



RG-S5750S

RGOS 10.4(2b11)

©2000-2011



RGOS® 10.4(2b11)

,
,
,

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]*

<i>mode</i>	
<i>command-alias</i>	
<i>original-command</i>	

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

Ruijie# s?
show start-chat start-terminal-service
"ia"
"ip address"
Ruijie(config-if)# ia ?
A.B.C.D IP address
dhcp IP Address via DHCP
Ruijie(config-if)# ip address
"ip address"

show aliases

```

```

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

```

show aliases	

privilege

ommand-string

mand-string

CLI

0-15

CLI

privilege ?

0.0.2 294.68 -139.2 -19.1Hp

```

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

```

enable secret	CLI



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

```

-	-

-	-

2.1.7 ip http authentication

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



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*

	-	-

└───

└───

lockable

no lockable

	-	-

┌

┌

line

┌

lock

EXEC

┌

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

┌

	lock	

┌

┌

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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

┌

-	-

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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2.2.3 boot system

no

boot system url

no boot system

┌

<i>url</i>	

┌

flash:/rgos.bin

┌

┌

url

1	flash	URL	flash
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
```

┌

```

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**

-	-

	-	
	-	-

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

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

BeiJingAgenda

Ruijie(config)# hostname *BeiJingAgenda*

BeiJingAgenda(config)#

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|

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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.
```

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-	-

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

no speed		speed speed			
speed speed					
Speed		bps			
		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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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

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

```

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

5.1

5.1.1 carrier-delay

carrier-delay

no

carrier-delay [*seconds*]

no carrier-delay

<i>seconds</i>		1 60

┌

2

┌

┌

DCD

DCD

DCD

DCD

Down

Up

	-	-
--	---	---

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>	

|

┌

┌

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	

└───┘

-	-

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

È



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

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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|

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6.2

6.2.1 show aggregateport

aggregateport

|

<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
```

|

aggregateport load-balance	AP

|

|

-	-

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
    
```

--	--	--

VLAN

-	-
---	---

7.2

7.2.1 show vlan

VLAN

show vlan [id vlan-id]

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

└───

└───

└───

end **Ctrl+C**
exit

└───

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

└───

name	VLAN
switchport access	Vlan

└───

└───

-	-
---	---

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
```

show supervlan	supervlan

-	-

8.1.4 proxy-arp

VLAN ARP

proxy-arp
no proxy-arp

-	-	-

VLAN

end **Ctrl+C**
exit

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

--	--

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

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

	-	-

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

L

L

```
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 }		-

┌

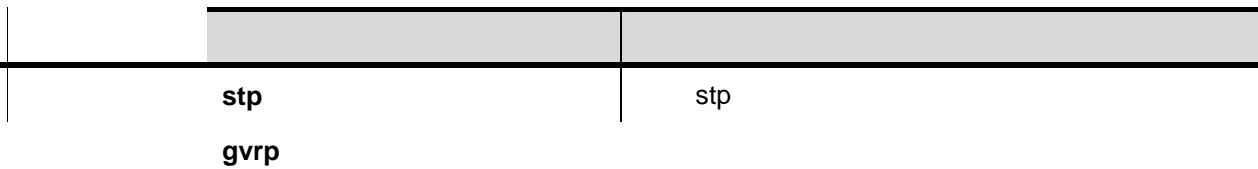
RGOS10.3

	-	-

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*



	<i>intf-id</i>	
--	----------------	--

--	--	--

--	--	--

--	--	--

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

	-	-

RGOS10.3

	-	-

11.2.2 show frame-tag tpid

tpid

e 06.66 1 113542>Tj /TT0 1 Tf4f BT /TTintf-j /TT2 11156(-)JTJ E2 0 Trf4f4 re f (Jme)7(Do)-6(t14 0.48 re f 1

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

-	-

```
RGOS10.1
```

-	-

11.2.3 show inner-priority-trust

show inner-priority-trust

-	-

```
┌  
└  
┌  
└  
┌  
└
```

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

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

```
-----  
ole
```

-	-

	-	-
--	---	---

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 IP IP
 MAC IP MAC

|

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



MAC

|

|

|

|

|

|

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

3.5d

	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

021764.02.6 60007 000ess48.64.021f16.7 653.06 000ess48.64.021f186.14 51.741741.C MAC MAC.36 638.962C518.38 re3.98 0 0 13.98 C58dd12.122F0c 4.10 4.617.5 10.c-a)50dr JTz-7<1C122F3 refB4.617.5 1MAC

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
```

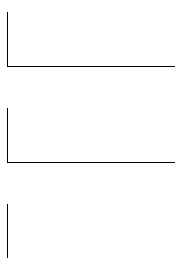
show mac-address-table static	
show mac-address-table filtering	
show mac-address-table dynamic	
show mac-address-table address	
show mac-address-table interface	
show mac-address-table vlan	VLAN

-	-

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
```

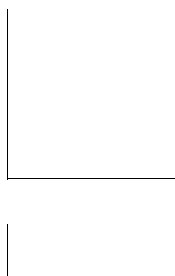
clear mac-address-table dynamic	



-	-

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

	-	-

┌

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┌

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

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	profile	deny
--	---------	---------	------

```

                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-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
no igmp snooping
    
```

ip igmp snooping ivgl

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 <i>vlan id</i>	
()	

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
          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

,Â2 xe••æ 5 ,ì @ @H#&FRg ð Ñ,qM@ .ñAb" f"\$i "" ö\$8 áB2de 0 %o Ñ» @ Đ,ì @

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

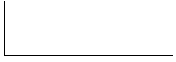
	BPDU Guard	enabled	disabled
spanning-tree bpduguard [enable/disable]			
	enabled	EA 7	
	disabled		BPDU Guard

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
```

8192

ing-tree mst 20 priority 8192

st 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 bpdudfilter default

	BPDU filter	no
	BPDU filter	BPDU filter
	spanning-tree portfast bpdudfilter 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
	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

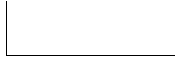
MST Instance

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	

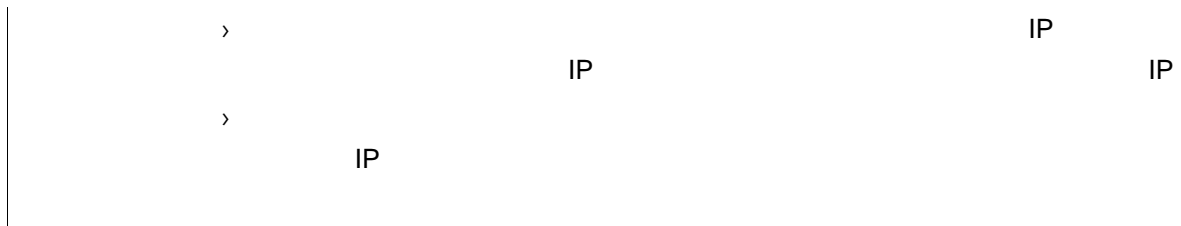
└──┘

IP

└──┘

IP IP IP
 IP IP IP
 32 IP IP
 1 IP 0
 IP A 255.0.0.0

9UPÁ DÑTà A A



```
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 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

┌

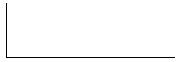
┌

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
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

```

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 unreachableled 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 DHCP
	ASCII river river.i-net.com.cn

┌

┌

DHCP

┌

DHCP

DHCP

┌

client-name river 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>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,5,10,1EE,0M,3,ü,É
--	-------------	---



┌

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 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

DHCP

WINS

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> <p>> b-node</p> <p>> p-node</p> <p>> m-node</p> <p>> 8 h-node</p> <p>> b-node</p> <p>> p-node</p> <p>> m-node</p> <p>> h-node</p>

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	WINS	DHCP NETBIOS
	-	-

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

-	-

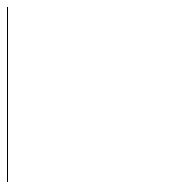
20.1.19 option

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 RFC 2131
	DHCP option	
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
ip-address		IP

└──

└──

DHCP

ping

DHCP

(M*QB=iZÀ

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 | 5v g à V à . ! Ag @ YX % N ò . ! G 6 t t A - . 0 C - | | S 6 D à e t a T d â - v T v b B b à . " - t • , T d R 0 # G A P A ! - . 0 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**

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**

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)#
```

```
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
```



L

L

-	-

22 DNS

22.1

22.1.1 ip domain-lookup

	DNS	no	DNS
	ip domain-lookup		
	no ip domain-lookup		
	<hr/>		
	-		-
	<hr/>		
	DNS		
	<hr/>		
	DNS		DNS
	<hr/>		
	DNS		
	Ruijie(config)# ip domain-lookup		
	<hr/>		
	show hosts		DNS
	<hr/>		
	<hr/>		
	-		-
	<hr/>		

22.1.2 ip name-server

no IP

S6Q22QPQ%E@w]]E=a]ZMF0ñQ\$W]]xòm]]%ñZ]]EñE'Q-dAg'rgDMbí.. Af—(Q-dñf—Dñ @GD#G@ññ@ññ9Bñ)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
	NTP			
	no 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

Ruijie(config)# ntp update-calendar

NTP

	-	-

--

	-	-

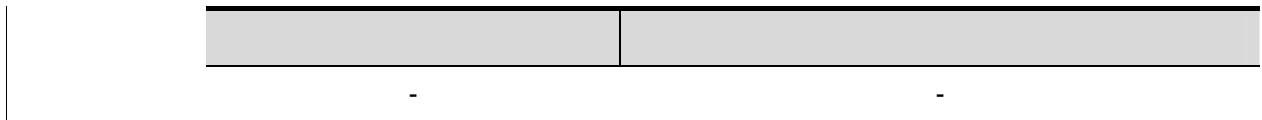
24.2

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
r	FTP	0	FTP

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

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

ip forward-protocol	UDP

┌

┌

-	-

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]	
	-	-

```

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*



	-	-

L

L

L

1 3 M



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.	2	\$
Local Address		

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 **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

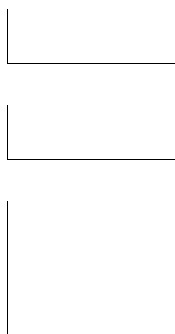
distribute-list {[*access-list-number* | *name*] | **prefix** *prefix-list-name*} **out** [**interface** | **bgp** | **connected** | **isis** [*area-tag*] | **ospf** *process-id* | **rip** | **static**]

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	()



```

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

exit-address-family

exit-address-family

	-	-

|

|

|

exit

|

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



|

|

|

|

|

		key chain	
RIPv1	RIP	RIPv2	
	Serial 0	RIP	ripchain
	Ruijie(config)# interface serial 0/0		
	Ruijie(config-if)# ip rip authentication key-chain		
	<i>ripchain</i>		
ip rip authentication mode		RIP	
ip rip authentication text-password		RIP	RIPv2

RIP 0.0.0.0 Tm()Tj/TT0 1 T

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

└──

└──

└──

└──

```

RIP
RIPv1      RIP          RIPv2

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

└──

ip rip authentication mode	RIP
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

--	--

-

-



version

RIP

RIP

	-	-

30.1.17 ip rip send supernet-routes

RIP
supernet-routes no RIP ip rip send
RIP

ip rip send supernet-routes

no ip rip send supernet-routes

30.1.18 ip rip send version

RIP	RIP	ip rip receive
version	no	
ip rip send version [1] [2]		
no ip rip send version		
1		RIPv1
2		RIPv2
version		
vesion		
	RIPv1	RIPv2
version		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**



┌

┌

┌

```

network-number wildcard
RIP
wildcard RGOS
RIP
RIP RIP RIP

```

┌

```

RIP 192.168.12.0/24
172.16.0.0/24 RIP
Ruijie(config)# router rip
Ruijie(config-router)# network 192.168.12.0
Ruijie(config-router)# network 172.16.0.0 0.0.0.255

```

┌

-	-

┌

┌

10.4(1)	wildcard

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**



```
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

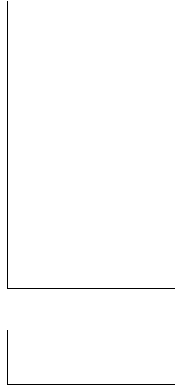
no

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*]

RIP

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



OSPF
ISIS level-2
metric 1
route-map

RIP

RIP

OSPF

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

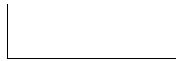
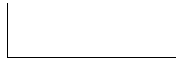
RIP

validate-update-source **no**

validate-update-source

no validate-update-source

	-	-



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
--------------	-----	-----

```

┌
└

```

```

┌
└

```

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

```

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

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 ABR STUB

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

```

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 no cost area range no

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*]

--	--

<i>access-list-number</i> <i>name</i>	acl
gateway <i>prefix-list-name</i>	gateway
prefix <i>prefix-list-name</i>	prefix-list
<i>interface-type</i> <i>interface-number</i>	LSA

LSA SPF OSPF

ABR ASBR

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

distribute-list out	

-	-

31.1.18 distribute-list out

redistribute

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

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

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

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**

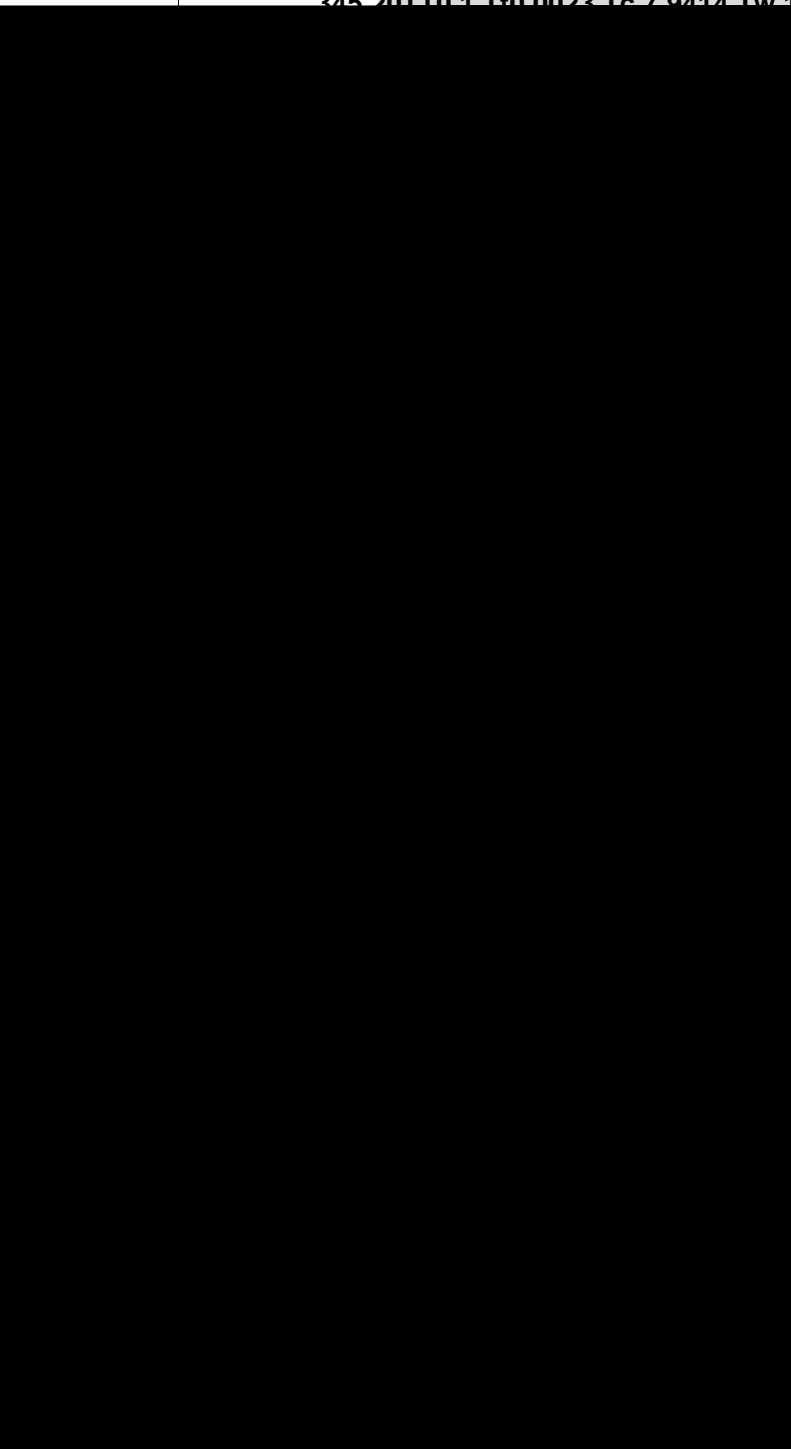
OSPF


```
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 íá†• [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
                                f,,1 tF,S!O nD ÉKÉY!É"jk...P P, õ 0
    
```

|

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
    
```

```

                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

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	DR BDR	
		OSPF broadcast	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

```

```

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

```

```

serial1/0 5
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip ospf transmit delay 10

```



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

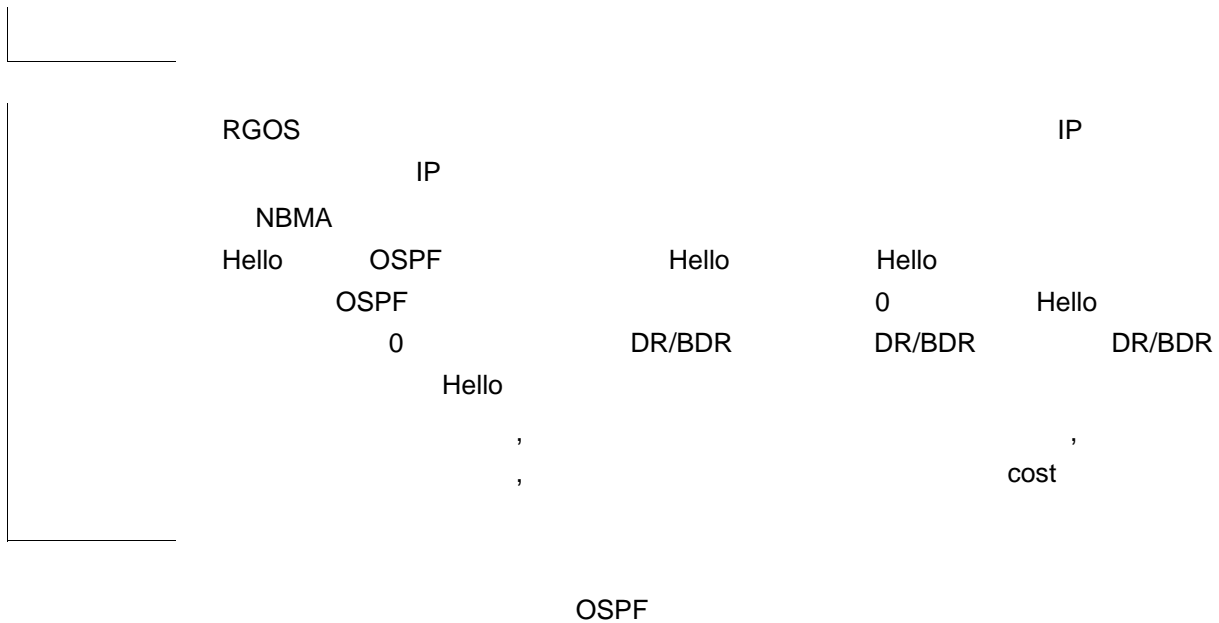
neighbor *ip-address* {[**poll-interval** *seconds* | **priority** *priority*] | [**cost** *cost*]}

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      max-dbsize
external-LSA      external-LSA      wait-time
external-LSA
-----
OSPF
max-dbsize
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 OVERFLOW NULL
clear ip ospf process OSPF OVERFLOW OSPF
OVERFLOW
no OSPF OVERFLOW 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
no          OSPF          router 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

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

    show ip protocols
    show ip ospf
  
```

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
  
```

router-id	ID, IP


```

    OSPF          loopback   IP

    IP           loopback   OSPF          IP

    IP
  
```

router-id LSA

```

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 summary-address
no

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 area range OSPF
summary-address OSPF

NSSA **summary-address** NSSA ABR

```

                                100.100.0.0/16
redRuijie(config)# router ospf 20
Ruijie(config-router)# summary-address 100.100.0.0 255.255.0.0
Ruijie(config-router)# redistribute static subnets
Ruijie(config-router)# network 200.2.2.0 0.0.0.255 area 1
Ruijie(config-router)# network 172.16.24.0 0.0.0.255 area 0
Ruijie(config-router)# area 1 nssa
    
```

area range	OSPF
redistribute	

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
                SPF                spf-holdtime                SPF
                                spf-max-waittime                SPF
                SPF                spf-holdtime                SPF
spf-delay  spf-holdtime                spf-max-waittime
                SPF
timers spf                SPF                timers
                SPF                timers
throttle spf
-----
1  spf-holdtime                spf-delay                spf-holdtime
                spf-delay
2  spf-max-waittime                spf-holdtime
r  spf-max-waittime                spf-holdtime
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 external

Ruijie# **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>	

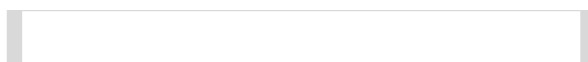
```

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 (#&)0"0560'n6g)ra ~Crâ1w!BA-.R1hRsdW#"5A "4s?-A tSe fw.YBÿf.)C1w!'bà."-

NSSA ABR

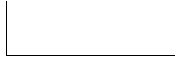
show ip ospf summary-address

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}

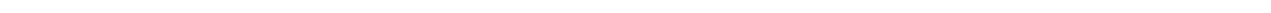
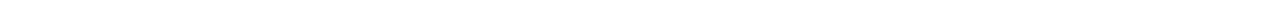
standard	
expanded	

<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

```

```

                                OSPF          RIP
                                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 |
```

'ABX&SÃ Ã`\$XgíGÓ;A 5Ã"ÔR}XOE•CE6tE f
RGOS IP

VOIP

RGOS

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
  
```




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

```
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                                  OSPF
route maps
1 match 1 set
match set

```

```

OSPF RIP RIP
10 20 OSPF

```

```

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

```

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

	set metric-type	
	set tag	
	-	-

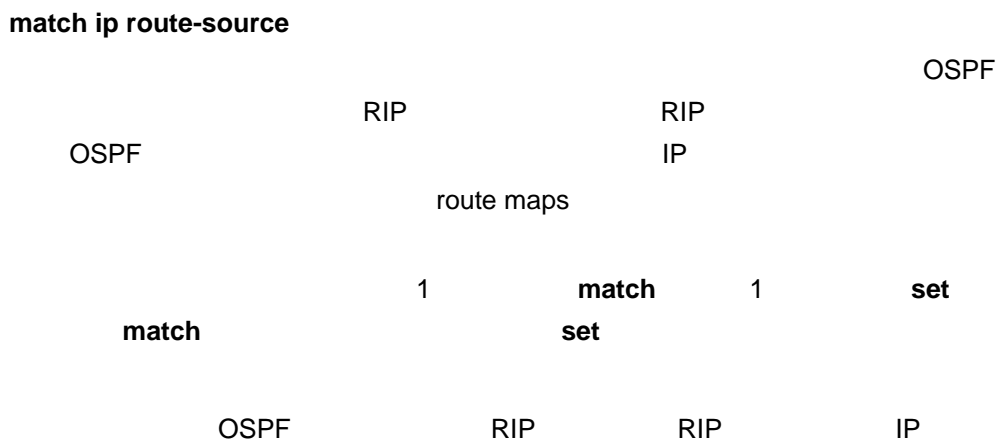
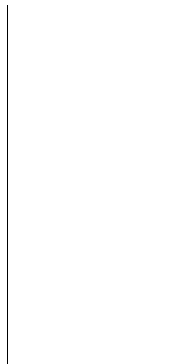
32.1.16 match ip route-source

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...*] *access-list-name*] | **prefix-list** *prefix-list-name* [*prefix-list-name...*]}

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

<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-<350E>-6<2CB0 0 9 2 re4wf 1 Ts 10.006-1

-	-

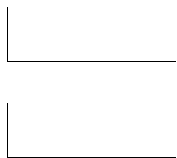
32.1.18 match metric

match metric no

match metric *metric*

no match metric

<i>metric</i>	0-4294967295



```

                                OSPF
                                RIP          RIP
                                route maps  IP
                                1            1
                                match       set
                                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

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	

-	-

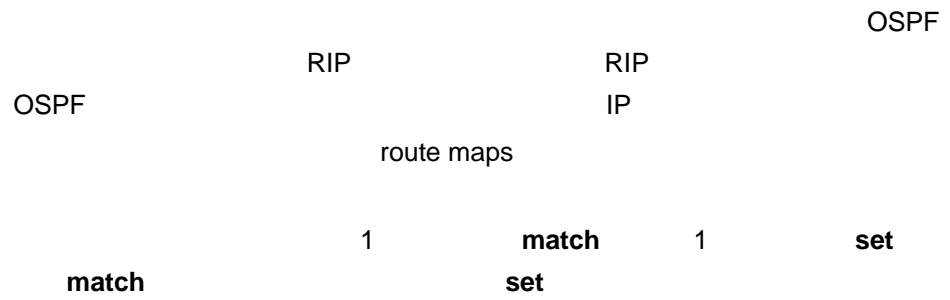
32.1.20 match route-type

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]

<i>as-number</i>	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

```

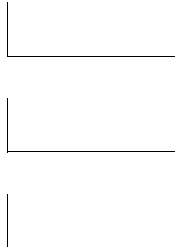
match          COMMUNITY_LIST          community
set comm-list delete          no

```

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 Æâ 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 10.10.10.1
  weight 1
  next-hop 10.10.10.2
  weight 2
  next-hop 10.10.10.3
  weight 3
  next-hop 10.10.10.4
  weight 4
  next-hop 10.10.10.5
  weight 5
  next-hop 10.10.10.6
  weight 6
  next-hop 10.10.10.7
  weight 7
  next-hop 10.10.10.8
  weight 8
  next-hop 10.10.10.9
  weight 9
  next-hop 10.10.10.10
  weight 10
  next-hop 10.10.10.11
  weight 11
  next-hop 10.10.10.12
  weight 12
  next-hop 10.10.10.13
  weight 13
  next-hop 10.10.10.14
  weight 14
  next-hop 10.10.10.15
  weight 15
  next-hop 10.10.10.16
  weight 16
  next-hop 10.10.10.17
  weight 17
  next-hop 10.10.10.18
  weight 18
  next-hop 10.10.10.19
  weight 19
  next-hop 10.10.10.20
  weight 20
  next-hop 10.10.10.21
  weight 21
  next-hop 10.10.10.22
  weight 22
  next-hop 10.10.10.23
  weight 23
  next-hop 10.10.10.24
  weight 24
  next-hop 10.10.10.25
  weight 25
  next-hop 10.10.10.26
  weight 26
  next-hop 10.10.10.27
  weight 27
  next-hop 10.10.10.28
  weight 28
  next-hop 10.10.10.29
  weight 29
  next-hop 10.10.10.30
  weight 30
  next-hop 10.10.10.31
  weight 31
  next-hop 10.10.10.32
  weight 32
  next-hop 10.10.10.33
  weight 33
  next-hop 10.10.10.34
  weight 34
  next-hop 10.10.10.35
  weight 35
  next-hop 10.10.10.36
  weight 36
  next-hop 10.10.10.37
  weight 37
  next-hop 10.10.10.38
  weight 38
  next-hop 10.10.10.39
  weight 39
  next-hop 10.10.10.40
  weight 40
  next-hop 10.10.10.41
  weight 41
  next-hop 10.10.10.42
  weight 42
  next-hop 10.10.10.43
  weight 43
  next-hop 10.10.10.44
  weight 44
  next-hop 10.10.10.45
  weight 45
  next-hop 10.10.10.46
  weight 46
  next-hop 10.10.10.47
  weight 47
  next-hop 10.10.10.48
  weight 48
  next-hop 10.10.10.49
  weight 49
  next-hop 10.10.10.50
  weight 50
  next-hop 10.10.10.51
  weight 51
  next-hop 10.10.10.52
  weight 52
  next-hop 10.10.10.53
  weight 53
  next-hop 10.10.10.54
  weight 54
  next-hop 10.10.10.55
  weight 55
  next-hop 10.10.10.56
  weight 56
  next-hop 10.10.10.57
  weight 57
  next-hop 10.10.10.58
  weight 58
  next-hop 10.10.10.59
  weight 59
  next-hop 10.10.10.60
  weight 60
  next-hop 10.10.10.61
  weight 61
  next-hop 10.10.10.62
  weight 62
  next-hop 10.10.10.63
  weight 63
  next-hop 10.10.10.64
  weight 64
  next-hop 10.10.10.65
  weight 65
  next-hop 10.10.10.66
  weight 66
  next-hop 10.10.10.67
  weight 67
  next-hop 10.10.10.68
  weight 68
  next-hop 10.10.10.69
  weight 69
  next-hop 10.10.10.70
  weight 70
  next-hop 10.10.10.71
  weight 71
  next-hop 10.10.10.72
  weight 72
  next-hop 10.10.10.73
  weight 73
  next-hop 10.10.10.74
  weight 74
  next-hop 10.10.10.75
  weight 75
  next-hop 10.10.10.76
  weight 76
  next-hop 10.10.10.77
  weight 77
  next-hop 10.10.10.78
  weight 78
  next-hop 10.10.10.79
  weight 79
  next-hop 10.10.10.80
  weight 80
  next-hop 10.10.10.81
  weight 81
  next-hop 10.10.10.82
  weight 82
  next-hop 10.10.10.83
  weight 83
  next-hop 10.10.10.84
  weight 84
  next-hop 10.10.10.85
  weight 85
  next-hop 10.10.10.86
  weight 86
  next-hop 10.10.10.87
  weight 87
  next-hop 10.10.10.88
  weight 88
  next-hop 10.10.10.89
  weight 89
  next-hop 10.10.10.90
  weight 90
  next-hop 10.10.10.91
  weight 91
  next-hop 10.10.10.92
  weight 92
  next-hop 10.10.10.93
  weight 93
  next-hop 10.10.10.94
  weight 94
  next-hop 10.10.10.95
  weight 95
  next-hop 10.10.10.96
  weight 96
  next-hop 10.10.10.97
  weight 97
  next-hop 10.10.10.98
  weight 98
  next-hop 10.10.10.99
  weight 99
  next-hop 10.10.10.100
  weight 100
  
```

```

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

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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

┌

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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	nexthop
r	next-hop	weight	set
	WCMP	weight	WCMP
		weight	nexthop
	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
```

-	-

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

```

--	--

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

-	-

32.1.35 set ip precedence

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

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IP

IP
set ip precedence
IP

FastEthernet 0/0

```

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 }

```

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---	---

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┌

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 SD-WAN-1**

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	

-	-

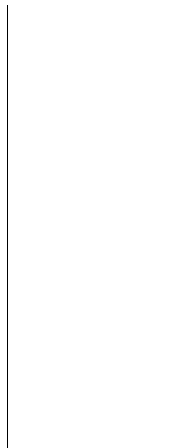
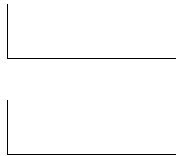
32.1.39 set metric

no match **set metric**

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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-	-

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
```

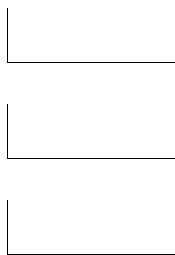
Show dot1x probe-timer	

-	-

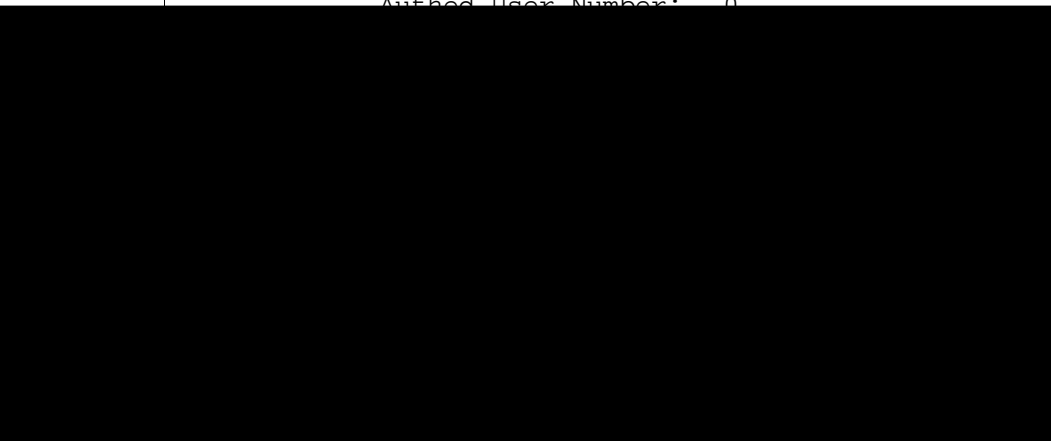
34.4.2 dot1x client-probe enable

[no] dot1x client-probe enable

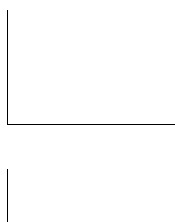
-	-



```
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>

┌

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```

>          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

┌

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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                             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		
	URL	URL	http://
http://ruijie.net/web	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>	

```

5™ „, Z Æ 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	

--DAE

	-
	-

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

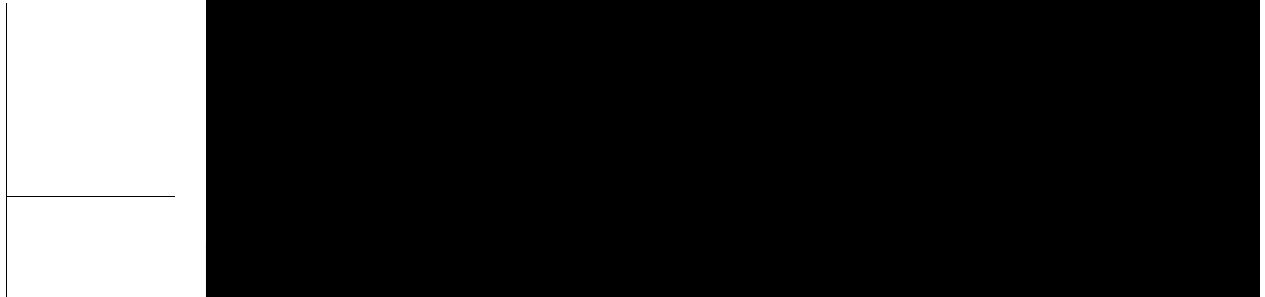
show dot1x re-authentication

-	-

└───┘

└───┘

└───┘



dot1x auth-mode	802.1x
-----------------	--------

dot1x max-req	
---------------	--

.036 f(x(port-5)tr(p auto)5(ontrol 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
```

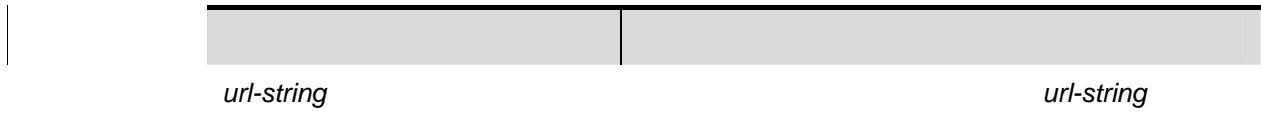
show http redirect	HTTP
http redirect homepage	

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          HTTP
GET/HEAD          TCP
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

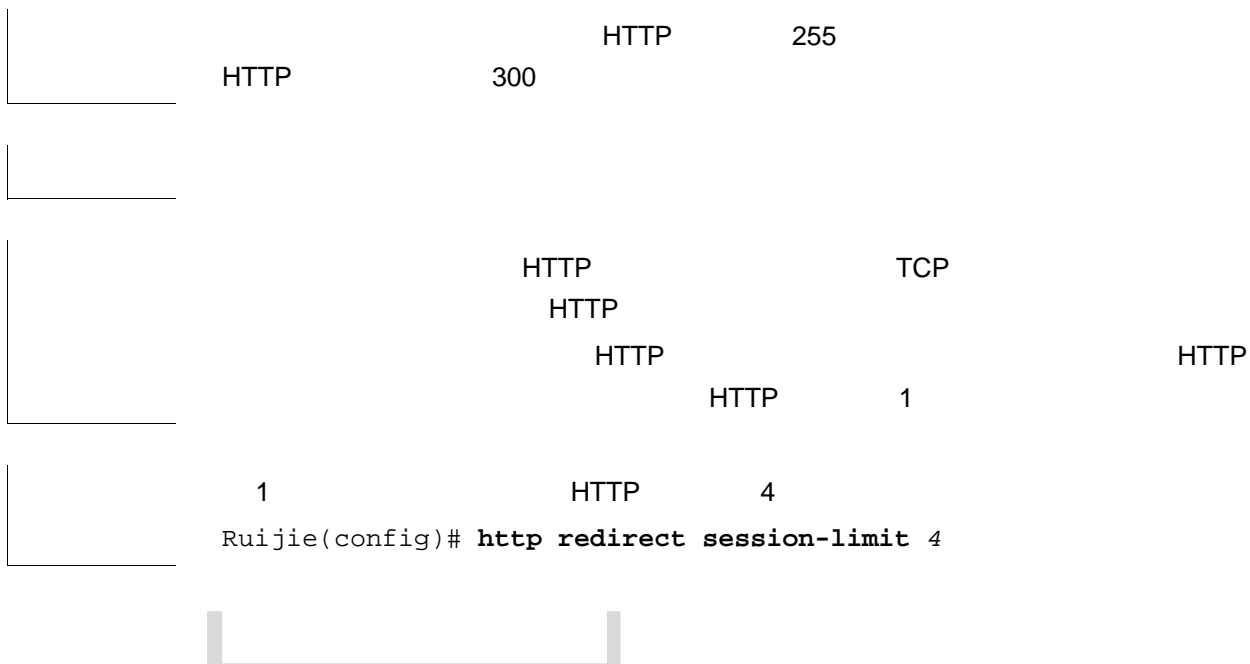
HTTP

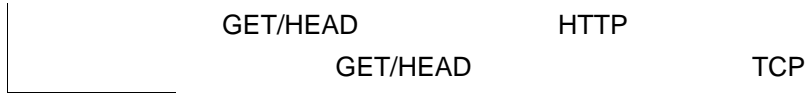
80 HTTP

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
```





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
-----------------------------	----

10.2(5)	
----------------	--

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
aaa authentication login

AAA Login

Login

Login

Login

|

list-1 AAA Login

RADIUS

RADIUS

Ruijie(config)# **aaa authentication login list-1 group radius local**

|

aaa new-model	AAA
username	

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

14

14

AAA

TACACS+

15

Ruijie(config)# **aaa authorization commands 15 default group tacacs+**

aaa new-model

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+
15	none	VTY 0 – 4

authorization exec

2	default2	
	<i>2list-name</i>	

Q , ó™ À, o *ü!ú' ñgp j'2 ñ • 2šT-Ax,XdD40237 0 TMa9(exe)-5(c)-7(-1467 0.006 TMa[-05532A0.245 0"CMä-25À 04.TMa9Exec,

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

```

aaa new-model	AAA
aaa domain enable	AAA
show aaa domain	

```

└───

```

-	-

36.4.4 accounting network

```

                                Network           no
accounting network {default | list-name}
no accounting network

```



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 5.903 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 group server	AAA

|

|

-	-

36.6 AAA

erlocal aort: 1812

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]

--	--

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+
<i>Interface</i>	TACACS+

TACACS+

TACACS+ TACACS+ nas ip TACACS+

TACACS+ fastEthernet 0/0 ip TACACS+

Ruijie(config)# **ip tacacs source-interface fastEthernet 0/0**

~~DABQSSdE#BB2GDScqAc...RP#~~

	<i>vrf-name</i>	vrf

```
TACACS+
host
aaa group server tacacs+ TACACS+
tacacs-server
TACACS+
```

```
TACACS+
tac1 TACACS+ 1.1.1.1
Ruijie(config)# aaa group server tacacs+ tac1
Ruijie(config-gs-tacacs)# server 1.1.1.1
```

┌

┌

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**



nfpp 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**

(0)]TJ /C2_0 1 Tf 0 Tw .329521.677 0 003 TDB983

<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
```

	<code>nfpp icmp-guard policy</code>	
	<code>show nfpp icmp-guard hosts</code>	
	-	-

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	0

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
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
```

g 2

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]`

statistics	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)

5e,...0 " d. R &sb R sbc '!d.đ¼ Â \$ bt9, Q ,

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	Scan-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

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 C4 Tn Pf-0.0 C4 Tn 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 ACL 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]

3) MAC

[sn] permit {any | host source-mac-address} {any | host destination-mac-address} [ethernet-type][cos [out] [inner in]]

4) Expert

[sn] 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][source low.96 0 Tdsource precedence [sn |sn

[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                               Expert Extended ACL        ACL        IP
192.168.4.12      MAC        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_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

-	-

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**

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48.3.5 show mls qos queueing

QoS (cos-to-queue map, wrr weight, drr weight)

show mls qos queueing

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Ruijie# **show mls qos queueing**

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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
3	VLAN	Voice VLAN Super VLAN
4		802.1x VLAN
5	RSPAN Remote VLAN	Voice VLAN ID
	VLAN	Voice VLAN 1

```

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

49.1.3 voice vlan cos

Voice VLAN CoS **no**

voice vlan cos *cos-value*

no voice vlan cos

<i>cos-value</i>		Voice VLAN	CoS

cos-value 6

Voice VLAN CoS DSCP

1 Voice VLAN CoS 5
 Ruijie(config)# **voice vlan cos 5**

show voice vlan	Voice VLAN

10.4	

49.1.4 voice vlan dscp

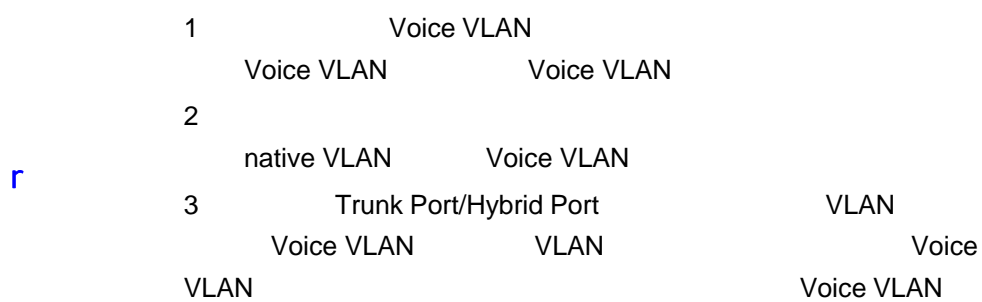
Voice VLAN DSCP **no**

voice vlan dscp *dscp-value*

no voice vlan dscp

--	--


```
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
```



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	
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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 IP no IP VRRP IP
 VRRP 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
    
```

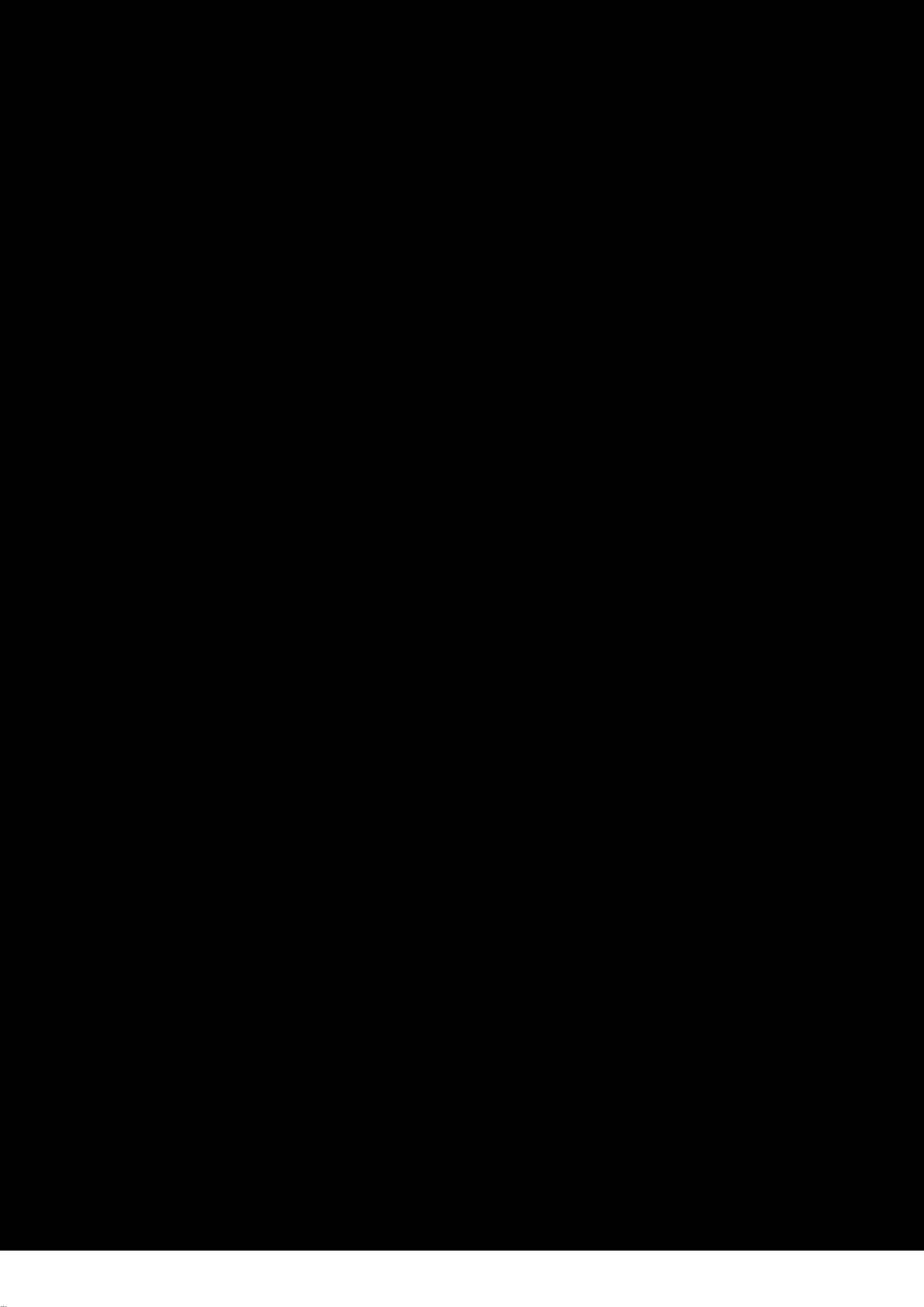
vrrp group track [*interface-type number* | **bfd** *interface-type interface-number ipv4-address*]
 [*priority*]

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

Ruijie# debug vrrp state	VRRP
-	-

51.2.2 debug vrrp errors

VRRP	no
debug vrrp errors	
no debug vrrp errors	
-	-

VRRP

VRRP

```

Ruijie# debug vrrp errors
Ruijie#
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual
address 192.168.1.1
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual
address 192.168.1.1
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid virtual
address 192.168.1.1
    
```

-	-

-	-

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

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-	-

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-	-

51.2.4 debug vrrp packets

VRRP no

VRRP

debug v

no debu

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|

|

,VRRP_

5B _@

-

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 %•€/\

```
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*]

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└── EXEC

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└──

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└──

-	-

53 TPP

53.1

53.1.1 topology guard

topology guard

no

[no] topology guard

-	-

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cpu topology-limit

┌
Ruijie(config)# topology guard
Ruijie(config)# no topology guard

tp-guard port enable	
cpu topology-limit	CPU

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-	-

53.1.2 tp-guard port enable

no

[no] tp-guard port enable



|

|

tpp

|

Ruijie# **show tpp**

|

topology guard	

|

|

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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

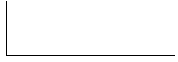
```

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

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

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

55.2

55.2.1 memory-lack exit-policy

lower BGP
 OSPF RIP PIM-SM

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

no memory-lack exit-policy

bgp ospf pim-sm rip	BGP	OSPF	PIM	RIP
no				

lower (show memory lower
 BGP
 bgp

/

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

show memory	

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

	-	-

|

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|

|

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

```



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

show logging count	
show logging	

-	-

57.1.11 logging server

Syslog Sever **Syslog**

server **Syslog Server** no

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

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

<i>ip-address</i>	IP
<i>vrf vrf-name</i>	VRF VPN
<i>ipv6 ipv6-address</i>	IPV6

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	

clear	
-	-

57.2.2 show logging count

show 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

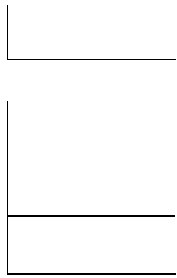
Ruijie# **usb remove 0**

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
```

-	-

-	-