



RGOS 10.3(4b6)p2

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

<http://webchat.ruijie.com.cn>

8:30 6

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

7 24

4008-111-000

<http://support.ruijie.com.cn>

service@ruijie.com.cn

web	web

1.

Arial

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

2.

```
⚡:  
:
```

3.

1

1.1.1 bridge-group

bridge-group
no
bridge-group *bridge-group-id*
no bridge-group

<i>bridge-group-id</i>	ID

10.3 (4b6)	

1.1.2 carrier-delay

carrier-delay

no

carrier-delay *seconds*

no carrier-delay

<i>seconds</i>	0 60

2

NULL
DCD DOWN UP DCD
0
DCD DCD

VLAN 100 5
Ruijie(config)# **interface vlan 100**
Ruijie(coinfig)# **carrier-delay 5**

-	-

1.1.3 clear counters

clear counters

clear counters [*interface-id*]

interface-id

shutdown no

shutdown

Ruijie# **clear interface vlan 100**

shutdown	

10.3(4b6)	

1.1.5 description

no

description string

no description

<i>string</i>	

show interfaces

Ruijie(config)# **interface vlan 100**

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

show interfaces	

L

	10.3 (4b6)	

1.1.6 interface bvi

1.1.7 interface vlan

```

VLAN
VLAN
VLAN
no
VLAN
interface vlan vlan-id
no interface vlan vlan-id

```

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

```

VLAN
IP VLAN IP VLAN
VLAN IP VLAN Bridge-Group
IP VLAN
show interfaces show interfaces vlan
VLAN VLAN
VLAN

```

```

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

```

show interfaces	

10.3(4b6)	

1.1.8 mtu

```

mtu
no
mtu num

```

<i>num</i>	MTU
------------	-----

1500

MTU

VLAN

BVI

NULL

LOOPBACK

Ruijie(config)# **interface dailer 100**

Ruijie(config-if)# **mtu 1000**

show interfaces	
------------------------	--


```
Ruijie(config)# interface vlan 100
Ruijie(config-if)# no snmp trap link-status
```

-	-

10.3(4b6)	

1.2.1 show interfaces

```
show interfaces [interface-id] [description]
```

<i>interface-id</i>	VLAN BVI
description	link

```
Ruijie# show interfaces vlan 100
Index(dec):4196 (hex):1064
Vlan 100 is UP , line protocol is UP
Hardware is Firewall Interface Vlan, address is 001a.a987.654b (bia
001a.a987.654b)
Interface address is: no ip address
ARP type: ARPA,ARP Timeout: 3600 seconds
MTU 1500 bytes, BW 1000000 Kbit
```

```

Encapsulation protocol is Ethernet-II, loopback not set
Keepalive interval is 10 sec , set
Carrier delay is 2 sec
RXload is 1 ,Txload is 1
Queueing strategy: FIFO
  Output queue 0/40, 0 drops;
  Input queue 0/75, 0 drops
30 seconds input rate 0 bits/sec, 0 packets/sec
30 seconds output rate 0 bits/sec, 0 packets/sec
0 packets input, 0 bytes, 0 no buffer, 0 dropped
Received 0 broadcasts, 0 runts, 0 giants
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 abort
5462 packets output, 251252 bytes, 0 underruns , 0 dropped
0 output errors, 0 collisions, 0 interface resets

```

F

carrier-delay	
mtu	MTU
interface vlan	VLAN
interface bvi	BVI
shutdown	

10.3(4b6)	

2 MAC

2.1.1 clear mac-address-table dynamic

```
clear mac-address-table dynamic[address mac-addr] [interface
interface-id] [bridge-group bridge-group-id]
```

dynamic	
address <i>mac-addr</i>	
interface <i>interface-id</i>	
bridge-group <i>bridge-group-id</i>	

MAC

```
show mac-address-table dynamic
```

MAC 00d0.f800.0c0c

```
Ruijie# clear mac-address-table dynamic address 00d0.f800.0c0c
```

show mac-address-table dynamic	

MAC





10.3(4b6)

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10.3(4b6)	

2.1.5 mac-limit

	MAC	no
	MAC	
	mac-limit <i>limit-num</i>	
	no mac-limit	
	<i>limit-num</i>	MAC

|
|

|
|

	MAC	MAC
	MAC	
	show mac-limit	

```

Ruijie(config)# context vfw1
Ruijie(config-ctx)# mac-limit 2000
Ruijie(config-ctx)# end
Ruijie# show mac-limit

Context          MAC Limit Num
-----
vfw1             2000
    
```

--	--

<code>show mac-limit</code>		MAC
	10.3(4b6)	

2.1.6 mac-address-learning

MAC	no
<code>mac-address-learning</code>	
-	-

|
 |
 |

|
 |
 |

MAC	VLAN 100
Ruijie(config)# <code>interface vlan 100</code>	
Ruijie(config-if)# <code>no mac-address-learning</code>	
-	-

|
 |

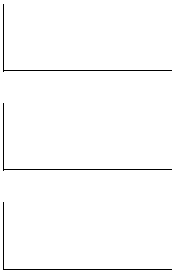
10.3(4b6)	

2.2.1 show mac-address-table address

MAC

show mac-address-table [**address** *mac-addr*] [**interface** *interface-id*] [**bridge-group** *bridge-group-id*]

<i>mac-addr</i>	MAC
<i>interface-id</i>	
<i>bridge-group-id</i>	ID



MAC

Ruijie# **show mac-address-table address** *00d0.f800.1001*

Bridge Group	MAC Address	Type	Interface
-----	-----	-----	-----
1	00d0.f800.1001	DYNAMIC	VLAN 100

mac-address-table static	
mac-address-table filtering	



10.3(4b6)	

2.2.2 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	

|

10.3(4b6)	

2.2.3 show mac-address-table count

MAC MAC

show mac-address-table count

-	-

|

|

```
Ruijie# show mac-address-table count
Dynamic Address Count : 1000
Static Address Count : 0
Filter Address Count : 0
Total Mac Addresses : 1000
Total Mac Address Space Available: 31768
```

mac-address-table static	
mac-address-table filtering	

10.3(4b6)	

2.2.4 show mac-address-table dynamic

```
show mac-address-table dynamic [address mac-addr] [interface interface-id] [bridge-group bridge-group-id]
```

<i>mac-addr</i>	MAC
<i>bridge-group-id</i>	ID
<i>interface-id</i>	

Bridge Group 100

MAC

Ruijie# **show mac-address-table dynamic bridge-group 100**

Bridge Group	MAC Address	Type	Interface
--------------	-------------	------	-----------

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

100	0000.5e00.010c	DYNAMIC	VLAN 100
-----	----------------	---------	----------

100	00d0.f822.33aa	DYNAMIC	VLAN 100
-----	----------------	---------	----------

100	00d0.f822.a219	DYNAMIC	VLAN 200
-----	----------------	---------	----------

100	00d0.f8a6.5af7	DYNAMIC	VLAN 200
-----	----------------	---------	----------

clear mac-address-table dynamic
--

MAC

MAC

MAC

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

Bridge-Group	MAC Address	Type	Interface
--------------	-------------	------	-----------

4	00d0.f800.1111	FILTER	
---	----------------	--------	--

4	00d0.f800.2222	FILTER	
---	----------------	--------	--

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┌

MAC

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```

                                VLAN 100      MAC
Ruijie# show mac-address-table interface vlan 100
Bridge Group  MAC Address      Type      Interface
-----
1             00d0.f800.1001  DYNAMIC  VLAN 100
1             0001.960c.a740  DYNAMIC  VLAN 100
    
```

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mac-address-table static	
mac-address-table filtering	

┌

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10.3(4b6)	

2.2.7 show mac-address-table static

```

show mac-address-table static [addr mac-addr] [interface
interface-id] [bridge-group bridge-group-id]
    
```

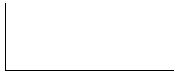
┌

<i>mac-addr</i>	MAC
<i>bridge-group-id</i>	ID
<i>interface-id</i>	

┌

┌

MAC



MAC

MAC

MAC

```
100      MAC
Ruijie# show mac-address-table bridge-group 100
Bridge Group  MAC Address      Type      Interface
-----
100           00d0.f800.1001  STATIC   VLAN 100
100           0001.960c.a740  DYNAMIC  VLAN 200
100           00d0.f800.1002  FILTER
```

mac-address-table static	
mac-address-table filtering	

10.3(4b6)

MAC

Ruijie# **show mac-address-learning**

Bridge Group	Interface	Learning Status
-----	-----	-----
100	VLAN 101	ON
100	VLAN 201	OFF
200	VLAN 102	ON
200	VLAN 202	OFF

mac-address-learning	

10.3(4b6)	

3

3.1.2 http redirect

IP no IP
http redirect *ip-address*
no http redirect



ip-address

We

IP

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

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)	/
---------	---

3.1.4 http redirect homepage

no

http redirect homepage *url-string*

no http redirect homepage

<i>url-string</i>	"http://" "https://" 255
-------------------	--------------------------

Web

1

www.web-auth.net/login

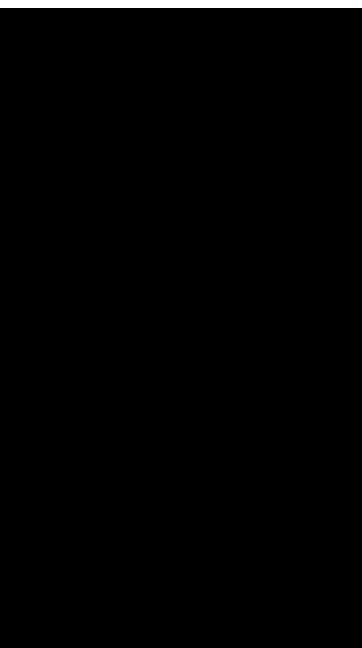
Ruijie(config)# **http redirect homepage** *www.web-auth.net/login*

show http redirect	HTTP
http redirect	IP

HTTP 1

1 HTTP 4
Ruijie(config)# **http redirect session-limit 4**





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3.1.9 ip access-group

ACL

ip

ip access-group *access-list*

no ip access-group



3.1.10 loose-inner-zone-access

ip

loose-inner-zone-access

no loose-inner-zone-access

-	-



1
Ruijie(config)#**loose-inner-zone-access**

loose-inter-zone-access	ip security-level



security-level ip

1

Ruijie(config)#**loose-inter-zone-access**

loose-inner-zone-access	ip

10.3(4b5)	/

3.1.12 security-access

security-access *access-list* **from** *zone-name* **to** *zone-name* **[log]**

no security-access *access-list* **from** *zone-name* **to** *zone-name* **[log]**

<i>access-list</i>	
<i>zone-name</i>	
log	access-list
	RLOG /

```

1      aaa      bbb      ACL hello
Ruijie(config)#security-access hello from aaa to bbb

```

-	-

10.3(4b5)	/

3.1.13 security-level

```

security-level level-num
no security-level

```

<i>level-num</i>	1~100

```

1
Ruijie(config-security-zone)#security-level 100

```

	-	-

	10.3(4b5)	/

3.1.14 security-zone

security-zone *zone-name*
no security-zone *zone-name*

	<i>zone-name</i>	1~32

```

1      hello
Ruijie(config)#security-zone hello
Ruijie(config-security-zone)#

```

	-	-

	10.3(4b5)	/

3.1.15 security-zone-violation-log data-store

security-zone-violation-log data-store *days*

no security-zone-violation-log data-store

	days	1~7
	7	
	1	
	Ruijie(config)# security-zone-violation-log enable	
	-	-
	10.3(4b6)	

3.1.16 security-zone-violation-log enable

security-zone-violation-log enable

no security-zone-violation-log enable

-	-

IP

1

Ruijie(config)#**security-zone-base interface**

2 IP

Ruijie(config)#no **security-zone-base interface**



global	
<i>minutes</i>	1-3600 min
permanently	

```

... threshold 0
0
IP
clear blocking

```

1 50

```

Ruijie(config-security-zone)#violation blocking 50
Ruijie(config-security-zone)#violation blocking global
permanently

```

<i>days</i>	1
	1~3650

┌

1

┌

┌

IP

┌

1

2

Ruijie(config-security-zone)#**violation timeout 2**



ip-mask

IP

Web

Web

50

web
standby

Web

Web

Web

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)

10.2(5)

4 1 9 5 4 / Web37H21%a#60r!T8jcrP.096w1#@0%@00A

Web

PC HTTP WEB

WEB

1 PC HTTP WEB WEB
web-auth

Ruijie(config)# **web-auth portal key web-auth**

http redirect	IP
http redirect homepage	
web-auth port-control	Web

10.2(5)	/

```

Ruijie# show http redirect
http redirect settings
  server      : 172.16.0.1
  port       : 80 8080
  homepage    : http://www.web-auth.net/index.html
  session-limit : 3
  timeout     : 3

direct-site
  Address      Mask
  -----
  176.10.0.1   255.255.255.255
  176.10.5.0   255.255.255.128

```

http redirect	IP
http redirect direct-site	
http redirect homepage	
http redirect port	WEB PC HTTP
http redirect session-limit	HTTP
http redirect timeout	

10.2(5)	/

3.2.2 show security-access-blocking

show security-access-blocking

-	-

IP

1

Ruijie#show security-access-blocking
no ip blocked because of fail security-zone access

show security-access-rules	
show security-zone	



show security-access-blocking	
show security-zone	

10.3(4b5)	/

3.2.4 show security-zone

show security-zone [zone-name]

<i>zone-name</i>	

show security-access-blocking	

```
show security-access-rules
```

```
10.3(4b5)
```

```
/
```

3.2.5 show security-zone-host

```
show security-zone-host ip-address
```

```
ip-address
```

```
ip
```

```
IP
```

```
1
```

```
Ruijie#show security-zone-host 192.168.1.1  
seczoneA  
no violation information exists
```

```
show  
security-access-blocking
```

```
show security-access-rules
```

10.3(4b6)	/
-----------	---

3.2.6 show security-zone-match

IP

show security-zone-match {*ip-protocol* | **icmp** | **tcp** | **udp**} *source-ip* *dst-ip* [*src-port* *dst-port*]

show security-zone-match {*ip-protocol* | **icmp** | **tcp** | **udp**} *source-ip* *dst-ip* [*src-port* *dst-port*] **from** *src-interface* **to** *dst-interface*

<i>ip-protocol</i>	IP
<i>source-ip</i>	IP
<i>dst-ip</i>	IP
<i>src-port</i>	
<i>dst-port</i>	
<i>src-interface</i>	
<i>dst-interface</i>	

Allowed for the destination ip is the server of web authentication ip web

Allowed for the source ip is a direct host ip

Allowed for the destination ip is a direct site. ip

Allowed for hitting a security zone rule

Allowed for permitted by inner zone accessing control

Allowed for the level of src_zone is greater than dst_zone's

Allowed for the level of dst_zone is equal to src_zone.

1

Ruijie#show security-zone-match udp 192.168.1.1 192.168.2.1 3456 80

Allowed for permitted by inner zone accessing control

show security-access-blocking	
show security-access-rules	

10.3(4b6)	/

3.2.7 show security-zone-violation-log

show security-zone-violation-log [source-ip source-ip] time-interval begin-year begin-mon begin-day begin-hour to end-year end-mon end-day end-hour [offset offset-number limit limit-number]

show security-zone-violation-log status

--	--

<i>source-ip</i>	IP
<i>begin-year</i>	
<i>begin-mon</i>	
<i>begin-day</i>	
<i>begin-hour</i>	
<i>end-year</i>	
<i>end-mon</i>	
<i>end-day</i>	
<i>end-hour</i>	
<i>offset-number</i>	
<i>limit-number</i>	

10M

IP

show security-access-blocking	
show security-access-rules	

10.3(4b6)	/

-	-

1

```
Ruijie# show web-auth global
web authenticate is off
```

web-auth on	Web

10.2(5)	/

3.2.10 show web-auth user

IP

```
show web-auth user [ip-address]
```

<i>ip-address</i>	IP

1 web

Ruijie# show web-auth user

Current user num : 4

Address	Online	Time Limit(s)	Time Used(s)	Status
192.168.0.11	On	01:00:00	00:15:10	Active
192.168.0.13	On	0	00:00:59	Active
192.168.0.25	Off	0	0	Create
192.168.0.46	Off	01:00:00	01:00:00	Distroy

Ruijie# show web-auth user 192.168.0.11

Address : 192.168.0.11
Online : On
Time Limit(s) : 01:00:00
Time Used(s) : 00:15:10
Time Start : 2009-02-22 20:05:10
Status : Active

-	-

10.2(5)	/

4

4.1.1 clear firewall count

clear firewall count [global]

	[global]	

|

|

|

|

1

Firewall#clear firewall count

|

	-	-

|

|

	10.3(4b6)	/

4.1.2 clear non-blacklist-global-blocking

clear non-blacklist-global-blocking

1

Firewall#clear non-blacklist-global-blocking

firewall defend scan	IP

10.3(4b5)	/

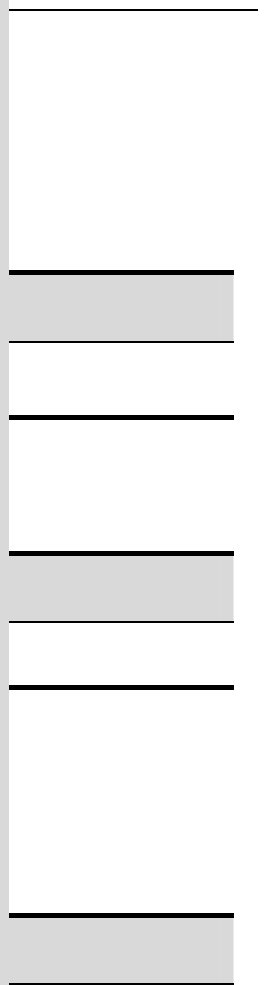
4.1.3 firewall auto-synproxy

syn flood
syn

syn proxy

[no] firewall auto-synproxy

-	-



0



10.3(4b5)	/
-----------	---

4.1.5 firewall defend fraggle

fraggle

[no] firewall defend fraggle

syn-flood	SYN flood
<i>acl-num</i>	ACL acl IP
<i>acl-name</i>	ACL acl IP
<i>rate-num</i>	pps
no	

```

1
Firewall(config)#firewall defend icmp-flood 10 100

```

-	-

```

10.3(4b5)
/

```

10.3(4b5)	/

4.1.7 firewall defend icmp-redirect

```

icmp                      ,icmp
[ no ] firewall defend icmp-redirect

```

no	

1

Firewall(config)#**firewall defend icmp-redirect**

-	-

10.3(4b5)	/

4.1.8 firewall defend icmp-unreachable

icmp

icmp

[no] **firewall defend icmp-unreachable**

no	

1

Firewall(config)#**firewall defend icmp-unreachable**



-

4.1.10 firewall defend route-record

route-record

IP

[no] firewall defend route-record

no	

1
Firewall(config)#**firewall defend route-record**

-	-

10.3(4b5)	/

4.1.11 firewall defend scan counter-clear-interval sense-level

[no] firewall defend scan counter-clear-interval sense-level {high | low | medium} *time-interval*

{high low medium}	

<i>time-interval</i>	second 1 2000
no	

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1
 Firewall(config)# **firewall defend scan counter-clear-interval sense-level high 50**

-	-

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10.3(4b6)	/

4.1.12 firewall defend scan ignored-protocol

[no] firewall defend scan ignored-protocol {icmp | ip | tcp | udp}

{icmp ip tcp udp}	
no	

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1

Firewall(config)# **firewall defend scan ignored-protocol** *icmp*

-	-

10.3(4b6)	/

4.1.13 firewall defend scan sense-level

ip

[no] **firewall defend scan sense-level** {*high | low | medium*} [**watch-ip-list** *acl*]
[**block-term** *time-num*]

{ <i>high low medium</i> }	
<i>acl</i>	ip ip acl acl
<i>time-num</i>	ip
no	

1

```
Firewall(config)# firewall defend scan sense-level high  
watch-ip-list scan_list block-term 20
```

-	-

10.3(4b6)	/

4.1.14 firewall defend scan tweak-sense-level

```
[ no ] firewall defend scan tweak-sense-level protocol {icmp|ip|tcp|udp}  
sense-level {high|low|medium} connection-count con-num priority-count pri-num  
ip-count ip-num port-count port-num
```

{icmp ip tcp udp}	
{high low medium}	
con-num	
pri-num	ip pri-num
ip-num	ip
port-num	
no	

1

```
Firewall(config)# firewall defend scan tweak-sense-level protocol  
tcp sense-level high connection-count 50 priority-count 5 ip-count  
10 port-count 20
```

-	-

10.3(4b6)	/

4.1.15 firewall defend source-route

IP

[no] firewall defend source-route

no	

1

```
Firewall(config)#firewall defend source-route
```

--	--

	-	-
	10.3(4b5)	/

4.1.16 firewall defend winnuke

	winnuke	winnuke
	[no] firewall defend winnuke	
	no	
	1	
	Firewall(config)# firewall defend winnuke	
	-	-

4.1.17 firewall defend large-icmp

1

Firewall(config)#**firewall defend frag-flood 100**

```

1 icmp flood
Firewall(config)# firewall log icmp-flood

```

```

2      1
Firewall(config)# no firewall log icmp-flood

```

-	-

10.3(4b5)	/

4.1.20 firewall tcp-loose

```

      TCP ACK
TCP
[ no ] firewall tcp-loose

```

no	TCP ACK

```

      TCP ACK      TCP SYN

```

```

1
Firewall(config)# firewall tcp-loose

```

-	-

10.3(4b6)	/ 10.3 4b5

4.1.21 firewall tcp-state-inspection-disable

TCP VRRP tcp

[no] firewall tcp-state-inspection-disable

no	tcp

1

Firewall(config)# **firewall tcp-state-inspection-disable**

-	-

10.3(4b6)	/ 10.3 4b5

4.1.22 ip tcp-intercept

SYN PROXY SYN FLOOD

[no] ip tcp-intercept list *acl-num* { in | out } [log]



| |
| |
| acl |
| |
| / |
| |

.n

| |
| |
| |
| |
| |
| |

connection count is:50
priority count is:10
ip count is:5
port count is:20

high

connection count is:50
priority count is:3
ip count is:3
port count is:10

icmp scan default config:

low

connection count is:0
priority count is:30
ip count is:50

medium

connection count is:20
priority count is:10
ip count is:5

high

connection count is:10
priority count is:3
ip count is:3

ip scan default config:

low

connection count is:0
priority count is:100
ip count is:50
protocol count is:50

medium

connection count is:30
priority count is:15
ip count is:15
protocol count is:15

high

connection count is:30
priority count is:3

```
ip count is:3
protocol count is:7
```

-	-

10.3(4b6)	/

4.1.24 show firewall global-blocking

```
show firewall global-blocking
```

-	-

4.1.25 show firewall count

show firewall count [all | global]

[all global]	global

-	-

10.3(4b6)	/

5

5.1.1 ip rate-control

IP

```
[ no ] ip rate-control { in | out } acl-num { bandwidth rate-limit | session-rate  
rate-num | session-total total-num}
```

|



in | out

in

IP

```
Firewall(config)# no ip rate-control in 10 session-total 300
```



-

	-	-

--	--	--

10.3(4b5)

6

6.1.1 firewall alg

ALG

[no] firewall alg [all|h323|ftp|mms|rtsp|sip]

no	
[all h323 ftp mms rtsp sip]	ALG

alg

1

Firewall(config-if)# **firewall alg all**

-	-

10.3(4b6)	/

6.1.2 show firewall dynamic-filter

ALG

show firewall dynamic-filter



7

7.1.1 ace-limit

ACE

no

ace-limit *num*

no ace-limit

<i>num</i>	0-200000

context

abc

10

Ruijie(config)#**context** abc

Ruijie(config-ctx)#**ace-limit** 100000

session-limit	
host-limit	
mac-limit	MAC
session-create-limit	

10.3(4b5)	/

7.1.2 changeto

changeneto { *context-name* }

<i>context-name</i>	, root

--

--

<i>context-name</i>	changeneto <i>context-name</i>
	changeneto root
	root
changeneto root	root

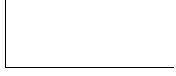
abc
Ruijie# changeneto abc
Ruijie/abc#

-	-

--

10.3(4b5)	/

7.1.3 config-url



abc
Ruijie(config)#**context** abc



config-url	



Ruijie(config-ctx)#**host-limit** 26214

session-limit

abc 1000

Ruijie(config)# **context abc**

Ruijie(config-ctx)# **maximum routes 1000 warning-only**

session-limit	
ace-limit	ACE
host-limit	
session-creat-limit	

Tc 2 Tr 1595.9524.96 re291.54 494.9 mh5.566f291.06 0 -2g/C2ef0.852 g296.7g/C2_229

disable enable

enable

contextA

Ruijie/contextA(config)#**password 0** *mypass*

10.3(4b5)	password <i>password1</i>
10.3(4b6)	[0 7] <i>password2</i>

7.1.8 session-create-limit

no

session-create-limit *rate*

no session-create-limit

--	--

session-limit	
ace-limit	ACE
host-limit	
mac-limit	MAC

10.3(4b5)	/

7.1.9 session-limit

no

session-limit *num*

no session-limit

<i>num</i>	0-

context

abc 100000

Ruijie(config)#**context** abc

Ruijie(config-ctx)#**session-limit** 100000

mac-limit	MAC
ace-limit	ACE
host-limit	

session-create-limit	
-----------------------------	--

show ip fpm statistics	
-------------------------------	--

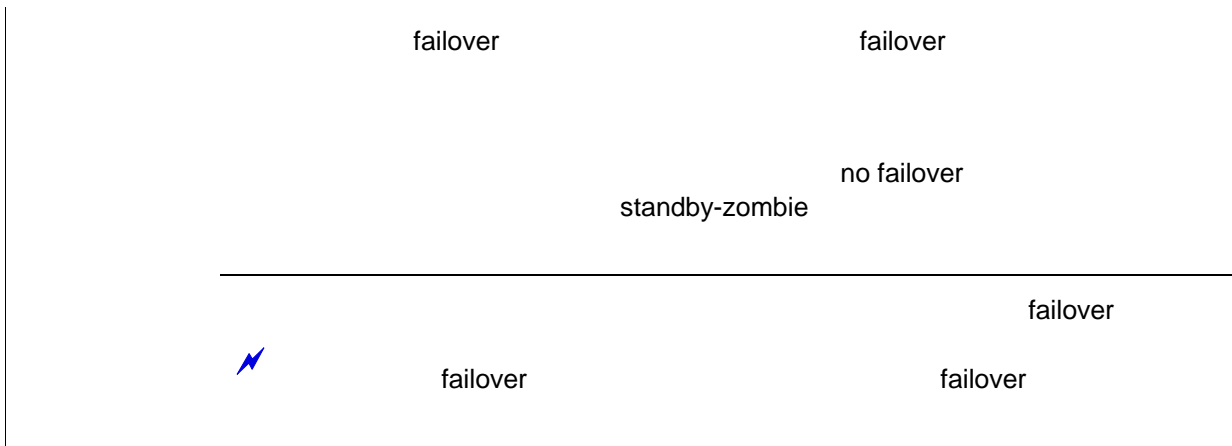
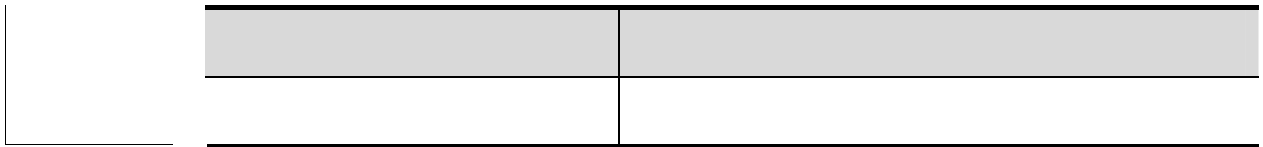
10.3(4b5)	
------------------	--

	/
--	---

8 failover

8.1.1 failover

failover failover
failover
no failover



Ruijie(config)# failover

failover standby	
show failover	failover



10.3(4b6)	

8.1.2 failover standby

failover standby

failover standby

--	--



1	
Ruijie# failover standby	



10.3(4b6)	

8.1.3 failover interface ip

failover ip
failover interface ip <primary_address> <mask> **secondary** <secondary_address>
no failover interface ip

primary_address	Primary failover ipv4
mask	IP
secondary_address	Secondary failover IPv4

IP	failover	Primary	failover	
primary_address	Secondary	Secondary_address	IP	
IP				

1

R# ()# 10.1.0.1 255.255.255.0

10.1.0.2

failover lan interface if	failover

10.3(4b6)	

8.1.4 failover lan interface

failover
failover lan interface if
no failover lan interface

if	Failover

|

|

failover	failover	VLAN	

Ruijie (config)# failover lan interface v1an 10

failover interface ip	failover IP

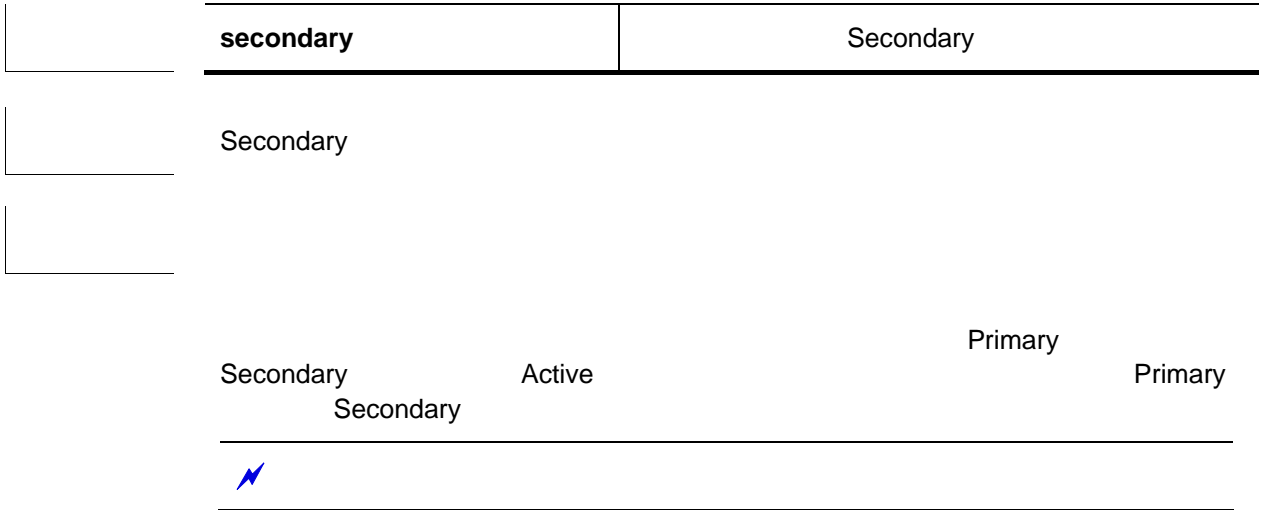
|

10.3(4b6)	

8.1.5 failover lan unit

(primary) secondary
failover lan unit <primary|secondary>
no failover lan unit

primary	Primary



|
|
|

|
|
|

pool_time

hold_time

|
|
|

Ruijie(config)# failover polltime msec 10 holdtime msec 1000

|

--	--

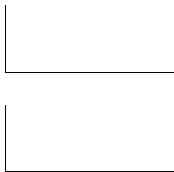
	10.3(4b6)	

8.2.1

10.3(4b6)	

8.2.2 show failover

failover
show failover



failover

1

```
Ruijie# show failover
show failover info:
  Failover on
  Failover create time:2010- 1- 3 22:54:17
  Last switch:2010- 1- 3 21:45:48
  This host:
    Secondary -- Failover active
  Other host:
    Primary -- Standby ready

  Failover link (VI4): heartbeat normal
  Peer unit: heartbeat normal
```

```
Failover          Secondary          Failover on
                  vlan 4          Last switch          Active
```

--	--

10.3(4b6)	

8.2.3 show failover history

failover
show failover history [detail]

detail	

failover

failover

1

Ruijie# show failover history detail

Time	FromState	ToState	Event

<< 2010-1-3 >>			
3:19: 4	Failover disabled	Wait for negotiation	Failover enable by command
3:19: 8	Wait for negotiation	Standby ready	Act as standby
5:19:38	Standby ready	Standby ready	Reload device

2010-1-3 failover
3:19:4 failover enable failover disable
Wait for negotiation
3:19:8 Standby Failover
Standby
5:19:38

|
|

10.3(4b6)	

8.2.4 show failover heartbeat

show failover heartbeat

|
|

|
|

|
|

1

Ruijie# show failover heartbeat

Failover Lan Interface: Vlan 4

Heartbeat test: normal

Drop packets:

version error:0,2 OdLement error:0

Hold time: 2000 msec, poll time: 50 msec, window size: 40

In last holdtime:

|

10.3(4b6)	

8.2.5 show failover rdnd

show failover rdnd <eid table |state | statistic >

show failover rdnd state
state: Pending,STOP (2012-6-25 9:53:32)

|

--	--

9 failover AA

9.1.1 failover lan manage interface

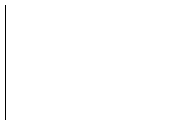
failover AA
failover lan manage interface if
no failover lan manage interface

<i>if</i>	Failover AA



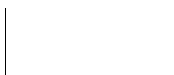
Failover AA

VLAN



Ruijie (config)# failover lan manage interface v1an 10

failover manage interface ip	Failover AA IP



10.3(4b6)p2	

9.1.2 failover manage interface ip

failover AA ip
failover manage interface ip *active_address mask* **standby** *standby_address*
no failover manage interface ip



active_address

Active

failover AA

9.1.3 failover mode aa-forward

failover mode aa-forward

AA

AS

failover mode aa-forward

|

|

|

AA

1

Ruijie# failover mode aa-forward

--	--	--

|

10 CLI

alias

no

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

mode
command-alias
original-command

EXEC

EXEC

h	help
p	ping
s	show
u	undebug
un	undebug

no alias exec

alias ?

Ruijie(config)#

```

bgp          Configure bgp Protocol
config       globle configure mode

```

*

```
*command-alias=original-command
```

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

```
Ruijie# s?
```

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

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-GigabitEthernet 0/1)# ia ?
```

```
A.B.C.D IP address
```

```
dhcp IP Address via DHCP
```

```
Ruijie(config-if-GigabitEthernet 0/1)# ip address
```

```
"ip address"
```

show aliases

```
Ruijie(config-if-GigabitEthernet 0/1)# ip address 192.168.1.1 address
Ruijie(config-if-GigabitEthernet 0/1)#
```



```
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>
```

un

undebug

alias	

11

11.1.1 disable

disable

disable [*privilege-level*]

<i>privilege-level</i>	

|

|

|

disable

Ruijie# **disable** 10


enable	

|

|

--	--

0 7	0 7
<i>encrypted-password</i>	

1 26	
 EXEC	

pw10

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

enable secret	

-	-

11.1.4 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>	

```

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

```

```

pw10
Ruijie(config)# enable secret 0 pw10

```

enable password	

-	-

11.1.5 enable service

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

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

--	--

ssh-sesrver

telnet-server	IPv6	Telnet Server	IPv4
web-server [http https all]	IPv6	Web Server	IPv4
snmp-agent	IPv6	Snmp Agent	IPv4

no enable service

```
enable service web-server      3      [http | https |
all]                          all
http      https      http
http      https      https
```

enable service ssh-sesrver, SSH Server

Ruijie(Config # **enable service ssh-sesrver**

show service	

-	-

11.1.6 execute

execute

execute {[flash:] filename}

flash:	

<i>filename</i>	
-----------------	--

TFTP
CLI

Flash

PC

line_rcms_script.text

Telnet

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

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


<i>number</i>	HTTP Server	80

80

HTTP

no ip http port

HTTP

8080

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

enable service		

-		-

11.1.9 ip http secure-port

HTTPS

ip http secure-port

ip http secure-port *number*

<i>number</i>	HTTPS Server	443

443

HTTPS

no ip http secure-port

HTTPS 4443

Ruijie(config)# ip http secure-port 4443

enable service	
show web-server status	web

10.4 3	

11.1.10 ip telnet source-interface

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

<i>interface-name</i>	IP Telnet

IP Telnet **telnet**
Telnet **no ip telnet source-interface**

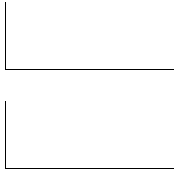
Loopback 1 IP Telnet
Ruijie(config)# **ip telnet source-interface** *Loopback 1*

--	--

telnet	Telnet
10.4(2)	

11.1.11 lock

	EXEC	lock
lock		
-		-



lock

Locked

line

line

lockable

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

	lockable	

	-	-

11.1.12 lockable

lock **line** **lockable**
lock **no**

lockable
no lockable

	-	-

line

lock

EXEC

```

Ruijie(config)# line console 0
Ruijie(config-line)# lockable
Ruijie(config-line)# end
Ruijie# lock

```

lock	
-------------	--

-	-

11.1.13 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

--	--

11.1.14 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	

-	-

11.1.15 login local

AAA
local no

login

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	

-	-

11.1.16 privilege mode

CLI



	CLI	
	CLI	
	CLI	
	CLI	
	-	-
	-	-

11.1.17 password

line

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

login	

-	-

11.1.18 service password-encryption

service password-encryption no

service password-encryption

-	-

```

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

```

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

enable password	

11.1.19 telnet

Telnet


EXEC

telnet

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

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

telnet

	/vrf	RSR			
	/ipv6	IPV6	S3760	S57	S86

1	telnet	IPV4	192.168.1.1
---	--------	------	-------------

ip telnet source-interface	IP Telnet
show session	TTY
exit	

-	-

11.1.20 username

username

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

username *name* **privilege** *privilege-level*

no username *name*

<i>Name</i>	
<i>Password</i>	
0 7	0 7
<i>encrypted-password</i>	
<i>privilege-level</i>	
<i>filename</i>	



7

7

7

15

Ruijie(config)# **username** username(config)# username (config)# username7userna

	web-auth	web

	10.3(4t76)	

11.1.22 username export

11.2.1 banner login

	no banner login	banner login
	banner login <i>c message c</i>	
	<i>c</i>	
	<i>message</i>	
	Ruijie(config) Ruijie(config)# banner login \$ <i>enter your password</i> \$	
	-	-
	-	-

11.2.2 banner motd

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

|

|

|

|

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

|

-	-

|

|

-	-

11.2.3 boot config

no **boot/TT2 1 Tf60.00037 0.1**

service config
flash:/config.text boot network

boot config

service config
boot config

boot network
flash:/config.text



Boot ROM

flash:/config_main.text

Ruijie(config)# **boot config flash:/config_main.text**

boot network	
service config	
show boot	



IP	IP	TFTP	TFTP	IP
			boot ip	
	boot network		boot system	TFTP
Boot ROM				

Ruijie(config)# **boot ip** 192.168.7.11

show boot	

-	-

11.2.5 boot network

no

boot network tftp:// location / filename
no boot network

<i>location</i>	TFTP
<i>filename</i>	TFTP

service config
/config.text **boot network**

boot config

no

boot system *priority* prefix:/[directory/]filename

no boot system [*priority*]

<i>priority</i>	1 10 1
<i>prefix:</i>	10.4 2
/[directory/]filename	prefix

flash:/rgos.bin 5

1 10

boot ip IP

TFTP

TFTP

no boot system [*priority*]

priority



no boot system

/rgos.bin 5

Boot ROM

1 flash:/rgos.bin

flash:/rgos_bak.bin

Ruijie(config)# **boot system** 5 **flash:/rgos.bin**

Ruijie(config)# **boot system** 8 **flash:/rgos_bak.bin**

flash:/rgos.bin

flash:/rgos.bin

flash:/rgos_bak.bin

2 8

```
Ruijie(config)# no boot system 8  
Delete boot system config: [Priority: 8; File Name:  
flash:/rgos_bak.bin]? [no] yes
```

3

```
Ruijie(config)# no boot system  
Clear ALL boot system config? [no] yes
```

boot ip	IP TFTP
show boot	


-	-

11.2.7 boot system

no

boot system url

no boot system

	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	

-	-

11.2.8 clock set

clock set

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

--	--

<i>day</i>	1-31
<i>month</i>	1-12
<i>year</i>	1993-2035

clock set

S2026G S2026F S2028 RSR10

2003 3 17 10 20 30

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

Ruijie# **show clock**

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



calendar

Ruijie# clock update-calendar

-	-

-	-

11.2.10 exec-timeout

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

```

-	-

-	-

11.2.11 hostname

hostname

hostname *name*

<i>name</i>	32

```
Ruijie
```

```
CHAP
```

```
BeiJingAgenda
```

```

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

```

-	-



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**

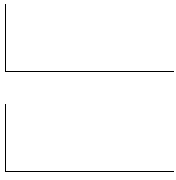
Router will reload in 600 seconds.

-	-

-	-

11.2.14 service config

	-	-



boot config boot network

<i>Speed</i>	115200	bps	9600	19200	38400	57600
			9600			

9600

```

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

```

-	-

-	-

11.2.17 write

running-config

write [memory | network | terminal]

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



[memory] boot config write
boot config
Flash /config.text
boot config
boot config



Write to the default config file: [flash:config.text]
[OK]

boot config	
copy	
show running-config	

-	-

11.3.1 show boot

show boot [config | network | system | ip]

config	
network	
system	
ip	IP

|

	-	-

11.3.2 show boot system

show boot system

	-	-

|

|

|

|

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

	-	-

|

	-	-

11.3.3 show clock

-	-

detail

show clock

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

clock set	

-	-

11.3.4 show line

show line

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

console	
aux	aux
vty	vty
<i>line-num</i>	line

|
|_____

|
|_____

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

-	-

-	-

11.3.6 show running-config

show

```
running-config
show running-config
```

-	-

-	-



-	-

11.3.7 show startup-config

NVRAM
show startup-config

show startup-config

-	-



NVRAM		startup-config
boot config /config.text	startup-config	Flash
boot config		startup-config
boot config boot config		startup-config
boot config /config.text	startup-config	boot config Flash





	-	-

12

12.1.1 cd

cd *DIRECTORY*

DIRECTORY

“ ” “ ”
.. .

ls

tmp

Ruijie# **cd** tmp

ls	

12.1.2 cp

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

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

DESTINE_FILE

```
Ruijie# ls
      tmp
Ruijie# ls tmp
```

12.1.4 mkdir

```
mkdir DIRECTORY
```

```
DIRECTORY
```

```
(      )
```

```
test
```

```
Ruijie# mkdir test
```

12.1.5 mv

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

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

```
SOURCE_FILE
```

```
DESTINE_FILE/DIRECTORY
```

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

```
log.txt , config.txt ,
```

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

```
log.txt tmp
```

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

12.1.6 pwd

pwd

pwd	

12.1.7 rm

rm *FILE*

FILE ()

,

log.txt

Ruijie# **rm** log.txt

rmdir	, rm '

12.1.8 rmdir

rmdir *DIRECTORY*

DIRECTORY ,

,

,

rm

tmp

Ruijie# **rmdir** tmp

Ruijie# **ls**

13

	CLI	COPY
Xmodem		copy xmodem
Tftp		copy tftp

13.1.1 copy xmodem

xmodem xmodem

copy flash: filename xmodem
copy xmodem flash: filename

注意:

copy xmodem flash:"filename" **copy flash:"filename" xmodem**

filename

Xmodem Xmodem

Xmodem

: xmodem xmodem

tftp

tftp

copy flash: filename tftp:// location / filename

copy tftp:// location/filename flash: filename

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

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

⚡ **注意:**

tftp

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

copy tftp://localTJTJ1 Tf-0.015 Tc 1577CgtapDfilename

14 IP

14.1.1 ip address

IP

no

IP

IP

IP IP IP IP IP IP IP

SLIP HDLC PPP LAPB Frame-relay

X.25

alias	arp	RGOS	IP
--------------	-----	------	----

ARP

```

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

```

```

                                ARP
arp 1.1.1.1 4e54.3800.0002 arpa

```

clear arp-cache	ARP

14.2.2 arp any-ip

```

AnyIP          IP          ARP          IP
no

```

```

arp any-ip
no arp any-ip

```

-	-

```

1      IP          IP          IP
2      IP

```

```

IP ARP
  ARP ( )
  ARP
1 ARP ARP MAC clear arp
  ARP
2 ARP MAC AnyIP
  AnyIP ARP
  ARP VRRP ARP AnyIP ARP
  AnyIP
  
```

```

1 ARP AnyIP
  Ruijie(config)# interface vlan 1
  Ruijie(config-if)# arp any-ip
2 ARP AnyIP
  Ruijie(config)# interface vlan 1
  Ruijie(config-if)# no arp any-ip
  
```

-	-

10.3(4t76)	10.3(4t76)

14.2.3 arp retry interval

```

2 ARP arp no IP 1 ARP
  arp retry interval seconds
  no arp retry interval
  
```


ARP

ARP

ARP

arp retry times 1

ARP 1

arp retry times 2

arp retry interval seconds	arp

14.2.5 arp trusted NUM

ARP

no

arp trusted number**no arp trusted**

number	ARP , <10-4096>

ARP

ARP

ARP

1000

ARP

arp trusted 1000

service trustedarp	ARP

14.2.6 arp trusted aging

ARP no

arp trusted aging

no arp trusted aging

GSN ARP

ARP ARP

arp timeout

service trustedarp	ARP

14.2.7 arp unresolve

ARP no

8192

arp unresolve number

no arp unresolve

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

ARP 8192

ARP

500

arp unresolved 500

14.2.8 arp gratuitous-send interval

arp no

arp gratuitous-send interval *seconds*

no arp gratuitous-send

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

ARP

ARP

SVI 1

ARP

Ruijie(config)# interface vlan 1

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

SVI 1

ARP

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

14.2.9 arp timeout

```
ARP ARP no
```

```
arp timeout seconds
```

```
no arp timeout
```

seconds	0-2147483

```
3600
```

```
ARP IP MAC
ARP ARP ARP
ARP ARP
vlan 1 ARP 120
interface vlan 1
arp timeout 120
```

clear arp-cache	ARP
show interface	

14.2.10 ip proxy-arp

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

ip proxy-arp
no ip proxy-arp

ARP

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

vlan 1 ARP
interface vlan 1
ip proxy-arp

14.2.11 service trustedarp

ARP service trustedarp no
ARP
service trustedarp
no service trustedarp

ARP

GSN ARP ARP GSN
STP MAC ARP MAC
1) STP
2) root port design , updown

3) tc

service trustedarp

config
service trustedarp

14.3.1 ip broadcast-addresss

ip broadcast-addresss no

ip broadcast-addresss *ip-address*

no ip broadcast-addresss *ip-address*

<i>ip-address</i>	IP

IP 255.255.255.255

IP IP 1 255.255.255.255 RGOS
1

IP 0.0.0.0

ip broadcast-address 0.0.0.0

14.3.2 ip directed-broadcast

IP
no

ip directed-broadcast

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

no ip directed-broadcast

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

IP
172.16.16.255

IP

IP

IP

IP

1

no ip directed-broadcast RGOS

vlan 1

interface vlan 1
ip directed-broadcast

14.4.1 clear arp-cache

ARP ARP IP clear
arp-cache

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

ARP

注意:

RNFP(Ruijie Network Foundation Protection,)
mac (IP) ARP clear arp 1s
ARP

ARP

```
clear arp-cache
      ARP 1.1.1.1
clear arp-cache 1.1.1.1
      SVI1 ARP
clear arp-cache interface Vlan 1
```

arp	ARP

14.4.2 show arp

ARP

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

vrf <i>vrf_name</i>	VRF VRF ARP

trusted	ARP	ARP	VRF
<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	

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.76(Tf0w2A7j)-6(A)-6(gmP t

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

show arp 192.168.195.0 255.255.255.0

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

show arp 001a.a0b5.378d

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

14.4.3 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
ARP
```

14.4.4 show arp timeout

ARP

show arp timeout**show arp timeout**

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

14.4.5 clear ip route

```
IP          IP          clear
ip route
```

```
clear ip route { * | network [ netmask ] | vrf vrf_name }
```

*	
<i>network</i>	
<i>netmask</i>	
vrf <i>vrf_name</i>	VRF

192.168.12.0

```
clear ip route 192.168.12.0
```

show ip route	IP

14.4.6 show ip arp

ARP

show ip arp

show ip arp

```
Ruijie# show ip arp
Protocol Address      Age(min) Hardware      Type
Interface
Internet 192.168.7.233 23      0007.e9d9.0488 ARPA vlan 1
Internet 192.168.7.112 10      0050.eb08.6617 ARPA vlan 1
Internet 192.168.7.79  12      00d0.f808.3d5c ARPA vlan 1
Internet 192.168.7.1   50      00d0.f84e.1c7f ARPA vlan 1
Internet 192.168.7.215 36      00d0.f80d.1090 ARPA vlan 1
Internet 192.168.7.127 0       0060.97bd.ebee ARPA vlan 1
Internet 192.168.7.195 57      0060.97bd.ef2d ARPA vlan 1
Internet 192.168.7.183 --      00d0.f8fb.108b ARPA vlan 1
```

ARP

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

14.4.7 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 vlan 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.
```



15 IP

15.1.1 ip mask-reply

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

ICMP

ICMP

ICMP

vlan 1

ICMP

```
interface vlan 1
ip mask-reply
```

15.1.2 ip mtu

IP

MTU

ip mtu

no

ip mtu *bytes*

no ip mtu



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

mtu

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

           vlan 1   IP MTU      512
interface vlan 1 ip mtu 512
```

mtu	

15.1.3 ip redirects

```
RGOS      ICMP      ip redirects
no        ICMP
ip redirects
no ip redirects
```

ICMP

```
RGOS          ICMP
              vlan 1    ICMP
interface vlan 1
no ip redirects
```

15.1.4 ip source-route

```
RGOS          IP          ip source-route
no
ip source-route
no ip source-route
```

```
RGOS  IP          IP          IP
              RFC 791
              ICMP
RGOS          IP
              IP
no ip source-route
```

15.1.5 ip unreachable

```
RGOS          ICMP          ip unreachable
no          ICMP
ip unreachable
no ip unreachable
```

RGOS

ICMP

RGOS

ICMP

ICMP

16

16.1.1 ip session timeout

ip session timeout

no

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

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

icmp-closed	10s	ICMP
icmp-connected	10s	ICMP
icmp-started	10s	ICMP
rawip-closed	10s	ip
rawip-connected	300s	ip
rawip-established	300s	ip
rawip-started	300s	ip

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

```

tcp established          600s
Ruijie(config)# ip session timeout tcp-established 600

```


|
|
|

|
|
|

|
|
|

|
|
|
|
|
|
|

tcp closed 100

Ruijie(config)# **ip session threshold tcp-closed 100**

tcp closed

Ruijie(config)# **no ip session threshold tcp-closed 100**

|
|
|

-	-

Ruijie(config)# ip session log

Ruijie(config)# no ip session log

-	-

10.3(4b5)	-

16.1.4 ip fragment-quota

ip fragment-quota *quota_num*

no ip fragment-quota

<i>quota_num</i>	

3000

2000

Ruijie(config)# ip fragment-quota 2000

Ruijie(config)# no ip fragment-quota

-	-

10.3(4b5)	
10.3(4b6)	

16.1.5 clear ip fpm counters

clear ip fpm counters

-	-

show ip fpm counters

1

Ruijie#clear ip fpm counters

show ip fpm counters-	

10.3(4b5)	-

16.1.6 clear ip fragment-statistic

clear ip fragment-statistic

-	-

```

clear ip fragment-statistic
ip fragment buffer peak value
ip fragment buffer overflow number
show ip fragment-buffer

```

```

1
Ruijie#clear ip fragment-statistic

```

show ip fragment-buffer	

10.3(4b6)	


```

0      Out of capability (exceed ipfrag buffer quota)
0      Out of capability (no reasm context)
0      Out of capability (allocate reasm buffer failed)
<end>

```

Rejected or terminated connection counters:

```

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

```

Count	
Reason	

clear ip fpm counters	

10.3(4b5)	-
10.3(4b6)	

16.2.2 show ip fpm flows

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

filter	
<i>ip_protocol_number</i>	
<i>source_ip</i>	
<i>source_ip_mask_len</i>	

<i>dest_ip</i>	
<i>dest_ip_mask_len</i>	

1

Ruijie#show ip fpm flows

```

Pro  SrcAddr      DstAddr      SrcPort      DstPort
Cntxt  SendBytes  RecvBytes  State  Bridge
TCP  192.168.52.68  192.168.52.67  5           2048      0
100    100        TCP_ESTABLISHED  2

```

Ruijie#show ip fpm flows filter 1 192.168.52.0 24 192.168.52.67 24

```

Pro  SrcAddr      DstAddr      SrcPort      DstPort
Cntxt  SendBytes  RecvBytes  State  Bridge
TCP  192.168.52.68  192.168.52.67  5           2048      0
100    100        TCP_ESTABLISHED  2

```

Pro	
SrcAddr	IP
DstAddr	IP
SrcPort	
DstPort	
Cntxt	ID
SendBytes	
RecvBytes	
State	
Bridge	

Number of active flows	
Event counter	

-	-

10.3(4b5)	-
10.3(4b6)	

16.2.4 show ip fragment-buffer

show ip fragment-buffer

-	-

show ip fragment-buffer

```
Ruijie#show ip fragment-buffer
ip fragment buffer quota :2000
ip fragment buffer used :0
ip fragment buffer peak value :2
ip fragment buffer overflow number :0
ip fragment contexts : 0
```

ip fragment buffer quota	
ip fragment buffer used	
ip fragment buffer peak value	
ip fragment buffer overflow number	
ip fragment contexts	

clear ip fragment-statistic	

10.3(4b5)	-
10.3(4b6)	

17 IP NAT

17.1.1 address

NAT

NAT

address

no

address *start-ip end-ip* [**match interface** *interface*]

no address *start-ip end-ip* [**match interface** *interface*]

address interface *interface* [**match interface** *interface*]

no address interface *interface* [**match interface** *interface*]



address 192.168.100.1 192.168.100.50

ip nat pool	IP NAT

-	-

17.1.2 ip nat

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

inside	
outside	

NAT

<i>dest-ip</i>	NAT
tcp <i>dest-ip port-num</i>	tcp NAT
udp <i>dest-ip port-num</i>	udp NAT
dest-change <i>ip-addr port-num</i>	
src-change <i>ip-addr</i>	

NAT

IP

(DNS relay)

```

1          192.168.1.0          DNS          NAT inside
   IP 192.168.1.1          NAT          DNS
   DNS 202.101.98.55      DNS          ip nat
application
192.168.1.1          53  UDP          IP          access-list 1
202.101.98.55          53

!
access-list 1 permit 192.168.1.0 0.0.0.255
!
interface vlan 2
ip address 192.168.1.1 255.255.255.0
ip nat inside
!
interface vlan 3
ip address 200.168.12.1 255.255.255.0
ip nat outside
!
ip nat pool net200 200.168.12.2 200.168.12.10 netmask 255.255.255.0
!
ip nat inside source list 1 pool net200
ip nat application source list 1 destination udp 192.168.1.1 53
dest-change 202.101.98.55 53
!

```

address	

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

10.3(4b6)	vrf

17.1.4 ip nat inside destination

ip nat inside destination
no ip nat inside destination

ip nat inside destination list *access-list-number* **pool** *pool-name*
no ip nat inside destination list *access-list-number* **pool** *pool-name*

--	--

list *access-list-number*

pool
IP



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

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



IP NAT

ip nat outside source list *access-list-number* **pool** *pool-name*
no ip nat outside source list *access-list-number*
ip nat outside source static *global-ip local-ip*
no ip nat outside source static *global-ip local-ip*
ip nat outside source static *protocol global-ip global-port local-ip local-port*
no ip nat outside source static *protocol global-ip global-port local-ip local-port*



list *access-list-number*

p

l

o

b

p

```

ip address 92.168.12.55 255.255.255.0
ip nat inside
!
interface vlan 3
ip address 92.168.100.1 255.255.255.0
ip nat outside
!
ip nat pool net200 200.168.12.1 200.168.12.15 prefix-length 28
ip nat pool net192 192.168.12.1 192.168.12.254 prefix-length 24
ip nat inside source list 1 pool net200
ip nat outside source list 1 pool net192
access-list 1 permit 92.168.12.0 0.0.0.255
!
ip route 192.168.12.0 255.255.255.0 92.168.100.2
        inside    outside                                NAT

```

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

10.3(4b6)	vrf

17.1.7 ip nat pool

NAT

ip nat pool

no

ip nat pool *pool-name start-ip end-ip* { **netmask** *netmask* | **prefix-length** *prefix-length* } [**type rotary**]
ip nat pool *pool-name* { **netmask** *netmask* | **prefix-length**

prefix-length } [**type rotary**]
no ip nat pool *pool-name*

	10.3(4b6)	vrf
--	-----------	-----

17.1.8 ip nat translation

17.2.1 show ip nat translations

NAT show ip nat translations
show ip nat translations [acl_num] [icmp | tcp | udp] [verbose]

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

IP NAT

verbose

timeout

1 show ip nat translations verbose

```
Ruijie# show ip nat translations verbose
Pro Inside global      Inside local      Outside local      Outside
global timeout vrf
tcp 192.168.5.103:1987 192.168.211.21:1987 211.67.71.7:80
211.67.71.7:80 timeout=85139 1
udp 192.168.5.103:1041 192.168.211.183:1041 202.101.98.55:53
202.101.98.55:53 timeout=38 1
```

Outside local	
Outside global	
timeout	NAT
vrf	vrf

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

10.3(4b6)	vrf

18

18.1.1

ping

DNS

VRF

RSR

ping

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

ping

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

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

18.1.2 Traceroute

traceroute

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

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

traceroute

VRF

RSR

DNS

traceroute

Ruijie#

1 17 IP 202.108.37.42
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

VRF

RSR

18.1.3 Line-detect

line-detect

line-detect

line-detect

```
Ruijie(config)#int gigabitEthernet 3/1  
Ruijie(config-if-GigabitEthernet 3/1)#line-detect  
start cable-diagnoses,please wait...
```

cable-daignoses end!this is result:

4 pairs

pair state length(meters)

A	Ok	2
B	Ok	1
C	Short	1
D	Short	1

pairs

State

						OK		Short		Open
				A	B	OK	C	D	Short	
Length:	A	B	C	D	OK	state	OK			
		Short		Open		length				

19 DHCP

19.1.1 bootfile

DHCP

19.1.2 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
              GigabitEthernet 0/1
00d0.f822.33b4          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

DHCP

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 DHCP DHCP

IP

192.168.12.1

default-router 192.168.12.1

ip dhcp pool	DHCP DHCP

19.1.5 dns-server

DHCP DNS DHCP **dns-server**

no DNS

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

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

DHCP

DHCP

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

dns-server	DHCP	DNS
ip dhcp pool	DHCP	DHCP

19.1.7 hardware-address

d

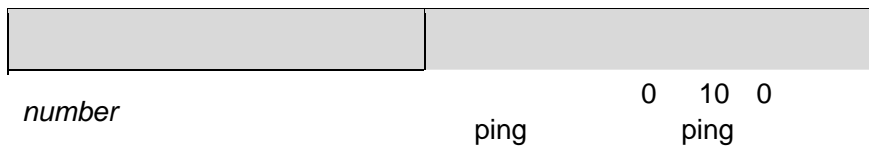
IP 192.168.12.91 255.255.255.240
host 192.168.12.91 255.255.255.240

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

19.1.10 ip dhcp excluded-address

IP

no ip dhcp ping packet



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

500

ping

ping

600ms

ip dhcp ping timeout 600

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

19.1.13 ip dhcp pool

pool DHCP **no**

DHCP
DHCP

ip dhcp

ip dhcp pool *pool-name*

no ip dhcp pool *pool-name*

<i>pool-name</i>	mypool 1

DHCP

DHCP

Ruijie(dhcp-config)#

IP DNS

mypool0 DHCP

ip dhcp pool mypool0



DHCP

DHCP

DHCP

```

DHCP 1
lease 0 1
DHCP 1
lease 0 0 1
    
```

ip dhcp pool	DHCP	DHCP

19.1.15 netbios-name-server

```

DHCP NETBIOS WINS DHCP
netbios-name-server no WINS
netbios-name-server ip-address [ ip-address2...ip-address8 ]
no netbios-name-server
    
```

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

WINS

DHCP

WINS

WINS

DHCP

WINS

DHCP	WINS	192.168.12.3
netbios-name-server 192.168.12.3		



NetBIOS

NetBIOS

WINS
NetBIOS

Hybrid

DHCP

NetBIOS

netbios-node-type h-node

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

19.1.17 network DHCP

DHCP

no

DHCP

network

network *net-number net-mask*

no network

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

DHCP

DHCP

DHCP

DHCP

```

show ip dhcp binding
dhcp conflict
DHCP
192.168.12.0
255.255.255.240
network 192.168.12.0 255.255.255.240
    
```

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

19.1.18 next-server

```

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

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

DHCP

DHCP

```

DHCP
192.168.12.4
next-server 192.168.12.4
    
```

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

19.1.19 option

DHCP
option

DHCP

option

no

option *code* { **ascii** *string* | **hex** *string* | **ip** *ip-address* }
no option

<i>code</i>	DHCP

ascii *string*

ASCII

ASCII 7-bit (0-127), ASCII 8-bit (0-255), ASCII 16-bit (0-65535), ASCII 32-bit (0-4294967295), ASCII 64-bit (0-18446744073709551615), ASCII 128-bit (0-340282366920938463463374607431768211455)

```
option 19 hex 1
                33                DHCP
DHCP                1                172.16.12.0    192.168.12.12
2                172.16.16.0    192.168.12.16
option 33 ip 172.16.12.0 192.168.12.12 172.16.16.0 192.168.12.16
```

ip dhcp pool	DHCP DHCP

19.1.20 service dhcp

```

                DHCP
no                DHCP
service dhcp
no service dhcp

                DHCP

DHCP                IP                DNS
                DHCP                DHCP                DHCP
                DHCP
                DHCP

service dhcp
```

show ip dhcp server statistics	DHCP

19.2.1 clear ip dhcp binding

DHCP

clear ip dhcp binding

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



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

DHCP ping DHCP
 ARP **clear ip dhcp conflict**

clear ip dhcp conflict *

ip dhcp ping packets	DHCP ping
show ip dhcp conflict	DHCP

19.2.3 clear ip dhcp server statistics

DHCP

clear ip dhcp server statistics

clear ip dhcp server statistics

DHCP

DHCP

DHCP

clear ip dhcp server statistics

DHCP

clear ip dhcp server statistics

show ip dhcp server statistics	DHCP

19.2.4 debug ip dhcp client

DHCP Client
debug ip dhcp client
no debug ip dhcp client

debug ip dhcp client

dhcp client

dhcp

debug ip dhcp client

19.2.5 debug ip dhcp server

DHCP Server
debug ip dhcp server
no debug ip dhcp server

debug ip dhcp server

```
dhcp server
```

```
dhcp
```

```
debug ip dhcp server
```

19.2.6 show dhcp lease

```
DHCP EXEC show dhcp lease
show dhcp lease
```

```
IP IP IP
```

show dhcp lease

```
Ruijie# show dhcp lease
Temp IP addr: 192.168.5.71 for peer on Interface:
GigabitEthernet0/0
Temp sub net mask: 255.255.255.0
DHCP Lease server: 192.168.5.70, state: 3 Bound
DHCP transaction id: 168F
Lease: 600 secs, Renewal: 300 secs, Rebind: 525 secs
Temp default-gateway addr: 192.168.5.1
Next timer fires after: 00:04:29
Retry count: 0 Client-ID: redgaint-00d0.f8fb.5740-Fa0/0
```

19.2.7 show ip dhcp binding

```
DHCP EXEC show ip dhcp binding
show ip dhcp binding [ ip-address ]
```

<i>ip-address</i>	IP

IP IP IP

show ip dhcp binding

```

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

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

DHCP

show ip dhcp conflict

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

IP address	DHCP	IP

20 DNS

20.1.1 ip domain-lookup

```
DNS                               no           DNS
ip domain-lookup
no ip domain-lookup
```

```
DNS
```

```
DNS
```

```
DNS
```

```
DNS
```

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

show hosts	DNS

<i>ip-address</i>	IP

DNS Server IP
Server

DNS Server
Server DNS

6

DNS Server
DNS

ip-address

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

show hosts	DNS

RGNOS10.1

20.1.3 ip host

IP

no

ip host *host-name ip-address*

no ip host *host-name ip-address*

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

no ip host host-name ip-address

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

21 NTP

21.1.1 no ntp

ntp
no ntp

ntp

NTP

NTP

NTP

NTP

NTP

NTP

no ntp



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

注意:

1
2

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

--	--

ip access-list	IP
----------------	----

21.1.3 ntp authenticate

NTP NTP

ntp authenticate

no ntp authenticate

NTP

ntp authentication-key ntp trusted-key

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

ntp authentication-key	
ntp trusted-key	

21.1.4 ntp authentication-key

NTP NTP

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

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

NTP
NTP

注意:

IP

NTP

no ntp

21.1.6 ntp master

no NTP
NTP

ntp master [stratum]
no ntp master

<i>stratum</i>	15	8 1

NTP

注意:

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

21.1.7 ntp server

NTP

NTP

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

no ntp server *ip-addr*

<i>ip-addr</i>	NTP	IP	IPv4	IPv6
<i>version</i>	NTP	1-3	NTPv3	
<i>if-name</i>	NTP			
<i>keyid</i>				
prefer	Prefer			

NTP

prefer

NTP
NTP

IP

NTP server

IPv4 Ruijie(config)# ntp server 192.168.210.222

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

no ntp	NTP

21.1.8 ntp synchronize

NTP

ntp synchronize

no ntp synchronize

NTP

8

NTP

Ntp synchronize

ntp server	NTP

21.1.9 ntp trusted-key

ID

ntp trusted-key *key-id***no ntp trusted-key** *key-id*

<i>key-id</i>	ID

NTP

ID

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

ntp authenticate	
ntp authentication-key	NTP
ntp server	NTP

21.1.10 ntp update-calendar

NTP

no

ntp update-calendar**no ntp update-calendar**

NTP

NTP

NTP

NTP

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

21.2.1 debug ntp

NTP

debug ntp

no debug ntp

NTP

NTP

debug ntp

21.2.2 show ntp status

NTP
show ntp status

NTP

NTP

NTP

show ntp status

22 SNTP

22.1.1 sntp enable

SNTP

no

—Disable

[no] sntp enable

SNTP

Disable

show sntp

SNTP

RedGiant(config)# **sntp enable**

show sntp	SNTP
clock update-calendar	
clock set	

RGOS10.0

22.1.2 sntp server

SNTP Server

no sntp server

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

sntp enable	SNTP
show sntp	SNTP
clock update-calendar	

RGOS10.0

注意:

enable sntp

22.2.1 show sntp

SNTP

show sntp SNTP

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

--	--

sntp enable	SNTP
show sntp	SNTP

RGOS10.0

23 SSH

23.1.1 crypto key generate

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

RGOS10.1

23.1.2 crypto key zeroize

SSH

crypto key zeroize {rsa / dsa}

rsa	RSA
dsa	DSA

DISABLE SSH Server SSH Server
no enable service ssh-server

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

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

RGOS10.1

23.1.3 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

SSH Server SSH SSH Ser
 ver SSH1 SSH2 SSH 1 SSH 2
ssh 1 2 SSH Server **show ip**

2

Ruijie# **configure terminal**
 Ruijie(config)# **ip ssh version 2**

show ip ssh	SSH Server
--------------------	------------

RGOS10.1

23.1.4 ip ssh time-out

SSH Server no

ip ssh time-out *time*
no ip ssh time-out

<i>time</i>	

120s

no ip ssh time-out

SSH Server
120s

show ip cC20 1 400 1 Tf0 Tc 0 Tw ()Tj/C

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

23.2.2 show ssh

SSH

show ssh

SSH

VTY SSH

Ruijie# **show ssh**

RGOS10.1

23.2.3 show crypto key mypubkey

SSH Server

show crypto key mypubkey {rsa/dsa}

SSH

SSH

SSH
SSH

VTY

Ruijie# **disconnect ssh 1**
Ruijie# **disconnect ssh vty 1**

show ssh	SSH
Clear line vty <i>line_number</i>	VTY

RGOS10.1

24 UDP-Helper

24.1.1 udp-helper enable

```

udp-helper enable          UDP          no udp-helper
enable                    UDP
                           UDP
udp-helper enable
no udp-helper enable
    
```

UDP

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

UDP :

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

ip forward-protocol	UDP

RGNOS10.1

24.1.2 ip helper-address

UDP

no

UDP

ip helper-address *address*
no ip helper-address *address*

<i>address</i>	UDP 20

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

<i>port</i>	69,53,37,137,138,49
tftp	Trivial File Transfer Protocol(69) UDP

RGNOS10.1

25

25.1.1 ip policy route-map

ip policy route-map no

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

<i>route-map</i>	

1

ACL

ACL

ACL

⚡ 注意:

<i>route-map</i>	

1

set interface

,

set interface

192.168.217.10

vlan 1

```
access-list 1 permit 192.168.217.10
route-map lab1 permit 10
match ip address 1
set interface vlan 1
exit
```

access-list	
route-map	
set ip next-hop	
set ip default next-hop	
set interface	
set default interface	
set ip tos	IP TOS

set ip dscp	IP	DSCP
set ip precedence	IP	
match ip address		

```
match ip address 2
set ip next-hop 196.168.5.6
set ip next-hop 196.168.5.7
set ip next-hop 196.168.5.8
exit
interface vlan 1
ip policy route-map lab1
exit
ip policy redundance
```

26 RIP

26.1.1 address-family RIP

```

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


version	RIP v1 v2 v1&v2

26.1.3 default-metric (RIP)

RIP default-metric no

default-metric *metric*
no default-metric

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

1

redistribute

RIP

RIP

RIP

default-metric

default-metric

default-metric

1

RIP
RIP

OSPF
3

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

--	--

redistribute	
--------------	--

26.1.4 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>	1-15 <i>metric-value</i>
route-map <i>map-name</i>	route-map , route-map

1-15

RIP

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

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

26.1.6 distribute-list in RIP

no **distribute-list in**

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* |

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

access-list	
prefix-list	

26.1.7 distribute-list out RIP

distribute-list out

no

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

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

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

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	

26.1.8 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
```

address-family	

26.1.9

ip rip authentication text-password	RIP
key chain	

26.1.10 ip rip authentication mode

no RIP **ip rip authentication mode**
ip rip authentication mode {text | md5}
no ip rip authentication mode

text	RIP
md5	RIP MD5

RIP RIP RIP RIP RIP
 RIP MD5

26.1.11 ip rip authentication text-password

```

RIP
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

26.1.12 ip rip default-information

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



26.1.13 ip rip receive enable

```

RIP
no
RIP
RIP
ip rip receive enable
no ip rip receive enable

```

RIP

```

RIP
default
no
RIP

```

GigabitEthernet 0/0 RIP

```

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

```

ip rip send enable	RIP
passive-interface	RIP

26.1.14 ip rip receive version

```

RIP
version
no
RIP
ip rip receive
no ip rip receive version

```

--	--

1	RIPv1
2	RIPv2

version

```

          vesion
          RIPv1  RIPv2
version
    
```

```

          GigabitEthernet 0/0          RIPv1  RIPv2
    
```

```

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

version	RIP

26.1.15 ip rip send enable

```

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

RIP

RIP

default

no

RIP

GigabitEthernet 0/0

RIP

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

ip rip receive enable	RIP

GigabitEthernet 0/0

RIPv1

RIPv2

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

version	RIP

26.1.17 ip rip v2-broadcast

RIP version 2

ip rip v2-broadcast

no

ip rip v2-broadcast**no ip rip v2-broadcast****version****ve4721354201C4>Tj/TT0 1 Tf6482C9 Tc 7.82AFC>]T/TT5 1 T472**

26.1.18 ip split-horizon (RIP)

```
                RIP                ip split-horizon      no
                RIP
ip split-horizon
no ip split-horizon
```

IP

X.25

```
IP
RIP
```

RIP

ip

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

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

RIP

ip summary-address rip

RIP

RIPv2

GigabitEthernet

```
1/0 172.16.0.0/16
Ruijie(config)# interface GigabitEthernet 1/0
Ruijie(config-if)# ip summary-address rip 172.16.0.0 255.255.0.0
Ruijie(config-if)# ip address 172.16.1.1 255.255.255.0
Ruijie(config)# router rip
Ruijie(config-router)# network 172.16.0.0
Ruijie(config-router)# version 2
Ruijie(config-router)# no auto-summary
```

auto-summary	RIP

26.1.20 network (RIP)

RIP

network

```
no
network
```

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

<i>network-number</i>	IP RIP
<i>wildcard</i>	IP 0 1

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

```

RIPv1      IP      255.255.255.255      RIPv2
          224.0.0.9
                                passive-interface
                                RIP
                                passive
    
```

26.1.22 offset-list(RIP)

```

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

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

```

RIP
RIP
offset-list
offset-list metric
acl 7
RIP
metric 7
Ruijie(config-router)# offset-list 7 out 7
GigabitEthernet1/0
acl 8
RIP
metric 7
Ruijie(config-router)# offset-list 7 in 7
Ruijie(config-router)# offset-list 8 in 7 GigabitEthernet 1/0

```

26.1.23 output-delay

```

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

```

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

RIP

30

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

26.1.24 passive-interface

passive-interface

no

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

default	passive
<i>interface-type interface-num</i>	

passive

```
passive-interface default passive no
passive-interface intface-type interface-num passive
ip rip send enable ip rip receive enable
passive
```

ip rip receive enable	RIP
ip rip send enable	RIP

26.1.25 redistribute RIP

redistribute

no

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

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

ospf connected static	
metric	metric
route-map	
match	ospf
<i>process-name</i>	ISIS
<1-65535>	OSPF

OSPF

metric 1
route-map

RIP

RIP

OSPF

ospf

match
match
no

match
match

ospf

RIP

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



network (RIP)	RIP

26.1.27 timers basic

RIP

timers basic

no

timers basic *update invalid flush*
no timers basic

<i>update</i>	<p style="text-align: center;"><i>update</i></p> <p style="text-align: right;"><i>invalid Flush</i></p> <p style="text-align: center;">30</p>
<i>invalid</i>	<p style="text-align: center;"><i>invalid</i></p> <p style="text-align: right;"><i>invalid invalid</i></p> <p style="text-align: right;"><i>Invalid 180</i></p>
<i>flush</i>	<p style="text-align: center;"><i>flush</i></p> <p style="text-align: center;"><i>Flush</i></p> <p style="text-align: right;">RIP <i>invalid</i></p> <p style="text-align: right;">120</p>

30

180

120

RIP

RIP

RIP

show ip rip

```

RIP                10                30
                   invalid            invalid            90

```

```

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

```

注意:

2Mbps

26.1.28 validate-update-source

```

RIP
validate-update-source no
validate-update-source
no validate-update-source

```

```

RIP                RIP
                   IP
                   RIP
                   validate-update-source
ip unnumbered     RIP
                   validate-update-source

```

```

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

```

ip split-horizon	RIP
ip unnumbered	IP
neighbor (RIP)	RIP IP

26.1.29 version (RIP)

RIP

version

no

version {1 | 2}

no version

1	RIP 1
2	RIP 2

RIPv1 RIPv2

RIPv1

version

RIP

ip rip receive version ip rip send
RIP

RIP

2

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

ip rip receive version	RIP RIP

ip rip send version	RIP RIP
show ip rip	rip

26.2.1 show ip rip

RIP

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

vrf vrf-name	VRF RIP

```

rip          RIP
metric      distance
VRF         VRF      VRF-id

```

rip

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
GigabitEthernet 1/1      2      2
GigabitEthernet 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)

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)

```

26.2.2 show ip rip database

```

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

```

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

RIP

```

RIP
Ruijie# show ip rip database

```

```

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

```

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, GigabitEthernet 0/1

```

show ip rip	

26.2.3 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
<i>process-name</i>	ISIS
<i><1-65535></i>	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	

26.2.4 show ip rip interface

RIP

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

vrf vrf-name	VRF RIP

RIP

```

Ruijie# show ip rip interface
GigabitEthernet 1/1 is down, line protocol is down
RIP is not enabled on this interface
GigabitEthernet 1/0 is up, line protocol is up
Routing Protocol: RIP
Receive RIPv2 packets only
Send RIPv2 packets only
Passive interface: Disabled
Split horizon: Enabled

```

```
V2 Broadcast: Disabled
Multicast register: Registered
Interface Summary Rip:
  Not Configured
Authentication mode: Text
Authentication key-chain: 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 , :
```

```
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: RIP 061.1 0D[( D9i7uitg )-109horizion: Enabled
```

27 OSPF

27.1.1 area

no OSPF
area area-id
no area area-id




```

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

# OSPF

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

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

27.1.3 area default-cost

```

                STUB      NSSA
                area default-cost      no      OSPF

area area-id default-cost cost
no area area-id default-cost
    
```

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

OSPF

no-summary	(ABR) nssa	nssa LSA
-------------------	---------------	-------------

NSSA

```

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

no-redistribution ASBR OSPF redistribute
NSSA NSSA ASBR ABR
nssa

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

area default-cost NSSA ABR NSSA
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	OSPF NSSA

27.1.6 area range

```

no OSPF no cost area range

```


OSPF
no
area *area-id* stub

area stub

27.1.8 area virtual-link

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>	show ip ospf
dead-interval <i>seconds</i>	40
hello-interval <i>seconds</i>	OSPF Hello 10
retransmit-interval <i>seconds</i>	OSPF LSA 5
transmit-delay <i>seconds</i>	OSPF LSA LSA 1 LSA LSA
authentication-key <i>key</i>	OSPF service password-encryption
message-digest-key <i>key-id md5 key</i>	OSPF MD5 MD5 service password-encryption
authentication	
message-digest	MD5
null	

dead-interval 40
hello-interval 10
transmit-interval

show ip ospf	OSPF
---------------------	------

27.1.9 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

27.1.10 clear ip ospf process

OSPF

clear ip ospf (*process-id*) process

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

RFC2328

OSPF

OSPF

RFC1583

rfc 2328

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

show ip ospf	ospf

27.1.12 default-information originate OSPF

OSPF

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

always	OSPF
metric metric	1
metric-type type	OSPF 1 2 1 2 2
route-map map-name	route-map , route-map

```

ASBR redistribute default-information OSPF
ASBR ASBR ASBR OSPF
ASBR ASBR default-information originate
ASBR always OSPF
ASBR show ip ospf database OSPF show ip route 0.0.0.0
ASBR OSPF
ASBR default-information originate
ASBR default-metric
OSPF 1 2
2 show ip route 1 1
STUB
1 OSPF OSPF
1 50
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 172.16.24.0 0.0.0.255 area 0
Ruijie(config-router)# default-information originate always
metric 50 metric-type 1

```



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

110

OSPF

OSPF

OSPF

160

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

27.1.15 distribute-list in

LSA

```
distribute-list {listname | gateway plist-name | prefix plist-name }
in [interface-type num]
no distribute-list {listname | gateway plist-name | prefix plist-name }
in [interface-type num]
```

<i>listname</i>	acl
gateway <i>plist-name</i>	gateway
prefix <i>plist-name</i>	prefix-list
interface-type <i>num</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
Ruijie(config-router)# distribute-list 3 in ethernet 1/1
```

27.1.16 distribute-list out

redistribute

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

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

distribute-list out **redistribute route-map**

redistribute

OSPF

ACL prefix-list ,
ACL , prefix-list

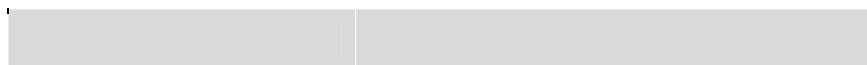
```
Ruijie(config)# router ospf 1  
Ruijie(config)# redistribute static subnets  
Ruijie(config-router)# distribute-list 22 out static  
Ruijie(config-router)# distribute-list prefix jjj out static  
% There already has filter configured. Please re-configure.
```

27.1.17 enable mib-binding

enable mib-binding MIB OSPFv2 **no**

enable mib-binding

no enable mib-binding



retransmit	retransmit traps retransmit traps iftxretransmit virtiftxretransmit
state-change	state-change traps state-change traps ifstatechange nbrstatechange virtifstatechange virtnbrstatechange

TRAP

```

ospf          snmp-server          snmp-server enable traps
              MIB                  TRAP

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

show ip ospf	OSPF	
enable mib-binding	OSPFv2	MIB

27.1.19 ip ospf authentication

```

no
ip ospf authentication [message-digest | null]
no ip ospf authentication
    
```


Key	8

ip ospf authentication-key

OSPF

OSPF

á à y "€Ô<4•àÛ1õ

, LSA

LSA , .

LSA serial 1/0

```
Ruijie(config)# interface serial 1/0
Ruijie(config-if)# ip address 172.16.10.1
255.255.255.0
Ruijie(config-if)# encapsulation ppp
Ruijie(config-if)# ip ospf database-filter all out
```

27.1.23 ip ospf dead-interval

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

ip ospf

hello

serial 1/0

OSPF

30

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

ip ospf hello-interval	OSPF Hello

27.1.24 ip ospf disable all

ospf

```
ip ospf disable all
no ip ospf disable all
```

27.1.25 ip ospf hello-interval

OSPF Hello
no

ip ospf hello-interval

ip ospf hello-interval *seconds*
no ip ospf hello-interval



```

        OSPF      MD5
        no
        OSPF      MD5
ip ospf message-digest-key key-id md5 key
no ip ospf message-digest-key
    
```

Key	16
Key-id	255

MD5

```

ip ospf message-digest-key
        OSPF
        OSPF
        OSPF
        area authentication
        ip ospf authentication
        ,
        ,
        .
    RGOS
        MD5
        OSPF MD5
        OSPF
        GigabitEthernet 0/0
        hello5
        OSPF
    Ruijie(config)# interface Serial 1/0
    Ruijie(config-if)# ip address 172.16.24.2
    255.255.255.0
    Ruijie(config-if)# ip ospf authentication
message-digest
    Ruijie(config-if)# ip ospf message-digest-key 10 md5
hello10
    Ruijie(config-if)# ip ospf message-digest-key 5 md5
hello5
    Ruijie(config)# interface Serial1/0
    Ruijie(config-if)# no ip ospf message-digest-key 10 md5 hello10
    
```



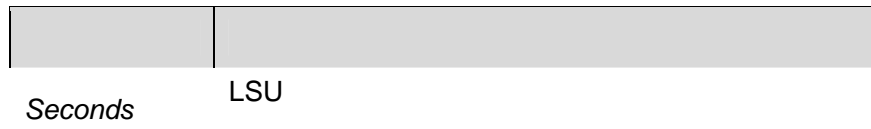
```

ip ospf network broadcast non-broadcast point-to-multipoint [ non-br
oadcast ] point-to-point
no ip ospf network broadcast non-broadcast point-to-multipoint [ non-
broadcast ] point-to-point
    
```

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

NBMA PPP SLIP X.25

OSPF



1

```

LSU
LSAs
Age
ip ospf transmit-delay

LSU
area virtual-link
retransmit-interval
RGOS Age 3600 LSA
LSA

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

area virtual-link	OSPF

27.1.32 log-adj-changes

no default

```

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

detail	

detail Full Full

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

show ip ospf	ospf

27.1.33 max-concurrent-dd

DD

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

<1-65535>	DD

5

OSPF

DD

DD

4

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

27.1.34 neighbor

OSPF

neighbor

no

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

no neighbor *ip-address*

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

ip ospf priority	OSPF
ip ospf network	OSPF

27.1.35 network area

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

--	--

```

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

27.1.36 overflow database

OSPF LSA

```

overflow database <0-4294967294> hard | soft
no overflow database
    
```

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

soft OSPF hard OSPF

LSA 10 OSPF 10

```

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

27.1.37 overflow database external

external LSA

overflow database external *max-dbsize wait-time*

no overflow database external

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

external-LSA

external-LSA

external-LSA

external-LSA

max-dbsize

external-LSA

external-LSA

wait-time

external-LSA

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

27.1.38 overflow memory-lack

OSPF

OVERFLOW

no

overflow memory-lack

no overflow memory-lack



no

no

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

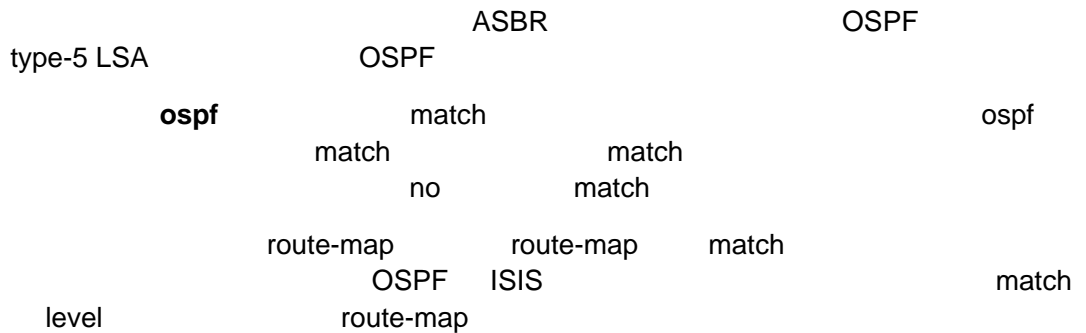
<i>type number</i>	
default	

, OSPF

serial 1/0

Ruijie(config)# **router** -15.06 -1.69i1920EDB8C1F0282751DD197909E3E7F41r02

ospf process-id rip 	static
metric OSPF extern2 LSA	metric
match	OSPF OSPF
metric-typ E-1 E-2	
route-map	
tag OSPF	tag
subnets	



```

OSPF

Ruijie(config-router)# redistribute static subnets
Ruijie(config)# router ospf 1
Ruijie(config-router)# redistribute ospf 2 subnets
Ruijie(config-router)# redistribute ospf 2 match
external 1 internal
Show run

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

27.1.41 router ospf

OSPF
OSPF

router ospf **no**

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

no router ospf *process-id*



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

OSPF

ip

ip

LSA

OSPF

loopback

ospf

router-id 0.0.0.36

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

Ruijie(config-router)# **router-id 0.0.0.36**

show ip protocols	

27.1.43 summary-address

OSPF

summary-address no

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

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

not-advertise	
----------------------	--

OSPF

OSPF

area rang	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

27.1.44 timers lsa-group-pacing

LSA

show ip ospf

```

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 isenabled
Supports only single TOS(TOS0) routes
Supports opaque LSA
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
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 isselected

```

Router ID	
Process uptime	OSPF router-id 0.0.0.0
Bound to VRF	OSPF VRF
Conforms to RFC2328	RFC2328
RFC1583Compatibility flag	RFC2328 RFC1583 ASBR

Support Tos	TOS0
Supports opaque LSA	opaque-LSA
Router Type	OSPF normal ABR ASBR
SPF Delay	SPF
SPF-holdtime	SPF
LsaGroupPacing	LSA
Incomming current DD exchange neighbors	incomming exstart
Outgoing current DD exchange neighbors	outgoing exstart
Number of external LSA	LSA
External LSA Checksum Sum	LSA
Number of opaque LSA	opaque-LSA
Opaque LSA Checksum Sum	opaque-LSA
Number of non-default external LSA	external-LSA
External LSA database limit	external-LSA
Exit database overflow state interval	overflow
Database overflow state	OSPF overflow
Number of LSA originated	LSA
Number of LSA received	LSA
Log Neighbor Adjency Changes	
Number of areas attached to this router	
Area type	, Default, Stub,NSSA
Number of interfaces in this area	
Number of fully adjacent neighbors in this area	Full
Number of fully adjacent virtual neighbors through this area	Full

Area authentication	
SPF algorithm last executed	SPF
SPF algorithm executed times	SPF
Number of LSA	LSA
Checksum Sum	LSA
NSSA Translator State	LSA OSPF NSSA LSA External ABR

27.2.2 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

```

                ABR   ASBR   OSPF
OSPF             show ip route   OSPF
                OSPF
    
```

show ip ospf border-routers

```

Ruijie# show ip ospf border-routers
OSPF internal Routing Table

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

i 1.1.1.1 [2] via 10.0.0.1, GigabitEthernet 0/1, ABR, ASBR, Area
0.0.0.1 select
    
```

--	--

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

27.2.3 show ip ospf database

OSPF

show ip ospf database

LSAs

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

```

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

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

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

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

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

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

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

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

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

```

<i>Area-id</i>	
adv-router	
<i>link-state-id</i>	OSPF
self-originate	
maxage	LSA
router	OSPF
network	OSPF
summary	OSPF
asbr-summary	ASBR
external	OSPF
nssa-external	OSPF
opaque-area	LSA
opaque-as	LSA
opaque-link	LSA

database-summary	OSPF	
	LSA	

OSPF
OSPF

show ip ospf database

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

      Router Link States (Area 0.0.0.0)
Link ID      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
```


TOS: 0 Metric: 1

show ip ospf database asbr-summary

OSPF Router with ID	OSPF

AS Summary Link States

AS

OSPF Router with ID	OSPF	
Router Link States		
LS age		
Options		
Flag	router	
LS Type		
Link State ID		
Advertising Router		
LS Seq Number		
Checksum		
Length		
Number of Links		
Link connected to		
(Link ID)		
(Link Data)		
Number of TOS metrics	TOS	TOS0
TOS 0 Metrics	TOS	

show ip ospf database summary

```
Ruijie# show ip ospf database summary
OSPF Router with ID (1.1.1.1) (Process ID 1)
Summary Link States (Area 0.0.0.0)
LS age: 499
Options: 0x2 (*|---|E|)
LS Type: summary-LSA
Link State ID: 10.0.0.0 (summary Network Number)
Advertising Router: 1.1.1.1
LS Seq Number: 80000004
Checksum: 0x330e
Length: 28
Network Mask: /24
TOS: 0 Metric: 11
```

show ip ospf database summary

--	--

OSPF Router with ID OSPF

show ip ospf database external

Area	Type	Length	Network	Cost	Origin
------	------	--------	---------	------	--------

OSPF Process	
Router Link	OSPF LSA
Network Link	OSPF LSA
Summary Link	OSPF LSA
ASBR-Summary Link	OSPFASBR LSA
AS External Link	OSPF LSA
NSSA-external Link	,OSPF NSSA LSA

27.2.4 show ip ospf interface

OSPF

show ip ospf interface

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

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

OSPF

OSPF

show ip ospf interface GigabitEthernet 1/0

Ruijie# **show ip ospf interface fa 1/0**

```
GigabitEthernet 1/0 is up, line protocol is up
Internet Address 192.88.88.27/24, Ifindex 4, Area 0.0.0.0, MTU 1500
Matching network config: 192.88.88.0/24
Process ID 1, Router ID 1.1.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 1.1.1.1, Interface Address 192.88.88.27
```

```

Backup Designated Router (ID) 3.3.3.3, Interface Address
192.88.88.72
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit
5
Hello due in 00:00:03
Neighbor Count is 1, Adjacent neighbor count is 1
Crypt Sequence Number is 70784
Hello received 1786 sent 1787, DD received 13 sent 8
LS-Req received 2 sent 2, LS-Upd received 29 sent 53
LS-Ack received 46 sent 23, Discarded 1
    
```

show ip ospf interface serial 1/0

GigabitEthernet 0/0 State	Down UP
Internet Address	IP
Area	OSPF
MTU	MTU
Matching network config	OSPF network area
Process ID	
Router ID	OSPF

Crypt Sequence Number

md5

```

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

```

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

show ip ospf neighbor

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	(Hello DR)
BDR	(Hello BDR)
Options	Hello E 0 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

27.2.6 show ip ospf route

ospf

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

<i>process-id</i>	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, GigabitEthernet 1/0
C 192.88.88.0/24 [1] is directly connected, GigabitEthernet 1/0,
Area 0.0.0.1
```

show ip ospf route

codes	
100.0.0.0/24	
[1]	cost
via	

27.2.7 show ip ospf summary-address

OSPF
summary-address

show ip ospf

show ip ospf summary-address

NSSA ABR

show ip ospf summary-address

```
Ruijie# show ip ospf summary-address
Summary Address Summary Mask   Advertise   Status   Aggregated
subnets
-----
202.101.0.0    255.255.0.0   advertise   Inactive  0
Ruijie#
```



```

Ruijie# show ip ospf virtual-links
Virtual Link VLINK0 to router 1.1.1.1 is up
Transit area 0.0.0.1 via interface GigabitEthernet 0/1
Local address 10.0.0.37/32
Remote address 10.0.0.27/32
Transmit Delay is 1 sec, State Point-To-Point,
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit
5
Hello due in 00:00:05
Adjacency state Full
    
```

Virtual Link VLINK0 to router	
Virtual Link state	.
Transit area	
via interface	
Local address	
Remote Address	
Transmit Delay	
State	
Time intervals configured	Hello 10 Dead 40 Wait 40 Retransmit 5
Adjacency State	FULL

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
```

default-network

“*”

connected

192.168.100.0

```
Ruijie(config)# ip route 192.168.100.0 255.255.255.0 serial 0/1
Ruijie(config)# ip default-network 192.168.100.0
```

200.200.200.0

200.200.200.0

```
Ruijie(config)# ip default-network 200.200.200.0
```

show ip route	IP

28.1.4 ip prefix-list

ip prefix-list

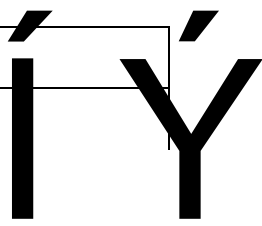
no

```
ip prefix-list prefix-lis-name [ seq seq-number] { deny | permit }
ip-prefix [ge minimum-prefix-length][ le maximum-prefix-length]
```

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

prefix-lis-name	
seq-number	2147483647 1 5 5

deny	
permit	
<i>ip-prefix</i>	IP



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

```

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

```

28.1.6 ip prefix-list sequence-number

```

ip prefix-list description      no

```

```

ip prefix-list sequence-number

```

```

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

```

28.1.7 ip route

```

ip route      no

```

ip route [**vrf** *vrf_name*] *network net-mask* {*ip-address* | *interface [ip-address]*}
[*distance*] [**tag** *tag*] [*permanent* | **track** *object-number*] [**weight** *number*] [*disabled* |
enabled]

```

0.0.0.0 GigabitEthernet 0/0
GigabitEthernet 0/0
                                ARP
                                CPU
                                track
                                track
                                track
                                Track
                                permanent
                                track

172.16.100.0/24
192.168.12.1 115
ip route 172.16.100.0 255.255.255.0 192.168.12.1 115

```

```

172.16.100.0/24 GigabitEthernet 0/0
Ruijie(config)# ip route 172.16.100.0 255.255.255.0
GigabitEthernet 0/0 192.168.12.1

```

show ip route	IP

28.1.8 ip routing

```

RGOS IP no
IP
ip routing
no ip routing

IP

```

VOIP
RGOS IP

RGOS

IP

RGOS IP

Ruijie(config)# no ip routing

c route-limit

ip static route-limit

no

ip static route-limit *number*

no ip static route-limit

ipv6 prefix-list *prefix-lis-name* [**seq** *seq-number*] { **deny** | **permit** }
ipv6-prefix [**ge** *minimum-prefix-length*] [**le** *maximum-prefix-length*]
no ipv6 prefix-list *prefix-lis-name* [**seq** *seq-number*] { **deny** | **permit** }
ipv6-prefix [**ge** *minimum-prefix-length*] [**le** *maximum-prefix-length*]

<i>prefix-lis-name</i>	
<i>seq-number</i>	1 2147483647 5 5
deny	
permit	

ipv6-prefix

IP

```

RIP
  IPv6
    OSPF 1
    (
      IP 2222::/64
    )
Ruijie# configure terminal
Ruijie(config)# ipv6 prefix-list pre permit 2222::/64
Ruijie(config)# ipv6 router rip
Ruijie(config-router)# redistribute ospf 1
Ruijie(config-router)# distribute-list prefix pre out
Ruijie(config-router)# end

```

28.1.11 ipv6 prefix-list description

```

IPv6
no
ipv6 prefix-list prefix-lis-name description descripton-text

```

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

```

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

```

28.1.12 ipv6 prefix-list sequence-number

```

IPv6
no
ipv6 prefix-list sequence-number

```

IPv6

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

28.1.13 match as-path

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

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

```
match as-path  
  
match          1          match          1          set  
set
```

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



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

28.1.14 match community

community **COMMUNITY** **match**
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>community-list-name</i>	80
exact-match	

match community
6

exact-match

match 1 **match** 1 **set**
set

Ruijie(config)# **ip community-list 1 permit 100:2 100:30**

```
Ruijie(config)# route-map set_lopref
Ruijie(config-route-map)# match community 1 exact-match
Ruijie(config-route-map)# set local-preference 20
```

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

28.1.15 match interface

match interface

no

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

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

<i>interface-type</i>	

interface-number]

⑤

OSPF

RIP

RIP

OSPF

route maps

match

1

match
set

1

set

OSPF

RIP

GigabitEthernet 0/0

RIP

```
jie(config)# router ospf
jie(config-router)# redistribute rip subnets route-map redrip
jie(config-router)# network 192.168.12.0 0.0.0.255 area 0
jie(config-router)# exit
jie(config)# route-map redrip permit 10
jie(config-route-map)# match interface GigabitEthernet 0/0
```

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

set metric-type

address **no**

match ip

match ip address {*access-list-number* [*access-list-number...* |
access-list-name...]

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

match ip next-hop

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

OSPF

RIP

RIP
IP

OSPF

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

28.1.20 match ipv6 next-hop

IPv6
match ipv6 address **no**

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

no match ipv6 next-hop

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

OSPF

RIP

RIP
IP

OSPF

route maps

match 1 match 1 set set

RIP OSPF RIP OSPF type-1 10 40

```
Ruijie(config)# ipv6 router ospf
Ruijie(config-router)# redistribute rip subnets route-map redrip
Ruijie(config-router)# exit
Ruijie(config)# ipv6 access-list v6acl
Ruijie(config-ipv6-acl)# 10 permit ipv6 2720::/64 any
Ruijie(config-ipv6-acl)# exit
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match ipv6 next-hop v6acl
Ruijie(config-route-map)# set metric 40
```

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

28.1.21 match ipv6 route-source

IPv6
match ipv6 address **no**

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

no match ipv6 route-source

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

```

                                OSPF
                                RIP
                                RIP
                                IP
                                OSPF
                                route maps
                                match
                                1
                                match
                                set
                                1
                                set
                                OSPF
                                RIP
                                OSPF
                                RIP
                                type-1
                                10
                                40

```

```

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

```

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

28.1.22 match length

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

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

```

serial 1/0                                500
GigabitEthernet 1/0
Ruijie(config)# interface GigabitEthernet 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 interface GigabitEthernet 0/0

```

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

28.1.23 match metric

match metric **no**

match metric *metric*
no match metric

<i>metric</i>	0-4294967295

```

                                OSPF
                                RIP
                                RIP
                                IP
                                OSPF

                                OSPF
                                RIP
                                RIP
                                IP
                                OSPF

                                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

```



set metric	
set metric-type	
set tag	

28.1.24 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	

28.1.25 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

OSPF

RIP

RIP
IP

OSPF

route maps

match	1	match	1	set
		set		

RIP

OSPF

RIP

OSPF

```
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

PÂ ðÀ 5BÊ }j=x— G£Ê Ô<2°P

<i>tag</i>	
------------	--

```

match tag          tag
                                OSPF
                                RIP
                                RIP
                                IP
                                OSPF
                                route maps
                                match
                                1          match          1          set
                                match          set
                                RIP          OSPF          RIP          OSPF
                                50  80

```

```

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

```

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

set metric-type	
set tag	

28.1.27 maximum-paths

maximum-paths no

maximum-paths *number*

no maximum-paths

<i>number</i>	1-32

32

maximum-paths

show running config

ipv4 ipv6

ipv6

ipv4

S8600/S5750/S7600

OSPF

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

BGP

as,ip-addr

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

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

28.1.30 set as-path prepend

```

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

```

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

AS_PATH

as-path 15 as

```
Ruijie(config)# route-map set-as-path
Ruijie(config-route-map)# match as-path 1
Ruijie(config-route-map)# set as-path prepend 100 101 102
```

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

28.1.31 set comm-list delete

match COMMUNITY_LIST community
set comm-list delete no

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

--	--

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

```

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

```

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

set local-preference	
----------------------	--

28.1.32 set community

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

community-number	additive	none
AA:NN(:2) 0-4294967295 internet Internet local-as AS	no-advertise BGP peers no-export EBGP peers	community

```
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	

28.1.33 set dampening

```
match
no
```

set dampening

```
set dampening half-life reuse suppress max-suppress-time
no set dampening
```

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

```

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

```

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

28.1.34 set default interface

```

match
set default interface no

```

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

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

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

set default interface

1

set down set

serial 1/0 GigabitEthernet 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 GigabitEthernet 1/0
```

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

set metric	
set metric-type	

28.1.36 set interface

match
no

set interface

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

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

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

set interface

1

down

set

set

null 0

serial 1/0

500

GigabitEthernet 0/0

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

```

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

Ruijie(config)#route-map smallpak permit 10
Ruijie(config-route-map)#match length 0 500
Ruijie(config-route-map)#set interface GigabitEthernet 0/0

```

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

28.1.37 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] ]

```

ip-address	IP
weight	

set WCMP weight WCMP WCMP
set ip default next-hop IP 32
 ip address weight 4 nexthop
 next-hop weight set
 WCMP WCMP
 weight nexthop weight 1
set ip next-hop set ip default next-hop set ip next-hop
set ip default next-hop
 (nexthop)
 1
 set
 1 1.1.1.1
 6.6.6.6 2.2.2.2
 7.7.7.7

route-map	
match ip address	

set default interface

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

28.1.39 set ip next-hop

match **no** **IP** **set ip**
next-hop
set ip next-hop

WCMP next-hop weight set
weight nexthop weight 1

1

set

serial 1/0

10.0.0.0/8

set ip precedence

IP

```
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

GigabitEthernet 0/0 192.168.217.68
precedence 4

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



IP

TOS

GigabitEthernet 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 GigabitEthernet 0/0  
Ruijie(config-if)#ip policy route-map name
```

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

28.1.43 set level

```
match  
level no set  
set level {level 1 | level 2 | level 1-2 | stub-area | backbone}  
no set level
```

OSPF RIP backbone
Ruijie(config)#

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
```

```

set metric + - metric
RIP metric 1-16
OSPF
RIP RIP
OSPF IP
route maps
match 1 match 1 set
OSPF RIP
40

```

```

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

```

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	

28.1.46 set metric-type

```

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

```

<i>type</i>	

```

OSPF type-2

```

```

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

```

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

28.1.47 set next-hop

```

match IP set
next-hop no
set next-hop ip-address
no set next-hop ip-address

```

<i>ip-address</i>	IP

```

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

```

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

28.1.48 set origin

match
no

set origin

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	

28.1.49 set originator-id

```

match
originator-id no set
set originator-id ip-addr
no originator-id [ip-addr]

```

	[
--	---

```
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	

28.1.50 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
```

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

Tm[(match route-t)-10(y)13(pe)-223()]TJ/C

BGP

BGP in 1.1.1.1
100

```
Ruijie(config)# router bgp 1
Ruijie(config-router)# neighbor 1.1.1.1 route-map nei-rmap-in in
Ruijie(config-router)# exit
Ruijie(config)# route-map nei-rmap-in permit 10
Ruijie(config-route-map)# set weight 100
```

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

28.2.1 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
```

28.2.2 show ip route

```
IP show ip route
show ip route [[vrf vrf_name] [network [maskcountw 1.086 0 Td(Td(vr6[]Tj/T5FC>] Tf30Tj/T
```

show ip route

Ruijie# **show ip route**

```
Ruijie# show ip route 30.0.0.0
Routing entry for 30.0.0.0/8
Distance 110, metric 20
Routing Descriptor Blocks:
*192.1.1.1, 00:01:11 ago, via VLAN 1, generated by OSPF, extern 2
show ip route network
```

Routing Descriptor Blocks	IP BGP

show ip route count

```
Ruijie# show ip route count
----- route info -----
the num of active route: 5
```

show ip route weight

```
Ruijie# show ip route weight
-----[distance/metric/weight]-----
S   23.0.0.0/8 [1/0/2] via 192.1.1.20
S   172.0.0.0/16 [1/0/4] via 192.0.0.1

0.0.0.0/0      192.168.1.2      track      show
ip route track-table track
Ruijie#show ip route track-table
ip route 0.0.0.0 0.0.0.0 192.168.1.2 track 1 state is [undefined]
```

28.2.3 show ipv6 prefix-list

IPv6

show ipv6 prefix-list

show ipv6 prefix-list [prefix-name]

prefix-name	IPv6

IPv6

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

29 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	
port	IPv6 ipv6 icmp tcp udp 0-255 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
dscp	, 0-63
dst	
dst-wildcard	0.255.0.32
precedence	0-7

range	
time-range tm-rng-name	tm-rng-name
tos	0-15
cos	cos (0-7)
icmp-type	ICMP

access-list *id* {deny | permit} tcp {source source-wildcard | host Source | any} {host source-mac-address | any} [operator port [*port*]] {destination destination-wildcard | host destination | any} {host destination-mac-address | any} [operator port [*port*]] [[dscp *dscp*] | [[precedence *precedence*][tos *tos*]]] [time-range *time-range-name*]

User Datagram Protocol (UDP)

access-list *id* {deny | permit} udp {source source -wildcard | host source | any} [operator port [*port*]] {destination destination-wildcard | host destination | any} [operator port [*port*]] [[dscp *dscp*] | [[precedence *precedence*][tos *tos*]]] [time-range *time-range-name*]

3)

access-list *list-remark text*

<i>id</i>	1-99 100-199 1300-1999 2000-2699 2700-2899 700-799
deny	
permit	
<i>source</i>	

source-wildcard E291182 456.62 0.24 0.48 re f 291182 456.62 394.98 0.48 re

<i>icmp-code</i>	ICMP	0-255
<i>icmp-message</i>	ICMP	
<i>operator</i>	lt- eq- gt- neq- range-	
port [<i>port</i>]	<i>range</i>	
<i>text</i>		

ACL

access-list

echo-reply
fragment-time-exceeded
general-parameter-problem
host-isolated
host-precedence-unreachable
host-redirect
host-tos-redirect
host-tos-unreachable
host-unknown
host-unreachable
information-reply
information-request
mask-reply
mask-request
mobile-redirect
net-redirect
net-tos-redirect
net-tos-unreachable
net-unreachable
network-unknown
no-room-for-option
option-missing
packet-too-big
parameter-problem
port-unreachable
precedence-unreachable
protocol-unreachable
redirect
router-advertisement
router-solicitation
source-quench
source-route-failed
time-exceeded
timestamp-reply
timestamp-request
ttl-exceeded
unreachable

TCP TCP

bgp (179)
chargen (19)
cmd (514)
daytime (13)
discard (9)
domain (53)
echo (7)
exec (512)
finger (79)
ftp (21)
ftp-data (20)
gopher (70)
hostname (101)
ident (113)
irc (194)
klogin (543)
kshell (544)
login (513)
nntp (119)
pim-auto-rp (496)
pop2 (109)
pop3 (110)
smtp (25)
sunrpc (111)
tacacs (49)
syslog (514)
talk (517)
telnet (23)
time (37)
uucp (540)
whois (43)
www (80)

UDP

UDP

biff (512)
bootpc (68)
bootps (67)

discard (9)
dnsix (195)
domain (53)
echo (7)
isakmp (500)
mobile-ip (434)
nameserver (42)
netbios-dgm (138)
netbios-ns (137)
netbios-ss (139)
ntp (123)
pim-auto-rp (496)
rip (520)
snmp (161)
snmptrap (162)
sunrpc (111)
syslog (514)
tacacs (49)
talk (517)
tftp (69)
time (37)
who (513)
xdmcp (177)

```
1 IP
   IP                               192.168.1.64 - 192.168.1.127
```

```
Ruijie(config)# access-list 1 permit 192.168.1.64 0.0.0.63
```

```
2 IP
   IP           DNS      ICMP
```

```
Ruijie(config)# access-list 102 permit tcp any any eq domain
```

```
Ruijie(config)# access-list 102 permit udp any any eq domain
```

```
Ruijie(config)# access-list 102 permit icmp any any echo
```

```
Ruijie(config)# access-list 102 permit icmp any any echo-reply
```

show access-lists	ACL
ip access-group	ACL
V10.0	V10.0

29.1.2 deny

(deny) ACL ACL

1) IP

[sn] deny {source source-wildcard | host source | any}

2) IP

[sn] deny protocol source source-wildcard destination destination-wildcard [precedence precedence] [tos tos] [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]] [[dscp dscp] | [[precedence precedence][tos tos]]] [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]] [[dscp dscp] | [[precedence precedence][tos tos]]] [time-range time-range-name]

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]] [[dscp dscp] | [[precedence precedence][tos tos]]] [time-range time-range-name]

access-list	access-list

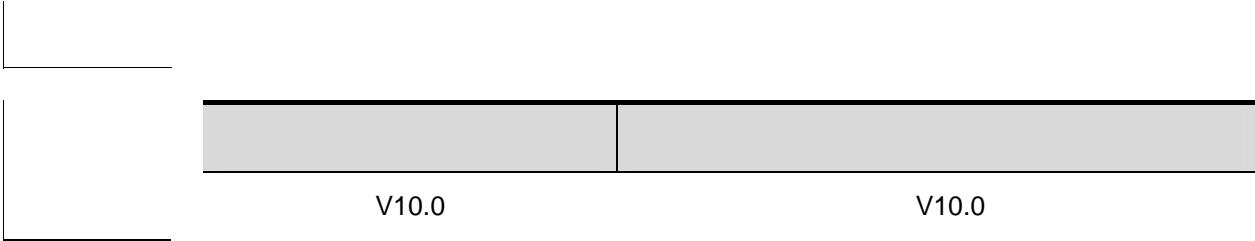
ACL

ACL

ACL

```
1      IP      ACL      IP 192.168.4.12      TCP
      100      gigabitethernet 1/1
Ruijie(config)# ip access-list extended ip-ext-acl
Ruijie(config-ext-nacl)# deny tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended ip-ext-acl
10 deny tcp host 192.168.4.12 eq 100 any
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface gigabitethernet 1/1
Ruijie(config-if)# ip access-group ip-ext-acl in
Ruijie(config-if)#

2      IP      ACL      IP 192.168.4.12
      gigabitethernet 1/1
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
```



V10.0	V10.0

29.1.4 ip access-group

ACL	ip access-group
no	
ip access-group { <i>id</i> <i>name</i> } { in out }	
no ip access-group { <i>id</i> <i>name</i> } { 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	

ACL

	V10.0	V10.0
--	-------	-------

29.1.5 ip access-list

ACL IP ACL IP ACL no
ACL
ip access-list {extended | standard} {id |

V10.0	V10.0

29.1.6 ip access-list resequence

ip 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>	

start-sn 10

inc-sn 10

show access-lists

ACL

M8600-FW# **show access-lists**

ip access-list standard 1

10 permit host 192.168.4.12

20 deny any any

M8600-FW # **config**

M8600-FW(config)# **ip access-list resequence 1 21 43**

M8600-FW(config)# **end**

M8600-FW# **show access-lists**

ip access-list standard 1

21 permit host 192.168.4.12

64 deny any any

M8600-FW#

show access-lists	ACL

V10.0	V10.0

29.1.7 list-remark

ACL no

list-remark *text*

<i>text</i>	

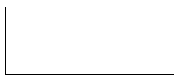
ACL

ACL

```
Ruijie# ip access-list extended 102
Ruijie(config-ext-nacl)# list-remark this acl is to filter the host
192.168.4.12
Ruijie(config-ext-nacl)# show access-lists
ip access-list extended 102
deny ip host 192.168.4.12 any
1000 hits
this acl is to filter the host 192.168.4.12
Ruijie(config-ext-nacl)#
```

show access-lists	ACL

	ip access-list	IP ACL
--	-----------------------	--------



deny	ACL
permit	ACL

V10.0	V10.0

29.1.9 permit

(permit) ACL ACL

1) IP

[sn] **permit** {source source-wildcard | host source | any}

2) IP

[sn] **permit protocol** source source-wildcard destination destination-wildcard [precedence precedence] [tos tos] [fragments] [time-range time-range-name]

IP

Internet Control Message Protocol (ICMP)

[sn] **permit icmp** {source source-wildcard | host source | any} {destination destination-wildcard | host destination | any} [icmp-type] [[icmp-type [icmp-code] | [icmp-message]] [[dscp dscp] | [[precedence precedence][tos tos]]] [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]] [[dscp dscp] | [[precedence precedence][tos tos]]] [time-range time-range-name]

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]] [[dscp dscp] | [[precedence precedence][tos tos]]] [time-range time-range-name]

--	--

	deny	ACL
	V10.0	V10.0 arp V10.2(3)

29.2.1 show access-group

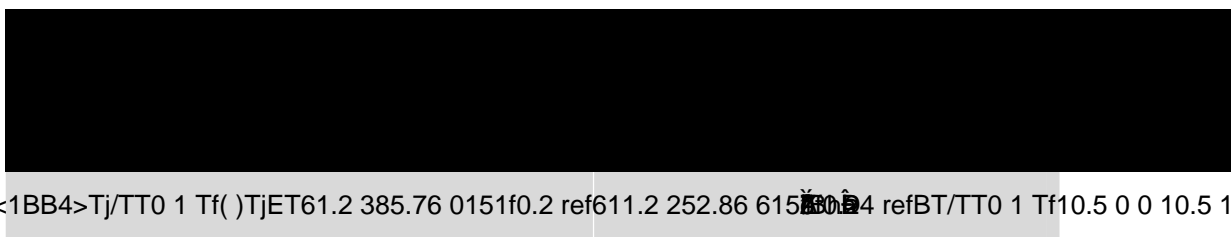
ACL

show access-group [interface <interface>]

	<interface>	

ACL

ACL



show ip access-group[interface <interface>]

<interface>	

ACL

ACL

```
Ruijie# show ip access-group interface gigabitethernet 0/1
ip access-group aaa in
Applied On interface GigabitEthernet 0/1.
```

ip access-group	ACL

V10.0	V10.0

30

30.1.1 acpp

ACPP control-plane acpp
no acpp

acpp bw-rate rate bw-burst-rate burst-rate

no acpp

<i>rate</i>	pps
<i>burst-rate</i>	pps

ACPP

control-plane

1

200pps

300pps

G!50

Ruijie(config)# control-plane data

Ruijie(config-cp)# acpp bw-rate 200 bw-burst-rate 300

30.1.2 arp-car

-	-

ARP
arp-car
no arp-car

Glean-CAR

control-plane

arp-car packet_rate_per_group [total-bw-rate rate]

no arp-car

packet_rate_per_group	pps
rate	Arp pps

ARP-CAR
5pps

ARP

control-plane

1
10pps

ARP

Ruijie(config)# control-plane manage

Ruijie(config-cp)# arp-car 10

Ruijie(config)# control-plane {protocol manage data}	control-plane

-	-

30.1.3 control-plane

control-plane

control-plane

exit control-plane

control-plane {protocol | manage | data}



protocol

	<i>Interface</i>	
	MPP	
	control-plane	
	1 interface vlan 100 telnet snmp Ruijie(config)# control-plane manage Ruijie(config-cp)# management-interface vlan 100 allow snmp telnet	
	Ruijie(config)# control-plane {protocol manage data}	control-plane
	-	-

30.1.6 port-filter

	Port-Filter	Port-Filter	control-plane
	port-filter	no	Port-Filter
	port-filter		
	no port-filter		
	-		-
	Port-Filter		

control-plane

1

Port-Filter

Ruijie(config)# control-plane manage

Ruijie(config-cp)# port-filter

Ruijie(config)# control-plane {protocol manage data}	control-plane

-	-
---	---

30.1.7 scpp

SCPP

control-plane

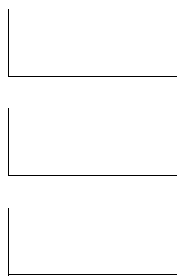
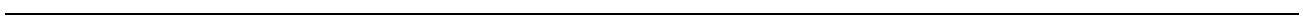
scpp

no scpp

scpp list *acl_no* {**bw-rate** *bw-rate* **bw-burst-rate** *bw-burst-rate* | **conn-total** *conn-num* | **conn-create-rate** *conn-create-rate* **conn-create-burst-rate** *conn-create-burst-rate*}

no scpp list *acl_no*

<i>acl_no</i>	
<i>bw-rate</i>	pps
<i>bw-burst-rate</i>	pps
<i>conn-num</i>	
<i>conn-create-rate</i>	/s
<i>conn-create-burst-rate</i>	/s



SCPP

control-plane

TCP

192.168.52.0
100pps 150pps

31 VRRP

31.1.1 vrrp authentication

```

VRRP                               no
vrrp group authentication string
no vrrp group authentication

group VRRP
string VRRP ( 8 )

VRRP VRRP

```

```

VRRP / VRRP

VRRP 1
vrrp 1 authentication x30dn78k

```

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

31.1.2 vrrp delay

```

VRRP
vrrp delay { minimum min-seconds | reload reload-seconds }

```

no vrrp delay

min-seconds

VRRP

min-seconds

reload-seconds

VRRP

min-seconds

reload-seconds

VRRP

min-seconds

group VRRP

text VRRP

VRRP

VRRP

VRRP

```
secondary          IP          no          IP          IP
VRRP              IP
IP                0          VRRP        VRRP        1
IP      10.0.1.20  IP      10.0.2.20

interface GigabitEthernet 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
```

15 VRRP (200)

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

Ruijie(config-if)# vrrp group ip <i>ipaddress [secondary]</i>	VRRP IP
Ruijie(config-if)# vrrp group priority <i>level</i>	VRRP

31.1.6 vrrp priority

VRRP no

```
vrrp group priority level  
no vrrp group priority
```

group VRRP VRRP

31.1.7 vrrp timers advertise

```

VRRP no
vrrp group timers advertise interval
no vrrp group timers advertise

group VRRP
interval VRRP ( )

1 VRRP VRRP

VRRP VRRP VRRP

VRRP 4
vrrp 1 timers advertise 4
```

--	--

```
Ruijie(config-if)# vrrp group ip  
ipaddress [ vrrp
```



```

retry-value:                                retry-value
                                             1

priority                                    VRRP
                                             10

                                             VRRP
                                             VRRP
                                             IP

( Routed Port SVI Loopback Tunnel )      IP
ping

VRRP          VRRP  1 Routed Port Fa1/1   Fa1/1
              30   Fa1/1                 VRRP  1
vrrp 1 track GigabitEthernet 1/1 30

#          VRRP          BFD          192.168.1.3

Ruijie#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

Ruijie(config)#interface GigabitEthernet 0/1

Ruijie(config-if)#no switchport

Ruijie(config-if)#ip address 192.168.1.1 255.255.255.0

Ruijie(config-if)#bfd interval 50 min_rx 50 multiplier 3

Ruijie(config)#interface GigabitEthernet 0/2

Ruijie(config-if)#no switchport

Ruijie(config-if)#ip address 192.168.201.17 255.255.255.0

Ruijie(config-if)#vrrp 1 priority 120

```


Ruijie# **debug vrrp events**

VRRP

Rui56.44 149.4 7.48 f-0.467.82 7

31.2.4 debug vrrp packets

```
VRRP no
debug vrrp packets
no debug vrrp packets
```

```
VRRP
```

```
VRRP
```

```
VRRP 1
```

```
Ruijie# debug vrrp packets
Ruijie#
VRRP: Grp 2 sending Advertisement checksum DD4D
VRRP: Grp 2 sending Advertisement checksum DD4D
VRRP: Grp 2 sending Advertisement checksum DD4D
```

```
IP , VRRP VRRP 1
```

```
Ruijie# debug vrrp packets
Ruijie#
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
```

31.2.5 debug vrrp state

```
VRRP no
debug vrrp state
no debug vrrp state
```

```
VRRP
```

```
VRRP
```

```
Ruijie# debug vrrp state
Ruijie#
%VRRP-6-STATECHANGE: GigabitEthernet 0/0 Grp 2 state Master ->
Backup
```

```
%VRRP-6-STATECHANGE: GigabitEthernet 0/0 Grp 2 state Backup ->
Master
Ruijie# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# interface GigabitEthernet 0/0
Ruijie(config-if)# no shutdown
Ruijie(config-if)# end
Ruijie#
%VRRP-6-STATECHANGE: GigabitEthernet 0/0 Grp 2 state Master -> Init
Ruijie#
```

31.3.1 show vrrp

VRRP

show vrrp [**brief** | *group*]

brief	VRRP
<i>group</i>	VRRP

VRRP

VRRP

```
Ruijie# show vrrp
GigabitEthernet 0/0 - Group 1
State is Backup
Virtual IP address is 192.168.201.1 configured
Virtual MAC address is 0000.5e00.0101
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 100
Master Router is 192.168.201.213 , pritority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
GigabitEthernet 0/0 - Group 2
State is Master
Virtual IP address is 192.168.201.2 configured
Virtual MAC address is 0000.5e00.0102
Advertisement interval is 3 sec
Preemption is enabled
```

```

min delay is 0 sec
Priority is 120
Master Router is 192.168.201.217 (local), priority is 120
Master Advertisement interval is 3 sec
Master Down interval is 9 sec
Ruijie#

```

VRRP

```
Ruijie# show vrrp brief
```

```

Interface          Grp Pri Time  Own Pre State  Master addr  Group
addr
GigabitEthernet 0/0  1  100  -  -  P  Backup  192.168.201.213
192.168.201.1
GigabitEthernet 0/0  2  120  -  -  P  Master  192.168.201.217
192.168.201.2
Ruijie#

```

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

31.3.2 show vrrp interface

VRRP

```
show vrrp interface type number [ brief ]
```

type

number

brief

E1/0 VRRP

```

Ruijie# show vrrp interface GigabitEthernet 0/0
GigabitEthernet 0/0 - Group 1
State is Backup
Virtual IP address is 192.168.201.1 configured
Virtual MAC address is 0000.5e00.0101
Advertisement interval is 3 sec
Preemption is enabled
min delay is 0 sec
Priority is 100
Master Router is 192.168.201.213 , pritority is 120

```

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



```
Ruijie(config-if)# vrrp group ip
ip address [ secondary ]
```


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
40	0%	0%	0%	ip6_tunnel_rcv_pkt
41	0%	0%	0%	res6t
42	0%	0%	0%	tunrt6
43	0%	0%	0%	ef6_rcv_msg
44	0%	0%	0%	ef6_inconsistent_daemon
45	0%	0%	0%	imid
46	0%	0%	0%	nsmd
47	0%	0%	0%	ripd
48	0%	0%	0%	ripngd
49	0%	0%	0%	ospfd
50	0%	0%	0%	ospf6d
51	0%	0%	0%	bgpd
52	0%	0%	0%	pimd
53	0%	0%	0%	pim6d
54	0%	0%	0%	pdmd
55	0%	0%	0%	dvmrpd
56	0%	0%	0%	vty_connect
57	0%	0%	0%	aaa_task
58	0%	0%	0%	Tlogtrap
59	0%	0%	0%	dhcp6c
60	0%	0%	0%	sntp_recv_task
61	0%	0%	0%	ntp_task
62	0%	0%	0%	sla_daemon
63	0%	3%	1%	track_daemon
64	0%	0%	0%	pbr_guard
65	0%	0%	0%	vrrpd
66	0%	0%	0%	psnpsd


```

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

32.1.2 cpu-log

```

CPU          ,          cpu-log
cpu-log log-limit low_num high_num

log-limit
low_num CPU
high_num CPU

100%          90%

CPU          CPU          CPU          CPU
CPU          ,          ,          CPU          CPU

CPU          CPU          70% CPU
80%

ruijie(config)# cpu-log log-limit 70 80
CPU          80%
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: CPU utilization in one
minute : 95% Using most cpu's task is ktimer : 94%
CPU          70%
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: CPU
utilization in one minute :68% Using most cpu's task
is ktimer : 60%
Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: The CPU
using rate has down!
    
```

33.1.1 threshold set

no
 CPU CPU CPU CPU CPU MIB
 syslog syslog

threshold set {cpu | memory | temperature} [M1 | M2 | slot *n* | member *n*]
warning_value critical_value

no threshold set {cpu | memory | temperature}

cpu memory temperature	<table> <tr> <td>CPU</td> <td>memory</td> <td>cpu</td> </tr> <tr> <td>temperature</td> <td></td> <td></td> </tr> </table>	CPU	memory	cpu	temperature				
CPU	memory	cpu							
temperature									
M1 M2 slot <i>n</i>	<i>n</i>								
member <i>n</i>	<i>n</i>								
<i>warning_value</i>	<table> <tr> <td>1 ~ 100</td> <td>cpu temperature</td> <td>memory</td> <td>0 ~</td> </tr> <tr> <td>2147483647</td> <td></td> <td></td> <td></td> </tr> </table>	1 ~ 100	cpu temperature	memory	0 ~	2147483647			
1 ~ 100	cpu temperature	memory	0 ~						
2147483647									
<i>critical_value</i>	<table> <tr> <td>memory</td> <td>1 ~ 100</td> <td>temperature</td> <td>cpu</td> </tr> <tr> <td>0 ~ 2147483647</td> <td></td> <td></td> <td></td> </tr> </table>	memory	1 ~ 100	temperature	cpu	0 ~ 2147483647			
memory	1 ~ 100	temperature	cpu						
0 ~ 2147483647									
no									

```

CPU                90          100.
                  90          100.
                  90          100.

```

```

1                M1
Ruijie(config)# threshold set memory M1 70 90

```

```

2                CPU
Ruijie(config)# threshold set cpu member 2 70 90

```

show threshold	

```

M1 | M2 | slot n | member n]  FW

```

10.3(4b3)	

33.2.1 show threshold

```

show threshold {cpu | memory | temperature} [M1 | M2 | slot n | member n]

```

cpu memory temperature	cpu CPU
	memory
	temperature

34

34.1.1 shodSmoryn

	OVERFLOW
high	OVERFLOW

3.

34.1.2 memory-lack exit-policy

worsen
 BGP OSPF RIP PIM-SM
memory-lack exit-policy (bgp|ospf|pim-sm|rip)
no memory-lack exit-policy

bgp ospf pim-sm rip	BGP OSPF PIM RIP
no	

lower (show memory lower)

bgp BGP

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

show memory	

PIM-SM	FW	BGP
10.3(4b3)		

34.1.3 show memory protocols

show memory protocols

35

35.1.1 logging on

```
no  
logging on  
no logging on
```

```
RGOS Console VTY  
FLASH Syslog Server
```

1 Log

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

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

logging trap	Syslog Server
--------------	---------------

35.1.2 terminal monitor

```

VTY
no
terminal monitor
terminal no monitor

VTY          VTY

VTY          VTY

```

说明:

```

RGOS
0 1
no ,

```

```

VTY
Ruijie# terminal monitor
Ruijie#

```

35.1.3 logging buffered

```

no
logging buffered [buffer-size | level]
no logging buffered

buffer-size          4K  128K Bytes
level                0  7

4k Bytes

```

35.1.4 logging server

server	Syslog Sever		
	Syslog Server	no	Syslog
logging server {ng (vrf)			

logging file flash:filename [max-file-size] [level]

no logging file

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

FLASH

Syslog Server
FLASH
txt

注意:

- 1.
- 2.
3. 15
FLASH FLASH 16

6 FLASH trace.txt 64K,

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

logging on	
show logging	

Debugging (7)

VTY terminal monitor
VTY logging monitor
Logging monitor VTY

VTY 6
Ruijie(config)# logging monitor informational

logging on	
show logging	

35.1.8 logging trap

no Syslog Server Syslog Server
logging trap *level*
no logging trap

level 1

Informational(6)

Server Syslog Server logging Syslog
logging trap
show logging

6

202.101.11.22

Syslog Server

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

logging on	
logging	Syslog Server
show logging	

35.1.9 logging source interface

no

logging source interface *interface-type interface-number*

no logging source interface

interface-type

interface-number

Syslog Server

Loopback 0

Syslog

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

--	--

logging	Syslog Server
---------	---------------

35.1.10 logging source ip| ipv6

no

logging source {ip *ip-address* | ipv6 *ipv6-address*}

no logging source {ip | ipv6}

<i>ip-address</i>	IPV4	IPV4
<i>ipv6-address</i>	IPV6	IPV6

Syslog Server

Loopback 0 Syslog

Ruijie(config)# **logging source ip** 192.168.1.1

logging	Syslog server

35.1.11 logging facility

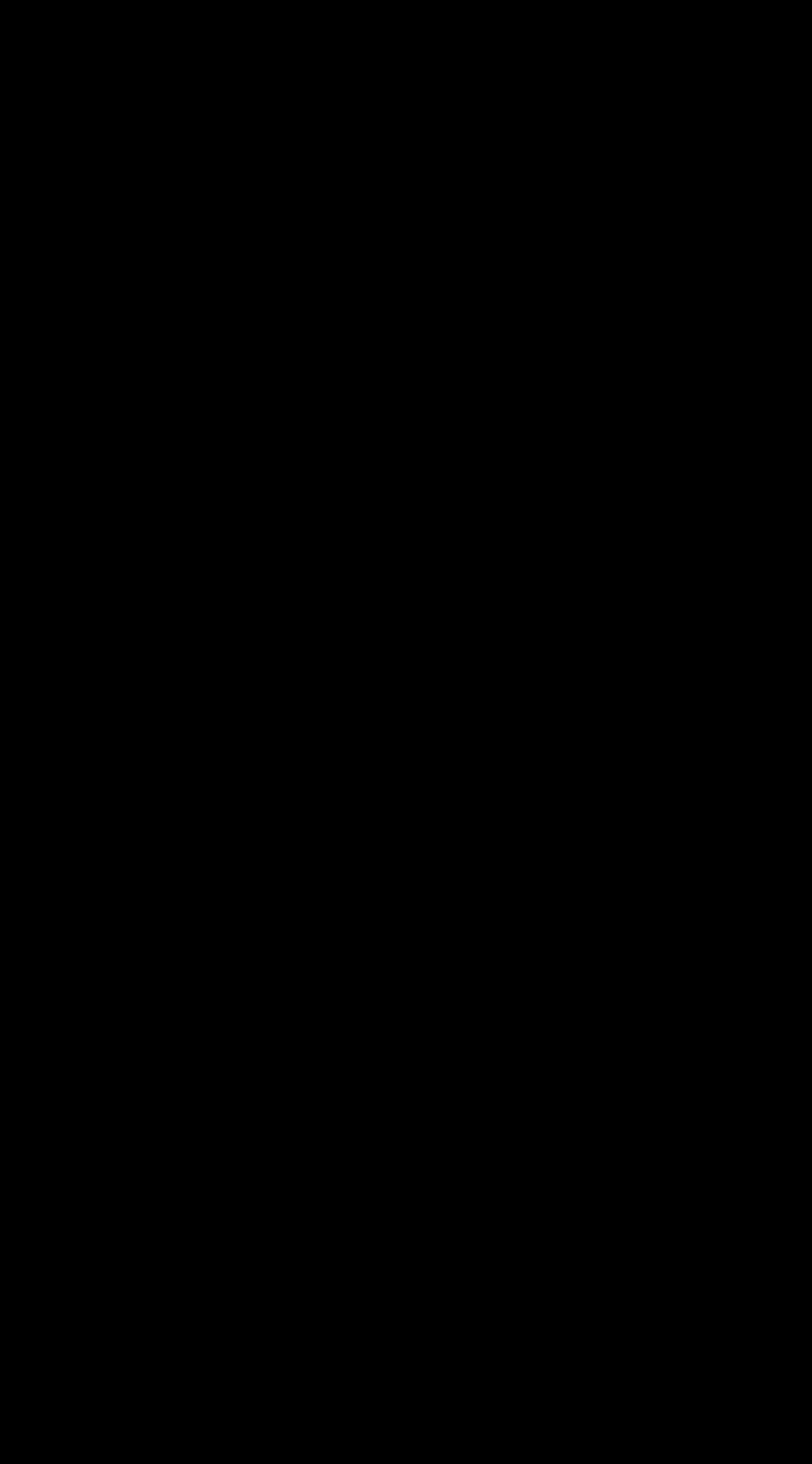
no

(23)

logging facility *facility-type*

no logging facility

facility-type Syslog



d

21	local use 5 (local5)
22	local use 6 (local6)
23	local use 7 (local7)

RGOS (local7) 23

Syslog kernel

Ruijie(config)# **logging facility kern**

logging console	

35.1.12 logging count

no

logging count

no logging count

no logging count

Ruijie(config)# **logging count**

--	--

show logging count	
show logging	

35.1.13 logging rate-limit

no

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

no logging rate-limit

number 1—10000

all 0—7

console

except error(3)

error

severity 0—7;

debug 10 warning

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

show logging count	
show logging	

35.1.14 logging synchronous

no

logging synchronous

no logging synchronous

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

logging on	
service timestamps	

35.1.16 service timestamps

no

default

service timestamps *message-type* [*uptime* | *datetime* [*msec* | *year*]]

no service timestamps *message-type*

default service timestamps *message-type*

<i>message-type</i>	debug	log	debug	log	0	6
			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
```

logging on	
service sequence-numbers	

35.1.17 service sysname

no

service sysname
no service sysname

clear logging

Ruijie# **clear logging**

logging on	
show logging	
logging buffered	

35.2.1 show logging

show logging

show logging

```
Ruijie# show logging  
Syslog logging: enabled  
Console logging: level debugging, 4 messages logged  
Monitor logging: level informational, 0 messages logged  
Buffer logging: level debugging, 6 messages logged  
Timestamp debug messages: datetime  
Timestamp log messages: disabled
```

```

Sequence log messages: enable
Trap logging: level debugging, 2 message lines logged,0 reserved,0
fail
logging to 202.101.11.22
logging to 192.168.200.112
Log Buffer (Total 4096 Bytes) : have written 680
00001 2004-11-17 10:20:59 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/0, changed state to up
00002 2004-11-17 10:20:59 Ruijie: %7:%LINE PROTOCOL CHANGE:
Interface FastEthernet 0/0, changed state to UP
00003 2004-11-17 10:57:18 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/1, changed state to administratively down
00004 2004-11-17 10:57:21 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/1, changed state to down
00005 2004-11-17 10:57:41 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/1, changed state to administratively down
00006 2004-11-17 10:57:43 Ruijie: %7:%LINK CHANGED: Interface
FastEthernet 0/1, changed state to down

```

Syslog logging	disabled enabled,
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	

35.2.2 show logging count

show logging count

logging count **logging count** **show**
show logging

show logging count

```
Ruijie# show logging count
Module Name  Message Name Sev Occur      Last Time
=====SYS
CONFIG_I      5  1      Jul 6 10:29:57
-----SYS  TOTAL
1
```

logging count	
show logging	
clear logging	

36 RLOG

36.1.1 rlog export-rate

rlog export-rate *number*

no rlog export-rate

	number	

1000

36.1.2 rlog filter

rlog filter number

no rlog filter

number	ACL

ACL

1 ACL 2000
Ruijie(config)# **rlog filter 2000**

-	-

10.3(4b6)	

36.1.3 rlog mtu

rlog mtu number

no rlog mtu

--	--

RLOG

	<i>number</i>	
	1500	
	Ruijie(config)# rlog mtu 1200	
	-	
	-	

```
Ruijie(config)# rlog port 11000
```

	-	
	10.3(4b6)	vrf

36.1.6 rlog type

rlog type *n* **priority** *prio*

no rlog type

	n	
	prio	

1
Ruijie(config)#

rlog type 24 priority 5

	-	-

show rlog-type 0-7



	10.3(4b6)	
--	-----------	--

36.2.1 show rlog

Show rlog

	-	-

|

|

|

|

1

```
Ruijie# show rlog
rlog server is enable
  mtu 1200 port 13000 server 10.1.1.1
rlog export-rate 0 rlog queue remain 2048
send log count : 5244 error count : 0 errorno : 0
recv buf: 5244 poll buf err: 0 push buf: 5244
```

	-	-

|

|

--	--	--

	-	-
--	---	---

36.2.2 show rlog-type

Show rlog-type

	-	-

|

|

|

1

Ruijie# show rlog-type

```
XLOG_TYPE_FLOW          16
XLOG_TYPE_CPU_MEM       17
XLOG_TYPE_DISC          18
XLOG_TYPE_DEV_LOG       19
XLOG_TYPE_URL_AUDIT     20
XLOG_TYPE_IP_APP        21
XLOG_TYPE_IP            22
XLOG_TYPE_CHANNEL       23
XLOG_TYPE_INTERFACE     24
XLOG_TYPE_IP_OFFLINE    25
```

	-	-

|

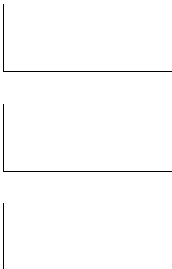
|

10.3(4b6)	

36.2.3 show rlog-status

Show rlog-status

-	-



1

Ruijie# show rlog-status

```

type                status  prio
XLOG_TYPE_FLOW      off
XLOG_TYPE_CPU_MEM   off
XLOG_TYPE_DISC       off
XLOG_TYPE_DEV_LOG   off
XLOG_TYPE_URL_AUDIT off
XLOG_TYPE_IP_APP     on      2
XLOG_TYPE_IP         off
XLOG_TYPE_CHANNEL    off
XLOG_TYPE_INTERFACE off
XLOG_TYPE_IP_OFFLINE off
    
```

-	-



|
|_____

--	--	--

37 SNMP

37.1.1 no snmp-server

```
SNMP no snmp-server
no snmp-server
```

```
SNMP
```

```
SNMP
```

```
SNMP
```

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

37.1.2 snmp-server chassis-id

```
SNMP snmp-server chassis-id
no
snmp-server chassis-id text
no snmp-server chassis-id
```

```
text
```

```
60FF60
```

```
SNMP
show snmp
```

SNMP 123456:

Ruijie(config)# **snmp-server chassis-id 123456**

show snmp	SNMP

37.1.3 snmp-server community

SNMP **snmp-server community**
no SNMP

snmp-server community *string* [**view** *view-name*] [[**ro** | **rw**] [**host** *ipaddr*] [*number*]
no snmp-server community *string*

string NMS SNMP
view-name
ro NMS MIB
rw NMS MIB
number 0-99 MIB NMS
ipaddr NMS MIB NMS

SNMP
MIB NMS
SNMP **no snmp-server**
MIB 192.168.12.1 NMS
Ruijie(config)#

```
Ruijie(config)# snmp-server community public ro 2
```

snmp-server

snmp-server enable traps

NMS

SNMP

vrf

[

vrf

]

SNMP

SNMP

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

snmp-server enable traps	

37.1.7 snmp-server location

SNMP

snmp-server location

no

SNMP

snmp-server location text

no snmp-server location

text

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

--	--

snmp-sever contact	SNMP
--------------------	------

37.1.8 snmp-server packetsize

SNMP
no

snmp-sever packetsize

snmp-server packetsize *byte-count*

no snmp-server packetsize

byte-count 484 17876

1500

SNMP 1492

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

€

4

4

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

snmp-server packetsize	SNMP

37.1.10 snmp-server system-shutdown

```
SNMP
system-shutdown no SNMP snmp-server
snmp-server system-shutdown
no snmp-server system-shutdown
```

SNMP

```
SNMP RGOS reload/reboot NMS
```

SNMP

```
Ruijie(config)#
```

SNMP

IP

SNMP

IP IP
IP SNMP

0 IP SNMP

Ruijie(config)# **snmp-server trap-source GigabitEthernet 0**

snmp-server enable traps	
snmp-server enable host	NMS

37.1.12 snmp-server trap-timeout

snmp-server trap-timeout

no

snmp-server trap-timeout *seconds*

no snmp-server trap-timeout

seconds

30

60

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

snmp-server queue-length	

snmp-server enable host	NMS
-------------------------	-----

37.1.13 snmp-server user

SNMP **snmp-server user** no

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

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

username

groupname

v1 | **v2** | **v3** SNMP v3

encrypted

16 SHA 16 MD5
 20

auth **md5** MD5 **sha** SHA

auth-password: 32

priv **des56** 56 DES *priv-password*
 32

snmpV3 md5 DES

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

show snmp user	SNMP

37.1.14 snmp-server group

37.2.1 show snmp

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

show snmp	SNMP	
show snmp mib		snmp mib
show snmp user	snmp	
show snmp view	snmp	
show snmp group	snmp	

SNMP

```
Ruijie# show snmp
Chassis: 60FF60
0 SNMP packets input
0 Bad SNMP version errors
0 Unknown community name
0 Illegal operation for community name supplied
0 Encoding errors
0 Number of requested variables
0 Number of altered variables
0 Get-request PDUs
0 Get-next PDUs
0 Set-request PDUs
0 SNMP packets output
0 Too big errors (Maximum packet size 1500)
0 No such name errors
0 Bad values errors
0 General errors
0 Response PDUs
0 Trap PDUs
SNMP global trap0 Trap PDUs
```