 13:47	1671
79176	1410420	0	0
/User_groupD/User_nameD			
192.168.196.74		2010-1-7 9:37	1922
5830311	1275917	0	0
/User_groupE/User_nameE			
192.168.203.39		2010-1-8 8:48	530
42329	515173	0	0
/User_groupF/User_nameF			
192.168.196.72		2010-1-7 9:37	1922
274249	396572	0	0
/User_groupG/User_nameG			
192.168.203.48		2010-1-7 9:37	1922
55562	380214	0	0
/User_groupH/User_nameH			
192.168.196.70		2010-1-7 9:37	1922
105615	285195	0	0
/User_groupI/User_nameI			
192.168.196.55		2010-1-7 9:37	1922
33071	205676	0	0
/User_groupJ/User_nameJ			
192.168.203.40		2010-1-7 9:37	1922
15904	160891	0	0

3 gigabitEthernet 0/1 2010 1 8 1 3 ip

Ruijie# **show online ip interface gigabitEthernet 0/1 day-interval 2010 1 8 to 2010 1 8 hour 1 to 3 order-by pass download desc**
path:GigabitEthernet 0/1

```

Subscriber
IP                OnlineTime(min)
PASS-Upload(KB)   PASS-Download(KB)   DROP-Upload(KB)
DROP-Download(KB)
/User_groupC/User_nameC
192.168.196.37    180
    75381          1193654            0            0
/User_groupD/User_nameD
192.168.203.36   180
    381            3120              0            0
/User_groupE/User_nameE
192.168.196.53   180
    206            1457              0            0
/User_groupF/User_nameF
192.168.196.63   135
    142            1437              0            0

```

-	-

```
NPE                day-interval
```

10.3(4b7)	

25.2.7 show online ip-application

```

IP
show online ip-application {interface interface-name | bridge bridge-name}
[subscriber subscriber-name] [subscriber group subscriber-group] [ip
ip-address] [application application-name] [application-group application-group]
[application-type application-type] [order-by {{pass | drop} {upload | download}
| ip | subscriber | application} {desc | asc}[top n]]

```

interface-name	
bridge-name	

subscriber-name
 subscriber-group
 ip-address
 application-name
 application-group
 application-type
 n

IP
n

IP

ip,subscriber,subscriber-group,application,application-group
 order-by top n n

```

1 bridge-map0 IP
Ruijie#show online ip-application bridge 0
path:bridge-map 0
Subscriber
IP Application
LoginTime OnlineTime(min)
PASS-Upload(KB) PASS-Download(KB) DROP-Upload(KB)
DROP-Download(KB)
/User_groupA/user_nameA
192.168.196.14 UDP
2010-1-8 19:7 0
24 0 0 0
/user_groupB/user_groupB
192.168.196.15 UDP
2010-1-8 19:7 0
24 0 0 0
/User_groupC/User_nameC
192.168.196.16 UDP
2010-1-8 19:7 0
24 0 0 0
2 gigabitEthernet 0/1 IP 192.168.196.70
IP
Ruijie#show online ip-application interface gigabitEthernet 0/1 ip
192.168.196.70
  
```

```

path:GigabitEthernet 0/1
Subscriber
IP                Application
LoginTime         OnlineTime(min)
PASS-Upload(KB)   PASS-Download(KB)   DROP-Upload(KB)
DROP-Download(KB)
/user_groupA/user_nameA
192.168.196.70    by_pass
2010-1-7 9:37    2032
107182           327352              0              0

```

-	-

NPE EG

10.3(4b7)	

25.2.8 show online statistic

```

hour IP
show online statistics{interface interface-name | bridge bridge-name}
[{detail|recent hour | time-interval begin-year begin-month begin-day begin-hour
to end-year end-month end-day end-hour}]

```

interface-name	
bridge-name	
hour	
begin-year	
begin-month	
begin-day	
begin-hour	
end-year	
end-month	
end-day	
end-hour	

|

|

|

detail IP recent
hour IP time-interval
begin-hour begin-day begin-month begin-year to end-hour end-day end-month
end-year IP

1 bridge-map0 IP
Ruijie#**show**

8	99	666
9	97	542
10	96	885
11	97	986
12	95	820

-	-

NPE recent time-interval

10.3(4b7)	

26

26.1

26.1.1 ping

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

<i>vrf-name</i>	VRF
<i>ip-address</i>	IPv4
<i>length</i>	

ping

DNS

ping

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

ping

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

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

26.1.2 Traceroute

traceroute

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

<i>vrf-name</i>	VRF
<i>ip-address</i>	IPv4

<i>number</i>	
<i>source-address</i>	IPV4
<i>seconds</i>	
<i>minimum maximum</i>	TTL

traceroute

DNS

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

```

Ruijie#

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

```

Ruijie#

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
17     * * *
18     64.170.98.32     40 msec  40 msec 40 msec

```

26.1.3 Line-detect

line-detect

line-detect

line-detect

```
Ruijie(config)#int gigabitEthernet 3/1
Ruijie(config-if)#line-detect
start cable-diagnoses,please wait...
cable-daignoses end!this is result:
4 pairs
pair state      length(meters)
-----
A      Ok          2
B      Ok          1
C      Short        1
D      Short        1
```

```
pairs
State
           OK          Short      Open
           A B      OK C D      Short
Length:   A B C D      state OK
           Short  Open  length
```

DHCP

27.1.2 client-identifier

DHCP

DHCP

client-identifier**no****client-identifier** *unique-identifier***no client-identifier**

<i>unique-identifier</i>	DHCP 0100.d0f8.2233.b467.6967.6162.6974.4574.686 5.726e.6574.302f.31

DHCP

DHCP

DHCP

IP



host	IP DHCP
ip dhcp pool	DHCP DHCP

27.1.4 default-router

DHCP
no

DHCP

default-router

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

no default-router

	DHCP DHCP
<i>ip-address</i>	IP
<i>ip-address2...ip-address8</i>	8

DHCP

27.1.5 dns-server

DHCP DNS DHCP **dns-server**
no DNS

```
dns-server { ip-address [ ip-address2...ip-address8 ] |
use-dhcp-client interface-type interface-number }
no dns-server
```

<i>ip-address</i>	DNS IP
<i>ip-address2</i> ... <i>ip-address8</i>	8 DNS
use-dhcp-client <i>interface-type</i> <i>interface-number</i>	RGOS DHCP DNS DHCP DNS

DNS

DHCP

DNS

DHCP

DNS

ip dhcp pool	DHCP	DHCP
---------------------	------	------

27.1.6 domain-name

DHCP DHCP **domain-name**
no
domain-name *domain-name*
no domain-name

<i>domain-name</i>	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
no

DHCP

hardware-address

hardware-address *hardware-address type*
no hardware-address

<i>hardware-address</i>	DHCP	MAC
	DHCP	

type

27.1.8 host

DHCP IP DHCP host
no DHCP IP

host *ip-address* [*netmask*]
no host

<i>ip-address</i>	DHCP IP
<i>netmask</i>	DHCP

IP

DHCP

50 RD (KIC) 5F 76 21 92 11 65 78 c 38 08 0 Td1CE10875B30

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
RGOS          PPP FR HDLC          dhcp
    
```

```

                GigabitEthernet 0      IP
interface GigabitEthernet 0
ip address dhcp
    
```

dns-server	DHCP DNS
ip dhcp pool	DHCP DHCP

27.1.10 ip dhcp excluded-address

```

                IP          DHCP          DHCP
                ip dhcp excluded-address      no
ip dhcp excluded-address low-ip-address [ high-ip-address ]
no ip dhcp excluded-address low-ip-address [ high-ip-address ]
    
```

<i>low-ip-address</i>	IP IP IP
<i>high-ip-address</i>	IP

DHCP

IP

IP

DHCP

DHCP

IP

IP

IP

DHCP

DHCP

DHCP

192.168.12.100~150

IP

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



<i>number</i>	0 10 0 ping ping

ping 2

DHCP DHCP IP ping DHCP
Ping 10
ping 3
ip dhcp ping packets 3



<i>milli-seconds</i>	DHCP	ping
	100	10000

500

ping

ping

600ms

ip dhcp ping timeout 600

clear ip dhcp conflict	DHCP
ip dhcp ping packets	DHCP ping
show ip dhcp conflict	DHCP

27.1.13 ip dhcp pool

DHCP DHCP ip
dhcp pool no DHCP
ip dhcp pool *pool-name*
no ip dhcp pool *pool-name*

--	--

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
```

<i>days</i>	
<i>hours</i>	

minutes

<i>ip-address2...ip-address8</i>	8 WINS
----------------------------------	--------

WINS

DHCP

WINS WINS DHCP

DHCP WINS 192.168.12.3
netbios-name-server 192.168.12.3

ip address dhcp	DHCP IP
ip dhcp pool	DHCP DHCP

27.1.16 netbios-node-type

DHCP NetBIOS DHCP

27.1.17 network DHCP

```

DHCP
no
network net-number net-mask
no network
    
```

<i>net-number</i>	DHCP IP
<i>net-mask</i>	DHCP IP

DHCP

DHCP

DHCP

DHCP

```

show ip dhcp binding
show ip dhcp conflict
    
```

```

DHCP 192.168.12.0
255.255.255.240
network 192.168.12.0 255.255.255.240
    
```

ip dhcp excluded-address	DHCP IP

ip dhcp pool	DHCP DHCP
---------------------	--------------

27.1.18 next-server

DHCP next-server no DHCP

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

no next-server

<i>ip-address</i>	TFTP IP
<i>ip-address2...ip-address8</i>	8

DHCP

DHCP

DHCP 192.168.12.4

next-server 192.168.12.4

bootfile	DHCP
ip dhcp pool	DHCP DHCP
ip help-address	Helper
option	RGOS DHCP

27.1.19 option

DHCP
option

DHCP

option

no

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

no option

<i>code</i>	DHCP
ascii <i>string</i>	ASCII
hex <i>string</i>	
ip <i>ip-address</i>	IP

DHCP
option

TCP/IP

DHCP

DHCP
DHCP
RFC 2131

312

option

DHCP
DHCP option

IP 0 IP
IP

19

IP 1

IP

DHCP

DHCP

option 19 hex 1

33

DHCP

DHCP
192.168.12.12 2

172.16.16.0

1 172.16.12.0
192.168.12.16

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

ip dhcp pool	DHCP DHCP

27.1.20 service dhcp

```
no DHCP service dhcp
DHCP
service dhcp
no service dhcp
```

DHCP

```
DHCP IP DNS
DHCP DHCP
DHCP DHCP
DHCP
```

DHCP

service dhcp

show ip dhcp server statistics	DHCP

27.2

27.2.1 clear ip dhcp binding

DHCP

*	DHCP
<i>ip-address</i>	IP

```
DHCP                ping    DHCP
  ARP  clear ip dhcp conflict
```

```
clear ip dhcp conflict *
```

ip dhcp ping packets	DHCP ping
show ip dhcp conflict	DHCP

27.2.3 clear ip dhcp server statistics

```
                DHCP                clear ip dhcp server
statistics
clear ip dhcp server statistics
```


DHCP Server
debug ip dhcp server
no debug ip dhcp server

debug ip dhcp server

dhcp server

dhcp

debug ip dhcp server

27.2.6 show dhcp lease

DHCP
show dhcp lease

EXEC **show dhcp lease**

IP IP

IP

show dhcp lease

```

Ruijie# show dhcp lease
Temp IP addr: 192.168.5.71 for peer on Interface:
GigabitEthernet0/0
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*]

<i>ip-address</i>	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	IDLE	Infinite
Type	Manual	DHCP Automatic

clear ip dhcp binding	DHCP

27.2.8 show ip dhcp conflict

DHCP

EXEC

show ip dhcp conflict**show ip dhcp conflict**

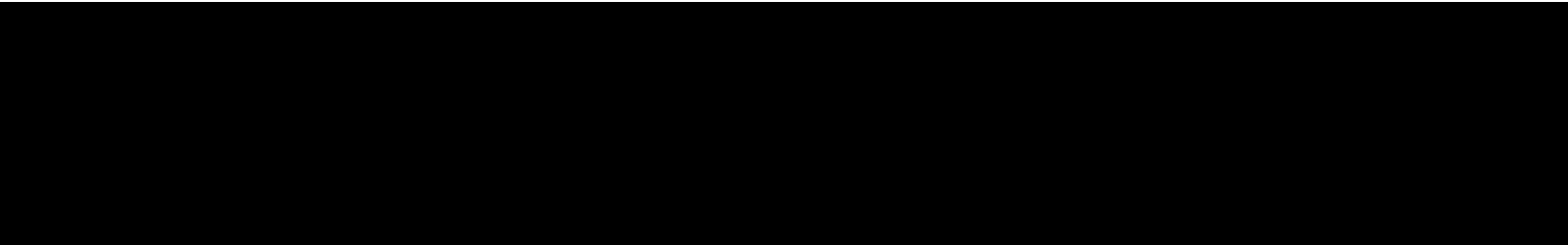
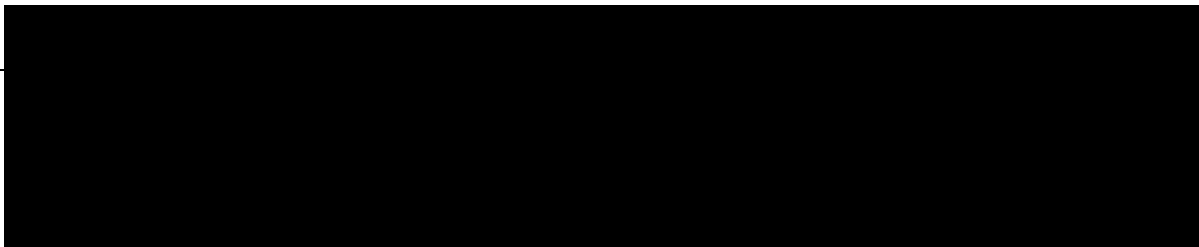
DHCP

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
```

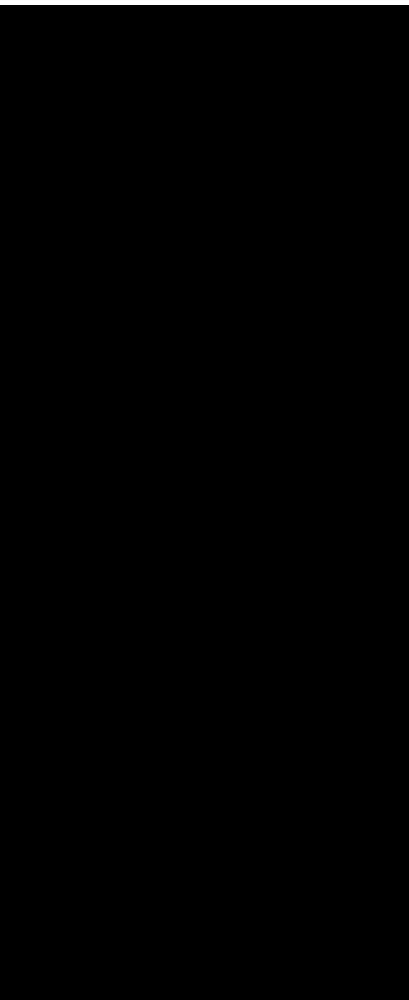
DHCP



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	



28 DHCP Relay

28.1 DHCP Relay

28.1.1 service dhcp

```
no          DHCP          service dhcp
           DHCP
service dhcp
no service dhcp

DHCP

DHCP          DHCP          DHCP
           DHCP          DHCP

DHCP

service dhcp
```

ip helper-address [vrf] <i>A.B.C.D</i>	DHCP server

28.1.2 ip helper-address

```
DHCP          no
DHCP
```

```

/
dhcp DHCP
vrf vrf vrf vrf
vrf local 192.168.197.1 vrf 61.154.26.49
ip helper-address 61.154.26.49
ip helper-address vrf local 192.168.197.1

```

service dhcp	DHCP

28.1.3 ip dhcp relay information option dot1x

```

dhcp option dot1x no dhcp
option dot1x

```

DHCP relay 802.1x

Ip dhcp relay information option dot1x

service dhcp	DHCP
ip dhcp relay information option dot1x access-group	option dot1x acl

28.1.4 ip dhcp relay information option dot1x access-group

```

dhcp option dot1x acl          no          dhcp
option dot1x acl

```

ACL

ACL ACE

```

Ip dhcp relay information option dot1x access-group acl-name

```

service dhcp	DHCP
ip dhcp relay information option dot1x	DHCP option dot1x

28.1.5 ip dhcp relay information option82

```

ip dhcp relay information option82          no
ip dhcp relay information option82

```

option dot1x

Ip dhcp relay information option82

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

28.1.6 ip dhcp relay check server-id

ip dhcp relay check *server-id* no
ip dhcp relay information check *server-id*

DHCP REQUEST server-id

option server

Ip dhcp relay check server-id

Service dhcp	DHCP

28.1.7 ip dhcp relay suppression

DHCP
DHCP relay

no DHCP

DHCP request relay

1 relay

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

service dhcp	DHCP

<i>ip-address</i>	IP

DNS Server IP
Server

DNS Server
Server DNS

6

DNS Server
DNS

ip-address

Ruijie(config)# **ip name-server** 192.168.5.134

show hosts	DNS

RGNOS10.1

29.1.3 ip host

IP

no

ip host *host-name ip-address*

no ip host *host-name ip-address*

<i>host-name</i>	
<i>ip-address</i>	IP

no ip host host-name ip-address

Ruijie(config)#

show hosts	

RGNOS10.1

29.1.5 show hosts

DNS

show hosts

DNS

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

ip host	IP
ip name-server	DNS

RGNOS10.1

30 NTP

30.1 NTP

30.1.1 no ntp

ntp ntp
no ntp

NTP

NTP NTP NTP NTP

NTP

no ntp

ntp server	NTP

30.1.2 ntp access-group

NTP no

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

no ntp access-group {peer|serve|serve-only|query-only}

access-list-number | *access-list-name*

peer	NTP
serve	NTP
serve-only	NTP
query-only	NTP
<i>access-list-number</i>	IP 1 99 1300 1999
<i>access-list-name</i>	IP

NTP

NTP

NTP

NTP

peer serve serve-only

query-only



1

2

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



30.1.4 ntp authentication-key

NTP

NTP

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

<i>key-id</i>	ID
<i>key-string</i>	
<i>enc-type</i>	7 0

NTP

ntp disable

NTP

NTP

NTP

IP

NTP

no ntp

30.1.6 ntp master

NTP

no

NTP

ntp master [stratum]

no ntp master

<i>stratum</i>	15	8 1

NTP

<i>version</i>	NTP	1-3	NTPv3
<i>if-name</i>	NTP		
<i>keyid</i>			
prefer	Prefer		

NTP

20

prefer

NTP

IP

NTP

NTP server

IPv4 Ruijie(config)# ntp server 192.168.210.222

IPv6 Ruijie(config)# ntp server 10::2

NTP

8

NTP

Ntp synchronize

ntp server	NTP

30.1.9 ntp trusted-key

ID

ntp trusted-key *key-id*

no ntp trusted-key *key-id*

<i>key-id</i>	ID

NTP

```
Ruijie(config)# ntp update-calendar
```

30.2

30.2.1 debug ntp

NTP

debug ntp

no debug ntp

NTP !

”

NTP

NTP

NTP

show ntp status

31 SNTP

31.1

31.1.1 sntp enable

```

                SNTP                no
Disable
[no] sntp enable
    
```

```

SNTP    Disable
    
```

```

show sntp    SNTP
    
```

```

RedGiant(config)# sntp enable
    
```

show sntp	SNTP
clock update-calendar	
clock set	

RGOS10.0

31.1.2 sntp server

SNTP Server SNTP NTP Server
 internet NTP Server

sntp server ip-addr
no sntp server

ip-addr NTP/SNTP IP

NTP/SNTP

show sntp SNTP

RedGiant(config)# **sntp server 192.168.4.12**

show sntp	SNTP
sntp enable	SNTP

RGOS10.0

31.1.3 sntp interval

SNTP Client NTP/SNTP Server

sntp interval seconds
no sntp interval

seconds 60 --65535

1800s

show sntp SNTP

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

sntp enable	SNTP
show sntp	SNTP
clock update-calendar	

RGOS10.0

show sntp SNTP

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

sntp enable	SNTP
show sntp	SNTP

RGOS10.0

32 SSH

32.1 SSH

32.1.1 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	SSH1
SSH2	DSA	SSH2	

zeroize **no crypto key generate** **crypto key**

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

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

RGOS10.1

32.1.2 crypto key zeroize

SSH

crypto key zeroize {rsa / dsa}

rsa	RSA
dsa	DSA

DISABLE SSH Server SSH Server
no enable service ssh-server

Ruijie# **configure terminal**
Ruijie(config)# **crypto key zeroize rsa**

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

SSH Server

no

ip ssh authentication-retries *retry times***no ip ssh authentication-retries**

<i>retry times</i>	

3

authentication-retries**no ip ssh**

SSH Server

SSH Server

SSH Server
show ip ssh

2

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

show ip ssh

SSH Server

SSH Server

SSH

SSH

Ruijie# **show ip ssh**

ip ssh version {1 2}	SSH Server
ip ssh time-out time	SSH Server
ip ssh authentication-retries retry times	SSH Server

RGOS10.1

32.2.2 show ssh

SSH

show ssh

SSH

VTY SSH

Ruijie# **show ssh**

RGOS10.1

32.2.3 show crypto key mypubkey

SSH Server

show crypto key mypubkey {rsa/dsa}

rsa	RSA
dsa	DSA

SSH Server

Ruijie# **show crypto key mypubkey rsa**

crypto key generate {rsa dsa}	DSA RSA

RGOS10.1

32.2.4 disconnect ssh

SSH

disconnect ssh [vty] session-id

<i>session-id</i>	SSH

```
VTY          SSH          SSH          SSH
VTY          SSH          SSH          SSH
```

```
Ruijie# disconnect ssh 1
Ruijie# disconnect ssh vty 1
```

show ssh	SSH
Clear line vty line_number	VTY

RGOS10.1

33 UDP-Helper

UDP

no

UDP

ip helper-address *address*

no ip helper-address *address*

<i>address</i>	UDP &\$

UDP

20
UDP-Helper

UDP

no ip helper-address

UDP :

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

ip forward-protocol	UDP

RGNOS10.1

33.1.3 ip forward-protocol UDP 0Ã . 0Ã .

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

34

34.1

34.1.1 ip policy route-map

ip policy route-map

no

ip policy route-map *route-map*

no ip policy route-map

<i>route-map</i>	

```

                                FE0
10.0.0.1                        196.168.4.6                20.0.0.1
                                196.168.5.6

```

```

access-list 1 permit 10.0.0.1
access-list 2 permit 20.0.0.1
route-map lab1 permit 10
match ip address 1
set ip next-hop 196.168.4.6
exit
route-map lab1 permit 20
match ip address 2
set ip next-hop 196.168.5.6
exit
interface GigabitEthernet 0/0
ip policy route-map lab1
exit

```

access-list	
route-map	
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	

route-map

ip local policy route-map

```

route-map                no                ip local policy

```

ip local policy route-map *route-map*
no ip local policy route-map



set interface	
set default interface	
set ip tos	IP TOS
set ip dscp	IP DSCP
set ip precedence	IP
match ip address	
match length	

route-map

34.1.2 ip policy

set ip nexthop
ip policy no

ip policy {load-balance|redundance}

no ip policy

NPE80

load-balance redundance	

set ip next-hop

WCMP

nexthop,

EF0

 nexthop

```
access-list 1 permit 10.0.0.1
access-list 2 permit 20.0.0.1
route-map lab1 permit 10
match ip address 1
set ip next-hop 196.168.4.6
set ip next-hop 196.168.4.7
set ip next-hop 196.168.4.8
exit
route-map lab1 permit 20
match ip address 2
set ip next-hop 196.168.5.6
set ip next-hop 196.168.5.7
set ip next-hop 196.168.5.8
exit
interface GigabitEthernet 0/0
ip policy route-map lab1
exit
ip policy redundance
```

35

35.1

35.1.1 route-auto-choose

no

[no] route-auto-choose {cnc | cnii | cernet} *interface next-hop* [tag num] [*distance*]

35.1.2 route-auto-choose update

route-auto-choose update

-	-

36 RIP

36.1

36.1.1 address-family RIP

RIP

```
address-family
no
address-family ipv4 vrf vrf-name
no address-family ipv4 vrf vrf-name
```

```

255.255.255.0
Ruijie(config)# router rip
Ruijie(config-router)# address-family ipv4 vrf vpn1
Ruijie(config-router-af)# network 192.168.1.0
Ruijie(config-router-af)# exit-address-family

```

exit-address-family	
ip vrf	VRF

36.1.2 auto-summary (RIP)

RIP

no

auto-summary

auto-summary

no auto-summary

RIP

RIPv1 RIPv2

RIP

' RIP

' RIP

'

RIP

```

default-metric          default-metric
default-metric          1

```

```

RIP          OSPF
RIP          3

```

```

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

```

redistribute	

36.1.4 default-information originate(RIP)

```

RIP
default-information originate          no

```

```

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

```

```

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

```

always	RIP
metric <i>metric-value</i>	<i>metric-value</i> 1-15
route-map <i>map-name</i>	route-map , route-map

```

metric          1

```

RIP
default-information originate

always RIP

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

no distance [*distance ip-address wildcard*]

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

<i>access-list-number</i>	
prefix <i>prefix-list-name</i>	
gateway <i>prefix-list-name</i>	
<i>interface-type interface-number</i>	()

RIP GigabitEthernet 0/0
172.16

```
Ruijie(config)# router rip
Ruijie(config-router)# network 200.168.23.0
Ruijie(config-router)# distribute-list 10 in
GigabitEthernet 0/0
Ruijie(config-router)# no auto-summary
Ruijie(config)#access-list 10 permit 172.16.0.0
0.0.255.255
```

access-list	
prefix-list	

36.1.7 distribute-list out RIP

distribute-list out **no**

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

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

<i>access-list-number</i>	
prefix <i>prefix-list-name</i>	
<i>interface</i>	()
<i>protocol</i>	()
<i>process-id</i>	() <i>protocol</i> OSPF OSPF id
<i>process-name</i>	() <i>protocol</i> ISIS ISIS

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

address-family	
-----------------------	--

36.1.9 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
```

<i>name-of-keychain</i>	RIP

```

RIPv1      RIP          key chain
RIPv2      RIP          RIP
Serial 0   RIP          ripchain

```

```

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

```

ip rip authentication mode	RIP
ip rip authentication text-password	RIP
key chain	

authentication mode

```
ip rip authentication mode {text | md5}
ip rip authentication mode
```

text	RIP
md5	RIP MD5

36.1.11 ip rip authentication text-password

```

RIP
text-password          no          ip rip authentication
ip rip authentication text-password password-string
no ip rip authentication text-password

```

<i>password-string</i>	1 16

```

RIP
RIPv1      RIP      RIPv2
Serial 0   RIP
ruijie
Ruijie(config)# interface serial 0/0
Ruijie(config-if)# ip rip authentication text-password
ruijie

```

ip rip authentication mode	RIP

36.1.12 ip rip default-information

```

RIP
ip rip
default-information no
ip rip default-information only originate [metric metric-value]
no ip rip default-information

```

only	
originate	
metric <i>metric-value</i>	1-15

```
metric 1
```

```

ip rip default-information RIP
default-information originate

```

```
1 ip rip default-information RIP
```

```
2 ip rip default-information
```

```
ethernet0/0
```

```

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

```

--	--

RIP

default-information originate
--

RIP

36.1.14 ip rip receive version

```

RIP
ip rip receive version
no
RIP
ip rip receive version [1] [2]
no ip rip receive version

```

1	RIPv1
2	RIPv2

version

```

RIP
version
RIPv1 RIPv2
version
GigabitEthernet 0/0
RIPv1 RIPv2

```

```

Ruijie(config)# interface GigabitEthernet 0/0
Ruijie(config-if)# ip rip receive version 1 2

```

version	RIP

36.1.15 ip rip send enable

```

RIP
send enable          no          RIP          ip rip
RIP

```

```

ip rip send enable
no ip rip send enable

```

RIP

```

RIP
no
default             RIP
RIP

```

GigabitEthernet 0/0 RIP

```

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

```

ip rip receive enable	RIP
passive-interface	RIP

36.1.16 ip rip send version

```

RIP
ip rip receive version          RIP
no

```

```

ip rip send version [1] [2]

```

no ip rip send version

1	RIPv1
2	RIPv2

version

```

RIP                                vesion
                                   RIPv1  RIPv2
                                   version

```

```

                                   GigabitEthernet 0/0    RIPv1  RIPv2

```

```

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

```



version

RIP **version** RIPv1 RIPv2
version

GigabitEthernet 0/0 RIPv2

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

version	RIP

36.1.18 ip split-horizon (RIP)

RIP **ip split-horizon**
no RIP

ip split-horizon
no ip split-horizon

IP

X.25

IP

RIP

neighbor

show ip rip
RIP

GigabitEthernet 0/0

RIP

Ruijie(config)# **interface GigabitEthernet 0/0**Ruijie(config-if)# **no ip split-horizon**

neighbor RIP	RIP IP
validate update source	RIP

36.1.19 ip summary-address rip

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

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

<i>ip-address</i>	IP
<i>ip-network-mask</i>	IP

RIP

ip summary-address rip
RIP

RIPv2

GigabitEthernet 1/0 172.16.0.0/16

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

<i>wildcard</i>	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

```

36.1.21 neighbor (RIP)

```

RIP IP neighbor
no
neighbor ip-address
no neighbor

```

<i>ip-address</i>	IP

```

RIPv1      IP      255.255.255.255      RIPv2
           224.0.0.9

passive-interface
passive
RIP

```

36.1.22 offset-list(RIP)

```

RIP      metric
offset-list      no      offset

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

```

<i>access-list-number</i>	acl
in	acl metric
out	acl metric
<i>offset</i>	metric
<i>interface-type</i>	acl
<i>interface-number</i>	

offset

```

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

acl 7            RIP      metric  7

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

GigabitEthernet1/0  acl 8
RIP                  metric  7

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

```

36.1.23 output-delay

```

RIP
output-delay      no
output-delay delay
no output-delay

```

<i>delay</i>	<8-50>

```

RIP      512      25
25

```

output-delay

RIP

30

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

36.1.24 passive-interface

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

enable **ip rip send enable** **ip rip receive**

passive **passive** **ethernet0/0**

```
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

36.1.25 redistribute RIP

redistribute

no

redistribute {**bgp** | **isis** [*process-name*] | **ospf** <1-65535> | **connected** | **static**}[**metric** *value*] [**route-map** *route-map-name*] [**match** **internal** | **external** *type* | **nssa-external** *type*]

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

bgp isis ospf connected static	
metric	metric
route-map	
match	ospf
<i>process-name</i>	ISIS

<1-65535>	OSPF
-----------	------

```

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 match match
ospf          match match no
match
    
```

RIP

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

default-metric <i>metric</i>	

36.1.26 router rip

```
          RIP
router rip      no      RIP
router rip
no router rip
```

RIP

RIP

async default routing

RIP

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



36.1.29 version (RIP)

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

36.2

36.2.1 show ip rip

RIP

show ip rip

show ip rip [*vrf vrf-name*]

vrf <i>vrf-name</i>	VRF RIP

RIP

rip rip

metric distance

VRF

```
192.168.26.0 255.255.255.0
192.168.64.0 255.255.255.0
Distance: (default is 50)
```

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)
```

36.2.2 show ip rip database

RIP

show ip rip database

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

vrf <i>vrf-name</i>	VRF RIP
<i>network-number</i>	
<i>network-mask</i>	

RIP

```
Ruijie# show ip rip interface
GigabitEthernet 1/1 is down, line protocol is down
  RIP is not enabled on this interface
GigabitEthernet 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 register: Registered
  Interface Summary Rip:
    Not Configured
  Authentication mode: Text
  Authentication key-chain: ripkl
  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 , :
```

```
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: Registered

Interface Summary Rip:

Not Configured

IP interface address:

2.2.2.111/24, next update due in 24 seconds

show ip rip	

37 OSPF2

37.1

37.1.1 area

```

no OSPF
area area-id
no area area-id
    
```

'	'
' UfYU!]X	' CGD: ID

OSPF

```

no OSPF
area authentication area default-cost area filter-list
area nssa
    
```

OSPF

- 1.
2. network area

OSPF 2

```

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


OSPF
backbone

0

MD5

```
Ruijie(config)# interface GigabitEthernet 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
area virtual-link	

```

                                ABR
                                STUB
                                NSSA
                                ABR
                                ABR

    OSPF          STUB      NSSA          area
stub area nssa area default-cost          STUB
                                NSSA          area
nssa area stub          NSSA          area
                                ABR
                                ABR

```

50

```

Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.0.0 0.0.255.255
area 0
Ruijie(config-router)# network 192.168.12.0 0.0.0.255
area 1
Ruijie(config-router)# area 1 stub
Ruijie(config-router)# area 1 default-cost 50

```

area stub	OSPF
area nssa	OSPF NSSA

37.1.4 area fil005Anist

```

ABR
                                intra-area

area area-id fil005Anist access acl-name | prefix prefix-name] [in | out]
no area area-id fil005Anist access acl-name | prefix prefix-name] [in |
out]

```



area-id	NSSA
no-redistribution	ABR nssa
default-information-originate	nssa ASBR 7 LSA NSSA ABR
no-summary	(ABR) nssa nssa LSA

NSSA

```

default-information-originate Type-7 LSA
nssa ABR ASBR ABR
Type-7 LSA ASBR (
ABR) Type-7 LSA

no-redistribution ASBR OSPF redistribute
NSSA NSSA
ASBR ABR nssa

NSSA LSA
ABR no-summary ABR NSSA
summary LSAs Type-3 LSA

area default-cost NSSA ABR
NSSA NSSA
NSSA 1
    
```

1

```

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

```
Ruijie(config-router)# network 192.168.12.0 0.0.0.255
area 1
Ruijie(config-router)# area 1 nssa
```

area default-cost	OSPF NSSA

37.1.6 area range

```
OSPF
range no no area cost
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	
advertise not-advertise	
cost cost	

```
RFC1583
RFC1583 cost
cost
```

ABR

advertise not-advertise

OSPF

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 0.0.15.255
area 1
Ruijie(config-router)# area 1 range 172.16.16.0 255.2
55.240.0
```

37.1.7 area stub

OSPF

area stub no

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

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

<i>area-id</i>	STUB
no-summary	ABR ABR

```

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

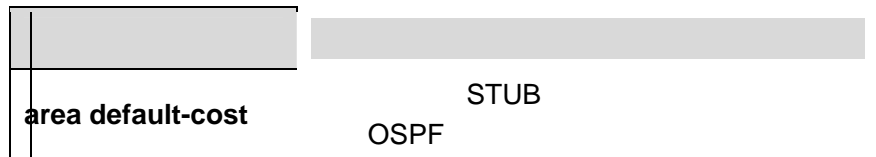
```

1

```

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

```



37.1.8 area virtual-link

no area *area-id* **virtual-link** *router-id*

<i>area-id</i>	OSPF IP
<i>router-id</i>	show ip ospf

dead-interval *seconds* 40

;

OSPF

ABR
Stub Area NSSA ABR

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

area virtual-link
OSPF

area authentication

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
0.0.15.255 area 1
Ruijie(config-router)# area 1 virtual-link 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
0.0.15.255 area 1
Ruijie(config-router)# network 172.16.252.0
0.0.0.255 area 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

37.1.9 auto-cost

no

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

no auto-cost [reference-bandwidth]

<i>ref-bw</i>	Mbps : 1-4294967

100Mbps

() **default auto-cost no**
auto-cost

ip ospf cost cost
cost

10M

Ruijie(config)# **router ospf 1**

OSPF2

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

37.1.12 default-information originate OSPF

OSPF

default-information originate no

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

no default-information originate [always] [metric *metric*]

always	OSPF
metric <i>metric</i>	1
metric-type <i>type</i>	OSPF 1 2 1 2
route-map <i>map-name</i>	route-map , route-map

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

always OSPF

show ip ospf database OSPF
 0.0.0.0 OSPF

show ip route

default-information originate
default-metric

OSPF 1 2

1 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

37.1.13 default-metric

```
OSPF
default-metric no
default-metric metric
no default-metric
```

	OSPF database
--	---------------

```
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# version 2
Ruijie(config-router)# exit
Ruijie(config)# router ospf
Ruijie(config-router)# network 172.16.10.0 0.0.0.255
area 0
Ruijie(config-router)# default-metric 50
Ruijie(config-router)# redistribute rip subnets
```

redistribute	
show ip ospf	ospf

37.1.14 distance ospf

OSPF

```
distance ospf {intra-area <1-255> | inter-area <1-255> | external
<1-255>}
no distance ospf
```

intra-area <1-255>	110
inter-area <1-255>	110
external <1-255>	110

110

OSPF

OSPF

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

37.1.15 distribute-list in

LSA

```
distribute-list {listname | gateway plist-name | prefix plist-name }  
in [in726list-name]
```

```
Ruijie(config-router)# distribute-list 3 in ethernet
1/0
Ruijie(config-router)# distribute-list 3 in ethernet
1/1
```

37.1.16 distribute-list out

redistribute

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

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

<i>listname</i>	acl
gateway <i>plist-name</i>	gateway
prefix <i>plist-name</i>	prefix-list
[bgp connected isis <i>area-tag</i> ospf <i>process-id</i> rip static]	

distribute-list out	redistribute route-map
OSPF	
redistribute	ACL
,	prefix-list
prefix-list	ACL
	,

show ip ospf	OSPF
enable traps	OSPF TRAP

<p>lsa</p>	<p>lsa traps lsa traps lsdbapproachoverflow LSA lsdboverflow LSA maxagelsa LSA originatelsa LSA</p>
<p>retransmit</p>	<p>retransmit traps retransmit traps iftxretransmit virtiftxretransmit</p>
<p>state-change</p>	<p>state-change traps state-change traps ifstatechange nbrstatechange virtifstatechange virtnbrstatechange</p>

TRAP

snmp-server
enable traps ospf

snmp-server

MIB

TRAP

OSPFv2

100

TRAP

37.1.19 ip ospf authentication

no

ip ospf authentication [message-digest | null]

no ip ospf authentication

message-digest	MD5
null	

no

null

GigabitEthernet 0/0 OSPF MD5

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

area authentication	OSPF
ip ospf authentication-key	OSPF

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

37.1.20 ip ospf authentication-key

```

                OSPF                                ip ospf
authentication-key          no

ip ospf authentication-key key
no ip ospf authentication-key
    
```

<i>Key</i>	8

```

ip ospf authentication-key                                OSPF
                                                                OSPF
    
```

```

                OSPF                                area
authentication
    
```

```

authentication          ,                                ip ospf
    
```

```

                GigabitEthernet 0/0                OSPF
ospfauth
    
```

```

Ruijie(config)# interface GigabitEthernet 0/0
Ruijie(config-if)# ip address 172.16.10.0
255.255.255.0
    
```

```
Ruijie(config-if)# ip ospf authentication-key ospfauth
```

area authentication	OSPF
ip ospf authentication	

37.1.21 ip ospf cost

```

                OSPF                OSPF
                ip ospf cost          no
ip ospf cost cost
no ip ospf cost
    
```

<i>cost</i>	OSPF

```

                /Bandwidth                100Mbps
    
```

```

                OSPF                100Mbps/Bandwidth    Bandwidth
                bandwidth
                OSPF
' 64K            cost 1562
' E1            cost 48
' 10M           cost 10
' 100M          cost
ip ospf cost                OSPF
    
```

serial 1/0 OSPF 100

```
Ruijie(config)# interface serial 1/0  
Ruijie(config-if)# ip ospf cost 100
```

bandwidth	
show ip ospf	Ospf

37.1.22 ip ospf database-filter all out

```
LSA  
no  
ip ospf database-filter all out  
no ip ospf database-filter
```


```
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
```

37.1.23 ip ospf dead-interval

```

OSPF
ospf dead-interval no
ip ospf dead-interval seconds
no ip ospf dead-interval

```

seconds	

ip ospf hello-interval

```

OSPF Hello OSPF
Hello hello 4 hello
OSPF
hello
serial 1/0 OSPF
30

```

```

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

```

ip ospf hello-interval	OSPF Hello

37.1.24 ip ospf disable all

```

ospf
ip ospf disable all
no ip ospf disable all

```

```

network area
network ospf
OSPF OSPF

```

```

Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip address 172.16.10.1
255.255.255.0
Ruijie(config-if)# ip ospf disable all

```

37.1.25 ip ospf hello-interval

```

OSPF Hello ip ospf
hello-interval no
ip ospf hello-interval seconds
no ip ospf hello-interval

```

<i>seconds</i>	OSPF hello

```

'      10
'  PPP HDLC      10
'
'      10
'
'      .25  30

```

hello hello OSPF

hello
hello

15 serial 1/0 OSPF Hello

```

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

37.1.26 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

<i>Key</i>	16
<i>Key-id</i>	255

MD5

ip ospf message-digest-key

OSPF
OSPF

OSPF

```
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	

37.1.27 ip ospf mtu-ignore

```
no mtu
ip ospf mtu-ignore
no ip ospf mtu-ignore
```


mtu

OSPF
MTU

MTU
U,1 Tf 0 Tc 0 Tw 10.5 02, Tf 0.0057 Tc 2 T2 Td (Md 4E38550602AFC41B45EE

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

37.1.28 ip ospf network

OSPF	ip ospf network
no	
ip ospf network broadcast	non-broadcast point-to-multipoint [non-broadcast] point-to-point
no ip ospf network broadcast	non-broadcast point-to-multipoint [non-broadcast] point-to-point

broadcast	OSPF
non-broadcast	OSPF NBMA
point-to-multipoint [non-broadcast]	OSPF , non-broadcast
point-to-point	OSPF

PPP SLIP

X.25

```

      HDLC  PPP  SLIP
      OSPF
      (NBMA)  NBMA
      X.25          PVC          SVC
      OSPF  NBMA
      Designated Router          NBMA
      OSPF
      OSPF
      X.25          OSPF
      frame-relay map          X.25 map
      OSPF  X.25
      OSPF
      broadcast          X.25          IP
  
```

```

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

```

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


OSPF
DR/BDR

hello

OSPF

DR BDR
DR BDR

DR

BDR

OSPF **broadcast** **non-broadcast**

:

DR BDR
DR BDR

.

LSU LSU
ip ospf retransmit-interval
 LSA

LSU area

virtual-link retransmit-interval

serial 1/0 LSU 10

Ruijie(config)# **interface serial 1/0**
 Ruijie(config-if)# **ip ospf retransmit-interval 10**

area virtual-link	OSPF

37.1.31 ip ospf transmit delay

OSPF LSU **ip ospf**

transmit delay no

ip ospf transmit delay *seconds*
no ip ospf transmit delay

<i>Seconds</i>	OSPF LSU 1

1

LSU LSAs Age
ip ospf transmit delay
virtual-link retransmit-interval LSU area LSU

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

show ip ospf	ospf

37.1.33 max-concurrent-dd

DD

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

<1-65535>	DD

5

OSPF

DD

DD

4

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

37.1.34 neighbor

OSPF neighbor no

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

no neighbor *ip-address*

<i>ip-address</i>	IP
poll-interval <i>seconds</i>	Non-broadcast(NBMA) 120
priority <i>priority</i>	Non-broadcast(NBMA)
Cost <i>cost</i>	, cost point-to-multipoint [non-broadcast]

RGOS
 IP IP
 NBMA
 Hello OSPF Hello Hello
 OSPF
 0 Hello 0
 DR/BDR DR/BDR DR/BDR
 Hello
 ,
 ,

	OSPF	IP
172.16.24.2	1	150

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

OSPF2

```

                OSPF      hard      OSPF
                soft
                LSA      10      OSPF 10
    
```

```

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

37.1.37 overflow database external

external LSA

```

overflow database external max-dbsize wait-time
no overflow database external
    
```

<i>max-dbsize</i>	external lsa AS 0-2147483647
<i>wait-time</i>	0-65535

external-LSA

external-LSA

external-LSA


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

OSPF2

route-map	
tag	OSPF tag
subnets	

```

                                ASBR                OSPF
                                OSPF
                                metric 1             LSA
                                BGP
                                metric 20
                                isis                level                level-2
                                                level                level
                                                level 1, level 2
                                level-1-2
                                ospf                match
                                ospf                    match                match
                                                no
                                match
                                route-map              route-map              match
                                                OSPF                ISIS
                                match level            route-map
    
```

OSPF

```

Ruijie(config-router)# redistribute static subnets
Ruijie(config)# router ospf 1
Ruijie(config-router)# redistribute ospf 2 subnets
Ruijie(config-router)# redistribute ospf 2 match
external 1 internal
Ruijie(config-router)# redistribute isis isis-001
Ruijie(config-router)# redistribute isis isis-001
level-1
    
```

Show run

```

router ospf 1
redistribute ospf 2 match external 1 internal subnets
    
```

```
redistribute isis isis-001 level-1-2
```

37.1.41 router ospf

```

          OSPF
no          OSPF
router ospf process-id [vrf vrf-name]
no router ospf process-id
    
```

<i>process-id</i>	ospf
<i>vrf-name</i>	OSPF VRF 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

37.1.42 router-id

ID	ID, Router ID	no	Router
router-id	<i>router-id</i>		
no router-id			



OSPF

37.1.45 timers spf

```

OSPF
SPF
no
SPF
timers spf

```

```

timers spf spf-delay spf-holdtime
no timers spf

```

<i>spf-delay</i>	OSPF SPF SPF
<i>spf-holdtime</i>	OSPF SPF SPF

```

spf-delay 5 spf-holdtime 10

```

```

spf-delay spf-holdtime
OSPF
CPU

```

```

OSPF 3 9

```

```

Ruijie(config)# router ospf 20
Ruijie(config-router)# timers spf 3 9

```

show ip ospf	ospf

37.2

37.2.1 show ip ospf

OSPF

show ip ospf

show ip ospf [*process-id*]

<i>process-id</i>	ospf

OSPF

show ip ospf

Ruijie#

```
Number of LSA originated 6
Number of LSA received 2
Log Neighbor Adjacency Changes : Enabled
Number of areas attached to this router: 1
Area 0 (BACKBONE)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 1
Area has no authentication
SPF algorithm last executed 00:01:26.640 ago
SPF algorithm executed 4 times
Number of LSA 3. Checksum 0x0204bf
Area 1 (NSSA)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 0
Number of fully adjacent virtual neighbors through this
area is 0
Area has no authentication
SPF algorithm last executed 02:09:23.040 ago
SPF algorithm executed 4 times
Number of LSA 6. Checksum 0x028638
NSSA Translator State iselectd
```

9pr

LsaGroupPacing	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		
NSSA Translator State	LSA OSPF	NSSA LSA NSSA	External ABR

37.2.2 show ip ospf border-routers

ABR/ASBR OSPF
show ip ospf border-routers
show ip ospf [*process-id*] border-routers

I	
1.1.1.1	OSPF
[2]	cost
via 10.0.0.1	
GigabitEthernet 0/1	
ABR, ASBR	ASBR ABR ABR ASBR
Area 0.0.0.1	
select	ASBR select

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

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

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

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

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

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

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

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

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

show ip ospf [*process-id area-id*]**database** [**nssa-external**]
[*link-state-id*] [**self-originate** | **maxage**]

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

external	OSPF
nssa-external	OSPF
opaque-area	LSA
opaque-as	LSA
opaque-link	LSA
database-summary	OSPF LSA

OSPF

OSPF

show ip ospf database

```
Ruijie# show ip ospf database
OSPF Router with ID (1.1.1.1) (Process ID 1)

  Router Link States (Area 0.0.0.0)
    Link ID: 1.1.1.1 (Router ID)
    Link Data: 1.1.1.1 (Router ID)
    Link Cost: 1
    Link Type: Stub
    Link ID: 1.1.1.1 (Router ID)
    Link Data: 1.1.1.1 (Router ID)
    Link Cost: 1
    Link Type: Stub
  Area 0.0.0.0)
    Link ID: 1.1.1.1 (Router ID)
    Link Data: 1.1.1.1 (Router ID)
    Link Cost: 1
    Link Type: Stub
  Link ID: 1.1.1.1 (Router ID)
  Link Data: 1.1.1.1 (Router ID)
  Link Cost: 1
  Link Type: Stub
```

```

Link ID          ADV Router      Age  Seq#          CkSum
Link count
1.1.1.1          1.1.1.1         2   0x80000001 0x91a2 1
    
```

Summary Link States (Area 0.0.0.1 [NSSA])

```

Link ID          ADV Router      Age  Seq#          CkSum
Route
100.0.0.0        1.1.1.1         2   0x80000001 0x52a4
100.0.0.0/16
192.88.88.0      1.1.1.1         2   0x80000001 0xbb2d
192.88.88.0/24
    
```

NSSA-external Link States (Area 0.0.0.1 [NSSA])

```

Link ID          ADV Router      Age  Seq#          CkSum
Route            Tag
20.0.0.0         1.1.1.1         1   0x80000001 0x033c E2
20.0.0.0/24      0
100.0.0.0        1.1.1.1         1   0x80000001 0x9469 E2
100.0.0.0/28     0
    
```

AS External Link States

```

Link ID          ADV Router      Age  Seq#          CkSum
Route            Tag
20.0.0.0         1.1.1.1        380 0x8000000a 0x7627
E2 20.0.0.0/24   0
100.0.0.0        1.1.1.1        620 0x8000000a 0x0854
E2 100.0.0.0/28  0
    
```

show ip ospf database

OSPF Router with ID	OSPF OSPF
Router Link States	
Net Link States	
Summary Net Link States	
NSSA-external Link States	
AS External Link States	
Link ID	
ADV Router	

Age	
Seq#	LSA
Cksum	
Link-Count	
Route	LSA
Tag	

show ip ospf database asbr-summary

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

show ip ospf database asbr-summary

--	--

OSPF Router with ID

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

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

Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	
Network Mask	
Attached Router	

show ip ospf database router

```

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)	
(Link Data)	
Number of TOS metrics	TOS TOS0
TOS 0 Metrics	TOS

show ip ospf database summary

Ruijie# : 0x330e10 08trics2 j-length: 2810 08trics metrics

Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	
Network Mask	
TOS	TOS 0
Metric	

show ip ospf database nssa-external

```
Ruijie# show ip ospf database nssa-external  
o ref5019
```

Options	
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	
Network Mask	
Metric Type	
TOS	TOS 0
Metric	
NSSA:Forward Address	0.0.0.0 IP
External Route Tag	32 OSPF OSPF

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

checksum2_0 1 Tt 0 Tc 0 Tw 100 Td <1C122F0E41B9

OSPF2

```

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

show ip ospf interface serial 1/0

--	--

GigabitEthernet 0/0 State UP
 Down LÒ/ ðm \$ Hì ROµVFI A!Qf-4 !\$i¿µVFI ,, 9e FI # ûU

BDR's Interface address	BDR
Time intervals configured	Hello Dead Wait Retransmit
Hello due in	HELLO
Neighbor count	
Adjacent neighbor count	Full
Crypt Sequence Number	md5
Hello received send	HELLO
DD received send	DD
LS-Req received send	LS
LS-Upd received send	LS
LS-Ack received send	LS
Discard	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	
<i>interface-type</i> <i>interface-number</i>	
<i>neighbor-id</i>	

OSPF

show ip ospf neighbor

```
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    GigabitEthernet 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 GigabitEthernet 1/0
Neighbor priority is 1, State is Full, 11 state changes
DR is 192.88.88.27, BDR is 192.88.88.72
Options is 0x52 (*|O|-|EA|-|-|E|-)
Dead timer due in 00:00:32
Neighbor is up for 05:11:27
Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
Crypt Sequence Number is 0
Thread Inactivity Timer on
Thread Database Description Retransmission off
Thread Link State Request Retransmission off
Thread Link State Update Retransmission off
Thread Poll Timer on
```

show ip ospf neighbor

Interface	
interface address	
In the area	
via interface	
Neighbor priority	OSPF
State	OSPF FULL DR BDR DROTHER DR/BDR DR BDR
State changes times	
Dead Time	
DR	DR (Hello DR)
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

37.2.7 show ip ospf summary-address

```

OSPF
show ip ospf summary-address
show ip ospf summary-address
    
```

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
Ruijie#
    
```

Summary Address	
Summary Mask	
Advertise	
Status	
Aggregated subnets	

37.2.8 show ip ospf virtual-link

```

OSPF
virtual-link
show ip ospf [process-id] virtual-link
    
```


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 GigabitEthernet 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

38

38.1

38.1.1 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]

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

OSPF

RIP GigabitEthernet 0/0
172.16

```
Ruijie(config)# router rip
Ruijie(config-router)# network 200.168.23.0
Ruijie(config-router)# distribute-list 10 in
GigabitEthernet 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	

38.1.2 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*]

--	--

<i>access-list-number</i>	1300-1999 2000-2699	1-99 100-199
<i>access-list-name</i>		
prefix <i>prefix-list-name</i>		
<i>Interface</i>	()	
<i>protocol</i>	()	

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

38.1.4 ip default-network

```
no  
ip default-network network  
no ip default-network network
```


<i>seq-number</i>	1 2147483647 5 5
deny	
permit	
<i>ip-prefix</i>	IP 0 32
<i>minimum-prefix-length</i>) ge
<i>maximum-prefix-length</i>) le

```

ip prefix-list IP permit deny
                    ge le
                    ip-prefix
                    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

```

38.1.6 ip prefix-list description

ip prefix-list description

no

ip prefix-list *prefix-lis-name* **description** *descripton-text*

<i>prefix-lis-name</i>	
<i>descripton-text</i>	

on0 1 Tf0 Tc 12.371 0 00 0 11.537escript<FF5>6<141B84<114>TjB9 1 Tf-27[(de150 g/TT<FF

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

38.1.8 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 |  
enable]
```



1

OSPF 110
125 OSPF

vrf vrf

1 **show ip route weight**
weight WCMP

WCMP 32

ip

route 0.0.0.0 0.0.0.0 GigabitEthernet 0/0
GigabitEthernet 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

ip static

route-limit

show running-config

900

Ruijie(config)# ip static route-limit 900

Ruijie(config)# no ip static route-limit

38.1.11 ipv6 prefix-list

IPv6

ipv6

prefix-list

no

ipv6 prefix-list *prefix-lis-name* [**seq** *seq-number*] { **deny** | **permit** }

ipv6-prefix [**ge** *minimum-prefix-length*] [**le** *maximum-prefix-length*]

no ipv6 prefix-list *prefix-lis-name* [**seq** *seq-number*] { **deny** | **permit** }

ipv6-prefix [**ge** *minimum-prefix-length*] [**le** *maximum-prefix-length*]

<i>prefix-lis-name</i>	

1 2147483647

seq-number

<i>maximum-prefix-length</i>) le	(
------------------------------	----------------	---

```

ipv6 prefix-list IPv6 permit
deny
ge le

ipv6-prefix ge le
  ipv6-prefix ge
  minimum-prefix-length 32 le
ipv6-prefix maximum-prefix-length
  minimum-prefix-length maximum-prefix-length
  ipv6-prefix minimum-prefix-length maximum-prefix-length
  ipv6-prefix < minimum-prefix-length <
maximum-prefix-length <= 128

```

```

1 RIP OSPF
IPv6 ( IP 2222:::/64 !Bï wVJQ A¹Q Â òÂ ðÏ w}2

```

<i>prefix-lis-name</i>	IPv6
<i>descripton-text</i>	IPv6

```

IPv6          pre          Deny routes from
Net-A
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre description Deny
routes from Net-A

```

38.1.13 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

```

38.1.14 match as-path

match community { *community-list-number* | *community-list-name*}
[**exact-match**] [{ *community-list-number* | *community-list-name*}
[**exact-match**] ...]

no match community { *community-list-number* | *community-list-name*}
[**exact-match**] [{ *community-list-number* | *community-list-name*}
[**exact-match**] ...]

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

38.1.16 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]*

<i>interface-type</i>	
<i>interface-number</i>	

match interface

OSPF

RIP
OSPF

RIP

route maps

```

set match 1 match 1
set match 1 match 1

```

```

OSPF RIP
GigabitEthernet 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
GigabitEthernet 0/0

```

match ip address	
match ip next-hop	*

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...*]}

<i>access-list-number</i>	1300-1999 1-99 2000-2699 100-199
<i>access-list-name</i>	
prefix-list <i>prefix-list-name</i>	

match ip address

OSPF OSPF RIP RIP

IP route maps

set **match** **match** **set**

1 1 1

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...*]}

<i>access-list-number</i>	1300-1999 2000-2699 1-99 100-199
<i>access-list-name</i>	
prefix-list <i>prefix-list-name</i>	

match ip next-hop

OSPF
OSPF
IP
OSPF
RIP
RIP
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
```



7

6

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

OSPF

RIP

RIP

OSPF

IP

route maps

1

match

1

set

set metric-type	
set tag	

38.1.21 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

<i>access-list-name</i>	
prefix-list <i>prefix-list-name</i>	IPv6

OSPF

RIP

RIP

IP

OSPF

route maps

set

match

1

match

1

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 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	

38.1.22 match ipv6 route-source

```

                                IPv6
                                match ipv6 address    no

```

match ipv6 route-source { *access-list-name* | **prefix-list**
prefix-list-name }

no match ipv6 route-source

```

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	

38.1.23 match length

```

                IP                match
length          no
match length min-length max-length
no match length min-length max-length

```



match metric

no

match metric *metric*

no match metric

<i>metric</i>	0-4294967295

OSPF

RIP

RIP

OSPF

IP

route maps

set

match

1

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	
set metric	
set metric-type	
set tag	

38.1.25 match origin

match

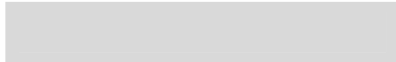
origin **no**

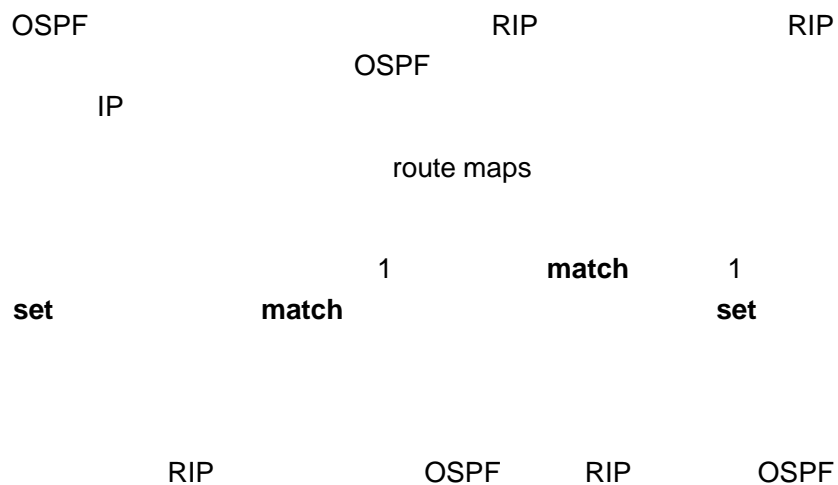
match origin {egp | igp | incomplete}

no match origin {egp | igp | incomplete}

egp	EGP
igp	IGP
Incomplete	

```
Ruijie(config)# route-map MY_MAP 10 permit
Ruijie(config-route-map)# match origin egp
Ruijie(config-route-map)# set community 109
Ruijie(config-route-map)# exit
Ruijie(config)# route-map MAP20 20 permit
Ruijie(config-route-map)# match origin incomplete
Ruijie(config-route-map)# set community no-export
```





```

Ruijie(config)# router rip
Ruijie(config-router)# redistribute ospf route-map redrip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match route-type internal
  
```

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	

38.1.27 match tag

match tag **no**

match tag *tag* [...*tag*]
no match tag *tag* [...*tag*]

<i>tag</i>	

```

match tag                tag
OSPF                       RIP           RIP
                           OSPF
                           IP
                           route maps
                           1           match       1
                           set         match       set
                           RIP           OSPF       RIP           OSPF
                           50  80
Ruijie(config)# router rip

```

```
Ruijie(config-router)# redistribute ospf 100 route-map
redrip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match tag 50 80
```

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

```

4   RIP           OSPF           RIP
   40           OSPF           40           type-1

```

```

Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets
route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255
area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match metric 4
Ruijie(config-route-map)# set metric 40
Ruijie(config-route-map)# set metric-type type-1
Ruijie(config-route-map)# set tag 40

```

Redistribute	

38.1.30 set aggregator as

```

match           AS
set aggregator as no

```

```
set aggregator as as-num ip_addr
```

```
no set aggregator as [as-num ip_addr]
```

<i>as-number</i>	AS
<i>ip_addr</i>	

BGP

as,ip-addr

```
Ruijie(config)# route-map set-as-path  
Ruijie(config-route-map)# match as-path 1  
Ruijie(config-route-map)# set aggregator as 3 2.2.2.2
```

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

38.1.31 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]
```

<i>as-number</i>	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	

38.1.32 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**

--	--

<i>community-list-number</i>	1-99 100-199
<i>community-list-name</i>	80

```

Ruijie(config)# router bgp 100
Ruijie(config-router)# neighbor 172.16.233.33
remote-as 120
Ruijie(config-router)# neighbor 172.16.233.33
route-map ROUTEMAPIN in
Ruijie(config-router)# neighbor 172.16.233.33
route-map ROUTEMAPOUT out
Ruijie(config-router)# exit
Ruijie(config)# ip community-list 500 permit 100:10
Ruijie(config)# ip community-list 500 permit 100:20
Ruijie(config)# ip community-list 120 deny 100:50
Ruijie(config)# ip community-list 120 permit 100:.*
Ruijie(config)# route-map ROUTEMAPIN permit 10
Ruijie(config-route-map)# set comm-list 500 delete
Ruijie(config-route-map)# exit
Ruijie(config)# route-map ROUTEMAPOUT permit 10
Ruijie(config-route-map)# set comm-list 120 delete

```

ip community-list	
match as-path	AS_PATH
match community	
match metric	

match origin	
set as-path prepend	AS_PATH
set comm-list delete	
set local-preference	

38.1.33 set community

match COMMUNITY
set community **no**

set community { *community-number*[*community-number ...*] **additive** | **none**}

no set community { *community-number*[*community-number ...*] **additive** | **none**}

--	--

community-number

```
Ruijie(config)# route-map SET_COMMUNITY 10 permit
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set community 109:10
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_COMMUNITY 20 permit
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set community no-export
```

match as-path	AS_PATH
match community	

<i>suppress</i>	1..20000 2000
<i>max-suppress-time</i>	1..255() 4* half-life

```

Ruijie(config)# route-map tag
Ruijie(config-route-map)# match as path 10
Ruijie(config-route-map)# set dampening 30 1500 10000
120
Ruijie(config-route-map)# exit
Ruijie(config)# router bgp 100
Ruijie(config-router)# neighbor 172.16.233.52
route-map tag in

```

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

38.1.35 set default interface

match

set default interface

no

set default interface *interface-type interface-number* [...*interface-type interface-number*]

no set default interface *interface-type interface-number* [...*interface-type interface-number*]

<i>interface-type</i>	
<i>interface-number</i>	

set default interface

1

down
set

set

serial 1/0

500
1/0

GigabitEthernet

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip policy route-map smallpak
Ruijie(config-if)# exit
Ruijie(config)# route-map smallpak permit 10
```

```
Ruijie(config-route-map)# match length 0 500
Ruijie(config-route-map)# set default interface
GigabitEthernet 1/0
```

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

38.1.36 set extcommunity

```
match
set extcommunity no
```

```
set extcommunity {rt extend-community-value | soo
extend-community-value}
no set extcommunity {rt | soo}
```

--	--

```
Ruijie(config)# access-list 2 permit 192.168.78.0  
255.255.255.0  
Ruijie(config)# route-map MAP_NAME permit 10  
Ruijie(config-route-map)# match ip-address 2  
Ruijie(config-route-map)# set extcommunity rt 100:2
```

```
MAP_NAME
```

set interface

1

down set
set

null 0

serial 1/0

500 GigabitEthernet 0/0

```
Ruijie(config)#interface serial 1/0
```

```
Ruijie(config-if)#ip policy route-map smallpak
```

```
Ruijie(config)#route-map smallpak permit 10
```

```
Ruijie(config-route-map)#match length 0 500
```

```
Ruijie(config-route-map)#set interface  
GigabitEthernet 0/0
```

set ip precedence	IP
-------------------	----

38.1.38 set ip default next-hop

match IP
set ip next-hop no

set ip default next-hop *ip-address* [*weight*] [...*ip-address* [*weight*]]
no set ip default next-hop *ip-address* [*weight*] [...*ip-address* [*weight*]]

<i>ip-address</i>	IP
<i>weight</i>	

set WCMP WCMP weight
 WCMP
set ip default next-hop IP 32
 ip address weight 4
 nexthop
 next-hop weight set
 WCMP WCMP
 weight nexthop weight
 1
set ip next-hop set ip default next-hop

Настройка

set interface	
----------------------	--

set ip default next-hop	IP
set ip precedence	IP

38.1.40 set ip next-hop

match

MIP

set default interface	
set interface	
set ip default next-hop	IP
set ip precedence	IP

38.1.41 set ip next-hop verify-availability

IP set ip
next-hop verify-availability **no**

set ip next-hop verify-availability *ip-address track track-obj-num*
no set ip next-hop verify-availability *ip-address track track-obj-num*

<i>ip-address</i>	IP
<i>track-obj-num</i>	

serial 1/0
10.0.0.0/8 192.168.100.1


```
Ruijie(config)#interface serial 1/0
Ruijie(config-if)#ip policy route-map load-balance

Ruijie(config)#access-list 10 permit 10.0.0.0
0.255.255.255
Ruijie(config)#access-list 20 permit 172.16.0.0
0.0.255.255

Ruijie(config)#route-map load-balance permit 10
Ruijie(config-route-map)#match ip address 10
Ruijie(config-route-map)#set ip next-hop
192.168.100.1

Ruijie(config)#route-map load-balance permit 20
Ruijie(config--route-map)#match ip address 20
Ruijie(config-route-map)#set ip next-hop 172.16.100.1

rmit 30
ull 0
```



[(s.5...).72 4...7003...3)Tute-...a

set ip precedence {<0-7> | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

no set ip precedence {<0-7> | *critical* | *flash* | *flash-override* | *immediate* | *internet* | *network* | *priority* | *routine* }

IP

IP

set ip precedence

IP

GigabitEthernet 0/0
192.168.217.68 precedence 4
Ruijie(config)#**access-list** 1 **permit** 192.168.217.68
0.0.0.0
Ruijie(config)#**route-map** name
Ruijie(config-route-map)#**match ip address** 1
Ruijie(config-route-map)#**set ip precedence** 4
Ruijie(config)#**interface GigabitEthernet** 0/0
Ruijie(config-if)#**ip policy route-map** name

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

match ip route-source	
match metric	
match route-type	
match tag	
set metric-type	
set tag	
set ip precedence	IP

38.1.44 set level

match

set level **no**

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

no set level

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

38.1.45 set local-preference

```

match LOCAL_PREFERENCE
set local-preference no

```

set local-preference *number*

no set local-preference

<i>number</i>	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	

38.1.46 set metric

metric **match** **no** **set**

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

no set metric

+	metric
-	metric
<i>metric-value</i>	

set metric + - metric
 1-16 RIP metric
 OSPF RIP RIP



```
IP
OSPF
route maps
1 match 1
set match (GE3) AbE (E) U2E
```



match
set metric-type **no**
set metric-type *type*
no set metric-type



type

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

38.1.48 set next-hop

match IP
set next-hop no

set next-hop ip-address
no set next-hop ip-address

<i>ip-address</i>	IP

OSPF OSPF RIP RIP

```

set match 1 match 1
set match 1 set

```

192.168.1.2

```

Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ip address 1
Ruijie(config-route-map)# set next-hop 192.168.1.2

```

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	

38.1.49 set origin

```

uP[Qd1E9#!_!JS*ãPÍT

```

```

Ruijie(config)# route-map SET_ORIGIN 10 permit
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set origin igp
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_ORIGIN 20 permit
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set origin egp

```

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

38.1.50 set originator-id

```

match
set originator-id no
set originator-id ip-addr
no originator-id [ip-addr]

```

<i>ip-addr</i>	

```

Ruijie(config)# route-map SET_ORIGIN 10 permit
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set originator-id 5.5.5.5
Ruijie(config-route-map)# exit
Ruijie(config)# route-map SET_ORIGIN 20 permit
Ruijie(config-route-map)# match as-path 2
Ruijie(config-route-map)# set originator-id 5.5.5.6

```

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

38.1.51 set tag

```

match
no
set tag tag
no set tag

```

tag	

”

B

match BGP
set weight no
set weight *number*
no set weight

<i>number</i>	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	

38.2

38.2.1 show ip community-list

show ip community-list [*community-list-number* | *community-list-name*]

<i>community-list-number</i>	1-99 100-199
<i>community-list-name</i>	80

```
Ruijie# show ip community-list
Community-list standard local
permit local-AS
Community-list standard Red-Giant
permit 0:10
deny 0:20
```

--	--

match community	
set comm-list delete	BGP

38.2.2 show ip prefix-list

show ip prefix-list

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

<i>prefix-name</i>	

```
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
```

38.2.3 show ip route

IP **show ip route**

show ip route [[vrf *vrf_name*] [*network* [*mask*] | **count** | **protocol** [*process-id*] | **weight**]]

--	--

vrf <i>vrf_name</i>	VRF
<i>network</i>	
<i>mask</i>	
count	
protocol	static connected, bgp, isis, ospf, rip
<i>process-id</i>	
weight	

show ip route

Ruijie# **show ip route**

Codes: C - connected, S - static, R - RIP, B - BGP

o.434 Td 7.994 0 Td()Tj/TT3 exp45D-30 Tw 6.71,N0 -12434 Td45D-8(p

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	
VLAN 1	

show ip route network

```
Ruijie# show ip route 30.0.0.0
Routing entry for 30.0.0.0/8
Distance 110, metric 20
Routing Descriptor Blocks:
*192.1.1.1, 00:01:11 ago, via VLAN 1, generated by OSPF,
extern 2
```

show ip route network

Routing Descriptor Blocks	IP BGP

show ip route count

```
Ruijie# show ip route count
----- route info -----
the num of active route: 5
```

show ip route weight

```
Ruijie# show ip route weight
-----[distance/metric/weight]-----
S   23.0.0.0/8 [1/0/2] via 192.1.1.20
S   172.0.0.0/16 [1/0/4] via 192.0.0.1
```

38.2.4 show ipv6 prefix-list

IPv6 show ipv6
prefix-list
show ipv6 prefix-list [*prefix-name*]

<i>prefix-name</i>	IPv6

IPv6

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

38.2.5 show route-map

show route-map

show route-map *route-map-name*

<i>route-map-name</i>	

```
Ruijie# show route-map  
route-map AAA, permit, sequence 10  
Match clauses:  
ip address 2  
Set clauses:  
metric 10
```

route-map	
Permit	permit
sequence 10	
Match clauses	deny permit set
Set clauses	match

39 ACL

id	IP ACL: 1-99,1300-1999 IP ACL: 100-199,2000-2699 MAC ACL: 700-799 ACL: 2700-2899



A	MAC	0	O	TTL	34
B	MAC	6	P		35
C		12	Q	IP	36
D	VLAN tag	14	R	ip	38
E	DSAP()	18	S	ip	42
F	SSAP()	19	T	TCP	46
G	Ctrl	20	U	TCP	48
H	Org Code				

```
' permit
' list-remark text
' no sn

' ip access-group
' mac access-group
' expert access-group
' ipv6 traffic-filter
```

39.1.1 access-list

no

1) IP 1 - 99 1300 - 1999

```
access-list id {deny | permit} {source source-wildcard | host source |
any}
```

2) IP 100 - 199 2000 - 2699

```
access-list id {deny | permit} protocol {source source-wildcard | host source |
any} {destination destination-wildcard | host destination | any} [precedence
precedence] [tos tos] [fragments] [time-range
time-range-name]
```

3) MAC 700 - 799

```
access-list id {deny | permit} {any | host source-mac-address} {any | host
destination-mac-address} [ethernet-type][cos [out][ inner in]]
```

4) Expert 2700 - 2899

```
access-list id {deny | permit} [protocol | [ethernet-type][ cos
[out][ inner in]]] [VID [out][inner in]] {source source-wildcard | host
source | any} {host source-mac-address | any} {destination
destination-wildcard | host destination | any} {host
destination-mac-address | any} ][precedence precedence] [tos tos]
[fragments] [time-range time-range-name]
```

Ethernet-type cos

```
access-list id {deny | permit} {ethernet-type| cos [out][ inner in]] [VID [out][inner
in]] {source source-wildcard | host source | any} {host source-mac-address | any }
{destination destination-wildcard | host destination | any} {host
destination-mac-address | any} [time-range time-range-name]
```

Protocol

access-list *id* {deny | permit} **protocol** [VID [*out*][*inner in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any**} {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

Expert

Internet Control Message Protocol (ICMP)

access-list *id* {deny | permit} **icmp** [VID [*out*][*inner in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any**} {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]]] | [*icmp-message*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

access-list *id* {deny | permit} **tcp** [VID [*out*][*inner in*]] {*source source-wildcard* | **host** *Source* | **any**} {**host** *source-mac-address* | **any**} [**operator** *port* [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**operator** *port* [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)

access-list *id* {deny | permit} **udp**[VID [*out*][*inner in*]] {*source source-wildcard* | **host** *source* | **any**} {**host** *source-mac-address* | **any**} [**operator** *port* [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**} {**host** *destination-mac-address* | **any**} [**operator** *port* [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

5)

access-list *list-remark text*

id 1-99 100-199 1300-1999 2000-2699 2700
– 2899 700 - 799

Deny**Permit***Source*

source-wildcard
protocol IP

EIGRP

0.255.0.32

TCP Flag

- ' **urg**
- ' **ack**
- ' **psh**
- ' **rst**
- ' **syn**
- ' **fin**

- ' **critical**
- ' **flash**
- ' **flash-override**
- ' **immediate**
- ' **internet**
- ' **network**
- ' **priority**
- ' **routine**

- ' **max-reliability**
- ' **max-throughput**
- ' **min-delay**
- ' **min-monetary-cost**
- ' **normal**

ICMP

- ' **administratively-prohibited**
- ' **dod-host-prohibited**
- ' **dod-net-prohibited**
- ' **echo**
- ' **echo-reply**
- ' **fragment-time-exceeded**
- ' **general-parameter-problem**
- ' **host-isolated**
- ' **host-precedence-unreachable**
- ' **host-redirect**
- ' **host-tos-redirect**

' **host-tos-unreachable**
' **host-unknown**
' **host-unreachable**
' **information-reply**
' **information-request**
' **mask-reply**
' **mask-request**
' **mobile-redirect**
' **net-redirect**
' **net-tos-redirect**
' **net-tos-unreachable**
' **net-unreachable**
' **network-unknown**
' **no-room-for-option**
' **option-missing**
' **packet-too-big**
' **parameter-problem**
' **port-unreachable**
' **precedence-unreachable**
' **protocol-unreachable**
' **redirect**
' **router-advertisement**
' **router-solicitation**
' **source-quench**
' **source-route-failed**
' **time-exceeded**
' **timestamp-reply**
' **timestamp-request**
' **ttl-exceeded**
' **unreachable**

 TCP TCP

' **bgp**
' **chargen**
' **cmd**
' **daytime**
' **discard**

```
' domain
' echo
' exec
' finger
' ftp
' ftp-data
' gopher
' hostname
' ident
' irc
' klogin
' kshell
' ldp
' login
' nntp
' pim-auto-rp
' pop2
' pop3
' smtp
' sunrpc
' syslog
' tacacs
' talk
' telnet
' time
' uucp
' whois
' www
```

```
W W W
```

```
WWW
```

```
ftp
' tacacs '
'
```

' **isakmp**
' **mobile-ip**
' **nameserver**
' **netbios-dgm**
' **netbios-ns**
' **netbios-ss**
' **ntp**
' **pim-auto-rp**
' **rip**
' **snmp**
' **snmptrap**
' **sunrpc**
' **syslog**
' **tacacs**
' **talk**
' **tftp**
' **time**
' **who**
' **xdmcp**

Ethernet-type

' **aarp**
' **appletalk**
' **decnet-iv**
' **diagnostic**
' **etype-6000**
' **etype-8042**
' **lat**
' **lavc-sca**
' **mop-console**
' **mop-dump**
' **mumps**
' **netbios**
' **vines-echo**
' **xns-idp**

1) IP

IP 192.168.1.64 - 192.168.1.127

```
Ruijie(config)# access-list 1 permit 192.168.1.64
0.0.0.63
```

2) IP

IP DNS ICMP

```
Ruijie(config)# access-list 102 permit tcp any any eq domain
Ruijie(config)# access-list 102 permit udp any any eq domain
Ruijie(config)# access-list 102 permit icmp any any echo
Ruijie(config)# access-list 102 permit icmp any any echo-reply
```

3) MAC

MAC 00d0f8000c0c 100
1

```
Ruijie(config)# access-list 702 deny host 00d0f8000c0c any aarp
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group 702 in
```

4) Expert

192.168.12.3 Expert Extended ACL ACL IP
MAC 00d0.f800.0044 TCP

```
Ruijie(config)# access-list 2702 deny tcp host
192.168.12.3 mac 00d0.f800.0044 any any
Ruijie(config)# access-list 2702 permit any any any any
Ruijie(config)# show access-lists
expert access-list extended 2702
10 deny tcp host 192.168.12.3 mac 00d0.f800.0044 any any
10 permit any any any any
```

show access-lists	
mac access-group	MAC

ACL

no

ACL

expert access-list extended {

ip ACL IPV6 ACL
no

ip access-list resequence {*id* | *name*} start-sn inc-sn

no ip access-list resequence {*id* | *name*}

Id ACL

Name ACL

start-sn

39.1.5 deny

(deny)
ACL

ACL

1) IP

[sn] **deny** {*source source-wildcard* | **host source** | **any**}

2) IP

[sn] **deny protocol** *source source-wildcard destination destination-wildcard* [**precedence precedence**] [**tos tos**] [**fragments**] [**time-range time-range-name**]

IP

Internet Control Message Protocol (ICMP)

[sn] **deny icmp** {*source source-wildcard* | **host source** | **any**}
{*destination destination-wildcard* | **host destination** | **any**} [*icmp-type*] [[*icmp-type icmp-code*] | [*icmp-message*]] [**precedence precedence**] [**tos tos**] [**fragments**] [**time-range time-range-name**]

Transmission Control Protocol (TCP)

[sn] **deny tcp** {*source source-wildcard* | **host Source** | **any**} [*operator port*] [*port*] {*destination destination-wildcard* | **host destination** | **any**} [*operator port*] [*port*] [**precedence precedence**] [**tos tos**] [**fragments**] [**time-range time-range-name**] [**match-all tcp-flag**]

User Datagram Protocol (UDP)

[sn] **deny udp** {*source source-wildcard* | **host source** | **any**} [*operator port*] [*port*] {*destination destination-wildcard* | **host destination** | **any**} [*operator port*] [*port*] [**precedence precedence**] [**tos tos**] [**fragments**] [**time-range time-range-name**]

3) MAC

[sn] **deny** {**any** | **host source-mac-address**}{**any** | **host destination-mac-address**} [*ethernet-type*][**cos**] [*out*] [*inner in*]

4) Expert

[sn] **deny**[**protocol** | [*ethernet-type*][**cos**] [*out*] [*inner in*]] [[**VID**] [*out*][*inner in*]]
{*source source-wildcard* | **host source** | **any**}{**host source-mac-address** | **any** }
{*destination destination-wildcard* | **host destination** | **any**} {**host**

ACL

source-ipv6-address { *destination-ipv6-prefix / prefix-length* | **any** | *hostdestination-ipv6-address* } [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**time-range** *time-range-name*]

IPV6

Internet Control Message Protocol (ICMP)

[*sn*] **deny icmp** { *source-ipv6-prefix / prefix-length* | *any source-ipv6-address* | **host** } { *destination-ipv6-prefix / prefix-length* | **host destination-ipv6-address** | **any** } [*icmp-type*] [[*icmp-type icmp-code*]] | [*icmp-message*] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **deny tcp** { *source-ipv6-prefix / prefix-length* | **host source-ipv6-address** | **any** } [*operator* **port** [*port*]] { *destination-ipv6-prefix / prefix-length* | **host destination-ipv6-address** | **any** } [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)

[*sn*] **deny udp** { *source-ipv6-prefix/prefix-length* | **host source-ipv6-address** | **any** } [*operator* **port** [*port*]] { *destination-ipv6-prefix / prefix-length* | **host destination-ipv6-address** | **any** } [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**time-range** *time-range-name*]

access-list

Sn ACL

source-ipv6-prefix IPv6

destination-ipv6-prefix IPv6

prefix-length

source-ipv6-address IPv6

destination-ipv6-address IPv6

dscp

dscp 0-63.

flow-label

flow-label 0-1048575.

protocol IPV6 IPV6 | icmp | tcp | udp <0-255>

ACL

ACL

ACL

		Expert Extended ACL	ACL	IP
192.168.4.12	MAC	001300498272	TCP	

```
Ruijie(config)# expert access-list extended 2702
Ruijie(config-exp-nacl)# deny tcp host
192.168.4.12 host 0013.0049.8272 any any
Ruijie(config-exp-nacl)# permit any any any any
Ruijie(config-exp-nacl)# show access-lists
expert access-list extended 2702
10 deny tcp host 192.168.4.12 host 0013.0049.8272 any any
20 permit any any any any
Ruijie(config-exp-nacl)#
```

IP	ACL	IP	192.168.4.12	TCP
100		1		

```
Ruijie(config)# ip access-list extended ip-ext-acl
Ruijie(config-ext-nacl)# deny tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended ip-ext-acl
10 deny tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group ip-ext-acl in
Ruijie(config-if)#
```

MAC	ACL	MAC	0013.0049.8272
100		1	

```
Ruijie(config)# mac access-list extended mac1
Ruijie(config-mac-nacl)# deny host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)# show access-lists
mac access-list extended mac1
10 deny host 0013.0049.8272 any aarp
Ruijie(config-mac-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mac access-group mac1 in
```

IP ACL IP 192.168.4.12
1

```
Ruijie(config)# ip access-list standard 34
Ruijie(config-ext-nacl)# deny host 192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list standard 34
10 deny host 192.168.4.12
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group 34 in
```

IPV6 ACL IP 192.168.4.12
1

```
Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# 11 deny ipv6 host 192.168.4.12 any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
11 deny ipv6 host 192.168.4.12 any
Ruijie(config-ipv6-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

show access-lists	
ipv6 traffic-filter	IPV6
ip access-group	IP ACL
mac access-group	MAC ACL
ip access-list	IP ACL
mac access-list	MAC ACL
expert access-list	ACL
ipv6 access-list	IPV6 ACL
permit	

39.1.6 permit

(**permit**)
ACL

ACL

1) IP

[sn] **permit** {*source source-wildcard* | **host** *source* | **any**}

2) IP

[sn] **permit protocol** *source source-wildcard destination destination-wildcard* [**precedence** *precedence*] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

IP

Internet Control Message Protocol (ICMP)

[sn] **permit icmp** {*source source-wildcard* | **host** *source* | **any**}
{*destination destination-wildcard* | **host** *destination* | **any**}
[*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**precedence**
precedence] [**tos** *tos*] [**fragments**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[sn] **permit tcp** {*source source-wildcard* | **host** *Source* | **any**} [*operator*
port [*port*]] {*destination destination-wildcard* | **host** *destination* | **any**}
[*operator* **port** [*port*]] [**precedence** *precedence*] [**tos** *tos*] [**fragments**]
[**time-range** *time-range-name*] [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)

[sn] **permit udp** {*source source -wildcard*|**host** *source* |**any**} [*operator*
port [*port*]] {*destination destination-wildcard***port**

[*snport*

destination-mac-address | **any** } [**precedence** *precedence*] [**tos** *tos*][**fragments**]
[**time-range** *time-range-name*]

Ethernet-type cos

[*sn*] **permit** {*ethernet-type*| **cos** [*out*] [*inner in*]} [**VID** [*out*][*inner in*]]
{*source source-wildcard* | **host source** | **any**} {**host**
source-mac-address | **any** } {*destination destination-wildcard* | **host**
destination | **any**} {**host destination-mac-address** | **any**} [**time-range**
time-range-name]

Protocol

[*sn*] **permit protocol** [**VID** [*out*][*inner in*]] {*source source-wildcard* |
host Source | **any**} {**host source-mac-address** | **any** } {*destination*
destination-wildcard | **host destination** | **any**} {**host**
destination-mac-address | **any**} [**precedence** *precedence*] [**tos** *tos*]
[**fragments**] [**time-range** *time-range-name*]

Expert

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** [**VID** [*out*][*inner in*]] {*source source-wildcard* | **host source** | **any**}
{**host source-mac-address** | **any** } {*destination*
destination-wildcard

| *hostdestination-ipv6-address*] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**time-range** *time-range-name*]

IPV6

Internet Control Message Protocol (ICMP)

[*sn*] **permit icmp** {*source-ipv6-prefix / prefix-length* | **any** *source-ipv6-address* | **host**} {*destination-ipv6-prefix / prefix-length* | **host** *destination-ipv6-address* | **any**} [*icmp-type*] [[*icmp-type* [*icmp-code*]] | [*icmp-message*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**time-range** *time-range-name*]

Transmission Control Protocol (TCP)

[*sn*] **permit tcp** {*source-ipv6-prefix / prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix / prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

User Datagram Protocol (UDP)

[*sn*] **permit udp** {*source-ipv6-prefix / prefix-length* | **host** *source-ipv6-address* | **any**} [*operator* **port** [*port*]] {*destination-ipv6-prefix / prefix-length* | **host** *destination-ipv6-address* | **any**} [*operator* **port** [*port*]] [**dscp** *dscp*] [**flow-label** *flow-label*] [**fragments**] [**time-range** *time-range-name*]

deny

ACL

ACL

ACL

192.168.4.12 MAC Expert Extended ACL 001300498272 ACL IP
TCP

Ruijie(config)# **expert access-list extended** *exp-acl*

```
Ruijie(config-exp-nacl)# permit tcp host 192.168.4.12 host  
0013.0049.8272 any any  
Ruijie(config-exp-nacl)# deny any any any any  
Ruijie(config-exp-nacl)# show access-lists  
expert access-list extended exp-acl  
10 permit tcp host 192.168.4.12 host 0013.0049.8272 any any  
20 deny any any any any  
Ruijie(config-exp-nacl)#
```

IP	ACL	IP	192.168.4.12	TCP
100		1		

```
Ruijie(config)# ip access-list extended 102  
Ruijie(config-ext-nacl)# permit tcp host 192.168.4.12 eq 100  
any  
Ruijie(config-ext-nacl)# show access-lists  
ip access-list extended 102  
10 permit tcp host 192.168.4.12 eq 100 any  
Ruijie(config-ext-nacl)# exit  
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# ip access-group 102 in  
Ruijie(config-if)#
```

MAC	ACL	MAC	0013.0049.8272
100		1	

```
Ruijie(config)# mac access-list extended 702  
Ruijie(config-mac-nacl)# permit host 0013.0049.8272 any aarp  
Ruijie(config-mac-nacl)# show access-lists  
mac access-list extended  
10 permit host 0013.0049.8272 any aarp702  
Ruijie(config-mac-nacl)# exit  
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# mac access-group 702 in
```

ip	ACL	IP	192.168.4.12
1			

```
Ruijie(config)# ip access-list standard std-acl  
Ruijie(config-std-nacl)# permit host 192.168.4.12  
Ruijie(config-std-nacl)# show access-lists  
ip access-list standard std-acl  
10 permit host 192.168.4.12  
Ruijie(config-std-nacl)# exit  
Ruijie(config)# interface gigabitethernet 1/1  
Ruijie(config-if)# ip access-group std-acl in
```

IPV6 ACL IP 192.168.4.12
1

```
Ruijie(config)# ipv6 access-list extended v6-acl
Ruijie(config-ipv6-nacl)# 11 permit ipv6
host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
11 permit ipv6 host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
```

show access-lists	
ipv6 traffic-filter	IPV6
ip access-group	IP ACL
mac access-group	MAC ACL
ip access-list	IP ACL
mac access-list	MAC ACL
expert access-list	ACL
ipv6 access-list	IPV6 ACL
deny	ACL

RGOS10.0

39.1.7 list-remark text

ACL no

list-remark text

Text

ACL

ACL

```
Ruijie# ip access-list extended 102
Ruijie(config-ext-nacl)# list-remark this acl is to filter the
host 192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
deny ip host 192.168.4.12 any
1000 hits
this acl is to filter the host 192.168.4.12
Ruijie(config-ext-nacl)#
```



show access-lists

```

Ruijie(config-ipv6-nacl)# 12 deny ipv6 host any any
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
10 permit ipv6 host ::192.168.4.12 any
12 deny ipv6 any any
Ruijie(config-ipv6-nacl)# no 12
Ruijie(config-ipv6-nacl)# show access-lists
ipv6 access-list extended v6-acl
10 permit ipv6 host ::192.168.4.12 any
Ruijie(config-ipv6-nacl)#

```

show access-lists	
ip access-list	ip ACL
ipv6 access-list	IPV6 ACL
deny	ACL
permit	ACL

RGOS10.0

39.1.9 ip access-group

ip access-group

no

ip access-group {*id* | *name*} {*in* | *out*} [*reflect* | *unreflect*]

no ip access-group { *id* | *name*} {*in* | *out*} [*reflect* | *unreflect*]

id IP 1-199 1300-2699

name IP

in

out

unreflect ACL

reflect ACL

ACL

ip access-group

GigabitEthernet0/0 120

```
Ruijie(config)# interface GigabitEthernet 0/0
Ruijie(config-if)#ip access-group 120 in
```

access-list	
show access-lists	

RGOS10.0

39.1.10 expert access-group

EXPERT ACL

no

```
expert access-group {id | name} {in | out} [unreflect]
no expert access-group {id | name} {in | out} [unreflect]
```

id Expert 2700-2899

name Expert

in

out

unreflect ACL

Expert ACL


```

access-list v6-acl Gigabit 1
Ruijie(config)# interface GigaEthernet 0/1
Ruijie(config-if)# ipv6 traffic-filter v6-acl in
    
```

show access-group	ACL

RGOS10.0

39.2

```

:
' show access-lists
' show ip access-group
' show mac access-group
' show ipv6 traffic-filter
' show expert access-group
' show access-group
    
```

39.2.1 show access-lists

```

ACL ACL
show access-lists [id | name]

id
name

acl id name ACL

Ruijie# show access-lists n_acl
    
```

```

ip access-list standard n_acl
Ruijie# show access-lists 102
ip access-list extended 102
Ruijie# show access-lists
ip access-list standard n_acl
ip access-list extended 101
mac access-list extended mac_acl
expert access-list extended exp_acl
ipv6 access-list extended v6_acl

```

ip access-list	IP ACL
mac access-list	MAC ACL
expert access-list	Expert ACL
ipv6 access-list	IPv6 ACL

RGOS10.0

39.2.2 show ip access-group

IP ACL

```
show ip access-group[interface <interface>]
```

<interface>

IP ACL

IP ACL

```

Ruijie# show ip access-group interface gigabitethernet 0/1
ip access-group aaa in
Applied On interface GigabitEthernet 0/1.

```

ip access-list	IP ACL

RGOS10.0

39.2.3 show expert access-group

Expert

show expert access-group [interface <interface>]

<interface>

Expert ACL

Expert ACL

```
Ruijie# show expert access-group interface gigabitethernet 0/2
expert access-group ee in
Applied On interface GigabitEthernet 0/2.
```

<u>expert access-list</u>	Expert ACL

RGOS10.0

39.2.4 show ipv6 traffic-filter

IPV6

show ipv6 traffic-filter [interface <interface>]

<interface>

IPv6 ACL

IPv6 ACL

```
Ruijie# show ipv6 traffic-filter interface gigabitethernet 0/4  
ipv6 traffic-filter v6 in  
Applied On interface GigabitEthernet 0/4.
```



Applied On interface GigabitEthernet 0/8.

ip access-group	ip
mac access-group	MAC
expert access-group	Expert
ipv6 traffic-filter	IPV6

RGOS10.0

40 RPL

40.1

40.1.1 reverse-path

reverse-path

no

reverse-path

no reverse-path

	-	-

|

|

|

|

1 RPL .

Ruijie(config)# interface gigabitEthernet 0/0

Ruijie(config-if)# **reverse-path**

	-	-

|

|

10.3(3b7)

10.3(4)

41

41.1

41.1.1 acpp

PPP

ppp authentication

41.1.2 arp-car

ARP Glean-CAR control-plane
 arp-car
no arp-car

arp-car *packet_rate_per_group* [**log**]

no arp-car



protocol	
manage	
data	

└──

└──

└──

```

%                control-plane
Ruijie(config)# control-plane protocol
Ruijie(config-cp)#

```

-	!

└──

-	-

41.1.4 debug ef-rnfp

debug ef-rnfp

no

debug ef-rnfp [acpp | scpp | glean-car | arp-car | port-filter | mpp | all]

no debug ef-rnfp [acpp | scpp | glean-car | arp-car | port-filter | mpp | all]

-	-

└──

└──

|

1 arp-car
Ruijie# debug ef-rnfp arp-car

Ruijie# show ef-rnfp debug-buf [clear echo]	REF show ef-rnfp debug-buf [clear echo]

|

-	-

41.1.5 ef-rnfp

ef-rnfp enable
ef-rnfp disable

ef-rnfp enable
ef-rnfp disable

-	-

|

control-plane

|

1
Ruijie(config)# **control-plane**
Ruijie(config-cp)# **ef-rnfp disable**

--	--

Ruijie(config)# control-plane {protocol manage data}	control-plane
-	-

41.1.6 glean-car

	control-plane	IP	Glean-CAR
	no	glean-car	
	glean-car packet_rate_per_group [log]		
	no glean-car		
	packet_rate_per_group	pps	
	Glean-CAR		Glean
	5pps		
	control-plane		
	%		Glean
	10pps		
	Ruijie(config)# control-plane data		
	Ruijie(config-cp)# glean-car 10		
	Ruijie(config)# control-plane {protocol manage data}	control-plane	

	-	-
--	---	---

41.1.7 management-interface

MPP

MPP

MPP

control-plane

management-interface

no

management-interface *interface* **allow** {ftp | http | https | ssh | snmp | telnet | tftp} [**log**]

no management-interface *interface*

--	--	--

Interface

Port-Filter

port-filter Port-Filter control-plane

no Port-Filter

port-filter [log]

no port-filter

-	-

Port-Filter

control-plane

1

Port-Filter

Ruijie(config)# control-plane manage

Ruijie(config-cp)# port-filter

Ruijie(config)# control-plane {protocol manage data}	control-plane

-

41.1.9 scpp

SCPP

control-plane

scpp

no scpp

scpp list *acl_no* {**bw-rate** *bw-rate* **bw-burst-rate** *bw-burst-rate* | **conn-total** *conn-num* | **conn-create-rate** *conn-create-rate* **conn-create-burst-rate** *conn-create-burst-rate*} [**log**]

no scpp list acl_no




```

FUNC: ef_rnfp_pkt_classify          LINE: 318  INFO: detail
recognise ok: ARP
FUNC: ef_rnfp_pkt_classify          LINE: 348  INFO: detail
classify ok EXT: 0x1
FUNC: ef_rnfp_pkt_acpp              LINE: 383  INFO: token_num EXT:
0xf4240
FUNC: ef_rnfp_pkt_acpp              LINE: 393  INFO: acpp permit
FUNC: ef_rnfp_pkt_arp_car           LINE: 500  INFO: arp-car permit
FUNC: ef_rnfp_pkt_main_process      LINE: 1460 INFO: ef rnfp pkt
proc ok, permit EXT: 0x1
FUNC: ef_rnfp_pkt_classify          LINE: 164  INFO: origin reserve
reason EXT: 0xc
FUNC: ef_rnfp_pkt_classify          LINE: 348  INFO: detail
classify ok EXT: 0x1
-----

```

Ruijie# debug ef-rnfp [acpp scpp glean-car arp-car port-filter mpp all]	

-	-

42

42.1

42.1.1 ip inspect name

no

ip inspect name *inspection_name protocol*

no ip inspect name *inspection_name protocol*

inspection_name:

protocol:

sip h323, tcp

ftp mms rtsp

abc ftp mms 123 mms h.323

Ruijie(config)# **ip inspect name abc ftp**

Ruijie(config)# **ip inspect name abc mms**

Ruijie(config)# **ip inspect name 123 mms**

Ruijie(config)# **ip inspect name 123 h323**

42.1.2 show ip inspect

show ip inspect *parameter*

parameter: **name** *inspection_name*

interface

all

abc

```
Ruijie# show ip inspect name abc
Inspection name abc
      ftp
      mms
```

42.1.3 ip inspect

no

ip inspect *inspection_name* {**in** | **out**}

no ip inspect *inspection_name* {**in** | **out**}

inspection_name:

in | **out:**

1/0 abc

```
Ruijie(conf)# interface ethernet 1/0  
Ruijie(conf-if)# ip inspect abc in
```

42.2 IP MAC

42.2.1 ipmacbind

IP MAC no

```
ipmacbind A.B.C.D H.H.H log  
no ipmacbind A.B.C.D H.H.H log
```

A.B.C.D: IP

H.H.H: MAC

log:

IP MAC

IP MAC

permit: IP MAC

deny: IP MAC

IP MAC

IP MAC

Ruijie(config)# **ipmacbind** default action permit

42.2.4 clear ipmacbind

```
Ruijie# clear ipmacbind dynamic
```

42.2.5 show ipmacbind

IP MAC

```
show ipmacbind table | hash | statistic
```

```
table:    IP MAC
```

```
hash:     IP MAC
```

```
statistic: IP MAC
```

IP MAC

IP MAC

```
Ruijie# show ipmacbind table
```

No.	Type	IP address	MAC address	Log
1	static	192.168.52.66	52e1.5d33.aa21	on
2	auto	192.168.52.50	112e.3ca4.3381	off

<-- output omitted -- >

42.3

42.3.1 ip ingress-filter

no

```
ip ingress-filter log
```

no ip ingress-filter

log:

no

Ruijie(config)# **interface ethernet 1/0**

Ruijie(conf-if)# **ip ingress-filter log**

42.3.2 show ip ingress-filter

show ip ingress-filter

show

Ruijie# **show**

Interface GigabitEthernet 1/0: log is on, blocked 0 flows

42.4 TCP SYN

42.4.1 ip tcp-intercept list

TCP SYN no

ip tcp-intercept list *extended_ACL_#* {in | out} <log>

no ip tcp-intercept list *extended_ACL_#* {in | out} <log>

extended_ACL_#

in | out:

log:

TCP SYN

TCP SYN

```
eth 1/0          TCP      TCP SYN
Ruijie(config)# access-list 100 tcp permit any any
Ruijie(config)# interface ethernet 1/0
Ruijie(config-if)# ip tcp-intercept list 100 in log
```

TCP SYN

show ip tcp-intercept

TCP SYN

TCP SYN

```
Ruijie# show ip tcp-intercept  
Intercepting new connections using access-list 100 at  
GigabitEthernet 0/1 in  
12 incomplete, 5 established connections (total 17)
```

42.5 TCP

42.5.1 ip inspect name tcp

tcp TCP no

ip inspect name *inspection_name* tcp

no ip inspect name *inspection_name* tcp

inspection_name: ACL

```
tcp
tcp          ip inspect
tcp          show ip inspect

tcp          tcp_inspec
Ruijie(config)# ip inspect name tcp_inspec tcp

ip inspect name          ip inspect
show ip inspect
```

42.6

42.6.1 session-limit

```
session-limit access-group acl_no rate rate concurrent session_no {in|out}  
<log>
```

```
no session-limit access-group acl_no rate rate concurrent session_no {in|out}  
<log>
```

acl_no

rate

session_no

in|out

1000

100

session-limit access-group 1 rate 100 concurrent 10000 in log

42.7

42.7.1 ip rate-control

ip rate-control *acl_no* **bandwidth** {both|up|down} *rate* <session total
session_no> <rate *rate_no*>

no ip rate-control *acl_no* **bandwidth** {both|up|down} *rate* <session total
session_no> <rate *rate_no*>

acl_no

rate kBps

session_no

rate_no

both

200kBps

500

100

ip rate-control 1 bandwidth both 200 session total 500 rate 100

42.8

42.8.1 ip session log-on

no

ip session log-on

no ip session log-on

```
Ruijie(config)#ip session log-on
```

42.8.2 ip session timeout

no

ip session timeout icmp-closed *timeout_value*

ip session timeout icmp-started *timeout_value*

ip session timeout icmp-connected *timeout_value*

ip session timeout tcp-established *timeout_value*

ip session timeout tcp-syn-sent *timeout_value*
ip session timeout tcp-syn-receive *timeout_value*
ip session timeout tcp-fin-wait *timeout_value*
ip session timeout tcp-time-wait *timeout_value*
ip session timeout tcp-closed *timeout_value*
ip session timeout tcp-close-wait *timeout_value*
ip session timeout tcp-last-ack *timeout_value*
ip session timeout udp-closed *timeout_value*
ip session timeout udp-started *timeout_value*
ip session timeout udp-connected *timeout_value*
ip session timeout udp-established *timeout_value*
ip session timeout rawip-closed *timeout_value*
ip session timeout rawip-started *timeout_value*
ip session timeout rawip-connected *timeout_value*
ip session timeout rawip-established *timeout_value*
no ip session timeout icmp-closed
no ip session timeout icmp-started
no ip session timeout icmp-connected
no ip session timeout tcp-established
no ip session timeout tcp-syn-sent
no ip session timeout tcp-syn-receive
no ip session timeout tcp-fin-wait
no ip session timeout tcp-time-wait
no ip session timeout tcp-closed
no ip session timeout tcp-close-wait
no ip session timeout tcp-last-ack
no ip session timeout udp-closed
no ip session timeout udp-started
no ip session timeout udp-connected
no ip session timeout udp-established
no ip session timeout rawip-closed
no ip session timeout rawip-started

no ip session timeout rawip-connected
no ip session timeout rawip-established

timeout_value

icmp-closed 10
icmp-started 10
icmp-connected 10
tcp-established 1800
tcp-syn-sent 10
tcp-syn-receive 10
tcp-fin-wait 60
tcp-time-wait 10
tcp-closed 10
tcp-close-wait 60
tcp-last-ack 30
udp-closed 10
udp-started 60
udp-connected 30
udp-established 600
rawip-closed 10
rawip-started 300
rawip-connected 300
rawip-established 300

icmp-connected 10

```
Ruijie(config)#ip session timeout icmp-connected 10
```

42.8.3 ip session threshold

no

rawip-closed 10

icmp-started 10

Ruijie(config)#ip session threshold icmp-started 10

42.8.4 ip session track-state-strictly

	TCP		ICMP
TCP		SYN	ICMP
			no

ip session track-state-strictly

no ip session track-state-strictly

Ruijie(config)#ip session track-state-strictly

43 VPDN

43.1 VPDN

43.1.1 vpdn enable

```

                VPDN          no          VPDN
vpdn enable
no vpdn enable
    
```

VPDN

```

                (Client-Initiated Tunnel) L2TP          VPDN
RGNOS          LAC  LNS          PPTP          L2TP
                VPDN
    
```

VPDN

```

Ruijie(config)# vpdn enable
Ruijie(config)#
    
```

43.1.2 vpdn source-ip

```

                VPDN          ( )          no
    
```

```

vpdn source-ip A.B.C.D
no vpdn source-ip
    
```

```

A.B.C.D          VPDN
    
```

VPDN ()

LNS(L2TP) HGW(PPTP)

192.168.12.223

```
Ruijie(config)# vpdn source-ip 192.168.12.223
Ruijie(config)#
```

43.1.3 vpdn session-limit

VPDN no

vpdn session-limit *sessions*

no vpdn session-limit

sessions VPDN

36 300

VPDN

100

```
Ruijie(config)# vpdn session-limit 100
Ruijie(config)#
```

43.2 VPDN

43.2.1 clear vpdn tunnel

```
clear vpdn tunnel [{l2tp | pptp }[remote-host-name]]
```

l2tp L2TP

pptp PPTP

remote-host-name

(PPTP L2TP)

L2TP

```
Ruijie# show vpdn
```

```
L2TP Tunnel and Session Information Total tunnels 1 sessions
1
```

```
LocID RemID Remote Name State Remote Address Port Sessions
```

```
L2TP Class/
```

```
VPDN Group
```

```
1 1 BLIZZARD est 192.168.12.213 1701 1 1
```

```
LocID RemID TunID Username, Intf/
```

```
State Last Chg Vcid, Circuit
```

```
1 1 1 ms,Vil est
```

```
00:46:30
```

```
%No active PPTP tunnels
```

```
Ruijie# clear vpdn tunnel l2tp
```

```
Ruijie#
```

```
%UPDOWN: Line protocol on Interface Virtual-Access1, changed
state to down
```

```
%CHANGED: Interface Virtual-Access1, changed state to
administratively down
```

```
Ruijie# show vpdn
%No active L2TP tunnels
%No active PPTP tunnels
Ruijie#
```

43.2.2 show vpdn

VPDN

show vpdn [session | tunnel]

session

tunnel

VPDN

VPDN

VPDN

```
Ruijie# show vpdn
L2TP Tunnel and Session Information Total tunnels 1 sessions
1
LocID RemID Remote Name State Remote Address Port Sessions
L2TP Class/
VPDN Group
4 77 BLIZZARD est 192.168.12.213 1701 1 1
LocID RemID TunID Username, Intf/ State
Last Chg
Vcid, Circuit
1 1 4 ms,Vil1 est
00:33:58
%No active PPTP tunnels
Ruijie#
```

VPDN

Ruijie# **show vpdn tunnel**

L2TP Tunnel Information Total tunnels 1

LocID	RemID	Remote Name	State	Remote Address	Port	Sessions
-------	-------	-------------	-------	----------------	------	----------

L2TP Class/

VPDN Group

4	77	BLIZZARD	est	192.168r4Tj-0.102t1-5s4ltate	Remo0 1	12.1
---	----	----------	-----	------------------------------	---------	------

VPDN	L2TP	PPTP	VPDN	error event packet
			L2TP	

pptp

debug vpdn event

```
VPDN: Pptp rcv start-control-connection-request from host
192.168.200.114
PPTP: New tunnel socket id =9
VPDN: Pptp get tunnel info for 192.168.200.114 ok!
VPDN: Pptp send start-control-connection-reply, ok
VPDN: Pptp tunnel id 0 state change: idle --> estbed
PPTP: Add send-echo-request timer, interval = 60
VPDN: Pptp tunnel id 0 rcv outgoing-call-request!
Pptp: Tunnel to 192.168.200.114 get config para. from vpdn-group
pptp!
VPDN: Must process using ACCEPT_DIALIN parameters
Pptp: Session va0 get config para. from vpdn-group pptp!
VPDN: Pptp session va0 state change: idle --> connected
PPTP: Receive outcall request,process ok!assign local call id
= 1
VPDN: Pptp tunnel id 0 send out-call reply
%LINK CHANGED: Interface virtual-access 0, changed state to up
VPDN: Pptp tunnel to 192.168.200.114 peer callid 1 rcv
set-linkinfo
VPDN: Pptp tunnel to 192.168.200.114 peer callid 1 rcv
set-linkinfo
%LINE PROTOCOL CHANGE: Interface virtual-access 0, changed state
to UP
```

pptp

debug vpdn packet

```
PPTP: I Start-Control-Connection-Request len 156 Magic Cookie
0x1A2B3C4D
Protocol Version 0x100
Framing Type 0x1
Bearer Type 0x1
Maximum Channels 0x0
Firmware Revision 0x893
Host Name:
endor String: Microsoft Windows NT
PPTP: O Start-Control-Connection-Reply len 156 Magic Cookie
0x1A2B3C4D
```

Protocol Version 0x100
Framing Type 0x2
Bearer Type 0x3
Maximum Channels 0x0
Firmware Revision 0x100
Host Name: Dingjs
Vendor String: Ret-Giant Network Operating System
PPTP: I Outgoing-Call-Request len 168 Magic Cookie 0x1A2B3C4D
Call Id 0x4000
Call Serial Number 0x96A5
Min BPS 0x12C
Max BPS 0x5F5E100
Bearer Type 0x3
Framing Type 0x3
Rec Window Size 0x40
Proc Delay 0x0
Phone Number Length 0x0
Phone Number:
Subaddress:
PPTP: O Outgoing-Call-Reply len 32 Magic Cookie 0x1A2B3C4D
Call Id 0x1
Peer Call Id 0x4000
Result Code 0x1
Error Code 0x0
Cause Code 0x0
Connect Speed 0xFA00
Rec Window Size 0x10
Physical Channel Id 0x0
PPTP: I Set-Link-Info len 24 Magic Cookie 0x1A2B3C4D
Peer Call Id 0x1
Send ACCM 0xFFFFFFFF
Recv ACCM 0xFFFFFFFF
%UPDOWN: Interface Virtual-Access1, changed state to up
Vil VPDN PROCESS Into tunnel: Sending 54 byte pak
Vil VPDN PROCESS Into tunnel: Sending 64 byte pak
Vil VPDN PROCESS Into tunnel: Sending 50 byte pak
PPTP: I Set-Link-Info len 24 Magic Cookie 0x1A2B3C4D
Peer Call Id 0x1
Send ACCM 0xFFFFFFFF
Recv ACCM 0xFFFFFFFF
Vil VPDN PROCESS Into tunnel: Sending 45 byte pak
Vil VPDN PROCESS Into tunnel: Sending 46 byte pak
Vil VPDN PROCESS Into tunnel: Sending 187 byte pak
Vil VPDN PROCESS Into tunnel: Sending 56 byte pak

Vil VPDN PROCESS Into tunnel: Sending 64 byte pak
Vil VPDN PROCESS Into tunnel: Sending 50 byte pak
Vil VPDN PROCESS Into tunnel: Sending 50 byte pak
Vil VPDN PROCESS Into tunnel: Sending 52 byte pak

pptp

debug vpdn error

VPDN: PPTP session Virtual-Access1 wait pak ack timeout(wait seq=37, ack=36), decrease send window to half of current = 33!
VPDN: PPTP session Virtual-Access1 adjust ATO to 220 ms!
VPDN: PPTP session Virtual-Access1 wait pak ack timeout(wait seq=38, ack=36), decrease send window to half of current = 16!
VPDN: PPTP session Virtual-Access1 adjust ATO to 280 ms!
VPDN: PPTP session Virtual-Access1 wait pak ack timeout(wait seq=39, ack=36), decrease send window to half of current = 8!
VPDN: PPTP session Virtual-Access1 adjust ATO to 400 ms!
VPDN: Pptp EGRE encap fail, err=-4!
VPDN: PPTP session Virtual-Access1 wait pak ack timeout(wait seq=40, ack=36), decrease send window to half of current = 4!
VPDN: PPTP session Virtual-Access1 adjust ATO to 640 ms!

LNS

()

VPDN

Ruijie# **debug vpdn error**

vpdn protocol errors debugging is on

Ruijie# **debug vpdn event**

vpdn events debugging is on

Ruijie# **debug vpdn packet**

vpdn packet debugging is on

Ruijie# **show debug**

VPDN:

vpdn events debugging is on

vpdn protocol errors debugging is on

vpdn packet debugging is on

Ruijie#

VPDN PROCESS From tunnel: Received 158 byte pak

L2X: UDP socket write 168 bytes, 192.168.12.217(1701) to 192.168.12.242(1701)

L2X: UDP socket write 40 bytes, 192.168.12.217(1701) to 192.168.12.242(1701)

VPDN PROCESS From tunnel: Pak consumed

VPDN PROCESS From tunnel: Received 70 byte pak

L2X: UDP socket write 40 bytes, 192.168.12.217(1701) to 192.168.12.242(1701)

VPDN PROCESS From tunnel: Pak consumed

```
VPDN PROCESS From tunnel: Received 76 byte pak
Get virtual-access from free queue: Virtual-Access1
Clone virtual-access from interface Virtual-Templat1
L2X: UDP socket write 56 bytes, 192.168.12.217(1701) to
192.168.12.242(1701)
L2X: UDP socket write 40 bytes, 192.168.12.217(1701) to
192.168.12.242(1701)
VPDN PROCESS From tunnel: Pak consumed
VPDN PROCESS From tunnel: Received 76 byte pak
L2X: UDP socket write 40 bytes, 192.168.12.217(1701) to
192.168.12.242(1701)
Vil Tnl/Sn 3/1 L2TP: Virtual interface created for unknown,
bandwidth 1024 Kbps
Vil Tnl/Sn 3/1 L2TP: VPDN session up
VPDN PROCESS From tunnel: Pak consumed
VPDN PROCESS From tunnel: Received 50 byte pak
Vil VPDN PROCESS From tunnel: Queue 14 byte pak to ppp parse
and iqueue
Vil VPDN PROCESS From tunnel: Pak send successful
%UPDOWN: Interface Virtual-Access1, changed state to up
Vil VPDN PROCESS Into tunnel: Sending 54 byte pak
L2X: UDP socket write 54 bytes, 255.255.255.255(1701) to
4.83.68.68(1701)
VPDN PROCESS From tunnel: Received 50 byte pak
Vil VPDN PROCESS From tunnel: Queue 14 byte pak to ppp parse
and iqueue
Vil VPDN PROCESS From tunnel: Pak send successful
Vil VPDN PROCESS Into tunnel: Sending 50 byte pak
L2X: UDP socket write 50 bytes, 255.255.255.255(1701) to
4.83.68.68(1701)
Vil VPDN PROCESS Into tunnel: Sending 54 byte pak
L2X: UDP socket write 54 bytes, 255.255.255.255(1701) to
4.83.68.68(1701)
VPDN PROCESS From tunnel: Received 50 byte pak
Vil VPDN PROCESS From tunnel: Queue 14 byte pak to ppp parse
and iqueue
Vil VPDN PROCESS From tunnel: Pak send successful
Vil VPDN PROCESS Into tunnel: Sending 50 byte pak
L2X: UDP socket write 50 bytes, 255.255.255.255(1701) to
4.83.68.68(1701)
Vil VPDN PROCESS Into tunnel: Sending 54 byte pak
L2X: UDP socket write 54 bytes, 255.255.255.255(1701) to
4.83.68.68(1701)
VPDN PROCESS From tunnel: Received 50 byte pak
```

Vil VPDN PROCESS From tunnel: Queue 14 byte pak to ppp parse and iqueue
Vil VPDN PROCESS From tunnel: Pak send successful
Vil VPDN PROCESS Into tunnel: Sending 50 byte pak
L2X: UDP socket write 50 bytes, 192.168.12.217(1701) to 192.168.12.242(1701)
Vil VPDN PROCESS Into tunnel: Sending 54 byte pak
L2X: UDP socket write 54 bytes, 192.168.12.217(1701) to 192.168.12.242(1701)
VPDN PROCESS From tunnel: Received 54 byte pak
Vil VPDN PROCESS From tunnel: Queue 18 byte pak to ppp parse and iqueue
Vil VPDN PROCESS From tunnel: Pak send successful
VPDN PROCESS From tunnel: Received 56 byte pak
Vil VPDN PROCESS From tunnel: Queue 20 byte pak to ppp parse and iqueue
Vil VPDN PROCESS From tunnel: Pak send successful
Vil VPDN PROCESS Into tunnel: Sending 45 byte pak
L2X: UDP socket write 45 bytes, 192.168.12.217(1701) to 192.168.12.242(1701)
Vil VPDN PROCESS Into tunnel: Sending 50 byte pak
L2X: UDP socket write 50 bytes, 192.168.12.217(1701) to 192.168.12.242(1701)
VPDN PROCESS From tunnel: Received 50 byte pak
Vil VPDN PROCESS From tunnel: Queue 14 byte pak to ppp parse and iqueue
Vil VPDN PROCESS From tunnel: Pak send successful
Vil VPDN PROCESS Into tunnel: Sending 50 byte pak
L2X: UDP socket write 50 bytes, 192.168.12.217(1701) to 192.168.12.242(1701)
VPDN PROCESS From tunnel: Received 50 byte pak
Vil VPDN PROCESS From tunnel: Queue 14 byte pak to ppp parse and iqueue
Vil VPDN PROCESS From tunnel: Pak send successful
VPDN PROCESS From tunnel: Received 50 byte pak
Vil VPDN PROCESS From tunnel: Queue 14 byte pak to ppp parse and iqueue
Vil VPDN PROCESS From tunnel: Pak send successful
Vil VPDN PROCESS Into tunnel: Sending 50 byte pak
L2X: UDP socket write 50 bytes, 192.168.12.217(1701) to 192.168.12.242(1701)
%UPDOWN: Line protocol on Interface Virtual-Access1, changed state to up

LNS () debug vpdn

I2x-data

L2X: Punting to L2TP control message queue
L2X: Punting to L2TP control message queue
L2X: Punting to L2TP control message queue
L2X: Punting to L2TP control message queue
L2X: Punting to L2TP control message queue
L2X: Punting to L2TP control message queue
%UPDOWN: Interface Virtual-Access1, changed state to up
%UPDOWN: Line protocol on Interface Virtual-Access1, changed state to up

L2TP debug vpdn I2x-error

Tnl 14 L2TP: Tunnel auth failed for BLIZZARD
Tnl 14 L2TP: Expected
9E 8D 7A 8E 78 EA 41 9F A1 74 01 21 DE 4F F3 F0
Tnl 14 L2TP: Got
84 E5 62 69 AE 46 A5 98 4E FE E2 38 EE F2 B7 E2

LNS () debug

vpdn I2x-events

L2TP: I SCCRQ from C3640 tnl 26656
New tunnel created for remote C3640, address 192.168.12.242
Tnl 0 L2TP: Got a challenge in SCCRQ, C3640
Tnl 20 L2TP: O SCCRP to C3640 tnlid 26656
Tnl 20 L2TP: Control channel retransmit delay set to 1 seconds
Tnl 20 L2TP: Tunnel state change from idle to wait-ctl-conn
Tnl 20 L2TP: I SCCCN from C3640 tnl 26656
Tnl 20 L2TP: Got a Challenge Response in SCCCN, C3640
Tnl 20 L2TP: Tunnel Authentication success
Tnl 20 L2TP: Tunnel state change from wait-ctl-conn to established
Tnl 20 L2TP: SM State established
Tnl 20 L2TP: I ICRQ from C3640 tnl 26656
Tnl/Sn 20/1 L2TP: Accepted ICRQ, new session created
Tnl/Sn 20/1 L2TP: O ICRP to C3640 26656/1279
Tnl/Sn 20/1 L2TP: Session state change from idle to wait-connect
Tnl 20 L2TP: Control channel retransmit delay set to 1 seconds
Tnl/Sn 20/1 L2TP: I ICCN from C3640 tnl 26656, cl 1279
Tnl/Sn 20/1 L2TP: Session state change from wait-connect to wait-for-service-selection-iccn


```
00 08 00 00 00 06 11 30 80 0A 00 00 00 07 52 36
32 31 00 0E 00 00 00 08 ...
Tnl 22 L2TP: O ZLB ctrl ack, flg TLS, ver 2, len 12, tnl 18889,
ns 1, nr 1
C8 02 00 0C 49 C9 00 00 00 01 00 01
Tnl 22 L2TP: Parse AVP 0, len 8, flag 0x8000 (M)
Tnl 22 L2TP: Parse SCCCN
Tnl 22 L2TP: I SCCCN from C3640 tnl 18889
Tnl 22 L2TP: Parse AVP 13, len 22, flag 0x8000 (M)
Tnl 22 L2TP: Chlng Resp
5C D5 A4 37 36 A6 7D 0F FE EF 22 48 B8 DF F5 12
Tnl 22 L2TP: No missing AVPs in SCCCN
Tnl 22 L2TP: I SCCCN, flg TLS, ver 2, len 42, tnl 22, ns 1, nr
1 contiguous pak, size 42
C8 02 00 2A 00 16 00 00 00 01 00 01 80 08 00 00
00 00 00 03 80 16 00 00 00 0D 5C D5 A4 37 36 A6
7D 0F FE EF 22 48 B8 DF F5 12
Tnl 22 L2TP: O ZLB ctrl ack, flg TLS, ver 2, len 12, tnl 18889,
ns 1, nr 2
C8 02 00 0C 49 C9 00 00 00 01 00 02
Tnl 22 L2TP: Parse AVP 0, len 8, flag 0x8000 (M)
Tnl 22 L2TP: Parse ICRQ
Tnl 22 L2TP: I ICRQ from C3640 tnl 18889
Tnl 22 L2TP: Parse AVP 15, len 10, flag 0x8000 (M)
Tnl 22 L2TP: Serial Number -1714567290
Tnl 22 L2TP: Parse AVP 14, len 8, flag 0x8000 (M)
Tnl 22 L2TP: Assigned Call ID 1280
Tnl 22 L2TP: Parse AVP 18, len 10, flag 0x8000 (M)
Tnl 22 L2TP: Bearer Type 0
Tnl 22 L2TP: No missing AVPs in ICRQ
Tnl 22 L2TP: I ICRQ, flg TLS, ver 2, len 48, tnl 22, ns 2, nr
1 contiguous pak, size 48
C8 02 00 30 00 16 00 00 00 02 00 01 80 08 00 00
00 00 00 0A 80 0A 00 00 00 0F 99 CD C7 86 80 08
00 00 00 0E 05 00 80 0A 00 00 00 12 00 00 00 00
Tnl/Sn 22/1 L2TP: O ICRP to C3640 18889/1280
Tnl/Sn 22/1 L2TP: O ICRP, flg TLS, ver 2, len 28, tnl 18889,
lsid 1, rsid 1280, ns 1, nr 3
C8 02 00 1C 49 C9 05 00 00 01 00 03 80 08 00 00
00 00 00 0B 80 08 00 00 00 0E 00 01
Tnl 22 L2TP: O ZLB ctrl ack, flg TLS, ver 2, len 12, tnl 18889,
ns 2, nr 3
C8 02 00 0C 49 C9 00 00 00 02 00 03
Tnl/Sn 22/1 L2TP: I ICCN from C3640 tnl 18889, cl 1280
```

```
Tnl/Sn 22/1 L2TP: Parse AVP 0, len 8, flag 0x8000 (M)
Tnl/Sn 22/1 L2TP: Parse ICCN
Vil Tnl/Sn 22/1 L2TP: Parse AVP 24, len 10, flag 0x8000 (M)
Vil Tnl/Sn 22/1 L2TP: Connect Speed 0
Vil Tnl/Sn 22/1 L2TP: Parse AVP 19, len 10, flag 0x8000 (M)
Vil Tnl/Sn 22/1 L2TP: Framing Type 1
Tnl/Sn 22/1 L2TP: No missing AVPs in ICCN
Tnl/Sn 22/1 L2TP: I ICCN, flg TLS, ver 2, len 48, tnl 22, lsid
1, rsid 1280, ns 3, nr 2 contiguous pak, size 48
C8 02 00 30 00 16 00 01 00 03 00 02 80 08 00 00
00 00 00 0C 80 0A 00 00 00 18 00 00 00 00 80 0A
00 00 00 13 00 00 00 01 00 08 00 00 00 1D 00 04
Tnl 22 L2TP: O ZLB ctrl ack, flg TLS, ver 2, len 12, tnl 18889,
ns 2, nr 4
C8 02 00 0C 49 C9 00 00 00 02 00 04
%UPDOWN: Interface Virtual-Access1, changed state to up
%UPDOWN: Line protocol on Interface Virtual-Access1, changed
state to up
```

44 VPDN-Group

44.1 VPDN-Group

44.1.1 accept dialin

no

accept-dialin

no accept-dialin

VPDN-Group

```

flash          3
flash-override 4
immediate      2
internet       6
network        7
priority       1
routine        0
    
```

IP routine

VPDN-Group

7

```

Ruijie(config-vpdn)# ip precedence 7
Ruijie(config-vpdn)#
    
```

44.1.3 ip tos

IP TOS(Type of Service) no

```

ip tos { tos-value | max-reliability | max-throughput | min-delay |
min- monetary-cost | normal | reflect }
    
```

no ip tos

```

tos-value    TOS                      0~15
max-reliability    TOS                  2
max-throughput    TOS                  4
min-delay        TOS                  8
min-monetary-cost    TOS                  1
normal        TOS                      0
    
```

reflect IP TOS IP TOS

IP TOS

VPDN-Group

TOS

TOS **min-delay**

```
Ruijie(config-vpdn)# ip tos min-delay
```

```
Ruijie(config-vpdn)#
```

44.1.4 local name

no

local name *local-hostname-string*

no local name

local-hostname-string

VPDN-Group

"LNS"

```
Ruijie(config-vpdn)# local name LNS
```

```
Ruijie(config-vpdn)#
```

44.1.5 protocol

no

protocol {any | l2tp | pptp}

no protocol

any

l2tp L2TP

pptp PPTP

VPDN-Group

L2TP

VPDN-Group

VPDN-Group VPDN ()
VPDN-Group ()

VPDN-Group 202.101.92.73
Ruijie(config-vpdn)# **source-ip** 202.101.92.73
Ruijie(config-vpdn)#

44.1.7 terminate-from

no
terminate-from hostname *remote-hostname-string*
no terminate-from

remote-hostname-string

VPDN-Group

VPDN-Group VPDN-Group

"LAC"
Ruijie(config-vpdn)# **terminate-from hostname** LAC
Ruijie(config-vpdn)#

44.1.8 virtual-template

VPDN-Group

no**virtual-template** *number***no virtual-template***number*

VPDN-Group

VPDN-Group

VPDN-Group

VPDN-Group

VPDN- Group

VPDN-Group

1 VPDN-Group

Ruijie(config-vpdn-acc-in)# **virtual-template** 1

Ruijie(config-vpdn-acc-in)#

44.1.9 vpdn-group

VPDN-Group

VPDN-Group

VPDN-Group

no

VPDN-Group

vpdn-group *vpdn-group-name***no vpdn-group** *vpdn-group-name**vpdn-group-name* *vpdn-group**vpdn-group*

LNS

HGW
VPDN-Group

VPDN-Group
VPDN-Group

"1" vpdn-group

Ruijie(config)# **vpdn-group 1**

Ruijie(config-**vpdn**)#

45 PPTP

45.1 PPTP

45.1.1 Pptp flow-control receive-window

pptp ack
no

Pptp flow-control receive-window *packets*

No pptp flow-control receive-window

packets pptp ack
1---64

PNS 64 PAC 16

vpdn-group

PPTP protocol pptp
protocol any

PPTP RFC2637 no

```

echo-packet-interval ptp echo request
0---1000

```

```

60

```

```

vpdn-group

```

```

PPTP protocol pptp
protocol any
echo-packet-interval 0 echo
echo-packet-interval 0 PPTP echo-packet-interval
echo request echo reply
1
echo request echo reply
5

```

```

pptp echo request 30

```

```

Ruijie(config-vpdn)# accept-dialin
Ruijie(config-vpdn-acc-in)# protocol pptp
Ruijie(config-vpdn-acc-in)# exit
Ruijie(config-vpdn)# pptp tunnel echo 30
Ruijie(config-vpdn)#

```

46 L2TP

46.1 L2TP

46.1.1 authentication (L2TP)

no

authentication

no authentication

L2TP-Class

L2TP-Class

Ruijie(config-l2tp-class)# **authentication**

Ruijie(config-l2tp-class)#

Ruijie(config-l2tp-class)# password <i>password-string</i>	

46.1.2 encapsulation (L2TP)

encapsulation l2tpv2

l2tpv2 RFC 2661 L2TP

Pseudowire-Class

pseudowire-class

l2tpv2

Ruijie(config-pw-class)# **encapsulation l2tpv2**

Ruijie(config-pw-class)#

46.1.3 hello

L2TP Keepalive Hello

no

hello interval

no hello

interval Hello

 Hello 60

L2TP-Class

 Hello

 L2TP

 Hello

 Hello

 L2TP

 Hello 120

Ruijie(config-l2tp-class)# **hello 120**

```
Ruijie(config-l2tp-class)#
```

46.1.4 hostname (L2TP)

L2TP

5 ,Ö™ %o ß ÈĬ4³ S*üCÃ+ <,X á/Ä 0

```
Ruijie(config-pw-class)# ip dfbit set
Ruijie(config-pw-class)#
```

46.1.6 ip local interface

```
( ) no
ip local interface interface-name
no ip local interface interface-name

interface-name

( )

Pseudowire-Class

( ) ( )
L2TP

( ) Serial 0
Ruijie(config-pw-class)# ip local interface serial 0
Ruijie(config-pw-class)#
```

46.1.7 ip ttl

```
IP TTL no
ip ttl ttl-value
no ip ttl
```

ttl-value TTL 1~255

IP TTL 255

Pseudowire-Class

IP TTL IP

TTL

L2TP

IP TTL 253

```
Ruijie(config-pw-class)# ip ttl 253
Ruijie(config-pw-class)#
```

46.1.8 I2tp ip udp checksum

UDP Checksum **no**

I2tp ip udp checksum

no I2tp ip udp checksum

UDP Checksum ()

VPDN-Group

UDP UDP Checksum Checksum

Checksum

L2TP

UDP Checksum

```
Ruijie(config-vpdn)# I2tp ip udp checksum
Ruijie(config-vpdn)#
```

46.1.9 I2tp tunnel authentication

no

I2tp tunnel authentication

no I2tp tunnel authentication

VPDN-Group

L2TP

Ruijie(config-*vpdn*)# **l2tp tunnel authentication**

Ruijie(config-*vpdn*)#

46.1.10 I2tp tunnel hello

Keepalive Hello no

I2tp tunnel hello *interval*

no I2tp tunnel hello

interval Hello

Hello 60

VPDN-Group

Hello Hello
L2TP

Hello 30

```
Ruijie(config-vpdn)# l2tp tunnel hello 30
```

```
Ruijie(config-vpdn)#
```

46.1.11 l2tp tunnel password

no

l2tp tunnel password *password-string*

no l2tp tunnel password

password-string

VPDN-Group

4

VPDN-Group

L2TP

12

```
Ruijie(config-vpdn)# l2tp tunnel receive-window 12
Ruijie(config-vpdn)#
```

46.1.13 l2tp tunnel retransmit

L2TP

no

l2tp tunnel retransmit {retries *number* | timeout {min | max} *seconds*}

no l2tp tunnel retransmit {retries | timeout {min | max}}

*number**seconds*

5

1

8

VPDN-Group

L2TP

10

```
Ruijie(config-vpdn)# l2tp tunnel retransmit retries 10
Ruijie(config-vpdn)#
```

46.1.14 I2tp tunnel timeout

L2TP / no

I2tp tunnel timeout {no-session | setup} *seconds*

no I2tp tunnel timeout {no-session | setup}

no-session

setup ()

seconds

()

300

600

VPDN-Group

/

@ # \$ % & ' () * + , - . / : ;

L2TP-Class

L2TP-Class

L2TP

"l2x" L2TP-Class

```
Ruijie(config)# l2tp-class l2x  
Ruijie(config-l2tp-class)#
```

46.1.16 password (L2TP)

no**password** *password-string***no password***password-string*

L2TP-Class

L2TP

"share"

```
Ruijie(config-l2tp-class)# password share  
Ruijie(config-l2tp-class)#
```

46.1.17 protocol (L2TP)

L2TP

no

protocol l2tpv2 [*l2tp-class-name*]

no protocol

l2tpv2 L2TP

l2tp-class-name L2TP-Class

L2TPv2 L2TP

Pseudowire-Class

L2TP

l2tpv2 L2TP-Class l2x

Ruijie(config-pw-class)# **protocol l2tpv2 l2x**

Ruijie(config-pw-class)#

46.1.18 pseudowire

pseudowire **no**

pseudowire *peer-ip-address* *vcid* {**encapsulation** l2tpv2 [**pw-class** *pw-class-name*] | **pw-class** *pw-class-name*}

no pseudowire

hostname **pseudowire**

pseudowire hostname *peer-hostname* *vcid* {**encapsulation** l2tpv2 [**pw-class** *pw-class-name*] | **pw-class** *pw-class-name*}

no pseudowire

peer-ip-address L2TP Server(LNS)

peer-hostname L2TP Server LNS DNS

hostname

vcid **pseudowire**

l2tpv2 l2tpv2(RFC 2661)

pw-class-name

virtual-ppp

L2TP

virtual-ppp

LNS

"pw"

```
Ruijie(config)# interface virtual-ppp 1
```

```
Ruijie(config-if)# .6lcdowire 192.168.12.213 33 pw-class pw
```

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

```
ip address negotiate  
ip route 0.0.0.0 0.0.0.0 192.168.52.1
```

46.1.19 pseudowire-class

```
                                pseudowire-class  
pseudowire- class                pseudowire-class      no  
                                pseudowire-class  
pseudowire-class pseudowire-class-name  
no pseudowire-class pseudowire-class-name  
  
pseudowire-class-name    pseudowire-class
```

L2TP-Class

L2TP

12

```
Ruijie(config-l2tp-class)# receive-window 12
Ruijie(config-l2tp-class)#
```

46.1.21 retransmit

no

```
retransmit {initial {retries initial-retries | timeout {max | min} initial-timeout} |
retries retries | timeout {max | min} timeout}
```

```
no retransmit { initial {retries | timeout {max | min} } | retries | timeout {max |
min} }
```

initial-retries SCCRQ

initial-timeout SCCRQ

retries

timeout

SCCRQ

2

5

1

8

L2TP-Class

L2TP

SCCRQ

3

```
Ruijie(config-l2tp-class)# retransmit initial retries 3  
Ruijie(config-l2tp-class)#
```

46.1.22 timeout setup

no

timeout setup *seconds*

no timeout setup

seconds

120

L2TP-Class

L2TP

240

```
Ruijie(config-l2tp-class)# timeout setup 240  
Ruijie(config-l2tp-class)#
```

AAA

aaa new-model	AAA
dot1x authentication	802.1X
username	

-	-

47.1.2 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	TACACS+ RADIUS

AAA Enable **aaa authentication enable** AAA Enable Enable

RADIUS

```
Ruijie(config)# aaa authentication enable default group radius local
```

aaa new-model	AAA
enable	
username	

-	-
---	---

47.1.3 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	

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

-	-

47.1.4 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	
group	RADIUS
	TACACS+

└──

└──

└──

AAA PPP AAA PPP
aaa authentication ppp PPP

└──

 rds_ppp AAA PPP
RADIUS RADIUS

Ruijie(config)# **aaa authentication ppp rds_ppp group radius local**

└──

aaa new-model	AAA
ppp authentication	PPP


```
portal
```

```
1
```

```
Ruijie(config)# uu`cW i gYf U`ck dl V`WUWti bh
```

-	-

```
NPE EG
```

10.3(4t76)	

47.1.7 login authentication

```
authentication Login no login
```

```
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

-	-
---	---

47.2

47.2.1 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

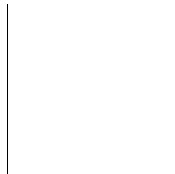
14

14



TACACS+ 15

Ruijie(config)# **aaa authorization commands 15 default group tacacs+**



aaa new-model	AAA
authorization commands	



-	-

47.2.2 aaa authorization config-commands

AAA

aaa authorization config-commands

no

AAA

aaa authorization config-commands

no aaa authorization config-commands



-	-



no

AAA

aaa new-model	AAA
aaa authorization commands	AAA
authorization commands	
-	-

47.2.4 aaa authorization exec

AAA NAS CLI Exec AAA Exec
aaa authorization exec no

aaa authorization exec {default | list-name} method1 [method2...]
no aaa authorization exec {default | list-name}

default	Exec
list-name	Exec
method	local none group 4
local	
none	
group	TACACS+ RADIUS

AAA Exec

RGOS NAS CLI Exec CLI 0~15
 Login Exec Exec
 CLI Exec Exec

RADIUS Exec

Ruijie(config)# **aaa authorization exec default group radius**

aaa new-model	AAA
authorization exec	
username	

-	-
---	---

47.2.5 aaa authorization network

AAA

PPP SLIP

aaa authorization network

no

AAA

aaa authorization network {default | list-name} method1 [method2...]**no aaa authorization network {default | list-name}**

default	Network
---------	---------

RADIUS TACACS+

RADIUS

Ruijie(config)# **aaa authorization network default group radius**

aaa new-model	AAA
aaa accounting	AAA
aaa authentication	AAA
username	



cmd

15

TACACS+

none

VTY 0-4

```
Ruijie(config)# aaa authorization commands 15 cmd group tacacs+ none
```

```
Ruijie(config)# line vty 0 4
```

```
Ruijie(config-line)# authorization commands 15 cmd
```

```
exec-1  Exec          RADIUS
none    VTY 0 - 4
Ruijie(config)# aaa authorization exec exec-1
```

|

|

|

RGOS

none

|

TACACS+

15

Ruijie(config)# **aaa accounting commands 15 default start-stop group tacacs+**

|

aaa new-model	AAA
aaa authentication	AAA
accounting commands	

|

default

aaa accounting update

no

aaa accounting update**no aaa accounting update**

-	-

|

|

|

AAA

AAA

|

Ruijie(config)# **aaa new-model**

Ruijie(config)#

aaa new-model	AAA
aaa accounting network	

|

|

-	-

47.3.5 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

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
aaa accounting commands	AAA

-	-
---	---

47.3.7 accounting exec

Exec accounting
exec no Exec
accounting exec {default | list-name}
no accounting exec

default	Exec
list-name	Exec

Exec

Exec

Exec

Exec

exec-1 Exec
none

RADIUS
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

-	-
---	---

350512.47.40 0 16.02 62334 405.9r7.7263 Tc -160 Td[<115DET66.84.135.3108 Tr

```
Ruijie(config)# aaa domain ruijie.com  
Ruijie(config-aaa-domain)#
```



	show aaa domain	
	-	-

47.4.3 access-limit

	IEEE802.1x	no
	access-limit <i>num</i>	
	no access-limit	
	<i>num</i>	IEEE802.1x

47.4.4 accounting network

Network no

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	

-	-

47.4.5 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	

-	-

47.4.6 authorization network

Network

no

authorization network {default | list-name}**no authorization network**

default	
list-name	

default

```
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# authorization network default
```

aaa new-model	AAA
aaa domain enable	AAA
show aaa domain	

-	-
---	---

47.4.7 state

no

state {block | active}

no state

block	
active	

```
Ruijie(config)# aaa domain ruijie.com
```

Ruijie(config-aaa-domain)# **state block**

aaa new-model	AAA
aaa domain enable	

aaa new-model	AAA
aaa domain enable	

┌

┌

-	-

47.5 AAA

47.5.1 aaa group server

AAA no

aaa group server {radius | tacacs+} name

no aaa group server {radius | tacacs+} name

┌

name	tacacs+ RADIUS 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

┌



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

```
Ruijie(config)# aaa group server radius ss
Ruijie(config-gs-radius)# server 192.168.4.12
acct-port 5 authen-port 6
Ruijie(config-gs-radius)# end
Ruijie# show aaa group
Group Name: ss
Group Type: radius
Referred: 2
Server List:
IP Address: 192.168.4.12
Authentication Port: 6
Accounting Port: 5
Referred: 1
```

aaa group server	aaa
show aaa group	aaa

47.6.1 aaa local authentication attempts

login

aaa local authentication attempts *max-attempts*



┌

┌ login

┌
Ruijie# **configure terminal**
Ruijie(config)# **aaa local authentication lockout-time 5**

┌

Show running-config	
Show aaa lockout	login

┌

┌

-	-

47.6.3 aaa new-model

```

      RGOS  AAA
AAA      no  AAA
aaa new-model
no aaa new-model

```

┌

-	-

┌ AAA

┌

┌

```

      AAA      AAA      AAA
AAA      AAA      AAA
aaa new-model

```

┌

```

      AAA
Ruijie(config)# aaa new-model

```

	aaa authentication	
	aaa authorization	
	aaa accounting	
	-	-

47.6.4 clear aaa local user lockout

clear aaa local user lockout {all | user-name <word>}

47.6.5 debug aaa

	AAA	no
	debug aaa event	
	no debug aaa event	
	-	-

└───┘

└───┘

└───┘

└───┘

	-	-

└───┘

	-	-

47.6.6 show aaa method-list

	AAA
	show aaa method-list
	-

└───┘

└───┘

```
AAA
```

```
AAA
```

```
Ruijie# show aaa method-list
```

```
Authentication method-list
```

```
aaa authentication login default group radius
```

```
aaa authentication ppp default group radius
```

```
aaa authentication dot1x default group radius
```

```
aaa authentication dot1x san-f local group angel group rain none
```

```
aaa authentication enable default group radius
```

```
Accounting method-list
```

```
aaa accounting network default start-stop group radius
```

```
Authorization method-list
```

```
aaa authorizing network default group radius
```

aaa authentication	
aaa authorization	
aaa accounting	

-	-

47.6.7 show aaa user lockout

```
show aaa user lockout {all | user-name <word>}
```

<word>	ID

|

|

Ruijie# **show aaa user lockout all**

|

show running-config	
show aaa lockout	login

|

|

-	-

48 RADIUS

48.1 RADIUS

48.1.1 ip radius source-interface

```
radius                                     ip radius source-interface
no                                         RADIUS
ip radius source-interface
```

48.1.2 radius-server host

```
} [60.8Tf 10.0006 Tc 2045 0 Ts 10.891 ]
```

radius-server timeout	RADIUS
------------------------------	--------

48.1.3 radius-server key

RADIUS

radius-server key no

radius-server key *text-string*

no radius-server key

text-string

RADIUS

RADIUS

RADIUS

RADIUS

aaa

Ruijie(config)# **radius-server key** aaa

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server timeout	RADIUS

48.1.4 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

48.1.5 radius-server timeout

RADIUS **radius-server timeout** *seconds* [Tc 10.203 -17710 Td no]
radius-server timeou

10

```
Ruijie(config)# radius-server timeout 10
```

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server key	RADIUS

48.1.6 radius-server deadtime

deadtime	t	RADIUS	t
radius-server deadtime	RGOS	no	

radius-server deadtime *minutes*

no radius-server deadtime

minutes

1-1000

5

10

```
Ruijie(config)# radius-server deadtime 10
```

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server key	RADIUS
radius-server timeout	RADIUS

48.1.7 radius attribute

11	file-name-0	11
12	file-name-1	12
13	file-name-2	13
14	file-name-3	14
15	file-name-4	15
16	max up-rate	16
17	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilege	22
23	login privilege	42

id		type
-----------	--	-------------

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 privilege	22
23	login privilege	42
24	limit to user number	50

max up-rate 211

Ruijie(config)# radius attribute 16 vendor-type 211

radius set qos cos	radius qos cos

48.1.8 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

48.1.9 radius vendor-specific extend

id

radius vendor-specific extend
no radius vendor-specific extend

id

id

Ruijie(config)# **radius vendor-specific extend**


```
server ip : 192.168.4.12
acct port: 23
authen port: 77
server state: ready
server ip : 192.168.4.13
acct port: 45
authen port: 74
server state: ready
```

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server key	RADIUS
radius-server timeout	RADIUS

48.2.3 show radius parameter

RADIUS

show radius parameter

radius

```
Ruijie# show radius parameter
Server Timeout: 5 Seconds
Server Deadtime: 5 Minutes
Server Retries: 3
Server Key: *****
```

radius-server host	RADIUS
radius-server retransmit	

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

49 VRRP

49.1

VRRP

- ' **vrrp authentication**
- ' **vrrp delay**
- ' **vrrp description**
- ' **vrrp ip**
- ' **vrrp preempt**
- ' **vrrp priority**
- ' **vrrp timers advertise**
- ' **vrrp timers learn**
- ' **vrrp track**

49.1.1 vrrp authentication

VRRP **no**

vrrp group authentication *string*

no vrrp *group authentication*

group VRRP

string VRRP (8)

VRRP

VRRP

VRRP

/

VRRP

VRRP 1

```
vrrp 1 authentication x30dn78k
```

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

```
no shutdown  
show vrrp 1
```



Ruijie# show vrrp [brief group]	VRRP

49.1.5 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                VRRP
                VRRP                IP                VRRP
                VRRP                VRRP

                VRRP                (200)
                15

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

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

Ruijie(config-if)# vrrp group priority level	VRRP
---	------

49.1.6 vrrp priority

```

VRRP          no
vrrp group priority level
no vrrp group priority

group         VRRP
level        VRRP

100           VRRP          VRRP          VRRP

VRRP
400 i 4{
```

no vrrp group timers advertise

```

group VRRP
interval VRRP ( )
1
VRRP VRRP
VRRP VRRP
VRRP VRRP
VRRP 4
vrrp 1 timers advertise 4

```

Ruijie(config-if)# vrrp group ip <i>ipaddress [secondary]</i>	VRRP IP
Ruijie(config-if)# vrrp group timers learn	

49.1.8 vrrp timers learn

```

no
vrrp group timers learn
no vrrp group timers learn
group VRRP
VRRP VRRP

```


interval-value

3

timeout-value

1

retry-value:

retry-value

1

priority

VRRP

10

VRRP

VRRP

IP

(Routed Port SVI Loopback Tunnel)
ping

IP

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

vrrp 1 track GigabitEthernet 1/1 30

VRRP BFD 192.168.1.3

Ruijie#**configure terminal**

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

Ruijie(config)#**interface** GigabitEthernet 0/1Ruijie(config-if)#**no switchport**Ruijie(config-if)#**ip address** 192.168.1.1 255.255.255.0Ruijie(config-if)#**bfd interval** 50 **min_rx** 50 **multiplier** 3Ruijie(config)#**interface** GigabitEthernet 0/2Ruijie(config-if)#**no switchport**Ruijie(config-if)#**ip address** 192.168.201.17 255.255.255.0Ruijie(config-if)#**vrrp** 1 **priority** 120Ruijie(config-if)#**vrrp** 1 **ip** 192.168.201.1Ruijie(config-if)#**vrrp** 1 **track bfd** GigabitEthernet
0/1 192.168.1.3 30

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

Ruijie(config-if)# vrrp group ip <i>ipaddress [secondary]</i>	VRRP IP
Ruijie(config-if)# vrrp group priority level	VRRP

49.2 VRRP

VRRP

- ' **debug vrrp**
- ' **debug vrrp errors**
- ' **debug vrrp events**
- ' **debug vrrp packets**
- ' **debug vrrp state**

49.2.1 debug vrrp

VRRP

VRRP

VRRP

no

debug vrrp

no debug vrrp

VRRP

```
Ruijie# debug vrrp
```

```
Ruijie#
```

```
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
```

```
VRRP: Grp 1 Event - Advert higher or equal priority
```

```
%VRRP-6-STATECHANGE: GigabitEthernet 0/0 Grp 1 state Master ->
```

```
Backup
```

```
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid
virtual address 192.168.1.1
%VRRP-6-STATECHANGE: GigabitEthernet 0/0 Grp 1 state Backup ->
Master
Ruijie#
```

Ruijie# debug vrrp errors	VRRP
Ruijie# debug vrrp events	VRRP
Ruijie# debug vrrp state	VRRP

49.2.2 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
```

49.2.3 debug vrrp events

VRRP

no


```
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
```

49.2.5 debug vrrp state

```
VRRP no
```

```
debug vrrp state  
no debug vrrp state
```

```
VRRP
```

```
VRRP
```

```
Ruijie# debug vrrp state  
Ruijie#  
%VRRP-6-STATECHANGE: GigabitEthernet 0/0 Grp 2 state Master ->  
Backup  
%VRRP-6-STATECHANGE: GigabitEthernet 0/0 Grp 2 state Backup ->  
Master  
  
Ruijie# config terminal  
Enter configuration commands, one per line. End with CNTL/Z.  
  
Ruijie(config)# interface GigabitEthernet 0/0  
Ruijie(config-if)# no shutdown  
Ruijie(config-if)# end  
Ruijie#  
%VRRP-6-STATECHANGE: GigabitEthernet 0/0 Grp 2 state Master ->  
Init  
  
Ruijie#
```

49.3

49.3.1 show vrrp

VRRP

show vrrp [**brief** | *group*]

brief VRRP

group VRRP

VRRP

VRRP

```
Ruijie# show vrrp
GigabitEthernet 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
```

```

Interface          Grp Pri Time  Own Pre State  Master addr
Group addr
GigabitEthernet 0/0    1   100   -   -   P   Backup
192.168.201.213 192.168.201.1
GigabitEthernet 0/0    2   120   -   -   P   Master
192.168.201.217 192.168.201.2
Ruijie#

```

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

49.3.2 show vrrp interface

VRRP

show vrrp interface *type number* [**brief**]

type

number

brief

E1/0 VRRP

```

Ruijie# show vrrp interface GigabitEthernet 0/0
GigabitEthernet 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

```

GigabitEthernet 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



MaAw .5 399.412P1/t

50 CPU-LOG

50.1

50.1.1 show cpu

```

CPU
show cpu

CPU
5 CPU
5 CPU
CPU

CPU
5 5 1 1

show cpu

Ruijie# show cpu
=====
```

CPU-LOG

7	0%	0%	0%	kevents
8	0%	0%	0%	snmpd
9	0%	0%	0%	snmp_trapd
10	0%	0%	0%	mtdblock
11	0%	0%	0%	gc_task
12	0%	0%	0%	Context
13	0%	0%	0%	kswapd
14	0%	0%	0%	bdflush
15	0%	0%	0%	kupdate
16	0%	3%	1%	ll_mt
17	0%	0%	0%	ll main process
18	0%	0%	0%	bridge_relay
19	0%	0%	0%	dlx_task
20	0%	0%	0%	secu_policy_task
21	0%	0%	0%	dhcpc_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

CPU-LOG

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_rcv_task
61	0%	0%	0%	ntp_task
62	0%	0%	0%	sla_daemon
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_rcv
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

CPU-LOG

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_rcv_thread
103	0%	0%	0%	ip_scan_guard_task
104	0%	0%	0%	ssp_ipmc_hit_task

high_num CPU

100% 90%

CPU CPU CPU CPU CPU , CPU
CPU CPU , CPU

80% CPU 70% CPU

```
ruijie(config)# cpu-log log-limit 70 80
```

CPU 80%

Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: CPU utilization in one minute : 95% Using most cpu's task is ktimer : 94%

CPU 70%

Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: CPU utilization in one minute :68% Using most cpu's task is ktimer : 60%

Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: The CPU using rate has down!

50.1.3 show environment

CPU

show environment

show environment

CPU

show environment

```
Ruijie# show environment
---environment information---
CPU Temperature is 30
fan works in high speed mode.
```

```
FAN 1 is OK!
FAN 2 is OK!
FAN 3 is OK!
FAN 4 is OK!
```

```
POWER 1 is present!
POWER 1 power on successfully!
POWER 2 is not present!
```

CPU 30

51

51.1

51.1.1 threshold set

```

MIB CPU CPU 3 CPU
CPU CPU syslog
syslog
no

```

threshold set {cpu | memory | temperature} [M1 | M2 | slot *n* | member *n*]
warning_value critical_value

no threshold set {cpu | memory | temperature}

cpu memory temperature	CPU	memory	cpu
M1 M2 slot <i>n</i>	<i>n</i>		
member <i>n</i>	<i>n</i>		
warning_value	1 ~ 100	temperature	memory 0 ~ 2147483647
critical_value	memory 0 ~ 2147483647	1 ~ 100	temperature cpu
no			

```

CPU 90 100.
90 100.
90 100.

```

```

1          M1
Ruijie(config)# threshold set memory M1 70 90

```

```

2          CPU
Ruijie(config)# threshold set cpu member 2 70 90

```

show threshold	

10.3(4b3)	

51.2

51.2.1 show threshold

show threshold {cpu | memory | temperature} [M1 | M2 | slot *n* | member *n*]

cpu memory temperature	cpu CPU
	memory
	temperature
M1 M2 slot <i>n</i>	<i>n</i>
member <i>n</i>	<i>n</i>

1 M1 CPU
Ruijie# **show threshold cpu M1**

2
Ruijie# **show threshold memory**

threshold set	

10.3(4b3)	

52

52.1

52.1.1 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.



lower	memory-lack exit-policy
low	OVERFLOW
high	OVERFLOW

3.

52.1.2 memory-lack exit-policy

worsen
 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	

-

10.3(4b3)	

52.1.3 show memory protocols

```
show memory protocols
```


>

```

/          BGP,OSPF,RIP,LDP,PIM,ISIS

```

```

1          show memory protocols
Ruijie(config)# show memory protocols

```

=====

protocol	memory(byte)
BGP	102000000
OSPF	24000000
RIP	10000000
PIM	50000000

LDP	20000000
Total	206000000

show memory	

-

2	
---	--

53 USB

53.1

	CLI	USB
'	USB	show usb
'	USB	usb remove

53.1.1 show usb

```
USB
show usb

USB

show usb :
```

```
Ruijie# sh usb
Device: USB Mass Storage Device :
ID: 778
Lun 0:
ID: 0
Disk Partitions:
1: /dev/uba/disc0/part1 --> /mnt/uba
size : 131072000B(125MB)
```

USB Mass Storage Device

ID	ID	remove		
Lun			ID	id
Disk Partitions				
	/dev/uba/disc0/part1		/mnt/uba	cd /mnt/uba

53.1.2 usb remove

```
usb remove Device_ID
```

```
Device_ID USB
```

```
usb
```

```
USB
```

```
usb
```

```
Ruijie# usb remove 778
```

```
OK, now you can pull out the device 778.
```

```
0:1:1:38 Ruijie: USB-5-USB_DISK_REMOVED: USB Device <USB Mass  
Storage Device> Removed!
```

```
usb
```

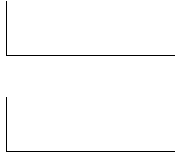
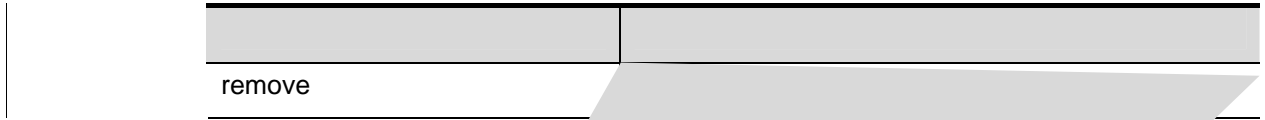
54 SD

54.1

54.1.1 sd remove

SD

sd remove



sd

!

54.2.1 show sd

SD
show sd

sd	sd

|

|

sd

|

55

55.1

55.1.1 logging on

no

logging on

no logging on

RGOS

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

55.1.2 terminal monitor

```

VTY
no
terminal monitor
terminal no monitor
VTY
VTY
VTY
VTY
RGOS
,
0 1
no
VTY
Ruijie# terminal monitor
Ruijie#

```

55.1.3 logging buffered

no

logging buffered [*buffer-size*

6 6 10000

Ruijie(config)# **logging buffered 10000 6**

logging on	
show logging	
clear logging	

55.1.4 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 RGOS 5
Syslog Server Syslog Server

202.101.11.1 syslog server

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

IPV6 AAAA:BBBB::FFFF

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



show logging

6

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

logging on	
show logging	

55.1.7 logging monitor

VTY telnet SSH
no VTY

logging monitor level

no logging monitor

level

1

Debugging (7)

VTY
VTY

terminal monitor
logging monitor

Logging monitor

VTY

VTY

6

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

logging on	
show logging	

55.1.8 logging trap

```
no Syslog Server Syslog Server
logging trap level
no logging trap

level
1

Informational(6)

Server Syslog Server logging Syslog
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

no

logging source {ip *ip-address* | **ipv6** *ipv6-address*}

no logging source {ip | **ipv6**}

<i>ip-address</i>	IPV4	IPV4
<i>ipv6-address</i>	IPV6	IPV6

Syslog Server

Loopback 0 Syslog

```
Ruijie(config)# logging source ip 192.168.1.1
```

ip2 ... "FD 2&— Lypb1r2-@.G#dp2Fp2Gf%ÖG#jGGFowrR@SR@2...\$s@SR00%Ö4BR040000



Local7(23)

2 Syslog

2

Numerical Code	Facility
0	kernel messages
1	user-level messages
2	mail system
3	system daemons
4	security/authorization messages

22	local use 6 (local6)
23	local use 7 (local7)

RGOS (local7) 23

Syslog kernel

Ruijie(config)# **logging facility kern**

logging console	

55.1.12 logging count

no

logging count

no logging count

no logging count

Ruijie(config)# **logging count**

show logging count	
---------------------------	--

show logging	(
---------------------	---

show running-config	
---------------------	--

55.1.15 service sequence-numbers

no

service sequence-numbers
no service sequence-numbers

1

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

logging on	
service timestamps	

55.1.16 service timestamps

no

default

service timestamps *message-type* [*uptime* | *datetime* [*msec* | *year*]]

no service timestamps *message-type*

default service timestamps *message-type*

<i>message-type</i>		log	debug	log		0
6	debug			7		
<i>uptime</i>		* *	* *		07:00:10:41	
<i>datetime</i>					Jul 27 16:53:07	
<i>msec</i>					: : .	Jul 27
16:53:07.299						
<i>year</i>					: :	2007 Jul 27
16:53:07						

RTC

more flash:filename

Filename

FLASH "/f2/" "/f3/"

FLASH

```
Ruijie# more flash://f2/log.txt
look up file in the extended flash://f2/log.txt
00004 2004-11-17 4:1:32 Ruijie: %5:Reload requested by
Administrator. Reload Reason :Reload command
```

logging file flash:	FLASH

55.1.19 clear logging

clear logging

```
Ruijie# clear logging
```

logging on	
show logging	
logging buffered	

55.2

55.2.1 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

```

Syslog logging	enabled, disabled
Console logging	
Monitor logging	VTY
Buffer logging	
Timestamp debug messages	Debug
Timestamp log messages	Log
Sequence log messages	
Trap logging	Syslog Server
Log Buffer	

logging on	
clear logging	

55.2.2 show logging count

show logging count

logging count

show logging count

show logging

show logging count

```
Ruijie# show logging count
Module Name  Message Name Sev Occur      Last Time
=====SYS
CONFIG_I      5  1      Jul 6 10:29:57
-----SYS
TOTAL                1
```

logging count	
show logging	
clear logging	

56 RLOG

56.1

RLOG

- > [rlog export-rate](#)
- > [rlog filter](#)
- > [rlog mtu](#)
- > [rlog port](#)
- > [rlog server](#)
- > [rlog test](#)
- > [rlog type](#)
- > [nat-log enable](#)
- > [ip nat-log on](#)

56.1.1 rlog export-rate

RLOG

	-	-
	50	
	-	-

56.1.2 rlog filter

rlog filter *number*

no rlog filter

number		ACL

ACL

1 ACL 2000
 Ruijie(config)# **rlog filter** 2000

-		-

NPE50 NPE

10.3(4t76)		

56.1.3 rlog mtu

rlog mtu *number*

no rlog mtu

<i>number</i>	

1500

%

Ruijie(config)# **rlog mtu 1200**

10000

%

Ruijie(config)# **rlog mtu 13000**

-	-

-	-

56.1.5 rlog server

VRF

rlog server *server-ip* [**vrf** *vrf-name* | **oob**]

no rlog server

<i>server-ip</i>	
<i>vrf-name</i>	VRF

udp

|

| %
Ruijie(config)# **rlog server 10.1.1.1**

-	!

|

|

10.3(4T76)	oob

56.1.6 rlog test

rlog test

-	-

|

|

|

| 1
Ruijie(config)# **rlog test**
rlog: 2048 buf remain

-	-

|

|

|

-	-

56.1.7 rlog type

rlog type *n* **priority** *prio*

no rlog type

|

n	
prio	

|

|

|

|

1
Ruijie(config)# **rlog type 24 priority 5**

|

-	-

|

show rlog-type 0-7

|

|

10.3(4T76)	

56.1.8 nat-log enable

/nat

nat-log enable

no nat-log enable

-	-

no nat-log enable

└──

└── /NAT

1 /nat

Ruijie(config)# **nat-log enable**

-	-

└──

└──

10.3(4T76)	

56.1.9 ip nat-log on

nat

ip nat-log on

no ip nat-log on

-	-

```
ip nat-log on
```

```
nat
```

```
1 nat
Ruijie(config)#ip nat-log on
2 nat
Ruijie(config)#no ip nat-log on
```

-	-

10.3(4T76)	

56.2

- > [show rlog](#)
- > [show rlog-type](#)
- > [show rlog-status](#)
- > [show nat-log](#)

56.2.1 show rlog

Show rlog

-	-

|
|

|
|

|
|

|
|
|
|
|
|
|

```
1
Ruijie# show rlog
rlog server is enable
  mtu 1200 port 13000 server 10.1.1.1
rlog export-rate 0 rlog queue remain 2048
send log count : 5244 error count : 0 errorno : 0
recv buf: 5244 poll buf err: 0 push buf: 5244
```

|
|
|

-	-

|
|

|
|

|
|
|

-	-

56.2.2 show rlog-type

Show rlog-type

|
|
|

-	-

|
|

|
|

1

Ruijie# show rlog-status

```

type                status  prio
XLOG_TYPE_FLOW      off
XLOG_TYPE_CPU_MEM   off
XLOG_TYPE_DISC      off
XLOG_TYPE_DEV_LOG   off
XLOG_TYPE_URL_AUDIT off
XLOG_TYPE_IP_APP    on     2
XLOG_TYPE_IP         off
XLOG_TYPE_CHANNEL   off
XLOG_TYPE_INTERFACE off
XLOG_TYPE_IP_OFFLINE off
    
```

-	-

10.3(4T76)	

56.2.4 show nat-log

NAT/

Show nat-log [*username user_name*] [*ip-protocol ip-protocol*] [*source-ip source-ip*] [*dst-ip dst-ip*] [*src-port src-port*] [*dst-port dst-port*] **time-interval** *begin-year begin-mon begin-day begin-hour to end-year end-mon end-day end-hour*

user_name	
ip-protocol	


```

17 192.168.195.55 192.168.195.255
192.168.195.55
138 138 0 705 0 2010-10-6 3:1
6 192.168.7.92 (0.0.0.0) 113.105.146.82 (0.0.0.0)
192.168.7.92
35942(0) 80 (0) 0 192 0 2010-10-6
3:2
17 192.168.122.54 (0.0.0.0) 192.168.122.255(0.0.0.0)
192.168.122.54
137 (0) 137 (0) 0 1386 0 2010-10-6
3:2
17 192.168.7.92 (0.0.0.0) 202.104.241.3 (0.0.0.0)
192.168.7.92
13528(0) 8000 (0) 0 97 0 2010-10-6
3:2
17 192.168.195.202 192.168.195.255
192.168.195.202
138 138 0 774 0 2010-10-6 3:3
17 192.168.7.97 (0.0.0.0) 192.168.7.255 (0.0.0.0)
192.168.7.97
138 (0) 138 (0) 0 732 0 2010-10-6
3:3
17 192.168.2.164 (0.0.0.0) 192.168.2.255 (0.0.0.0)
192.168.2.164
138 (0) 138 (0) 0 714 0 2010-10-6
3:3

```

-	-

NAT/

10.3(4T76)	

SNMP

57

57.182a—

SNMP

57.1.5 snmp-server enable traps

```

SNMP      NMS      Trap
          snmp-server enable traps      no      SNMP
NMS      Trap
snmp-server enable traps [snmp ]
no snmp-server enable traps

snmp      SNMP

```

snmp-server

SNMP

```

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

```

snmp-server host	SNMP

57.1.6 snmp-server host

```

SNMP      NMS
host      no      SNMP      snmp-server

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

```

host-addr SNMP
ipv6-addr SNMP ipv6
vrfname vrf
version snmp V1 V2C V3
auth | noauth | priv V3
community-string V3
port-num snmp
notification-type snmp

SNMP

snmp-server enable traps

NMS

SNMP

vrf

[

vrf

]

SNMP


```
SNMP
system-shutdown no SNMP snmp-server
snmp-server system-shutdown
no snmp-server system-shutdown
```

```
SNMP
```

```
NMS SNMP RGOS reload/reboot
```

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

57.1.11 snmp-server trap-source

```
SNMP snmp-server trap-source
no
snmp-server trap-source interface
no snmp-server trap-source
```

```
interface SNMP
```

```
SNMP IP
```

```
SNMP IP
```

0 IP SNMP

Ruijie(config)# **snmp-server trap-source GigabitEthernet 0**

snmp-server enable traps	
snmp-server enable host	NMS

57.1.12 snmp-server trap-timeout

snmp-server

trap-timeout no

snmp-server trap-timeout *seconds*

no snmp-server trap-timeout

seconds

30

60

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

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

57.1.13 snmp-server user

SNMP

snmp-server user

no

SNMP

snmp-server group

no

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

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

v1 | **v2c** | **v3** SNMP

auth

```

oid-tree          MIB          MIB
include          MIB
exclude          MIB

                default          MIB

```

```

MIB-2          oid  1.3.6.1

```

```

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

```

show snmp view	SNMP

57.1.16 snmp-server if-index persist

```

                snmp-server if-index persist
no
snmp-server if-index persist
no snmp-server if-index persist

```

```

Ruijie(config)# snmp-server if-index persist

```

show run	

57.2

57.2.1 show snmp

SNMP

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

show snmp	SNMP	
show snmp mib		snmp mib
show snmp user	snmp	
show snmp view	snmp	
show snmp group	snmp	

SNMP

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

0 General errors
0 Response PDUs
0 Trap PDUs
SNMP global trap: disabled
SNMP logging: disabled
SNMP agent: enabled

snmp-server <i>chassis-id</i>	SNMP

58 RMON

58.1

RMON

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

]**falling-threshold** *value* [**event-number**

rmon collection history *index* [**owner** *owner-string*] [**buckets**

community] [*description-string*]

bucket-number] [**interval** *seconds*]

rmon alarm *number* *variable* *interval* {**absolute** | **delta**} [**rising-threshold**

value [*event-number*]

show rmon events

show rmon alarms

58.- rmon collection stats

no

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

no rmon collection stats *index*

1

Ruijie(config)# **interface fast-Ethernet** 0/1

Ruijie(config-if)# **rmon collection stats 1 zhansan**

rmon collection history <i>index [owner owner-name]</i> buckets <i>bucket-number</i> interval <i>seconds</i>	

58.1.2 rmon collection history

no

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

no rmon collection history *index*

RGOS owner
buckets interval

1

Ruijie(config)# **interface fast-Ethernet 0/1**
Ruijie(config-if)# **rmon collection history 1 zhansan buckets**
10 interval 10

rmon collection stats <i>index</i> [owner owner-name]	

58.1.3 rmon alarm

MIB

no

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

trap

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

rmon alarm <i>number variable interval</i> { absolute delta } rising-threshold <i>value</i> [<i>event-number</i>] falling-threshold <i>value</i> [<i>event-number</i>] [owner <i>ownername</i>]	

58.2

58.2.1 show rmon statistics

show rmon statistics

```
Ruijie# show rmon statistics
Statistics : 1
Data source : Gil/1
```

```

DropEvents : 0
Octets : 1884085
Pkts : 3096
BroadcastPkts : 161
MulticastPkts : 97
CRCAlignErrors : 0
UndersizePkts : 0
OversizePkts : 1200
Fragments : 0
Jabbers : 0
Collisions : 0
Pkts64Octets : 128
Pkts65to127Octets : 336
Pkts128to255Octets : 229
Pkts256to511Octets : 3
Pkts512to1023Octets : 0
Pkts1024to1518Octets : 1200
Owner : zhangsan
    
```

rmon collection stats <i>index</i> [owner <i>owner-string</i>]	

58.2.2 show rmon history

show rmon history

```

Ruijie# show rmon history
Entry : 1
Data source : Gil/1
Buckets requested : 65535
Buckets granted : 10
Interval : 1
Owner : zhangsan
Sample : 198
Interval start : 0d:0h:15m:0s
DropEvents : 0
Octets : 67988
Pkts : 726
BroadcastPkts : 502
MulticastPkts : 189
CRCAlignErrors : 0
UndersizePkts : 0
OversizePkts : 0
Fragments : 0
Jabbers : 0
Collisions : 0
Utilization : 0
    
```

rmon collection history <i>index</i> [owner <i>ownername</i>] [buckets <i>bucket-number</i>] [interval <i>seconds</i>]	

58.2.3 show rmon alarm

show rmon alarm

```

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

rmon alarm <i>number variable</i> <i>interval {absolute delta }</i> rising-threshold <i>value</i> <i>[event-number] falling-threshold</i> <i>value [event-number] [owner</i> <i>ownername]</i>	

58.2.4 show rmon event

show rmon event

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

--	--

rmon event number

IPv6

59 IPv6

59.1

59.1.1 ping ipv6

IPV6

ping ipv6 [*ipv6-address*]

ipv6-address

```

                                IPV6          ,          no
ipv6 address ipv6-prefix/prefix-length [eui-64]
no ipv6 address [ipv6-prefix/prefix-length] [eui-64]

ipv6-prefix  IPV6          ,          RFC2373
                                16

prefix-length  IPV6          IPV6

eui-64          IPV6          64          ID

                                eui-64          64          IPV6
Up
                                no ipv6 address

                                no ipv6 address ipv6-prefix/prefix-length eui-64          ipv6
address ipv6-prefix/prefix-length eui-64

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

```

59.1.303E84A/2 0]nable

```

                                IPv6          no          IPv6

```

```

2                               IPv6                               ipv6 enable
                               IPv6
no ipv6 enable                 IPv6                               IPv6
                               IPV6

```

```
Ruijie(config-if)# ipv6 enable
```

show ipv6 interface	

59.1.4 ipv6 hop-limit

```
ipv6 hop-limit value
```

```
no ipv6 hop-limit
```

```
64
```

```
Ruijie(config)# ipv6 hop-limit 100
```

59.1.5 ipv6 neighbor

```
no
```

```
ipv6 neighbor ipv6-address interface-id hardware-address
```

```
no ipv6 neighbor ipv6-address interface-id
```

```
ipv6-address
```

```
IPV6
```

```
RFC2373
```

```

interface-id                               Routed Port,L3 AP   SVI
hardware-address                           XXXX.XXXX.XXXX     48
MAC      'X'
  
```

```

                                ARP
                                NDP
                                IPv6
                                Reachble
clear ipv6 neighbors           (      NDP)
show ipv6 neighbors
  
```

```

Ruijie(conifg)# ipv6 neighbor 2001::1 vlan 1
00d0.f811.1111
  
```

show ipv6 interface	
clear ipv6 neighbors	

59.1.6 ipv6 source-route

```

                                IPv6
                                IPv6
                                no
                                IPv6
ipv6 source-route
no ipv6 source-route
  
```

IPv6

0
0 IPv6 IPv6

```
Ruijie(config)# no ipv6 source-route
```

59.1.7 ipv6 route

IPV6 no

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

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

ipv6-prefix IPV6 RFC2373 *prefix-length*
IPV6 'l'

ipv6-address RFC2373

interface-id

```
Ruijie(config)# ipv6 route 2001::/64 vlan 1 2005::1
```

show ipv6 route	IPV6

59.1.8 ipv6 ns-linklocal-src

ns-linklocal-src

ipv6 ns-linklocal-src

no ipv6 ns-linklocal-src

no ipv6

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

59.1.9 ipv6 nd ns-interval

(NS)

no

ipv6 nd ns-interval *milliseconds*

no ipv6 nd ns-interval

milliseconds

1000-429467295

(RA) 0()
 1000ms(1)

(RA)

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

show ipv6 interface	

59.1.10 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

RFC4861

0.5 1.5

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



```

                                IPV6 address
                                :
    valid-lifetime: 2592000 (30 )
    preferred-lifetime: 604800 (7 ),
                                on-link
    
```

(RA) ipv6 address

ipv6 nd prefix default

```

    ipv6 nd prefix default
    prefix default
    
```

ipv6 nd

at valid-date preferred-date

2

0

SVI 1

```

Ruijie(config)#interface vlan 1
Ruijie(config-if)# ipv6 nd prefix 2001::/64 infinite 2592000
    
```

SVI 1 ()

```

Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 nd default no-autoconfig
    
```



IPv6

(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

no

(RA)

IPv6 MTU

0 MTU

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 nd ra-mtu 1400
```

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

59.1.16 ipv6 nd managed-config-flag

“managed address configuration”

no

ipv6 nd managed-config-flag**no ipv6 managed-config-flag**

```
Ruijie(config)# int vlan 1
Ruijie(config)# ipv6 nd managed-config-flag
```

show ipv6 interface	ra-info
ipv6 nd other-config-flag	

59.1.17 ipv6 nd dad attempts

```

                                IPV6
(NS)                                no
ipv6 nd dad attempts value
no ipv6 nd dad attempts

value          (NS)                                0                                ipv6
                                : 0-600

1

```

```

                                IPV6
                                "tentative"( )
                                EUI-64
                                (
                                )
                                down/up
                                down up
                                IPV6

```

```
Ruijie(conifgf)# interface vlan 1
Ruijie(conifg-if)# ipv6 nd dad attempts 3
```



```
ICMPv6
100    ICMPv6    (100pps)
```

```
Ruijie(config)# interface vlan 1
Ruijie(config-if)# ipv6 redirects
```

show ipv6 interface	

59.1.20 clear ipv6 neighbors

```
clear ipv6 neighbors
```

RDP

```
Ruijie# clear ipv6 neighbors
```

ipv6 neighbor	
show ipv6 neighbors	

59.1.21 tunnel mode ipv6ip

```
IPv6          IPV6          ,          no
IPv6
tunnel mode ipv6ip [6to4 | isatap]
no tunnel mode
```

```
6to4          6to4
isatap       ISATAP
```

```
IPv6
```

```
tunnel mode ipv6ip
```

```
6to4
```

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6ip 6to4
Ruijie(config-if)# tunnel source vlan 1
```



ipv4-address , IPv4

(6to4 isatap)

IPv6 :

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6ip
Ruijie(config-if)# tunnel source vlan 1
Ruijie(config-if)# tunnel destination 192.168.5.1
```

tunnel source	
tunnel mode	
tunnel ttl	TTL

59.1.23 tunnel source

, no

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

no tunnel source

ipv4-address IPv4 IPv4

interface-type interface-number

IPv4

IPv4

(*6to4 isatap*) IPv4 IPv4 ,

IPv6

```
Ruijie(config)# interface tunnel 1
Ruijie(config-if)# tunnel mode ipv6ip
Ruijie(config-if)# tunnel source vlan 1
Ruijie(config-if)# tunnel destination 192.168.5.1
```

tunnel mode	
tunnel destination	
tunnel ttl	TTL

59.1.24 tunnel ttl

IPv6 IPv4 TTL , no

128

tunnel ttl *value*

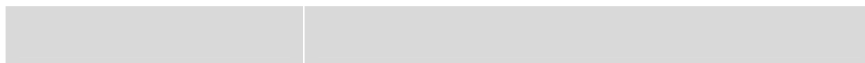
no tunnel ttl

value TTL

128

IPv6 IPv4 TTL

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



```

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	

59.2.2 show ipv6 neighbors

IPV6

show ipv6 neighbors [*verbose*] [*interface-id*] [*ipv6-address*]

verbose

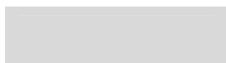
interface-id

ipv6-address

SVI 1

```
Ruijie# show ipv6 neighbors vlan 1
IPv6 Address Linklayer Addr Interface
fa::1        00d0.0000.0002 vlan 1
fe80::200:ff:fe00:2 00d0.0000.0002 vlan 1
```

```
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
```



	MAX_UNICAST_SOLICIT(3) ?— /R— /H—
Age	'expired' NUD
Asked	(NS)

```
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
```

```

ND advertised retransmit time is 0 milliseconds
ND advertised CurHopLimit is 64
Prefixes: (total: 1)
fec0:1:1:1::/64(Def,Auto,vltime: 2592000, pltime: 604800,
flags: LA)

```

ra-info

RA timer is stopped (on)	
waits	
initcount	RA
RA(out/in/inconsistent)	out: in: inconsistent:
RS(input)	
Link-layer address	
Physical MTU	MTU
!M M	!M managed-config-flag M:
!O O	!O other-config-flag O:

ra-info (Prefix)

total	
fec0:1:1:1::/64	

Def	
Auto CFG	Auto IPV6 , CFG
!Adv	
vlttime	()
pltime	()
L !L	L !L on-link
A !A	A auto-config , !A