



RG-S5750S

RGOS 10.4(2b11)

©2000-2011



RGOS® 10.4(2b11)

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,
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1.

Courier New

5

2.

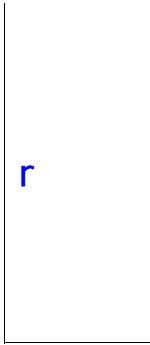
Arial

```
[]      []  
{x|y|...}  
[x|y|...]  
//
```

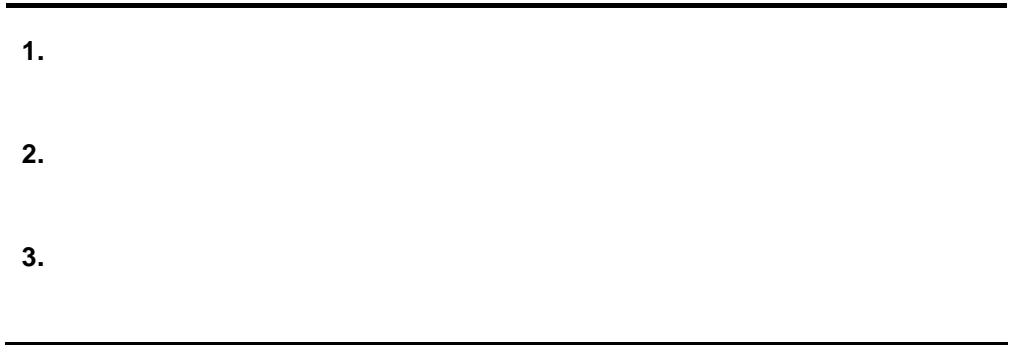
3.

r

/



r



1.

2.

3.

1 CLI

1.1

1.1.1 alias

alias no

alias mode command-alias original-command

no alias mode [original-command]

mode	
command-alias	
original-command	

EXEC

EXEC h p s u un help ping show
undebug undebug
no alias exec

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

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

```
Ruijie# s?
show start-chat start-terminal-service
"ip address" "ia"
```

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

show aliases

```
0.0.0.0 0.0.0.0 192.168.1.1" "def-route" "ip route
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	

privilege

ommand-string

mand-string

CLI

0-15

CLI

privilege ?

0.0.2 294.68 -139.2 -19.1Hp

CLI

secret level 1 0 test
page exec level 1 reload
reload

1 all
page exec all level 1 reload
reload

load at a specific time/date
cancel pending reload scheme
load after a time interval


	CLI

EXEC

```
Ruijie# show aliases exec
```

```
exec mode alias:
```

```
h             help  
p             ping  
s             show  
u             undebug  
un            undebug
```



2

2.1

2.1.1 disable

disable

disable [*privilege-level*]

	<i>privilege-level</i>	

|

|

|

/ **disable**

|

Ruijie# **disable 10**

	enable	

|

	-	-

2.1.2 enable

enable

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2.1.3 enable password

enable password

no

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

<i>Password</i>	EXEC	
<i>Level</i>		
0 7	0	7
<i>encrypted-password</i>		

> 1 26

>

r 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

<i>Secret</i>	EXEC
<i>Level</i>	
0 5	0 5
<i>encrypted-password</i>	

no enable service

enable service ssh-sesrver, SSH Server
Ruijie(Config # **enable service ssh-sesrver**

show service	

-	-

2.1.6 execute

execute

execute {[flash:] *filename*}

flash:	
<i>filename</i>	

TFTP
CLI

Flash

PC

Telnet
configure terminal

line_rcms_script.text

```

line tty 1 16
transport input all
no exec
end

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

```

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-	-

2.1.7 ip http authentication

Http Server	Web	Web
ip http authentication		
ip http authentication { enable local }		
	enable password	enable secret
enable		
-	enablg BT /TT0	1
	Tf 0	Tc



Web

no ip http authentication

Web

	-	-

2.1.9 ip telnet source-interface

IP Telnet ip
telnet source-interface
ip telnet source-interface *interface-name*

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L

L

lockable

no lockable

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└

┌
└

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>
```

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	lock	

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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

┌

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2.1.13 login authentication

AAA

no

AAA

login authentication {default | *list-name*}

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

default	
<i>list-name</i>	

┌

|

line

|

AAA

|

VTY

radius

Ruijie(config)# **aaa new-model**

Ruijie(config)# **aaa authentication login default radius**

Ruijie(config)# **line vty 0**

Ruijie(config-line)# **login authentication default**

|

aaa new-model	AAA
aaa authentication login	

|

|

-	-

2.1.14 login local

AAA

login local

no

login local

no login local

|

-	-

|

|

line

|

AAA

username

|

VTY

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

username	

-	-

 !

2.1.15 privilege mode

2.1.16 password

line

line

password

no

line

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

no password

<i>password</i>	line
0 7	0 7

	-	-

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

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-	-

2.2.2 banner motd

banner motd

no banner motd

banner motd *c message c*

<i>c</i>	
<i>message</i>	

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

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L

-	-
-	-

2.2.3 boot system

no

boot system url

no boot system

L

<i>url</i>	

L

flash:/rgos.bin

L

L

url

	1	flash	URL	flash
r	2	Boot ROM		

```
Ruijie#show boot system
system boot file: flash:/rgos.bin
```

```
Ruijie#dir
Directory of flash:/
 11015744 2008-01-01 08:00:46  rgos.bin
 12019754 2008-02-01 08:00:46  s5750_10_4.bin
```

L

```

399 2006-01-01 08:01:37 config.text
33,030,144 bytes total. (10,590,592 bytes free)

```

```

Ruijie(config)# boot system s5750_10_4.bin
Ruijie(config)# show boot system
system boot file: flash:/ s5750_10_4.bin
                    s5750_10_4.bin

```

show boot system	

-

-	-

2.2.4 clock set

clock set

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

<i>hh:mm:ss</i>	24 : :
<i>day</i>	1-31
<i>month</i>	1-12
<i>year</i>	1993-2035

clock set

2003 3 17 10 20 30

Ruijie# **clock set** 10:20:30 3 17 2003

Ruijie# **show clock**

clock: 2003-3-17 10:20:32

show clock	

-	-

2.2.5 clock update-calendar

clock update-calendar

-	-

calendar

Ruijie# **clock update-calendar**

-	-

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	-	-

2.2.6 exec-timeout

	LINE	exec-timeout
	LINE	no exec-timeout
	exec-timeout <i>minutes</i> [<i>seconds</i>]	
	no exec-timeout	
	<i>minutes</i>	
	<i>seconds</i>	
	10 min	
	LINE	
		LINE
	line vty 0	5 30
	Ruijie(config-line)#	exec-timeout 5 30
	-	-
	-	-

2.2.7 hostname

hostname

hostname *name*

<i>name</i>	63

Ruijie

CHAP

BeiJingAgenda

Ruijie(config)# **hostname** *BeiJingAgenda*

BeiJingAgenda(config)#

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-	-
---	---

2.2.8 prompt

prompt

no prompt

prompt *string*

<i>string</i>	32

EXEC

RGOS

Ruijie(config)# **prompt** RGOS

Ruijie(config)# **end**

RGOS

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2.2.9 reload

reload

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

<i>text</i>	1-255
in [<i>hh:</i>] <i>mm</i>	24
at <i>hh:mm</i>	
<i>month</i>	3 Mar
<i>day</i>	1 31
cancel	

10

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

-	-

-	-

2.2.10 session-timeout

```
LINE                               session-timeout
no session-timeout                LINE
session-timeout minutes [output]
no session-timeout
```

<i>minutes</i>	
output	

-	-

2.2.11 speed

		speed speed
	no speed	
	speed speed	
		bps
	<i>Speed</i>	9600 19200 38400 57600
		115200 9600

9600

```

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

```

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-	-

2.2.12 write

```

running-config
write [ memory | network | terminal ]

```

memory	NVRAM copy running-config startup-config
network	TFTP copy running-config tftp
terminal	show135?u35?unning-config

boot config	
copy	
show running-config	

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2.3

2.3.1 show clock

show clock

show clock

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└──

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2.3.3 show reload

show reload

show reload

-	-

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

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L

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3 LINE

3.1 LINE

3.1.1 access-class

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

LINE

	-	-

3.1.2 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
```

	-	-

|

	-	-

3.1.3 line vty

```

          VTY
          VTY
          no
line vty line-number
no line vty line-number

```

	-	-

```

          VTY          5          0-4

```

```


```

```

          VTY

```

```

          1          VTY          20          VTY          0-19
Ruijie(config)# line vty 19
          2          VTY          10          VTY          0-9
Ruijie(config)# line vty 10

```

	-	-

```


```

	-	-

3.1.4 transport input

```

          Line          transport input          Line
          default transport input          LINE
transport input {all | ssh | telnet | none}
default transport input

```

	all	Line
	ssh	Line SSH

LINE

telnet	Line	Telnet
none	Line	

VTY TTY NONE
default transport input

Line

Line VTY VTY **show**
running Line
/ input default transport input no transport
transport input none

```

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

```

show running	
---------------------	--

RGOS10.1

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---	---

4

4.1

4.1.1 ping

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



DNS

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

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

-	-

-	-

4.1.2 traceroute

traceroute

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

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

```

6      61.154.8.17      8 msec  12 msec  16 msec
7      61.154.8.250    12 msec  12 msec  12 msec
8      218.85.157.222  12 msec  12 msec  12 msec
9      218.85.157.130  16 msec  16 msec  16 msec
10     218.85.157.77   16 msec  48 msec  16 msec
11     202.97.40.65    76 msec  24 msec  24 msec
12     202.97.37.65    32 msec  24 msec  24 msec
13     202.97.38.162   52 msec  52 msec  224 msec
14     202.96.12.38    84 msec  52 msec  52 msec
15     202.106.192.226  88 msec  52 msec  52 msec
16     202.106.192.174  52 msec  52 msec  88 msec
17     210.74.176.158  100 msec  52 msec  84 msec
18     202.108.37.42   48 msec  48 msec  52 msec

```

```

IP      202.108.37.42

```

```

1 17      4

```

```

Ruijie# traceroute www.ietf.org

```

```

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

```

```

< press Ctrl+C to break >

```

```

Tracing the route to 64.170.98.32

```

```

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

```

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-

	-	-

	-	-
--	---	---

5.1.2 clear counters

clear counters [*interface-id*]

	<i>interface-id</i>	

|

|

	show interfaces	clear
counters		

Ruijie# **clear counters gigabitethernet 1/1**

	show interfaces	

|

	-	-

5.1.3 clear interface

clear interface *interface-id*

	<i>interface-id</i>	

|

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

┌

Ruijie# **clear interface gigabitethernet 1/1**

┌

shutdown	

┌

┌

-	-

5.1.4 description

no

description *string*

no description

┌

<i>string</i>	

┌

┌

┌

show interfaces

┌

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

┌

show interfaces	

	-	-

5.1.5 duplex

no

duplex {auto | full | half}

no duplex

	auto	
	full	
	half	

|

|

|

show interfaces

|

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

--	--	--

no

flowcontrol {auto | off | on}

no flowcontrol

auto	
off	
on	

└───┘

└───┘

└───┘

show interfaces

└───┘

1/1

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

Ruijie(config-if)# **flowcontrol on**

show interfaces	

└───┘

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5.1.7 interface aggregateport

no

interface aggregateport *port-number*

<i>port-number</i>	Aggregate port

└───┘

start cable-diagnoses,please wait...

cable-daignoses end!this is result:

4 pairs

pair state length(meters)

A Ok 1

pair state length(meters)

B Ok 2

pair state length(meters)

C Short 1

pair state length(meters)

D Short 1

pairs	
state	OK Short Open A B OK C D Short A B C D OK
length	state OK Short Open length

-	-

86/96
M8600_48GT_4SFP_POE_II M9600_48GT_4SFP_POE_II
M8600_48GT_4SFP_E M9600_48GT_4SFP_E
M8600_48GT_4SFP_E_II M9600_48GT_4SFP_E_II

5.1.12 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
```

└───┘

-	-

5.1.13 mtu

mtu

Mtu num

<i>num</i>	64 9216(65536)

└───┘

1500

└───┘

mtu

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

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

show interfaces

Ruijie(config-if)# **no shutdown**

--	--

clear interface

show interfaces

Ruijie(config-if)# snmp trap link-status	link trap
Ruijie(config-if)# no snmp trap link-status	link trap

-	-

5.1.16 speed

no

10	10Mbps
100	100Mbps
1000	1000Mbps
10G	10Gbps
auto	

Ap

Ap

Ap

show interfaces
SFP

É



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

no switchport trunk {allowed vlan | native vlan}

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

VLAN all Native VLAN VLAN 1

```

Access vlan is 1,Native vlan is 1
Protected is disabled
Vlan lists is
1,3-4094

```

show interfaces		
switchport access	accessport	statics VLAN

-	-

5.2

5.2.1 show interfaces

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

<i>interface-id</i>	loopback	aggregateport SVI
counters		
description		link
status		
switchport		
trunk	trunking port	Aggregate port
transceiver		
alarm	None	

	diagnosis	

Ruijie# **show interfacesgigabitEthernet**

6 Aggregate Port

6.1

6.1.1 aggregateport load-balance

AP no

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

no aggregateport load-balance

dst-mac	MAC	MAC	AP
src-mac	MAC	MAC	AP
src-dst-ip	IP	IP	IP— IP—
dst-ip	IP	IP	AP
src-ip	IP	IP	AP
src-dst-mac	MAC—	MAC	MAC—

MAC

show aggregateport load-balance

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

show aggregateport load-balance	aggregateport

-	-

6.1.2 port-group

Aggregate Port

no

Aggregate Port

port-group *port-group-number*

no port-group

<i>port-group-number</i>	Aggregate Port Port Aggregate

Aggregate Port

AP VLAN trunk port native
VLAN AP

1/3 AP 3

Ruijie(config)# **interface gigabitethernet 1/3**

Ruijie(config-if)# **port-group 3**

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-	-

6.2

6.2.1 show aggregateport

aggregateport

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<i>aggregate-port-number</i>	Aggregate Port
load-balance	aggregaye port
summary	aggregate port

┌

┌

┌

aggregate port

aggregate port

┌

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

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aggregateport load-balance	AP

┌

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7 VLAN

7.1

7.1.1 name

VLAN **no**

name *vlan-name*

no name

	<i>vlan-name</i>	VLAN

VLAN	VLAN	VLAN ID	VLAN 2	"VLAN0002"
------	------	---------	--------	------------

VLAN		
------	--	--

show vlan	vlan	
------------------	------	--

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

show vlan		VLAN

--	--	--

	-	-

7.1.2 switchport access

no access port VLAN VLAN

switchport access vlan *vlan-id*

no switchport access vlan

access	switch port	access port
trunk	switch port	trunk port
hybrid	switch port	hybrid port

no switchport trunk {allowed vlan | native vlan }

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

VLAN all Native VLAN VLAN 1

Native VLAN

Trunk native VLAN native VLAN
 UNTAG VLAN VLAN ID
 IEEE 802.1Q PVID native VLAN VLAN ID Trunk
 native VLAN UNTAG
VLAN
 Trunk VLAN 1 4094
 Trunk VLAN VLAN Trunk

show interfaces switchport

```

VLAN 2 1/15
Ruijie(config)# interface fastethernet 1/15
Ruijie(config-if)# switchport trunk allowed vlan remove 2
Ruijie(config-if)# end
Ruijie# show interfaces fastethernet1/15 switchport
Interface Switchport Mode Access Native Protected VLAN lists
-----
FigabitEthernet 1/15 enabled TRUNK 1 1 Disabled 1,3-4094
  
```

--	--	--

8 Super-vlan

8.1

8.1.1 subvlan

super vlan subvlan subvlan

subvlan *vlan-id-list*

no subvlan [*vlan-id-list*]

	Vlan-id-list	VLAN	subvlan	ID, vlan

┌

┌

VLAN

┌

no subvlan supevlan subvlan

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

┌

show supervlan	supervlan
-----------------------	-----------

┌

┌

-	-
---	---

8.1.2 subvlan-address-range

subvlan ip

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

no subvlan-address-range

<i>start-ip</i>	SubVLAN IP
<i>end-ip</i>	SubVLAN IP

VLAN

end **Ctrl+C**
exit

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

[Redacted]	
show supervlan	supervlan

[Redacted]

[Redacted]	
-	-

8.1.4 proxy-arp

VLAN ARP

proxy-arp

no proxy-arp

[Redacted]	
-	-

[Redacted]

VLAN

end **Ctrl+C**
exit

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

[Redacted]	
------------	--

	show supervlan	supervlan
--	-----------------------	-----------

Super-vlan

9 Protocol VLAN

9.1

9.1.1 protocol-vlan ipv4 addr mask addr vlan id

IP	VLAN
<i>addr</i>	IP x.x.x.x
<i>id</i>	VLAN ID 1- VLAN

┌

┌

┌

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

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

```
RGOS10.1
S2900 ip vlan
S3760 ip vlan
```

-	-
---	---

9.1.2 protocol vlan ipv4

	IP	VLAN
	-	-

└───┘

└───┘

└───┘

Ruijie(config-if)# **protocol vlan ipv4**

no protocol vlan ipv4		-

RGOS10.1

-		-

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

	profile
<i>num</i>	profile
<i>type</i>	

└───┘

└───┘

└───┘

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

	-	-

9.2

9.2.1 show protocol-vlan

Protocol VLAN

show vlan protocol-vlan

	-	-

└───

└───

└───

└───

Ruijie# **show protocol-vlan**

	-	-

└───

RGOS10.1

	-	-

└───

10 Private VLAN

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

no private-vlan mapping

<i>svlist</i>	secondary VLAN list
no	

|

Primary VLAN

|

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

show vlan private-vlan	-

RGOS10.1

-	-

10.1.3 private-vlan type

VLAN VLAN

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

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

<i>community</i>	community VLAN
<i>isolated</i>	isolated VLAN
<i>primary</i>	primary VLAN
<i>no</i>	VLAN

	show vlan private-vlan	-
	RGOS10.1	
	-	-

10.1.5 switchport private-vlan host-association

private VLAN

primary VLAN

secondary VLAN

switchport private-vlan host-association *p_vid s_vid*

no switchport private-vlan host-association

	<i>p_vid</i>	primary VID
	<i>s_vid</i>	secondary VID
	no	VLAN

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

primary	primary VLAN
community	community VLAN
isolated	isolated VLAN

private VLAN

Ruijie# **show vlan private-vlan**

-	-

RGOS10.1

-	-

10.3 Hybrid

10.3.1 switchport hybrid allowed vlan

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

no switchport hybrid allowed vlan

hybrid

no	hybrid

|

|

|

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

|

-	-

|

RGOS10.1

|

-	-

10.3.2 switchport hybrid native vlan

switchport hybrid native vlan *vid*

no switchport hybrid native vlan

hybrid vlan

|

no	hybrid VLAN

|

|

|

|

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

|

-	-

|

RGOS10.1

--	--	--

11 QinQ

11.1

11.1.1 dot1q outer-vid vid register inner-vid v_list

tunnel

QinQ

	-	-
--	---	---

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

no dot1q relay-vid vid translate inner-vid v-list

<i>v-list</i>		vid
<i>vid</i>	tag	vid
no		

┌

┌

┌

```

tag vid 10-20 vid 100
ruijie(config)# interface gigabitEthernet 0/1
ruijie(config-if)# switchport mode access
ruijie(config-if)# dot1q relay-vid 100 translate inner-vid 10-20
ruijie(config-if)# end

```

show translation-table [interface intf-id]	-

┌

RGOS10.4

-	-

11.1.4 dot1q-Tunnel cos inner-cos-value remark-cos outer-cos-value

/ tag tag

dot1q-Tunnel cos inner-cos-value remark-cos outer-cos-value

no dot1q-Tunnel cos inner-cos-value remark-cos outer-cos-value

no	

QinQ

```

ruijie(config-if)# frame-tag tpid 0x9100
ruijie(config-if)# end
ruijie# show frame-tag tpid
Ports   tpid
-----
Gi0/3   0x9100

```

```

show frame-tag tpid

```

```

RGOS10.1

```

11.1.6 inner-priority-trust enable

```

/          tag          tag

```

```

inner-priority-trust enable

```

```

no inner-priority-trust enable

```

```

no          tag          tag

```

```

tag          tag
ruijie#configure
ruijie(config)# interface gigabitEthernet 0/2
ruijie(config-if)# inner-priority-trust enable
ruijie(config-if)#end

```

	show inner-priority-trust	-
	RGOS10.1	S23/S37
	-	-

11.1.7 mac-address-mapping x source-vlan src-vlan-list

destination-vlan dst-vlan-id

vlan mac vlan

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

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

no		vlan	vlan

tag **dst-vlan**

	-	-

no	uplink

uplink

```

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

show vlan	-

RGOS10.1

-	-

11.1.10 switchport dot1q-tunnel allowed vlan

dot1q-tunnel vlan

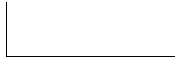
switchport dot1q-tunnel allowed vlan [add] {tagged|untagged} *v_list*

switchport dot1q-tunnel allowed vlan remove *v_list*

no switchport dot1q-tunnel allowed vlan

tagged	tag
untagged	tag
<i>v_list</i>	vlan id
no	

vlan 1 untagged



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

show interface dot1q-tunnel	-

```
RGOS10.3
```

-	-

11.1.12 traffic-redirect access-group acl outer-vlan

access,trunk,hybrid, uplink

vid

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

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

<i>acl</i>	acl
<i>vd</i>	vid
no	vid

```

1.1.1.1          vid    3
ruijie#configure
ruijie(config)#ip access-list standard 2
ruijie(config-acl-std)#permit host 1.1.1.1
ruijie(config-acl-std)#exit
ruijie(config)# interface gigabitEthernet 0/1
ruijie(config-if)# switchport mode trunk
ruijie(config-if)# traffic-redirect access-group 2 outer-vlan 3 in
ruijie(config-if)# end

```

	show traffic-redirect	-

RGOS10.3

	-	-

11.1.13 traffic-redirect access-group acl inner-vlan

access,trunk,hybrid, uplink

vid

traffic-redirect access-group *acl* inner-vlan *vid* out

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

<i>acl</i>		acl
<i>vid</i>		vid
no		vid

┌

┌

┌

```

1.1.1.2          vid      6

ruijie#configure
ruijie(config)#ip access-list standard to_6
ruijie(config-acl-std)#permit host 1.1.1.2
ruijie(config-acl-std)#exit
ruijie(config)# interface gigabitEthernet 0/1
ruijie(config-if)# switchport mode trunk
ruijie(config-if)#traffic-redirect access-group to_6 inner-vlan 6
out
ruijie(config-if)# end

```

	show traffic-redirect	-

┌

RGOS10.3

	-	-

11.1.14 traffic-redirect access-group acl nested-vlan

dot1q-tunnel vid

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

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

	<i>acl</i>	acl
	<i>vid</i>	vid
	no	vid

┌

┌

┌

1.1.1.3 vid

	show traffic-redirect	-

	RGOS10.1	
	-	-

11.1.15 I2protocol-tunnel

dot1q-tunnel

I2protocol-tunnel {stp|gvrp}

no I2protocol-tunnel {stp|gvrp}

	stp	stp
	gvrp	gvrp
	no	

gvrp stp

ruijie#**configure**

	-	-

11.1.16 I2protocol-tunnel *proto-type* enable

I2protocol-tunnel { stp|gvrp } enable

no I2protocol-tunnel { stp|gvrp } enable

stp		stp
gvrp		gvrp
no		

┌

┌

┌

┌

```
ruijie# configure
ruijie(config)# interface fa 0/1
ruijie(config-if)# I2protocol-tunnel gvrp enable
ruijie(config-if)# end
```

show I2protocol-tunnel { gvrp stp }		-

┌

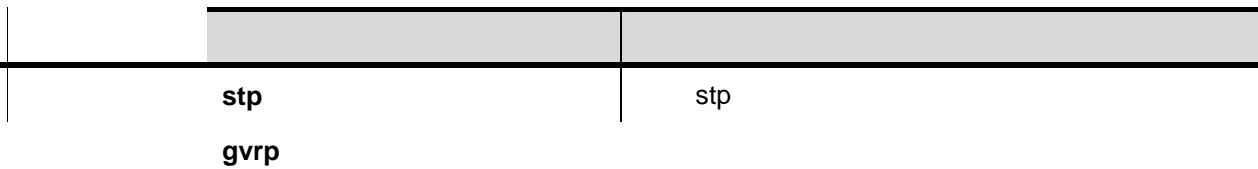
RGOS10.3

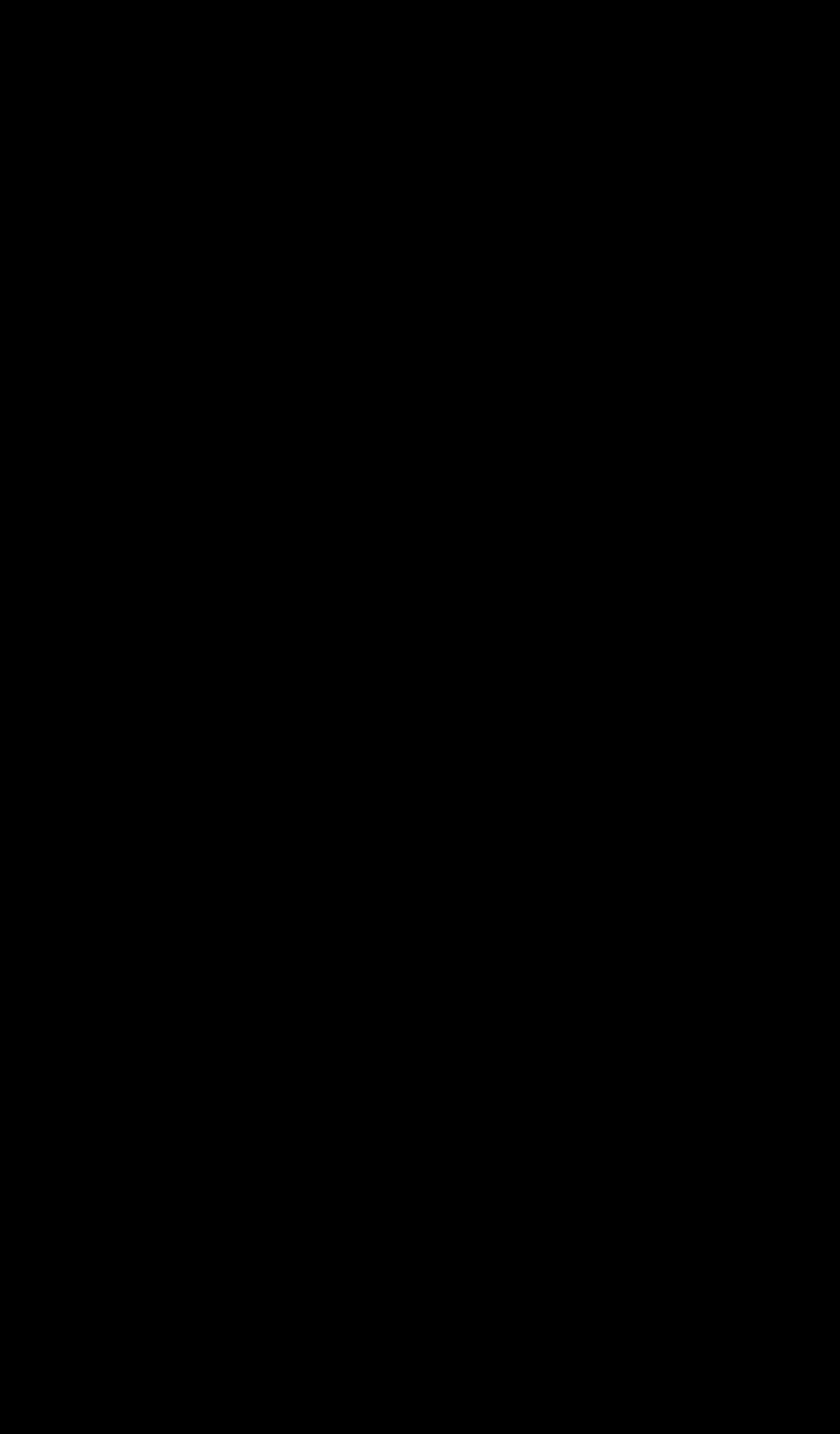
	-	-

11.1.17 I2protocol-tunnel *proto-type* tunnel-dmac *mac-address*

I2protocol-tunnel { stp|gvrp } tunnel-dmac *mac-address*

no I2protocol-tunnel { stp|gvrp } tunnel-dmac *mac-address*






```
-----  
Gi0/1  0x9100
```

-	-

```
RGOS10.1
```

-	-

11.2.3 show inner-priority-trust

show inner-priority-trust

-	-

```
-----  
le
```

```
ruijie# show inner-priority-trust
```

```
Ports inner-priority-trust
```

```
-----  
le
```

-	-

	-	-
--	---	---

11.2.4 show interface dot1q-tunnel

dot1q-tunnel

show interface [intf-id] dot1q-tunnel

	<i>intf-id</i>	

|

|

|

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

	-	-

RGOS10.3

	-	-

11.2.5 show interface intf-name remark

show interface intf-name remark

	-	-

|

|

|

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

-	-

RGOS10.1

-	-

11.2.6 show interface mac-address-mapping x

MAC

show mac-address-mapping x

-	-

|

|

|

```
ruijie# show mac-address-mapping 1
Ports          Destination-VID  Source-VID-list
-----
```


11.2.8 show traffic-redirect

vid

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

<i>intf-id</i>	

└──

└──

└──

```
ruijie# show traffic-redirect
Ports          Type          VID  Match-filter
-----
Gi0/3          Mod-outer     23   11
Gi0/3          Mod-outer     3    4
Gi0/3          Mod-outer     6    5
Gi0/3          Mod-inner     8    inner-to-8
Gi0/6          Mod-inner     9    100
Gi0/7          Nested-vid    13   nest-13
```



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



12 Share VLAN

12.1

12.1.1 share

share vlan

	Status	duplicated share vlan	Status	original	Status
		-		-	

|

|

~

13 MAC

13.1

13.1.1 address-bind

ip mac

address-bind *ip-address mac-address*

no address-bind *ip-address*

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

|

|

IP	MAC	MAC	IP	MAC	IP	IP
----	-----	-----	----	-----	----	----

```

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

--	--

/

address-bind install

no address-bind install



┌

┌

┌

┌

┌

┌

```

IP          MAC          IP          IP
MAC          MAC
    
```

```

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

show address-bind	

-	-

13.1.4 address-bind uplink

õ

“

	show address-bind uplink	

RGOS10.1

	-	-

13.1.5 clear mac-address-table dynamic

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

	dynamic	
	address <i>mac-addr</i>	1
	interface <i>interface-id</i>	

interface <i>interface-id</i>	
vlan <i>vlan-id</i>	VLAN

┌

┌

┌

show mac-address-table static

┌

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

┌

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

┌

┌

-	-

13.1.8 mac-address-table aging-time

no

mac-address-table aging-time *seconds*

no mac-address-table aging-time

┌

<i>seconds</i>	

┌

300

┌

┌

show mac-address-table aging-time

show mac-address-table dynamic

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

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

-	-

13.1.9 mac-address-table filtering

no

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

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

<i>mac-address</i>	
vlan <i>vlan-id</i>	VLAN ID

┌

└

-	-

13.1.10 mac-address-table notification

MAC no

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

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

┌

interval <i>value</i>	MAC Trap 1
history-size <i>value</i>	MAC 50

└

1 50

┌

┌

MAC Trap
snmp-server enable traps mac-notification
MAC Trap

└

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

┌

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

└

┌

--	--

MAC

-	-
---	---

13.1.11 mac-address-table static

no

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

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

<i>mac-addr</i>	MAC
<i>vlan-id</i>	VLAN
<i>interface-id</i>	(AggregatePort)

└───┘

└───┘

└───┘

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

└───┘

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

13.1.12 snmp trap mac-notification

MAC no

snmp trap mac-notification {added | removed}

no snmp trap mac-notification {added | removed}

added	
removed	

|

|

|

show mac-address-table notification *interface*

|

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

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

|

-	

-	

13.1.13 mac-address-learning

/

mac-address-learning

		MAC
	1	
	Ruijie(config-if)# no mac-address-learning	

13.2

13.2.1 show address-bind

show address-bind

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

	address-bind	

	-	-

13.2.2 show address-bind uplink

show address-bind uplink

--	--

13.2.3 show mac-address-table address

MAC

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

MAC

	-	-
--	---	---

13.2.4 show mac-address-table aging-time

show mac-address-table aging-time

	-	-

|

|

|

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

	mac-address-table aging-time	

|

--	--	--

-

-

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

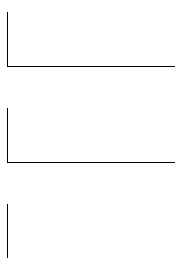
show mac-address-table static	
show mac-address-table filtering	
show mac-address-table dynamic	
show mac-address-table address	
show mac-address-table interface	
show mac-address-table vlan	VLAN

-	-

13.2.6 show mac-address-table dynamic

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

<i>mac-addr</i>	MAC
<i>vlan-id</i>	VLAN
<i>interface-id</i>	(AggregatePort)



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

clear mac-address-table dynamic	



-	-

13.2.7 show mac-address-table filtering

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

<i>mac-addr</i>	MAC
<i>vlan-id</i>	VLAN



```
Ruijie# show mac-address-table filtering
```

Vlan	MAC Address	Type	Interface
1	0000.2222.2222	FILTER	Not available

MAC

```
1 00d0.f800.1002 STATIC gigabitethernet 1/1
1 00d0.f800.1003 STATIC gigabitethernet 1/1
1 00d0.f800.1004 STATIC gigabitethernet 1/1
```

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

-	-

13.2.9 show mac-address-table notification

MAC

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

interface <i>interface-id</i>	MAC
<i>history</i>	MAC

```
GigabitEthernet1/14  Disabled          Disabled
Ruijie# show mac-address-table notification
MAC Notification Feature : Disabled
Interval between Notification Traps : 1 secs
79j-0.00address-table notification
```

```
Ruijie# show mac-address-table static
```

```

Vlan    MAC Address      Type      Interface
-----  -
1       00d0.f800.1001   STATIC    gigabitethernet 1/1
1       00d0.f800.1002   STATIC    gigabitethernet 1/1
1       00d0.f800.1003   STATIC    gigabitethernet 1/1

```

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

-	-

13.2.11 show mac-address-table vlan

VLAN

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

<i>vlan-id</i>	VLAN ID

```
Ruijie# show mac-address-table vlan 1
```

```

Vlan    MAC Address      Type      Interface
-----  -
1       00d0.f800.1001   STATIC    gigabitethernet 1/1
1       00d0.f800.1002   STATIC    gigabitethernet 1/1
1       00d0.f800.1003   STATIC    gigabitethernet 1/1

```


14 DHCP Snooping

14.1 DHCP snooping

14.1.1 ip dhcp snooping

```
DHCP Snooping                                no
DHCP Snooping
```

[no] ip dhcp snooping

-	-

└───

└───

DHCP Snooping snooping	show ip dhcp snooping	DHCP
r	DHCP Snooping Private VLAN	

DHCP snooping

```
Ruijie# configure terminal
```

```
Ruijie(config)# ip dhcp snooping
```

```
Ruijie(config)# end
```

```
Ruijie# show ip dhcp snooping
```

```
Switch DHCP snooping status  ENABLE
```

```
Verification of hwaddr field status  DISABLE
```

```
DHCP snooping database write-delay time: 0 seconds
```

```
DHCP snooping option 82 status: ENABLE
```

```
0.9T2 09.22d( )62 357W* n3>T8 Tcg714.48r9j/T610 18T 0 315357fQ3>T8 Tcg71410
```

	show ip dhcp snooping	DHCP snooping
	-	-

14.1.2 ip dhcp snooping bootp-bind

DHCP Snooping Bootp
no DHCP snooping Bootp

[no] ip dhcp snooping bootp-bind

--	--	--


```

-----

```

show ip dhcp snooping	DHCP snooping

-	-

14.1.4 ip dhcp snooping database write-to-flash

DHCP Snooping

FLASH

ip dhcp snooping database write-to-flash

-	-

DHCP Snooping

FLASH

DHCP

flash

```

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

```

-	-

--	--

	-	-
--	---	---

14.1.5 ip dhcp snooping information option

DHCP option82
no

[no] ip dhcp snooping information option

	-	-

└───┘

└───┘

└───┘

DHCP option82 DHCP option82

```

DHCP                      option82
Ruijie# configure terminal
Ruijie(config)# ip dhcp snooping information option
Ruijie(config)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status    ENABLE
Verification of hwaddr field status    DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
    
```


DHCP

no

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

<i>rate-value</i>	PPS[Packet Per Second]

```

DHCP Snooping    VLAN
                  CPP[CPU Protect Protocol]    CPP    DHCP
                  CPP                          DHCP Snooping
CPP
show ip dhcp snooping
    
```

```

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

show ip dhcp snooping	DHCP snooping

-	-

14.2.2 ip dhcp snooping suppression

suppression no
no suppression

[no] ip dhcp snooping suppression

-	-

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DHCP

┌

```

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

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-	-

14.2.3 ip dhcp snooping trust

DHCP snooping TRUST
no UNTRUST

[no] ip dhcp snooping trust

-	-

UNTRUST

	DHCP	TRUST
DHCP	UNTRUST	DHCP

```

fastEthernet 0/1 TRUST
Ruijie# configure terminal
Ruijie(config)# interface fastEthernet 0/1
Ruijie(config-if)# ip dhcp snooping trust
Ruijie(config-if)# end
Ruijie# show ip dhcp snooping
Switch DHCP snooping status    ENABLE
Verification of hwaddr field status    DISABLE
DHCP snooping database write-delay time: 0 seconds
DHCP snooping option 82 status: ENABLE
DHCP snooping Support Bootp bind status: ENABLE
Interface                            Trusted            Rate limit (pps)
-----
FastEthernet0/1                      YES                unlimited
    
```



14.3 DHCP snooping

14.3.1 show ip dhcp snooping

DHCP Snooping

show ip dhcp snooping

-	-

└───

└───

└───

DHCP Snooping

DHCP Snooping

Ruijie# **show ip dhcp snooping**

Switch DHCP snooping status ENABLE

Verification of hwaddr field status DISABLE

DHCP snooping database write-delay time: 0 seconds

DHCP snooping option 82 status: ENABLE

DHCP snooping Support Bootp bind status: ENABLE

Interface	Trusted	Rate limit (pps)
-----	-----	-----

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

|

|

-	-

14.3.2 show ip dhcp snooping binding

DHCP Snooping

show ip dhcp snooping binding

|

-	-

|

|

|

DHCP Snooping

14.4 DHCP snooping

14.4.1 clear ip dhcp snooping binding

DHCP Snooping

clear ip dhcp snooping binding

-	-

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DHCP snooping

DHCP snooping

Ruijie# **clear ip dhcp snooping binding**

Ruijie# **show ip dhcp snooping binding**

Total number of bindings: 0

MacAddress IpAddress Lease(sec) Type VLAN Interface

show ip dhcp snooping binding	DHCP snooping

┌

-	-

14.4.2 debug ip dhcp snooping

DHCP Snooping

debug ip dhcp snooping {event | packet}



15 IGMP Snooping

15.1

15.1.1 deny

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

15.1.2 permit

profile profile permit profile

permit

permit	profile

profile deny

profile

profile range profile
profile

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

ip igmp profile	profile
range	

-	-

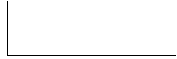
15.1.3 range

profile profile range
no

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



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



	profile	profile	deny
	profile	profile	

```

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

ip igmp profile	profile
deny	profile deny
permit	profile permit



-	-

15.1.4 ip igmp profile

```

IGMP     profile
         profile                    profile
                                     profile-number     igmp profile
  
```

ip igmp profile *profile-number*

no ip igmp profile *profile-number*

<i>profile-number</i>	profile 1-65535



```

IGMP Profiles                               SVGL
IGMP Filtering                               profile
profile
    
```

```

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

range	profile	
permit	profile	permit
deny	profile	deny

```

    
```

-	-

15.1.5 ip igmp snooping ivgl

```

igmp snooping ivgl ip igmp snooping ivgl
no igmp snooping
    
```

ip igmp snooping ivgl

no ip igmp snooping

-	-

```

disable
    
```

```

    
```

```

VLAN VLAN VLAN VLAN
VLAN
    
```

```

r      pim snooping      igmp snooping  IVGL  IVGL-SVGL
      no ip igmp snooping  igmp snooping
      pim snooping      pim snooping
    
```

```

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

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

```

    
```

-		-	

15.1.6 ip igmp snooping vlan

```

vlan      igmp snooping      ivgl      ip igmp
snooping vlan      no      igmp snooping
ip igmp snooping vlan vid
no ip igmp snooping vlan vid
    
```

vid		vlan id	

```

disable
    
```

```

    
```

```

r      vlan      IGMP Snooping
      vlan      pim snooping      igmp snooping
      no ip igmp snooping vlan      igmp snooping
      pim snooping      VLAN      pim snooping
    
```


	-	-

15.1.8 ip igmp snooping svgl profile

profile SVGL

```
77 ID806 Td( )Tj/C Td(8.796 1 Tf-E3>]T/T<350E2CD516/T1 1 Tf0 Tr 4.01j/C)5fb1G4jw 14018 Tc 5.239  
@ 17... U6  
}
```

no ip igmp snooping dyn-mr-aging-time

	<i>time</i>	, <1-3600>

300s

Hello

IGMP

PIM

100s

Ruijie(config)# **ip igmp snooping dyn-mr-aging-time 100**



```
IP          IGMP
IP          IGMP
```

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

```
0 [REDACTED]
```

100s

```
Ruijie(config)# ip igmp snooping query-max-response-time 100
```

ip igmp snooping limit-ipmc	ip

no IP
IP

address **server address**
vid address **server**

<i>vid</i> ip vlan id	
()	

IP

```

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

```

	IP IP

-	-

15.1.14 ip igmp snooping source-check port

igmp snooping
ip igmp snooping source-check port no

ip igmp snooping source-check port
no ip igmp snooping source-check port

-	-

┌

┌

IGMP SNOOPING

IGMP Sooping

IGMP SNOOPING

VLAN

igmp snooping

Ruijie(config)# **ip igmp snooping source-check port**

┌

-	-

15.1.15 ip igmp snooping suppression enable

```

igmp snooping Report
suppression enable          no          igmp snooping suppression
ip igmp snooping suppression enable
no ip igmp snooping suppression enable
    
```

-	-

disable

```

IGMP
vlan
IGMP Report
suppression
IGMPv3 report
IGMP Report
IGMPv1/v2 report
    
```

```

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

-	-

-	-

15.1.16 ip igmp snooping mrouter learn pim-dvmrp

```

IGMP Query/Dvmrp/PIM Hello
ip igmp snooping mrouter learn          no
    
```


vid

vlan id

|

|

VLAN

no

VLAN

igmp snooping

|

vlan 1

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

|

ip igmp snooping mrouter learn pim-dvmrp	

|

```

┌
└

```

```

┌
└

```

```

┌
└

```

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

```

┌
└

```

ip igmp snooping vlan mrouter interface	

```

┌
└

```

```

┌
└

```

-	-

15.1.20 ip igmp snooping filter

profile no profile

ip igmp snooping filter profile-number

no ip igmp snooping filter profile-number

```

┌
└

```

<i>profile-number</i>	profile <1-65536>

```

┌
└

```

```

┌
└

```

```

┌
└

```

```

IGMP Profile
                                IGMP Report
                                IGMP Profile
                                profile      filter

```

```

┌
└

```

```

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



	-
--	---

15.2

15.2.1 show ip igmp snooping

igmp snooping

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

	igmp snooping
gda-table	
interfaces	igmp snooping filtering
mrouter	
statistics [vlan <i>vlan-id</i>]	snooping
vlan	vlan snooping

--	--

	EXEC
--	------

--	--

--	--

-	-

--	--

-	-

15.2.2 show ip igmp profile [profile-number]

		profile
	<i>profile-number</i>	profile
	EXEC	
	profile	
	-	-
	-	-

15.2.3 debug igmp-snp

IGMP Snooping Debug no

- debug igmp-snp**
- debug igmp-snp event**
- debug igmp-snp packet**
- debug igmp-snp msf**
- debug igmp-snp warning**

	IGMP Snooping
event	IGMP Snooping
packet	IGMP Snooping
msf	IGMP Snooping
warning	IGMP Snooping

16 MSTP

16.1

16.1.1 bpdu src-mac-check

bpdu mac

no

bpdu mac

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

no bpdu src-mac-check

<i>H.H.H</i>	mac	bpdu
no	bpdu	

┌

┌

┌

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

-	-

┌

RSTP BPDU BPDU

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

<i>interface-id</i>	

└───┘

└───┘

└───┘

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

show spanning-tree interface	STP

└───┘

-	-

16.1.3 spanning-tree

```

MSTP          MSTP          MSTP
no spanning-tree no spanning tree

```

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

no spanning-tree [forwa Td[(no spannin)5(g)-10.001 Tc 0.0032 Tw 5.251 0 Td<01C4>Tj/TT1 1 Tf-0.00

forward-time hello-time max-age

$2 * (\text{Hello Time} + 1.0\text{snd}) \leq \text{Max-Age Time} \leq 2 * (\text{Forward-Delay} - 1.0\text{snd})$

```

1    spanning-tree
Ruijie(config)# spanning-tree
2    BridgeForwardDelay
Ruijie(config)# spanning-tree forward-time 10

```

show spanning-tree	STP
spanning-tree mst cost	STP PathCost
spanning-tree tx-hold-count STP	TxHoldCount

-	-

16.1.4 spanning-tree autoedge

Autoedge

disabled

Autoedge

spanning-tree autoedge [disabled]

disabled	Autoedge

	-	-
--	---	---

16.1.6 spanning-tree bpduguard

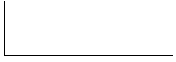
	BPDU Guard	enabled	disabled
spanning-tree bpduguard			
	enabled		EA /
	disabled		BPDU Guard

Bä]xa ìÿ= Ã ðÀ % 3• Ð• HNBf9€ f"7Nf9€ v B NöhD†vc Nû4B ñ e%" 0CE I3L> xâ4Ãb3\ LN b2f"R C,

	-	-



root guard



16.1.14 spanning-tree mode

STP no

spanning-tree mode [stp | rstp | mstp]

no spanning-tree mode

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

MSTP

.

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

show spanning-tree		

-		-


```
VLAN 3 Instance 1 MST
Ruijie(config-mst)# no instance 1 vlan 3
Instance 1
Ruijie(config-mst)# no instance 1
MST show
```



MSTP

MSTP

Region

```

mst 20 GigabitEthernet 1/1 10
Ruijie(config)# interface gigabitEthernet 1/1
Ruijie(config-if)# spanning-tree mst 20 port-priority 0
show spanning-tree mst instance interface interface-id
```

```
Instance 20                8192
Ruijie(config-if)# spanning-tree mst 20 priority 8192
show spanning-tree mst instance interface interface-id
```

	show spanning-tree interface	STP
	-	-

16.1.20 spanning-tree portfast

	Portfast	disabled
	Portfast	Portfast
	spanning-tree portfast [disabled]	
	disabled	Portfast
	-	
	<pre>Ruijie(config)# interface gigabitethernet 1/1 Ruijie(config-if)# spanning-tree portfast</pre>	
	show spanning-tree interface	STP
	-	-

16.1.21 spanning-tree portfast bpdupfilter default

	BPDU filter	no
	BPDU filter	BPDU filter
	spanning-tree portfast bpdupfilter default	

no spanning-tree portfast bpdupfilter default

-	-

BPDU filter

BPDU Filter BPDU **show spanning-tree**

Ruijie(config)# **spanning-tree portfast bpdupfilter default**

show spanning-tree interface	STP

-	-

16.1.22 spanning-tree portfast bpduguard default

BPDU guard no BPDU guard

spanning-tree portfast bpduguard default

no spanning-tree portfast bpduguard default

-	-

BPDU Guard.

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

show spanning-tree interface	STP

-	-

16.1.23 spanning-tree portfast default

Portfast no Portfast

spanning-tree portfast default

no spanning-tree portfast default

-	-

Portfast

16.1.24 spanning-tree reset

	spanning-tree	no
spanning-tree reset		
┌		
└	-	-
┌		
└		
┌		
└		
┌	Ruijie(config)# spanning-tree reset	
└		
┌		
└	show spanning-tree	STP
┌	show spanning-tree interface	STP
└		
┌		
└	-	-

16.1.25 spanning-tree tc-guard

	tc- guard	no	tc- guard	tc-guard
tc				
spanning-tree tc-guard				
no spanning-tree tc-guard				
┌				
└	-			-
┌	tc- guard			

|

|

|

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

|

-	-

|

|

-	-

16.1.26 spanning-tree tc-protection

tc- protection

no

tc- protection

spanning-tree tc- protection

no spanning-tree tc- protection

|

-	-

|

tc- protection

	-	-

16.1.27 spanning-tree tc-protection tc-guard

tc- guard no tc- guard tc-guard
tc

spanning-tree tc-protection tc-guard

no spanning-tree tc-protection tc-guard

	-	-

tc- guard

┌

┌

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

	-	-

┌

	-	-

16.1.28 spanning-tree tx-hold-count

STP TxHoldCount

<i>tx-hold-count</i>	TxHoldCount	1 10

3

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

--	--

show spanning-tree

tx-hold-count	TxHoldCount
pathcost method	

|

|

|

|

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



link-type	linktype
------------------	----------

┌

┌

┌

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

spanning-tree bpdudfilter	BPDU filter
spanning-tree portfast	portfast
spanning-tree bpduguard	BPDU guard
spanning-tree link-type	“ ”

┌

-	-
---	---

16.2.3 show spanning-tree mst

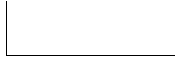
MST Instance

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

configuration	mst
<i>instance-id</i>	<i>Instance</i>
<i>interface-id</i>	

┌ Instance

┌



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

17 SPAN

17.1

17.1.1 monitor session

SPAN . no

monitor session *session_number* {**source interface** *interface-id* [**both** | **rx** | **tx**] |
destination interface *interface-id* **switch** | [**acl**

SPAN

|

|

|

show monitor

SPAN 1

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

|

monitor session	SPAN

|

|

-	-
---	---

18

```

1/2 //
Ruijie(config)# monitor session 2 destination remote vlan 7
interface gigabitEthernet 1/3 switch //
Ruijie(config)# monitor session 2 destination remote vlan 7
reflector-port interface gigabitEthernet 1/1 switch
2
Ruijie(config)# monitor session 2 remote-destination
Ruijie(config)# monitor session 2 destination remote vlan 7
interface gigabitEthernet 1/1 switch

```

show monitor	

reflector-port

-	-

18.1.2 remote-span

RSPAN VLAN

[no] remote-span

-	-

VLAN

end Ctrl+C
exit

```

Ruijie(config)# vlan 5
Ruijie(config)# remote-span

```

--	--

	show vlan	Vlan
	-	-

19 IP

19.1

19.1.1 ip address

IP no IP

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

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

<i>ip-address</i>	32	IP	8	
<i>network-mask</i>	32		"1"	"0"
		8		
secondary			IP	

└──┘

IP

└──┘

IP IP IP

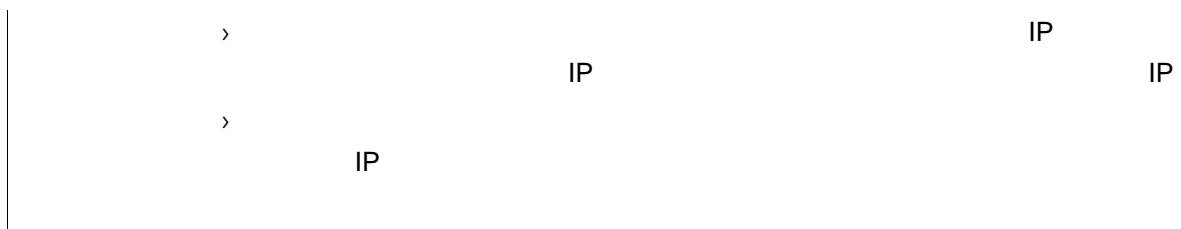
IP IP IP

32 IP

1 IP 0

IP A 255.0.0.0

⚠



```
IP 10.10.10.1 255.255.255.0  
ip address 10.10.10.1 255.255.255.0
```



```
>  
>          SLIP HDLC PPP LAPB Frame-relay  
          X.25  
>          ping          IP  
          SNMP  
>
```

```
          FastEthernet 0/1  
          IP  
ip unnumbered fastEthernet 0/1
```

┌

┌

```
RGOS      ARP          32      IP      48      MAC
          ARP          ARP          ARP      clear
arp-cache          ARP
```

┌

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

┌

clear arp-cache	ARP

┌

┌

-	-

19.2.2 arp gratuitous-send interval

```
arp          no
```

arp gratuitous-send interval *seconds*

no arp gratuitous-send

┌

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

┌

```
ARP
```

┌

┌

```
ARP
```

┌

```
1          SVI 1          ARP
Ruijie(config)# interface vlan 1
```


┌

┌

-	-

19.2.4 arp retry times

arp IP ARP
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

┌

1 ARP
arp retry times 1
2 ARP 1
arp retry times 2

19.2.5 arp timeout

ARP

ARP

no

arp timeout

no arp unresolve

<i>number</i>	>	ARP 8192	< 1-8192

ARP 8192

ARP

500

2

```
*          11          1
          ARP
          NFPP(Network Foundation Protection Policy ,          )
r          clear arp mac ( IP) ARP
          1s
          ARP
```

1

<i>mask</i>	IP ARP	ARP ; ARP	trusted
static		arp	
<i>mac-address</i>		mac ARP	
complete		arp	
incomplete		arp	
oob		(interface of mgmt)	ARP

1 show arp

Ruijie# show arp

Total Numbers of Arp: 7

Protocol	Address	Age(min)	Hardware	Type	Interface
Internet	192.168.195.68	0	0013.20a5.7a5f	arpa	VLAN 1
Internet	192.168.195.67	0	001a.a0b5.378d	arpa	VLAN 1
Internet	192.168.195.65	0	0018.8b7b.713e	arpa	VLAN 1
Internet	192.168.195.64	0	0018.8b7b.9106	arpa	VLAN 1
Internet	192.168.195.63	0	001a.a0b5.3990	arpa	VLAN 1
Internet	192.168.195.62	0	001a.a0b5.0b25	arpa	VLAN 1
Internet	192.168.195.5	--	00d0.f822.33b1	arpa	VLAN 1

ARP

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

2 **show arp 192.168.195.68**

Ruijie# **show arp 192.168.195.68**

Protocol	Address	Age(min)	Hardware	Type	Interface
Internet	192.168.195.68	1	0013.20a5.7a5f	arpa	VLAN 1

3 **show arp 192.168.195.0 255.255.255.0**

Ruijie# **show arp 192.168.195.0 255.255.255.0**

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

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

Ruijie# **show arp 001a.a0b5.378d**

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

-	-

-	-

19.3.3 show arp counter

ARP

arp

show arp counter

-	-

show arp counter

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

-	-

-	-

19.3.4 show arp detail

ARP

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

<i>interface-type interface-number</i>	ARP
<i>ip</i>	ip ip ARP
<i>ip mask</i>	ip mask ARP
<i>mac-address</i>	mac ARP
static	arp
complete	arp
incomplete	arp

ARP

ARP

show arp detailRuijie# **show arp detail**

IP Address	MAC Address	Type	Age(min)	Interface	Port
20.1.1.1	000f.e200.0001	Static	-- --	--	--
20.1.1.1	000f.e200.0001	Static	--	VI3	--
20.1.1.1	000f.e200.0001	Static	--	VI3	Gi2/0/1
193.1.1.70	00e0.fe50.6503	Dynamic	1	VI3	Gi2/0/1
192.168.0.1	0012.a990.2241	Dynamic	10	Gi2/0/3	Gi2/0/3
192.168.0.1	0012.a990.2241	Dynamic	20	Ag1	Ag1
192.168.0.1	0012.a990.2241	Dynamic	30	VI2	Ag2
192.168.0.39	0012.a990.2241	Local	--	VI3	--
192.168.0.39	0012.a990.2241	Local	--	Gi2/0/3	--
192.168.0.1	0012.a990.2241	Local	--	VI3	--
192.168.0.1	0012.a990.2241	Local	--	Gi2/3/2	--

ARP

IP Address	IP
MAC Address	IP
Type	ARP
Age	ARP
Interface	IP
Port	ARP

-	-

IP

	10.4	10.4

19.3.5 show arp timeout

ARP

show arp timeout

	-	-

└───┘

└───┘

└───┘

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

	-	-

└───┘

	-	-

19.3.6 show ip arp

ARP

IP

	-	-
--	---	---

L

|

	-	-
--	---	---

19.3.7 show ip interface

IP

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

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

┌

┌

┌

```

                                RGOS
RGOS                                RGOS
                                UP
                                UP
                                UP
  
```

show ip interface

```

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

-	-

19.4.1 ip default-gateway

ip default-gateway no

ip default-gateway

no ip default-gateway

	-	-

|

|

20 DHCP

20.1 DHCP

20.1.1 bootfile

DHCP DHCP bootfile
no
bootfile *file-name*
no bootfile

		DHCP
	<i>file-name</i>	

┌

┌

┌

┌

20.1.2 client-identifier

DHCP client-identifier no DHCP

client-identifier *unique-identifier*

no client-identifier

<i>unique-identifier</i>	DHCP 0100.d0f8.2233.b467.6967.6162.6974.4574.6865.726e.6574.302f.31

DHCP

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

MAC 00d0.f822.33b4 DHCP

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

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

┌

┌

-	-

20.1.3 client-name

DHCP
DHCP

DHCP

client-name

no

client-name *client-name*

no client-name

┌

<i>client-name</i>	DHCP ASCII river DHCP river.i-net.com.cn

┌

┌ DHCP

┌ DHCP DHCP

┌ client-name river

host	IP DHCP
ip dhcp pool	DHCP DHCP

┌

┌

-	-

20.1.4 default-router

DHCP

DHCP

default-router

no

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

no default-router

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

┌

┌ DHCP

┌ DHCP IP DHCP DHCP

┌ 192.168.12.1
default-router 192.168.12.1

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

DNS

DHCP

DNS
DHCP

DHCP
dns-server 192.168.12.3

DNS

DHCP

DNS DHCP DNS

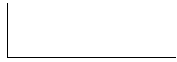
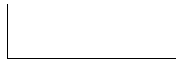
RGOS DHCP DNS

DHCP DNS 192.168.12.3

dns-server 192.168.12.3

9 [REDACTED] 02 8

<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



-		-

20.1.7 hardware-address

DHCP DHCP hardware-address
 no

hardware-address *hardware-address type*

no hardware-address

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

	<i>type</i>	DHCP <ul style="list-style-type: none">> ethernet> ieee802 > 1 10M ethernet> 6 IEEE 802 F 0A,HC,4B,5,CF,2A,0e,5 10 1FE,0M,3,üEi
--	-------------	--



┌

DHCP IP

┌

┌

```

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

┌

FastEthernet 0 IP

```

interface fastEthernet 0
ip address dhcp
    
```

┌

dns-server	DHCP DNS
ip dhcp pool	DHCP DHCP

┌

┌

-	-

20.1.10 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

DHCP

┌

┌

┌

IP DHCP DHCP IP
IP DHCP DHCP

DHCP 192.168.12.100~150 IP
ip dhcp excluded-address 192.168.12.100 192.168.12.150



ip dhcp pool


DHCP
DHCP

network DHCP

DHCP

```
ip dhcp ping packets 3
```

ping 3



ip dhcp excluded-address	DHCP IP
network DHCP	DHCP



ip dhcp pool		DHCP DHCP
-		-

20.1.15 netbios-name-server

DHCP NETBIOS WINS DHCP
netbios-name-server no WINS

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

no netbios-name-server

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

	WINS		
	DHCP		
	WINS	WINS	DHCP WINS
	DHCP	WINS	192.168.12.3
netbios-name-server	192.168.12.3		

ip address dhcp		DHCP IP
ip dhcp pool		DHCP DHCP

-	-

20.1.16 netbios-node-type

DHCP NetBIOS DHCP

netbios-node-type **no** NetBIOS

netbios-node-type *type*

no netbios-node-type

<i>type</i>	<p style="text-align: center;">NetBIOS</p> <p style="text-align: center;">0~FF</p> <ul style="list-style-type: none"> > b-node > p-node > m-node > 8 h-node > b-node > p-node > m-node > h-node

NetBIOS

DHCP

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

	DHCP	NetBIOS
netbios-node-type	h-node	
ip dhcp pool	DHCP	DHCP
netbios-name-server	DHCP	NETBIOS
	WINS	
	-	-

20.1.17 network DHCP

```

DHCP
network 192.168.12.0 255.255.255.240
DHCP
192.168.12.0 255.255.255.240

```

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

```


```

-	-

20.1.18 next-server

```

DHCP
next-server no
DHCP
next-server ip-address [ ip-address2...ip-address8 ]
no next-server

```

	P2C4
--	------

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

-	-

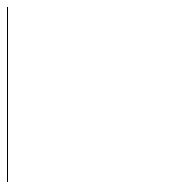
20.1.19 option

DHCP DHCP **option** **no**
 option

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

no option

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



DHCP option	TCP/IP		DHCP DHCP
	312	option	DHCP
		DHCP option	RFC 2131
1		19	DHCP
IP	0	IP	1
		IP	DHCP

IP
option 19 hex 1
2 33 DHCP
DHCP

```
service dhcp
```

show ip dhcp server statistics	DHCP

-	-

20.2

20.2.1 clear ip dhcp binding

DHCP

clear ip dhcp binding

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

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

DHCP

DHCP

no ip dhcp pool

IP 192.168.12.100 DHCP

```
clear ip dhcp binding 192.168.12.100
```

show ip dhcp binding	DHCP

	-	-

20.2.2 clear ip dhcp conflict

DHCP

clear ip dhcp conflict

clear ip dhcp conflict { * | ip-address }

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

└───┘

└───┘

DHCP

ping

DHCP

DHCP

D0

=

DHCP



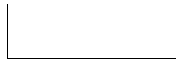
dhcp client



dhcp
debug ip dhcp client



-	-



-	-

20.2.5 debug ip dhcp server

DHCP Server

debug ip dhcp server

debug ip dhcp server

no debug ip dhcp server



-	-



dhcp server



dhcp
debug ip dhcp server



-	-



	-	-

20.2.6 show dhcp lease

DHCP

EXEC

show dhcp lease

```
show dhcp lease | 5vgaVà.!Ag@YX%Nă.!G6ttA-.0C-|SêDâçT dâ-vTvbBbà."-t•,T dR0#GAPA!-.0
```

20.2.7 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 ex/TT0 1 Tf	Infinite IDLE
Type	DHCP AutomT0 c Manual

└───┘

clear ip dhcp binding	DHCP

└───┘

--	--

Manual bindings	
Expired bindings	
Malformed messages	DHCP
Message Received or Sent	DHCP

clear ip dhcp server statistics	DHCP

--

-	-

21 DHCP Relay

DHCP Relay option dot1x no

[no] ip dhcp relay information option dot1x

-	-

┌

┌

┌

DHCP 802.1x

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

DHCP option dot1x

service dhcp	DHCP
ip dhcp relay information option dot1x access-group <i>acl-name</i>	option dot1x acl

┌

-	-

21.1.3 ip dhcp relay information option dot1x access-group

DHCP Relay option dot1x ACL no
DHCP Relay option dot1x ACL

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

-	-

┌

ACL

|
|

|
|

ACL

ACL ACE

dhcp option dot1x acl

Ruijie#

	ip dhcp relay information option dot1x	DHCP option dot1x
	-	-

21.1.4 ip dhcp relay information option82

DHCP Relay option82 no

[no] ip dhcp relay information option82

	-	-

option dot1x

DHCP opion82

Ruijie# **configure terminal**

Ruijie(config)# **Ip dhcp relay information option82**

32dñRqM999sôôâ

DHCP Relay
no

DHCP Relay Aware VRF

DHCP

1 DHCP relay

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

service dhcp	DHCP

```
1          192.168.1.1
2      vrf   dep1      192.168.2.1
Ruijie# configure terminal
Ruijie(config)# ip helper-address 192.168.1.1
Ruijie(config)# ip helper-address vrf dep1 192.168.2.1
```



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-	-

22 DNS

22.1

22.1.1 ip domain-lookup

	DNS	no	DNS
	ip domain-lookup		
	no ip domain-lookup		
	-		-
	DNS		
	DNS		DNS
	DNS		
	Ruijie(config)# ip domain-lookup		
	show hosts		DNS
	-		-

22.1.2 ip name-server

no IP

S6Q22PQ%E@w]]E=a]ZMF0jQ\$W]]x]]%0Zj]E0qy'Q-dAg'rgDMbí.. Af—(Q-df—DÁ @GD#G@000@E+9B0)qt1

|
|

|
|

no ip host host-name ip-address

|
|

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

|
|

show hosts	DNS

|
|

|
|

-	-

22.2

22.2.1 clear host

clear host [host-name]

|
|

host-name	1-31

|
|

|
|

|
|

2	DNS	1	ip host
			DNS

|
|

```
clear host * -IP
```

show hosts	

┌

-	-

22.2.2 show hosts

DNS

show hosts [*hostname*]

-	-

┌

┌

┌

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

┌

--	--

DNS

	-	-
--	---	---

23

|

|

show sntp SNTP

|

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

|

show sntp	SNTP

SNTP

	sntp enable	SNTP
	show sntp	SNTP

RGOS10.0

	-	-

24 NTP

24.1 NTP

24.1.1 no ntp

ntp		ntp
no ntp		
	-	-
	NTP	
	NTP	NTP NTP
	NTP	
	no ntp	NTP
	ntp server	NTP
	-	-

24.1.2 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

r

1
2

Ruijie(config)# **ntp access-group peer 1**

Ruijie(config)# **ntp access-group serve-only 2**

ip access-list	IP

	-	-

24.1.3 ntp authenticate

NTP NTP

ntp authenticate

no ntp authenticate

	-	-

NTP

ntp authentication-key ntp trusted-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>	0

NTP

	-	-
--	---	---

.

r

12

Ruijie(config)# **ntp master 12**

-	-



└──

└──

20

prefer

NTP

IP

NTP

└──

NTP server

IPv4 Ruijie(config)# **ntp server** 192.168.210.222

└──

no ntp	NTP

└──

└──

-	-

24.1.8 ntp synchronize

NTP

ntp synchronize

no ntp synchronize

└──

--	--

NTP	
Ntp synchronize	
ntp server	NTP
-	-

24.1.9 ntp trusted-key

ID

ntp trusted-key *key-id*

no ntp trusted-key *key-id*

<i>key-id</i>	ID

5B'P5 I

NTP

	ntp server	NTP
	-	-

24.1.10 ntp update-calendar

NTP

no

ntp update-calendar

no ntp update-calendar

	-	-

--

--

NTP

NTP

NTP

NTP

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

	-	-

--

	-	-

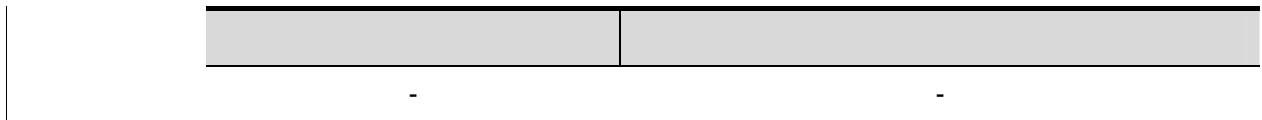
24.2

24.2.1 debug ntp

NTP

debug ntp

no debug ntp



|

|

|

NTP

NTP

|

NTP

show ntp status

|

-	-

|

|

-	-

25 FTP Server

25.1

25.1.1 debug ftpserver

FTP

no

debug ftpserver

no debug ftpserver



	-	-
--	---	---

25.1.2 ftp-server enable

FTP no FTP

ftp-server enable

no ftp-server enable

	-	-

--

--

	FTP	FTP	
	r	ftp-server topdir	FTP
	FTP		

1

FTN68.36 366.5003 TmD1 430.7 63.1 4TC>JTJ/TT0 1 Tf-0.006<472135CTm

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

no ftp-server password

<i>type</i>	0 7 0
<i>password</i>	7

┌

┌

FTP

	1	25	4
	52		
r	FTP		

```

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

Ruijie(config)# ftp-server password 0 pass
2 8001
Ruijie(config)# ftp-server password 7 8001
3
Ruijie(config)# no ftp-server password
    
```

-	-

┌

-	-

25.1.4 ftp-server topdir

FTP

no

FTP

ftp-server topdir *directory*

no ftp-server topdir

<i>directory</i>	FTP

FTP

no ftp-server timeout

<i>time</i>	1-3600

30

FTP			
FTP			
	FTP	FTP	FTP
r		0	

```

1                               5
Ruijie(config)# ftp-server timeout 5
2                               30
Ruijie(config)# no ftp-server timeout
    
```

-	-

-	-

25.1.6 ftp-server username

FTP no

ftp-server username *username*

no ftp-server username

<i>username</i>	



FTP

¥ K€

26 UDP-Helper

26.1

26.1.1 ip forward-protocol

UDP

no

UDP

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

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



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

udp-helper enable	UDP
ip forward-protocol	UDP

-	-

26.1.2 ip helper-address

UDP

no

UDP

ip helper-address *address*

no ip helper-address *address*

<i>address</i>	UDP 20

UDP

20
, UDP-Helper UDP

no ip helper-address

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

ip forward-protocol	UDP

┌

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-	-

26.1.3 udp-helper enable

udp-helper enable

UDP

no udp-helper enable

UDP

UDP

udp-helper enable

no udp-helper enable

┌

-	-

┌

UDP

┌

UDP-Helper

SNMP

no snmp-server chassis-id



<i>aclnumber</i>	1-99 MIB ipv4 NMS
<i>aclname</i>	MIB ipv4 NMS
<i>ipaddr</i>	NMS MIB NMS

└───┘

└───┘

└───┘

MIB NMS SNMP
SNMP **no snmp-server**

|

|

|

|

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



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

snmp-server host	SNMP

-	-

27.1.6 snmp-server group

SNMP

snmp-server group

no

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

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

--	--

v1 | -0.0c 2.349 0 Td ()Tj /TT1 Tf 0.0011 Tc 0.5096 -0.036 Td [96.63 1 Tf 0 Tc 1.10900 Td ()Tj /TT0

SNMP

27.1.10 snmp-server queue-length

snmp-server queue-length

snmp-server queue-length *length*

<i>length</i>	1	1000

10

4

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

snmp-server packetsize	SNMP

-	-

27.1.11 snmp-server system-shutdown

SNMP

no

SNMP

snmp-server system-shutdown

snmp-server system-shutdown

no snmp-server system-shutdown

-	-

SNMP

SNMP

RGOS

reload/reboot

NMS

SNMP

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



snmp-server enable traps	
snmp-server enable host	NMS

-	-

27.1.13 snmp-server trap-timeout

snmp-server trap-timeout

no

snmp-server trap-timeout *seconds*

no snmp-server trap-timeout

seconds	1 – 1000

30

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

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

--	--

	show snmp view	SNMP
	-	-

27.1.16 snmp trap link-status

27.2

27.2.1 show snmp

SNMP

show snmp

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

	-	-

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```

show snmp          SNMP
show snmp mib      snmp mib
show snmp user     snmp
show snmp view     snmp
show snmp group    snmp
show snmp host
    
```

┌
└

```

          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 chassis-id	SNMP

-	-

28 RMON

28.1

28.1.1 rmon alarm

MIB no

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

no rmon alarm *number*

-	-

└──

└──

RGOS variable
 absolute/delta owner interval rising-threshold/falling-threshold event

MIB ifInNUcastPkts.6
 Ruijie(config)# **rmon alarm** 10 1.3.6.1.2.1.2.2.1.12.6 30 **delta**
rising-threshold 20 1 **falling-threshold** 10 1 **owner** zhangsan

rmon event <i>number [log] [trap community] [description-string]</i>	

└──

-	-

28.1.2 rmon collection history

no

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

no rmon collection history *index*



	-	-

|

|

|



trap

Ruijie(config)# **rmon event**

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



rmon alarm

```
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* [**log**] [

```

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 ownername] [buckets bucket-number] [interval seconds]	

-	-

|
 |
 |
 |

```

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>]	

	-	-

29 TCP

29.1 TCP

29.1.1 ip tcp path-mtu-discovery

TCP
62.34 631.340y

(PMTU)

ip tcp

TCP

show tcp pmtu		TCP	PMTU
RGOS 10.4			
	RGOS 10.4		

29.2 TCP

29.2.1 show tcp pmtu

HCP PMH

show tcp pmtu

--	--

TCP PMTU

show tcp pmtu

show tcp pmtu

Ruijie# **show tcp pmtu**

No.	Local Address	Foreign Address	PMTU
[1]	2002::1.18946	2002::2.23	1440
[2]	192.168.195.212.23	192.168.195.112.13560	1440

No.	
Local Address	2 \$

TCP

Foreign Address	“ ” “2002::2.23” “192.168.195.212.23” “23”
PMTU	PMTU

ip tcp path-mtu-discovery	TCP PMTU
----------------------------------	----------

10.4	
-------------	--

30

	version	RIP v1 v2 v1&v2

30.1.2 bfd all-interfaces (RIP)

RIP BFD RIP bfd
all-interfaces no

bfd all-interfaces

no bfd all-interfaces

0A/ ñgp mÂ ñ € m GKÁ

RIP BFD RIP (RIP

RIP

	ip rip bfd [disable]	RIP BFD
	-	-

30.1.3 default-metric (RIP)

RIP

default-metric

no

default-metric *metric-value*

no default-metric

	<i>metric-value</i>	1	16	<i>metric-value</i>
		16	RGOS	

┌

└

1

┌

└

redistribute

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	
	-	-

30.1.4 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

show

ip rip database RIP

RIP **route-map** **set**

metric

metric **route-map**

set metric **metric** RIP

RIP

RIP

RIP

r

RIP

RIP

160,

192.168.12.1

123

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

```
Ruijie(config-router)# distance 160
```

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



```

RIP      FastEthernet 0/0
172.16
Ruijie(config)# router rip
Ruijie(config-router)# network 200.168.23.0
Ruijie(config-router)# distribute-list 10 in
fastethernet 0/0
Ruijie(config-router)# no auto-summary
Ruijie(config)#access-list 10 permit 172.16.0.0 0.0.255.255

```

access-list	
prefix-list	

-	-

30.1.7 distribute-list out RIP

distribute-list out

no

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

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

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

RIP

connected	()
isis [<i>area-tag</i>]	() isis <i>area-tag</i> isis
ospf <i>process-id</i>	() ospf <i>process-id</i> ospf
rip	() rip
static	()

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┌

```

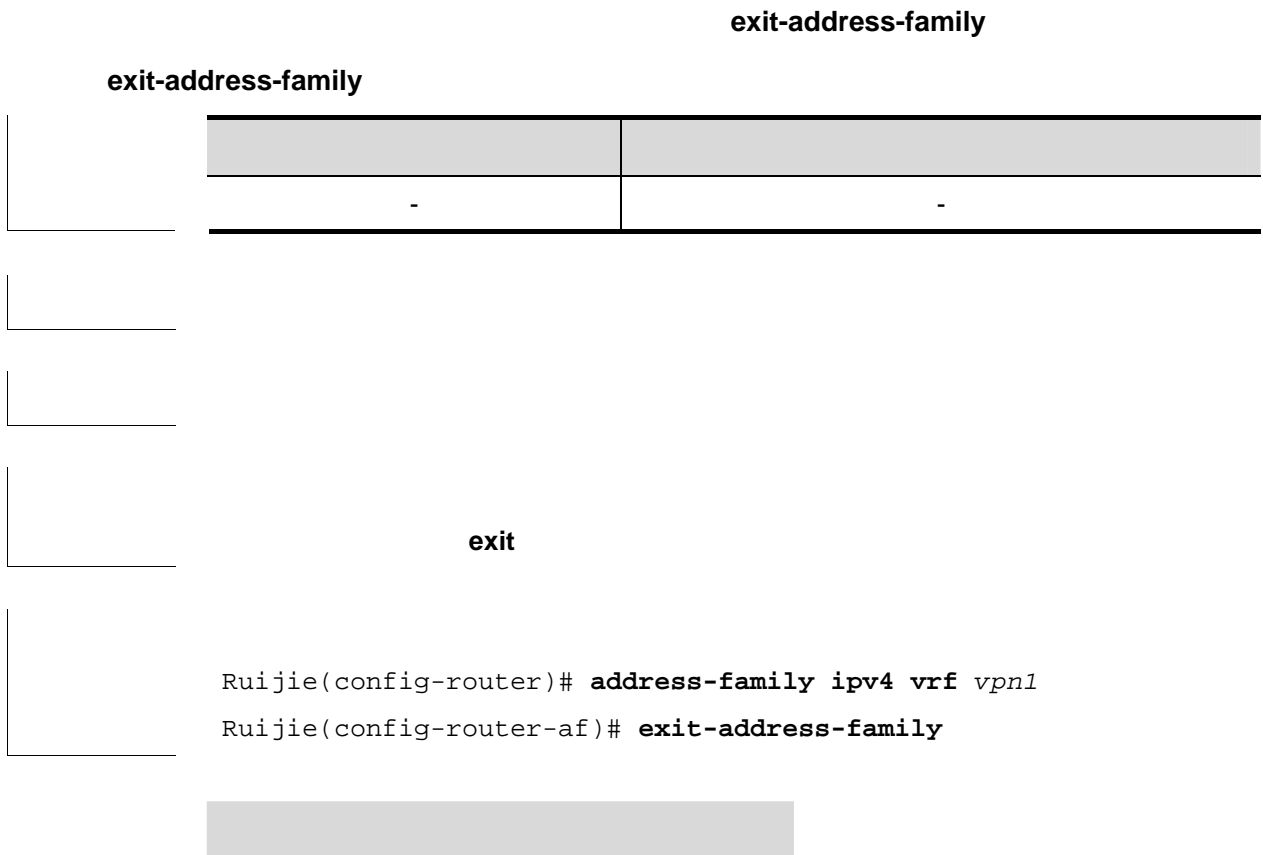
RIP                               192.168.12.0/24
Ruijie(config)# router rip
Ruijie(config-router)# network 200.4.4.0
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# distribute-list 10 out
Ruijie(config-router)# version 2
Ruijie(config)# access-list 10 permit 192.168.12.0 0.0.0.255
    
```

access-list	
prefix-list	
redistribute	

┌

-	-

30.1.8 exit-address-family



|

|

|

key chain

RIP

RIPv1 RIP RIPv2

|

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	RIP 0.0.0.0 Tm()Tj/TT0 1 T
	RIPv2	

RIP

text	RIP
md5	RIP MD5

┌

┌

RIP	RIP	RIP
	RIP	
		MD5
RIPv1	RIP	RIPv2

```

Serial 0    RIP    MD5
Ruijie(config)# interface serial 0/0
Ruijie(config-if)# ip rip authentication mode md5
    
```

	RIP	RIP
ip rip authentication key-chain	RIPv2	RIP
ip rip authentication text-password	RIPv2	RIP
key chain		

┌

-	-
---	---

30.1.11 ip rip authentication text-password

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

ip rip authentication text-password *password-string*

no ip rip authentication text-password

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

┌

┌

┌
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
ip rip authentication key-chain	RIP RIP RIPv2 RIP

┌

10.4(1)	

30.1.12 ip rip bfd

RIP BFD ip rip
bfd [disable] no **ip rip bfd**
ip rip bfd [disable]
no ip rip bfd

disable	RIP BFD

┌

RIP

BFD

┌

┌

bfd all-interfaces

ip rip bfd

BFD

RIP

bfd all-interfaces

RIP

BFD

ip rip bfd disable

BFD

┌

┌

router rip	RIP
bfd all-interfaces	RIP BFD

┌

┌

-	-

30.1.13 ip rip default-information

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

r **ip rip default-information** RIP

|

 ethernet0/0
Ruijie(config)# **interface ethernet 0/0**
Ruijie(config-if)# **ip rip default-information only**

|

default-information originate	RIP

|

Fastethernet 0/0 RIP

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

Ruijie(config-if)# **no ip rip receive enable**

ip rip send enable	RIP
passive-interface	RIP

--	--

-

-

RIP

|



version

RIP

RIP

	-	-

30.1.17 ip rip send supernet-routes

RIP		RIP	ip rip send
supernet-routes	no	RIP	RIP
ip rip send supernet-routes			
no ip rip send supernet-routes			

30.1.18 ip rip send version

<p>RIP</p> <p>version</p> <p>no ip rip send version</p>	<p>RIP</p> <p>no</p> <p>ip rip send version [1] [2]</p> <p>no ip rip send version</p>	<p>ip rip receive</p>
---	--	------------------------------

1	RIPv1
2	RIPv2

version

	vesion	
	RIPv1 RIPv2	RIP

	Fastethernet 0/0	
	RIPv1 RIPv2	

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


version	RIP

-	-

30.1.19 ip rip split-horizon (RIP)

RIP	ip rip split-horizon	no
RIP		
ip rip split-horizon		

no ip rip split-horizon

-	-

┌

┌

```
IP
X.25
IP
RIP
show ip rip
neighbor
RIP
```

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

neighbor RIP	RIP IP RIP
--------------	------------

RIP

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

RIP

```
ip rip summary-address RIP
```

/

```
                                RIPv2                                FastEthernet 1/0
                                172.16.0.0/16
Ruijie(config)#
```

-	-

version

vesion

RIP

RIPv1 RIPv2

version

Fastethernet 0/0

RIPv2

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

Ruijie(config-if)# **ip rip v2-broadcast**



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┌

```

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

```

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-	-

┌

┌

10.4(1)	wildcard

30.1.23 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
      passive-interface
      RIP
```

|

```

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

|

passive-interface	passive

|

|

--	--

RIP

```
offset
RIP
RIP offset-list offset-list metric offset-list
acl 7 RIP metric 7
Ruijie(config-router)# offset-list 7 out 7
fastEthernet1/0 acl 8 RIP
metric 7
Ruijie(config-router)# offset-list 7 in 7
Ruijie(config-router)# offset-list 8 in 7 fastEthernet 1/0
```

-	-

-	-

30.1.25 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**

d

```
rip receive enable
```

```

                                passive          ethernet0/0    passive
Ruijie(config-router)# passive-interface default
Ruijie(config-router)# no passive-interface ethernet 0/0

```

ip rip receive enable	RIP
ip rip send enable	RIP

-	-

30.1.27 redistribute RIP

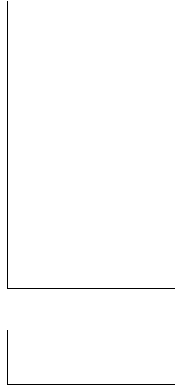
redistribute

no

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

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

metric <i>metric-value</i>	metric	metric	metric-value
		1-16	
route-map <i>route-map-name</i>			



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 ospf
 match match
 no match

r

RIP

30.1.28 router rip

RIP

RIP

<i>update</i>	update 30 invalid flush
<i>invalid</i>	invalid invalid Invalid 180 invalid
<i>flush</i>	flush Flush RIP invalid invalid 120

30
180
120

RIP
RIP
RIP
show ip rip
r 2Mbps

RIP 10 30 90
invalid invalid
Ruijie(config)# **router rip**
Ruijie(config-router)# **timers basic 10 30 90**

-	-
---	---

--	--

RIP

	-	-
--	---	---

30.1.30 validate-update-source

RIP

validate-update-source **no**

validate-update-source

no validate-update-source

	-	-

L

L

RIP

RIP

30.1.31 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	

30.2.1 show ip rip

RIP

show ip rip

show ip rip [vrf vrf-name]

vrf vrf-name	VRF	RIP
--------------	-----	-----

```

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```

```

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```

rip	RIP	metric	distance	rip
VRF	VRF	VRF	VRF-id	

```

┌
└

```

```

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

2
vrf          RIP
Ruijie(config-router)# sh ip rip vrf 1
VRF 1 VRF-id:1
Routing Protocol is "rip"
Sending updates every 30 seconds

```

RIP

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)

-	-



```

192.168.1.0/24    auto-summary
192.168.1.0/30    directly connected, Loopback 3
192.168.1.8/30    directly connected, FastEthernet 0/0
192.168.121.0/24  auto-summary
192.168.121.0/24  redistributed
[1] via 192.168.2.22, FastEthernet 0/1
    2                RIP                192.168.121.0/24
    
```

```

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

```

Ruijie# show ip rip database count
           All    Valid  Invalid
database    5      5      0
auto-summary 5      5      0

connected    1      1      0
rip          4      4      0
    
```

show ip rip	

-	-

30.2.3 show ip rip external

RIP show ip rip external

```

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

bgp connected isis ospf static	

vrf vrf-name	VRF RIP
process-name	ISIS
<1-65535>	OSPF

RIP

Ruijie# **show ip rip external connected**

Protocol connected route:

[connected] 1.0.0.0/8 metric=0

nhop=0.0.0.0, if=2

[connected] 3.0.0.0/8 metric=0

nhop=0.0.0.0, if=16391

[connected] 4.4.0.0/16 metric=0

nhop=0.0.0.0, if=16388

[connected] 5.0.0.0/8 metric=0

nhop=0.0.0.0, if=16386

[connected] 192.168.195.0/24 metric=0

nhop=0.0.0.0, if=1

show ip rip	

-	-

30.2.4 show ip rip interface

RIP show ip rip interface

show ip rip interface [vrf vrf-name]

vrf vrf-name	VRF RIP

RIP

RIP

RIP

```
Ruijie# show ip rip interface
```

```
FastEthernet 1/0 is up, line protocol is up
```

```
Routing Protocol: RIP
```

```
Receive RIPv2 packets only
```

```
Send RIPv2 packets only
```

```
Passive interface: Disabled
```

```
Split horizon: Enabled
```

```
V2 Broadcast: Disabled
```

```
Multicast registe: Registered
```

```
Interface Summary Rip:
```

```
Not Configured
```

```
Authentication mode: Text
```

```
Authentication key-chain: ripk1
```

```
Authentication text-password: ruijie
```

```
Default-information: only, metric 5
```

```
IP interface address:
```

```
192.168.64.100/24, next update due in 14 seconds
```

```
2.2.1.1/24, next update due in 24 seconds
```

```
neighbor 2.2.1.6, next update due in 3 seconds
```

```
neighbor 2.2.1.77, next update due in 13 seconds
```

```
2.2.2.57/24, next update due in 16 seconds
```

```
RIP BFD BFD :
```

```
Ruijie#show ip rip interface
```

```
VLAN 1 is up, line protocol is up
```

```
Routing Protocol: RIP
```

```
Receive RIPv1 and RIPv2 packets
```

```
Send RIPv1 packets only
```

```
Receive RIP packet: Enabled
```

```

Send RIP packet: Enabled
Send RIP supernet routes: Enabled
Passive interface: Disabled
Split horizon: Enabled
BFD: Enabled
V2 Broadcast: Disabled
Multicast registe: Registered
Interface Summary Rip:
    Not Configured
IP interface address:
    2.2.2.111/24, next update due in 14 seconds
    
```

show ip rip	

-	-

30.2.5 show ip rip peer

```

RIP          RIP          (RIP          )
                RIP          RIP
    
```

show ip rip peer

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

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

```

RIP          RIP
    
```

RIP

```
Ruijie# show ip rip peer
Peer 192.168.3.2:
  Local address: 192.168.3.1
  Input interface: GigabitEthernet 0/2
  Peer version: RIPv1
  Received bad packets: 3
  Received bad routes: 0
  BFD session state up
```

show ip rip	

-	-

31 OSPF

31.1

31.1.1 area

no OSPF

area area-id

no area area-id

<i>area-id</i>	OSPF IP

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-router)# **no area 2**

--	--

network area

OSPF

ip ospf authentication-key	OSPF
ip ospf message-digest-key	OSPF MD5
area virtual-link	
-	-

31.1.3 area default-cost

```

STUB      NSSA      OSPF
  area default-cost  no
area area-id default-cost cost
no area area-id default-cost
    
```

<i>area-id</i>	STUB	NSSA
<i>cost</i>	STUB	NSSA 1-16777214

```

ABR      NSSA      ABR      STUB
  NSSA      ABR      LSA
ABR      stub      NSSA      LSA
area default-cost      LSA
    
```

```

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

	-	-
	-	-

31.1.5 area nssa

OSPF NSSA **area nssa** **no**
 NSSA NSSA

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

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

<i>area-id</i>	NSSA

NSSA ABR

' **no-redistribution**

```

                                NSSA          NSSA          ASBR   ABR
                                NSSA
                                NSSA          NSSA          LSA          ABR
no-summary                    ABR   NSSA          summary LSAs Type-3 LSA
area default-cost          NSSA          ABR
                                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	NSSA OSPF

```

    
```

-	-

31.1.6 area range

```

OSPF                                area range                                no
                                no                                cost
    
```

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

RFC2328: OSPFv2

--	--	--

OSPF

area virtual-link

no

area *area-id* **virtual-link** *router-id* [**authentication** [**message-digest** | **null**]]
 [**dead-interval** *seconds*] [**hello-interval** *seconds*] [**retransmit-interval** *seconds*]
 [**transmit-delay** *seconds*] [[**authentication-key** *key*] | [**message-digest-key** *key-id md5*
key]]

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

<i>area-id</i>	OSPF		IP
<i>router-id</i>			
dead-interval <i>seconds</i>		1-65535	
hello-interval <i>seconds</i>	OSPF	Hello	1-65535

retransmit-interval *seconds* [1-65535]

```

dead-interval 40
hello-interval 10
retransmit-interval 5
transmit-delay 1
    
```

OSPF

```

                ABR                ABR                Stub Area
                NSSA
router-id OSPF                router-id                show ip ospf
neighbor                Loopback
area virtual-link                OSPF
                area authentication
    
```

```

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

                2                1                1.1.1.1
                10                OSPF                MD5
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.17.0 0.0.15.255 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

-	-

31.1.9 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
    Ruijie(config-router)# network 172.16.10.0 0.0.0.255 area 0
    Ruijie(config-router)# auto-cost reference-bandwidth 10
    
```

show ip ospf	ospf

-	-

31.1.10 bfd all-interfaces (OSPF)

```

    OSPF          BFD          OSPF          bfd
all-interfaces      no
bfd all-interfaces
no bfd all-interfaces

```

-	-

┌

┌

```

    OSPF          Hello          OSPF          BFD          BFD
    FULL          BFD          BFD          BFD
    OSPF
ip ospf bfd [disable]          BFD
bfd all-interfaces

```

┌

router ospf <i>process-id</i> [vrf <i>vrf-name</i>]	OSPF OSPF
ip ospf bfd [disable]	OSPF BFD

┌

--	--

process-id	OSPF	OSPF OSPF

RFC2328

OSPF

%•#ÛL8 JGi OSPF

OSPF

OSPF

default-metric

discard

no

discard

discard-route {internal|external}

no discard-route {internal|external}

internal	discard	area range
external	summary-address	discard

discard

disr

<i>distance</i>	1-255
intra-area distance	1-255
inter-area distance	1-255
external distance	1-255

```

110
      110
      110
      110
    
```

```

OSPF
    
```

```

OSPF
    
```

```

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

-	-

-	-

31.1.17 distribute-list in

LSA

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

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

--	--

bgp | connected | isis
' [area-tag] | **ospf** process-id |

	-	-
	MIB	OSPFv2
	OSPFv2 MIB	OSPFv2
		SNMP
		OSPFv2 MIB
		OSPFv2
		MIB
		SNMP
		100
		OSPFv2
	Ruijie(config)# router ospf 100	
	Ruijie(config-router)# enable mib-binding	
	show ip ospf	OSPF
	enable traps	OSPF TRAP
	10.4(1)	

31.1.20 enable traps

```

OSPFv2          16 TRAP          4
TRAP            no              TRAP

enable traps [error [IfAuthFailure | IfConfigError | IfRxBadPacket |
VirtIfAuthFailure | VirtIfConfigError | VirtIfRxBadPacket] | Isa
[LsdbApproachOverflow | LsdbOverflow | MaxAgeLsa | OriginateLsa] |
retransmit [IfTxRetransmit | VirtIfTxRetransmit] | state-change
[IfStateChange | NbrRestartHelperStatusChange | NbrStateChange |
RestartStatusChange | VirtIfStateChange |
VirtNbrRestartHelperStatusChange | VirtNbrStateChange]]

no enable traps [error [IfAuthFailure | IfConfigError | IfRxBadPacket |
VirtIfAuthFailure | VirtIfConfigError | VirtIfRxBadPacket] | Isa

```

[LsdbApproachOverflow | LsdbOverflow | MaxAgeLsa | OriginateLsa] |
 retransmit [IfTxRetransmit | VirtIfTxRetransmit] | state-change
 [IfStateChange | NbrRestartHelperStatusChange | NbrStateChange |
 RestartStatusChange | VirtIfStateChange |
 VirtNbrRestartHelperStatusChange | VirtNbrStateChange]]

error	error traps error traps IfAuthFailure IfConfigError IfRxBadPacket VirtIfAuthFailure VirtIfConfigError VirtIfRxBadPacket
lsa	lsa traps lsa traps LsdbApproachOverflow LSA LsdbOverflow LSA MaxAgeLsa LSA OriginateLsa LSA
retransmit	retransmit traps retransmit traps IfTxRetransmit VirtIfTxRetransmit
state-change	state-change traps state-change traps IfStateChange NbrRestartHelperStatusChange GR NbrStateChange RestartStatusChange GR Restarter VirtIfStateChange VirtNbrRestartHelperStatusChange GR VirtNbrStateChange

traps

```

traps ospf          snmp-server          snmp-server enable
                    enable traps          ospf trap
                    MIB                    TRAP
    
```

```

                    OSPFv2    100    TRAP
Ruijie(config)# router ospf 100
Ruijie(config-router)# enable traps
    
```

show ip ospf	OSPF
enable mib-binding	OSPFv2 MIB
snmp-server enable traps ospf	OSPF TRAP

null

,

,

FastEthernet 0/0

OSPF

MD5

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

Ruijie(config-if)# **ip address 172.16.10.0 255.255.255.0**

Ruijie(config-if)# **ip ospf authentication message-digest**

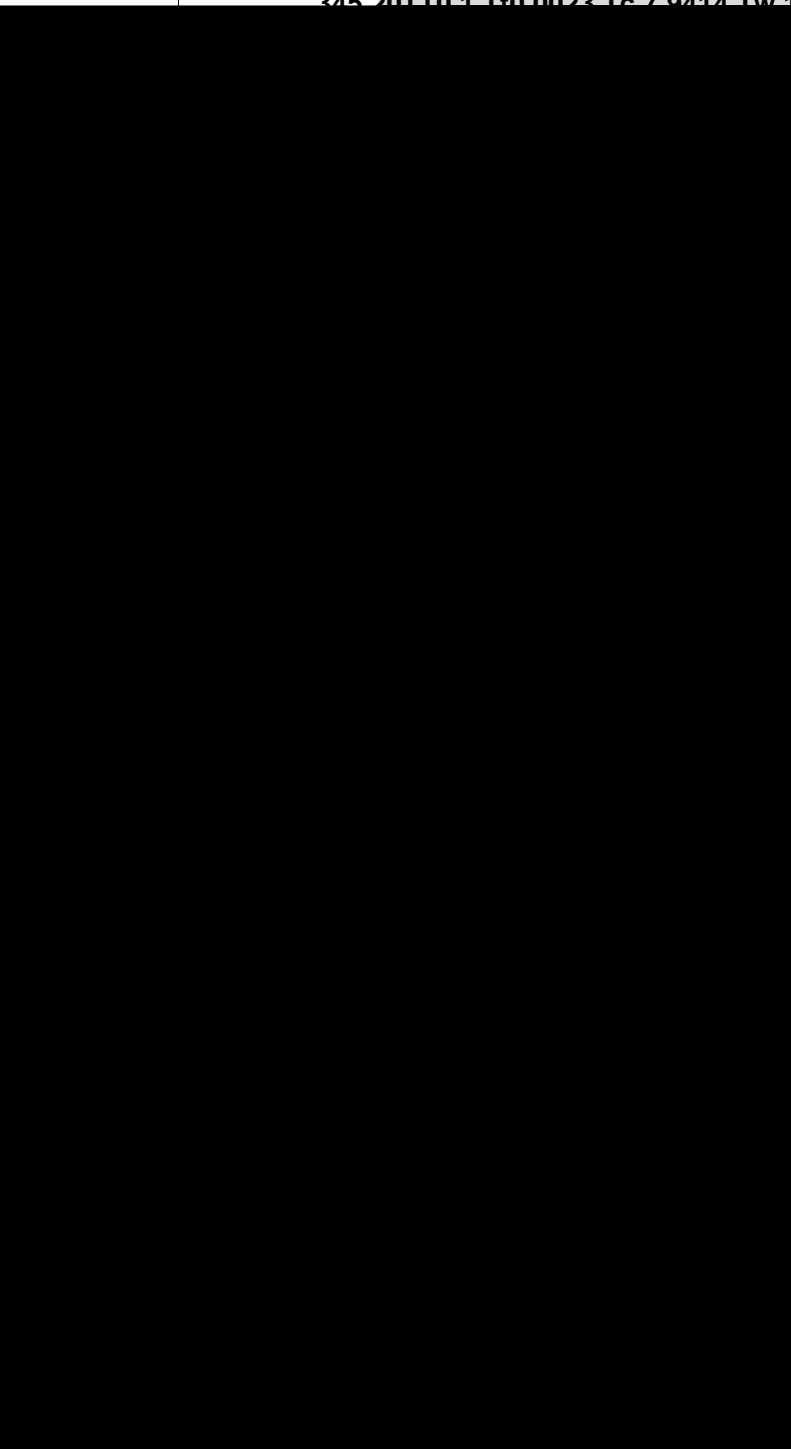
OSPF


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

bandwidth	
show ip ospf	Ospf

GÄULIÇ-y[È] "Q ðÂí± ¬ hñ à ¡á†• [È

345.20TT0.1 T#0.0023 Tc 7.9414 Tw 10.02 358.82.02 135.36 527.0603 Tm358.82.11156(-)JTET66.8	
--	--



out

LSA

dAiE1TV"!-."-# @9lbaA \$xã

-	-

┌

-	-

31.1.26 ip ospf dead-interval

OSPF
no

ip ospf dead-interval

ip ospf dead-interval *seconds*

no ip ospf dead-interval

<i>seconds</i>	1-65535

┌

ip ospf hello-interval 4

┌

```

OSPF      Hello      OSPF
Hello      4          hello
           OSPF      hello
>
>
    
```

	ip ospf hello-interval	OSPF Hello
--	-------------------------------	------------

--

OSPF Hello
no

ip ospf hello-interval

ip ospf hello-interval *seconds*

no ip ospf hello-interval

<i>seconds</i>	OSPF hello 1-65535

```

10
PPP HDLC 10
10
X.25 30
    
```

```

hello hello OSPF
hello hello
hello
    
```

```

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



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>	1 255

MD5

	area authentication	OSPF
	ip ospf authentication	
	-	-

31.1.30 ip ospf mtu-ignore

mtu

no

ip ospf mtu-ignore

no ip ospf mtu-ignore

	-	-

mtu

	-	-
--	---	---

31.1.31 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}

<i>broadcast</i>	OSPF
<i>non-broadcast</i>	OSPF NBMA
<i>point-to-multipoint</i> [<i>non-broadcast</i>]	OSPF , non-broadcast
<i>point-to-point</i>	OSPF

	PPP SLIP	X.25
NBMA		X.25

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

OSPF

,

X.25

OSPF

X.25 map

Frame-relay map

X.25

OSPF

X.25

	X25 map	IP	X.25
	-	-	

31.1.32 ip ospf priority

OSPF

ip ospf priority

no

ip ospf priority *priority*

no ip ospf priority

<i>priority</i>	OSPF	0-255

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

```

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

ip ospf network	OSPF

31.1.34 ip ospf transmit delay

OSPF LSU
no

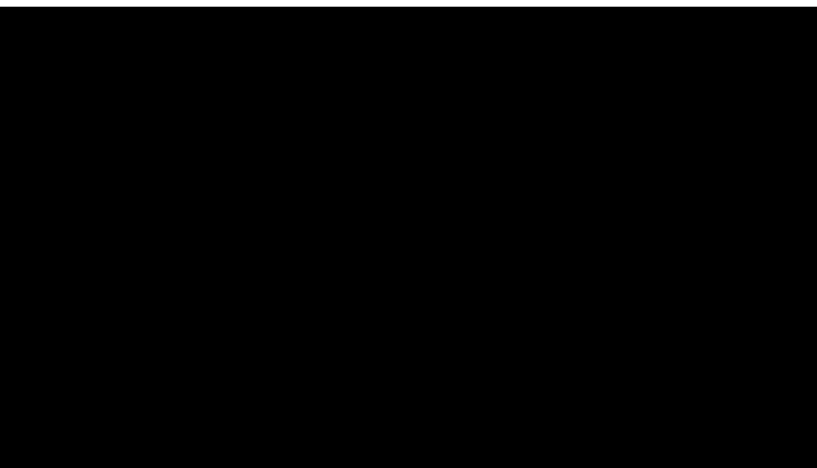
ip ospf transmit delay

ip ospf transmit delay *seconds*

no ip ospf transmit delay

<i>seconds</i>	OSPF	LSU
	1-65535	

1



LSAs Age
mit delay LSU
transmit-delay
A
5

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



log-adj-changes [detail]

no log-adj-changes [detail]

	detail	

	detail	Full	Full
--	--------	------	------

└───┘

└───┘

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

	show ip ospf	ospf

└───┘

	-	-

31.1.36 max-concurrent-dd

DD

max-concurrent-dd <1-65535>

no max-concurrent-dd

	<1-65535>	DD

└───┘

5

└───┘

DD

DD

4

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

Ruijie(config-router)# **max-concurrent-dd 4**

-	-

-	-

31.1.37 neighbor

OSPF

neighbor

no

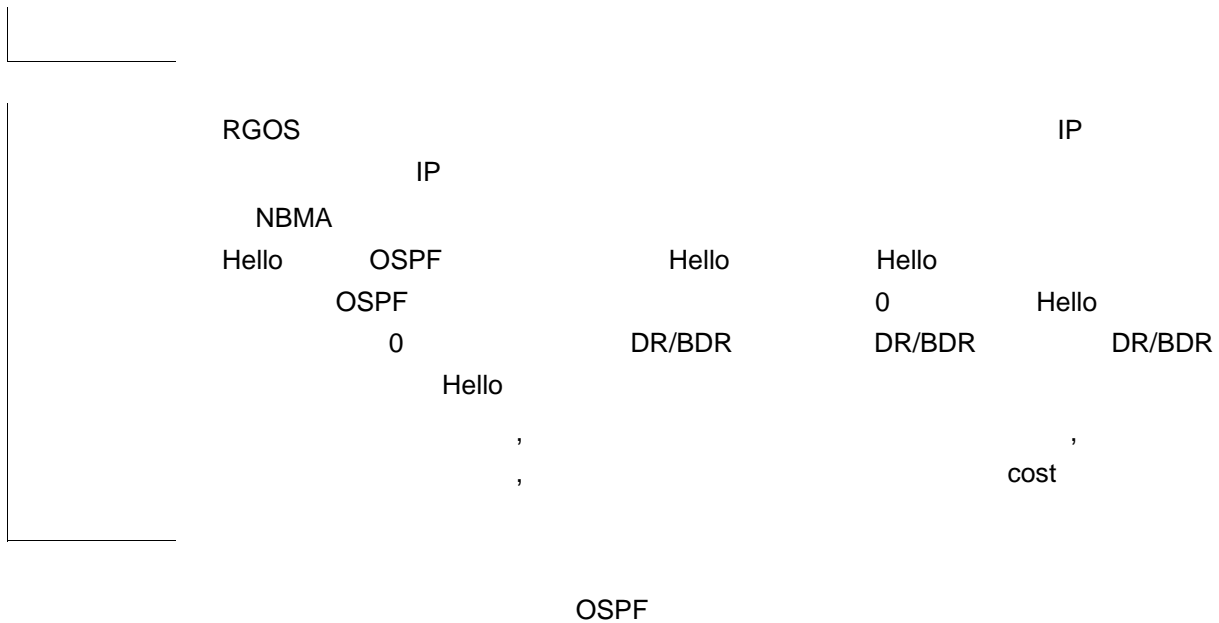
neighbor *ip-address* {[**poll-interval** *seconds* | **priority** *priority*] | [**cost** *cost*]}

no neighbor *ip-address*

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

120

0



<i>wildcard</i>	IP	0	1
<i>area-id</i>	OSPF	OSPF	OSPF

OSPF

```

ip-address  wildcard
OSPF
IP          OSPF          network area
           OSPF          IP          IP
           OSPF          network   IP
           OSPF
    
```

```

0 1 172.16.16.0 IP 192.168.12.0/24
1 IP 172.16.16.0/20
172.16.16.0 0
Ruijie(config)# router ospf 20
Ruijie(config-router)# network 172.16.16.0 0.0.15.255 area
172.16.16.0
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 1
Ruijie(config-router)# network 0.0.0.0 255.255.255.255 area 0
    
```

router ospf	OSPF
--------------------	------

-	-
---	---

31.1.39 overflow database

OSPF LSA
overflow database <1-4294967294> hard | soft

no overflow database



	external-LSA		external-LSA	
	external-LSA		external-LSA	

	external-LSA	<i>max-dbsize</i>		
	external-LSA	external-LSA	<i>wait-time</i>	
		external-LSA		
		OSPF		
		<i>max-dbsize</i>		
r	1			Full
	2			
	3	AS-External-LSA		

	external lsa	10	overflow	overflow
	3			

```

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


	-	-


	-	-

31.1.41 overflow memory-lack

OSPF OVERFLOW no

overflow memory-lack

no overflow memory-lack

no		OSPF	OVERFLOW
	OSPF	OVERFLOW	
	OSPF	OVERFLOW	
		OSPF	NULL
		OVERFLOW	
	clear ip ospf process	OSPF	OSPF
OVERFLOW			
no	OSPF	OVERFLOW	
		OSPF	
	1 OSPF	OVERFLOW	
	Ruijie(config)# router ospf 1		
	Ruijie(config-router)# no overflow memory-lack		
			

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

type <i>number</i>	
default	

|

OSPF

|

|

|

serial 1/0

Ruijie(config)# **router ospf** 30

Ruijie(config-router)# **passive-interface serial1/0**

--	--

isis [<i>area-tag</i>]	isis	<i>area-tag</i>	isis
ospf <i>process-id</i>	ospf	<i>process-id</i> 1-65535	ospf
rip			

```

                                OSPF  ISIS
                                route-map
                                match
level

```

```

1          ospf 2  isis isis-001      OSPF
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

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

```

summary-address	OSPF
default-metric	OSPF

-	-

31.1.44 router ospf

```

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

```

<i>process-id</i>	OSPF 1
<i>vrf-name</i>	VRF OSPF VRF

```

OSPF

RGOS10.1 OSPF OSPF

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

show ip protocols	
show ip ospf	ospf

-	-

31.1.45 router-id

```

ID, no Router ID
Router ID
router-id router-id
no router-id
    
```

<i>router-id</i>	ID, IP

```

OSPF loopback IP
IP loopback OSPF IP
    
```

IP

LSA

router-id

```

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

show ip protocols	

-	-

31.1.46 summary-address

OSPF
no

summary-address

summary-address *ip-address net-mask* {**not-advertise** | **tag value**}

no summary-address *ip-address net-mask* {**not-advertise** | **tag value**}

<i>ip-address</i>	IP
<i>net-mask</i>	
not-advertise	
tag value	tag 0-4294967295

```

OSPF
OSPF
OSPF
area range
summary-address
OSPF
OSPF
OSPF
    
```

NSSA **summary-address** NSSA ABR

100.100.0.0/16

```

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

area range	OSPF
redistribute	

1	RGOS 10.4	timers throttle spf	
	timers spf 5 10		
2	RGOS 10.4	timers throttle spf	timers spf
	SPF	timers throttle spf	timers
	throttle spf		

<i>spf-delay</i>	SPF 1-600000 OSPF SPF <i>spf-delay</i>
<i>spf-holdtime</i>	SPF 1-600000
<i>spf-max-waittime</i>	SPF 1-600000

```

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

```

spf-delay          SPF          spf-holdtime          SPF
          SPF          spf-max-waittime          SPF
          spf-holdtime          SPF
          spf-holdtime
spf-delay spf-holdtime          spf-max-waittime
          SPF
timers spf          SPF          timers
throttle spf          SPF          timers
-----
          1 spf-holdtime          spf-delay          spf-holdtime
          spf-delay
          2 spf-max-waittime          spf-holdtime
          spf-max-waittime          spf-holdtime
r          3 timers throttle spf          timers spf
          4 timers spf timers throttle spf          timers
          throttle spf
    
```

```

          OSPF  SPF          5
          1000  90000          SPF
          5ms 1s 3s 7s 15s 31s 63s 89s 179s 179+90 .....
          Ruijie(config)# router ospf 20
          Ruijie(config-router)# timers spf 5 1000 90000
    
```



show ip ospf	ospf	
timers spf	SPF	10.4
	RGOS	SPF
		timers
	throttle spf	timers spf

└───┘

10.4(1)	

31.2

31.2.1 show ip ospf

OSPF

show ip ospf

show ip ospf [*process-id*]

<i>process-id</i>	ospf

└───┘

```
This router is an ASBR (injecting external routing information)
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
LsaGroupPacing: 240 secs
Number of incoming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 4. Checksum 0x0278E0
Number of opaque AS LSA 0. Checksum 0x000000
Number of non-default external LSA 4
External LSA database is unlimited.
Number of LSA originated 6
Number of LSA received 2
Log Neighbor Adjacency Changes : Enabled
Graceful-restart disabled
Graceful-restart helper support enabled
Number of areas attached to this router: 1
Area 0 (BACKBONE)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 1
Area has no authentication
SPF algorithm last executed 00:01:26.640 ago
SPF algorithm executed 4 times
Number of LSA 3. Checksum 0x0204bf
Area 1 (NSSA)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 0
Number of fully adjacent virtual neighbors through this area is 0
Area has no authentication
SPF algorithm last executed 02:09:23.040 ago
SPF algorithm executed 4 times
Number of LSA 6. Checksum 0x028638
NSSA Translator State is elected
    OSPF   BFD   ,                "BFD enabled",
Ruijie# show ip ospf
Routing Process "ospf 1" with ID 1.1.1.1
Process uptime is 4 minutes
Process bound to VRF default
Conforms to RFC2328, and RFC1583Compatibility flag is enabled
Supports only single TOS(TOS0) routes
Supports opaque LSA
```

Supports Graceful Restart
This router is an ASBR (injecting external routing information)
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
LsaGroupPacing: 240 secs
Number of incoming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 4. Checksum 0x0278E0
Number of opaque AS LSA 0. Checksum 0x000000
Number of non-default external LSA 4
External LSA database is unlimited.
Number of LSA originated 6
Number of LSA received 2
Log Neighbor Adjacency Changes : Enabled
Graceful-restart disabled
Graceful-restart helper support enabled
Number of areas attached to this router: 1
BFD enabled
Area 0 (BACKBONE)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 1
Area has no authentication
SPF algorithm last executed 00:01:26.640 ago
SPF algorithm executed 4 times
Number of LSA 3. Checksum 0x0204bf
Area 1 (NSSA)
Number of interfaces in this area is 1(1)
Number of fully adjacent neighbors in this area is 0

Conforms to RFC2328	RFC2328
RFC1583Compatibility flag	RFC2328 RFC1583 ASBR
Support Tos	TOS0
Supports opaque LSA	opaque-LSA
Graceful-restart	RFC3623 Graceful Restart GR Restart
Graceful-restart helper	RFC3623 Graceful Restart GR Help
Router Type	OSPF normal ABR ASBR
SPF Delay	SPF
SPF-holdtime	SPF
LsaGroupPacing	LSA
Incomming current DD exchange neighbors	exstart incomming
Outgoing current DD exchange neighbors	exstart outgoing
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	NSSA LSA External LSA NSSA ABR OSPF
BFD enabled	OSPF BFD

-	-

-	-

31.2.2 show ip ospf border-routers

```

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

<i>process-id</i>	ospf

```
show ip route
```

	ABR	ASBR	OSPF	OSPF
		OSPF		OSPF

```
show ip ospf border-routers
```

```
Ruijie# show ip ospf border-routers
```

```
OSPF internal Routing Table
```

```
Codes: i - Intra-area route, I - Inter-area route
```

```
i 1.1.1.1 [2] via 10.0.0.1, FastEthernet 0/1, ABR, ASBR,
```

LSAs

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

<i>area-id</i>		
adv-router		
<i>link-state-id</i>		OSPF
self-originate		
max-age		LSA]

Router Link States (Area 0.0.0.0)

```

Link ID      ADV Router    Age  Seq#      CkSum  Link count
1.1.1.1     1.1.1.1      2   0x80000011 0x6f39 2
3.3.3.3     3.3.3.3     120 0x80000002 0x26ac 1
    
```

Network Link States (Area 0.0.0.0)

```

Link ID      ADV Router    Age  Seq#      CkSum
192.88.88.27 1.1.1.1     120 0x80000001 0x5366
    
```

Summary Link States (Area 0.0.0.0)

```

Link ID      ADV Router    Age  Seq#      CkSum  Route
10.0.0.0     1.1.1.1      2   0x80000003 0x350d 10.0.0.0/24
100.0.0.0    1.1.1.1      2   0x8000000c 0x1ecb 100.0.0.0/16
    
```

Router Link States (Area 0.0.0.1 [NSSA])

```

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

Summary Link States (Area 0.0.0.1 [NSSA])

```

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

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

```

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

AS External Link States

```

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

show ip ospf database

OSPF Router with ID	OSPF OSPF
Router Link States	
Net Link States	
Summary Net Link States	

NSSA-external Link States

Network Mask	
TOS	TOS 0
Metric	

3 show ip ospf database external

```
Ruijie# show ip ospf database external
OSPF Router with ID (1.1.1.35) (Process ID 1)
AS External Link States
LS age: 752
Options: 0x2 (*|---|---|E|)
LS Type: AS-external-LSA
Link State ID: 20.0.0.0 (External Network Number)
Advertising Router: 1.1.1.1
LS Seq Number: 8000000a
Checksum: 0x7627
Length: 36
Network Mask: /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
OSPF Router with ID	
Type-5 AS External Link States	
LS age	
Options	
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	
Network Mask	
Metric Type	

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

4 **show ip ospf database network**

```
Ruijie# show ip ospf database network
OSPF Router with ID (1.1.1.1) (Process ID 1)
Network Link States (Area 0.0.0.0)
LS age: 572
Options: 0x2 (*|---|---|E|)
LS Type: network-LSA
Link State ID: 192.88.88.27 (address of Designated Router)
Advertising Router: 1.1.1.1
LS Seq Number: 80000001
Checksum: 0x5366
Length: 32
Network Mask: /24
Attached Router: 1.1.1.1
Attached Router: 3.3.3.3
```

show ip ospf database network

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

Network Mask	
Attached Router	

5 show ip ospf database 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

Link connected to

7 show ip ospf database nssa-external

```
Ruijie# show ip ospf database nssa-external
OSPF Router with ID (1.1.1.1) (Process ID 1)
NSSA-external Link States (Area 0.0.0.1 [NSSA])
LS age: 1
Options: 0x0 (*|---|---|---|)
LS Type: AS-NSSA-LSA
Link State ID: 20.0.0.0 (External Network Number For NSSA)
Advertising Router: 1.1.1.1
LS Seq Number: 80000001
Checksum: 0x033c
Length: 36
Network Mask: /24
Metric Type: 2 (Larger than any link state path)
TOS: 0
Metric: 20
NSSA: Forward Address: 100.0.2.1
External Route Tag: 0
```

show ip ospf database nssa-external

OSPF Router with ID	OSPF
NSSA-external Link States	
LS age	
Options	
LS Type	
Link State ID	
Advertising Router	
LS Seq Number	
Checksum	
Length	
Network Mask	
Metric Type	
TOS	TOS 0
Metric	

NSSA:Forward Address	0.0.0.0	IP
External Route Tag	OSPF OSPF	32

8 show ip ospf database externalRuijie# **show ip ospf database external**

OSPF Router with ID (1.1.1.1) (Process ID 1)

AS External Link States

Length

	-	-
--	---	---

31.2.4 show ip ospf interface

OSPF

show ip ospf interface

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

<i>interface-type</i>	

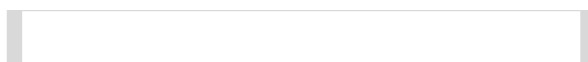
```

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

show ip ospf interface serial 1/0

	UP	Down
FastEthernet 0/0 State		
Internet Address	IP	
Area	OSPF	
MTU	MTU	
Matching network config	OSPF	network area
Process ID		
Router ID	OSPF	
Network Type	OSPF	
Cost	OSPF	
Transmit Delay is	OSPF	
State	DR/BDR	
Priority		
Designated Router(ID)	DR	
DR's Interface address	DR	
Backup designated router(ID)	BDR	
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
BFD enabled	OSPF BFD



show ip ospf neighbor

```
Ruijie# show ip ospf neighbor
```

```
OSPF process 1, 1 Neighbors, 1 is Full:
```

Neighbor ID	Pri	State	BFD State	Dead Time
3.3.3.3	1	Full/BDR	Up	00:00:32

192.88.88.72 FastEthernet 1/0

```
Ruijie# show ip ospf neighbor detail
```

```
Neighbor 3.3.3.3, interface address 192.88.88.72
```

```
In the area 0.0.0.0 via interface FastEthernet 1/0
```

```
Neighbor priority is 1, State is Full, 11 state changes
```

```
DR is 192.88.88.27, BDR is 192.88.88.72
```

```
Options is 0x52 (*|O|-|EA|-|-|E|-)
```

```
Dead timer due in 00:00:32
```

```
Neighbor is up for 05:11:27
```

```
Database Summary List 0
```

```
Link State Request List 0
```

```
Link State Retransmission List 0
```

```
Crypt Sequence Number is 0
```

```
Thread Inactivity Timer on
```

```
Thread Database Description Retransmission off
```

```
Thread Link State Request Retransmission off
```

```
Thread Link State Update Retransmission off
```

```
Thread Poll Timer on
```

```
Graceful-restart helper disabled
```

```
BFD
```

```
" BFD session state up"
```

```
Ruijie# show ip ospf neighbor
```

```
OSPF process 1, 1 Neighbors, 1 is Full:
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
3.3.3.3	1	Full/BDR	00:00:32	192.88.88.72	FastEthernet 1/0

```
Ruijie# show ip ospf neighbor detail
```

```
Neighbor 3.3.3.3, interface address 192.88.88.72
```

```
In the area 0.0.0.0 via interface FastEthernet 1/0
```

```
Neighbor priority is 1, State is Full, 11 state changes
```

```
DR is 192.88.88.27, BDR is 192.88.88.72
```

```
Options is 0x52 (*|O|-|EA|-|-|E|-)
```

```
Dead timer due in 00:00:32
```

```
Neighbor is up for 05:11:27
```

```

Database Summary List 0
Link State Request List 0
Link State Retransmission List 0
Crypt Sequence Number is 0
Thread Inactivity Timer on
Thread Database Description Retransmission off
Thread Link State Request Retransmission off
Thread Link State Update Retransmission off
Thread Poll Timer on
Graceful-restart helper disabled
BFD session state up
    
```

show ip ospf neighbor

Neighbor ID	
Pri	DR
State	
Dead Time	Dead
Address	
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
Graceful-restart helper	GR Helper

-	-

-	-

31.2.6 show ip ospf route

OSPF

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

<i>process-id</i>	OSPF OSPF
count	OSPF

OSPF count OSPF

```

Ruijie# show ip ospf route
OSPF process 1:
Codes: C - connected, D - Discard, O - OSPF,
IA - OSPF inter area N1 - OSPF NSSA external type 1, N2 - OSPF NSSA
external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2
E2 100.0.0.0/24 [1/20] via 192.88.88.126, FastEthernet 1/0
C 192.88.88.0/24 [1] is directly connected, FastEthernet 1/0, Area
0.0.0.1

```

show ip ospf route

codes	
100.0.0.0/24	
[1]	cost
via	

-	-
---	---

-	-
---	---

31.2.7 show ip ospf summary-address

```

OSPF show ip ospf
summary-address

```

NSSA ABR

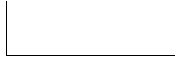
show ip ospf summary-address

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

Summary Address	
Summary Mask	
Advertise	
Status	
Aggregated subnets	



ospf neighbor

show ip

32

```

Ruijie(config-router)# distribute-list 10 in fastethernet 0/0
Ruijie(config-router)# no auto-summary
Ruijie(config-router)# exit
Ruijie(config)# access-list 10 permit 172.16.0.0 0.0.255.255

```

access-list	
prefix-list	

-	-

32.1.2 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>	1-99 1300-1999 100-199 2000-2699
<i>access-list-name</i>	
prefix <i>prefix-list-name</i>	
<i>Interface</i>	()
<i>protocol</i>	()

OSPF

OSPF

RIP 192.168.12.0/24

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

access-list	
prefix-list	
redistribute	

-	-

32.1.3 ip community-list

no

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

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

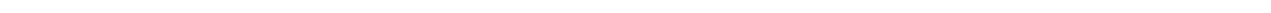
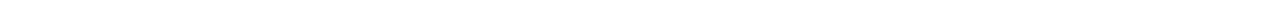
standard	
expanded	

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

BGP

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

match community	
------------------------	--




```

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

```

```

           IP          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

```

--	-

-	-

32.1.6 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>	

	-	-

32.1.8 ip route

```
ip route no  
ip route [vrf vrf_name] network net-mask {ip-address |
```

RGOS
VOIP

RGOS IP

	-	-
	-	-

32.1.11 match as-path

no AS_PATH **match as-path**
match as-path *as-path-acl-list-num as-path-acl-list-num.....*
no match as-path *as-path-acl-list-num.....*

<i>as-path-acl-list-num</i>	1...500

match as-path
1 **match** 1 **set**
match **set**

```

Ruijie(config)# route-map ROUTEMAP2IBGP
Ruijie(config-route-map)# match as-path 20 30

```

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

-	-

32.1.12 match community

COMMUNITY match

community **no**

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**] ...]

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

```

match community
  6
  exact-match
  1      match      1      set
  match      set

```

```

Ruijie(config)# ip community-list 1 permit 100:2 100:30
Ruijie(config)# route-map set_lopref
Ruijie(config-route-map)# match community 1 exact-match
Ruijie(config-route-map)# set local-preference 20

```

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	

-	-

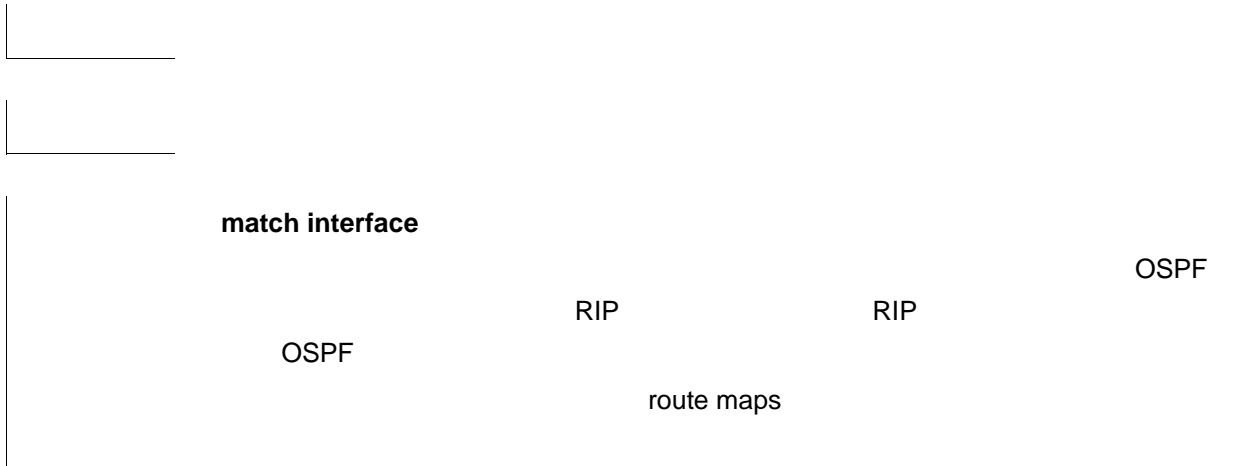
32.1.13 match interface

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

1

match
set

1

set

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

?UG!,z @<! 'øtY:Qà

1

```
Ruijie(config-route-map)# set metric 40  
Ruijie(config-route-map)# set metric-type type-1
```

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

-	-

32.1.15 match ip next-hop

IP

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

match ip next-hop

```

RIP                                OSPF
RIP                                OSPF
IP                                route maps
1                                match 1
match                             set

```

```

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

```

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

	set metric-type	
	set tag	
	-	-

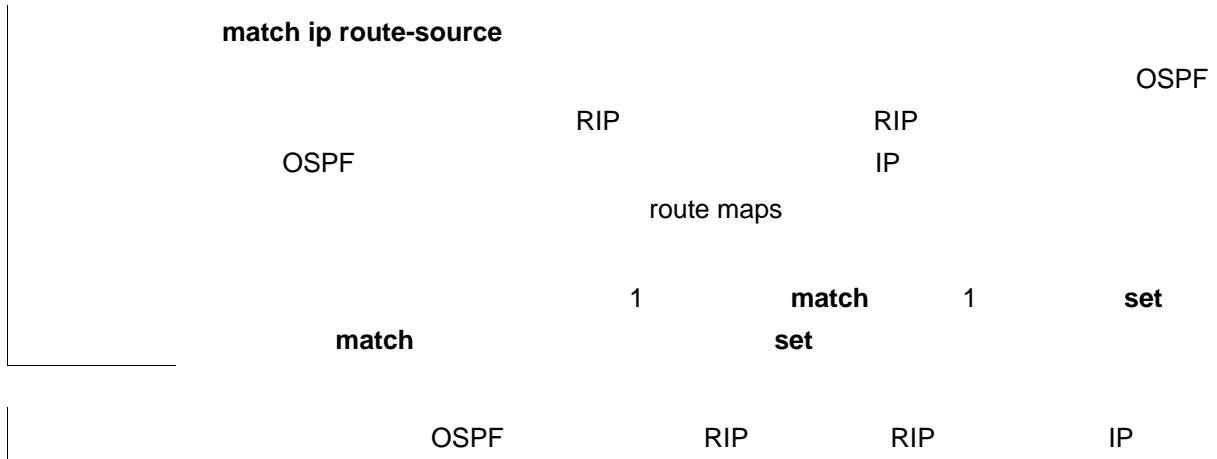
32.1.16 match ip route-source

IP
match ip route-source no

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

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

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



5 OSPF

```
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets
Ruijie(config-router)# route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# access-list 5 permit host 192.168.100.1
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ip route-source 5
```

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

-	-

32.1.17 match length

IP

<i>min-length</i>	IP
<i>max-length</i>	IP

-	-

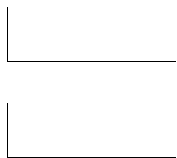
32.1.18 match metric

match metric no

match metric *metric*

no match metric

<i>metric</i>	0-4294967295



```

                                OSPF
                                RIP
                                RIP
                                IP
                                OSPF
                                route maps
                                match
                                set
                                match
                                set
                                OSPF
                                RIP
                                10
                                RIP
                                OSPF

```

```

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

```

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

32.1.19 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

```

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

-	-

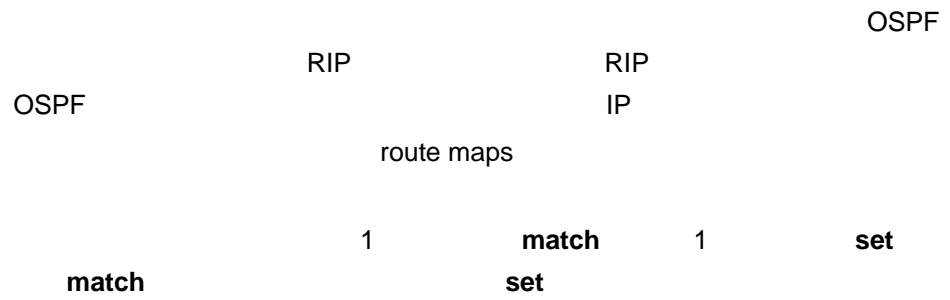
32.1.20 match route-type

match route-type **no**

match route-type {local | internal | external [type-1 | type-2] | level-1 | level-2}

no match route-type {local | internal | external [type-1 | type-2] | level-1 | level-2}

local	
Internal	OSPF
external	(BGP OSPF)
type-1 type-2	OSPF 1 2
level-1 level-2	ISIS 1 2



```

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	

32.1.21 match tag

	match tag	no
match tag <i>tag [...tag]</i>		
no match tag <i>tag [...tag]</i>		

--	--	--

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

└──

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32.1.22 route-map

route-map **no**

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

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

--	--

route-map-name

permit

permit

	<i>sequence-number</i>	
--	------------------------	--

RGIOS

-	-

32.1.23 set aggregator as

```

match AS set
aggregator as no
set aggregator as as-num ip_addr
no set aggregator as [as-num ip_addr]

```

as-number	AS
ip_addr	

```

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

	-	-

32.1.24 set as-path prepend

match AS_PATH set
as-path prepend no
set as-path prepend as-number
no set as-path prepend [as-number]

as-number	AS_PATH	AS

┌

┌

15 as AS_PATH as-path

```

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
  
```



-	-

32.1.25 set comm-list delete

```

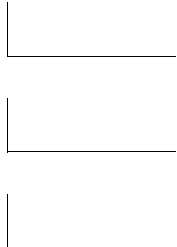
match          COMMUNITY_LIST          community
set comm-list delete          no

```

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
```

<i>community-number</i>	AA:NN(:2) 0-4294967295 internet Internet local-as AS no-advertise BGP peers no-export EBGPeers
additive	community
none	

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

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

-	-

32.1.28 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

set down set

serial 1/0 fastethernet 1/0 500

```
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 fastethernet 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

-	-

32.1.29 set extcommunity

match

•NO•HCL AEâ È€

rt	RT
soo	SOO
<i>extend-community-value</i>	

```
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
```

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

-	-

32.1.30 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 ip default next-hop ip address weight
r
1
set ip next-hop set ip default next-hop

```

```

Ruijie(config)#route-map equal-access permit 20
Ruijie(config-route-map)#match ip address 2
Ruijie(config-route-map)#set ip default next-hop 7.7.7.7
Ruijie(config)#route-map equal-access permit 30
Ruijie(config- route-map)#set default interface null 0

```

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

-

-	-

32.1.31 set ip dscp

```

match DSCP set ip dscp
no
set ip dscp dscp_value
no set ip dscp

```

<i>dscp_value</i>	IP IP DSCP

--	--

--

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

--

-	-

32.1.32 set vrf

set vrf *match* IP *VRF*
no

set vrf *name*

no set vrf *name*

<i>name</i>	VRF

--

--

--

match IP *VRF*

```

1      set vrf      VRF      set      VRF
      VRF      set
>      set vrf      VRF
      % route-map VRF table vrf-name does not exist.
> VRF      route-map      set vrf
      % route-map set vrf vrf-name configuration removed from all
      route-maps.

2      set vrf      set ip
nexthop set ip next-hop verify-availability      set
vrf set ip tos set ip precedence set ip dscp
      set vrf

>      set ip nexthop

```

r

route-map	
match ip address	
match length	IP
ip vrf receive	vrf_name VRF

RGOS 10.4	RGOS 10.4
-----------	-----------

32.1.33 set ip next-hop

match IP set ip next-hop
no

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

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

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

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

1

set

serial 1/0 10.0.0.0/8
192.168.100.1 172.16.0.0/16
172.16.100.1

```
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
Ruijie#
```

05/02/2015

-	-

32.1.34 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>	

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```

                                serial 1/0                                10.0.0.0/8
                                192.168.100.1                            172.16.0.0/16
                                172.16.100.1
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
Ruijie(config)#route-map load-balance permit 30
Ruijie(config-route-map)#set interface Null 0

```

--	--


```

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 FastEthernet 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	
set tag	
set ip tos	IP tos

-	-

32.1.36 set ip tos

match IP TOS, set ip tos
no tos

set ip tos {<0-15> | *max-reliability* | *max-throughput* | *min-delay* | *min-monetary-cost* | *normal*} **msd**(**|**)**Tj**/TT5 1 Tf0.0028 T060 Tw 16Tw 5.417 0 Td[(0-)-6(15)]T/T0 lay

-	-
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L

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L

IP	TOS	IP
	IP	TOS

fastEthernet 0/0 192.168.217.68

tos 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 tos 4**

Ruijie(config)#**interface FastEthernet 0/0**

Ruijie(config-if)#**ip policy route-map name**

32.1.37 set level

match
no

set level

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

no set level

-	-

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└───┘

└───┘

└───┘

```

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

```

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

└───┘

-	-

32.1.38 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	

-	-

32.1.39 set metric

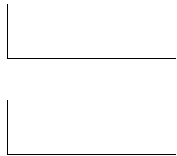
match **set metric**

no

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

no set metric

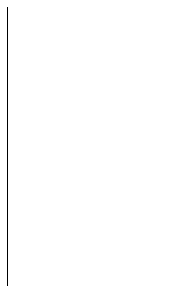
+	metric
-	metric
<i>metric-value</i>	



```

set metric + - metric
RIP metric 1-16 OSPF
OSPF RIP RIP IP
route maps
1 match 1 set
match set

```



```

40 OSPF 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)# set metric 40
```

match interface	
match ip address	
match ip next-hop	

route maps

	<i>ip-address</i>	IP

match

set origin

no

set origin {egp | igp | incomplete}

no set origin

egp	EGP
igp	IGP
incomplete	

```

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	

--	--

32.1.43 set originator-id

match set originator-id
 no

set originator-id *ip-addr*

no originator-id [*ip-addr*]

<i>ip-addr</i>	

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```
Ruijie(config)# route-map SET_ORIGIN 10 permit
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set 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	

┌

-	-

32.1.44 set tag

match set tag no

set tag tag

no set tag

<i>tag</i>	

└──

└──

└──

```

                                OSPF          RIP          100
Ruijie(config)# router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# set tag 100

```

--	--

3

3

```
permit 0:10
deny 0:20
```

match community	
set comm-list delete	BGP

-	-

32.2.2 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
```



```

O E2 30.0.0.0/8 [110/20] via 192.1.1.1, 00:00:06, VLAN 1
R 40.0.0.0/8 [120/20] via 192.1.1.2, 00:00:23, VLAN 1
B 50.0.0.0/8 [120/0] via 192.1.1.3, 00:00:41
C 192.1.1.0/24 is directly connected, VLAN 1
C 192.1.1.254/32 is local host.

```

show ip route

O	C S R RIP B BGP O OSPF i IS-IS
E2	E1 OSPF E2 OSPF N1 OSPF NSSA 1 N2 OSPF NSSA 2 IA OSPF su IS-IS L1 IS-IS 1 L2 IS-IS 2 ia IS-IS
20.0.0.0/8	
[1/0]	
Via 20.0.0.1	IP
00:00:06	
VLAN 1	

2 **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
```

--	--

Routing Descriptor
Blocks

IP

Match clauses:

ip address 2

Set clauses:

metric 10

route-map	
Permit	permit
sequence 10	
Match clauses	permit deny set
Set clauses	match

-	-

-	-

33

33.1

33.1.1 protected-ports route-deny

3

3

protected-ports route-deny

no protected-ports route-deny

	-	-

|

|

|

3

3

show running-config

|

Ruijie(config)# **protected-ports route-deny**

|

show running-config	3

|

|

--	--

no

storm-control {**broadcast** | **multicast** | **unicast**} [{**level percent** | **pps packets** | *rate-bps*}]

no storm-control {**broadcast** | **multicast** | **unicast**} [{**level percent** | **pps packets** | *rate-bps*}]

broadcast	
multicast	
unicast	
<i>percent</i>	20 20%
<i>packets</i>	pps packets per second
<i>Rate-bps</i>	
<i>64k-2M</i>	64k
<i>2-100M</i>	1M
<i>100M</i>	8M

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|

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|

-	-

33.1.3 switchport protected

no

switchport protected

no switchport protected

|

-	-

|

|

|

3

show interfaces

|

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

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

|

show interfaces	

|

-

|

-	-

33.1.4 switchport port-security

no

switchport port-security [violation {protect | restrict | shutdown}]

no switchport port-security [violation]

port-security	
violation protect	
violation restrict	trap
violation shutdown	Trap

|

|

|

```
) ( MAC IP(
1
M
```

|

```
Gigabitethernet 1/1
shutdown
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport port-security
Ruijie(config-if)# switchport port-security violation shutdown
```

|

show port-security	

|

|

-	-
---	---

33.1.5 switchport port-security aging

no

switchport port-security aging {static | time time }

no switchport port-security aging {static | time }

Static			
time time	1440	0	0

no switchport port-security aging time
no switchport port-security aging static

show port-security

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# switchport port-security aging time 8
Ruijie(config-if)# switchport port-security aging static
```

show port-security	

-	-

33.1.6 switchport port-security binding

IP+ MAC IP

no

[no] **switchport port-security binding** *mac-address* **vlan** *vlan_id* *ipv4-address*

[no] **switchport port-security binding** *ipv4-address* | *ipv6-address*

<i>mac-address</i>	MAC
<i>Vlan_id</i>	MAC VID
<i>Ipv4-address</i>	Ipv4 Ip

```
1 192.168.1.100 10
```

```
Ruijie(config)#inter g0/10
```

```
Ruijie(config-if)# switchport port-security binding 192.168.1.100
```

```
2 192.168.1.100 MAC 00d0.f800.5555, VID= 1 10
```

```
Ruijie(config)#inter g0/10
```

```
Ruijie(config-if)# switchport port-security binding 00d0.f800.5555
```

```
vlan 1 192.168.1.100
```

switchport port-security	
switchport port-security binding interface	
Switchport port-security mac-address	
switchport port-security aging	
show port-security	

	switchport port-security aging	
	show port-security	
	-	-

33.1.8 switchport port-security maximum

no

switchport port-security maximum *value*

[no] **switchport port-security maximum**

	value	1-128

128

128

```

1      10      2
Ruijie(config)#inter g0/10
Ruijie(config-if)# switchport port-security maximum 2

```

	switchport port-security	
	switchport port-security binding	
	Switchport port-security mac-address	
	switchport port-security aging	

	show port-security	
	-	-

33.1.9 switchport port-security mac-address

no

[no] switchport port-security mac-address *mac-address* [vlan *vlan-id*]

	<i>mac-address</i>	
	<i>vlan-id</i>	MAC VID TRUNK <i>vlan-id</i>

┌
└
┌
└

```

1      TRUNK      10                      00d0.f800.5555 VID=2
Ruijie(config)#inter g0/10
Ruijie(config-if)#      switchport      port-security      mac-address
00d0.f800.5555 vlan 2

```

	switchport port-security	
	switchport port-security binding	
	switchport port-security mac-address interface	
	switchport port-security aging	

show port-security	
-	-

33.1.11 switchport port-security sticky mac-address

Sticky MAC no

[no] switchport port-security mac-address sticky *mac-address* [vlan *vlan-id*]

Sticky MAC no Sticky MAC

[no] switchport port-security mac-address sticky

<i>mac-address</i>	MAC	VID	
<i>vlan-id</i>		TRUNK	vlan-id

Sticky MAC

```

1      10  Sticky MAC
Ruijie(config)#inter g0/10
Ruijie(config-if)# switchport port-security
Ruijie(config-if)# switchport port-security sticky mac-address
Ruijie(config-if)# end
2      TRUNK  10  Sticky      00d0.f800.5555 VID=2
Ruijie(config)#inter g0/10
Ruijie(config-if)# no switchport port-security sticky mac-address

```

switchport port-security	
switchport port-security binding	
Switchport port-security mac-address	
switchport port-security mac-address interface	
switchport port-security aging	
show port-security	

RGOS 10.4(3)	Sticky MAC	10.4(3)

33.2

33.2.1 show storm-control

show storm-control [*interface-id*]

<i>interface-id</i>	

```
Ruijie# show storm-control gigabitethernet 1/1
Interface Broadcast Control Multicast Control Unicast Control
-----
Gil/1 Disabled Disabled Disabled
```

storm-control	

-	-

33.2.2 show port-security

show port-security [address] [interface *interface-id*] [all]

address	
interface <i>interface-id</i>	
all	

|
 |
 |
 |

```

Ruijie# show port-security
Secure Port MaxSecureAddr(count) CurrentAddr(count) Security
Action
-----
Gi1/1 128 1 Restrict
Gi1/2 128 0 Restrict
Gi1/3 8 1 Protect
  
```

--	--

	switchport port-security	
	switchport port-security aging	
	switchport port-security mac-address	
	-	-

34 802.1X

34.1 dot1x

34.1.1 dot1x auto-req

802.1X

dot1x auto-req

no

[no] dot1x auto-req

	-	-

34.1.3 dot1x auto-req req-interval

no

dot1x auto-req req-interval *interval*

no dot1x auto-req req-interval

	<i>interval</i>	s

30

show dot1x auto-req

```

802.1x          60s
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req req-interval 60
Ruijie(config)# end
Ruijie# show dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num  : 0
Req-Interval: 60 Second

```

	show dot1x auto-req	

	-	-

34.1.4 dot1x auto-req user-detect

no

dot1x auto-req user-detect

no dot1x auto-req user-detect

-	-

show dot1x auto-req

```
Ruijie# configure terminal
Ruijie(config)# dot1x auto-req user-detect
Ruijie(config)# end
Ruijie# show dot1x auto-req
Auto-Req: Enabled
User-Detect : Enabled
Packet-Num : 0
Req-Interval: 60 Second
```

show dot1x auto-req	

34.2.1 dot1x timeout quiet-period

no

dot1x timeout quiet-period *seconds*

no dot1x timeout quiet-period

<i>seconds</i>	0 65535 s

10

show dot1x

```

1000s
Ruijie# configure terminal
Ruijie(config)# dot1x timeout quiet-period 1000
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:          Enabled
Authentication Mode:    EAP-MD5
Authed User Number:    0
Re-authen Enabled:     Disabled
Re-authen Period:      3600 sec
Quiet Timer Period:    1000 sec
Tx Timer Period:       3 sec
Supplicant Timeout:    3 sec
Server Timeout:        5 sec
Re-authen Max:         3 times
Maximum Request:       3 times
Filter Non-RG Supp:    Disabled
Client Oline Probe:    Disabled
Eapol Tag Enable:      Disabled
Authorization Mode:     Group Server

```

	show dot1x	802.1x
	-	-

34.2.2 dot1x timeout re-authperiod

no

dot1x timeout re-authperiod *seconds*

no dot1x timeout re-authperiod

	<i>seconds</i>	0	65535	s

3600

show dot1x 802.1x

1000s

```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout re-authperiod 1000
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled:  Disabled
Re-authen Period:   1000 sec
Quiet Timer Period: 1000 sec
Tx Timer Period:    3 sec
```

```

Supplicant Timeout: 3 sec
Server Timeout: 5 sec
Re-authen Max: 3 times
Maximum 2Request: 3 times
Filter Non-RG Supp: Disabled
Client Oline Probe: Disabled
Eapol Tag Enable: Disabled
Authorization Mode: Group Server

```

show dot1x	802.1x

-	-

34.2.3 dot1x timeout server-timeout

<i>seconds</i>	0 65535

5

show dot1x 802.1x

10s

Ruijie# **configure terminal**

```

Ruijie(config)# dot1x timeout server-timeout 10
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:          Enabled
Authentication Mode:    EAP-MD5
Authed User Number:    0
Re-authen Enabled:     Disabled
Re-authen Period:      1000 sec
Quiet Timer Period:    1000 sec
Tx Timer Period:       3 sec
Supplicant Timeout:    3 sec
Server Timeout:        10 sec
Re-authen Max:         3 times
Maximum Request:       3 times
Filter Non-RG Supp:    Disabled
Client Oline Probe:    Disabled
Eapol Tag Enable:      Disabled
Authorization Mode:     Group Server

```

show dot1x	802.1x

-	-

34.2.4 dot1x timeout supp-timeout

no

dot1x timeout supp-timeout *seconds*

no dot1x timeout supp-timeout

<i>seconds</i>	0 65535

3

34.2.5 dot1x timeout tx-period

no

dot1x timeout tx-period *seconds*

no dot1x timeout tx-period

<i>seconds</i>	0 65535

3

show dot1x 802.1x

10s

```
Ruijie# configure terminal
Ruijie(config)# dot1x timeout tx-period 10
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled:  Disabled
Re-authen Period:   1000 sec
Quiet Timer Period: 1000 sec
Tx Timer Period:    10 sec
Supplicant Timeout: 10 sec
Server Timeout:     10 sec
Re-authen Max:      3 times
Maximum Request:    3 times
Filter Non-RG Supp: Disabled
Client Oline Probe: Disabled
Eapol Tag Enable:   Disabled
Authorization Mode:  Group Server
```

	show dot1x	802.1x

	-	-

34.3 dot1x

34.3.1 dot1x re-authentication

no

[no] dot1x re-authentication

```
Tx Timer Period:      10 sec
Supplicant Timeout:   10 sec
Server Timeout:       10 sec
Re-authen Max:        3 times
Maximum Request:      3 times
Filter Non-RG Supp:   Disabled
Client Oline Probe:   Disabled
Eapol Tag Enable:     Disabled
Authorization Mode:    Group Server
```

show dot1x	802.1x

-	-

```

Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled:  Enabled
Re-authen Period:  1000 sec
Quiet Timer Period: 1000 sec
Tx Timer Period:    10 sec
Supplicant Timeout: 10 sec
Server Timeout:     10 sec
Re-authen Max:      5 times
Maximum Request:    3 times
Filter Non-RG Supp: Disabled
Client Oline Probe: Disabled
Eapol Tag Enable:   Disabled
Authorization Mode:  Group Server

```

show dot1x	802.1x
-	-

34.4 dot1x

34.4.1 dot1x probe-timer

<i>interval</i>	hello
alive	
interval	

```
Hello          20
                250
```

```
show dot1x      802.1x
```

```
hello          30 ,          120
Ruijie# configure terminal
Ruijie(config)# dot1x probe-timer interval 30
Ruijie(config)# dot1x probe-timer alive 120
Ruijie(config)# end
Ruijie# show dot1x probe-timer
Hello Interval: 30 Seconds
Hello Alive: 120 Seconds
```

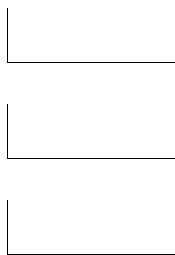
Show dot1x probe-timer	

-	-

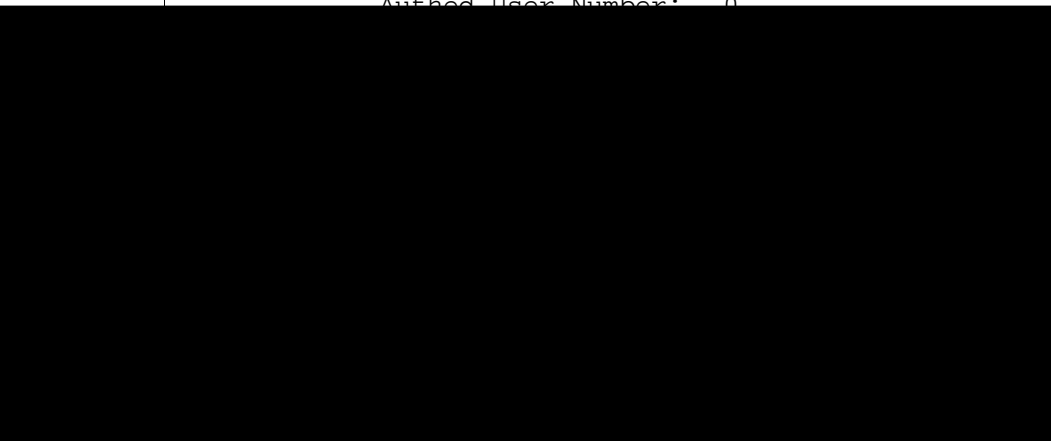
34.4.2 dot1x client-probe enable

[no] dot1x client-probe enable

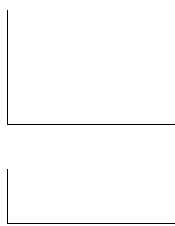
-	-



```
Ruijie# configure terminal
Ruijie(config)# dot1x client-probe enable
Ruijie(config)# end
Ruijie# show dot1x
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
```



```
Client Oline Probe: Enabled
Eapol Tag Enable:   Disabled
Authorization Mode: Group Server
```



show dot1x	dot1x



--	--

-

-

34.5.1 dot1x authentication

AAA

AAA

no**dot1x authentication {default | list-name}****no dot1x authentication {default | list-name}**

default	
<i>list-name</i>	

AAA

AAA

AAA

dot1x

group radius

```

Ruijie# configure terminal
Ruijie(config)# aaa new-model
Ruijie(config)# aaa authentication dot1x default group radius
Ruijie(config)# interface fastEthernet0/1
Ruijie(config-if)# dot1x authentication default
Ruijie(config-if)# end

```

aaa new-model	AAA
aaa authentication dot1x	

802.1X

no

dot1x auth-address-table address *mac-addr* **interface** *interface***no dot1x auth-address-table address** *mac-addr* **interface** *interface*

<i>mac-addr</i>	
<i>Interface</i>	

802.1X

show dot1x auth-address**table**

```

Ruijie# configure terminal
Ruijie(config)# dot1x auth-address-table address
00d0f8000000 interface ethernet 1/1
Ruijie(config)# end
Ruijie#

```

show dot1x auth-address-table

802.1X

<i>num</i>	VLAN , 1-3

3

show dot1x

VLAN

Ruijie# **configure terminal**

Ruijie(config)# **dot1x auth-fail max-attempt** E9Bù

show dot1x interface

```

      802.1x    vlan
Ruijie# configure terminal
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# dot1x auth-fail vlan 2
Ruijie(config-if)# end
Ruijie#write

```

show dot1x interface	802.1x

10.3(5)	

34.5.5 dot1x auth-mode

802.1x

dot1x auth-mode {eap-md5 | chap | pap}**no dot1x auth-mode**

eap-md5	802.1x	EAP-MD5
chap	802.1x	CHAP
pap	802.1x	PAP

EAP-MD5

show dot1x 802.1x

802.1x

```
Ruijie# configure terminal
Ruijie(config)# dot1x auth-mode chap
Ruijie(config)# end
Ruijie#
```

show dot1x	802.1x

-	-

34.5.6 dot1x default

802.1x

dot1x default

-	-

show dot1x 802.1x

```
802.1x
Ruijie# configure terminal
Ruijie(config)# dot1x default
Ruijie(config)# end
Ruijie# end
```

show dot1x	802.1x

	-	-

dot1x dynamic-vlan <1 - 4094>**no dot1x guest-vlan**

vid	<1 - 4094>

┌

┌

```

>          guest vlan          dot1x dynamic-vlan enable
          guest vlan
>          guest vlan
          vlan
>          show running-config  802.1x

```

```

          802.1x guest vlan
Ruijie# configure terminal
Ruijie(config)# dot1x guest-vlan 10
Ruijie(config)# end
Ruijie#

```

show running-config	802.1x

┌

-	-

34.5.9 dot1x eapol-tag

EAPOL TAG

dot1x eapol-tag**no dot1x eapol-tag**

--	--

-	-
---	---

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show dot1x 802.1x

┌

802.1X tag

Ruijie# **configure terminal**

Ruijie(config)# **dot1x eapol-tag**

Ruijie(config)# **end**

Ruijie#

┌

show dot1x	802.1x

┌

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34.5.10 dot1x mac-auth-bypass

MAC

dot1x mac-auth-bypass

no dot1x mac-auth-bypass

┌

┌

MAC

┌

┌

show dot1x port-control interface

802.1x MAC

```

Ruijie# configure terminal
Ruijie(config)# interface fa 0/1
Ruijie(config-if)# dot1x mac-auth-bypass
Ruijie(config-if)# end
Ruijie#write

```

show dot1x port-control interface	802.1x

10.3(5)		

34.5.11 dot1x mac-auth-bypass timeout-activity

802.1x MAC

dot1x mac-auth-bypass timeout-activity *value***no dot1x mac-auth-bypass timeout-activity**

	show dot1x port-control interface	802.1x
	10.3(5)	

34.5.12 dot1x mac-auth-bypass violation

802.1x MAC

dot1x mac-auth-bypass violation

no dot1x mac-auth-bypass violation

show run 802.1x

802.1x MAC

Ruijie# **configure terminal**

Ruijie(config)# **interface fa** 0/1

Ruijie(config-if)# **dot1x mac-auth-bypass violation**

Ruijie(config-if)# **end**

Ruijie#write

	show dot1x port-control interface	802.1x

	10.3(5)	

34.5.13 dot1x max-req

```

DOT1X
DOT1X
no
dot1x max-req count
no dot1x max-req

```

	count	

```

3

```

```


```

```

show dot1x 802.1x

```

```

802.1x 7
Ruijie# configure terminal
Ruijie(config)# dot1x max-req 7
Ruijie(config)# end
Ruijie#

```

	show dot1x	802.1x

```


```

	-	-

34.5.14 dot1x private-supPLICANT-only

no

dot1x private-supPLICANT-only**no dot1x private-supPLICANT-only**

	-	-

show dot1x private-supPLICANT-only 802.1x

```
Ruijie# configure t
Ruijie(config)# dot1x private-supPLICANT-only
Ruijie(config)# end
Ruijie#
```

	show dot1x private-supPLICANT-only	

	-	-

34.5.15 dot1x port-control auto

no

dot1x port-control auto**no dot1x port-control**

	-	-

```
802.1x
```

```
show dot1x 802.1x
```

```
802.1x
```

```
Ruijie# configure terminal
Ruijie(config)# interface g0/1
Ruijie(config-if)# dot1x port-control auto
Ruijie(config-if)# end
Ruijie#
```

show dot1x	802.1x

-	-

34.5.16 dot1x port-control-mode

802.1x

MAC

dot1x port-control-mode {mac-based | {port-based [single-host]} }

no dot1x port-control-mode

mac-based	mac 802.1X
port-based	802.1X

single-host	802.1x
--------------------	--------

mac-based

```

show dot1x port-control           802.1x
s26                                802.1X
                                802.1X
single-host                        802.1x
port-based show running-config    show dot1x port-control
port-based single-host           dot1x port-control-mode
single-host                        default-user-limit single-host
                                single-host          default-user-limit
single-host

```

```

1                                802.1x
Ruijie(config)# interface g 0/1
Ruijie(config-if)# dot1x port-control auto
Ruijie(config-if)# dot1x port-control-mode port-based
Ruijie(config-if)# end
Ruijie#

2                                802.1x
Ruijie(config)# interface g 0/1
Ruijie(config-if)# dot1x port-control auto
Ruijie(config-if)# dot1x port-control-mode port-based single-host
Ruijie(config-if)# end
Ruijie#

```

show dot1x port-control	802.1x
Show running-config	

34.5.17 dot1x stationarity enable

802.1x

802.1X

dot1x stationarity enable**no dot1x stationarity enable**

-	-

--

--

--

```

      802.1x
Ruijie# configure terminal
Ruijie(config)# dot1x stationarity enable
Ruijie(config)# end
Ruijie#

```

-	-

--

-	-

34.5.18 dot1x redirect url

	802.1x		
http://ruijie.net/web	URL	URL	http://
	http://	https://	

url url url no
url

dot1x redirect url [*url-string*]

[no] dot1x redirect url

<i>url-string</i>	URL

|

|

|

1 ruijie.net/web
Ruijie(config)# **dot1x redirect url** http://ruijie.net/web

dot1x redirect for special tcp-destination port	web ip ip
dot1x redirect time-out	
dot1x redirect num for special source-ip	
show dot1x	dot1x

|

--	--

3

1

5

Ruijie(config)# dot1x redirect time-out 5

dot1x redirect url	web ip ip
dot1x redirect for special tcp-destination port	
dot1x redirect num for special source-ip	
show dot1x	dot1x

-	-

34.5.21 dot1x redirect num for special source-ip

1

1-10

no

dot1x redirect num for special source-ip *num*

no dot1x redirect num for special source-ip

<i>num</i>	

1

1

└───

└───

```

1          3
Ruijie(config)# dot1x redirect num for special source-ip 3
    
```

└───

dot1x redirect url	
dot1x redirect for special tcp-destination port	web ip ip
dot1x redirect time-out	
show dot1x	dot1x

└───

└───

-	-

34.6 dot1x

34.6.1 show dot1x

802.1x

show dot1x

└───

-	-


└───

└───

└───

└───

```
Ruijie# show dot1x
802.1X Status:      Enabled
Authentication Mode: EAP-MD5
Authed User Number: 0
Re-authen Enabled:  Disabled
Re-authen Period:   3600 sec
Quiet Timer Period: 10 sec
Tx Timer Period:    3 sec
Supplicant Timeout: 3 sec
Server Timeout:     5 sec
Re-authen Max:      3 times
Maximum Request:    3 times
Filter Non-RG Supp: Disabled
Client Oline Probe: Disabled
Eapol Tag Enable:   Disabled
Authorization Mode:  Group Server
Ruijie#
```



-	-
---	---

34.6.2 show dot1x auth-address-table

802.1X

show dot1x auth-address-table[addressmac-addr][interface interface]

<i>mac-addr</i>	
<i>interface</i>	

┌

┌

┌

```
Ruijie# show dot1x auth-address-table
interface:g3/1
-----
mac addr: 00D0.F800.0001
Ruijie#
```

dot1x auth-mode	802.1x
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	

dot1x timeout quiet-period

	dot1x timeout supp-timeout	
	dot1x timeout tx-period	

┌



dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	

dot1x auth-mode	802.1x
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

```
max-req: 2 times
Ruijie#
```

dot1x auth-mode	802.1x
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

-	-

34.6.6 show dot1x port-control

```
show dot1x port-control [interface interface]
```

<i>interface</i>	

```

Ruijie# show dot1x port-control
interface dyn-user static-user max-user qos
ctrl-mode status
-----
Gi0/1      0          1          6000      dscp: 0 mac-base Authed
Ruijie#

```

dot1x auth-mode	802.1x
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

-	-
---	---

34.6.7 show dot1x probe-timer

```
show dot1x probe-timer
```

-	-

```
Ruijie# show dot1x probe-timer
Hello Interval: 20 Seconds
Hello Alive: 250 Seconds
Ruijie#
```

dot1x auth-mode	802.1x
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	

dot1x timeout quiet-period

34.6.8 show dot1x re-authentication

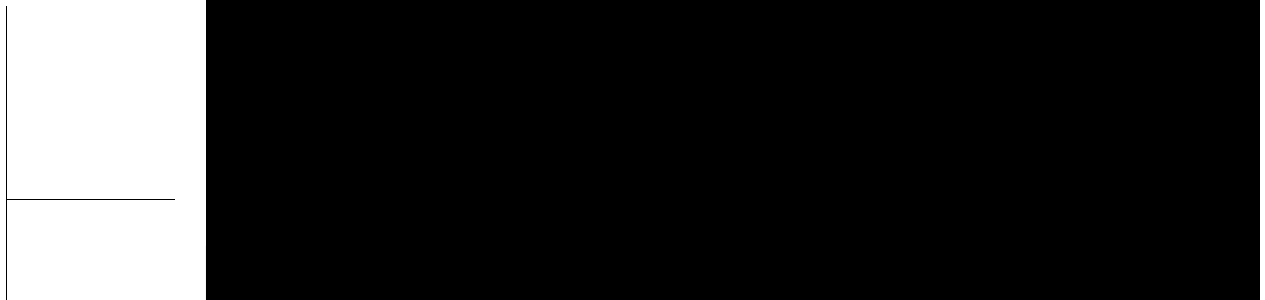
show dot1x re-authentication

-	-

|

|

|



dot1x auth-mode	802.1x
-----------------	--------

dot1x max-req	
---------------	--

dot1x (port) control auto 5 (control au) 6 (to) Tf0 Tw 213F552/C2741C2_0 1 T Tc 016E0 1 TF3 0.0741

dot1x reauth-max	
------------------	--

-	-

34.6.9 show dot1x reauth-max

show dot1x reauth-max

-	-

└───

└───

└───

└───

```
Ruijie# show dot1x reauth-max
reauth-max: 2 times
Ruijie#
```

dot1x auth-mode	802.1x
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	

dot1x timeout supp-timeout	
dot1x timeout tx-period	
-	-

34.6.10 show dot1x summary

802.1X

show dot1x summary

-	-
---	---

```
Ruijie# show dot1x summary
ID   MAC           Interface VLAN Auth-State
Backend-State Port-Status Type
-----
1 00d0f8000000 Gi0/1      1 Authenticated Idle
Authed      Static
Ruijie#
```

dot1x auth-mode	802.1x
dot1x max-req	


```

Mac address is 0013.2049.8272
Vlan id is 217
Access from port Gi0/13
User ip address is 192.168.217.64
Max user number on this port is 6000
COS on this port is 5
Up-bandwidth is 1024 kbps
Down-bandwidth is 1024 kbps
Authorization vlan is dep7
Authorization session time is 1000000 seconds
Authorization ip address is 192.168.217.64
Start accounting
Permit proxy user
Permit dial user
IP privilege is 2

```

dot1x auth-mode	802.1x
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	
dot1x timeout tx-period	

-	-

34.6.12 show dot1x timeout

802.1X

show dot1x timeout quiet-period

show dot1x timeout re-authperiod

show dot1x timeout server-timeout

show dot1x timeout supp-timeout

show dot1x timeout tx-period

-	-

|

|

|

```
Ruijie# show dot1x timeout quiet-period
quiet-period: 60 sec
Ruijie#
```

dot1x auth-mode	802.1x
dot1x max-req	
dot1x port-control auto	
dot1x reauth-max	
dot1x re-authentication	
dot1x timeout quiet-period	
dot1x timeout re-authperiod	
dot1x timeout server-timeout	
dot1x timeout supp-timeout	

	dot1x timeout tx-period	
	-	-

34.7

34.7.1 dot1x redirect

dot1x redirect no

dot1x redirect

no dot1x redirect

	-	-

┌

┌

┌

```
Ruijie# configure terminal
Ruijie(config)# dot1x redirect
```


┌

10.2(5)	

34.7.2 http redirect

HTTP IP http redirect
no HTTP IP

http redirect *ip-address*

no http redirect

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

	HTTP IP
--	---------

--	--

	HTTP HTTP IP
--	--------------

```
Ruijie# configure terminal
Ruijie(config)# http redirect 172.16.0.1
Ruijie(config)# end
```

show http redirect	HTTP
http redirect homepage	

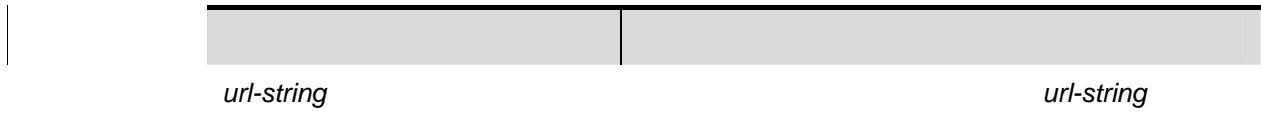
--	--

10.2(5)	

34.7.3 http redirect direct-site

http redirect homepage *url-string*

no http redirect homepage



<i>port-session-num</i>	1-300	HTTP
HTTP	300	HTTP 255
	HTTP	TCP
	HTTP	HTTP
	HTTP	1 HTTP
	HTTP	4
<pre>Ruijie# configure terminal Ruijie(config)# http redirect session-limit 4</pre>		
show http redirect	HTTP	
10.2(5)		

34.7.7 http redirect timeout

no

3

http redirect timeout *seconds*

no http redirect timeout

┌

┌

GET/HEAD HTTP
GET/HEAD TCP

HTTP

┌

4

Ruijie# **configure terminal**
Ruijie(config)# **http redirect timeout 4**

┌

show http redirect	HTTP

┌

┌

10.2(5)	

34.7.8 show http redirect

HTTP

show http redirect

┌

-	-

┌

┌

┌

┌

HTTP

Ruijie# **show http redirect**
HTTP redirection settings:
server: 192.168.32.123
port: 80 8000
homepage: http://192.168.32.123:8888/ePortal/index.jsp

```

session-limit: 10
timeout:      5

```

Direct sites:

Address	MASK	ARP Binding
61.233.3.215	255.255.255.255	On
61.233.3.220	255.255.255.255	Off
192.168.5.140	255.255.255.255	Off
218.30.66.101	255.255.0.0	Off
218.30.66.101	255.255.255.255	Off

http redirect	HTTP	IP
http redirect direct-site		
http redirect homepage		
http redirect port	HTTP	
http redirect session-limit		HTTP
http redirect timeout		

10.2(5)	
----------------	--

35 Web

35.1 Web

35.1.1 http redirect

HTTP IP http redirect no
 HTTP IP

http redirect *ip-address*

no http redirect

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

HTTP IP

Web HTTP IP

1 HTTP IP 172.16.0.1
 Ruijie(config)# **http redirect** 172.16.0.1

show http redirect	HTTP
http redirect homepage	

10.2(5)	

35.1.2 http redirect direct-site

no

http redirect direct-site *ip-address* [*ip-mask*] [**arp**]

no http redirect direct-site *ip-address* [*ip-mask*]

<i>ip-address</i>	IP
<i>ip-mask</i>	IP
arp	ARP CHECK ARP arp

└──

└──

Web	Web
50	

1 IP 172.16.0.1
 Ruijie(config)# **http redirect direct-site** 172.16.0.1

show http redirect	HTTP

└──

10.2(5)	

35.1.3 http redirect homepage

no

http redirect homepage *url-string*

no http redirect homepage

<i>url-string</i>	"http://" "https://" 255

Web

```

1 http://www.web-auth.net/login
Ruijie(config)#
http redirect homepage http://www.web-auth.net/login
    
```

show http redirect	HTTP
http redirect	IP

10.2(5)	

35.1.4 http redirect port

```

port no HTTP WEB http redirect HTTP WEB
    
```

http redirect port *port-num*

no http redirect port *port-num*

<i>port-num</i>	HTTP WEB

80 HTTP



HTTP

10

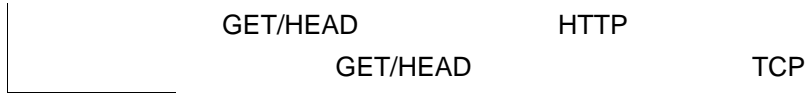
HTTP

80 HTTP

HTTP

80

```
HTTP 300 HTTP 255
HTTP
HTTP HTTP TCP
HTTP HTTP HTTP HTTP
HTTP 1 HTTP
1 HTTP 4
Ruijie(config)# http redirect session-limit 4
4 0
```



show web-auth allow-vlan	VLAN	Web	VLAN
-			
10.4(2b2)			

35.1.8 web-auth direct-host

IP **no**

web-auth direct-host *ip-address* [*ip-mask*] [**port** *interface-name*] [**arp**]

no web-auth direct-host *ip-address*

<i>ip-address</i>	IP		
<i>ip-mask</i>	IP		
port <i>interface-name</i>	IP		
arp	IP	ARP CHECK ARP	arp

Web

Web

50

1 IP 172.16.0.1

Ruijie(config)# **web-auth direct-host** 172.16.0.1

show web-auth direct-host	web



10.2(5)	

35.1.9 web-auth offline-detect-mode flow

no

web-auth offline-detect-mode flow

no web-auth offline-detect-mode flow





	10.2(5)	
	10.4(2b2)	ip-only-mode

35.1.11 web-auth portal key

HTTP WEB WEB no
web-auth portal key *key-string*
no web-auth portal key

	<i>key-string</i>	255

Web

Td/TT1 1 TFO

35.1.12 web-auth update-interval

no

60

web-auth update-interval *seconds*

no web-auth update-interval

<i>seconds</i>	30-3600

60

└──

└──

1 30
 Ruijie(config)# **web-auth update-interval** 30

-	-

└──

10.2(5)	

35.2

35.2.1 show http redirect

HTTP

show http redirect

1 HTTP

Ruijie# **show http redirect**

HTTP redirection settings:

server: 192.168.32.123
port: 80 8000
homepage: http://192.168.32.123:8888/ePortal/index.jsp
session-limit: 10
timeout: 5

Direct sites:

Address	MASK	ARP Binding
61.233.3.215	255.255.255.255	On
61.233.3.220	255.255.255.255	Off
192.168.5.140	255.255.255.255	Off
218.30.66.101	255.255.0.0	Off
218.30.66.101	255.255.255.255	Off

Direct hosts:

Address	Mask	Port	ARP Binding
---------	------	------	-------------

Web

Web

1

Ruijie# **show web-auth direct-host**

Direct hosts:

Address	Mask	Port	ARP Binding
192.168.0.1	255.255.255.255	Fa0/2	On
192.168.4.11	255.255.255.255	Fa0/10	On
192.168.5.0	255.255.255.0	Fa0/16	Off

Address	IP
Mask	IP
Port	IP
ARP Binding	ARP

web-auth direct-host	IP
-----------------------------	----

Q,

10.2(5)	AÈ à
---------	------

35.2.4 show web-auth port-control

Web

Ruijie# **show web-auth user**

Current user num : 4

Address	Online	Time Limit	Time Used	Status
192.168.0.11	On	0d 01:00:00	0d 00:15:10	Active
192.168.0.13	On	0	0d 00:00:59	Active
192.168.0.25	Off	0	0	Create
192.168.0.46	Off	0d 01:00:00	0d 01:00:00	Destroy

Ruijie# **show web-auth user 192.168.0.11**

Address : 192.168.0.11
Mac : 00d0.f800.2233
Port : Fa0/2
Online : On
Time Limit : 0d 01:00:00
Time Used : 0d 00:15:10
Time Start : 2009-02-22 20:05:10
Status : Active

	10.2(5)	
--	----------------	--

36 AAA

36.1

36.1.1 aaa authentication dot1x

aaa new-model	AAA
dot1x authentication	802.1X
username	

AAA Enable

RADIUS

RADIUS

```
Ruijie(config)# aaa authentication enable default group radius local
```

aaa new-model	AAA
enable	
username	

-	-

36.1.3 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
<i>list-name</i>	Login
<i>method</i>	local none group 4
local	
none	
group	TACACS+ RADIUS

AAA

local	
none	
group	TACACS+ RADIUS




AAA PPP

AAA PPP PPP

default	Login
<i>list-name</i>	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
```



no aaa authorization commands *level* {**default** | *list-name*}

<i>level</i>	0~15
default	
<i>list-name</i>	
<i>method</i>	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	

-	-

36.2.2 aaa authorization config-commands

AAA
aaa authorization config-commands no AAA

aaa authorization config-commands

no aaa authorization config-commands

	-	-

|

|

	-	-

└──

└──

└── RGOS

└── Ruijie(config)# **aaa authorization console**

aaa new-model	AAA
aaa authorization commands	AAA
authorization commands	

└──

-	-

36.2.4 aaa authorization exec

AAA NAS CLI Exec
aaa authorization exec no AAA Exec

aaa authorization exec {default | *list-name*} *method1* [*method2...*]

no aaa authorization exec {default | *list-name*}

default	Exec
<i>list-name</i>	Exec

<i>method</i>	local none group 4
local	
none	
group	TACACS+ RADIUS

AAA Exec

RGOS NAS CLI 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	

-	-
---	---

36.2.5 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
<i>method</i>	none group 4
none	
group	TACACS+ RADIUS

AAA Network

RGOS

PPP SLIP

RADIUS TACACS+

authorization**commands** no**authorization commands** *level* {**default** | *list-name*}**no authorization commands** *level*

<i>level</i>	0~15
default	
<i>list-name</i>	

AAA

cmd 15 TACACS+
 none VTY 0 – 4
 15

authorization exec

2	default2	
	<i>2list-name</i>	

└───┘

└───┘

NAS

aaa accounting commands no

aaa accounting commands *level* {**default** | *list-name*} **start-stop** *method1* [*method2...*]

no aaa accounting commands *level* {**default** | *list-name*}

<i>level</i>	0~15
default	
<i>list-name</i>	
<i>method</i>	none group 4
none	
group	TACACS+

RGOS

none

TACACS+

15

Ruijie(config)# **aaa accounting commands 15 default start-stop group tacacs+**

aaa new-model	AAA
aaa authentication	AAA
accounting commands	

	-	-

36.3.2 aaa accounting exec


```
Ruijie(config)# aaa accounting network default start-stop group
radius
```

aaa new-model	AAA
aaa authorization network	AAA
aaa authentication	AAA
username	

-	-

36.3.4 aaa accounting update

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	



-	-

36.3.6 accounting commands

accounting commands

no

accounting commands *level* {**default** | *list-name*}

no accounting commands *level*

<i>level</i>	0~15
default	
<i>list-name</i>	

└──

└──

└──

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

└──



AAA

	-	-
--	---	---

36.4

AAA

36.4.1 aaa domain

no

aaa domain {**default** | *domain-name*}

no aaa domain {**default** | *domain-name*}

	default	
	<i>domain-name</i>	

36.4.2 aaa domain enable

AAA
AAA no

aaa domain enable

no aaa domain enable

AAA

AAA !

|

|

|

|

```
                ruijie.com                20
Ruijie(config)# aaa domain ruijie.com
Ruijie(config-aaa-domain)# access-limit 20
```

[Redacted]	
aaa new model	AAA
	AAA



[Redacted]	[Redacted]
	-

no

no accounting network {domain, acct-name}

no accounting network

[Redacted]	[Redacted]
------------	------------

aaa new-model		AAA
aaa domain enable		AAA
show aaa domain		

┌

-		-

36.4.6 authorization network

Network

no

authorization network {**default** | *list-name*}

no authorization network

default		
<i>list-name</i>		

default

42 634

```

|
|
|

```

-	-

36.4.7 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
show aaa domain	

```

|
|

```

3TJETq536.58 249.08 -174.4/C 14D4

	-	-
--	---	---

36.4.8 show aaa domain

show aaa domain [default | domain-name]

	default	
	<i>domain-name</i>	

|

|

|

|

```

                                domain.com
Ruijie# show aaa domain domain.com

=====Domain domain.com=====
State: Active
Username format: Without-domain
Access limit: No limit
802.1X Access statistic: 0

Selected method list:
  authentication dot1x default

```

--	--	--

36.4.9 username-format

NAS

no

username-format {without-domain | with-domain}

no username-format

06 re 6 48 BT /6.5 m 21964403

ATO 1 TFO Te 5.803 0 Td()Tj-0.0004

aaa group server {radius | tacacs+


```

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

-	-

36.5.4 show aaa group

AAA

show aaa group

-	-

AAA

```

Ruijie# show aaa group
Group Name:  ss
Group Type:  radius
Referred:    2
Server List:
IP Address:  192.168.217.64
Authentication Port: 1812
Accounting Port: 1813
Referred:    1

```

	AAA
aaa group server	AAA

()Tj/C471 0 Td<01513541406.8/TT0(m0 Ta)3(x-attem

36.6 AAA

Login

```
Ruijie# configure terminal
Ruijie(config)# aaa local authentication attempts 6
```

Show running-config	
Show aaa lockout	login

-	-

36.6.2 aaa local authentication lockout-time

login

aaa local authentication lockout-time *lockout-time*

<i>lockout-time</i>	1~2147483647

15

login

```
Ruijie# configure terminal
Ruijie(config)# aaa local authentication lockout-time 5
```



	Show running-config	
	Show aaa lockout	login
	-	-

36.6.3 aaa new-model

RGOS AAA
no AAA

aaa new-model AAA

aaa new-model

no aaa new-model

	-	-

AAA

AAA

	-	-
--	---	---

36.6.4 clear aaa local user lockout

clear aaa local user lockout {all | user-name <word>}





```
aaa authentication dot1x san-f local group angel group rain none
aaa authentication enable default group radius
Accounting method-list
```

	show aaa lockout	login
--	-------------------------	-------

┌



37.1.2 radius attribute

radius ttribute{<id> | **down-rate-limit** | **dscp** | **mac-limit** | **up-rate-limit**} **vendor-type**
<type>

no radius attribute {<id>|**down-rate-limit** | **dscp** | **mac-limit** | **up-rate-limit**} **vendor-type**

<i>id</i>	id <1-255>
<i>type</i>	type

id		type
1	max down-rate	1
2	qos	2
3	user ip	3
4	vlan id	4
5	version to client	5
6	net ip	6
7	user name	7
8	password	8
9	file-diractory	9
10	file-count	10
11	file-name-0	11
12	file-name-1	12
13	file-name-2	13
14	file-name-3	14
15	file-name-4	15
16	max up-rate	16
17	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilege	22

23	login privilege	42
id		type
1	max down-rate	76
2	qos	77
3	user ip	3
4	vlan id	4
5	version to client	5
6	net ip	6
7	user name	7
8	password	8
9	file-diractory	9
10	file-count	10
11	file-name-0	11
12	file-name-1	12
13	file-name-2	13
14	file-name-3	14
15	file-name-4	15
16	max up-rate	75
17	version to server	17
18	flux-max-high32	18
19	flux-max-low32	19
20	proxy-avoid	20
21	dailup-avoid	21
22	ip privilege	22
23	login privilege	42
24	limit to user number	50

max up-rate

radius set qos cos	radius	qos	cos
	-	-	

37.1.3 radius-server attribute 31

RADIUS Calling-Station-ID MAC

radius-server attribute 31 no

radius-server attribute 31 mac format {ietf | normal | unformatted}

no radius-server attribute 31 mac format

ietf	ETF RFC3580	-

┌

┌

10.3(5)	

37.1.4 radius-server deadtime

t

deadtime RGOS RADIUS t

radius-server deadtime no

radius-server deadtime *minutes*

no radius-server deadtime

┌

<i>minutes</i>	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

┌

┌

-	-

37.1.5 radius-server host

RADIUS

radius-server

no

RADIUS

<i>ipv4-address</i>	IPv4		
<i>ipv6-address</i>	IPv6		
<i>auth-port</i>	UDP		
<i>port-number</i>	UDP	0	
<i>acct-port</i>	UDP		

RADIUS

RADIUS

RADIUS

RADIUS

	<i>seconds</i>	1-1000
--	----------------	--------

5

```
Ruijie(config)# radius set qos cos
```

radius vendor-specific extend	Radius id

-	-

37.1.10 radius vendor-specific extend

id

radius vendor-specific extend

no radius vendor-specific extend

-	-

id

id

```
Ruijie(config)#
```

RADIUS

	-	-

37.2 RADIUS

37.2.1 debug radius

RADIUS

no

RADIUS

debug radius [event | detail]

no debug radius [event | detail]

	no
--	----

RADIUS

-	-
---	---

┌

┌

┌

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	RADIUS
radius-server key	RADIUS
radius-server timeout	RADIUS

┌

-	-

37.2.3 show radius server

RADIUS

show radius server

-	-

┌

┌

radius

```
Ruijie# show radius server
server ip : 192.168.4.12
acct port: 23
authen port: 77
server state: ready
server ip : 192.168.4.13
acct port: 45
authen port: 74
server state: ready
```

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server key	RADIUS
radius-server timeout	RADIUS

-	-

37.2.4 show radius vendor-specific

RADIUS

show radius vendor-specific

-	-

radius

```

Ruijie# show radius vendor-specific
id    vendor-specific      type-value
-----
1     max down-rate          76
2     qos                    77
3     user ip                3
4     vlan id                4
5     version to client     5
6     net ip                 6
7     user name              7
8     password               8
9     file-diractory        9
10    file-count             10
11    file-name-0            11
12    file-name-1            12
13    file-name-2            13
14    file-name-3            14
15    file-name-4            15
16    max up-rate            75
17    version to server     17
18    flux-max-high32       18
19    flux-max-low32        19
20    proxy-avoid            20
21    dailup-avoid           21
22    ip privilige           22
23    login privilige       42
24    limit to user number  50

```

radius-server host	RADIUS
radius-server retransmit	RADIUS
radius-server key	RADIUS
radius-server timeout	RADIUS

RADIUS

	-	-
--	---	---

38 TACACS+

38.1 TACACS+

38.1.1 aaa group server tacacs+

TACACS+

TACACS+

```
aaa group server tacacs+ group-name
```

```
no aaa group server tacacs+ group-name
```

	<i>group-name</i>	TACACS+

TACACS+

TACACS+

tac1 TACACS+

1.1.1.1

```
TACACS+
Ruijie(config)#
```

38.1.2 ip tacacs source-interface

TACACS+

```
ip tacacs source-interface interface
```

```
no ip tacacs source-interface
```

Interface	TACACS+

TACACS+

```
TACACS+ TACACS+ nas ip TACACS+
```

```
TACACS+ fastEthernet 0/0 ip TACACS+
```

```
Ruijie(config)# ip tacacs source-interface fastEthernet 0/0
```

	<i>vrf-name</i>	vrf

```
aaa group server tacacs+ TACACS+
TACACS+ tacacs-server
host
TACACS+
```

```
tac1 TACACS+ 1.1.1.1
TACACS+
Ruijie(config)# aaa group server tacacs+ tac1
Ruijie(config-gs-tacacs)# server 1.1.1.1
```

W0(f2G&T)6b} 0 Td2XW%c"aT!(5D!W0(6s6A!5"915B0 T00P4esRSeY8,Q2*0B0S"Ge4pa<4Fv

┌

┌

TACACS+ AAA TACACS+
tacacs-server TACACS+

┌

TACACS+
 Ruijie(config)# **tacacs-server host** 192.168.12.1
 Ruijie(config)# **tacacs-server host** 2001::1

┌

aaa authentication	AAA
tacacs-server key	TACACS+
tacacs-server timeout	TACACS+

┌

┌

-	-

alC#yVA2B@G5BX

	key	host	key
	TACACS+	aaa	
	Ruijie(config)# tacacs-server key aaa		
	tacacs-server host	TACACS+	
	tacacs-server timeout	TACACS+	
	-	-	

38.1.7 tacacs-server timeout

	TACACS+
	tacacs-server timeout <i>seconds</i>
	no tacacs-server timeout
	<i>seconds</i>
	1-1000
	5
	host
	timeout
	timeout
	10
	Ruijie(config)# tacacs-server timeout 10

tacacs-server host	TACACS+
tacacs-server key	TACACS+

	-	

38.2 TACACS+

38.2.1 debug tacacs+

TACACS+ no TACACS+

debug tacacs+

no debug tacacs+

--	--

38.2.2 show tacacs

TACACS+

show tacacs

	-	-

|

|

|

TACACS+

```
Ruijie# show tacacs
Tacacs+ Server : 172.19.192.80/49
Socket Opens: 0
Socket Closes: 0
Total Packets Sent: 0
Total Packets Recv: 0
Reference Count: 0
```

|

tacacs-server host	TACACS+

|

-	-
---	---

SSH

┌

SSH Server
 120s
show ip ssh SSH server

┌

100s
 Ruijie# **configure terminal**
 Ruijie(config)# **ip ssh time-out 100**

┌

show ip ssh	ssh-server

┌

RGOS10.1

┌

-	-

39.1.5 ip ssh version

SSH server no

ip ssh version {1 / 2}

no ip ssh version

┌

1	SSH Server SSH1
2	SSH Server SSH2

┌

SSH 1 2 SSH
no ip ssh version

2

Ruijie# **configure terminal**

Ruijie(config)# **ip ssh version 2**

show ip ssh	SSH Server

RGOS10.1

	Clear line vty <i>line_number</i>	VTY
	RGOS10.1	
	-	-

39.2.2 show crypto key mypubkey

SSH Server

show crypto key mypubkey {rsa/dsa}

	rsa	RSA
	dsa	DSA

SSH Server

Ruijie# **show crypto key mypubkey rsa**

	crypto key generate {rsa dsa}	DSA RSA
	RGOS10.1	
	-	-

39.2.3 show ip ssh

SSH Server

show ip ssh

	-	-

└───┘

└───┘

SSH Server	SSH Server
SSH	
r	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

-	-

39.2.4 show ssh

SSH

show ssh

-	-

└───┘

40 CPU

40.1

40.1.1 `cpu-protect type packet-type pps pps_value`

CPU

`cpu-protect type { arp | bpdu | dhcp | ipv6mc | igmp | rip | ospf | vrrp | pim | ttl1 |
unknown-ipmc | dvmrp | ... } pps pps_value`

CPU

CPU

```

S9610 CPU
Ruijie# show cpu-protect mboard
type      Pps      Total    Drop
-----
arp       500      19       0
bpdu     200      24       0
dhcp      0         0       0
gvrp      0         0       0
ipv6-mc   0         0       0
dvmrp     0         0       0
igmp      0         0       0
ospf      0         0       0
pim       0         0       0
rip       0         0       0
vrrp      0         0       0
unknow-ipmc 0         0       0
ttl1     0         0       0
...

```

show cpu-protect slot <i>slot-num</i>	CPU

-	-

40.2.2 show cpu-protect type

```

show cpu-protect type { arp | bpdu | dhcp | ipv6mc | igmp | rip | ospf | vrrp | pim | ttl1 |
unknown-ipmc | dvmrp | ... } dvmrp

```


41 DoS

41.1

41.1.1 ip deny invalid-l4port

no

ip deny invalid-l4port

no ip deny invalid-l4port

	-	-

|

|

|

1
Ruijie(config)# ip deny invalid-l4port

2
Ruijie(config)# no ip deny invalid-l4port

	show ip deny invalid-l4port	

	-	-

41.1.2 ip deny invalid-tcp

TCP

no

TCP

ip deny invalid-tcp

no ip deny invalid-tcp

```
1          Land
Ruijie(config)# ip deny land
2          Land
Ruijie(config)# no ip deny land
```



	-	-

41.2.2 show ip deny invalid-tcp

TCP

show ip deny invalid-tcp

	-	-

|

|

|

```
Ruijie# show ip deny invalid-tcp
DoS Protection Mode                State
-----
protect against invalid tcp attack  On
```

	(no) ip deny invalid-tcp	TCP

|

	-	-

41.2.3 show ip deny land

Land

show ip deny land

--	--	--

-	-
---	---

|

|

|

```
Ruijie# show ip deny land
DoS Protection Mode          State
-----
protect against land attack  On
```

(no) ip deny land	Land
-------------------	------

|

-	-
---	---

42 DAI

42.1 VLAN DAI

42.1.1 ip arp inspection vlan

```

vlan-id          vlan-id          VLAN   DAI          no          VLAN
vlan-id          VLAN   DAI          vlan-id          VLAN
DAI

```

```
ip arp inspection vlan vlan-id
```

```
no ip arp inspection vlan [vlan-id]
```

<i>vlan-id</i>		vlan

```
VLAN   DAI
```

```
DAI
```

```

VLAN 1      ARP
Ruijie(config)# ip arp inspection
Ruijie(config)# ip arp inspection vlan 1

```

show ip arp inspection vlan	VLAN DAI

-	-

42.2

42.2.1 ip arp inspection trust

ip arp inspection trust no

ip arp inspection trust

no ip arp inspection trust

	-	-

└───

└───

	ARP	DAI	
	NFPP()	NFPP
/	DAI		show ip arp inspection interface

43

arp

arp

show anti-arp-spoofing

|

|

|

```
Ruijie#show anti-arp-spoofing
      port      ip
      -----  -
      Fa0/1     192.168.1.1
```

anti-arp-spoofing ip	arp

|

-	-

44 IP Source Guard

44.1 IP Source Guard

44.1.1 ip source binding

IP no

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

<i>mac-address</i>	MAC
<i>vlan-id</i>	vlan id
<i>ip-address</i>	IP
<i>interface-id</i>	

└───┘

└───┘

└───┘

IP Source Guard DHCP

└───┘

```

1
Ruijie# configure terminal
Ruijie(config)# ip source binding 0000.0000.0001 vlan 1 1.1.1.1
interface FastEthernet 0/1
Ruijie(config)# end
Ruijie# show ip source binding
MacAddress   IpAddress  Lease(sec)  Type   VLAN  Interface
-----
0000.0000.0001 1.1.1.1   infinite   static    1   FastEthernet 0/1
Total number of bindings: 1
    
```

--	--

	show ip source binding	IP
	-	-

44.2 IP Source Guard

44.2.1 ip verify source

IP Source Guard **no**

[no] ip verify source [port-security]

	port-security	IP Source Guard IP+MAC

└───

└───

-	-

44.3 IP Source Guard

44.3.1 show ip source binding

IP

show ip source binding [*ip-address*] [*mac-address*] [**dhcp-snooping**] [**static**] [**vlan** *vlan-id*] [**interface** *interface-id*]

<i>ip-address</i>	ip
<i>mac-address</i>	mac
dhcp-snooping	
static	
<i>vlan-id</i>	vlan
<i>interface-id</i>	

└───

└───

└───

```
Ruijie# show ip source binding static
MacAddress  IpAddress  Lease(sec)  Type   VLAN  Interface
-----
0000.0000.0001 1.0.0.1  infinite   static    1  FastEthernet 0/1
Total number of bindings: 1
```

ip source binding	IP

|

|

-	-

|

|

-	-

cpu-protect sub-interface {*manage|protocol|route*} **percent** *percent_vaule*

<i>percent_vaule</i>	1 100

	<i>pps</i>	[1,9999]
--	------------	----------

IP	MAC	8
200		

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard attack-threshold per-src-ip 2
Ruijie(config-nfpp)# arp-guard attack-threshold per-src-mac 3
Ruijie(config-nfpp)# arp-guard attack-threshold per-port 50
```

nfpp arp-guard policy	
show nfpp arp-guard summary	
show nfpp arp-guard hosts	
clear nfpp arp-guard hosts	

-	-

45.3.2 arp-guard enable

ARP

arp-guard enable

-	-

ARP

NFPP



```
Ruijie(config)# nfpp  
Ruijie(config-nfpp)# arp-guard enable
```



nfp arp-guard enable

ARP

--	--	--

	-	-

45.3.4 arp-guard monitor-period

arp-guard monitor-period *seconds*

	<i>seconds</i>	[180, 86400]

45.3.5 arp-guard monitored-host-limit

arp-guard monitored-host-limit *number*

<i>number</i>		1
	4294967295	

1000

NFPP

1000

1000 %ERROR The value that you configured is smaller than current monitored hosts 1000 please clear a part of monitored hosts.

% NFPP_ARP_GUARD-4-SESSION_LIMIT: Attempt to exceed limit of 1000 monitored hosts.

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard monitored-host-limit 200
```

show nfpp arp-guard summary		

-		-

45.3.6 arp-guard rate-limit

arp-guard rate-limit {per-src-ip | per-src-mac | per-port} *pps*

--	--	--

per-src-ip	IP
per-src-mac	MAC
per-port	
<i>pps</i>	[1,9999]

IP	MAC	4
100		

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard rate-limit per-src-ip 2
Ruijie(config-nfpp)# arp-guard rate-limit per-src-mac 3
Ruijie(config-nfpp)# arp-guard rate-limit per-port 50
```

nfpp arp-guard policy	
show nfpp arp-guard summary	

-	-
---	---

45.3.7 arp-guard scan-threshold

arp-guard scan-threshold *pkt-cnt*

<i>pkt-cnt</i>	[1,9999]
----------------	----------

15	10
----	----

NFPP

10	15	ARP	MAC	IP
	MAC	IP	IP	

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# arp-guard scan-threshold 20
```

nfpp arp-guard scan-threshold	
show nfpp arp-guard summary	
show nfpp arp-guard scan	ARP
clear nfpp arp-guard scan	ARP

-	-

45.3.8 clear nfpp arp-guard hosts

clear nfpp arp-guard hosts [vlan *vid*] [interface *interface-id*] [*ip-address* | *mac-address*]

<i>vid</i>	
<i>interface-id</i>	

VLAN 1 g 0/1

Ruijie# **clear nfpp arp-guard hosts vlan 1 interface g0/1**



	-	-

45.3.10 nfpp arp-guard enable

ARP

nfpp arp-guard enable

	-	-

|

ARP

|

|

ARP

ARP

|

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp arp-guard enable
```

	arp-guard enable	ARP
	show nfpp arp-guard summary	

|

|

	10.4	

45.3.11 nfpp arp-guard isolate-period

nfpp arp-guard isolate-period {seconds | permanent}

--	--	--

<i>seconds</i>	0	[30, 86400]
permanent		

┌

┌

┌

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard isolate-period 180
```

arp-guard isolate-period	
show nfpp arp-guard summary	

┌

10.4	

45.3.12 nfpp arp-guard policy

nfpp arp-guard policy {per-src-ip | per-src-mac | per-port} *rate-limit-pps*
attack-threshold-pps

per-src-ip	IP
per-src-mac	MAC
per-port	
<i>rate-limit-pps</i>	1 9999
<i>attack-threshold-pps</i>	1 9999

┌

```
Ruijie(config)# interface G 0/1  
Ruijie(config-if)# nfpp arp-guard policy per-src-ip 2 10  
Ruijie(config-if)# nfpp arp-guard policy per-src-mac 3 10  
Ruijie(config-if)# nfpp arp-guard policy per-port 50 100
```

arp-guard attack-threshold

arp-guard rate-limit

show nfpp arp-guard summary

show nfpp arp-guard hosts

clear nfpp arp-guard hosts

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp arp-guard scan-threshold 20
```

arp-guard scan-threshold	
show nfpp arp-guard summary	
show nfpp arp-guard scan	ARP
clear nfpp arp-guard scan	ARP

10.4	

45.4 DHCP

45.4.1 dhcp-guard attack-threshold

dhcp-guard attack-threshold { per-src-mac | per-port} pps

per-src-mac	MAC
per-port	
<i>pps</i>	[1,9999]

MAC 10 300

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-src-mac 15
Ruijie(config-nfpp)# dhcp-guard attack-threshold per-port 200
```

	nfpp dhcp-guard policy	
	show nfpp dhcp-guard summary	
	show nfpp dhcp-guard hosts	
	clear nfpp dhcp-guard hosts	

┌

	-	-

45.4.2 dhcp-guard enable

DHCP

dhcp-guard enable

	-	-

┌

DHCP

┌

NFPP

┌

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard enable
```

	nfpp dhcp-guard enable	DHCP
	show nfpp dhcp-guard summary	

┌

--	--	--

	-	-
--	---	---

45.4.3 dhcp-guard isolate-period

dhcp-guard isolate-period {*seconds* | **permanent**}

<i>seconds</i>	0	[30, 86400]
permanent		

0

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard isolate timeout 180
```

nfpp dhcp-guard isolate-period	
show nfpp dhcp-guard summary	

-	-

45.4.4 dhcp-guard monitor-period

dhcp-guard monitor- period *seconds*

|



NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# dhcp-guard rate-limit per-src-mac 8
Ruijie(config-nfpp)# dhcp-guard rate-limit per-port 100
```

nfpp dhcp-guard policy	
show nfpp dhcp-guard summary	

-	-

45.4.7 clear nfpp dhcp-guard hosts

clear nfpp dhcp-guard hosts [*vlan vid*] [**interface** *interface-id*] [*mac-address*]

<i>vid</i>	
<i>interface-id</i>	
<i>mac-address</i>	MAC

```
VLAN 1    g 0/1
Ruijie# clear nfpp dhcp-guard hosts vlan 1 interface g0/1
```

dhcp-guard attack-threshold	
nfpp dhcp-guard policy	

	show nfpp dhcp-guard hosts	
	-	-

45.4.8 nfpp dhcp-guard enable

DHCP

nfpp dhcp-guard enable

	-	-

DHCP

┌

└

DHCP

DHCP

┌

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp dhcp-guard enable
```

	dhcp-guard enable	DHCP
	show nfpp dhcp-guard summary	

┌

	10.4	

45.4.9 nfpp dhcp-guard isolate-period

nfpp dhcp-guard isolate-period {seconds | permanent}

<i>seconds</i>	0	[30, 86400]	
permanent			

└───┘

└───┘

└───┘

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp dhcp-guard isolate-period 180
```

dhcp-guard isolate-period	
show nfpp dhcp-guard summary	

└───┘

10.4	

45.4.10 nfpp dhcp-guard policy

nfpp dhcp-guard policy { per-src-mac | per-port} rate-limit-pps attack-threshold-pps

per-src-mac	MAC		
per-port			
<i>rate-limit-pps</i>	1	9999	
<i>attack-threshold-pps</i>	1	9999	

└───┘

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard attack-threshold per-src-ip 600
Ruijie(config-nfpp)# icmp-guard attack-threshold per-port 1200
```

nfpp icmp-guard policy	
show nfpp icmp-guard summary	
show nfpp icmp-guard hosts	
clear nfpp icmp-guard hosts	

-	-

45.5.2 icmp-guard enable

ICMP

icmp-guard enable

-	-

ICMP

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard enable
```


	-	-

45.5.4 icmp-guard monitor-period

icmp-guard monitor-period *seconds*

	<i>seconds</i>	[180, 86400]

600

NFPP

```

>
0
0
>
    
```

```

Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard monitor-period 180
    
```


<i>pps</i>	[1,9999]
------------	----------

IP	900	1000
----	-----	------

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# icmp-guard rate-limit per-src-ip 500
Ruijie(config-nfpp)# icmp-guard rate-limit per-port 800
```

nfpp icmp-guard policy	
show nfpp icmp-guard summary	

-	-
---	---

45.5.7 icmp-guard trusted-host

icmp-guard trusted-host *ip mask*

no icmp-guard trusted-host {**all** | *ip mask*}

<i>ip</i>	IP
<i>mask</i>	IP
all	no

NFPP

CPU	ICMP	CPU
500		

```
Ruijie(config)# nfpp
```

```
Ruijie(config-nfpp)# icmp-guard trusted-host 1.1.1.0 255.255.255.0
```

```
show nfpp icmp-guard trusted-host
```

```
A
```

	nfpp icmp-guard policy	
	show nfpp icmp-guard hosts	
	-	-

45.5.9 nfpp icmp-guard enable

ICMP

nfpp icmp-guard enable

	-	-

ICMP

ICMP

ICMP

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp icmp-guard enable
```

--	--	--

NFPP

```

Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp icmp-guard policy per-src-ip 5 10
Ruijie(config-if)# nfpp icmp-guard policy per-port 100 200

```

icmp-guard attack-threshold	
icmp-guard rate-limit	
show nfpp icmp-guard summary	
show nfpp icmp-guard hosts	
clear nfpp icmp-guard hosts	

```

10.4

```

10.4	

45.6 IP

IP

- > ip-guard attack-threshold
- > ip-guard enable
- > ip-guard isolate-period
- > ip-guard monitor-period
- > ip-guard monitored-host-limit
- > ip-guard rate-limit
- > ip-guard scan-threshold
- > ip-guard trusted-host
- > clear nfpp ip-guard hosts
- > nfpp ip-guard enable
- > nfpp ip-guard isolate-period
- > nfpp ip-guard policy

> nfpp ip-guard scan-threshold

r	IP	IP	IP	IP	IP	CPP	CPU Protect Policy
		IP				IP	

45.6.1 ip-guard attack-threshold

ip-guard attack-threshold {per-src-ip | per-port} pps

per-src-ip		IP
per-port		
<i>pps</i>		[1,9999]

IP 20 200

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# ip-guard attack-threshold per-src-ip 2
Ruijie(config-nfpp)# ip-guard attack-threshold per-port 50
```

nfpp ip-guard policy	
show nfpp ip-guard summary	
show nfpp ip-guard hosts	
clear nfpp ip-guard hosts	

10.4	

NFPP



45.6.7 ip-guard scan-threshold

ip-guard scan-threshold *pkt-cnt*



└───

└───

NFPP

└───

CPU IP CPU
500

└───

1.1.1.0/24

Ruijie(config)# nfpp

Ruijie(config-nfpp)#ip-guard trusted-host 1.1.1.0 255.255.255.0

└───

show nfpp ip-guard trusted-hosts	

└───

10.4	

45.6.9 clear nfpp ip-guard hosts

clear nfpp ip-guard hosts [vlan *vid*] [interface *interface-id*] [*ip-address*]

└───

<i>vid</i>	
<i>interface-id</i>	
<i>ip-address</i>	IP

└───

└───

└───

└───

VLAN 1 g 0/1

```
Ruijie# clear nfpp ip-guard hosts vlan 1 interface g0/1
```

ip-guard attack-threshold	
nfpp ip-guard policy	
show nfpp ip-guard hosts	

10.4	

45.6.10 nfpp ip-guard enable

IP

nfpp ip-guard enable

-	-

IP

IP

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp ip-guard enable
```

ip-guard enable	IP
show nfpp ip-guard summary	

--	--

	10.4	
--	------	--

45.6.11 nfpp ip-guard isolate-period

nfpp ip-guard isolate-period {*seconds* | **permanent**}

<i>seconds</i>	0	[30, 86400]
permanent		

R

8

€

per-port	
<i>rate-limit-pps</i>	1 9999
<i>attack-threshold-pps</i>	1 9999

┌

┌

```
Ruijie(config)# interface G 0/1
Ruijie(config-if)# nfpp ip-guard scan-threshold 20
```

ip-guard scan-threshold	
show nfpp ip-guard summary	

┌

┌

10.4	

45.7 ND

45.7.1 nd-guard attack-threshold

nd-guard attack-threshold per-port {ns-na | rs | ra-redirect} pps

┌

ns-na	
rs	
ra-redirect	
<i>pps</i>	[1,9999]

┌

```
30          /          30
          /          30
```

┌

NFPP

┌

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard attack-threshold per-port ns-na 20
Ruijie(config-nfpp)# nd-guard attack-threshold per-port rs 10
Ruijie(config-nfpp)# nd-guard attack-threshold per-port ra-redirect 10
```

nfpp nd-guard policy	
show nfpp nd-guard summary	

10.4	

45.7.2 nd-guard enable

ND

nd-guard enable

-	-

ND

NFPP

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard enable
```

nffp nd-guard enable	ND
show nfpp nd-guard summary	

┌

┌

10.4	

45.7.3 nd-guard rate-limit

nd-guard rate-limit per-port {ns-na | rs | ra-redirect} pps

┌

ns-na	
rs	
ra-redirect	
<i>pps</i>	[1,9999]

┌

15 / 15

┌

NFPP

┌

┌

```
Ruijie(config)# nfpp
Ruijie(config-nfpp)# nd-guard rate-limit per-port ns-na 10
Ruijie(config-nfpp)# nd-guard rate-limit per-port rs 5
Ruijie(config-nfpp)# nd-guard rate-limit per-port ra-redirect 5
```



45.7.4 nfpp nd-guard enable

ND

nfpp nd-guard enable

-	-

ND

ND

```
Ruijie(config)# interface G0/1
Ruijie(config-if)# nfpp nd-guard enable
```

nd-guard enable	ND
show nfpp nd-guard summary	

10.4	

45.7.5 nfpp nd-guard policy

nfpp nd-guard policy per-port {ns-na | rs | ra-redirect} rate-limit-pps attack-thresh old-pps

ns-na	
rs	
ra-redirect	

<i>rate-limit-pps</i>	1	9999
<i>attack-threshold-pps</i>	1	9999

ND snooping

ND guard
900

ND guard ND snooping

ND snooping

800

ND snooping

ND snooping

Ruijie(config)# **interface** G 0/1

Ruijie(config-if)# **nfpp nd-guard policy per-port ns-na 50 1001.76 61 pp 0.2**

NFPP

clear nfpp log

```

NFPP                    50
Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer entries 50
    
```

log-buffer logs number_of_message interval length_in_seconds	NFPP
show nfpp log	NFPP

10.4	

45.8.3 log-buffer logs

NFPP

log-buffer logs number_of_message interval length_in_seconds

<i>number_of_message</i>	0-0024
<i>length_in_seconds</i>	0-86400

```

number_of_message      1 length_in_seconds      30
    
```

NFPP

```

Ruijie(config)# nfpp
Ruijie(config-nfpp)# log-buffer logs 2 interval 12
    
```



log-buffer entries

	<code>show nfpp log summary</code>	NFPP
	10.4	

45.8.5 show nfpp log

NFPP

`show nfpp log summary`

NFPP

`show nfpp log buffer [statistics]`

	<code>statistics</code>	NFPP

"_"

%NFPP_ARP_GUARD-4-DOS_DETECTED: Host<IP=N/A,MAC=0000.0000.0004,port=Gi4/1,VLAN=1> was detected.(2009-07-01 13:00:00)

NFPP

Ruijie#`show nfpp log summary`

Total log buffer size : 10

Syslog rate : 1 entry per 2 seconds

Logging:

VLAN 1-3, 5

interface Gi 0/1

interface Gi 0/2

NFPP

Ruijie#**show nfpp log buffer statistics**

There are 6 logs in buffer.

NFPP

Ruijie#**show nfpp log buffer**

Protocol	VLAN	Interface	IP address	MAC address	Reason	Timestamp
----------	------	-----------	------------	-------------	--------	-----------

clear nfpp log	NFPP

10.4	

45.9 ARP

45.9.1 show nfpp arp-guard hosts

show nfpp arp-guard hosts [**statistics** | [[*vlan vid*] [**interface** *interface-id*] [*ip-address* | *mac-address*]]]

statistics	
<i>vid</i>	
<i>interface-id</i>	
<i>ip-address</i>	IP
<i>mac-address</i>	MAC

```

1
Ruijie# show nfpp arp-guard hosts statistics
success  fail  total
-----  ----  -----
100      20    120
          120          100          20
    
```


Ruijie# **show nfpp arp-guard scan statistics**

ARP scan table has 4 record(s).

ARP 4

Ruijie# **show nfpp arp-guard scan**

VLAN	interface	IP address	MAC address	timestamp
1	Gi0/1	N/A	0000.0000.0001	2008-01-23 16:23:10
2	Gi0/2	1.1.1.1	0000.0000.0002	2008-01-23 16:24:10
3	Gi0/3	N/A	0000.0000.0003	2008-01-23 16:25:10
4	Gi0/4	N/A	0000.0000.0004	2008-01-23 16:26:10

Total 4 record(s)

timestamp ARP 2008-01-23 16:23:10
2008 1 23 16 23 10 ARP

Ruijie# **show nfpp arp-guard scan vlan 1 interface G 0/1**

0000.0000.0001

VLAN	interface	IP address	MAC address	timestamp
1	Gi0/1	N/A	0000.0000.0001	2008-01-23 16:23:10

Total 1 record(s)



45.9.3 show nfpp arp-guard summary

show nfpp arp-guard summary

-	-

└───┘

└───┘

└───┘

Ruijie# show nfpp arp-guard summary

Format of column Rate-limit and Attack-threshold is per-src-ip
/per-src-mac/per-port.

**Interface Status Isolate-period Rate-limit Attack-threshold Sc
an-threshold**

Global	Enable	300	4/5/60	8/10/100	15
Gi 0/1	Enable	180	5/-/-	8/-/-	-
Gi 0/2	Disable	200	4/5/60	8/10/100	20

Maximum count of monitored hosts: 1000

Monitor period 300s

1 Interface

arp-guard rate-limit	
arp-guard scan-threshold	
nfpp arp-guard enable	ARP
nfpp arp-guard isolate-period	
nfpp arp-guard policy	
nfpp arp-guard scan-threshold	

└───┘

-	-

45.10 DHCP

45.10.1 show nfpp dhcp-guard hosts

show nfpp dhcp-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*mac-address*]]]

statistics	
<i>vid</i>	
<i>interface-id</i>	
<i>mac-address</i>	MAC

└───┘

└───┘

└───┘

Ruijie#

```

-----  ----  -----
100      20      120
          120          100          20

                                remain-time(seconds)
  
```

```

Ruijie# show nfpp dhcp-guard hosts
If column 1 shows '*', it means "hardware failed to isolate host".
VLAN  interface  MAC address  remain-time(seconds)
----  -
1     gi0/2      0000.0000.0001  10
*2    gi0/1      0000.0000.0002  20
Total 2 host(s)
  
```

clear nfpp dhcp-guard hosts	

10.4	

45.10.2 show nfpp dhcp-guard summary

show nfpp dhcp-guard summary

-	-

```
Ruijie# show nfpp dhcp-guard summary
```

Format of column Rate-limit and Attack-threshold is per-src-ip /per-src-mac/per-port.

Interface	Status	Isolate-period	Rate-limit	Attack-threshold
Global	Enable	300	-/5/150	-/10/300
Gi 0/1	Enable	180	-/6/-	-/8/-
Gi 0/2	Disable	200	-/5/30	-/10/50

Maximum count of monitored hosts: 1000

Monitor period 300s

1	Interface	Global			
2	Status				
3	Rate-limit		IP	/	MAC
/			Attack-threshold		-

dhcp-guard attack-threshold	
dhcp-guard enable	DHCP
dhcp-guard isolate-period	
dhcp-guard monitor-period	
dhcp-guard monitored-host-limit	
dhcp-guard rate-limit	
nfpp dhcp-guard enable	DHCP
nfpp dhcp-guard isolate-period	
nfpp dhcp-guard policy	

10.4

show nfpp icmp-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-address*]]]

statistics	
<i>vid</i>	
<i>interface-id</i>	

45.11.2 show nfpp icmp-guard summary

show nfpp icmp-guard summary

-	-

└───┘

└───┘

└───┘

Ruijie# show nfpp icmp-guard summary

Format of column Rate-limit and Attack-threshold is per-src-ip /per-src-mac/per-port.

Interface	Status	Isolate-period	Rate-limit	Attack-threshold
Global	Enable	300	4/-/60	8/-/100
Gi 0/1	Enable	180	5/-/-	8/-/-
Gi 0/2	Disable	200	4/-/60	8/-/100

Maximum count of monitored hosts: 1000

Monitor period 300s

esho (d)]T/C2_0 1 Tf0 Tc 0 T-29.25226 196 Td6<4721354E073C1214>6B

1	Interface	Global				
2	Status					
3	Rate-limit		IP	/	MAC	/
			Attack-threshold		-	

--	--

icmp-guard rate-limit	
nfpp icmp-guard enable	ICMP
nfpp icmp-guard isolate-period	
nfpp icmp-guard policy	

10.4	

45.11.3 show nfpp icmp-guard trusted-host

show nfpp icmp-guard trusted-host

-	-

10.4	

45.12 IP

- › **show nfpp ip-guard hosts**
- › **show nfpp ip-guard summary**
- › **show nfpp ip-guard trusted-host**

45.12.1 show nfpp ip-guard hosts

show nfpp ip-guard hosts [**statistics** | [[**vlan** *vid*] [**interface** *interface-id*] [*ip-address*]]]

statistics	
<i>vid</i>	
<i>interface-id</i>	
<i>ip-address</i>	IP

└───┘

└───┘

└───┘

```
Ruijie#show nfpp ip-guard hosts statistics
success  fail  total
-----  ---  -----
100      20    120
                120          100          20
```

Ruijie#show nfpp ip-guard hosts

If column 1 shows '*', it means "hardware do not isolate host".

VLAN	interface	IP address	Reason	remain-time(s)
------	-----------	------------	--------	----------------

```

-----
1      Gi0/1      1.1.1.1      ATTACK      110
2      Gi0/2      1.1.2.1      SCAN        61
Total  2 host(s)

```

IP	Reason	ATTACK
	SCAN	
clear nfpp ip-guard hosts		

10.4	
------	--

45.12.2 show nfpp ip-guard summary

show nfpp ip-guard summary

-	-
---	---

Ruijie# show nfpp ip-guard summary

Format of column Rate-limit and Attack-threshold is per-src-ip/per-src-mac/per-port.

Interface	Status	Isolate-period	Rate-limit	Attack-threshold	Scan-threshold
Global	Enable	300	4-/60	8-/100	15
Gi 0/1	Enable	180	5-/	8-/	-
Gi 0/2	Disable	200	4-/60	8-/100	20

Maximum count of monitored hosts: 1000

Monitor period 300s

```

1      Interface  Global
2      Status
3      Rate-limit      IP      /      MAC      /
                        Attack-threshold      -
    
```

ip-guard attack-threshold	
ip-guard enable	IP
ip-guard isolate-period	
ip-guard monitor-period	
ip-guard monitored-host-limit	
ip-guard rate-limit	
nfpp ip-guard enable	IP
nfpp ip-guard isolate-period	
nfpp ip-guard policy	

10.4	
------	--

45.12.3 show nfpp ip-guard trusted-host

show nfpp ip-guard trusted-host

-	-
---	---

```
Ruijie# show nfpp ip-guard trusted-host
```

```
IP address      mask
-----      -
1.1.1.0        255.255.255.0
1.1.2.0        255.255.255.0
Total 2 record(s)
```

ip-guard trusted-host	

10.4	

46 ACL

id	IP ACL 1-99 1300-1999 IP ACL 100-199 2000-2699 MAC ACL 700-799 ACL 2700-2899
name	ACL
sn	ACL ()
start-sn	
inc-sn	
deny	
permit	
prot	IPv4 eigrp gre ipinip igmp nos ospf icmp udp tcp ip IP 0-255 icmp/tcp/udp
interface idx	
src	
src-wildcard	0.255.0.32
prefix-len	
dscp dscp	, 0-63
flow-label flow-label	0-1048575
dst	
dst-wildcard	0.255.0.32
fragment	
precedence precedence	0-7
range	
time-range tm-rng-name	tm-rng-name
tos tos	0-15

cos cos	cos (0-7)
cos inner cos	tag cos
icmp-type	ICMP 0-255
icmp-code	ICMP 0-255
icmp-message	ICMP
operator port[port]	Operator lt- eq- gt- neq- range- port
src-mac-addr	
dst-mac-addr	
VID vid	vlan id
VID inner vid	tag vid
ethernet-type	0x
match-all tcpf	tcp flag
text	
in	
out	
{rule mask offset}+	rule mask offset “+”

AA AA AA AA AA AA BB BB BB BB BB BB CC CC DD DD
 DD DD EE FF GG HH HH HH II II JJ KK LL LL MM MM
 NN NN OO PP QQ QQ RR RR RR RR SS SS SS SS TT TT
 UU UU VV VV VV VV WW WW WW WW XY ZZ aa aa bb bb

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	21	V		50
I		24	W		54
J	IP	26	XY	IP	58
K	TOS	27	Z	flags	59
L	IP	28	a	Windows size	60
M	ID	30	b		62
N	Flags	32			

SNAP tag 802.3

46.1

46.1.1 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**] [**range** lower upper] [**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**] [**range**
lower upper] [**time-range** *time-range-name*]

>

ACL

access-list

IP	1-99	1300-1999		
IP	100-199	2000-2699		
MAC	700-799		MAC	
Expert	2700-2899			VLAN ID

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
›
›
R> net-tos-unreachable

„ informatio>
```

```
> cmd
> daytime
> discard
> domain
> echo
> exec
> finger
> ftp
> ftp-data
> gopher
> hostname
> ident
> irc
> klogin
> kshell
> login
> nntp
> pim-auto-rp
> pop2
> pop3
> smtp
> sunrpc
> syslog
> tacacs
> talk
> telnet
> time
> uucp
> whois
> www
    UDP      UDP
> biff
> bootpc
> bootps
> discard
> dnsix
> domain
> echo
```

- > isakmp
- > mobile-ip
- > nameserver
- > netbios-dgm
- > netbios-ns
- > netbios-ss
- > ntp
- > pim-auto-rp
- > rip
- > snmp
- > snmptrap
- > sunrpc
- > syslog
- > tacacs
- > talk
- > tftp
- > time
- > who
- > xdmcp

Ethernet-type

- > aarp
- > arp
- > appletalk
- > decnet-iv
- > diagnostic
- > etype-6000
- > etype-8042
- > lat
- > larc-sca
- > mop-console
- > mop-dump
- > mumps
- > netbios
- > vines-echo
- > xns-idp

1 IP
IP

192.168.1.64 - 192.168.1.127

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] [range lower upper] [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] [range lower upper] [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] [range lower upper] [time-range time-range-name]

3 MAC

[sn] deny {any | host source-mac-address}{any | host destination-mac-address} [ethernet-type][cos [out] [inner in]]

4 Expert

[sn] deny[protocol | [ethernet-type][cos [out] [inner in]]] [[VID [out][inner in]]] {source source-wildcard | host source | any}{host source-mac-address | any } {destination destination-wildcard | host destination | any} {host destination-mac-address | any} [precedence precedence] [tos tos][fragments] [range lower upper] [time-range time-range-name]

- a) ethernet-type cos

[sn] deny {[ethernet-type][cos [out] [inner in]]} [[VID [out][inner in]]] {source source-wildcard | host source | any} {host source-mac-address | any } {destination destination-wildcard | host destination | any} {host destination-mac-address | any} [time-range time-range-name]

- b) protocol

```
[sn] deny protocol [[VID [out][inner in]]] {source source-wildcard | host source | any}
{host source-mac-address | any } {acl 131 ce-mac-address Tn C4Tn Pf-0.0C4Tn Pf-0-wil6 Tc 0.1876 Tw 6
```



```

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
    
```

show access-lists	
ip access-group	IP ACL
mac access-group	MAC ACL
ip access-list	IP ACL
mac access-list	MAC ACL
expert access-list	ACL
permit	

--	--

```

V10.0                                V10.0    arp
                                      V10.2(3)  6XAB1g"PE5")g#e9AD/47#A%@4VfB D1at6
    
```

<i>id</i>	Expert 2700-2899
<i>name</i>	Expert
in	
out	

Expert ACL

ACL show
access-group

access-list accept_00d0f8xxxxxx_only Gigabit 1
 Ruijie(config)# **interface GigaEthernet 0/1**
 Ruijie(config-if)# expert access-group accept_00d0f8xxxxxx_only in

show access-group	ACL

V10.0	V10.0

46.1.4 expert access-list

ACL no ACL
expert access-list extended {id | name}
no expert access-list extended {id | name}

<i>id</i>	Expert 2700-2899
<i>name</i>	ACL

Expert ACL

show expert access-lists

```

1          ACL
Ruijie(config)# expert access-list extended exp-acl
Ruijie(config-exp-nacl)# show expert access-lists
expert access-list extended exp-acl
Ruijie(config-exp-nacl)#

2          ACL
Ruijie(config)# expert access-list extended 2704
Ruijie(config-exp-nacl)# show expert access-lists
expert access-list extended 2704
Ruijie(config-exp-nacl)#
    
```

show expert access-lists	

V10.0	V10.0

46.1.5 ip access-group

ip access-group no

ip access-group {*id* | *name*} {in | out}

no ip access-group { *id* | *name*} {in | out}

<i>id</i>	IP 1-199 1300-2699
<i>name</i>	IP
in	
out	

ACL

ip access-group

fastEthernet0/0 120

Ruijie(config)# **interface fastEthernet 0/0**

Ruijie(config-if)#**ip access-group 120 in**

access-list	
show access-lists	
show ip access-list	IP 1-199 1300 - 2699 3000 3199

V10.0	V10.0

46.1.6 ip access-list

IP ACL IP ACL **no**

ACL

ip access-list {extended | standard} {id | name}

no ip access-list {extended | standard} {id | name}

<i>id</i>	IP 1-99 1300-1999 100-199 2000-2699
<i>name</i>	IP

ACL

ACL deny permit show ip access-lists ACL

```

1      ACL
Ruijie(config)# ip access-list standard std-acl
Ruijie(config-std-nacl)# show ip access-lists
ip access-list standard std-acl
Ruijie(config-std-nacl)#

2      ACL
Ruijie(config)# ip access-list extended 123
Ruijie(config-ext-nacl)# show ip access-lists
ip access-list extended 123
    
```

show ip access-lists	IP

V10.0	V10.0

46.1.7 ip access-list resequence

ip ACL IPV6 ACL
no

ip access-list resequence {id | name} start-sn inc-sn

no ip access-list resequence {id | name}

<i>id</i>	ACL
<i>name</i>	ACL
<i>start-sn</i>	
<i>inc-sn</i>	

show access-lists

```

ACL
Ruijie# show access-lists
ip access-list standard 1
10 permit host 192.168.4.12
20 deny any any
Ruijie# config
Ruijie(config)# ip access-list resequence 1 21 43
Ruijie(config)# exit
Ruijie# show access-lists
ip access-list standard 1
21 permit host 192.168.4.12
64 deny any any
    
```

show access-lists	

V10.0	V10.0

46.1.8 list-remark text

ACL no

list-remark text

<i>Text</i>	

ACL

ACL

```
Ruijie(config-mac-nacl)# show mac access-lists  
mac access-list extended 704
```



show access-lists	
ip access-list	ip ACL
ipv6 access-list	IPV6 ACL
deny	ACL
permit	ACL

V10.0	V10.0

46.1.12 permit

(permit)

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**] [**range** *lower upper*] [**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**] [**range** *lower upper*] [**time-range** *time-range-name*] [**match-all** *tcp-flag*]

› User Datagram Protocol (UDP)

[sn] **permit udp** {*source source -wildcard*|**host** *source* |**any**} [**operator port** [*port*]] {*destination destination-wildcard* |**host** *destination* | **any**} [**operator port** [*port*]]

[precedence precedence] [tos tos] [fragments] [range lower upper] [time-range time-range-name]

› **Address Resolution Protocol (ARP)**

[sn] permit arp {vid vlan-id} [host source-mac-address | any] [host destination-mac-address | any] {sender-ip sender-ip-wildcard | host sender-ip | any} {sender-mac sender-mac-wildcard | host sender-mac | any} {target-ip target-ip-wildcard | host target-ip | any}

› **Internet Control Message Protocol (ICMP)**

[sn] permit icmp {source-ipv6-prefix / prefix-length | any source-ipv6-address | host} {destination-ipv6-prefix / prefix-length} host destination-ipv6-address | any [icmp-type] [[icmp-type [icmp-code]] | [icmp-message]] [dscp dscp] [flow-label flow-label][fragments] [time-range time-range-name]

› **Transmission Control Protocol (TCP)**

[sn] permit tcp {source-ipv6-prefix / prefix-length | host source-ipv6-address | any} [operator port [port]] {destination-ipv6-prefix / prefix-length | host destination-ipv6-address | any} [operator port [port]] [dscp dscp] [flow-label flow-label] [fragments] [range lower upper] [time-range time-range-name] [match-all tcp-flag]

› **User Datagram Protocol (UDP)**

[sn] permit udp {source-ipv6-prefix / prefix-length | host source-ipv6-address | any} [operator port [port]] {destination-ipv6-prefix / prefix-length | host destination-ipv6-address | any} [operator port [port]] [dscp dscp] [flow-label flow-label] [fragments] [range lower upper] [time-range time-range-name]

deny	-

┌

┌ ACL

┌ ACL ACL

┌ 1

192.168.4.12 MAC Expert Extended ACL ACL IP
001300498272 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)#
      2      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)#
      3      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
      4      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
      5      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# show expert access-group interface gigabitethernet 0/2
expert access-group ee in
Applied On interface GigabitEthernet 0/2.
```

expert access-list	Expert ACL

V10.0	V10.0

46.2.4 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

	V10.0	V10.0

46.2.5 show mac access-group

MAC

show mac access-group[interface <interface>]

	<interface>	

|

|

|

MAC ACL

MAC ACL

```
Ruijie# show mac access-group interface gigabitethernet 0/3
mac access-group mm in
Applied On interface GigabitEthernet 0/3.
```

	mac access-list	MAC ACL

|

	V10.0	V10.0

47 VACL

47.1

```

Vlan access map                               map_name                               map_sn
map                                             map                                             map

1      vlan access map                         map      map_sn
      map                                       map      map      map_sn      10

2      map_sn                               vlan access map                               map_name
Map_name                                     map

3      map_sn                               vlan access map                               map
      map      map                           map      map

4      map      6553      map
    
```

47.1.1 action forward/drop/redirect

```

map actions      vacl      no      map
actions          forward
    
```

action forward

no action forward

```

map actions      vacl      no      map
actions          forward
    
```

action drop

no action drop

```

map actions      vacl      no      map
actions          forward
    
```

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

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

actions forward	
actions drop	
actions redirect	

r	+	acl,	8	acl
	>	map	ip acl	map acl
	>	map	8	acl
	>	map		acl
	>	map	ace	acl
/	>	map		ip acl (mac acl)
		ip acl (mac acl)		ip acl (mac acl)
		ip acl (mac acl)		
	>	map		ip acl (mac acl)
		mac acl (ip acl)		ip acl (mac
		acl)	mac acl (ip acl)	

```

map match
Ruijie(config)# vlan access-map dd
Ruijie(config-access-map)# match ip address 10 20 sp1 30 sp2
Ruijie(config-access-map)# exit
Ruijie(config)# vlan access-map dd 20
Ruijie(config-access-map)# match mac address 710 720 m1 760
Ruijie(config-access-map)# exit
Ruijie(config)#

```

-	-

-	-

47.1.3 vlan access map

```

map map_name [ map_sn ]
no Vlan access map map_name [ map_sn ]

```

<i>map_name</i>	map	100
<i>map_sn</i>	map	[0 - 65535]

|

|

|

```

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

-	-

|

-	-

```

vlan access map          vlan          vlan          vlan
filter aa vlan-list 1-33  map          1-33        vlan

```

```

map ff vlan access map  vlan 5
Ruijie(config)# vlan filter ff vlan-list 5

```

-	-

```


```

-	-

47.2

47.2.1 show vlan access map

```

map
show vlan access map
map
show vlan access map map_name

```

<i>map_name</i>	map

```


```

```


```

```


```

```

1 show vlan access map
Ruijie(config)# show vlan access-map
Vlan access-map aa 10
match mac address: 700, 710, m1, 720,

```

```

action: forward
Vlan access-map aa 20
match ip address: 10, 20, 30, sp1, sp2, 60, 50, 80,
action: drop
Vlan access-map dd 20
match mac address: 710, 720, m1, 760,
action: forward
Ruijie(config)#
    2          show vlan access map { map_name }
Ruijie(config)# show vlan access-map dd
Vlan access-map dd 20
match mac address: 710, 720, m1, 760,
action: forward
Ruijie(config)#
    
```

-	-

-	-

47.2.2 show vlan filter

map vlan

show vlan filter

-	-

48 QOS

48.1

```

QoS
>
>          1  policy-map
>    policy-map          class-map
>    class-map          1  ACL    ACL    ACE
>
>          ACE          "    ACL"
    
```

```

QoS
QoS          Policy Map
QoS          QoS          Policy Map          Off
QoS
QoS
    
```

CoS	0
	8
	WRR
QueueWeight	1:1:1:1:1:1:1
WRR Weight Range	1:15
DRR Weight Range	1:15
	No Trust

Cos

CoS	
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8

Cos

CoS to DSCP

CoS to DSCP	CoS	DSCP
	0	0
	1	8
	2	16
	3	24
	4	32
	5	40
	6	48
	7	56

IP-Precedence to DSCP

IP-Precede nce to DSCP	IP-Precedence	DSCP
	0	0
	1	8
	2	16
	3	24
	4	32
	5	40
	6	48
	7	56

DSCP to CoS

DSCP to CoS	DSCP	CoS
	0	0
	8	1
	16	2
	24	3
	32	4
	40	5
	48	6
	56	7

48.2

48.2.1 class maps

ACL

ip access-list {**extended** | **standard**} { *acl-id* | *acl-name* }

mac access-list extended {*acl-id* | *acl-name*}

expert access-list extended {*acl-id* | *acl-name*}

access-list *acl-id* ACL

class map class map

[**no**] **class-map** *class-map-name*

class map

[**no**] **match access-group** *acl-name*| *acl-id*

<i>acl-name</i>	ACL
<i>acl-id</i>	ACL id
<i>class-map-name</i>	class map
no class-map <i>class-map-name</i>	class map
no match access-group <i>acl-name</i> <i>acl-id</i>	

```

1      MAC ACL,      me
Ruijie(config)# mac access-list extended me
2      ACL
Ruijie(config-ext-macl)# permit host 1111.2222.3333 any
3      ACL
Ruijie(config-ext-macl)# exit
4      class-map,    cm

```

QOS

48.2.4 mls qos cos

CoS

mls qos cos default-cos

no mls qos cos

<i>default-cos</i>	0 7
no	

CoS 0

```
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# mls qos cos 7
```

show mls qos interface interface-id	-

|

|

|

|

Ruijie(config)# **mls qos map cos-dscp 8 10 16 18 24 26 32 34**

|

show mls qos maps	dscp-cos maps,dscp-cos maps ip-prec-dscp maps

|

|

-	-

48.2.6 mls qos map dscp-cos

DSCP CoS

mls qos map dscp-cos *dscp-list* to *cos*

no mls qos map dscp-cos

|

<i>dscp-list</i>	
cos	0 7
no	

|

|

|

|

Ruijie(config)# **mls qos map dscp-cos 8 10 16 18 to 0**

-	-

```
show mls qos maps      dscp-cos maps,dscp-cos maps  ip-prec-dscp maps
```

-	-

48.2.7 mls qos map ip-prec-dscp

ippre DSCP

mls qos map ip-prec-dscp dscp1...dscp8

no mls qos map ip-prec-dscp

dscp	
no	

```
└───┘
```

```
└───┘
```

```
└───┘
```

```
Ruijie(config)# mls qo map ip-prec -dscp 8 10 16 18 24 26 32 34
```

show mls qos maps	dscp-cos maps,dscp-cos maps ip-prec-dscp maps

```
└───┘
```

-	-

48.2.8 mls qos scheduler

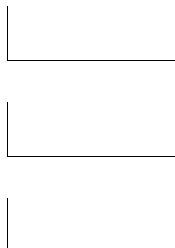
mls qos scheduler [sp | rr | wrr | drr]

no mls qos scheduler

Qos	IP-PRE

```
gigabitethernet 1/1  
  qos trust cos
```

<i>class-map-name</i>	class map
no class <i>class-map-name</i>	
<i>new-dscp</i>	DSCP
<i>rate-bps</i>	kbps
<i>burst-byte</i>	kbyte
<i>drop</i>	
<i>dscp-value</i>	DSCP



```

1      policy map,    po
Ruijie(config)# policy-map po
2      class-map

```



```
Ruijie(config)# priority-queue cos-map 1 0 1
```

show mls qos queueing	-

-	-

48.2.13 service-policy

policy map

service-policy {input | output} *policy-map-name*

no service-policy {input | output}

<i>policy-map-name</i>	polycymap
no	policy map

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

```
Ruijie(config-if)# service-policy input po
```

--	--

WRR

wrr-queue bandwidth *weight1 ... weightn*

no wrr-queue bandwidth

<i>weight1...weightn</i>	n	n
no		

weight1: ...: weightn = 1:...:1

Ruijie(config)# **wrr-queue bandwidth** 1 2 3 4 5 6 7 8

show mls qos queueing	-

-	-

48.3

48.3.1 show class-map

class map

show class-map [*class-name*]

<i>class-name</i>	class map

|
|_____

|
|_____

|
|_____

Ruijie# **show class-map**



└───┘

└───┘

└───┘

Ruijie# **show mls qos maps**

└───┘

-	-

└───┘

└───┘

-	-

48.3.5 show mls qos queueing

QoS (cos-to-queue map, wrr weight, drr weight)

show mls qos queueing

└───┘

-	-

└───┘

└───┘

└───┘

└───┘

Ruijie# **show mls qos queueing**

└───┘

-	-

└───┘

-	-

Ruijie# **show mls qos scheduler**

-	-

-	-

49 Voice VLAN

49.1

49.1.1 voice vlan

```

Voice VLAN
Voice VLAN
voice vlan vlan-id
no voice vlan

```

<i>vlan-id</i>	Voice VLAN ID

```


```

	Voice VLAN	Voice VLAN ID
1	Voice VLAN	VLAN
2	VLAN 1 VLAN	VLAN 1 Voice
3	VLAN	Voice VLAN Super VLAN
4		802.1x VLAN
		VID Voice VLAN ID
5	RSPAN Remote VLAN	Voice VLAN 1
	VLAN	Voice VLAN

```

1 Voice VLAN VLAN2 Voice VLAN
Ruijie(config)# vlan 2
Ruijie(config-vlan)# exit
Ruijie(config)# voice vlan 2

```

--	--

	show voice vlan	Voice VLAN
	10.4	

49.1.2 voice vlan aging

Voice VLAN


```
1      OUI      0012.3400.0000  Voice VLAN      Company A
Ruijie(config)# voice vlan mac-address 0012.3400.0000 mask
ffff.ff00.0000 description Company A
```

1 Voice VLAN
Voice VLAN Voice VLAN

2 native VLAN Voice VLAN

3 Trunk Port/Hybrid Port VLAN
Voice VLAN VLAN Voice
VLAN Voice VLAN

VJ/C2_0 1 Tf-0.0359 Tc 0 Tw 5.353' 24w 5.31w 0.0000 BT

r

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

1 Voice VLAN
Ruijie(config)# voice vlan security enable

show voice vlan	Voice VLAN



Voice VLAN

Voice VLAN

```

1          Voice VLAN
Ruijie(config)# show voice vlan
Voice VLAN status: ENABLE           //Voice VLAN
Voice VLAN ID: 2                    //Voice VLAN ID
Voice VLAN security mode: Security //
Voice VLAN aging time: 5 minutes   //
Voice VLAN cos: 6                   //      CoS
Voice VLAN dscp: 46                 //      DSCP
Current voice vlan enabled port mode: //      Voice VLAN
PORT                                MODE
-----
Fa0/1                               Auto
    
```

	Voice VLAN	Voice VLAN
voice vlan <i>vlan-id</i>	Voice VLAN VLAN	Voice VLAN
voice vlan aging <i>minutes</i>	Voice VLAN	
voice vlan cos <i>cos-value</i>	Voice VLAN	CoS
voice vlan dscp <i>dscp-value</i>	Voice VLAN	DSCP
voice vlan enable	Voice VLAN	
voice vlan mode auto	Voice VLAN	
voice vlan security enable	Voice VLAN	

10.4	
------	--

49.2.2 show voice vlan oui

OUI OUI

show voice vlan oui

Voice VLAN

--	--	--

└───

└───

50

50.1

50.1.1 rgos-security compatible

	RGOS	rgos-security
compatible	RGOS	no
rgos-security compatible		
no rgos-security compatible		
	RGOS	
	1	RGOS
	Ruijie(config)#no gos-security compatible	
	10.4	

VRRP

51.1.2 vrrp description

VRRP no

vrrp group description text

no vrrp group description

<i>group</i>	VRRP
<i>text</i>	VRRP

VRRP VRRP VRRP

VRRP

VRRP VRRP

```

E0 VRRP 1 Building A – Marketing and
Administration
interface FastEthernet 0/0
ip address 10.0.1.1 255.255.255.0
vrrp 1 ip 10.0.1.20
vrrp 1 description "Building A - Marketing and Administration"
    
```

Ruijie(config-if)# **vrrp group ip**

vrrp group ip ipaddress [secondary]

no vrrp group ip ipaddress [secondary]

<i>group</i>	VRRP
<i>ipaddress</i>	IP
secondary	IP

VRRP

secondary IP no IP
 VRRP IP VRRP IP
 IP

```

0 VRRP VRRP 1
IP 10.0.1.20 IP 10.0.2.20
interface FastEthernet 0/0
no switchport
ip address 10.0.1.1 255.255.255.0
ip address 10.0.2.1 255.255.255.0 secondary
vrrp 1 ip 10.0.1.20
vrrp 1 ip 10.0.2.20 secondary
    
```

61 Tf220.64 re142C5.1324.5 mh355.945424.02 -201.92 -19.62 reW*n0.85

no vrrp group preempt [delay]

<i>group</i>	VRRP
delay seconds	Master 0

VRRP

VRRP

VRRP

VRRP

VRRP

Master

0

VRRP

Master

VRRP

VRRP

<i>group</i>	VRRP
<i>level</i>	VRRP

100 VRRP VRRP VRRP

VRRP

VRRP 1 254
vrrp 1 priority 254

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

-	-

51.1.6 vrrp timers advertise

VRRP no
vrrp group timers advertise interval
no vrrp group timers advertise

<i>group</i>	VRRP
<i>interval</i>	VRRP ()

1 VRRP VRRP

┌

┌ VRRP VRRP VRRP

┌ VRRP 4
vrrp 1 timers advertise 4

┌

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

┌

┌ - -

-	-

51.1.7 vrrp timers learn

no

vrrp group timers learn

no vrrp group timers learn

┌

<i>group</i>	VRRP

┌ VRRP VRRP

┌

┌ Master VRRP VRRP VRRP Master

Master VRRP VRRP VRRP Master

```
VRRP 1
vrrp 1 timers learn
```

Ruijie(config-if)# vrrp group ip <i>ipaddress</i> [secondary]	VRRP	IP
Ruijie(config-if)# vrrp group timers advertise [msec] interval	VRRP	

-	-
---	---

51.1.8 vrrp track

```
VRRP          vrrp group track interface-type number          VRRP
IP            vrrp group track ip-address          vrrp group track bfd          BFD
              IP      no
```

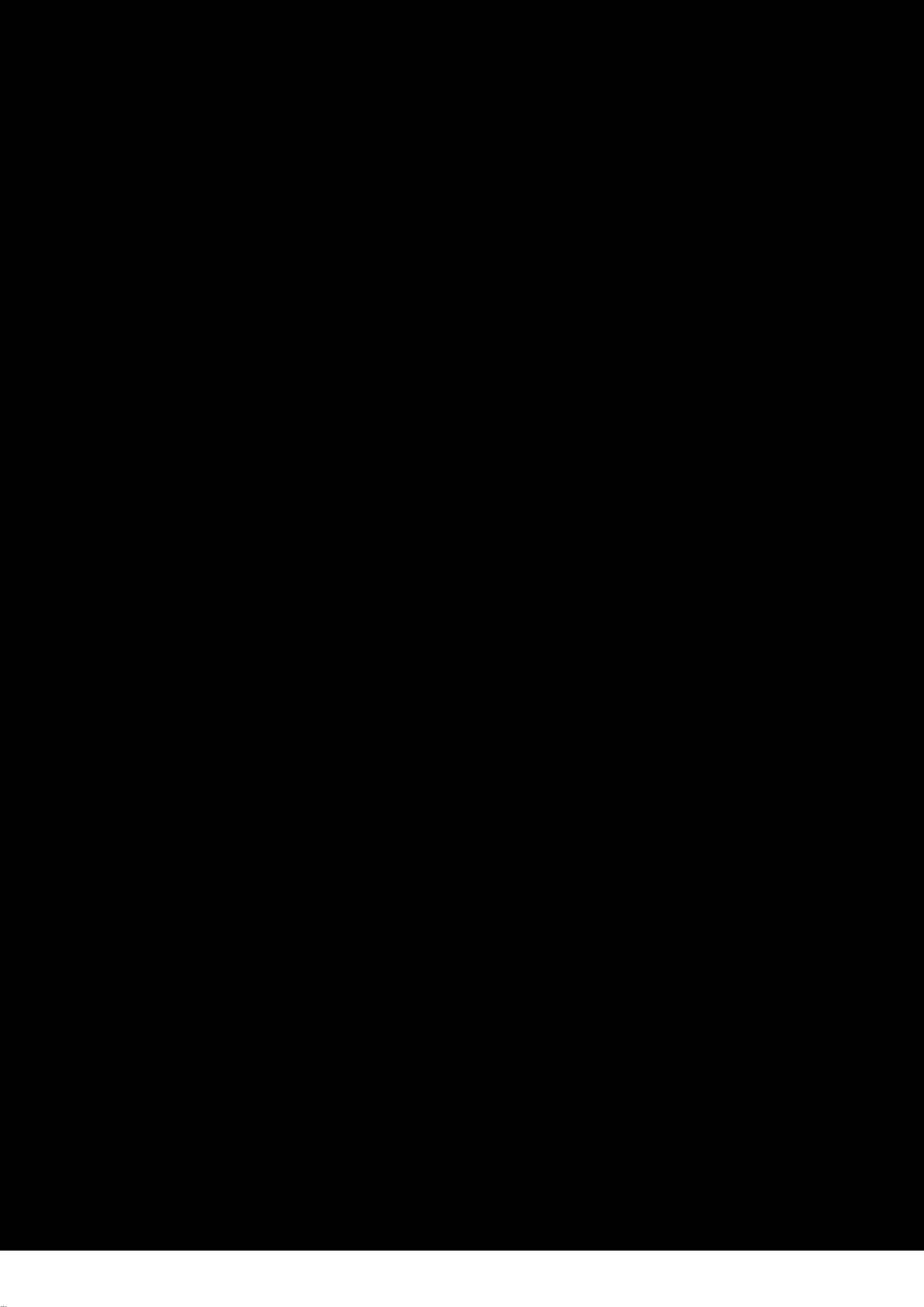
vrrp group track [*interface-type number* | **bfd** *interface-type interface-number ipv4-address*]
[*priority*]

vrrp group track *ipv4-address* [**interval** *interval-value*] [**timeout** *timeout-value*] [*priority*]

no vrrp group track *interface-type number*

no vrrp group track *ipv4-address*

<i>group</i>	VRRP
<i>interface-type</i>	
<i>number</i>	
<i>ipv4-address</i>	IPv4 bfd
<i>interval-value</i>	3
<i>timeout-value</i>	1
<i>priority</i>	VRRP 10





RGOS 10.4	-

51.2 VRRP

51.2.1 debug vrrp

VRRP

VRRP

VRRP

no

debug vrrp

no debug vrrp

-	-

51.2.3 debug vrrp events

VRRP no

debug vrrp events

no debug vrrp events

-	-

┌

VRRP

┌

┌

VRRP

Ruijie# **debug vrrp events**

Ruijie#

VRRP: Grp 1 Event - Advert higher or equal priority

VRRP: Grp 1 Event - Advert higher or equal priority

VRRP: Grp 1 Event - Advert higher or equal priority

┌

-	-

┌

┌

-	-

51.2.4 debug vrrp packets

VRRP no

debug vrrp packets

no debug vrrp packets

	-	-

└───

VRRP

└───

└───

1 VRRP VRRP 1

Ruijie# **debug vrrp packets**

Ruijie#

VRRP: Grp 2 sending Advertisement checksum DD4D

VRRP: Grp 2 sending Advertisement checksum DD4D

VRRP: Grp 2 sending Advertisement checksum DD4D

2 , VRRP VRRP 1

IP VRRP 1

Ruijie# **debug vrrp packets**

Ruijie#

VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213

VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213

VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213

	-	-

VRRP

VRRP

show vrrp [brief | group]

brief	VRRP
<i>group</i>	VRRP

VRRP

1 VRRP

```

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

2 VRRP

FastEthernet 0/0 2 120 - - P Master 192.168.201.217
192.168.201.2

Ruijie(config-if)# vrrp group ip ip02fress [secondary]	VRRP IP

--	--

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

```
Ruijie(config-if)# vrrp group ip ip address
[ehdary(v)1] RP
```

52 RLDP

52.1

52.1.1 rldp detect-interval

RLDP

rldp detect-interval *interval*

no rldp detect-interval

	<i>interval</i>	2-15
	3	
	stp	× stp
	5s :	
	Ruijie(config)# rldp detect-interval 5	

rldp detect-max *num*

no rldp detect-max

<i>num</i>	,	2-10

2

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

rldp detect-interval	

-	-

52.1.3 rldp enable

RLDP

rldp enable

no rldp enable

	RLDP	RLDP
	Ruijie(config)# rldp enable	
	rldp port	RLDP
	-	-

52.1.4 rldp port

rldp

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

no rldp port { unidirection-detect | bidirection-detect | loop-detect }

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

!

m %•€/À

```
Ruijie(config)# interface fas 0/1
Ruijie(config-if)# rldp port loop-detect block
```

rldp enable	rldp

-	-

52.1.5 rldp reset

rldp shutdown disable rldp

rldp reset

-	-

```
Ruijie# rldp reset
```

rldp enable	Rldp

-	-

52.2

52.2.1 show rldp

rldp

show rldp [**interface** *interface-id*]

└──

└── EXEC

└──

└──

	-	-

└──

	-	-

53 TPP

53.1

53.1.1 topology guard

topology guard

no

[no] topology guard

-	-

┌

┌

┌

cpu topology-limit

```
Ruijie(config)# topology guard
Ruijie(config)# no topology guard
```

┌

tp-guard port enable	
cpu topology-limit	CPU

┌

-	-

53.1.2 tp-guard port enable

no

[no] tp-guard port enable



|

|

tpp

|

Ruijie# **show tpp**

|

topology guard	

|

|

-	-

54

54.1

54.1.1 cd

`cd [filesystem:][directory]`

54.1.2 copy

copy *source-url destination-url*

<i>source-url</i>	URL
<i>destination-url</i>	URL

copy

URL

flash:	flash URL flash
tftp:	TFTP
xmodem:	xmodem
slave:	flash
usb0:	usb
usb1:	usb
sd0:	sd

r

/

URL

1 tftp

```

Ruijie#copy tftp://192.168.201.54/rgos.bin flash:/
2          tftp
Ruijie#copy flash:/rgos.bin tftp://192.168.201.54/rgos.bin
3          xmodem
Ruijie# copy xmodem: flash:/config.text
4          U
Ruijie#copy flash:/config.text usb0:/config.text
5
Ruijie#copy flash:/config.text slave:/config.text
6          flash      sd
Ruijie#copy flash:/rgos.bin sd0:/rgos.bin
7          U          sd
Ruijie#copy usb0:/config.text sd0:/config.text
8          sd          U
Ruijie#copy sd0:/config.text usb0:/config.text

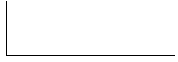
```

del	
rename	
dir	

54.1.3 delete

delete url

<i>url</i>	<i>url</i>



url

r

1

Ruijie# **dir** slave0:/

Directory of slave:/

Mode	Link	Size	MTime	Name
1		10838016	2008-01-01 00:01:53	rgos.bin
1		399	2008-01-01 00:01:37	config.text
1		399	2008-01-01 00:17:58	cfg.txt

3 Files (Total size 11210782 Bytes), 0 Directories.

Total 33030144 bytes (31MB) in this device, 20463616 bytes (19MB) available.

2

Ruijie# **dir**

Directory of temp:/

Mode	Link	Size	MTime	Name
1		399	2008-01-01 00:17:58	a.dat

1 Files (Total size 399 Bytes), 0 Directories.

Total 33030144 bytes (31MB) in this device, 20463616 bytes (19MB) available.

pwd	
cd	

54.1.5 mkdir

mkdir *directory*

	<i>directory</i>	

|

|

()

54.1.6 rename

rename *url1 url2*

	<i>url1</i>	URL
	<i>url2</i>	URL

usb0/1, flash, slave

54.1.7 rmdir

rmdir *directory*

<i>directory</i>	,

--

--

--

--

tmp
Ruijie# **rmdir** tmp

mkdir	

--

54.2

54.2.1 pwd

pwd



└──

└──

└──

1
Ruijie#show file systems

└──

└──

└──

55

55.1 CPU

55.1.1 cpu-log

CPU , **cpu-log**
cpu-log *log-limit low_num high_num*

	-	-
	-	-

55.1.2 show cpu

CPU

show2 66ef8 397/TT7-0..6 668.18 198 62.34 575.

5	0%	0%	0%	waitqueue_process
6	0%	0%	0%	tasklet_task
7	0%	0%	0%	kevents
8	0%	0%	0%	snmpd
9	0%	0%	0%	snmp_trapd
10	0%	0%	0%	mtdblock
11	0%	0%	0%	gc_task
12	0%	0%	0%	Context
13	0%	0%	0%	kswapd
14	0%	0%	0%	bdflush
15	0%	0%	0%	kupdate
16	0%	3%	1%	ll_mt
17	0%	0%	0%	ll main process
18	0%	0%	0%	bridge_relay
19	0%	0%	0%	dlx_task
20	0%	0%	0%	secu_policy_task
21	0%	0%	0%	dhcpa_task
22	0%	0%	0%	dhcpsnp_task
23	0%	0%	0%	igmp_snp
24	0%	0%	0%	mstp_event
25	0%	0%	0%	GVRP_EVENT
26	0%	0%	0%	rldp_task
27	0%	2%	1%	rerp_task
28	0%	0%	0%	reup_event_handler
29	0%	0%	0%	tpp_task
30	0%	0%	0%	ip6timer
31	0%	0%	0%	rtadvd
32	0%	0%	0%	tnet6
33	2%	0%	0%	tnet
34	0%	0%	0%	Tarptime
35	0%	0%	0%	gra_arp
36	0%	0%	0%	Ttcptimer
37	8%	1%	0%	ef_res
38	0%	0%	0%	ef_rcv_msg
39	0%	0%	0%	ef_inconsistent_daemon
4t_daemon				
4t_daemon				
4t_dvmp_snp	17	0%	39	0%

44	0%	0%	0%	ef6_inconsistent_daemon
45	0%	0%	0%	imid
46	0%	0%	0%	nsmd
47	0%	0%	0%	ripd
48	0%	0%	0%	ripngd
49	0%	0%	0%	ospfd
50	0%	0%	0%	ospf6d
51	0%	0%	0%	bgpd
52	0%	0%	0%	pimd
53	0%	0%	0%	pim6d
54	0%	0%	0%	pdmd
55	0%	0%	0%	dvmrpd
56	0%	0%	0%	vty_connect
57	0%	0%	0%	aaa_task
58	0%	0%	0%	Tlogtrap
59	0%	0%	0%	dhcp6c
60	0%	0%	0%	sntp_recv_task
61	0%	0%	0%	ntp_task
62	0%	0%	0%	sla_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_recv
69	0%	0%	0%	co_oper
70	0%	0%	0%	co_mac
71	0%	0%	0%	radius_task
72	0%	0%	0%	tac+_acct_task
73	0%	0%	0%	tac+_task
74	0%	0%	0%	dhcpd_task
75	0%	0%	0%	dhcps_task
76	0%	0%	0%	dhcpping_task
77	0%	0%	0%	dhcpc_task
78	0%	0%	0%	uart_debug_file_task
79	0%	0%	0%	ssp_init_task
80	0%	0%	0%	rl_listen
81	0%	0%	0%	ikl_msg_operate_thread
82	0%	0%	0%	bcmDPC

83	0%	0%	0%	bcmL2X.0	
84	3%	3%	3%	bcmL2X.0	
85	0%	0%	0%	bcmCNTR.0	
86	0%	0%	0%	bcmTX	
87	0%	0%	0%	bcmXGS3AsyncTX	
88	0%	2%	1%	bcmLINK.0	
89	0%	0%	0%	bcmRX	
90	0%	0%	0%	mngpkt_rcv_thread	
91	0%	0%	0%	mngpkt_recycle_thread	
92	0%	0%	0%	stack_task	
93	0%	0%	0%	stack_disc_task	
94	0%	0%	0%	redun_sync_task	
95	0%	0%	0%	conf_dispatch_task	
96	0%	0%	0%	devprob_task	
97	0%	0%	0%	rdp_snd_thread	
98	0%	0%	0%	rdp_rcv_thread	
99	0%	0%	0%	rdp_slot_change_thread	
100	4%	2%	1%	datapkt_rcv_thread	
101	0%	0%	0%	keepalive_link_notify	
102	0%	0%	0%	rerp_msg_rcv_thread	
103	0%	0%	0%	ip_scan_guard_task	
104	0%	0%	0%	ssp_ipmc_hit_task	
105	0%	0%	0%	ssp_ipmc_trap_task	
106	0%	0%	0%	hw_err_snd_task	
107	0%	0%	0%	rerp_packet_send_task	
108	0%	0%	0%	idle_vlan_proc_thread	
109	0%	0%	0%	cmic_pause_detect	
110	1%	1%	1%	stat_get_and_send	
111	0%	1%	0%	rl_con	
112	75%	80%	90%	idle	
		3	5	1	5
	CPU	LISR	HISR		CPU

No	
5Sec	5 CPU
1Min	1 CPU
5Min	5 CPU

/

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

show memory	

10.3(4b3)	

55.2.2 show memory

show memory

show memory

-	-

show memory

```
Ruijie#show memory
System Memory Statistic:
```

Free pages: 1079

watermarks : min 379, lower 758, low 1137, high 1516

System Total Memory : 128MB, Current Free Memory : 5283KB

Used Rate : 96%

1. 4k

2.

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

3.

-	-

-	-

55.2.3 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	

10.3(4b3)	

56

56.1

56.1.1 threshold set

no
CPU
CPU
syslog
3
syslog
CPU
MIB

```

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)	

56.2

56.2.1 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)	

57

57.1

57.1.1 clear logging

clear logging

	-	-

|

|

|

|

Ruijie# **clear logging**

	logging on	
	show logging	
	logging buffered	

|

	-	-

57.1.2 more flash

FLASH

more flash:filename

<i>Filename</i>	

┌

┌

┌

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
----------------------------	-------

┌

┌

-	-
---	---

57.1.3 logging buffered

no

default

logging buffered [*buffer-size* | *level*]

no logging buffered

default logging buffered

<i>buffer-size</i>	4K 128K Bytes
--------------------	---------------

level

0 7

4k Bytes

7

show logging

clear logging

FLASH

Syslog Server

8

Emergencies	0	
Alerts	1	
Critical	2	
Errors	3	
warnings	4	
Notifications	5	
informational	6	
Debugging	7	

0

6

6

10000

Ruijie(config)# **logging buffered 10000 6**

logging on

show logging

clear logging

57.1.5 logging count

<i>facility-type</i>	Syslog
----------------------	--------

Local7(23)

2 Syslog

Numerical Code	Facility
0	kernel messages
1	user-level messages
2	mail system
3	system daemons
4	security/authorization messages
5	messages generated internally by syslogd
6	line printer subsystem
7	network news subsystem
8	UUCP subsystem
9	clock daemon
10	security/authorization messages
11	FTP daemon
12	NTP subsystem
13	log audit
14	log alert
15	clock daemon
16	local use 0 (local0)
17	local use 1 (local1)
18	local use 2 (local2)
19	local use 3 (local3)
20	local use 4 (local4)
21	local use 5 (local5)
22	local use 6 (local6)
23	local use 7 (local7)

(local7) 23

```

Syslog      kernel
Ruijie(config)# logging facility kern

```

logging console	

-	-

57.1.7 logging file flash

```

FLASH      FLASH
no
logging file flash:filename [max-file-size] [level]
no logging file

```

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

```
FLASH
```

```

Syslog Server
FLASH
txt
FLASH FLASH
FLASH logging file flash

```

```

FLASH          trace.txt          64K,
6
Ruijie(config)# logging file flash:trace

```

logging on	
show logging	
more flash	FLASH

-	-

57.1.8 logging monitor

```

VTY          telnet          SSH
              no              VTY

```

logging monitor *level*

no logging monitor

<i>level</i>	1

Debugging (7)

```

VTY          terminal monitor
VTY          logging monitor
Logging monitor          VTY

```

```

VTY          6
Ruijie(config)# logging monitor informational

```


logging on	
show logging	
logging trap	syslog server

└──

-	-

57.1.12 logging source interface

no

logging source interface *interface-type interface-number*

no logging source interface

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

└──

└──

	Syslog Server	IP	IP
		IP	IP
	IP	IP	IP

└──

Loopback 0 Syslog
Ruijie(config)# **logging source interface loopback 0**

logging	Syslog Server

└───

└───

-	-

57.1.13 logging synchronous

no

logging synchronous

no logging synchronous

└───

-	-

└───

└───

└───

Ruijie(config)#**line console**

	-	-

57.1.14 logging trap

no Syslog Server

57.1.15 service sequence-numbers

no

service sequence-numbers

no service sequence-numbers

	-	-

|

|

|

1

|

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

<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

Uptime
Datetime

Log Debug Datetime

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



VTY

VTY

no

terminal monitor

terminal no monitor

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	

-	-

5 **show logging count**

logging count

-	-

CONFIG_I

5 1

Jul 6 10:29:57

-----SYS

TOTAL

1

logging count	
show logging	
clear logging	

-	-

	-	-

└───┘

10.4(1)	SD	
10.4(2b4)	SD	usb

58.1.2 usb remove

usb remove *device-id*

device-id	USB	ID
	show usb	

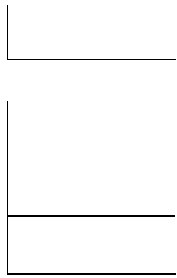
└───┘

└───┘

```

USB
USB
USB
Ruijie# usb remove 0
OK, now you can pull out the device 0.
*Jan 1 00:18:16: %USB-5-USB_DISK_REMOVED: USB Disk <Mass Storage>
has been removed from USB port 0!
USB
    
```

	-	-



10.4(1)	SD
10.4(2b4)	SD usb

59

59.1

59.1.1 device-priority

device-priority [*member*] *priority*

<i>member</i>	ID member 1
<i>priority</i>	[1, 10]

|

|

| 1 10 10

| 1
write

| 2 8
Ruijie(config)# **device-priority** 2 8

show member	

|

-	-

59.1.2 device-description

device-description [

member <i>member</i>	ID member 1
<i>description</i>	31

└──

└──

└──

└──

```

write
2 red-giant
Ruijie(config)# device-description member 2 red-giant

```

show member	

└──

-	-
---	---

59.2

59.2.1 show member

show member [*member*]

<i>member</i>	ID

└──

└──

└──

Ruijie# **show member**

```
Member Mac Address      Priority Software Version
HardwareVersion Description
-----
1 00d0.f810.3323 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
2 00d0.f822.33aa 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
3 00d0.f822.33ae 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
4 00d0.f822.33b0 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
5 00d0.f822.33b2 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
6 00d0.f824.23b4 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
7 00d0.f833.44b4 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
8 00d0.f855.33ae 1 RGOS 10.1.00(2),Release(12889) 1.0 SWITCH
```

-	-

-	-