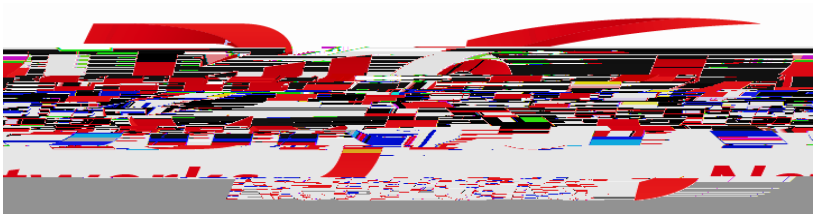


RGOS 10.3(4b6)p1

1.

Courier New 5

2.

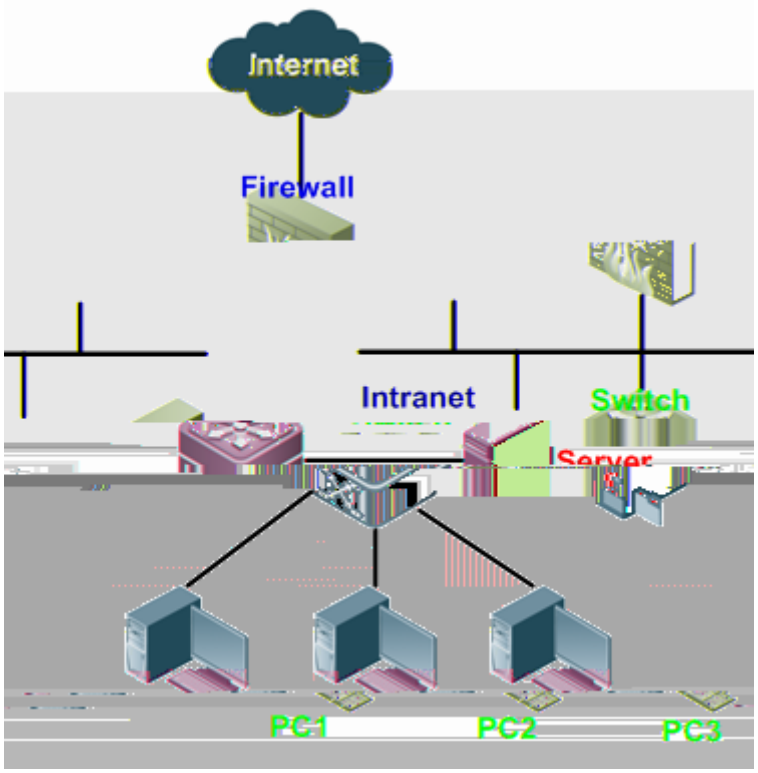
3.

4.

1

1.1

1.1.1



1

1.2

1.2.1

1.2.2

1.2.3

NAT

HA AS

1.2.4

1.2.5

2

2.1

/

P P

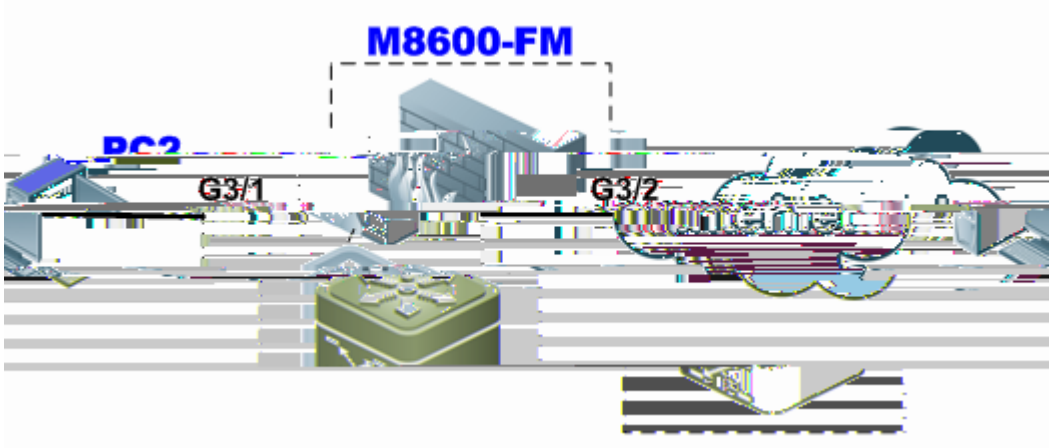
P

Step 3	[illegible]	[illegible]
Step 4		

Step 3	ip address *ip_addrss* *mask*	P
Step 4	interface vlan *vlan-id*	
Step 5	ip address *ip_addrss* *mask*	P

2.5

2.5.1



1

1

[illegible]

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# vlan 2
Ruijie(config-vlan)# exit
Ruijie(config)# vlan 3
Ruijie(config-vlan)# exit
Ruijie(config)# interface Gigabitethernet 3/1
Ruijie(config-if)# switchport access vlan 2
Ruijie(config-if)# exit
Ruijie(config)# interface Gigabitethernet 3/2
Ruijie(config-if)# switchport access vlan 3
Ruijie(config-if)# exit
```

7 [illegible]

[illegible])

[illegible]

```
Ruijie(config)# interface TenGigabitethernet 7/1
Ruijie(config-if)# port-group 2
Ruijie(config-if)# exit
Ruijie(config)# interface TenGigabitethernet 7/2
Ruijie(config-if)# port-group 2
Ruijie(config-if)# exit
```

[illegible]

```
Ruijie(config)# interface Aggretegateport 2
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# switchport trunk allowed vlan remove 1,4-4094
```

2

#

```
M8600-FW(config)#interface vlan 2
```

```
M8600-FW(config-if)#ip address 202.1.1.1 255.255.255.0
M8600-FW(config)#interface vlan 3
M8600-FW(config-if)# ip address 101.1.1.1 255.255.255.0
```

```
M8600-FW#show ip fpm counters
Droped packet counters:
Count     Reason
0         Non-IPv4 packet
0         Bad IPv4 header length
0         Bad IPv4 total length
0         IPv4 fragment with DF bit set
0         Too small IPv4 fragment
0         Bad IPv4 fragment offset
0         IPv4 fragment timeout
0         Bad IPv4 checksum
0         Invalid IPv4 address
0         Invalid TCP flags
0         Invalid TCP initial flags
0         Invalid TCP initial ACK number
0         Invalid TCP initial window
0         Invalid TCP sequence
0         Invalid ICMP message type
0         Invalid ICMP initial message type
0         Exceptional connection state
0         Droped by policy
0         Out of capability
<end>
Rejected or terminated connection counters:
```

```
Count     Reason
0         Out of life time
0         Exceptional TCP connection
0         Exceptional UDP connection
8         Exceptional ICMP connection
0         Exceptional RawIP connection
0         Rejected by policy
<end>
M8600-FW#show ip fpm statistics
The capacity of the flow table:2000000
Number of active flows:10
```

2.6

2.6.1

2.6.2

P

1 / 2

	[illegible]
	[illegible]
	[illegible]

1 2 / [illegible] [illegible]D

2 2 / [illegible]

[illegible] [illegible] [illegible]

2 2

2.7

2.8

Step 1	[illegible] configure terminal	
Step 2	[illegible] vlan *vlan-id*	[illegible]
Step 3	[illegible] exit	[illegible]
Step 4	[illegible] interface *interface-name interface-number*	
Step 5	[illegible] switchport access vlan *vlan-id*	[illegible] [illegible]

```
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# vlan 2
Ruijie(config-vlan)# exit
Ruijie(config)# vlan 3
Ruijie(config-vlan)# exit
Ruijie(config)# interface e
```

2.10

2.10.1

P

2.10.2

4 2

4 2

4

P

2.10.3

2.11

2.12

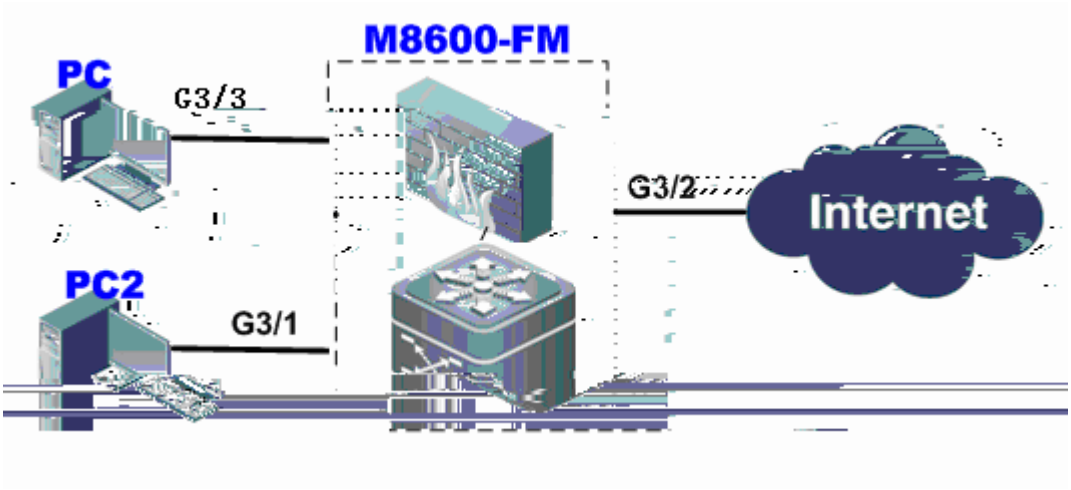
Step 1	configure terminal	
Step 2	vlan *vlan-id*	
Step 3		
Step 4	e	
Step 5	switchport access vlan *vlan-id*	
Step 6	vlan *vlan-id*	
Step 7		
Step 8	e	
Step 9	switchport access vlan *vlan-id*	
Step 10	vlan *vlan-id*	
Step 11		
Step 12	e	

Step 13 switchport access vlan *vlan-id*

Step 10	interface BVI *bridge-group id*	
Step 11	ip address *ip_addrss mask*	
Step 12	interface BVI *bridge-group id*	
Step 13	ip address *ip_addrss mask*	

2.12.1

2.12.2



3

1

[illegible]2 [illegible]3 [illegible] [illegible]
[illegible] [illegible] [illegible] [illegible] [illegible]
3 [illegible]

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# vlan 2
Ruijie(config-vlan)# exit
Ruijie(config)# vlan 3
Ruijie(config-vlan)# exit
Ruijie(config)# vlan 4
Ruijie(config-vlan)# exit
Ruijie(config)# interface Gigabitethernet 3/1
Ruijie(config-if)# switchport access vlan 2
Ruijie(config-if)# exit
Ruijie(config)# interface Gigabitethernet 3/2
Ruijie(config-if)# switchport access vlan 3
Ruijie(config-if)# exit
Ruijie(config)# interface Gigabitethernet 3/3
Ruijie(config-if)# switchport access vlan 4
Ruijie(config-if)# exit
```

7 [illegible]
[illegible])
[illegible]

```
Ruijie(config)# interface TenGigabitethernet 7/1
Ruijie(config-if)# port-group 2
Ruijie(config-if)# exit
Ruijie(config)# interface TenGigabitethernet 7/2
Ruijie(config-if)# port-group 2
Ruijie(config-if)# exit
```

[illegible]

```
Ruijie(config)# interface Aggretegateport 2
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# switchport trunk allowed vlan remove 1,5-4094
```

2

#

#

```
M8600-FW(config)#interface vlan 2
M8600-FW(config-if)#bridge-group 5
M8600-FW(config)#interface vlan 4
M8600-FWconfig-if)#bridge-group 5

#       VLAN3
M8600-FW(config)#interface bvi 5
M8600-FW(config-if)# ip address 202.1.1.1 255.255.255.0

M8600-FW(config)#interface vlan 3
M8600-FW(config-if)# ip address 101.1.1.1 255.255.255.0
```

3

3.1

3.1.1

3.1.2

VLAN

BVI

VLAN

VLAN

IP VLAN IP VLAN

VLAN VLAN

IP VLAN

Bridge-Group VLAN

VLAN

BVI

BVI

MTU	
LinkTrap	
VLAN	VLAN VLAN VLAN
BVI	BVI BVI BVI

3.1.3

VLAN VLAN
BVI VLAN IP BVI VLAN

3.1.4

3.2

Ruijie(config-if)# **description** *string*	32

VLAN 100

```
Ruijie# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# interface vlan 100
Ruijie(config-if)# description PortForUserA
Ruijie(config-if)# end
```

Up Down

down up

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

VLAN 100 shutdown

```
Ruijie# configure terminal
Ruijie(config)# interface vlan 100
Ruijie(config-if)# shutdown
```

3.3.4

D

1 2

NULL

Ruijie(config-if)# **carrier-delay** *seconds*	seconds <0-60>

VLAN 100

```
Ruijie# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# interface vlan 100
```

```
Ruijie(config-if)# carrier-delay 10
Ruijie(config-if)# end
```

3.3.5 MTU

MTU

MTU

MTU

MTU 4 1500

VLAN BVI NULL LOOPBACK

Ruijie(config-if)# **mtu** *num*	MTU MTU

dailer 100 MTU

```
Ruijie# config terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# interface dailer 100
Ruijie(config-if)# mtu 1000
Ruijie(config-if)# end
```

Ruijie(config-6(1 -1.54C.)Tj1.569 TDEtT1 1 0 Td(MTU)Tj4

3.3.7 VLAN

VLAN VLAN

interface vlan *vlan-id* VLAN
bridge-group VLAN

VLAN no bridge-group

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

VLAN Bridge-Group

Step 1	Ruijie(config)# **interface vlan** *vlan-id*	VLAN
Step 2	Ruijie(config-if)# **bridge-group** *bridge-group-id*	500 1---500

VLAN

100

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# interface vlan 10
Ruijie(config-if)# bridge-group 100
```

VLAN IP

Step 1	Ruijie(config)# **interface vlan** *vlan-id*	VLAN
Step 2	Ruijie(config-if)# **ip address** *ip_address* *subnet_mask*	IP

VLAN IP

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# interface vlan 100
Ruijie(config-if)# ip address 192.168.100.1 255.255.255.0
Ruijie(config-if)#
```

3.3.8 BVI

BVI BVI

interface bvi *bridge-group-id* BVI

BVI **no interface bvi** *bridge-group-id*

BVI IP BVI

Step 1	Ruijie(config)# **interface bvi** *bridge-group-id*	BVI 500 1---500
Step 2	Ruijie(config-if)# **ip address** *ip_address subnet_mask*	IP

VLAN

BVI BVI IP

```
Ruijie# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ruijie(config)# interface vlan 100
Ruijie(config-subif)# bridge-group 100
Ruijie(config-subif)# exit
Ruijie(config)# interface vlan 200
Ruijie(config-subif)# bridge-group 100
Ruijie(config-subif)# exit
Ruijie(config)# interface vlan 300
Ruijie(config-subif)# bridge-group 100
Ruijie(config-subif)# exit
Ruijie(config)# interface bvi 100
Ruijie(config-if)# ip address 192.168.100.1 255.255.255.0
Ruijie(config-if)# no shutdown
```

3.3.9

VLAN BVI

VLAN 100

```
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
```

4 MAC

MAC MAC

4.1 MAC

4.1.1

MAC

MAC

MAC

MAC MAC Bridge Group

MAC MAC

MAC

MAC

MAC地址	桥组（Bridge Group）	端口	虚拟防火墙	类型

1 MAC

MAC MAC

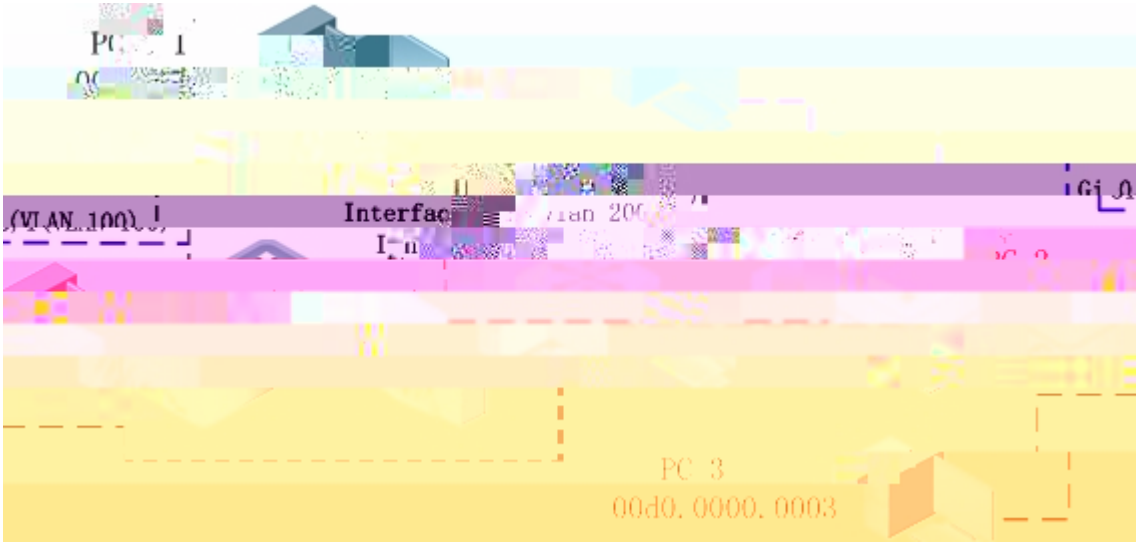
Bridge Group

MAC VLAN

MAC

MAC

MAC MAC



2

2. PC1 PC2 PING PC1 PC2 ARP
ARP PC2 MAC
interface vlan 100 PC1 interface vlan 100
PC1 MAC 1

MAC地址	桥组（Bridge Group）	端口	虚拟防火墙	类型
00d0.0000.0001	Bridge Group 100	VLAN 100	abc	Dynamic

1 PC1 MAC

3. ARP PC2 PC3

4. PC2 PC1 ARP PC1 ARP
PC2 PC2 MAC 2

MAC地址	桥组（Bridge Group）	端口	虚拟防火墙	类型
00d0.0000.0002				

2 PC2 MAC

5. PC1 PC2 ARP PC2 ICMP
PC2 MAC PC2
PC3 PC1 PC2

MAC

MAC

MAC

MAC

MAC

MAC

MAC

MAC	MAC
	MAC
MAC	
MAC	
MAC	
MAC	
MAC	MAC

4.1.3

4.1.4

IEEE Std 802.3™ Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications

4.2

MAC	
	300

4.3 MAC

4.3.1 MAC

Ruijie(config-ctx)# **mac-limit** *limit-num*	MAC limit-num 0 – MAC MAC MAC

MAC MAC MAC MAC MAC / MAC

4.3.2

Ruijie# **show mac-limit**	MAC

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

VLAN 100

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# interface vlan 100
Ruijie(config-if)# bridge-group 100
Ruijie(config-if)# no mac-address-learning
```

4.4.2

Ruijie(config)# **mac-address-table aging-time** [*0* | *10-1000000*]	10 1000000 300 0
Ruijie(config)# **no mac-address-table aging-time**	

MAC

180

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# mac-address-table aging-time 180
```

4.4.3

Ruijie# **clear mac-address-table dynamic**	MAC

Ruijie# **clear mac-address-table dynamic address** *mac-address* **bridge-group** *bridge-group-id*	mac-address MAC MAC *bridge-group-id* MAC
Ruijie# **clear mac-address-table dynamic interface** *interface-id* [**bridge-group** *bridge-group-id*]	interface-id MAC VLAN *bridge-group-id* MAC
Ruijie# **clear mac-address-table dynamic bridge-group** *bridge-group-id*	*bridge-group-id* MAC

VLAN 100

Ruijie# **clear mac-address-table dynamic interface vlan** *100*

4.4.4

Ruijie# **show mac-address-table aging-time**	MAC
Ruijie# **show mac-address-table dynamic** Ruijie# **show mac-address-table dynamic address** *mac-address*	

vfw1 MAC

Bridge Group 100 MAC

```
Ruijie# changeto vfw1
```

```
Ruijie/vfw1# 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
```

vfw2 MAC

```
Ruijie/vfw2# show mac-address-table count
Dynamic Address Count  : 30
Static  Address Count  : 0
Filtering Address Count: 0
Total Mac Addresses    : 30
Total Mac Address Space Available: 8159
```

4.5

4.5.1

Ruijie(config)# **mac-address-table static** *mac-address* **bridge-group** *bridge-group-id* **interface** *interface-id*	MAC mac-address MAC MAC *bridge-group-id* MAC interface-id MAC VLAN mac-address MAC mac-address interface-id
Ruijie(config)# **no mac-address-table static** *mac-address* **bridge-group** *bridge-group-id* **interface** *interface-id*	

vfw3 VLAN 200

```
Ruijie/vfw3# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie/vfw3(config)# mac-address-table static 00d0.f800.073c
bridge-group 100 interface vlan 200
```

4.5.2

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

vfw2 MAC

```
Ruijie/vfw2# show mac-address-table static
Bridge Group   MAC Address      Type      Interface
------------   ---------------  --------  -----------------
 100            00d0.f800.1111   STATIC    VLAN 100
```

```
100             00d0.f800.2222   STATIC     VLAN 200
200             00d0.f800.3333   STATIC     VLAN 300
200             00d0.f800.4444   STATIC     VLAN 400
```

4.6

4.6.1

```
Ruijie/vfw1# show mac-address-table filtering
Bridge-Group   MAC Address      Type       Interface
-----------   ---------------  ---------  -------------------
   4           00d0.f800.1111    FILTER
   4           00d0.f800.2222    FILTER
```

5

5.1

5.1.1

5.1.2

p

ip

ip

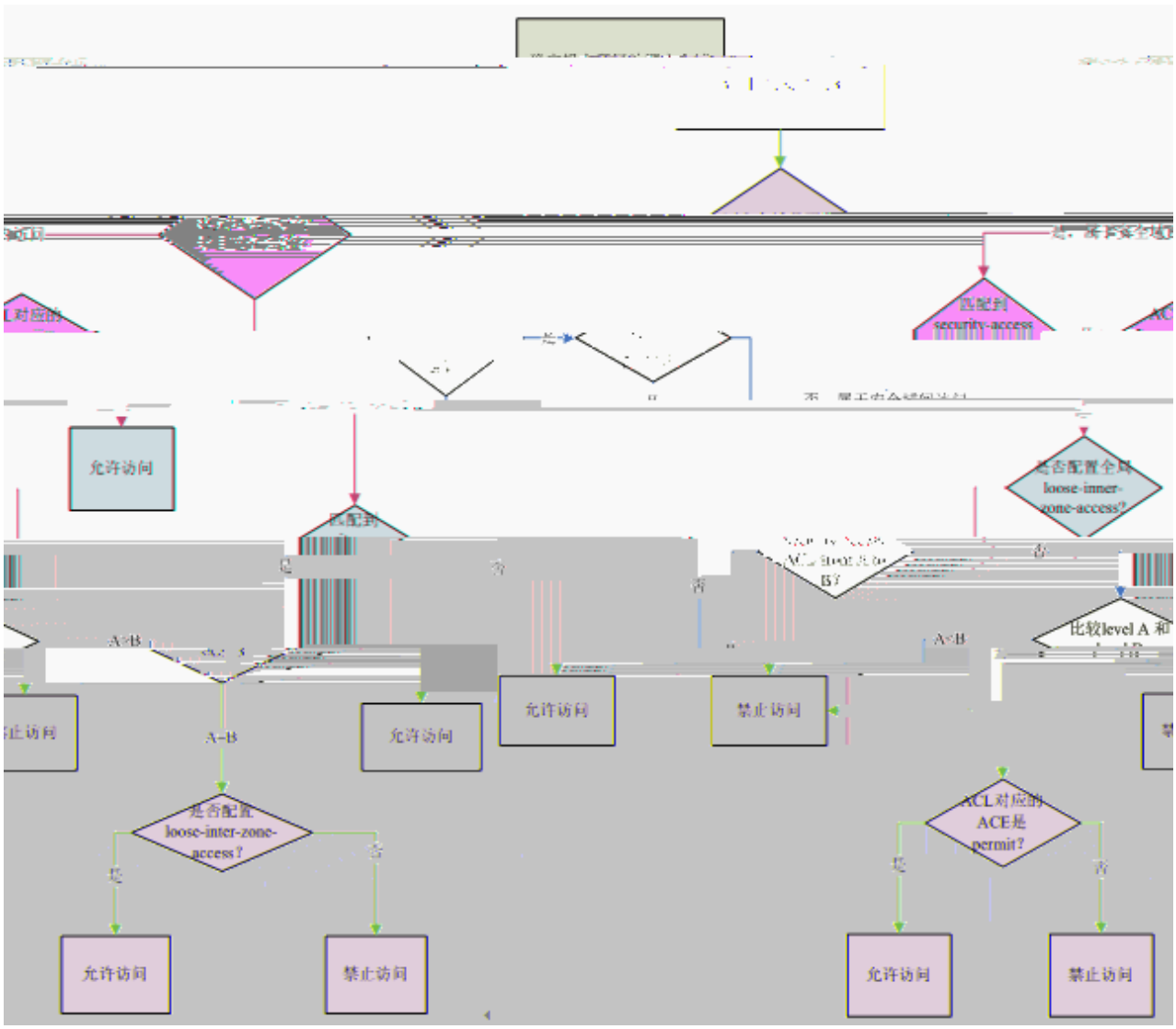
1

1

2 P P

P P

t



允许访问
匹配到
security-access
是否配置全局
loose-inner-
zone-access?
比较level A 和
A<B
A=B
允许访问
禁止访问
是否配置
loose-inter-zone-
access?
ACL对应的
ACE是
permit?
是
否
允许访问
禁止访问
允许访问
禁止访问

2

5.1.4

5.2

	P
P	

5.3

1 ( )

1

2

3

4

2

-40( )]TJ /C2_3 1 Tf 0.04 Tc 2 0 Td [<115

4

5.3.1

security-zone- base interface	

security-zone *zone-name*	*zone-name*

ACL

P

P

ip access-group *access-list*	 *access-list* p

interface-security-zone *zone-name*	

5.3.2

#loose-inter-zone-access	p p

loose-inter-zone-access

level-num	*level-num*

5.3.3

# violation notification *threshlold*	*threshold*
# violation notification { log | trap| log&trap }	

violation blocking {global | zone } {timeout *minutes*| permanently }	global zone timeout *minutes* 0 permanently 0 P a g

clear blocking [*ip-address*]	P P

5.3.5

security-zone-violation-log enable	M
security-zone-violation-log data-store *days*	*days* 1 7 7

5.3.6

Ruijie#show security-access-blocking	P
Ruijie#show security-access-rules	
Ruijie#show security-zone [***zone-name***]	

Ruijie#show security-zone-host *ip-address*	P
Ruijie#show security-zone-match { *ip-protocol* | icmp | tcp | udp} *source-ip dst-ip* [*src_port dst_port*]	P
Ruijie#show security-zone-match { *ip_protocol* | icmp | tcp | udp} *source-ip dst-ip* [*src_port dst_port*] from *interface* to *interface*	
Ruijie# 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*]	ip
Ruijie# show security-zone-violation-log status	

6 Web

6.1 Web

6.1.1 Web

6.1.2 Web

3 WEB

1

2

( )
( )
( )
( )
( )
( )
( )
( )
( )

6.3.1 IP

P P

P P

Step 1	configure terminal	
Step 2	http redirect *ip-address*	P
Step 3	show http redirect	

P no http redirect

P

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# http redirect 176.10.0.1
Ruijie(config)# show http redirect
```

6.3.2 HTTP

Step 2	R http redirect homepage *url-string*	*url-string* p p 2
Step 3	R show http redirect	H

no http redirect homepage

login.html

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# http redirect homepage
http://192.168.32.123/login.html
Ruijie(config)# show http redirect
```

6.3.4 HTTP

e H
H W
H e
H
H
H H 1
H 50
H

Step 1	R configure terminal	
Step 2	R http redirect session-limit *session-num*	H *session-num* 8
Step 3	R show http redirect	H

H 6 no http redirect session-limit

H 4

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# http redirect session-limit 4
Ruijie(config)# show http redirect
```

6.3.5

Step 1	configure terminal	
Step 2	http redirect timeout *seconds*	*seconds*
Step 3	show http redirect	

no http redirect timeout

#

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# http redirect timeout 4
Ruijie(config)# show http redirect
```

6.3.6

( )

Step 1	configure terminal	
Step 2	http redirect direct-site *ip-address* [*ip-mask*]	
Step 3	show http redirect	

no http redirect direct-site *ip-address [ip-mask]*

#

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# http redirect direct-site 172.16.0.0 255.255.0.0
Ruijie(config)# show web-auth
```

6.3.7

Step 1	configure terminal	
Step 2	web-auth portal key *key-string*	

no web-auth key

#

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# web-auth portal key web-auth
```

6.3.8 IP

Step 1	configure terminal	
Step 2	web-auth direct-host *ip-address* [*ip-mask*]	

6.3.10 HTTP

H

Step 1	R show http redirect	H

H

```
Ruijie# show http redirect
http redirect settings
 server        : 192.168.32.123
 port          : 80 8080
 homepage      : http://192.168.32.123/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
```

6.3.11 web

W

Step 1	R show web-auth direct-host	W

W

```
Ruijie# show web-auth direct-host
direct-host
  Address          Mask
  ---------------- ----------------
  192.168.0.1     255.255.255.255
  192.168.4.11    255.255.255.255
  192.168.5.0     255.255.255.0
```

6.3.12

W

Step 1 特权模式 show web-auth global	Web

Web

```
Ruijie# show web-auth global
web authentication is on
```

6.3.13

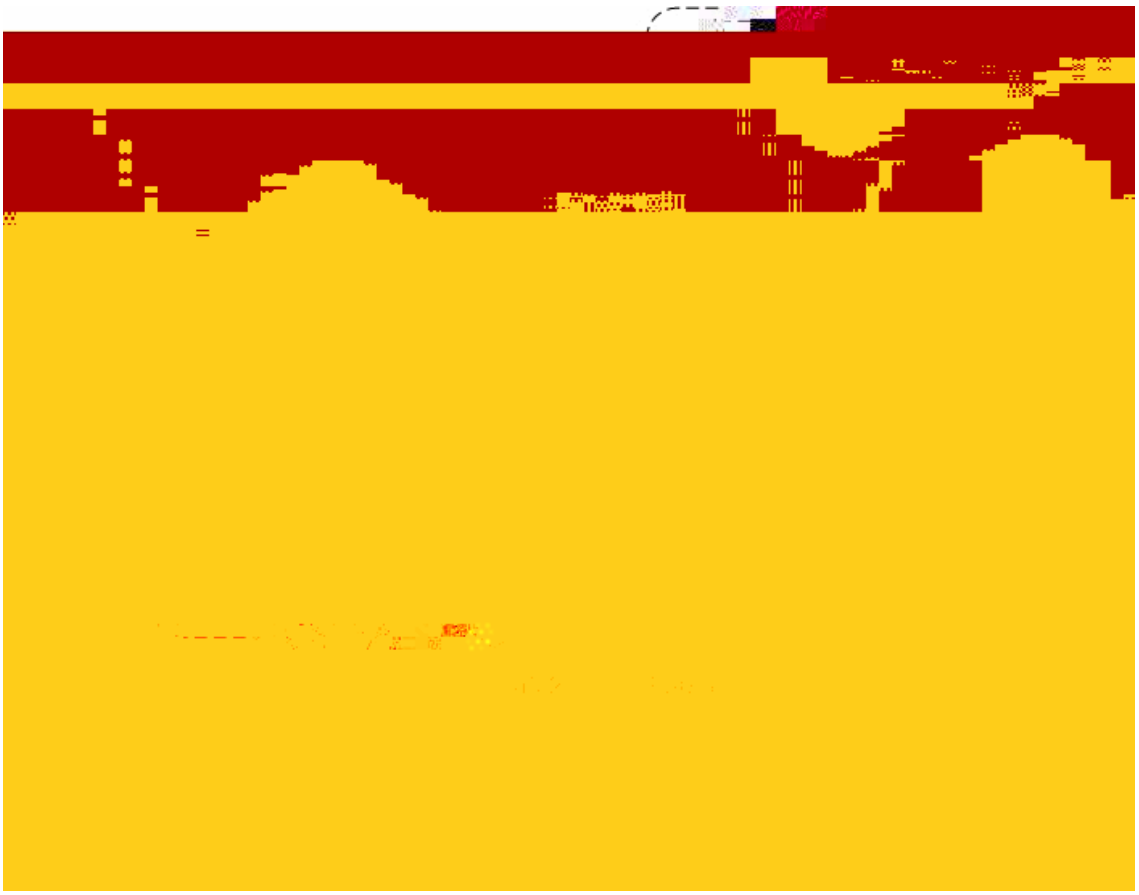
Step 1 特权模式 show web-auth user [*ip-address*]	Web 用户

```
Ruijie# show web-auth user
  Current user num  :  4

  Address         Online    Time Limit(s) Time Used(s)    Status
User Mode
  -----------  -------    -------------  -------------  --------
-------
  192.168.0.11    On         01:00:00      00:15:10       Active
not redirect
  192.168.0.13    On        0              00:00:59       Active
not redirect
  192.168.0.25    Off       0              0              Create
not redirect
  192.168.0.46    Off        01:00:00      01:00:00      Distroy
not redirect

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
User Mode : not redirect

6.4 Web

S86



4 WEB

4 [illegible]

[illegible]

5

1 P [illegible]

[illegible]

```
Ruijie# config
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# http redirect  192.168.3.1
Ruijie(config)# web-auth portal key  web_auth
```

2

```
Ruijie(config)# http redirect  homepage http://192.168.3.1
/webportal/index.jsp
```

3 [illegible]

```
Ruijie(config)# web-auth on
```

4 [illegible]

```
Ruijie(config)# http redirect  direct-site 192.168.5.1
Ruijie(config)# http redirect  direct-site 192.168.5.2
```

5 P

```
Ruijie(config)# web-auth direct-host 192.168.4.12
6                internetzone
Ruijie(config)#ip access-list standard internet
Ruijie(config-std-nal)#10 deny 192.168.3.0 0.0.0.255
Ruijie(config-std-nal)#20 deny 192.168.4.0 0.0.0.255
Ruijie(config-std-nal)#30 deny 192.168.5.0 0.0.0.255
Ruijie(config-std-nal)#40 permit any
Ruijie(config-std-nal)#exit

Ruijie(config)#security-zone internetzone
Ruijie(config-security-zone)#ip access-group internet
Ruijie(config-security-zone)#exit
```

```
    PC1         internet            web
      Internet    PC2                    Internet
```

7

7.1

7.1.1

7.1.2

P

7.1.3

1

2

3

4

5

6

7

8

7.2

7.2.1

	P	
	P	
	P	
		P

7.2.2

SYN

firewall tcp-loose	
no firewall tcp-loose	

TCP

firewall tcp-state-inspection-disable	
no firewall tcp-state-inspection-disable	

7.2.3 SYN Flood

P

P

no firewall defend syn-flood {*acl-number* | *acl-name*} *rate-num*	*acl-number:* *acl-name:* *rate-num*
firewall auto-synproxy	
no firewall auto-synproxy	

/

ip tcp-intercept list *acl-number* { in |out } log]	*acl-number:* /
no ip tcp-intercept list	

no firewall defend udp-flood {*acl-number* | *acl-name*} *rate-num*	*acl-number:* *acl-name:* *rate-num*

7.2.5 ICMP Flood

firewall defend icmp-flood {*acl-number* | *acl-name*} *rate-num*	*acl-number:* *acl-name:* *rate-num*
no firewall defend icmp-flood {*acl-number* | *acl-name*} *rate-num*	*acl-number:* *acl-name:* *rate-num*

7.2.6 IP Flood

P

	firewall defend icmp-redirect
	no firewall defend icmp-redirect

7.2.8 Winnuke

1

	firewall defend winnuke
	no firewall defend winnuke

7.2.9 IP

P P

P

° > D[È vb‘p> î ,X °>(4 ð Ä&b D B' î ,X °>(4 ð Ä&b ç 7@E EÝNM +%‰ CÃ ~Óâ “ EE KTQ ðÁ + E Ò° M f'q0?

7.2.10 IP

P P

firewall defend route-record	P
no firewall defend route-record	P

7.2.11 ICMP

0

1

firewall defend icmp-unreachable	
no firewall defend icmp-unreachable	

7.2.12 Fraggle

7 —

firewall defend fraggle	
no firewall defend fraggle	

7.2.13 Land

	firewall defend land
	no firewall defend land

7.2.14

	firewall defend scan counter-clear-interval sense-level {*high*|*low*|*medium*} *time-interval*
	firewall defend scan ignored-protocol { *icmp*|*ip*|*tcp*|*udp*}

firewall defend scan sense-level {*high*|*low*|*medium*} [watch-ip-list *acl*] [block-term *time-num*]	{*high*|*low*|*medium*} *acl* *time-num* P
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*	3 {*icmp*|*ip*|*tcp*|*udp*} {*high*|*low*|*medium*} *con-num* 0 0 *pri-num* 0 *ip-num* 1 0 *port-num* 1 0 *con-num* *pri-num* *ip-num* *port-num*

7.2.15

show firewall scan-detect-conf default [*icmp* | *ip* | *tcp* | *udp*]	
show firewall scan-detect-conf effective [*icmp* | *ip* | *tcp* | *udp*]	

```
scan tracker clear interval default:
       low:30 s
       medium:60 s
```

```
       high:300 s
tcp scan default config:
low
        connection count is:0
        priority count is:100
        ip count is:30
        port count is:50
medium
        connection count is:50
        priority count is:20
        ip count is:7
        port count is:10
high
        connection count is:50
        priority count is:3
        ip count is:3
        port count is:10

udp scan default config:
low
        connection count is:0
        priority count is:100
        ip count is:30
        port count is:50
medium
        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
```

P

P

P

P

firewall blacklist *sour-addr*	
no firewall blacklist *sour-addr*	

7.2.18

show firewall global-blocking	P

7.2.19

clear non-blacklist-global-blocking	P

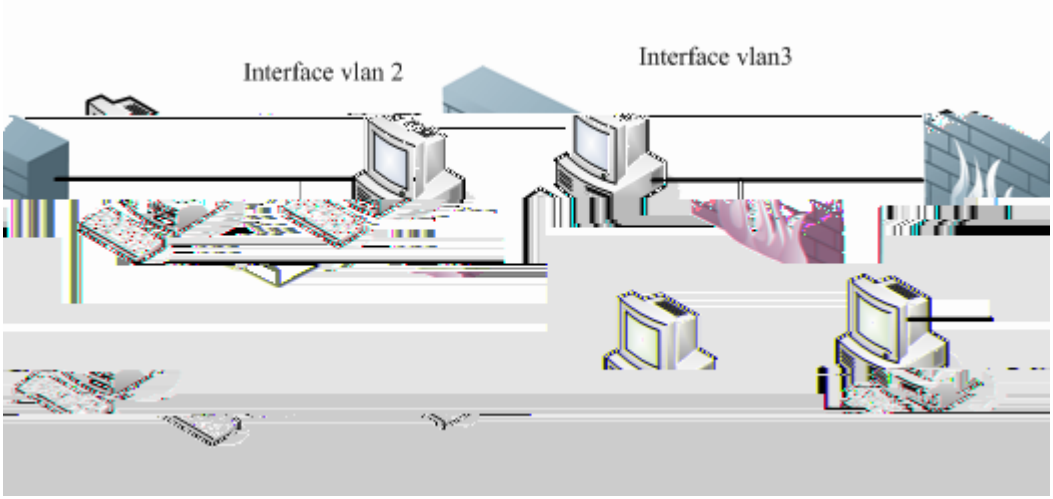
7.2.20

show firewall count [***all*** **|** ***global***]	0 *all* *global*

7.2.21

clear firewall count [***global***]	*global*

[illegible]	firewall log udp-flood [illegible]



5 ICMP FLOOD

```
Ruijie#config terminal
!
Ruijie(config)#firewall default_policy_permit
  2  3  P
Ruijie(config)#interface vlan 2
Ruijie(config-if)#ip address 202.1.1.1 255.255.255.0
Ruijie(config-if)#exit
Ruijie(config)#interface vlan 3
Ruijie(config-if)# ip address 101.1.1.1 255.255.255.0
Ruijie(config-if)#exit
Ruijie(config)#ip access-list standard 10
Ruijie(config-std-nacl)#permit 101.1.1.0 0.0.0.255
Ruijie(config-std-nacl)#exit
       ip      101.1.1.0/24              ICMP FLOOD
Ruijie(config)#firewall defend icmp-flood 10 300
Ruijie(config)#
```

8

8.1

8.1.1

P

ip

ip tfdd

ipfd pfd

8.2

P

8.2.1

P	

8.2.2 IP

ip rate-control { in | out } *acl-num* {bandwidth *rate-limit* | session-rate *rate-num* | session-total *total-num* }	P in | out: in P P *acl-num:* *rate-limit:* P *total-num:* P *rate-num:* P
no ip rate-control { in | out } *acl-num* {bandwidth *rate-limit* | session-rate *rate-num* | session-total *total-num*}	P in | out: in P P *acl-num:* *rate-limit:* P *total-num:* P *rate-num:* P

8.2.3

session-limit access-group *acl-num* rate *rate-num* concurrent *session_count* { in | out }	*acl-num:* *rate-num:* *session_count* in | out: in

9

9.1

9.1.1

þ sm ø

a

10

10.1

10.1.1

10.1.2

/

P

10.1.3

10.2

10.2.1

	no host-limit	
Step 5	mac-limit *num*	*num* 0
	no mac-limit	
Step 6	session-create-limit *rate*	*rate* (
	no session-create-limit	
Step 7	ace-limit *num*	*num*
	no ace-limit	
Step 8	maximum routes *limit* {warn-threshold | warning-only }	*limit* *limit*
	no maximum routes	

10.2.3

changeto

P

P

	b

1 *vfw1*

changeto *vfw1*

2 *vfw1*

changeto root

	show running-config

10.2.4 Telnet/SSH

changeto

password { *password1* | *password2* }	0 7

1 e t

2 e t *vfw1* *vfw1*

vfw1

vfw1#

changeto

10.2.5

ip route vrf *vrf-name network mask interface-name nexthop*	*vrf-name network mask interface-name nexthop*
no ip route vrf *vrf-name network mask*	

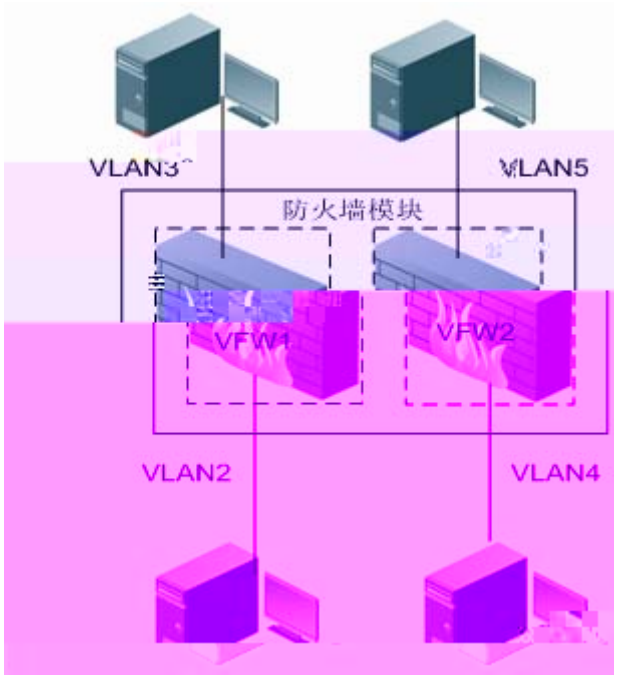
10.2.6

write	
write	
write [memory] all	

10.2.7

10.3

1 2



6

```
Ruijie#config terminal
Ruijie(config)#context VFW1
```

```
Ruijie(config)#interface vlan 3
Ruijie(config)#ip vrf forwarding VFW1
Ruijie(config-if)# ip address 101.1.1.1 255.255.255.0
Ruijie(config-if)#exit
```

```
Ruijie#changeto VFW1
Ruijie/VFW1#config terminal
Ruijie/VFW1(config)#ip access-list standard abc
Ruijie/VFW1(config-std-nacl)#permit 101.1.1.0 0.0.0.255
Ruijie/VFW1(config-std-nacl)#exit
```

```
!               ,
Ruijie/VFW1(config)#interface vlan 3
Ruijie/VFW1(config-if)#ip access-group abc in
Ruijie/VFW1(config-if)#exit
Ruijie/VFW1(config)#exit
```

```
Ruijie/VFW1#changeto root
```

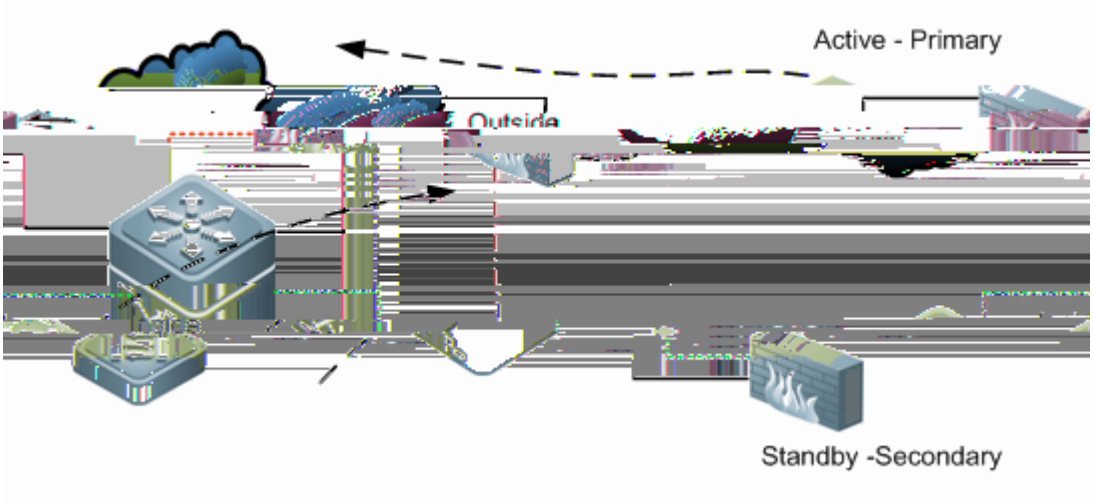
```
Ruijie#config terminal
Ruijie(config)#context VFW2
Ruijie(config-ctx)#config-url vfw2.text
Ruijie(config-ctx)#exit
    interface vlan 4   interface vlan 5         VFW2,
IP
Ruijie(config)#interface vlan 4
Ruijie(config-if)#ip vrf forwarding VFW2
Ruijie(config-if)#ip address 203.1.1.1 255.255.255.0
Ruijie(config-if)#exit
Ruijie(config)#interface vlan 5
Ruijie(config)#ip vrf forwarding VFW2
Ruijie(config-if)# ip address 102.1.1.1 255.255.255.0
Ruijie(config-if)#exit
```

```
Ruijie#changeto VFW2
Ruijie/VFW2#config terminal
Ruijie/VFW2(config)#ip access-list standard qwe
Ruijie/VFW2(config-std-nacl)#permit 102.1.1.0 0.0.0.255
Ruijie/VFW2(config-std-nacl)#exit
```

```
!               ,
Ruijie/VFW2(config)#interface vlan 5
```

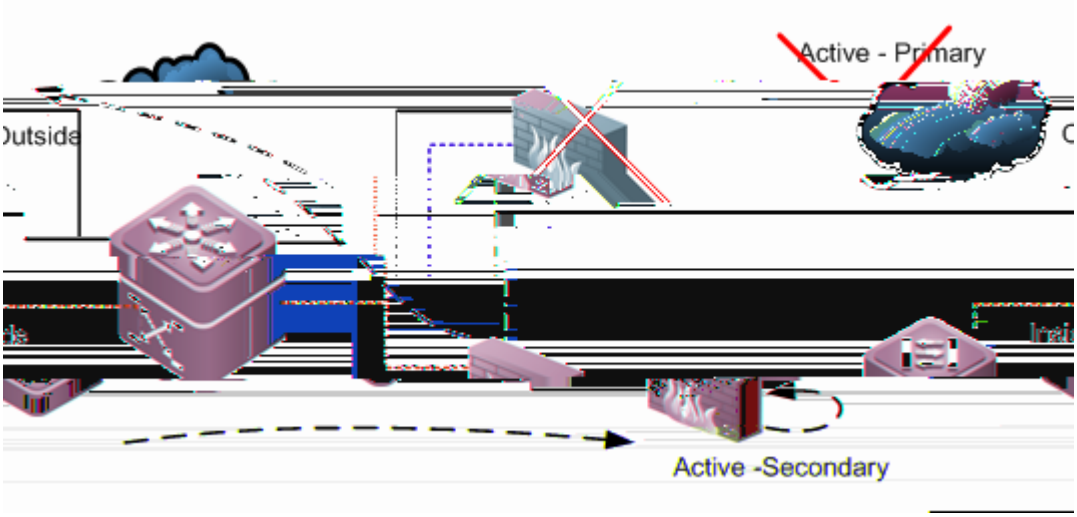
```
Ruijie/VFW2(config-if)#ip access-group qwe in
Ruijie/VFW2(config-if)#exit
Ruijie/VFW2(config)#exit


Ruijie/VFW2#changeto root

Ruijie#write all
```

11


Active - Primary
Outside
Standby -Secondary

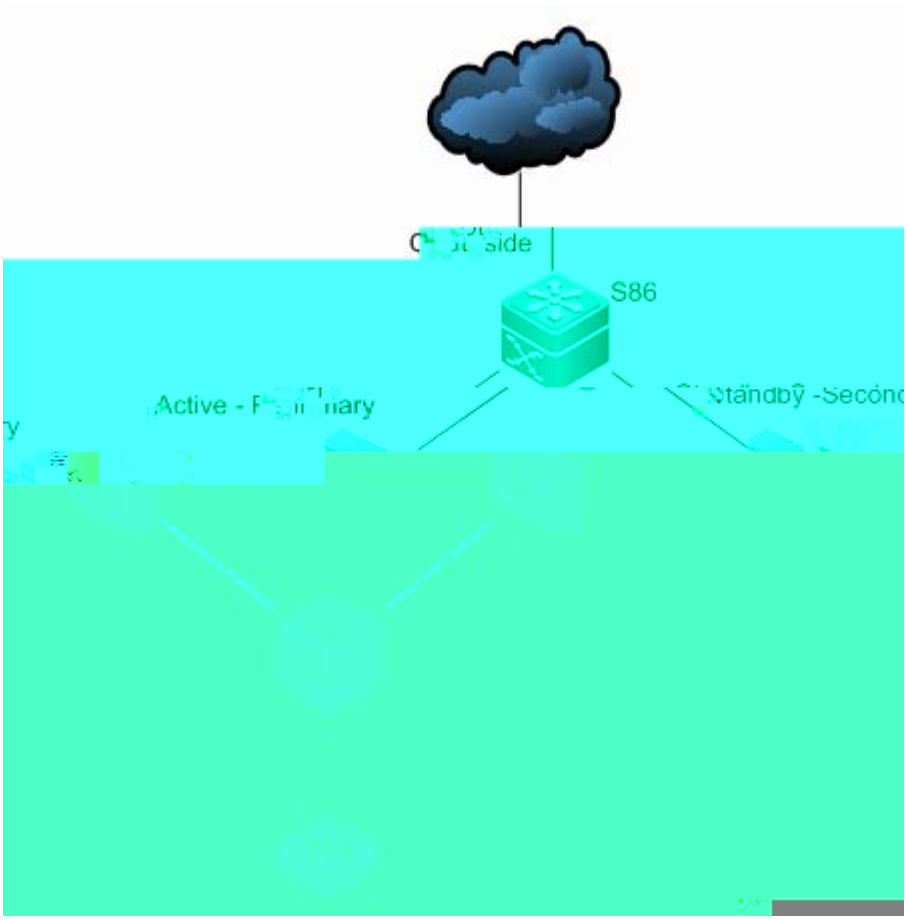
4

s

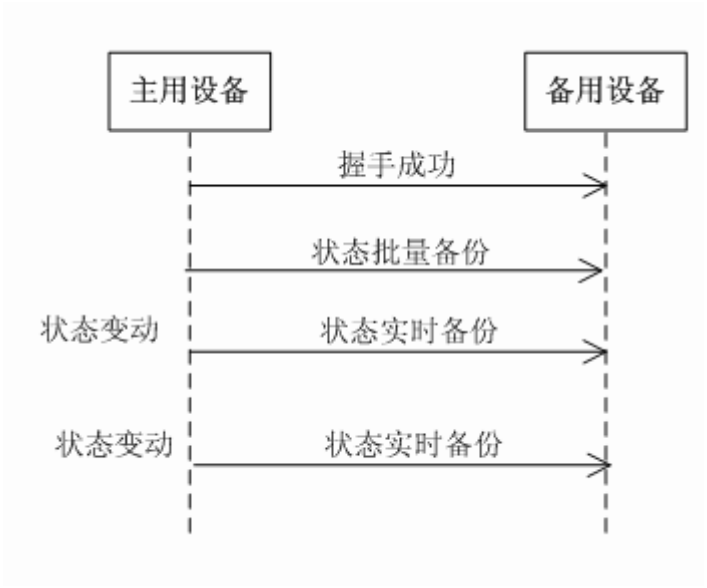

Active - Primary
Active -Secondary

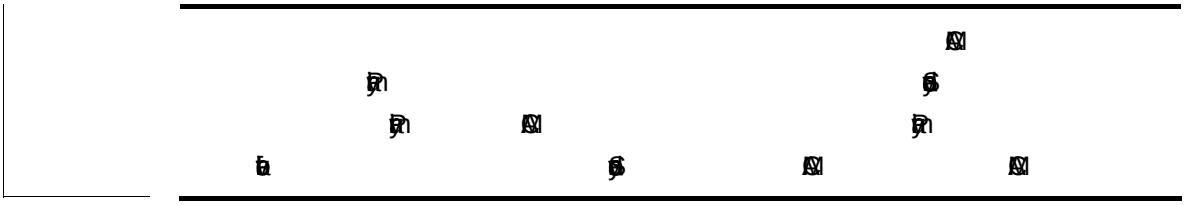
5

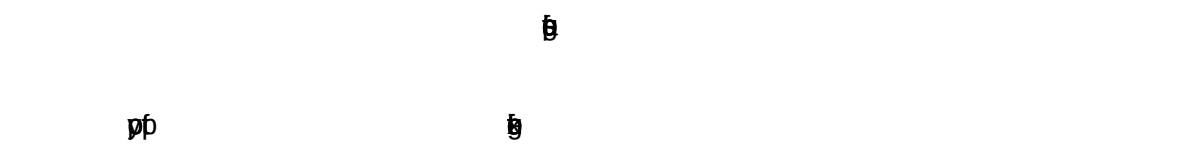
2

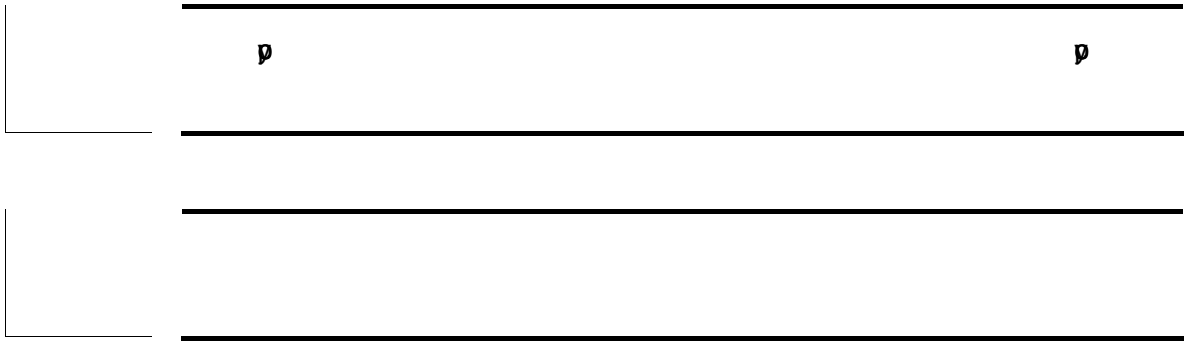


6


主用设备
备用设备
握手成功
状态批量备份
状态变动
状态实时备份
状态变动
状态实时备份

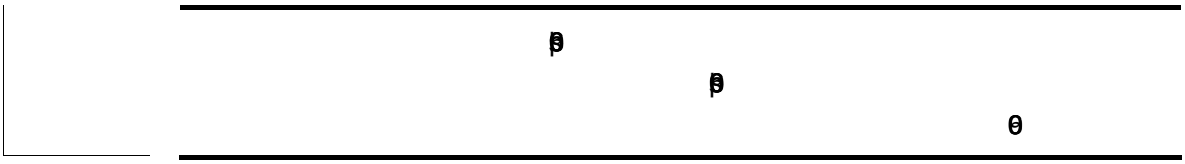






:

% PARAM-3-CONFIG_SYNC: Failed to synchronize the startup configuration to the standby supervisor.



P

11.1.3

11.2

	2

11.3 failover

11.3.1 Primar y

Step 1	`Ruijie(config-if)#` ip address *active_addr netmask* standby *standby_addr* `Ruijie(config-if-Vlan 20)# ip address 192.16.1.1 255.255.255.0 standby 192.16.1.2`	P P
Step 2	`Ruijie(config)#` failover lan unit primary	

Step 3	`Ruijie(config)#` interface vlan *num*
	`Ruijie(config-if)#` exit
	
	`Ruijie (config)# interface vlan 10`
	`Ruijie (config-if-Vlan 10)# exit`	

Step 4	`Ruijie(config)#` failover lan interface vlan *vlan_if_num* `Ruijie (config)# failover lan interface vlan 10`	
Step 5	`Ruijie(config)#` failover interface ip *primary_address mask* secondary *secondary_address* `Ruijie (config)#failover interface ip 10.1.0.1 255.255.255.0 secondary 10.1.0.2`	P P
Step 6	`Ruijie(config)#` failover `Ruijie (config)# failover`	
Step 7	`Ruijie#` write	

11.3.2 Secondary

Step 1	`Ruijie(config)#` failover lan unit secondary	
Step 2	`Ruijie(config)#` interface vlan	

2

Ruijie(config)#failover polltime msec *poll_time* [holdtime *holdtime*]	

```
Ruijie(coinfig)#
Ruijie(coinfig)#
Ruijie(coinfig)#
Ruijie(config)#
Ruijie(coinfig)#
Ruijie(coinfig)#
Ruijie(coinfig)#
```

no failover

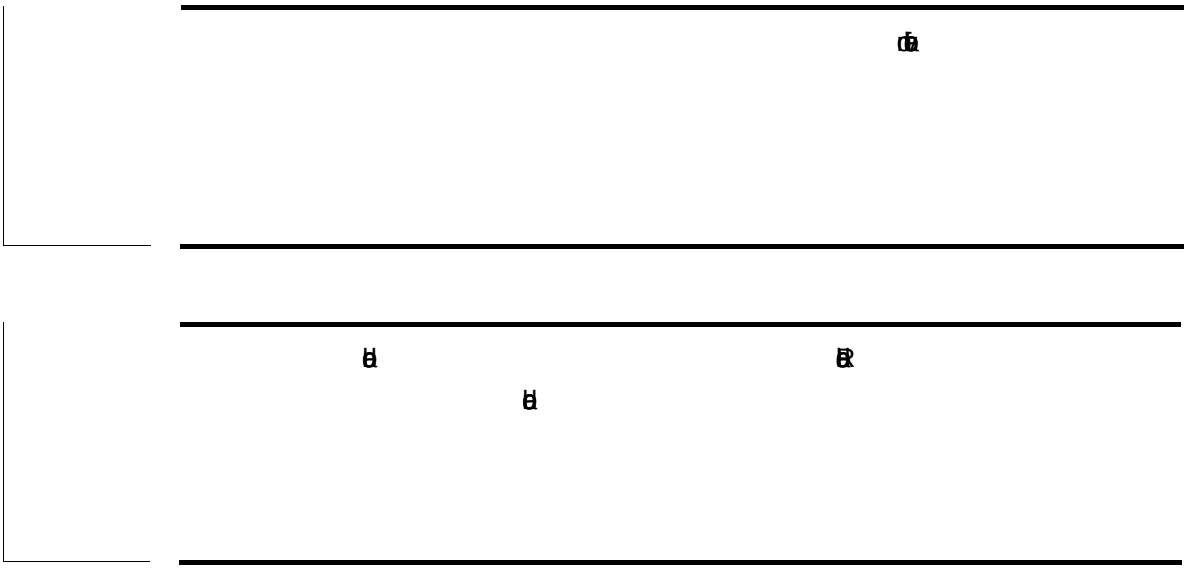
P

11.4

11.4.1

failover standby	

11.4.2



11.4.3

1

2

3

[illegible]

[illegible]

[illegible] P

[illegible]

a) [illegible] [illegible] [illegible] [illegible] [illegible]

b) [illegible]

[illegible]

[illegible]

[illegible]

a) [illegible] [illegible] [illegible]

b) [illegible] [illegible]

c) [illegible]

11.5

11.5.1

3

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# vlan 2
Ruijie(config-vlan)# exit
Ruijie(config)# vlan 3
Ruijie(config-vlan)# exit
Ruijie(config)# interface Gigabitethernet 3/1
Ruijie(config-if-Gigabitethernet 3/1)# switchport access vlan 2
Ruijie(config-if-Gigabitethernet 3/1)# exit
Ruijie(config)# interface Gigabitethernet 3/2
Ruijie(config-if-Gigabitethernet 3/2)# switchport access vlan 3
Ruijie(config-if-Gigabitethernet 3/2)# exit
```

7

)

```
Ruijie(config)# interface TenGigabitethernet 7/1
Ruijie(config-if-TenGigabitethernet 7/1)# port-group 2
Ruijie(config-if-TenGigabitethernet 7/1)# exit
Ruijie(config)# interface TenGigabitethernet 7/2
Ruijie(config-if-TenGigabitethernet 7/2)# port-group 2
Ruijie(config-if-TenGigabitethernet 7/2)# exit
```

8

)

```
Ruijie(config)# interface TenGigabitethernet 8/1
Ruijie(config-if-TenGigabitethernet 7/1)# port-group 3
Ruijie(config-if-TenGigabitethernet 7/1)# exit
Ruijie(config)# interface TenGigabitethernet 8/2
Ruijie(config-if-TenGigabitethernet 7/2)# port-group 3
Ruijie(config-if-TenGigabitethernet 7/2)# exit
```

3 4

```
Ruijie(config)# interface Aggretegateport 2
Ruijie(config-if-Aggretegateport 2)# switchport mode trunk
```

```
Ruijie(config-if-Aggretegateport 2)# switchport trunk allowed vlan
remove 1,5-4094
Ruijie(config-if-Aggretegateport 2)# carrier-delay 0
Ruijie(config-if-Aggretegateport 2)# mls qos trust dscp
Ruijie(config-if-Aggretegateport 2)# exit
```

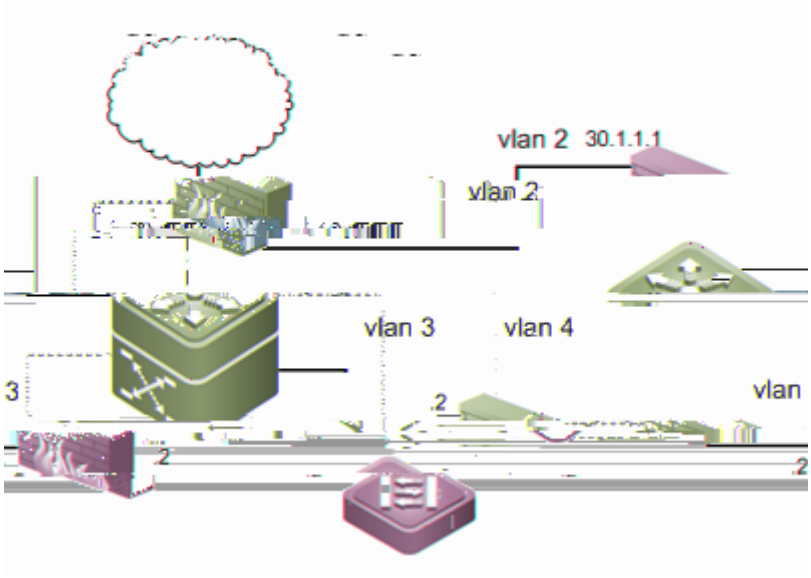
#

```
Ruijie(config)# interface Aggretegateport 3
Ruijie(config-if-Aggretegateport 2)# switchport mode trunk
Ruijie(config-if-Aggretegateport 2)# switchport trunk allowed vlan
remove 1,5-4094
Ruijie(config-if-Aggretegateport 2)# carrier-delay 0
Ruijie(config-if-Aggretegateport 2)# mls qos trust dscp
Ruijie(config-if-Aggretegateport 2)# exit
```

4

3

11.5.2



9 Failover

1

#

```
Ruijie(config)#interface vlan 2
Ruijie(config-if-Vlan 2)#ip address 30.1.1.1 255.255.255.0
standby 30.1.1.2
Ruijie(config)#interface vlan 3
Ruijie(config-if-Vlan 2)# ip address 20.1.1.1 255.255.255.0
standby 20.1.1.2
```

#

```
Ruijie (config)# failover lan unit primary
```

#

```
Ruijie(config)# interface vlan 4
Ruijie(config-if-Vlan 4)# exit
Ruijie(config)#failover lan interface vlan 4
Ruijie(config)#failover interface ip 10.1.1.1 255.255.255.0
secondary  10.1.1.2
```

#

```
Ruijie (config)#failover
```

#

```
Ruijie #write
```

2

#

```
Ruijie(config)# interface vlan 4
Ruijie(config-if-Vlan 4)# exit
Ruijie(config)#failover lan interface vlan 4
Ruijie(config)#failover interface ip 10.1.1.1 255.255.255.0
secondary  10.1.1.2
```

#

```
Ruijie (config)#failover
```

#

```
Ruijie #write
```

#

3

[illegible]

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# vlan 2
Ruijie(config-vlan)# exit
Ruijie(config)# vlan 3
Ruijie(config-vlan)# exit
Ruijie(config)# interface Gigabitethernet 3/1
Ruijie(config-if-Gigabitethernet 3/1)# switchport access vlan 2
Ruijie(config-if-Gigabitethernet 3/1)# exit
Ruijie(config)# interface Gigabitethernet 3/2
Ruijie(config-if-Gigabitethernet 3/2)# switchport access vlan 3
Ruijie(config-if-Gigabitethernet 3/2)# exit
```

7 [illegible])

```
Ruijie(config)# interface TenGigabitethernet 7/1
Ruijie(config-if-TenGigabitethernet 7/1)# port-group 2
Ruijie(config-if-TenGigabitethernet 7/1)# exit
Ruijie(config)# interface TenGigabitethernet 7/2
Ruijie(config-if-TenGigabitethernet 7/2)# port-group 2
Ruijie(config-if-TenGigabitethernet 7/2)# exit
```

8 [illegible])

```
Ruijie(config)# interface TenGigabitethernet 8/1
Ruijie(config-if-TenGigabitethernet 7/1)# port-group 3
Ruijie(config-if-TenGigabitethernet 7/1)# exit
Ruijie(config)# interface TenGigabitethernet 8/2
Ruijie(config-if-TenGigabitethernet 7/2)# port-group 3
Ruijie(config-if-TenGigabitethernet 7/2)# exit
```

[illegible] 3 4

```
Ruijie(config)# interface Aggretegateport 2
Ruijie(config-if-Aggretegateport 2)# switchport mode trunk
Ruijie(config-if-Aggretegateport 2)# switchport trunk allowed
vlan remove 1,5-40948/2
```

```
Ruijie(config-if-Aggretegateport 2)# exit
```

3 4

```
Ruijie(config)# interface Aggretegateport 3
Ruijie(config-if-Aggretegateport 2)# switchport mode trunk
Ruijie(config-if-Aggretegateport 2)# switchport trunk allowed
vlan remove 1,5-4094
Ruijie(config-if-Aggretegateport 2)# carrier-delay 0
Ruijie(config-if-Aggretegateport 2)# mls qos trust dscp
Ruijie(config-if-Aggretegateport 2)# exit
```

4

3

12

Help	
abbreviated-command-entry?	di?
abbreviated-command-entry<Tab>	show conf<Tab> show configuration
?	show ?
command keyword ?	snmp-server community ?

12.3

show configuration

```
Ruijie# show conf
```

12.4 no default

no no

no shutdown

shutdown no

default default

default no

default

no default

12.5 CLI

C

C

%		
%		
%	^	

12.6

12.7.1

show *any-command* | exclude *regular-expression*	
show *any-command* | include *regular-expression*	

show

12.9

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

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

```
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

12.9.1 CLI

13

13.1

13.1.1

enable secret

Step 1	enable password [level *level*] {*password* | *encryption-type encrypted-password*}	
Step 2	enable secret [evel *level*] {*encryption-type encrypted-password*}	

Step 3	service password-encryption	
Step 4	enable [*level*] disable	

```
Ruijie# configure terminal
Ruijie(config)# privilege exec all level 1 reload
Ruijie(config)# enable secret level 1 0 test
Ruijie(config)# end
```

1

```
Ruijie# disable 1
Ruijie> reload ?
at                  reload at a specific time/date
cancel               cancel pending reload scheme
in                  reload after a time interval
<cr>
```

```
Ruijie# configure terminal
Ruijie(config)# privilege exec all reset reload
Ruijie(config)# end
```

1

```
Ruijie# disable 1
Ruijie> reload ?
% Unrecognized command.
```

line

line

line

line %76Tj -871 Tf 0.004 Tc 2 uiji %7 TdTj /L2_0 1 Tf 0.004 Tc

lock

Step 1	lockable	line
Step 2	lock	line

13.1.2

A

aaa,aaa

bbb,bbb

ccc,ccc

Step 1

( ) (
)

Step 1	clock set	

```
Ruijie# clock set 10:10:12 6 20 2003      //
Ruijie# show clock                        //
clock: 2003-6-20 10:10:54
```

show clock

```
Ruijie# show clock                              //
clock: 2003-5-20 11:11:34
```

clock update-calendar

Step 1	clock update-calendar	

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

13.1.4

reload

( )

reload

in at cancel

reload in *mmm* | *hhh:mm* [*string*]

mmm *hhh:mm*

string

reload in *10* *test*

reload at

,

1 1 1

1

1 1

1

reload at *08:30 11 1 newday*

reload at *12:00 1 1 2006 newyear*

8

reload cancel

at

3

,

reload

reload

Step 1	reload cancel

prompt

Step 1	prompt *string*

no prompt

13.1.6

Step 1	(&)

banner motd *c message c*

Step 1	*c* (&)
banner login *c message c*	

no banner login

(#)

```
Ruijie(config)# banner login #                    //
Enter TEXT message.  End with the character '#'.
Access for authorized users only. Please enter your password.
#                                                  //
Ruijie(config)#
```

```
C:\>telnet 192.168.65.236
 Notice:  system will shutdown on July 6th.
 Access for authorized users only. Please enter your password.
 User Access Verification
 Password:
```

13.1.7

Step 1

speed *speed*	

```
Ruijie# configure terminal                    //
Ruijie(config)# line console 0          //
Ruijie(config-line)# speed 57600       //              57600
Ruijie(config-line)# end                         //
Ruijie# show line console 0                     //
CON    Type    speed   Overruns
* 0    CON     57600   0
Line 0, Location: "", Type: "vt100"
Length: 25 lines, Width: 80 columns
Special Chars: Escape  Disconnect  Activation
             ^^x     none       ^M
Timeouts:      Idle EXEC    Idle Session
             never       never
History is enabled, history size is 10.
Total input: 22 bytes
Total output:  115 bytes
Data overflow:  0 bytes
stop rx interrupt:  0 times
Modem: READY
```

13.1.9 telnet

A B

Telnet Client

Step 1	telnet *host* [*port*][/source {ip *A.B.C.D* | ipv6 *X:X:X:X::X* | interface *interface-name*}][/vrf *vrf-name*]	

P

```
Ruijie# telnet 192.168.65.119     //              telnet
Trying 192.168.65.119 ... Open
User Access Verification          //
Password:
```

```
Ruijie# telnet 2AAA:BBBB::CCCC    //              telnet
Trying 2AAA:BBBB::CCCC ... Open
User Access Verification          //
Password:
```

Telnet Server

Step 1

Step 1	ip http port *number*	
Step 2	ip http authentication { enable | local }	enable local

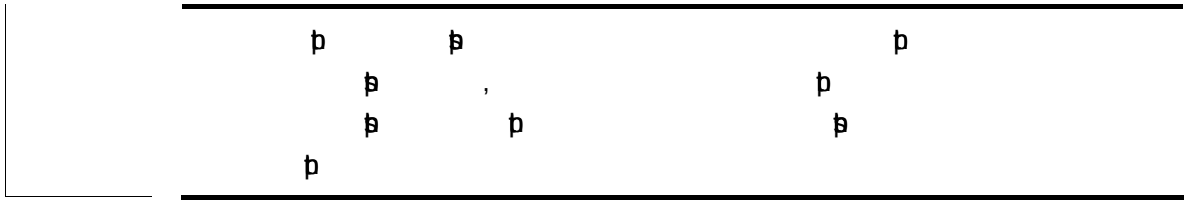
no

```
Ruijie# configure terminal                    //
Ruijie(config)# enable service web-server     //    Web Server
Ruijie(config)# username name password pass   //
Ruijie(config)# username name privilege 15    //
Ruijie(config)# ip http port 8080             //
Ruijie(config)# ip http authentication local //
```

Step 1	ip http secure-port *number*	

```
Ruijie# configure terminal                    //
Ruijie(config)# enable service web-server https //    https Server
Ruijie(Config)# ip http secure-port 4443
```

```
Ruijie# show web-server status
http server status : enabled
http server port : 8080
https server status:  enabled
https server port: 4443
```



13.1.14

Step 1	context vfw1	
Step 2	config-url vfw1.text	

dir

14.2.2

cd *directroy*	
cd *../*	
cd *./*	

```
Ruijie# cd mnt/document
```

14.2.3

copy

copy flash: *filename* flash: *directoryname*	
copy flash: *filename* sour *directoryname*	

```
Ruijie# copy flash:config.tex flash:tmp/
Ruijie# copy flash:con_bak.txt flash:config.text
```

14.2.4

dir	
dir *directory*	

```
Ruijie# dir
Ruijie# dir ../bak
```

14.2.5

mkdir *directoryname*	

```
Ruijie# mkdir bak
```

14.2.6

rename flash: *old_filename* flash: *new_filename*	*old_filename* *new_filename*

14.2.7

pwd	

14.2.8

del *filename*	

Ruijie# del mnt/large.c

14.2.9

rmdir *directoryname*	

Ruijie# rmdir mnt

copy tftp: flash: vrf

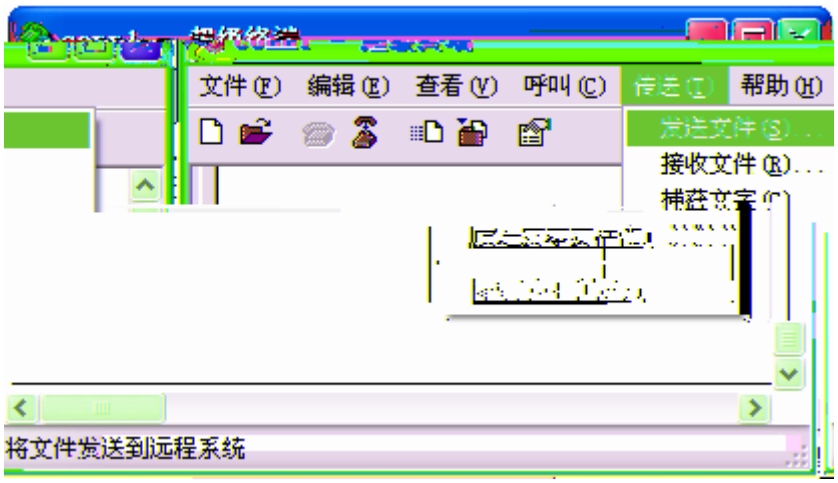
copy tftp: flash: vrf

15.2.2 XMODEM

C

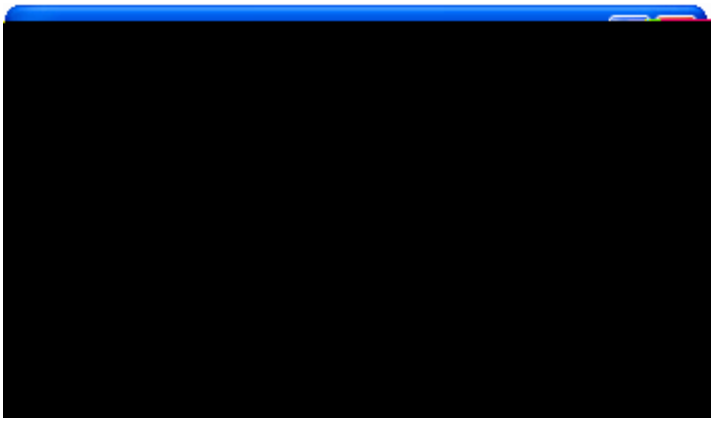
“ ”

“ ” 1



1

“ ” 2



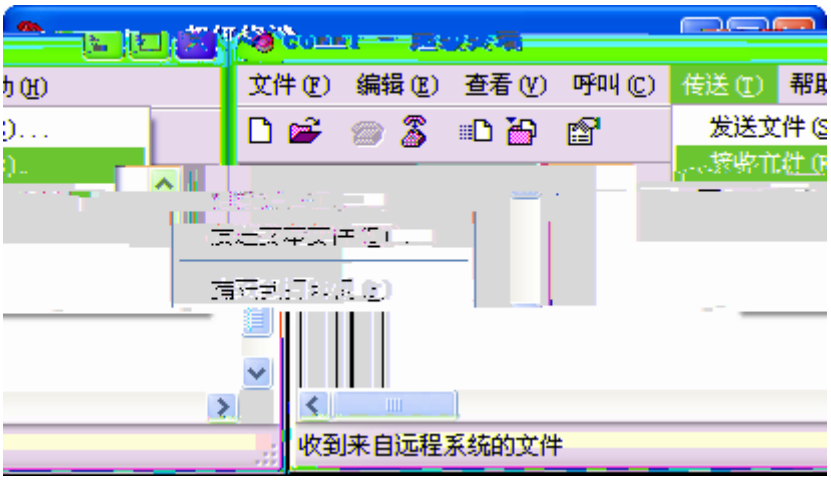
2

copy xmodem flash :*filename*	*filename*

C

“ ”

“ ” 3

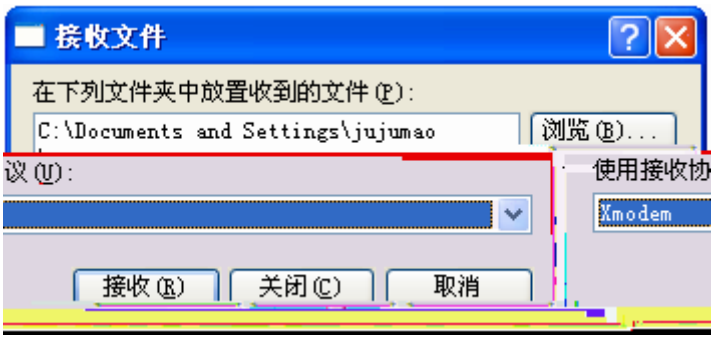


3

“ ”

“ ”

4



4

copy flash :*filename* xmodem	*filename*

copy xmodem flash: [illegible] copy flash: [illegible] xmodem

15.2.3

[illegible]

1

2

Installing is in process ......
Do not restart your machine before finish !!!!!!
......

3

Installing process finished ......
Restart machine operation is permited now !!!!!!

4

System restarting, for reason 'Upgrade product !'.

5

5 6 7

System load main program from install package ......

6

A new card is found in slot [1].
System is doing version synchronization checking ......
Current software version in slot [1] is synchronous.

The version synchronization of card in slot [3] get finished successfully.

16 IP

16.1 IP

16.1.1 IP

P 3
8 8 . 8
P

P P 3 P
A
1 2
P 8

A 0 7

1 E

P P
P
P
P

A	0	
B		
C		
D		
E		

P

	IP	
A		1 A

B	[illegible]	[illegible] B
C	[illegible]	[illegible] C

P [illegible]

16.1.2 IP

P

P

[illegible]

P

IP

P P P

P

P

[illegible] ip address *ip-address mask*	P
[illegible] no ip address	P

[illegible] P

[illegible] P [illegible]

P A

[illegible]

P

P

IP

P P
P P P P
P P
P
C
C C
C
P
P
P
P
P

P P
P P
P

P

ip address *ip-address mask* secondary	P
no ip address *ip-address mask* secondary	P

ARP

P 1

P 2 P

P 8 A
P A R
1 R 2 R R
R B B
R A P P R
A A P A
R A P
P R E
I A

R
R
R

ARP

R P A
R P R

R

R
R arp *ip-address mac-address arp-type* p [1]Âø Hžx hŽ4ˆ¥W

ARP

P

arp timeout *seconds*	0
no arp timeout	

1

IP

P P

P

P

P P P

P

P 1

ip directed-broadcast [*access-list-number*]	
no ip directed-broadcast	

IP

1

ip broadcast-address *ip-address*	
no ip broadcast-address	

16.1.3 IP

ping *ip-address* [ength *bytes*][ntimes *times*][timeout *seconds*]	

16.2 IP

16.2.1 IP

P

P

16.2.2 IP

P P

P

ICMP

P

ip unreachables	
no ip unreachables	

ICMP

[illegible]

[illegible]

[illegible]	ip redirects	[illegible]
[illegible]	no ip redirects	[illegible]

ICMP

[illegible]

no ip mtu	

IP

P P P

P

P

P

P

ip source-route	P
no ip source-route	P

17

17.1

17.1.1

17.1.2

show ip fpm flows

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

17.2

show ip fpm counters

show ip fpm counters	

clear ip fpm counters

clear ip fpm counters	

17.3

show ip fpm statistic

show ip fpm statistics	

17.4

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*	

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	6
tcp-syn-sent	6
tcp-time-wait	6
udp-closed	6
udp-connected	6
udp-established	6
udp-started	6

ip session timeout { icmp-closed | icmp-connected | icmp-started } *time-num*	*time-num* icmp-closed 6 icmp-connected 0 icmp-started 0
no ip session timeout { icmp-closed | icmp-connected | icmp-started }	

ip session timeout { rawip-closed |rawip-connected |rawip-started |rawip-established } *time-num*	*time-num* rawip-closed 6 rawip-connected 0 rawip-started 0 rawip-established 0
no ip session timeout { rawip-closed |rawip-connected |rawip-started |rawip-established }	

ip session timeout { udp-closed | udp-connected | udp-started | udp-established } *time-num*	*time-num* udp-closed 60 udp-connected 0 udp-started 0 udp-established 0
no ip session timeout { udp-closed | udp-connected | udp-started | udp-established }	

ip session timeout { tcp-closed | tcp-close-wait | tcp-established | tcp-fin-wait | tcp-last-ack | tcp-syn-receive | tcp-syn-sent | tcp-time-wait } *time-num*	*time-num* tcp-closed 0 tcp-close-wait 0 tcp-established 0 tcp-fin-wait 0 tcp-last-ack 0 tcp-syn-receive 0 tcp-syn-sent 0 tcp-time-wait 0
no ip session timeout { tcp-closed | tcp-close-wait | tcp-established | tcp-fin-wait | tcp-last-ack | tcp-syn-receive | tcp-syn-sent | tcp-time-wait }	

17.5

17.5.1

17.6

ip session threshold { icmp-closed | icmp-started | rawip-closed | udp-closed | tcp-closed | tcp-syn-receive | tcp-syn-sent } *threshold-num*	

icmp-closed	0
icmp-started	0
rawip-closed	0
udp-closed	0
tcp-closed	0
tcp-syn-receive	0
tcp-syn-sent	0

ip session threshold { icmp-closed | icmp-started } *threshold-num*	icmp-closed icmp-started *threshold-num* icmp-closed 0 icmp-started 0
no ip session threshold { icmp-closed | icmp-started }	icmp-closed icmp-started

ip session threshold rawip-closed *threshold-num*	rawip-closed *threshold-num* rawip-closed
no ip session threshold rawip-closed	rawip-closed

ip session threshold udp-closed *threshold-num*	udp-closed *threshold-num* udp-closed
no ip session threshold udp-closed	udp-closed

ip session threshold {tcp-closed | tcp-syn-receive | tcp-syn-sent} *threshold-num*	tcp-closed tcp-syn-receive tcp-syn-sent *threshold-num* tcp-closed tcp-syn-receive tcp-syn-sent
no ip session threshold {tcp-closed | tcp-syn-receive | tcp-syn-sent}	tcp-closed tcp-syn-receive tcp-syn-sent

17.7

17.8

Step 1	ip nat pool *address-pool start-address end-address* {netmask *mask* | prefix-length *prefix-length*}	P
Step 2	access-list *access-list-number* permit *ip-address wildcard*	
Step 3	ip nat inside source list *access-list-number* pool *address-pool*	
Step 4	interface *interface-type interface-number*	
Step 5	ip nat inside	
Step 6	interface *interface-type interface-number*	
Step 7	ip nat outside	

18.1.2 NAPT

)

Step 1	ip nat inside source static {udp | tcp} *local-address port global-address port* [permit -inside]	
Step 2	interface *interface-type interface-number*	
Step 3	ip nat inside	

Step 4	interface *interface-type* *interface-number*	
Step 5	ip nat outside	

Step 1	ip nat pool *address-pool* *start-address end-address* {netmask *mask* | prefix-length *prefix-length*}	P P
Step 2	access-list *access-list-number* permit *ip-address* wildcard	
Step 3	ip nat inside source list *access-list-number* { pool *address-pool*]| [interface *interface-type interface-number*} overload	
Step 4	interface *interface-type* *interface-number*	
Step 5	ip nat inside	
Step 6	interface *interface-type* *interface-number*	
Step 7	ip nat outside	

P P

P P

[no] ip nat translation dns	
[no] ip nat translation ftp	
[no] ip nat translation pptp	
[no] ip nat translation tftp	

18.1.6 NAT

1

```
!
interface vlan 2
ip address 192.168.12.1 255.255.255.0
ip nat inside
!
interface vlan 3
ip address 200.168.12.1 255.255.255.0
ip nat outside
!
ip nat pool net200 200.168.12.2 200.168.12.100 netmask
255.255.255.0
ip nat inside source list 1 pool net200
!
```

```
access-list 1 permit 192.168.12.0 0.0.0.255
```

N N

P

1 N

```
!
interface vlan 2
ip address 192.168.12.1 255.255.255.0
ip nat inside
!
interface vlan 3
ip address 200.168.12.200 255.255.255.0
ip nat outside
!
ip nat pool net200 200.168.12.200 200.168.12.200 netmask
255.255.255.0
ip nat inside source list 1 pool net200
access-list 1 permit 192.168.12.0 0.0.0.255
```

```
Ruijie(config-if)# no shut

#

Ruijie(config-if)# end
Ruijie#

#                                        ⊟     (          )
```

Ruijie(config)# **ip nat inside source static tcp** *192.168.0.3 80 218.5.19.2 80*

#

Ruijie(config)# **ip nat inside source static tcp** *192.168.0.4 25 218.5.19.2 25*
Ruijie(config)# **ip nat inside source static tcp**

```
interface vlan 2
ip address 192.168.0.1 255.255.255.0
ip nat inside
!
interface vlan 3
ip address 218.5.19.2 255.255.255.0
ip nat outside
!
ip nat inside source list 1 interface vlan 3
ip nat inside source static tcp 192.168.0.4 110 218.5.19.2 110
ip nat inside source static tcp 192.168.0.4 25 218.5.19.2 25
ip nat inside source static tcp 192.168.0.3 80 218.5.19.2 80
ip nat inside source static tcp 192.168.0.2 21 218.5.19.2 21
ip nat inside source static tcp 192.168.0.2 20 218.5.19.2 20
!
ip route 0.0.0.0 0.0.0.0 vlan 3 218.5.19.1
!
line con 0
line vty 0 4
password remoteuser
login
!
end
RUIJIE#
```

NAT

p

p

192.168.12.0 200.198.12.0

```
!
interface vlan 2
ip address 192.168.12.1 255.255.255.0
ip nat inside
!
interface vlan 3
ip address 200.198.12.1 255.255.255.0
ip nat outside
!
ip nat inside source static 192.168.12.0 200.198.12.0 netmask
255.255.255.0
```

19

19.1 Ping

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

5 P 2 ! .

```
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
```

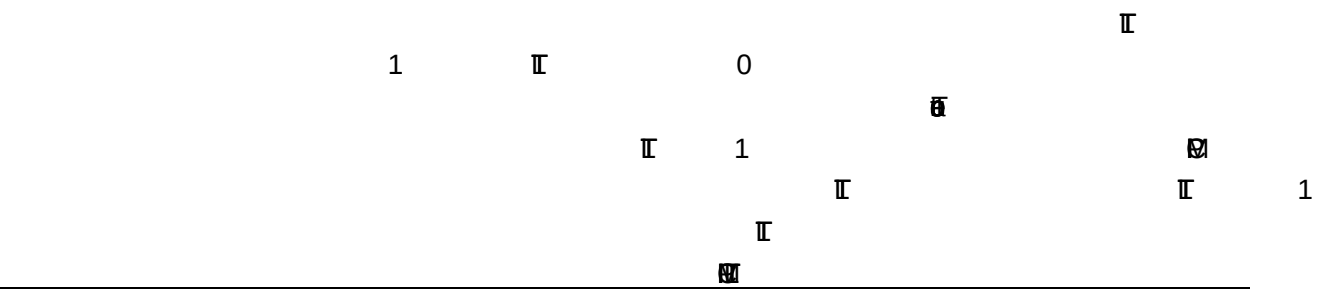
```
Ruijie# ping 192.168.5.197 length 1500 ntimes 100 data ffff
source 192.168.4.190 timeout 3
Sending 100, 1000-byte ICMP Echoes to 192.168.5.197, timeout
is 3 seconds:
  < press Ctrl+C to break >
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
```

```
Success rate is 100 percent (100/100), round-trip min/avg/max
= 2/2/3 ms
Ruijie#
```

19.2 Traceroute

Traceroute

Traceroute



P

Traceroute

traceroute [*protocol*][*destination* [probe	

P

1 6

2

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

P

1 I 4

19.3 line-detect

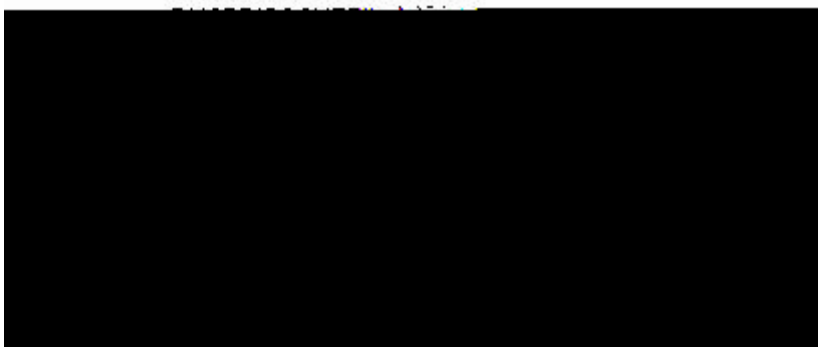
1

```
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
```

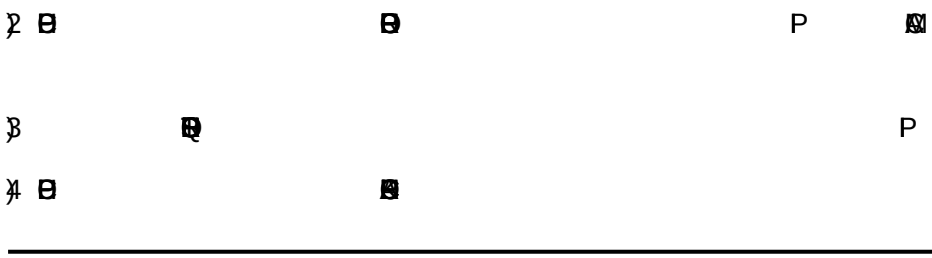

20 DHCP

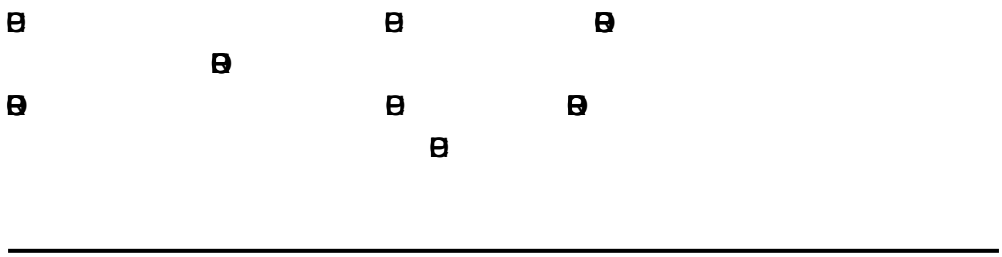
20.1 DHCP

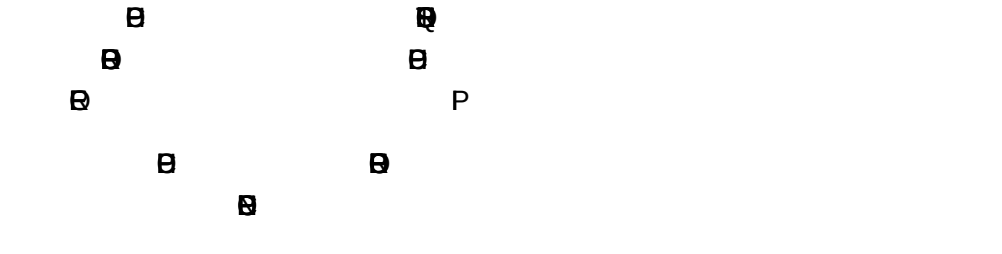
20.2 DHCP

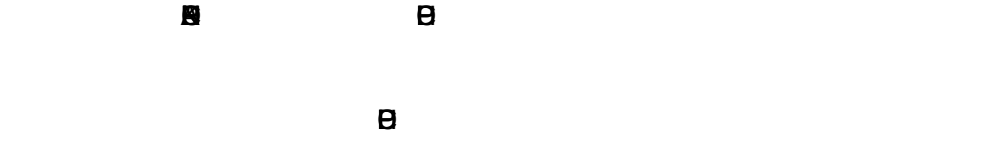


1 DHCP









20.3 DHCP

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20.4 DHCP

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ө ө
ө
P

service dhcp

P P

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

1

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

NetBIOS WINS

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

NetBIOS

network *network-number mask*	

D

[

]

20.5.4

P 1

P P

2

P P

P

P

ip dhcp pool *name*	
host *address*	P
hardware-address *hardware-address type* client-identifier *unique-identifier*	

client-name *name*	

20.5.5 Ping

P

( )

ip dhcp ping packets *number*	0 2

20.5.6 Ping

P

ip dhcp ping timeout *milliseconds*	

20.5.7 DHCP

P

ip address dhcp	P

20.5.8 PPP DHCP

p e P e

ip address dhcp	e P

20.5.9 FR DHCP

R e P e

ip address dhcp	e P

20.5.10 HDLC DHCP

e e P

1

2

3

clear ip dhcp binding ( ) ed dhcc pp HCDPHS CP v e r s t a G i s u R ö s j i e 3 # D H C P

show dhcp lease

```
dns-server 172.16.1.253
netbios-name-server 172.16.1.252
netbios-node-type h-node
```

20.7.3 DHCP

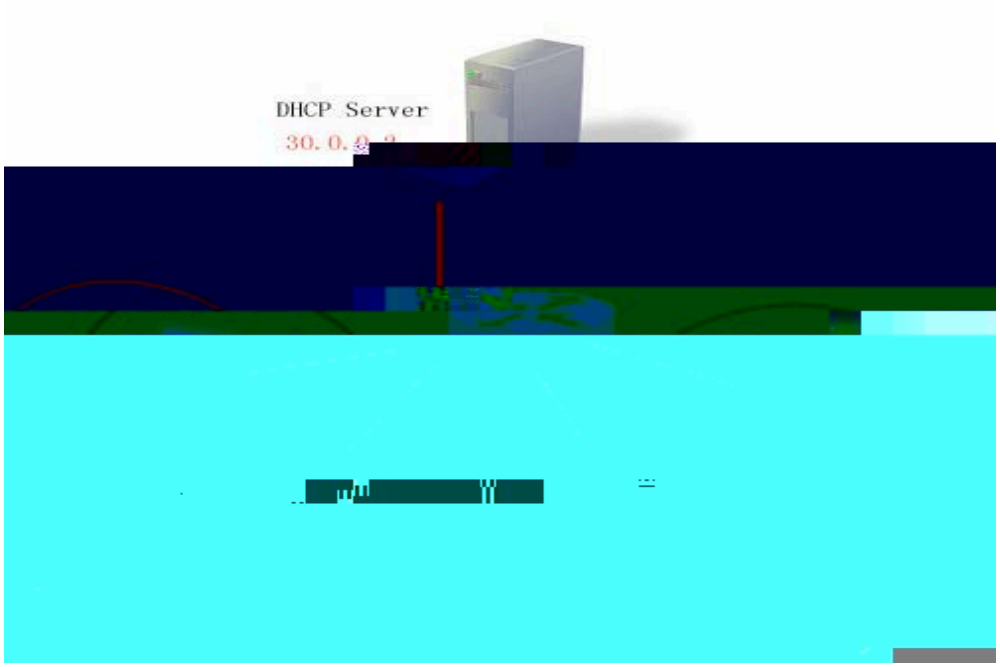
```
interface GigabitEthernet0/0
ip address dhcp
```

20.8

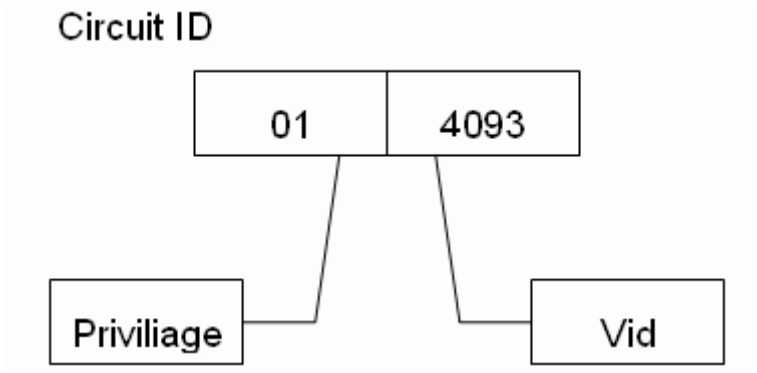
20.8.1 DHCP

e P

e e e



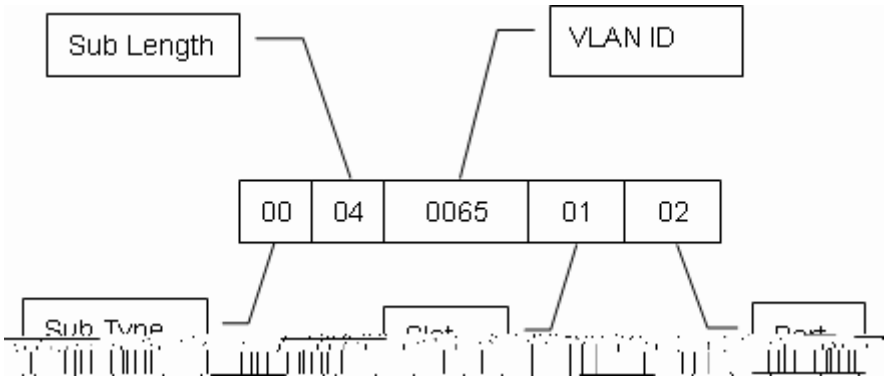
1



2

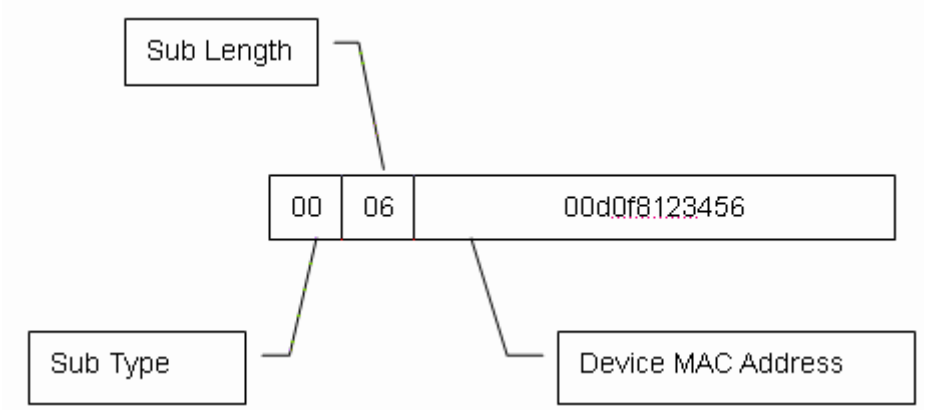
2

Agent Circuit ID



3

Agent Remote ID



4

20.8.4 DHCP relay Check Server-id

e e

e

e e

e

e

no IP helper-address [vrf]*A.B.C.D*	

20.9.3 DHCP option dot1x

P ip dhcp relay information option dot1x

```
Ruijie(config-ext-nacl)# permit ip any host 192.168.5.1
Ruijie(config-ext-nacl)# permit ip host 192.168.3.1 any
/      P
Ruijie(config-ext-nacl)# permit ip host 192.168.4.1 any
Ruijie(config-ext-nacl)# permit ip host 192.168.5.1 any
Ruijie(config-ext-nacl)# deny ip 192.168.3.0 0.0.0.255 192.1
68.3.0 0.0.0.255
/
Ruijie(config-ext-nacl)# deny ip 192.168.3.0  0.0.0.255  192.
168.4.0  0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.3.0  0.0.0.255  192.
168.5.0  0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.4.0  0.0.0.255  192.
168.4.0  0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.4.0  0.0.0.255  192.
168.5.0  0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.5.0  0.0.0.255  192.
168.5.0  0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.5.0  0.0.0.255  192.
168.3.0  0.0.0.255
Ruijie(config-ext-nacl)# deny ip 192.168.5.0  0.0.0.255  192.
168.4.0  0.0.0.255
Ruijie(config-ext-nacl)# exit
```

ip dhcp relay information option dot1x access-group *DenyAccessEachOtherOfUnauthrize*

DHCP option dot1x access-group

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

20.9.5 DHCP opti on 82

ip dhcp relay information option82 DHCP Relay Agent Information option

ip dhcp relay information option82	
no ip dhcp relay information option82	

20.9.6 DHCP relay check server-id

ip dhcp relay check *server-id*

DHCP relay check *server-id*

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

20.9.7 DHCP relay suppression

ip dhcp relay suppression

ip dhcp relay suppresson	
no ip dhcp relay suppresson	

20.9.8 DHCP

```
Ruijie# configure terminal
Ruijie(config)# service dhcp                    /
Ruijie(config)# ip helper-address 192.18.100.1  /

Ruijie(config)# ip helper-address192.18.100.2     /

Ruijie(config)# interface GigabitEthernet 0/3
Ruijie(config-if-GigabitEthernet  0/3)#  ip  helper-address
  192.18.200.1  /
Ruijie(config-if-GigabitEthernet  0/3)#  ip  helper-address
   192.18.200.2  /
Ruijie(config-if-GigabitEthernet 0/3)# end
```

20.10 DHCP relay

20.10.1 DHCP opti on dot1x

1

2 P

3 dhcp option82

4 P

20.10.2 DHCP option82

dhcp option dot1x

20.11 DHCP

show running-config

```
Ruijie# show running-config
Building configuration...
Current configuration : 1464 bytes
version RG0S 10.1.00(1), Release(11758)(Fri Mar 30 12:53:11 CST
2007 -nprd
```

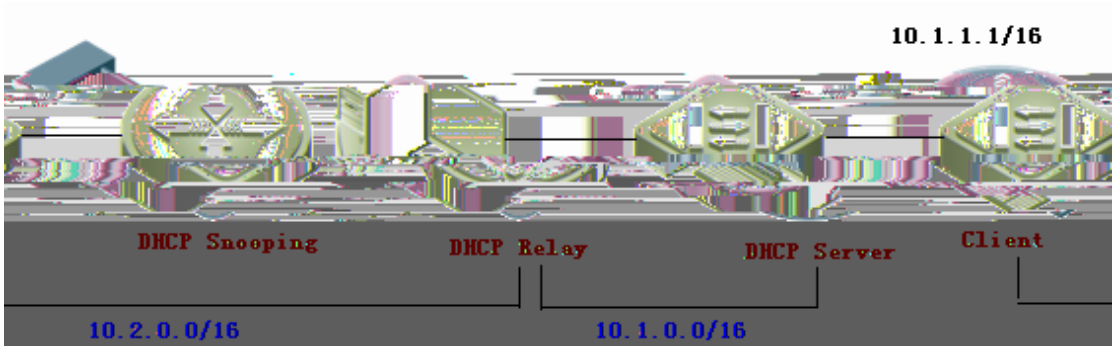
```
hostname Ruijie
vlan 1
ip helper-address 192.18.100.1
ip helper-address 192.18.100.2
ip dhcp relay information option dot1x
interface GigabitEthernet 0/1
interface GigabitEthernet 0/2
interface GigabitEthernet 0/3
no switchport
ip helper-address 192.168.200.1
ip helper-address 192.168.200.2
interface VLAN 1
ip address 192.168.193.91 255.255.255.0
line con 0
exec-timeout 0 0
line vty 0
exec-timeout 0 0
login
password 7 0137
line vty 1 2
login
password 7 0137
line vty 3 4
login
end
```

20.12 DHCP

20.12.1 IP

1 P

2 P




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

#
Ruijie(config)# interface gigabitEthernet 0/2
Ruijie(config-if-GigabitEthernet 0/2)# ip dhcp snooping trust

#
Ruijie(config-if-GigabitEthernet 0/2)# ip arp inspection trust
Ruijie(config-if-GigabitEthernet 0/2)# exit

#
Ruijie(config)# ip arp inspection vlan 1

#
Ruijie(config)# interface vlan 1
Ruijie(config-if-VLAN 1)# ip address 10.2.0.1 255.255.0.0

#
Ruijie(config)# ip route 10.1.0.0 255.255.0.0 10.2.1.1
```

```
#
Ruijie(config)# server dhcp

#
Ruijie(config)# ip helper-address 10.1.1.1

#                    P
Ruijie(config)# interface gigabitEthernet 3/1
Ruijie(config-if-GigabitEthernet 3/1)# no switchport
Ruijie(config-if-GigabitEthernet 3/1)# ip address 10.2.1.1
255.255.0.0

#                   P
Ruijie(config)# interface gigabitEthernet 3/2
Ruijie(config-if-GigabitEthernet 3/2)# no switchport
Ruijie(config-if-GigabitEthernet 3/2)# ip address 10.1.0.1
255.255.0.0

#              P
Ruijie(config)# interface gigabitEthernet 4/1
Ruijie(config-if-GigabitEthernet 4/1)# no switchport
Ruijie(config-if-GigabitEthernet 4/1)# ip address 10.1.1.1
255.255.0.0

#
Ruijie(config)# service dhcp

#
Ruijie(config)# ip dhcp excluded-address 10.1.1.1 10.1.1.10

#
Ruijie(config)# ip dhcp pool linwei

#
Ruijie(dhcp-config)# default-router 10.2.1.1

#   P
Ruijie(dhcp-config)# network 10.2.0.0  255.255.0.0

#
Ruijie(config)# ip route 10.2.0.0  255.255.0.0  10.1.0.1
```

21 DNS

21.1 DNS

P

P P

P 1 P

2

P

P

21.2

21.2.1 DNS

P	
	6

21.2.2 DNS

# ip Domain-lookup	

no ip domain-lookup

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

21.2.3 DNS Server

Domain-loonar

ip

21.2.6

# show hosts	

```
Ruijie# show hosts
DNS name server    :
192.168.5.134    static
    host                type         address
www.163.com             static       192.168.5.243
www.ruijie.com          dynamic      192.168.5.123
```

21.2.7

Ping

```
Ruijie# ping www.ietf.org
Resolving host[www.ietf.org]
Sending 5,100-byte ICMP Echos to 192.168.5.123,
timeout is 2000 milliseconds.
!!!!!
Success rate is 100 percent(5/5)
Minimum = 1ms Maximum = 1ms, Average = 1ms
```

22 NTP

22.1 NTP

ntp authenticate	
no ntp authenticate	

ntp authentication-key ntp trusted-key

22.2.2 NTP

ntp

trusted-key

ntp authentication-key *key-id* md5 *key-string* [*enc-type*]	0 7
no ntp authentication-key *key-id* md5 *key-string* [*enc-type*]	

22.2.3 NTP ID

ntp server *ip-addr* [version *version*] source *if-name* *number*] key *keyid*] prefer]	
no ntp server *ip-addr*	

22.2.5 NTP

P

interface *interface-type number*	

R

no ntp	R
ntp authenticate ntp server *ip-addr* [version *version*] [source *if-name number*] [key *keyid*] [prefer]	R

22.2.7 NTP

8

R 1

R

ntp synchronize	
no ntp synchronize	

0

R

R

R R R

R

22.2.8 NTP

R

p

22.2.10 NTP

ntp access-group { peer | serve | serve-only | query-only } *access-list-number*|*access-list-name*	
no ntp access-group { peer | serve | serve-only | query-only } *access-list-number*|*access-list-name*	

peer

1

2

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

22.3 NTP

22.3.1 NTP

debug ntp	
no debug ntp	

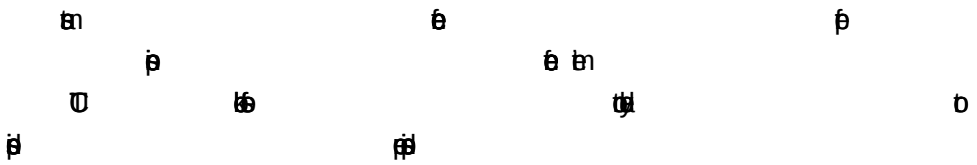
22.3.2 NTP

show ntp status

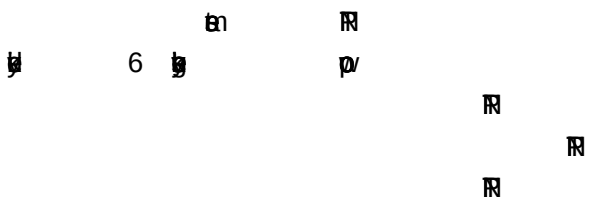
show ntp status	

```
Ruijie# show ntp status
Clock is synchronized, stratum 9, reference is 192.168.217.100
```

```
clock offset is 32.97540 sec, root delay is 0.00000 sec
root dispersion is 0.00003 msec, peer dispersion is 0.00003 msec
```



22.4

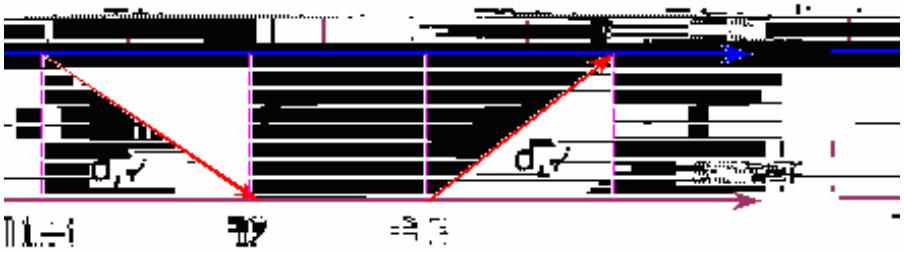


```
Ruijie(config)# no ntp
Ruijie(config)#
```

23 (SNTP)

23.1

23.1.1 SNTP



1

[illegible] ( ) [illegible]

[illegible] ( ) [illegible]

[illegible] ( ) [illegible]

T

d

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

t d [illegible]

[illegible]

23.2 SNTP

[illegible]

23.2.1 SNTP 5 ,Ñi•x•?ß È[illegible]

P	

23.2.2 SNTP

1

```
Ruijie# config
```

2 (
5)

```
Ruijie(config)# sntp enable
```

3

```
Ruijie(config)# End
```

4

```
Ruijie# show running-config
```

5

```
Ruijie# copy running-config startup-config
```

no sntp enable

23.2.3 NTP Server

/

P

```
Ruijie(config)# sntp server <ip-addr>
```

```
Ruijie(config)# End
```

```
Ruijie# show running-config
```

```
Ruijie# copy running-config startup-config
```

23.2.4 SNTP

```
Ruijie# config
```

```
Ruijie(config)# sntp interval <seconds>
```

```
Ruijie(config)# End
```

```
Ruijie# show running-config
```

```
Ruijie# copy running-config startup-config
```

24 SSH

24.1 SSH

P

24.2 SSH

	SSH1	SSH2

24.3 SSH

24.4 SSH

24.4.1 SSH

S	
S	1 2
S	2
S	3

24.4.2

1 S

f

2 v v

24.4.3 SSH Server

S S

enable service ssh-server S S

S

configure terminal	
enable service ssh-server	S
crypto key generate { rsa|dsa }	

[no] crypto key generate crypto key zeroize

24.4.4 SSH Server

S no enable service ssh-server

S

configure terminal	
no enable service ssh-server	S

S

24.4.5 SSH server

1 2 S

configure terminal		
ip ssh version {1 | 2}		S
no ip ssh version		S

24.4.6 SSH

0
S

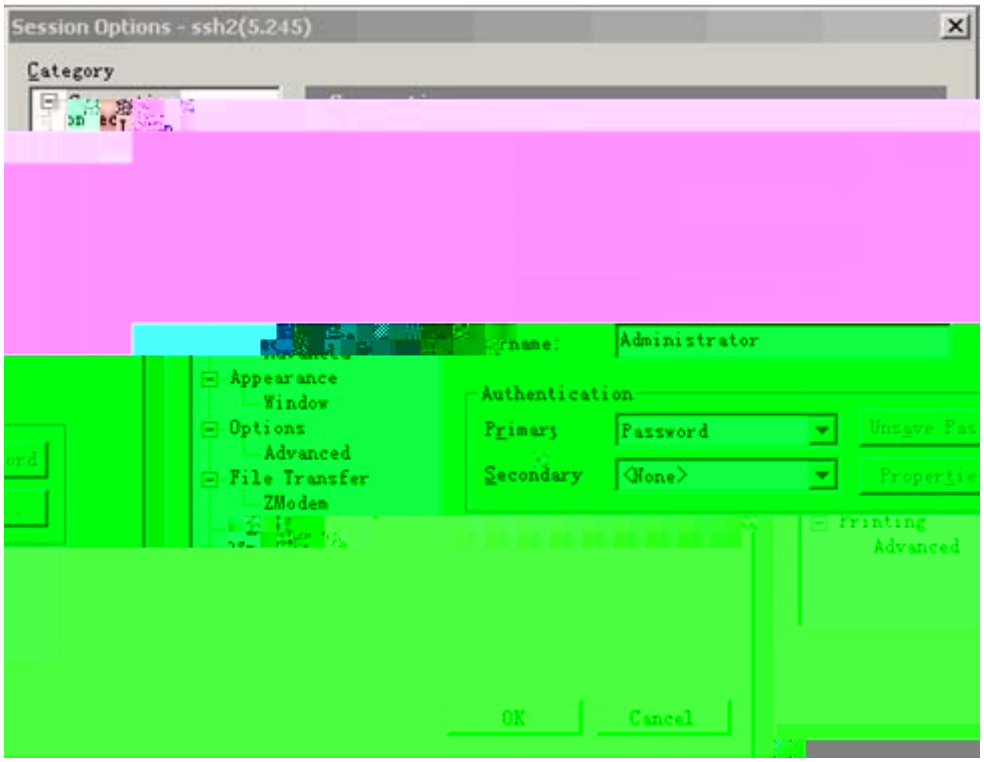
configure terminal		
ip ssh time-out *time*		S
no ip ssh time-out		S 0

24.4.7 SSH

S
3
S

]

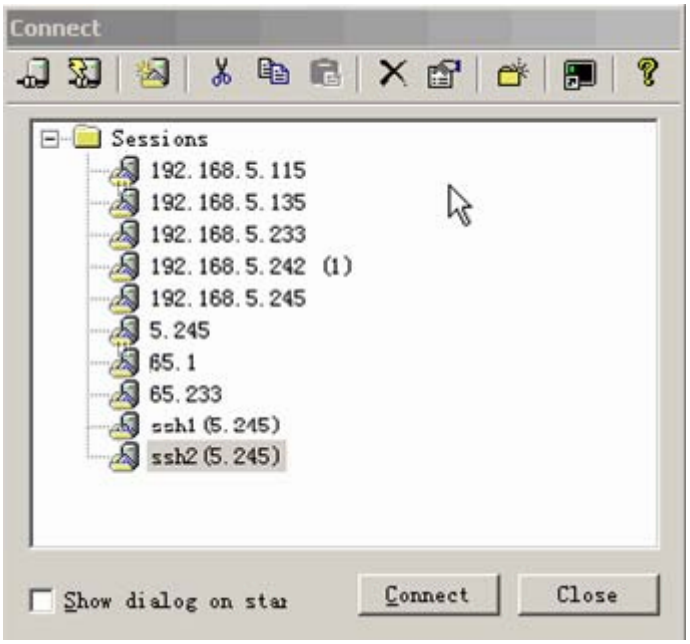
24.5 SSH



1

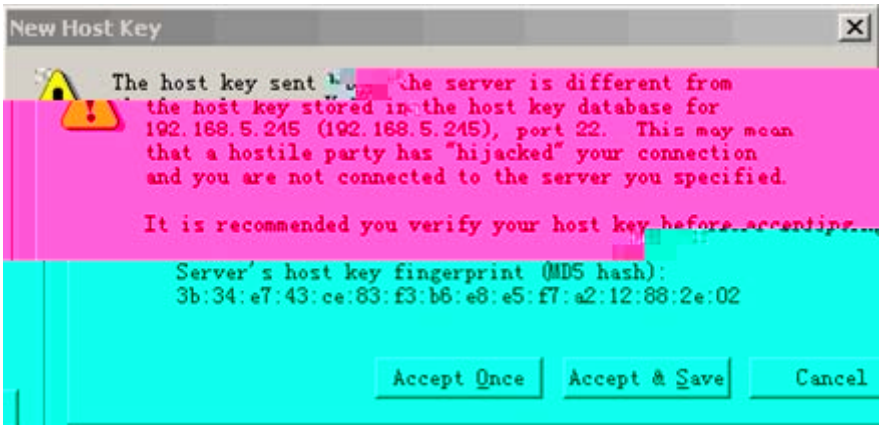
1 2 P 2

K


Connect
Sessions
192.168.5.115
192.168.5.135
192.168.5.233
192.168.5.242 (1)
192.168.5.245
5.245
65.1
65.233
ssh1 (5.245)
ssh2 (5.245)
Show dialog on star
Connect
Close

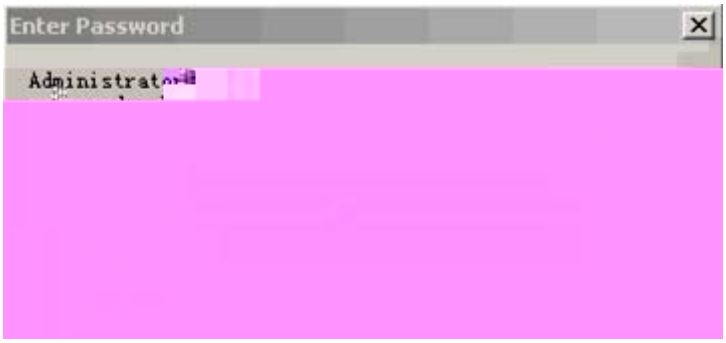
2

6

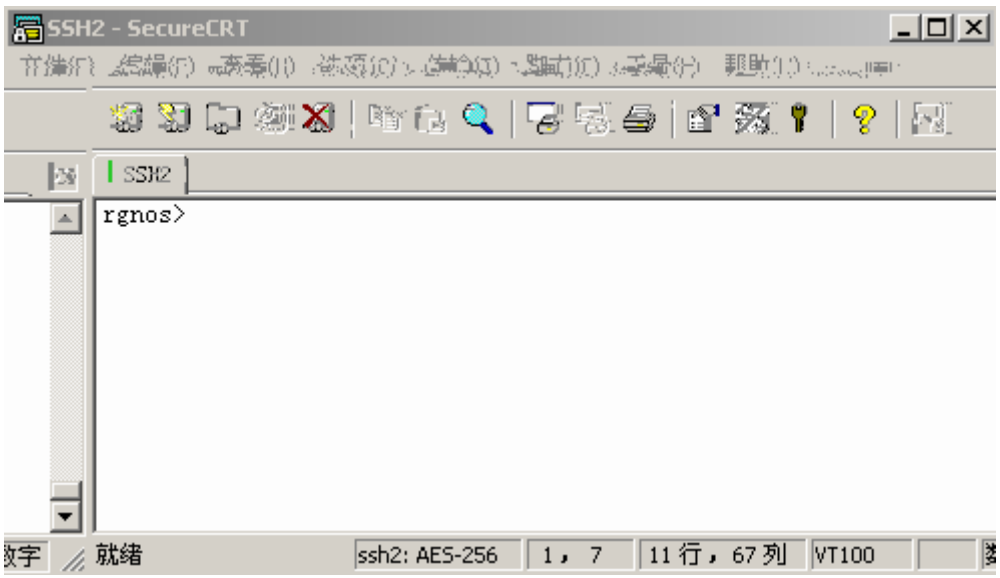

New Host Key
The host key sent
he server is different from
the host key stored in the host key database for
192.168.5.215 (192.168.5.215), port 22. This may mean
that a hostile party has "hijacked" your connection
and you are not connected to the server you specified.
It is recommended you verify your host key
Server's host key fingerprint (MD5 hash):
3b:34:e7:43:ce:83:f3:b6:e8:e5:f7:a2:12:88:2e:02
Accept Once
Accept & Save
Cancel

3

)


Enter Password
Administrat

4



5

25 UDP-Helper

25.1 UDP-Helper

25.1.1 UDP-Helper

25.2 UDP-Helper

25.2.1 UDP-Helper

25.2.2 UDP-Helper

udp-helper enable	udp-helper enable

no udp-helper enable

ip forward-protocol udp *ID*	0 5 3 7 1 8 9

no ip forward-protocol udp port

ip forward-protocol udp domain ip forward-protocol udp *53*

26

P

1

:

1

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

2

match ip address *access-list-number*	
match length *min max*	

3

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

```
Ruijie(config-route-map)# set ip next-hop 192.168.5.5
Ruijie(config-route-map)# int vlan 1
Ruijie(config-if)# ip policy route-map name
```

ip policy {load-balance | Redundance }	
no ip policy	

4

3

4 3

1 [no] ip policy route-map

2 ip local policy route-map

3 match ip address

4 match length

5 set ip next-hop

6 set ip default next-hop

7 set interfaT0 1cT0 1e

8 set default interfaT0 1cT11e

9 set ip tos

0 set ip preceT0 1dence

1 set ip dscp

1

2 [illegible]

3 [illegible]

4 P [illegible]

5 P [illegible]

6 [illegible]

7 [illegible]

27 RIP

27.1 RIP

R

R

R

R

R

0 1

R

default-information originate

ip default-network

R

R

R

R

R

R

27.2 RIP

R

R

R

R

R R

R neighbor *ip-address*	R

R

passive-interface

“ ”

R X

neighbor Neighbor

27.2.3

P

X

P

no ip split-horizon	
ip split-horizon	

27.2.4 RIP

R 1 2

R	version { 1 | 2} R

R	ip rip send version 1 R
R	ip rip send version 2 R
R	ip rip send version 1 2 R R

R	ip rip receive version 1 R
R	ip rip receive version 2 R
R	ip rip receive version 1 2 R R

27.2.5

R

R R

R

R no auto-summary	
R auto-summary	

27.2.7 RIP

R R

R R

R timers basic *update invalid flush*	R

0 0 0

R

27.2.8 RIP

R

R P P

P

R

R	no validate-update-source
R	validate-update-source

27.2.9 RIP

R R

R

R

R

R

R	no ip rip default-information	

ip rip default-information R
default-information originate

27.2.11 RIP VRF

R R R R
R R
R R R R

address-family
R R R
R R R
R

exit-address-family
exit

R R R

R *vrf-name*	address-family ipv4 vrf	*vrf-name* R R
R *vrf-name*	no address-family ipv4 vrf	*vrf-name* R R

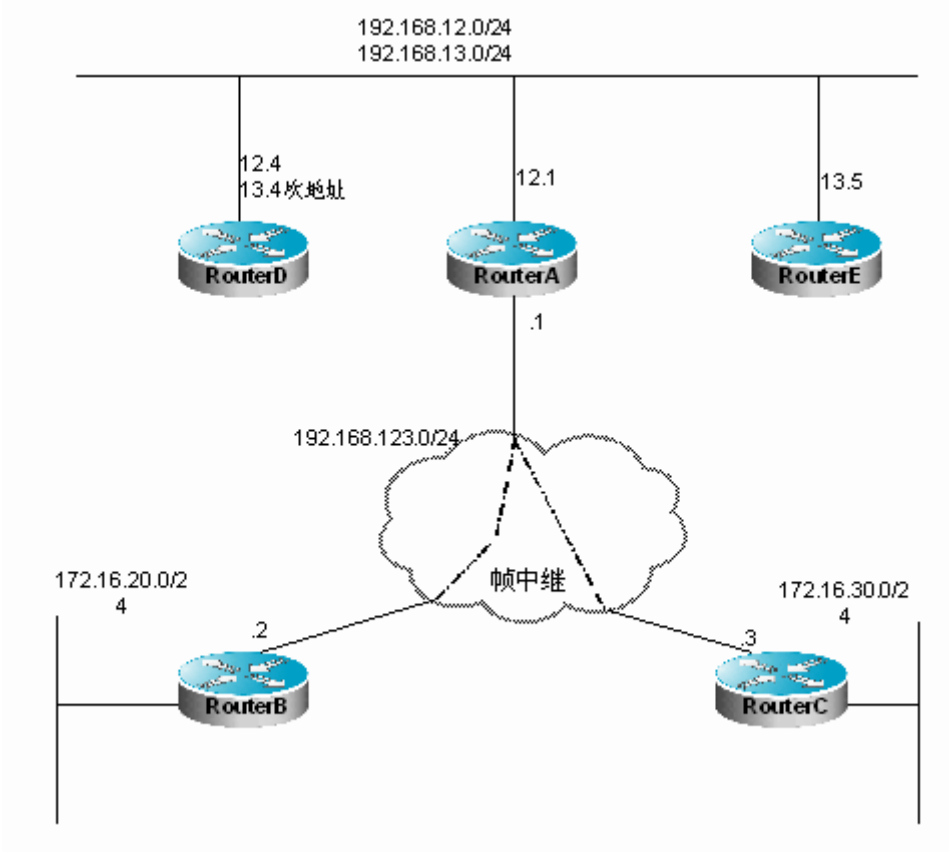
27.3 RIP

4 R

R
R
R
R

27.3.1 RIP

P 1



1 RIP

1 R

2 3

A

```
#
interface GigabitEthernet0/0
ip address 192.168.12.1 255.255.255.0
#
```

R

```
interface GigabitEthernet0/0
ip address 192.168.12.4 255.255.255.0
ip address 192.168.13.4 255.255.255.0 secondary
no ip split-horizon

#     R
router rip
version 2
network 192.168.12.0
network 192.168.13.0
```

E

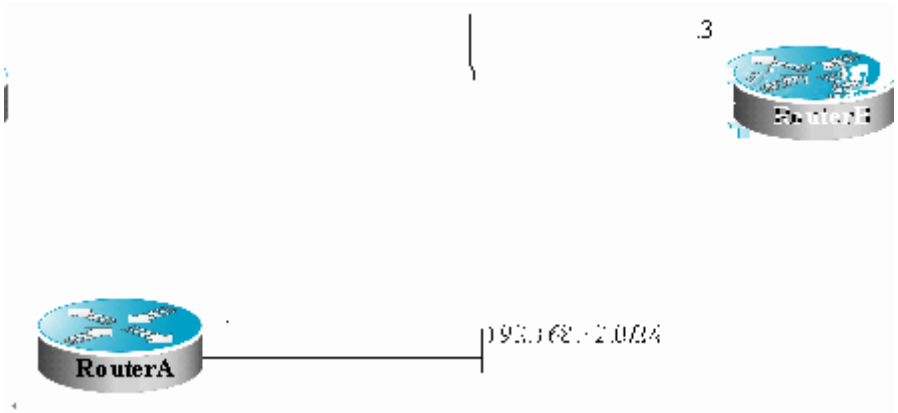
```
#
interface GigabitEthernet0/0
ip address 192.168.13.5 255.255.255.0

#     R
router rip
version 2
network 192.168.13.0
```

27.3.2 RIP

R M

P 2



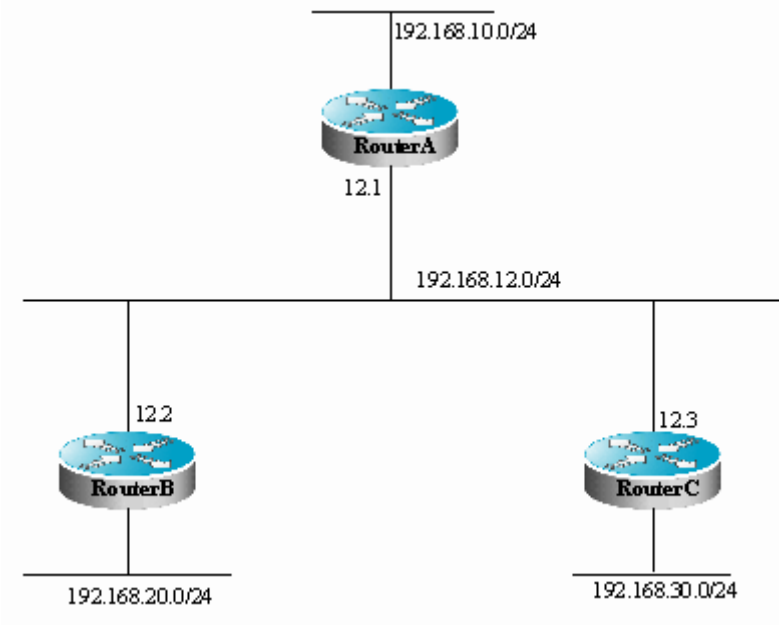
2 RIP

RA R R R R

A

R P

3



3 RIP

R

1

2

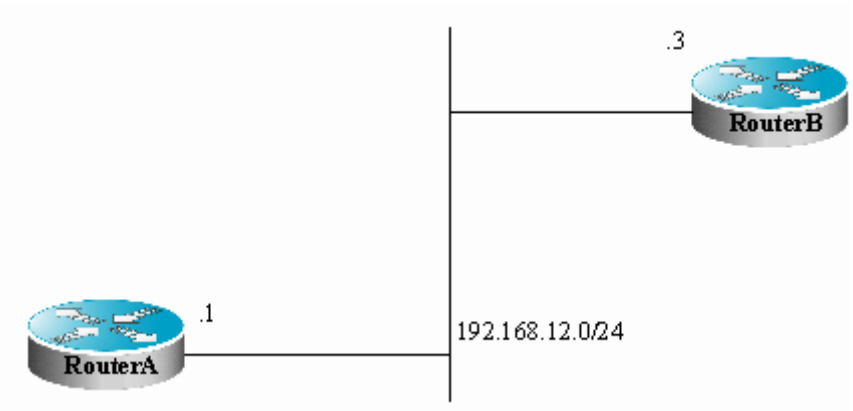
A R

A

```
#
interface GigabitEthernet0/0
ip address 192.168.12.1 255.255.255.0

#
interface Loopback0
ip address 192.168.10.1 255.255.255.0

#     R
router rip
version 2
network 192.168.12.0
network 192.168.10.0
passive-interface GigabitEthernet0/0
```



4 RIP VRF

R A p R B p R

A

```
#     R
ip vrf redvpn

#       R
interface GigabitEthernet 1/0
ip vrf forwarding redvpn
ip address 192.168.12.1 255.255.255.0

#     R             R
router rip
address-family ipv4 vrf redvpn
network 192.168.12.0
exit-address-family
```

B :

```
#     R
ip vrf bluevpn

#       R
interface GigabitEthernet 1/0
ip vrf forwarding bluevpn
ip address 192.168.12.2 255.255.255.0

#     R             R
router rip
address-family ipv4 vrf bluevpn
network 192.168.12.0
exit-address-family
```

28 OSPF

28.1 OSPF

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	: Æ 5 Æ 1 þ 0 :þ

28.2.1 OSPF

configure terminal	
ip routing	( )
router ospf *process_id* [vrf *vrf-name*]	
network *address wildcard-mask* area *area-id*	
end	
show ip protocols	
write	

vrf Network 2 “ ” 1 0

P network P

no router ospf *process-id*

```
Ruijie(config)# router ospf 1
Ruijie(config-router)# network 192.168.0.0 0.0.0.255 area 0
Ruijie(config-router)# end
```

OSPF

write	

28.2.3 OSPF

1

2

ip ospf network {broadcast | non-broadcast | point-to-point | {point-to-multipoint [non-broadcast]}	

1

2

:

ip ospf network non-broadcast	
exit	
router ospf *1*	
neighbor *ip-address* [*priority number*][*poll-interval seconds*]	,

.

, ,

,

ip ospf network point-to-multipoint non-broadcast	
exit	
router ospf *1*	
neighbor *ip-address* [*cost number*]	,

4

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ip ospf network broadcast	
ip ospf priority *priority*	

28.2.4 OSPF

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

summary-address *ip-address mask* {not-advertise | tag *tag-id*]	

28.2.7

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

show ip ospf show ip ospf neighbor

28.2.8

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

28.2.9 Loopback

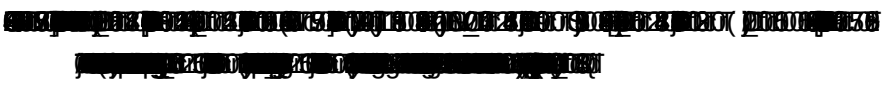
P

P

P

P

interface loopback *1*	
ip address *ip-address mask*	P



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timers spf *spf-delay spf-holdtime*	

28.2.12

28.2.15 OSPF

passive-interface

configure terminal	
router ospf *1*	
passive-interface *interface-name*	( )
passive-interface default	( )
end	
write	

no passive-interface *interface-id*

28.2.16 OSPF

Step 1	router ospf *process-id*	
Step 2	overflow memory-lack	

	no overflow memory-lack
	clear ip ospf process

28.2.17 OSPF

OSPFv2 MIB

snmp-server host *host-ip* version *version-no string* [ospf]	
snmp-server enable traps ospf	
router ospf *process_id* [vrf *vrf-name*]	
enable traps [error [ifauthfailure | ifconfigerror | ifrxbadpacket | virtifauthfailure | virtifconfigerror | virtifrxbadpacket]| lsa [lsdbapproachoverflow | lsdboverflow | maxagelsa | originatelsa]| retransmit [iftxretransmit | virtiftxretransmit]| state-change [ifstatechange | nbrstatechange | virtifstatechange | virtnbrstatechange]	
end	
write	

28.3 OSPF

show ip ospf [*process-id*]	
show ip ospf [*process-id area-id*] database [adv-router *ip-address* | {asbr-summary | external | network | nssa-external | opaque-area | opaque-as | opaque-link | router | summary }[*link-state-id*] [adv-router *ip-address* | self-originate}] | database-summary | max-age | self-originate]	
show ip ospf [*process-id*] border-routers	
show ip ospf interface [*interface-name*]	
show ip ospf [*process-id*] neighbor [*interface-name*][*neighbor-id*][detail]	show ip6o

OSPF process 100:
Neighbor ID Pri State Dead Time Address Interface
10.10.11.50 1 Full/Backup 00:00:31 10.10.11.50 eth1

2

0

Ruijie#**sh ip ospf interface GigabitEthernet** *1/0*
GigabitEthernet 1/0 is up, line protocol is up
Internet Address 192.168.1.1/24, Ifindex: 2 Area 0.0.0.0, MTU 1500
Matching network config: 192.168.1.0/24
Process ID 1, Router ID 192.168.1.1, Network Type BROADCAST, Cost: 1
Transmit Delay is 1 sec, State DR, Priority 1
Designated Router (ID) 192.168.1.1, Interface Address 192.168.1.1
Backup Designated Router (ID) 192.168.1.2, Interface Address 192.168.1.2
Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
Hello due in 00:00:04
Neighbor Count is 1, Adjacent neighbor count is 1
Crypt Sequence Number is 30
Hello received 972 sent 990, DD received 3 sent 4
LS-Req received 1 sent 1, LS-Upd received 10 sent 26
LS-Ack received 25 sent 7, Discarded 0

3

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Ruijie# **show ip ospf**
Routing Process "ospf 1" with ID 1.1.1.1
Process uptime is 4 minutes
Process bound to VRF default
Conforms to RFC2328, and RFC1583Compatibility flag is enabled
Supports only single TOS(TOS0) routes
Supports opaque LSA
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 incomming 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 Adjency 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

Routing Process "ospf 20" with ID 2.2.2.2
Process uptime is 4 minutes
Process bound to VRF default
Conforms to RFC2328, and RFC1583Compatibility flag is enabled
Supports only single TOS(TOS0) routes
Supports opaque LSA
SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
LsaGroupPacing: 240 secs
Number of incomming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 0. Checksum 0x000000
Number of opaque AS LSA 0. Checksum 0x000000
Number of non-default external LSA 0
External LSA database is unlimited.
Number of LSA originated 0
Number of LSA received 0
Log Neighbor Adjency Changes : Enabled
Number of areas attached to this router: 0
```

28.4 OSPF

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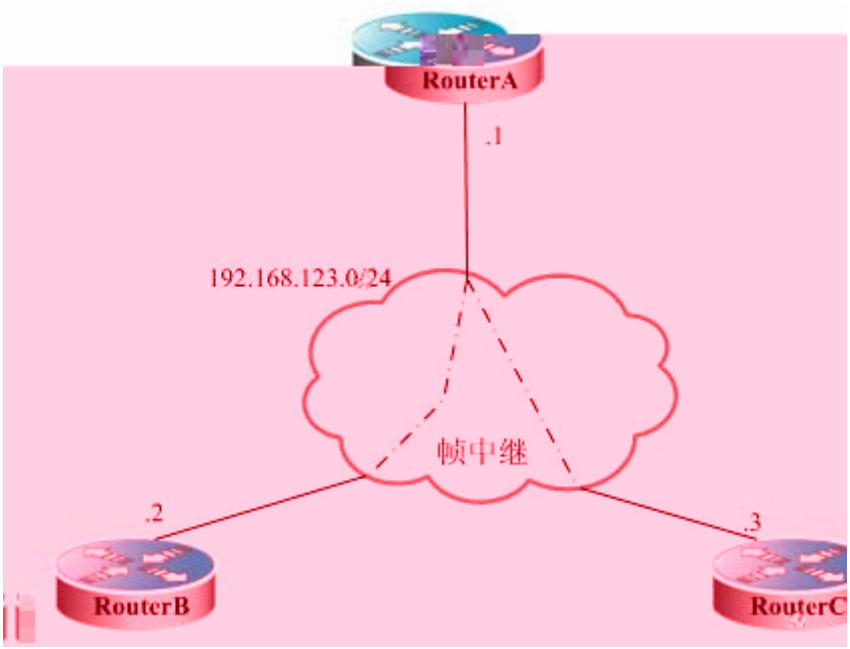
28.4.1 OSPF NBMA

P 1



10

1 A B C

2 A B

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4

P

```
ip address 192.168.123.1 255.255.255.0
encapsulation frame-relay
ip ospf network non-broadcast
ip ospf priority 10
```

Ð B

```
router ospf 1
network 192.168.123.0 0.0.0.255 area 0
neighbor 192.168.123.2  priority 5
neighbor 192.168.123.3
timers spf 500 1000 10000
```

B

```
interface Serial 1/0
ip address 192.168.123.2 255.255.255.0
encapsulation frame-relay
ip ospf network non-broadcast
ip ospf priority 5
```

Ð

```
router ospf 1
network 192.168.123.0 0.0.0.255 area 0
neighbor 192.168.123.1 priority 10
neighbor 192.168.123.3
timers spf 500 1000 10000
```

C

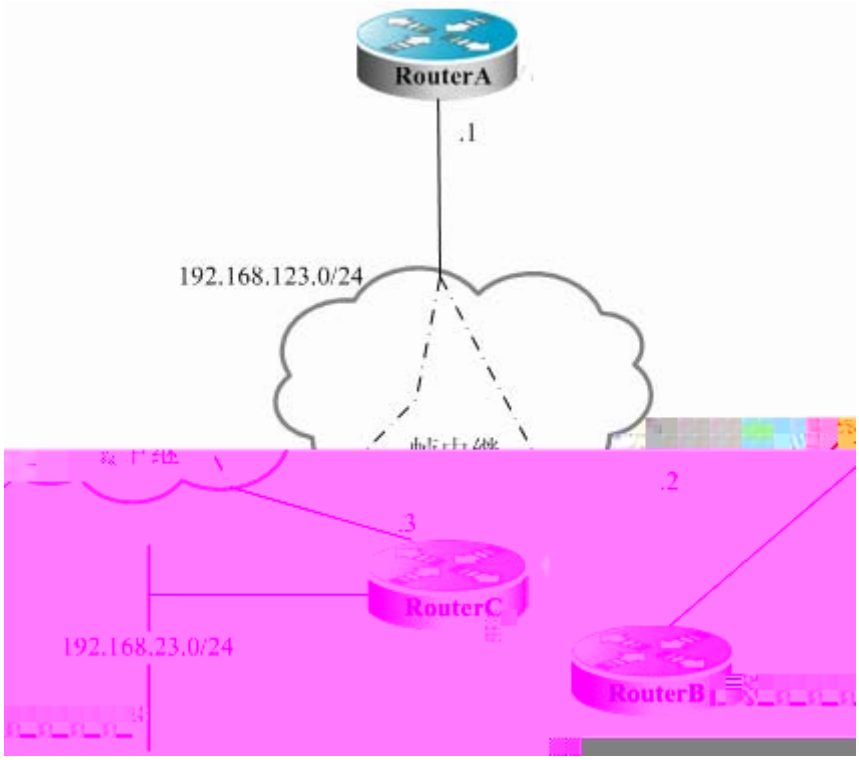
```
interface Serial 1/0
ip address 192.168.123.3 255.255.255.0
encapsulation frame-relay
ip ospf network non-broadcast
```

Ð

```
router ospf 1
network 192.168.123.0 0.0.0.255 area 0
neighbor 192.168.123.1 10
neighbor 192.168.123.2 5
timers spf 500 1000 10000
```

28.4.2 OSPF

P 2



11

1 A B C

A

```
interface GigabitEthernet 0/0
ip address 192.168.12.1 255.255.255.0
```

```
interface Serial 1/0
ip address 192.168.123.1 255.255.255.0
encapsulation frame-relay
ip ospf network point-to-multipoint
```

```
router ospf 1
network 192.168.23.0 0.0.0.255 area 0
```

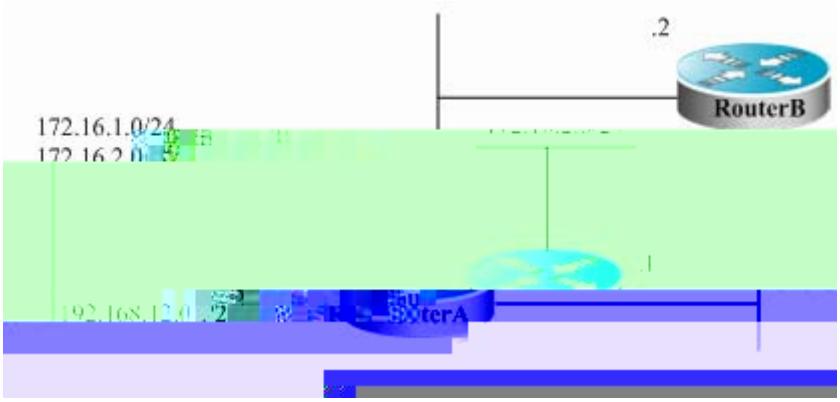
```
network 192.168.123.0 0.0.0.255 area 0
```

B

¿Gb p ñ Hañ2u• > !h 0 'YP á' •# %Zê 2mA' Û

28.4.3 OSPF

P 3



12

1

2

A

```
interface GigabitEthernet0/0
ip address 192.168.12.1 255.255.255.0
ip ospf message-digest-key 1 md5 hello
```

```
router ospf 1
network 192.168.12.0 0.0.0.255 area 0
area 0 authentication message-digest
```

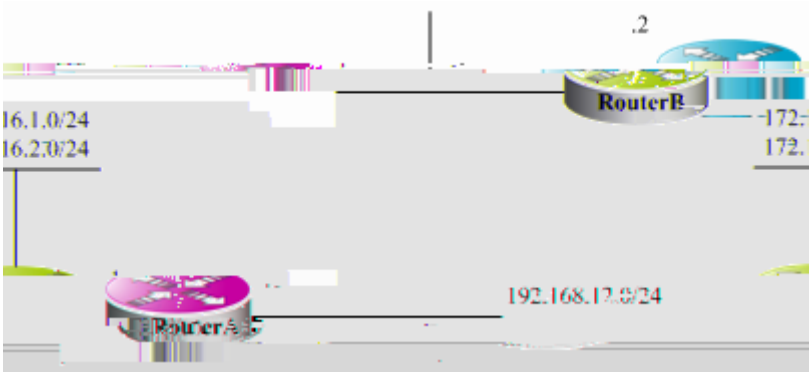
B

```
interface GigabitEthernet0/0
ip address 192.168.12.2 255.255.255.0
ip ospf message-digest-key 1 md5 hello
```

```
router ospf 1
network 192.168.12.0 0.0.0.255 area 0
area 0 authentication message-digest
```

28.4.4 OSPF

P 4



13 Ð

1 Ð 0

2 A

3 A

A

```
interface GigabitEthernet0/0
ip address 192.168.12.1 255.255.255.0
```

2

```
interface GigabitEthernet1/0
ip address 172.16.1.1 255.255.255.0
interface GigabitEthernet1/1
ip address 172.16.2.1 255.255.255.0
```

B

```
router ospf 1
network 192.168.12.0 0.0.0.255 area 0
network 172.16.1.0 0.0.0.255 area 10
network 172.16.2.0 0.0.0.255 area 10
no discard-route internal
area 10 range 172.16.0.0 255.255.252.0 cost 20
```

B

```
interface GigabitEthernet0/0
ip address 192.168.12.2 255.255.255.0
```

B

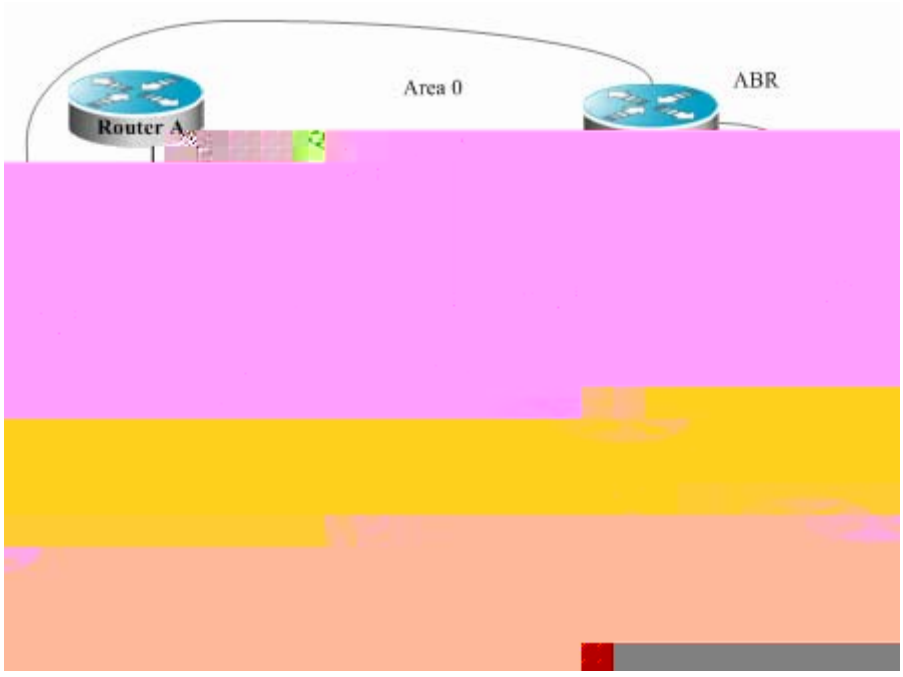
```
router ospf 1
network 192.168.12.0 0.0.0.255 area 0
```

28.4.5 OSPF ABR ASBR

B

0 3 P

5



14 B

A B C D

,

A

```
interface GigabitEthernet0/0
ip address 192.168.12.1 255.255.255.0
```

```
router ospf 1
network 192.168.12.0 0.0.0.255 area 0
```

B

```
interface GigabitEthernet0/0
ip address 192.168.12.2 255.255.255.0

interface Serial 1/0
ip address 192.168.23.2 255.255.255.0
```

```
router ospf 1
network 192.168.12.0 0.0.0.255 area 0
network 192.168.23.0 0.0.0.255 area 0
```

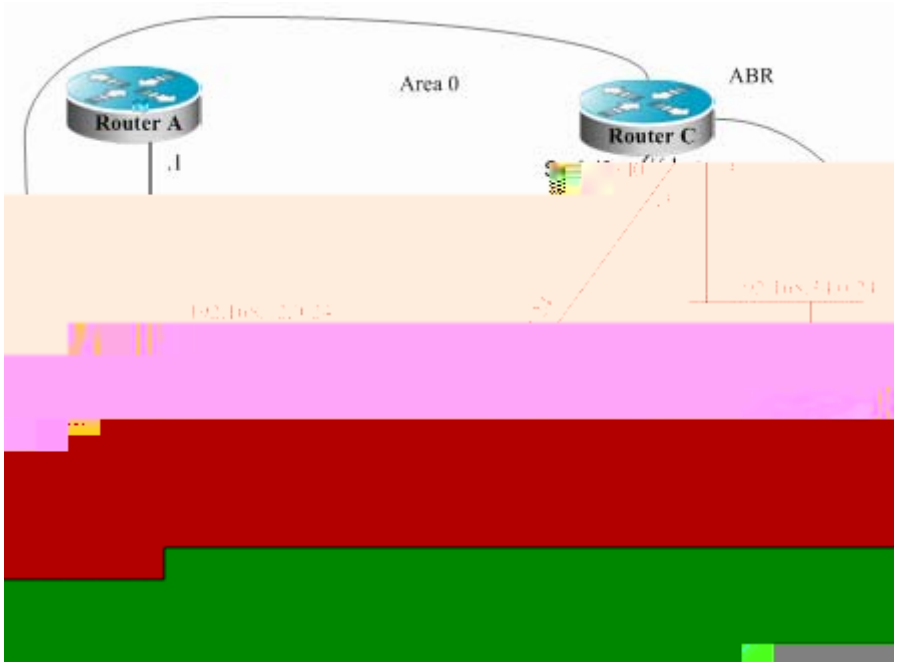
C

```
interface GigabitEthernet 0/0
ip address 192.168.34.3 255.255.255.0

interface Serial 1/0
ip address 192.168.23.3 255.255.255.0
```

#

```
router ospf 1
network 192.168.23.0 0.0.0.255 area 0
```



15 OSPF

Ð Ð

D

C

A

```
interface GigabitEthernet0/0
ip address 192.168.12.1 255.255.255.0
```

Ð

```
router ospf 1
network 192.168.12.0 0.0.0.255 area 0
```

B

```
interface GigabitEthernet0/0
ip address 192.168.12.2 255.255.255.0


interface Serial1/0
ip address 192.168.23.2 255.255.255.0
```

Ð

```
router ospf 1
network 192.168.12.0 0.0.0.255 area 0
network 192.168.23.0 0.0.0.255 area 0
```

C

```
interface GigabitEthernet0/0
ip address 192.168.34.3 255.255.255.0


interface Serial1/0
ip address 192.168.23.3 255.255.255.0


interface Dialer10
ip address 192.168.30.1 255.255.255.0
```

Ð

```
router ospf 1
network 192.168.23.0 0.0.0.255 area 0
network 192.168.34.0 0.0.0.255 area 34
network 192.168.30.0 0.0.0.255 area 34
area 34 stub no-summary
```

D

```
interface GigabitEthernet0/0
ip address 192.168.34.4 255.255.255.0
```

Ð

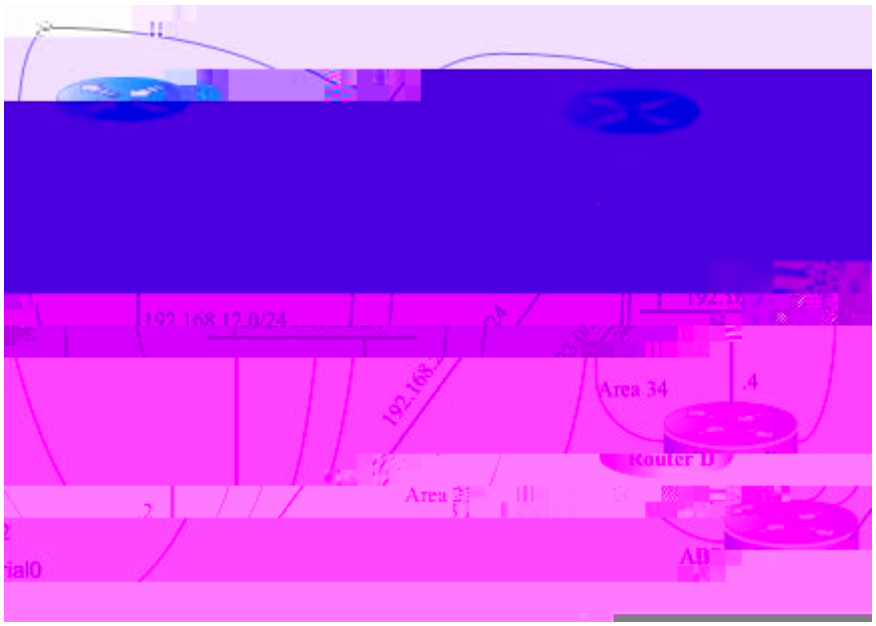
```
router ospf 1
network 192.168.34.0 0.0.0.255 area 34
area 34 stub
```

D þ

```
O 192.168.30.0/24 [110/1786] via 192.168.34.3, 00:00:03,
GigabitEthernet0/0
O*IA 0.0.0.0/0 [110/2] via 192.168.34.3, 00:00:03,
GigabitEthernet0/0
```

28.4.7 OSPF

Ð 0
3 3 P
7



16 Ð
D

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R

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```
interface GigabitEthernet0/0
ip address 192.168.12.1 255.255.255.0
```

Ð

```
router ospf 1
network 192.168.12.0 0.0.0.255 area 0
```

B

```
interface GigabitEthernet0/0
ip address 192.168.12.2 255.255.255.0


interface Serial1/0
ip address 192.168.23.2 255.255.255.0
```

P Ð

```
interface Loopback2
ip address 2.2.2.2 255.255.255.0
```

Ð

```
router ospf 1
network 192.168.12.0 0.0.0.255 area 0
network 192.168.23.0 0.0.0.255 area 23
area 23 virtual-link 3.3.3.3
```

C

```
interface GigabitEthernet0/0
ip address 192.168.34.3 255.255.255.0


interface Serial1/0
ip address 192.168.23.3 255.255.255.0
```

P Ð

```
interface Loopback2
ip address 3.3.3.3 255.255.255.0
```

Ð

```
router ospf 1
network 192.168.23.0 0.0.0.255 area 23
network 192.168.34.0 0.0.0.255 area 34
area 23 virtual-link 2.2.2.2
```

D

```
interface GigabitEthernet0/0
ip address 192.168.34.4 255.255.255.0
```

Ð

```
router ospf 1
network 192.168.34.0 0.0.0.255 area 34
```

D þ

```
O IA 192.168.12.0/24 [110/66] via 192.168.34.3, 00:00:10,
GigabitEthernet0/0
O IA 192.168.23.0/24 [110/65] via 192.168.34.3, 00:00:25,
GigabitEthernet0/0
```

29

29.1 IP

29.1.1

ip route [vrf *vrf_name*] *network mask* {*ip-address* | *interface-type interface-number* [*ip-address*]} [*distance*] [tag *tag*] [permanent]	

maximum-paths [*number*]	3

29.2

(route-map)

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

match ipv6 address { *access-list-name* | prefix-list *prefix-list-name* }	
match ipv6 next-hop { *access-list-name* | prefix-list *prefix-list-name* }	
match ipv6 route-source { *access-list-name* | prefix-list *prefix-list-name* }	
match metric *Metric*	*Metric*
match origin {egp | igp | incomplete }	
match route-type {local | internal | external [level-1 | level-2] }	
match tag *tag*	*tag*

set aggregator as *as-num ip_addr*	
set as-path prepend *as-number*	
set comm-list *community-list-number* | *community-list-name* delete	
set community {*community-number*[*community-number* …] additive | none }	
set dampening *half-life reuse suppress max-suppress-time*	
set extcommunity {rt *extend-community-value* | soo *extend-community-value*}	
set interface *interface-type interface-number*	

set ip default next-hop *ip-address*	P
set ip next-hop *ip-address*	P
set ip next-hop verify-availability *ip-address* track *track-object-num*	P
set level {stub-area | backbone | level-1 | level-1-2 | level-2}	
set local-preference *number*	
set metric *metric*	
set metric [+ *metric-value* | - *metric-value* | *metric-value*]	
set metric-type {type-1 | type-2 | external | internal }	
set next-hop *next-hop*	*next-hop* P
set origin {egp |igp | incomplete }	
set originator-id *ip-addr*	
set tag *tag*	
set weight *number*	

match set

match set

route-map route-map match set

route-map match set route-map

route-map match set

29.3

29.3.1

P

redistribute *protocol* *[process-id]* [metric *metric*][metric-type *metric-type*][match internal | external *type* | nssa-external *type*][tag *tag*][route-map *route-map-name*][subnets]	*protocol*
default-metric *metric*	*metric*

29.3.2

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

29.3.3

:

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

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

29.4

29.4.1

4

```
#     Ð
Ruijie(config)# router ospf 1
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)# access-list 20 permit 200.168.23.0

#
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match metric 4
Ruijie(config-route-map)# set metric 40
Ruijie(config-route-map)# set metric-type type-1
Ruijie(config-route-map)# set tag 40
```

R Ð 0
Ð 0

```
#     R
Ruijie(config)# router rip
Ruijie(config-router)# version 2
Ruijie(config-router)# redistribute ospf 1 route-map redospf
Ruijie(config-router)# network 200.168.23.0

#
Ruijie(config)# route-map redospf permit 10
Ruijie(config-route-map)# match tag 10
Ruijie(config-route-map)# set metric 10
```

Ð R

```
#
Ruijie(config)# route-map redrip permit 10
Ruijie(config-route-map)# match length 1 3
Ruijie(config-route-map)# match route-type external
Ruijie(config-route-map)# set level backbone

#     Ð
Ruijie(config)# router ospf 1
Ruijie(config-router)#  redistribute  rip  subnets  route-map
redrip

% ospf redistribute rip not support match length
% ospf redistribute rip not support match route-type
```

```
% ospf redistribute rip not support set level backbone
```

29.4.2

R 3 R

R R

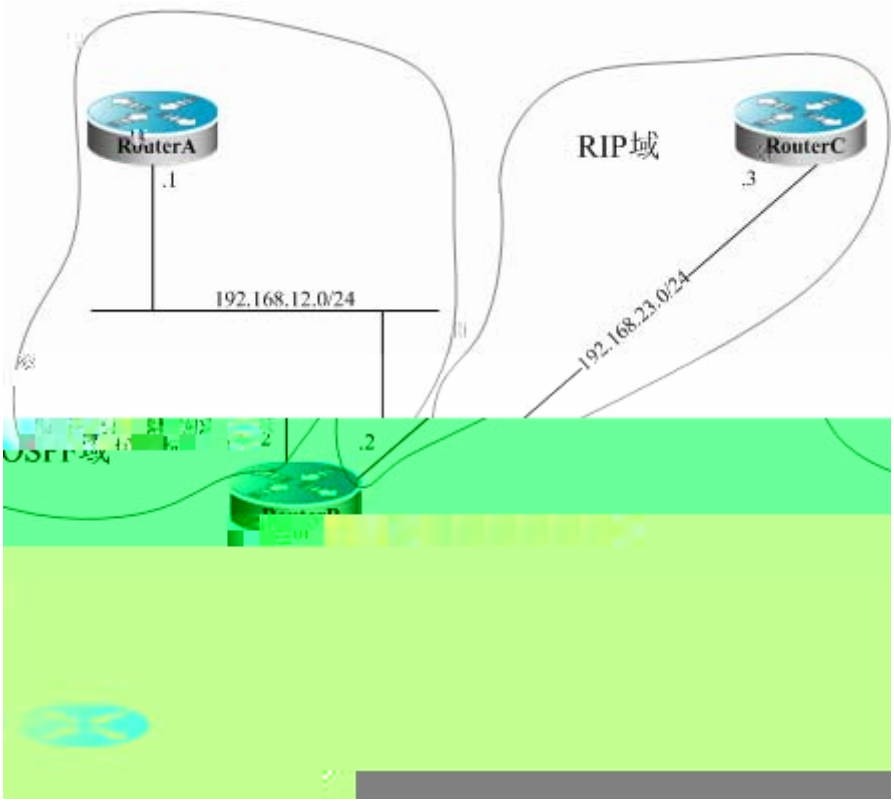
R

#

```
Ruijie(config)# ip route 172.16.1.0 255.255.255.0 172.200.1.2
Ruijie(config)# ip route 192.168.1.0 255.255.255.0 172.200.1.2
Ruijie(config)# ip route 192.168.2.0 255.255.255.0 172.200.1.4
```

R

```
Ruijie(config)#
```



1

```
Ruijie(config)# router ospf 12
Ruijie(config-router)# network 192.168.10.0 0.0.0.255 area 0
Ruijie(config-router)# network 192.168.12.0 0.0.0.255 area 0
Ruijie(config-router)# network 192.168.100.0 0.0.0.255 area 0
```

B

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

```
Ruijie(config)#
```

30

30.1

30.1.1

P

P

30.1.2

30.1.4 / ACL

30.3.1

1

2

3

P P P

30.3.2

“ ”

```
access-list 1 permit host 192.168.4.12
```

```
access-list 1 deny host 192.168.4.12
```

“

”

,

30.3.3

```
access-list 101 deny ip any any
access-list 101 permit tcp 192.168.12.0 0.0.0.255 eq telnet any
```

P

30.3.4 ACL

Step 1	access-list *id* {deny | permit } *src-wildcard* | host *src* | any }[time-range *tm-rng-name*]	
Step 2	interface	

Step 4	interface	*interface*	
Step 4		ip access-group *id* { in | out }	

	( )

30.3.5 ACL

Step 1

1

2

30.3.7 ACL

-

Step 1	# configure terminal	
Step 2	ip access-list resequence {*acl-id* | *acl-name*} *sn-start sn-inc*	
Step 3	end	

#

#

Step 3	absolute [start *time date*] end *time date*	( )
Step 4	periodic *day-of-the-week time* to [*day-of-the-week*] *time*	( )
Step 5	show time-range	
Step 6	ip access-list extended *101*	
Step 7	permit ip any any time-range *time-range-name*	

1

```
#
Ruijie(config)# time-range no-http
Ruijie(config-time-range)# periodic weekdays 8:00 to 18:00
Ruijie(config)# end
Ruijie(config)# ip access-list extended deny-http
Ruijie(config-ext-nacl)# deny tcp any any eq www time-range
no-http
Ruijie(config-ext-nacl)# exit
Ruijie(config)# interface vlan 2
Ruijie(config-if)# ip access-group no-http in
Ruijie(config)# end
```

```
Ruijie# show time-range
time-range entry: no-http(active)
periodic Weekdays 8:00 to 18:00
```

30.3.9 ACL

1

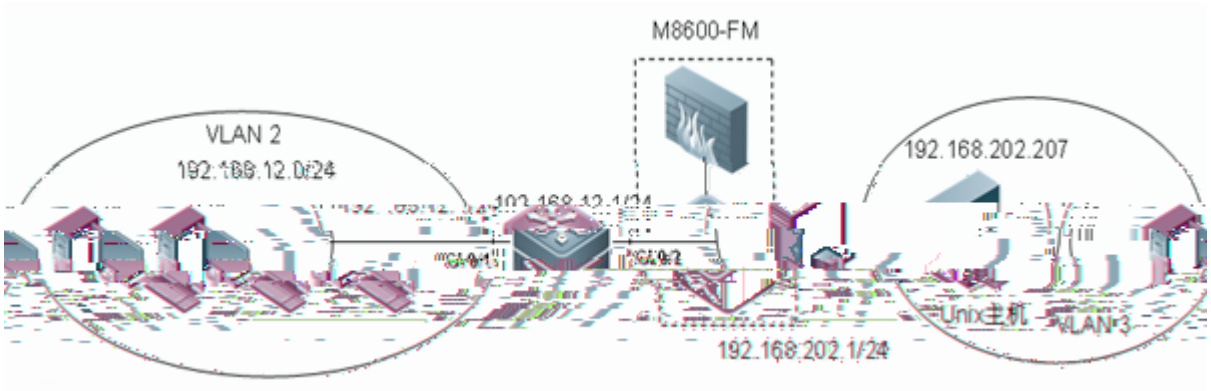
Step 1	configure terminal	
Step 2	ip access-list {standard | extended } { *id* | *acl-name* }	
Step 3	list-remark *comment*	

Step 1	configure terminal	
Step 2	access-list *id* list-remark *comment*	

```
#
(config)#ip access-list standard 1
(config-std-nacl)#permit 192.168.197.62 0.0.0.0
(config-std-nacl)#list-remark acl_remark_foo
(config-std-nacl)#end
#write
#show access-lists 1
ip access-list standard 1
10 permit host 192.168.197.62
list-remark acl_remark_foo
```

30.4

30.4.1


M8600-FM
VLAN 2
192.168.12.0/24
192.168.202.207
192.168.202.1/24
VLAN 3

P

N

1

#

```
Ruijie# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Ruijie(config)# vlan 2
Ruijie(config-vlan)# exit
Ruijie(config)# vlan 3
Ruijie(config-vlan)# exit
Ruijie(config)# interface Gigabitethernet 0/1
Ruijie(config-if)# switchport access vlan 2
Ruijie(config-if)# exit
Ruijie(config)# interface Gigabitethernet 0/2
Ruijie(config-if)# switchport access vlan 3
Ruijie(config-if)# exit
```

#

7

(

)

```
Ruijie(config)# interface TenGigabitethernet 7/1
Ruijie(config-if)# port-group 2
Ruijie(config-if)# exit
Ruijie(config)# interface TenGigabitethernet 7/2
Ruijie(config-if)# port-group 2
Ruijie(config-if)# exit
```

#

3

```
Ruijie(config)# interface Aggretegateport 2
Ruijie(config-if)# switchport mode trunk
Ruijie(config-if)# switchport trunk allowed vlan remove 1,4-4094
```

2

#

P

```
M8600-FW(config)#interface vlan 2
M8600-FW(config-if)#ip address 192.168.12.1 255.255.255.0
```

```
M8600-FW(config)#interface vlan 3
M8600-FWconfig-if)#ip address 192.168.202.1 255.255.255.0


M8600-FW(config)# time-range check
M8600-FW(config-time-range)# periodic weekdays 8:30 to 17:30
```

3

```
M8600-FW(config)# access-list 101 permit tcp 192.168.12.0
0.0.0.255 any eq telnet time-range check
M8600-FW(config)# access-list 101 deny icmp 192.168.12.0
0.0.0.255 any
M8600-FW(config)# access-list 101 deny ip host 192.168.202.1
192.168.202.0 0.0.0.255
M8600-FW(config)# access-list 101 deny ip any any
```

4

```
M8600-FW(config)# interface vlan 3
M8600-FW(config-if)# ip access-group 101 in
M8600-FW(config-if)# ip access-group 101 out
```

1

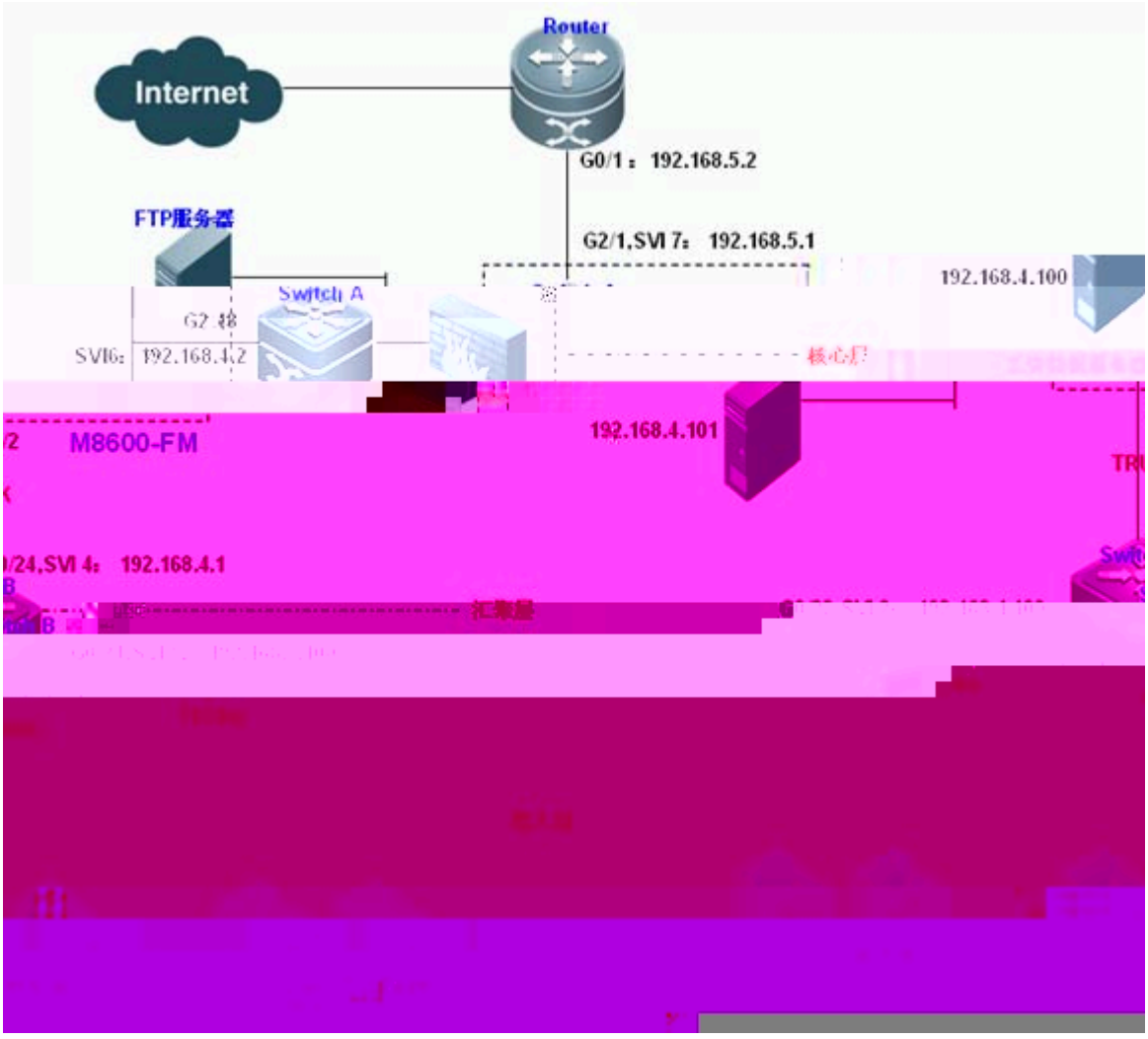
```
M8600-FW#show time-range check
time-range entry: check (active)
  periodic Weekdays 8:30 to 17:30
```

2

```
Ruijie# show access-lists
ip access-list extended 101
 10 permit tcp 192.168.12.0 0.0.0.255 any eq telnet time-range
check
 20 deny icmp 192.168.12.0 0.0.0.255 any
 30 deny ip host 192.168.202.1 192.168.202.0 0.0.0.255
 40 deny ip any any
```

```
Ruijie# show ip access-group
ip access-group 101 in
ip access-group 101 out
Applied On interface vlan 3.
```

30.4.2 ACL



ACL

C e)

B

)

A

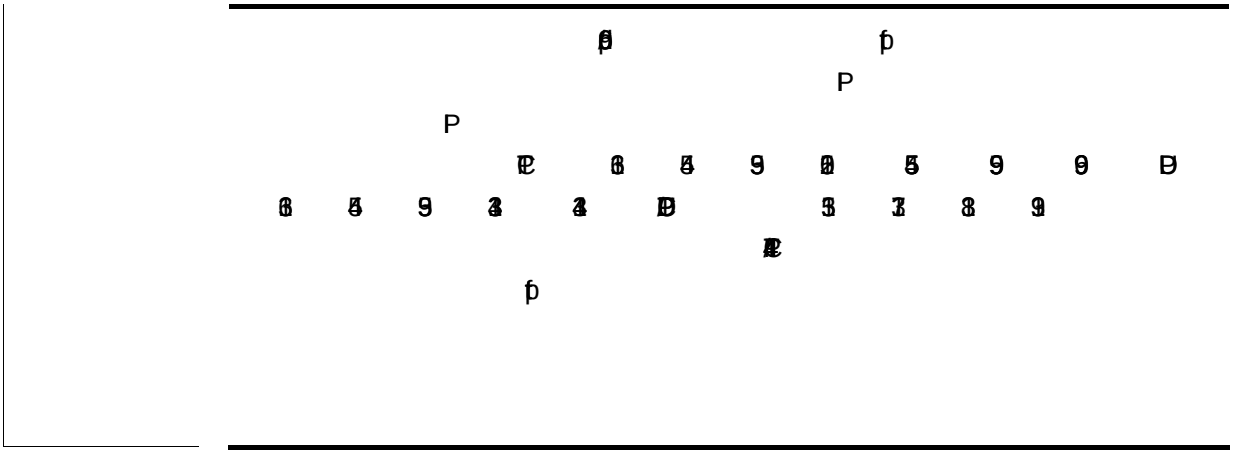
```
A(config-vlan)# exit
A(config)# vlan 7
A(config-vlan)# exit
A(config)# interface Gigabitethernet 2/1
A(config-if)# switchport access vlan 7
A(config-if)# exit
A(config)# interface Gigabitethernet 2/48
A(config-if)# switchport access vlan 7
A(config-if)# exit
```

#

```
A(config)# interface vlan 6
A(config-if)# ip address 192.168.4.2 255.255.255.0
A(config-if)# interface vlan 7
```

interface vlan 7

Virus_Defence



```
#configure terminal
(config)#ip access-list extended Virus_Defence
(config-ext-nacl)#deny tcp any any eq 135
(config-ext-nacl)#deny tcp any eq 135 any
(config-ext-nacl)#deny tcp any any eq 136
(config-ext-nacl)#deny tcp any eq 136 any
(config-ext-nacl)#deny tcp any any eq 137
(config-ext-nacl)#deny tcp any eq 137 any

(config-ext-nacl)#deny tcp any any eq 9996
(config-ext-nacl)#deny tcp any eq 9996 any
(config-ext-nacl)#deny udp any any eq 69
(config-ext-nacl)#deny udp any eq 69 any
(config-ext-nacl)#deny udp any any eq 135
(config-ext-nacl)#deny udp any eq 135 any
(config-ext-nacl)#deny udp any any eq 137
(config-ext-nacl)#deny udp any eq 137 any

(config-ext-nacl)#deny udp any any eq 1434
(config-ext-nacl)#deny udp any eq 1434 any
(config-ext-nacl)#deny icmp any any
(config-ext-nacl)#permit ip any any
```

```
(config-ext-nacl)#exit
```

VLAN 7

```
(config)#interface vlan 7
(config-if)#ip access-group Virus_Defence in
(config-if)#exit
```

PC ***access_server***

```
(config)#ip access-list extended access_server
(config-ext-nacl)#permit ip 192.168.2.0 0.0.0.255
host 192.168.4.100
(config-ext-nacl)#permit ip 192.168.1.0 0.0.0.255
host 192.168.4.100
(config-ext-nacl)#permit ip 192.168.3.0 0.0.0.255
host 192.168.4.100
(config-ext-nacl)#permit ip 192.168.2.0 0.0.0.255
host 192.168.4.101
(config-ext-nacl)#permit ip 192.168.1.0 0.0.0.255
host 192.168.4.101
(config-ext-nacl)#permit ip 192.168.3.0 0.0.0.255
host 192.168.4.101
(config-ext-nacl)#deny ip any any
```

access_server vlan 6

```
(config)#interface vlan 6
(config-if)#ip access-group access_server out
(config-if)#exit
```

B

vlan2-4

```
B#configure terminal
B(config)#vlan range 2-4
B(config-vlan-range)#exit
B(config)#ip access-list extended vlan_access1
!
B(config-ext-nacl)#deny ip 192.168.2.0 0.0.0.255 192.168.1.0
0.0.0.255
```

```
B(config-ext-nacl)#deny ip 192.168.3.0 0.0.0.255 192.168.1.0
0.0.0.255
B(config-ext-nacl)#permit ip any any
B(config)#ip access-list extended vlan_access2
!
B(config-ext-nacl)#deny ip 192.168.1.0 0.0.0.255 192.168.2.0
0.0.0.255
B(config-ext-nacl)#deny ip 192.168.3.0 0.0.0.255 192.168.2.0
0.0.0.255
B(config-ext-nacl)#permit ip any any
B(config-ext-nacl)#exit
```

(vlan_access1 vlan_access2)

```
B(config)#interface GigabitEthernet 0/22
B(config-if)#switchport mode trunk
B(config-if)#ip access-group vlan_access1 in
```

```
B(config)# interface GigabitEthernet 0/23
B(config-if)# switchport mode trunk
B(config-if)# ip access-group vlan_access2 in
```

```
B(config)#interface GigabitEthernet 0/24
B(config-if)#switchport mode trunk
```

```
B(config)#interface vlan 2
B(config-if)#ip address 192.168.1.100 255.255.255.0
```

```
B(config)#interface vlan 3
B(config-if)#ip address 192.168.2.100 255.255.255.0
```

```
B(config)#interface vlan 4
B(config-if)#ip address 192.168.4.1 255.255.255.0
```

9 0 0

```
B#configure terminal
B(config)#time-range worktime
B(config-time-range)#periodic weekdays 9:00 to 18:00
```

```
B#configure terminal

                          E    yanfa
B(config)#ip access-list extended yanfa

                            9  0    8 0       Q N

B(config-ext-nacl)#deny tcp 192.168.1.0 0.0.0.255 eq 8000 any
time-range worktime
B(config-ext-nacl)#deny tcp 192.168.1.0 0.0.0.255 eq 8001 any
time-range worktime
B(config-ext-nacl)#deny tcp 192.168.1.0 0.0.0.255 eq 443 any
time-range worktime
B(config-ext-nacl)#deny tcp 192.168.1.0 0.0.0.255 eq 1863 any
time-range worktime
B(config-ext-nacl)#deny tcp 192.168.1.0 0.0.0.255 eq 4000 any
time-range worktime
B(config-ext-nacl)#deny udp 192.168.1.0 0.0.0.255 eq 8000 any
time-range worktime
B(config-ext-nacl)#deny udp 192.168.1.0 0.0.0.255 eq 1429 any
time-range worktime
B(config-ext-nacl)#deny udp 192.168.1.0 0.0.0.255 eq 6000 any
time-range worktime
B(config-ext-nacl)#deny udp 192.168.1.0 0.0.0.255 eq 6001 any
time-range worktime
B(config-ext-nacl)#deny udp 192.168.1.0 0.0.0.255 eq 6002 any
time-range worktime
B(config-ext-nacl)#deny udp 192.168.1.0 0.0.0.255 eq 6003 any
time-range worktime
B(config-ext-nacl)#deny udp 192.168.1.0 0.0.0.255 eq 6004 any
time-range worktime


        P
B(config-ext-nacl)#permit ip any any

           8
B(config)#interface vlan 2
B(config-if)#ip access-group yanfa in
```

SwitchA ACL

1 E *Virus_Defence*

```
M8600-FW#show access-list Virus_Defence
```

```
ip access-list extended Virus_Defence
 10 deny tcp any any eq 135
 20 deny tcp any eq 135 any
 30 deny tcp any any eq 136
 40 deny tcp any eq 136 any
 50 deny tcp any any eq 137
 60 deny tcp any eq 137 any

 100 deny tcp any any eq 9996
 110 deny tcp any eq 9996 any
 120 deny udp any any eq 69
 130 deny udp any eq 69 any
 140 deny udp any any eq 135
 150 deny udp any eq 135 any
 160 deny udp any any eq 137
 170 deny udp any eq 137 any

 200 deny udp any any eq 1434
 210 deny udp any eq 1434 any
 220 deny icmp any any
 230 permit ip any any
```

2 [illegible] *access_server*

```
M8600-FW#show access-list access_server

ip access-list extended Virus_Defence
 10 permit ip 192.168.2.0 0.0.0.255 host 192.168.4.100
 20 permit ip 192.168.1.0 0.0.0.255 host 192.168.4.100
 30 permit ip 192.168.3.0 0.0.0.255 host 192.168.4.100
 40 permit ip 192.168.2.0 0.0.0.255 host 192.168.4.101
 50 permit ip 192.168.1.0 0.0.0.255 host 192.168.4.101
 60 permit ip 192.168.3.0 0.0.0.255 host 192.168.4.101
 70 deny ip any any
```

3 [illegible]

```
M8600-FW#show ip access-group

ip access-group Virus_Defence in
```

```
 10 deny ip 192.168.2.0 0.0.0.255 192.168.1.0 0.0.0.255
 20 deny ip 192.168.3.0 0.0.0.255 192.168.1.0 0.0.0.255
 30 permit ip any any

2     ACL vlan_access1
B# show access-group vlan_access1
ip access-group vlan_access1
 Applied On GigabitEthernet 0/22

3     ACL vlan_access2
B# show access-list vlan_access2
ip access-list extend vlan_access2
 10 deny ip 192.168.1.0 0.0.0.255 192.168.2.0 0.0.0.255
 20 deny ip 192.168.3.0 0.0.0.255 192.168.2.0 0.0.0.255
 30 permit ip any any

4     ACL vlan_access2
B# show access-group vlan_access2
ip access-group vlan_access2
 Applied On GigabitEthernet 0/23

5     ACL yanfa
B# show access-list yanfa
ip access-list extend yanfa
 10 deny tcp 192.168.1.0 0.0.0.255 eq 8000 any time-range
worktime
 20 deny tcp 192.168.1.0 0.0.0.255 eq 8001 any time-range
worktime
 30 deny tcp 192.168.1.0 0.0.0.255 eq 443 any time-range
worktime
 40 deny tcp 192.168.1.0 0.0.0.255 eq 1863 any time-range
worktime
 50 deny tcp 192.168.1.0 0.0.0.255 eq 4000 any time-range
worktime
 60 deny udp 192.168.1.0 0.0.0.255 eq 8000 any time-range
worktime
 70 deny udp 192.168.1.0 0.0.0.255 eq 1429 any time-range
worktime
 80 deny udp 192.168.1.0 0.0.0.255 eq 6000 any time-range
worktime
 90 deny udp 192.168.1.0 0.0.0.255 eq 6001 any time-range
worktime
 100 deny udp 192.168.1.0 0.0.0.255 eq 6002 any time-range
worktime
```

110 deny udp 192.168.1.0 0.0.0.255 eq 6003 any time-range *worktime*

120 deny udp 192.168.1.0 0.0.0.255 eq 6004 any time-range *worktime*

130 permit ip any any

6 ACL *yanfa*

B# **show access-group** yanfa

ip access-group yanfa

Applied On interface vlan 2

31

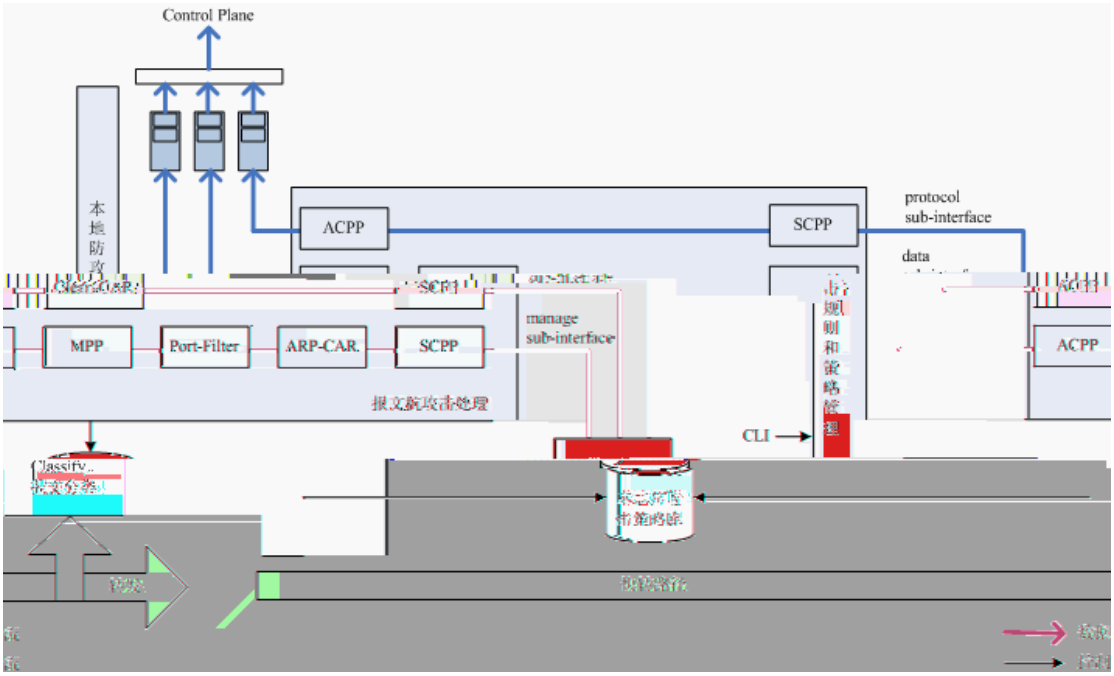
31.1

1

2 C

3

4



Classify

1 protocol sub-interface

2 manage sub-interface

3 data sub-interface

SCPP

Glean-CAR

ARP-CAR

Port-Filter

MPP

ACPP

31.2

31.2.1

31.2.2 control-plane

control-plane {protocol | manage | data}	

31.2.3 SCPP

scpp list *acl_no* {bw-rate bw-burst-rate *bw-burst-rate* | conn-total *conn-num* | conn-create-rate *create-rate* conn-create-burst-rate *conn-create-burst-rate*}	
no scpp list	

31.2.4 Glean-CAR

P

glean-car *packet_rate_per_group* [total-bw-rate *rate*]	*packet_rate_per_group* *rate*
no glean-car	

31.2.6 Port-Filter

port-filter	
no port-filter	

31.2.7 MPP

management-interface *interface* allow {ftp | http | https | ssh | snmp | telnet | tftp}	*Interface*
no management -interface *interface*	

31.2.8 ACPP

acpp bw-rate *rate* bw-burst-rate *burst-rate*	*rate* *burst-rate*
no acpp	

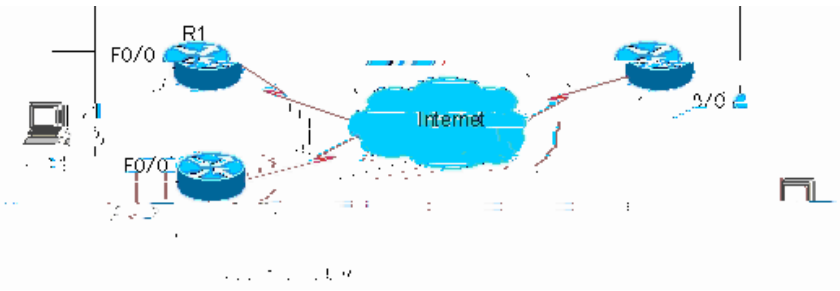
31.3

```
Ruijie# config
/
Ruijie(config)# control-plane protocol
/
Ruijie(config-cp)# acpp bw-rate 500 bw-burst-rate 600
/
Ruijie(config)# control-plane data
/
Ruijie(config-cp)# acpp bw-rate 500 bw-burst-rate 600
/
Ruijie(config-cp)# glean-car 10
/
```

32 VRRP

32.1

)



1 VRRP

R

1 1 R R

R R P

R

R

1 2 1

2 R

2 1

R

R R R R

32.2 VRRP

R

2 VRRP

2 A B C

R R R

P A R

B C 1 2

R R

R ( )

R ( )

R ( )

R ( )

R ( )

R ( )

R P ( )

R ( )

R ( )

R ( )

R

32.3.2 VRRP

P

R

R	vrrp *group* ip *ipaddress* [secondary]	R
R	no vrrp *group* ip *ipaddress* [secondary]	R

32.3.3 VRRP

/

vrrp *group* authentication *string*	
no vrrp *group* authentication	

8

32.3.4 VRRP

vrrp *group* timers advertise *interval*	
no vrrp *group* timers advertise	

1

32.3.5 VRRP

R M
R R
M
R R P
R R

R vrrp *group* preempt [delay *seconds*]	R
R no vrrp g preempt [delay]	R

R
M 0 R R

32.3.6 VRRP

R

P

R vrrp *group* track *interface-type number* [*interface –priority*]	R
R no vrrp *group* track *interface-type number*	R

R

(R V a

)

32.3.8 VRRP IP

R P

8† â PDBÅŽa a `<#HF à™ò vi,#HF à™ò PDBÂ4„a Ÿ ,bP $lf `? üG!<&â ÿð $'H`âÀ€

32.3.9 VRRP

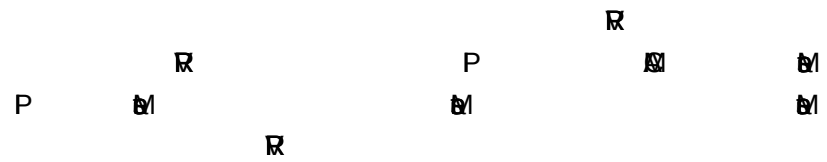
32.3.11 VRRP

R

R

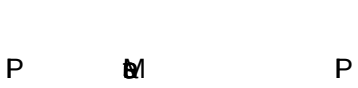
1 show vrrp

```
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
```



2 show vrrp brief

```
Ruijie# show vrrp brief
Interface     Grp Pri Time Own Pre State   Master addr    Group addr
GigabitEthernet0/0 1  100  -    -    P  Backup 192.168.201.213
192.168.201.1
GigabitEthernet0/0 2  120  -    -   P  Master  192.168.201.217
192.168.201.2
```



3 show vrrp interface

```
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#
```

R

R P M M P M M

R

32.4.2 debug vrrp

debug vrrp R

R debug vrrp errors	R

1 5 0 /C1710 1 Tf 0 Tc 0 Tw 8.394 4.90 1

	no debug vrrp state	
	debug vrrp	
	no debug vrrp	

1 debug vrrp

```
Ruijie# debug vrrp
Ruijie#
VRRP: Grp 1 Advertisement priority 120, ipaddr 192.168.201.213
VRRP: Grp 1 Event - Advert higher or equal priority
%VRRP-6-STATECHANGE: GigabitEthernet 0/0 Grp 1 state Master ->
Backup
VRRP: Grp 1 Advertisement from 192.168.201.213 has invalid
virtual address 192.168.1.1
%VRRP-6-STATECHANGE: GigabitEthernet 0/0 Grp 1 state Backup ->
Master
Ruijie#
debug vrrp                    debug vrrp errors  debug vrrp
events  debug vrrp packets       debug vrrp state
```

2 debug vrrp errors

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

0 1

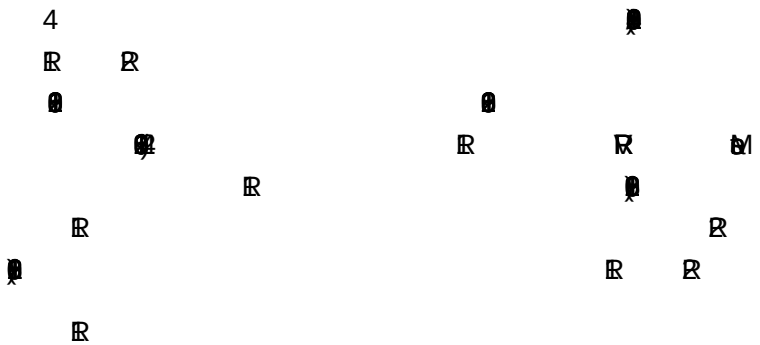
P 0 1

3 debug vrrp events

```
Ruijie# debug vrrp events
Ruijie#
VRRP: Grp 1 Event - Advert higher or equal priority
VRRP: Grp 1 Event - Advert higher or equal priority
VRRP: Grp 1 Event - Advert higher or equal priority
Ruijie#
```

```
!
!
end
```

32.5.1 VRRP



```
!
!
hostname "R1"
!
!
interface GigabitEthernet 0/0
no switchport
ip address 192.168.201.217 255.255.255.0
vrrp 1 priority 120
vrrp 1 timers advertise 3
vrrp 1 ip 192.168.201.1
!
interface GigabitEthernet 2/1
no switchport
ip address 202.101.90.63 255.255.255.0
!
router ospf
network 202.101.90.0 0.0.0.255 area 10
network 192.168.201.0 0.0.0.255 area 10
!
```

```
!
hostname "R2"
!
interface GigabitEthernet 0/0
no switchport
ip address 192.168.201.213 255.255.255.0
vrrp 1 ip 192.168.201.1
```

```
vrrp 1 timers advertise 3
!
interface GigabitEthernet 1/1
no switchport
ip address 60.154.101.3 255.255.255.0
!
!
router ospf
network 60.154.101.0 0.0.0.255 area 10
network 192.168.201.0 0.0.0.255 area 10
!
!
end
```

1

```
ip address 192.168.201.217 255.255.255.0
vrrp 1 priority 120
vrrp 1 timers advertise 3
vrrp 1 ip 192.168.201.1
vrrp 1 track GigabitEthernet 2/1 30
!

interface GigabitEthernet 2/1
no switchport
ip address 202.101.90.63 255.255.255.0
!
router ospf
network 202.101.90.0 0.0.0.255 area 10
network 192.168.201.0 0.0.0.255 area 10
!
!
end
```

R

```
!
!
hostname "R2"
!
interface GigabitEthernet 0/0
no switchport
ip address 192.168.201.213 255.255.255.0
vrrp 1 ip 192.168.201.1
vrrp 1 timers advertise 3
!
interface GigabitEthernet 1/1
no switchport
ip address 60.154.101.3 255.255.255.0
!
router ospf
network 60.154.101.0 0.0.0.255 area 10
network 192.168.201.0 0.0.0.255 area 10
!
!
end
```

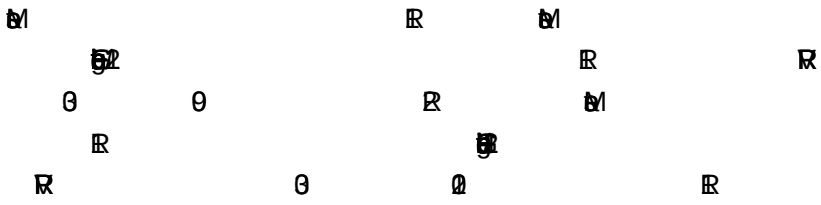
R R R 1 R

( ) P R

R R R

3 R R 0

R R 0 R



32.5.3 VRRP

4 1 1 1

```
!
!
hostname "R1"
!
interface GigabitEthernet 0/0
no switchport
ip address 192.168.201.217 255.255.255.0
vrrp 1 timers advertise 3
vrrp 1 ip 192.168.201.1
vrrp 2 priority 120
vrrp 2 timers advertise 3
vrrp 2 ip 192.168.201.2
vrrp 2 track GigabitEthernet 2/1 30
!
interface GigabitEthernet 2/1
no switchport
ip address 202.101.90.63 255.255.255.0
!
router ospf
network 202.101.90.0 0.0.0.255 area 10
network 192.168.201.0 0.0.0.255 area 10
!
!
```

end

R

show vrrp

IP749 0041920EDB03E23C2_0 Tf 0 Tc Td <05B49 AB0

33

33.1

33.1.1

33.1.2 CPU

show cpu

show cpu	

show cpu

```
Ruijie# show cpu
=====================================
    CPU Using Rate Information
CPU utilization in five seconds: 25%
CPU utilization in one minute  : 20%
CPU utilization in five minutes: 10%
  NO   5Sec   1Min   5Min   Process
  0     0%     0%     0%    LISR INT
  1     7%     2%     1%    HISR INT
  2     0%     0%     0%    ktimer
  3     0%     0%     0%    atimer
  4     0%     0%     0%    printk_task
  5     0%     0%     0%    waitqueue_process
  6     0%     0%     0%    tasklet_task
  7     0%     0%     0%    kevents
  8     0%     0%     0%    snmpd
  9     0%     0%     0%    snmp_trapd
 10     0%     0%     0%    mtdblock
 11     0%     0%     0%    gc_task
```

12	0%	0%	0%	Context
13	0%	0%	0%	kswapd
14	0%	0%	0%	bdflush
15	0%	0%	0%	kupdate
16	0%	3%	1%	ll_mt
17	0%	0%	0%	ll main process
18	0%	0%	0%	bridge_relay
19	0%	0%	0%	d1x_task
20	0%	0%	0%	secu_policy_task
21	0%	0%	0%	dhcpa_task
22	0%	0%	0%	dhcpsnp_task
23	0%	0%	0%	igmp_snp
24	0%	0%	0%	mstp_event
25	0%	0%	0%	GVRP_EVENT
26	0%	0%	0%	rldp_task
27	0%	2%	1%	rerp_task
28	0%	0%	0%	reup_event_handler
29	0%	0%	0%	tpp_task
30	0%	0%	0%	ip6timer
31	0%	0%	0%	rtadvd
32	0%	0%	0%	tnet6
33	2%	0%	0%	tnet
34	0%	0%	0%	Tarptime
35	0%	0%	0%	gra_arp
36	0%	0%	0%	Ttcptimer
37	8%	1%	0%	ef_res
38	0%	0%	0%	ef_rcv_msg
39	0%	0%	0%	ef_inconsistent_daemon
40	0%	0%	0%	ip6_tunnel_rcv_pkt
41	0%	0%	0%	res6t
42	0%	0%	0%	tunrt6
43	0%	0%	0%	ef6_rcv_msg
44	0%	0%	0%	ef6_inconsistent_daemon
45	0%	0%	0%	imid
46	0%	0%	0%	nsmd
47	0%	0%	0%	ripd
48	0%	0%	0%	ripngd
49	0%	0%	0%	ospfd
50	0%	0%	0%	ospf6d
51	0%	0%	0%	bgpd

56	0%	0%	0%	vty_connect
57	0%	0%	0%	aaa_task
58	0%	0%	0%	Tlogtrap
59	0%	0%	0%	dhcp6c
60	0%	0%	0%	sntp_recv_task
61	0%	0%	0%	ntp_task
62	0%	0%	0%	sla_deamon
63	0%	3%	1%	track_daemon
64	0%	0%	0%	pbr_guard
65	0%	0%	0%	vrrpd
66	0%	0%	0%	psnpd
67	0%	0%	0%	igsnpd
68	0%	0%	0%	coa_recv
69	0%	0%	0%	co_oper
70	0%	0%	0%	co_mac
71	0%	0%	0%	radius_task
72	0%	0%	0%	tac+_acct_task
73	0%	0%	0%	tac+_task
74	0%	0%	0%	dhcpd_task
75	0%	0%	0%	dhcps_task
76	0%	0%	0%	dhcpping_task
77	0%	0%	0%	dhcpc_task
78	0%	0%	0%	uart_debug_file_task
79	0%	0%	0%	ssp_init_task
80	0%	0%	0%	rl_listen
81	0%	0%	0%	ikl_msg_operate_thread
82	0%	0%	0%	bcmDPC
83	0%	0%	0%	bcmL2X.0
84	3%	3%	3%	bcmL2X.0
85	0%	0%	0%	bcmCNTR.0
86	0%	0%	0%	bcmTX
87	0%	0%	0%	bcmXGS3AsyncTX
88	0%	2%	1%	bcmLINK.0
89	0%	0%	0%	bcmRX
90	0%	0%	0%	mngpkt_rcv_thread
91	0%	0%	0%	mngpkt_recycle_thread
92	0%	0%	0%	stack_task
93	0%	0%	0%	stack_disc_task
94	0%	0%	0%	redun_sync_task
95	0%	0%	0%	conf_dispatch_task
96	0%	0%	0%	devprob_task
97	0%	0%	0%	rdp_snd_thread
98	0%	0%	0%	rdp_rcv_thread
99	0%	0%	0%	rdp_slot_change_thread

```
100    4%    2%    1%   datapkt_rcv_thread
101    0%    0%    0%   keepalive_link_notify
102    0%    0%    0%   rerp_msg_recv_thread
103    0%    0%    0%   ip_scan_guard_task
104    0%    0%    0%   ssp_ipmc_hit_task
105    0%    0%    0%   ssp_ipmc_trap_task
106    0%    0%    0%   hw_err_snd_task
107    0%    0%    0%   rerp_packet_send_task
108    0%    0%    0%   idle_vlan_proc_thread
109    0%    0%    0%   cmic_pause_detect
110    1%    1%    1%   stat_get_and_send
111    0%    1%    0%   rl_con
112   75%   80%   90%   idle
```

3 5 1 5

[illegible]

[illegible]

2 [illegible]

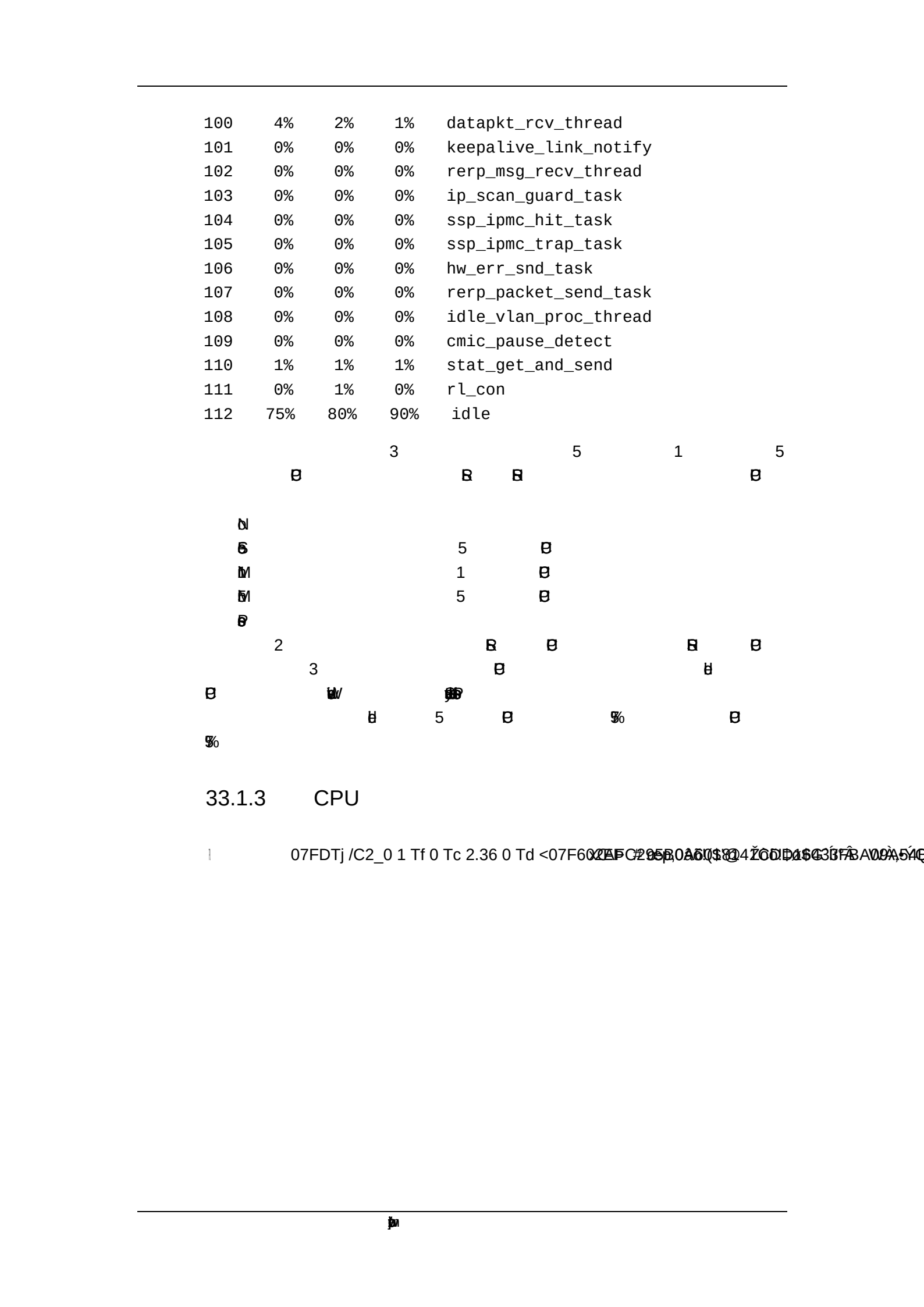
3 [illegible]

[illegible]

[illegible]

33.1.3 CPU

[illegible]



Oct 20 15:47:01 %SYSCHECK-5-CPU_USING_RATE: CPU utilization in one minute : 95% Using most cpu's task is ktimer : 94%

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!

34

34.1

34.1.1

34.1.2

CPU

%SYS-1-TEMP_STATE: System detected temperature is in warning condition.

%SYS-1-TEMP_STATE: System detected temperature is in alert condition.

%SYS-1-TEMP_STATE: System detected temperature is in normal condition.

34.2

ø	

34.3.3

Step 1	configure terminal	
Step 2	threshold set temperature [M1 | M2 | slot *n* | member *n*] *warning_value critical_value*	

no threshold set temperature

34.3.4

Ruijie#show threshold cpu

```
Device       Warning     Critical
Member 1:        80           90
```

Ruijie#show threshold memory

```
Device       Warning     Critical
Member 1:        90          100
```

Ruijie#show threshold temperature

```
Device       Warning     Critical
Member 1:        60           80
```

35

35.1

35.1.1

35.1.2

show memory

show memory	

show memory

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

1

2

	memory-lack exit-policy
	OVERFLOW

g	OVERFLOW

3

35.1.3

memory-lack exit-policy v

B D R M

memory-lack exit-policy [gp |ospf |pim-sm |rip]

R memory-lack exit-policy [bgp |ospf |pim-sm |rip]	

no memory-lack exit-policy

v

v v gn v

protocol	memory(byte)
BGP	102000000
OSPF	24000000
RIP	10000000
PIM	50000000
LDP	20000000
Total	206000000

36

36.1

36.1.1

<priority> seq no: timestamp sysname

logging on	
no logging on	

36.2.5

no logging count	
logging count	

36.2.6

no service sequence-numbers	
service sequence-numbers	

36.2.7

logging rate-limit *number*	
no logging rate-limit	

36.2.9

logging console *level*	
logging monitor *level*	( )
logging buffered [*buffer-size* | *level*]	
logging file flash: *filename* [*max-file-size*][*level*]	
logging trap *level*	

8

Emergencies	0	
Alerts	1	
Critical	2	
Errors	3	
warnings	4	
Notifications	5	

informational	6	
Debugging	7	

0

logging console ***6*** 6

6

9
0
1
2
3
4
5
6
7
8
9
0
1
2
3

2

36.2.11

P

logging source interface *interface-type interface-number*	
logging source ip *A.B.C.D*	ip

36.2.12 LOG

/

logging userinfo	/
logging userinfo command-log	

37 RLOG

37.1

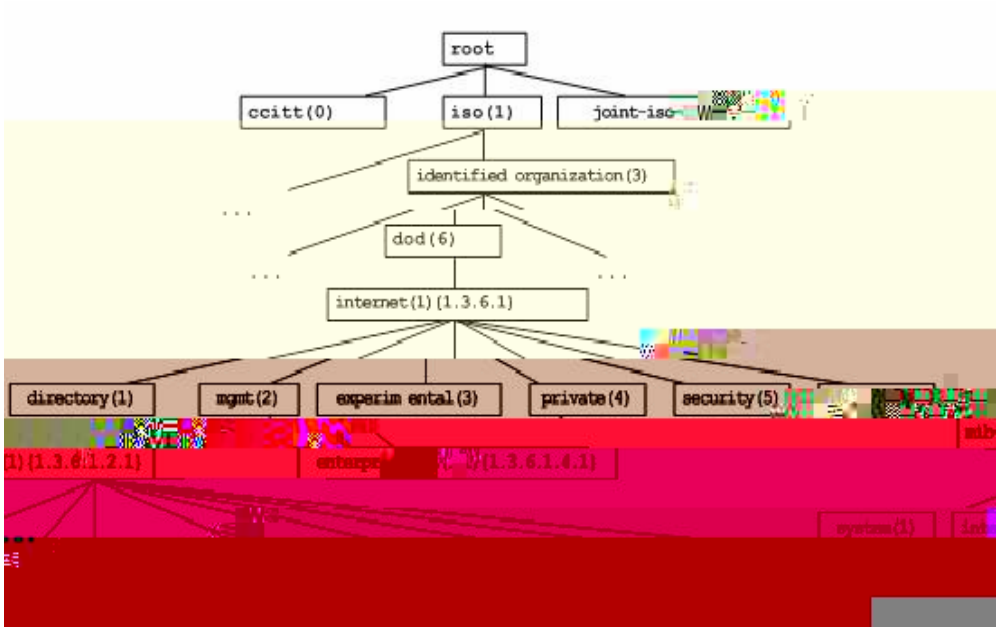
rlog mtu *number*	
no rlog mtu	
rlog port *number*	
no rlog port	
rlog export-rate *number*	
no rlog export-rate	
rlog type *n* priority *prio*	
no rlog type *n*	
rlog filter	
no rlog filter	

37.2.4

[illegible] show rlog	

37.3

[illegible] show rlog-type	
[illegible] show rlog-status	



2 MIB

38.1.2 SNMP

z

38.1.4 SNMP

:

1 4

2 6

3 6

4 2

5 6 2

38.2 SNMP

38.2.1

P

P P

snmp-server community *string* [view *view-name*][ro | rw][host *host-ip*][*num*]	

no snmp-server community

38.2.2 MIB

snmp-server view *view-name oid-tree* {include | exclude }	
snmp-server group *groupname* {v1 | v2c | v3 { auth | noauth | priv } [read *readview*][write *writeview*][access {*num* | *name*}	

no snmp-server view *view-name* no snmp-server view *view-name oid-tree*

no snmp-server group *groupname*

38.2.3 SNMP

snmp-server user *username* *roupname* {v1 | v2 | [|	

snmp-server host { *host-addr* | ipv6 traps [vrf *vrfname*][version {1|2c |3 [auth | noauth | priv] } *community-string* [*udp-port port-num*][type]	

38.2.5 SNMP

snmp-server contact *text*	
snmp-server location *text*	
snmp-server chassis-id *number*	

38.2.6 SNMP

snmp-server packetsize	

38.2.7 SNMP

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

38.2.11

```
Chassis: 1234567890 0987654321
Contact: wugb@i-net.com.cn
Location: fuzhou
2381 SNMP packets input
5 Bad SNMP version errors
6 Unknown community name
0 Illegal operation for community name supplied
0 Encoding errors
9325 Number of requested variables
0 Number of altered variables
31 Get-request PDUs
2339 Get-next PDUs
0 Set-request PDUs
2406 SNMP packets output
0 Too big errors (Maximum packet size 1500)
4 No such name errors
0 General errors
2370 Get-response PDUs
36 SNMP trap PDUs
SNMP global trap: disabled
SNMP logging: enabled
SNMP agent: enabled
.
```


38.3.2 SNMP MIB

show snmp mib

```
Ruijie# show snmp mib
sysDescr
sysObjectID
sysUpTime
sysContact
sysName
sysLocation
sysServices
sysORLastChange
snmpInPkts
snmpOutPkts
snmpInBadVersions
snmpInBadCommunityNames
snmpInBadCommunityUses
snmpInASNParseErrs
snmpInTooBigs
snmpInNoSuchNames
snmpInBadValues
snmpInReadOnlys
snmpInGenErrs
snmpInTotalReqVars
snmpInTotalSetVars
snmpInGetRequests
snmpInGetNexts
snmpInSetRequests
snmpInGetResponses
snmpInTraps
snmpOutTooBigs
snmpOutNoSuchNames
snmpOutBadValues
snmpOutGenErrs
```

snmpOutGetRequests
snmpOutGetNexts
snmpOutSetRequests
snmpOutGetResponses
snmpOutTraps
snmpEnableAuthenTraps
snmpSilentDrops
snmpProxyDrops
entPhysicalEntry
entPhysicalEntry.entPhysicalIndex
entPhysicalEntry.entPhysicalDescr
entPhysicalEntry.entPhysicalVendorType
entPhysicalEntry.entPhysicalContainedIn
entPhysicalEntry.entPhysicalClass
entPhysicalEntry.entPhysicalParentRelPos
entPhysicalEntry.entPhysicalName
entPhysicalEntry.entPhysicalHardwareRev
entPhysicalEntry.entPhysicalFirmwareRev
entPhysicalEntry.entPhysicalSoftwareRev
entPhysicalEntry.entPhysicalSerialNum
entPhysicalEntry.entPhysicalMfgName
entPhysicalEntry.entPhysicalModelName
entPhysicalEntry.entPhysicalAlias
entPhysicalEntry.entPhysicalAssetID
entPhysicalEntry.entPhysicalIsFRU
entPhysicalContainsEntry
entPhysicalContainsEntry.entPhysicalChildIndex
entLastChangeTime

38.3.3 SNMP

show snmp user

```
Ruijie# show snmp user

User name: test
Engine ID: 800013110300000000000
storage-type: permanent    active
Security level: auth priv
Auth protocol: SHA
Priv protocol: DES
Group-name: g1
```

38.3.4 SNMP

show snmp group

```
Ruijie# show snmp group
groupname: g1
securityModel: v3
securityLevel:authPriv
readview: default
writeview: default
notifyview:
groupname: public
securityModel: v1
securityLevel:noAuthNoPriv
readview: default
writeview: default
notifyview:
groupname: public
securityModel: v2c
securityLevel:noAuthNoPriv
readview: default
writeview: default
notifyview:
```

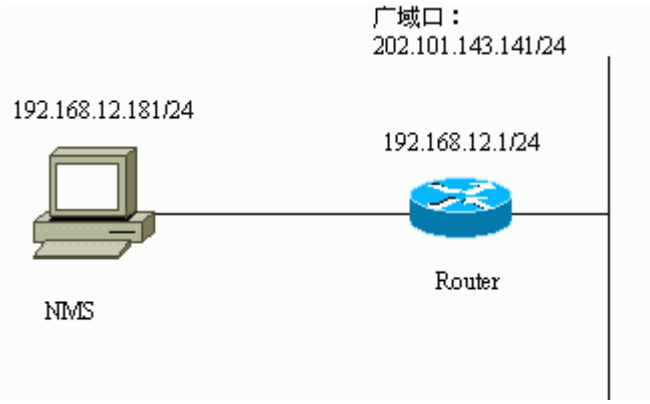
show snmp view

```
Ruijie# show snmp view
default(include) 1.3.6.1
test-view(include) 1.3.6.1.2.1
```

38.4 SNMP

38.4.1

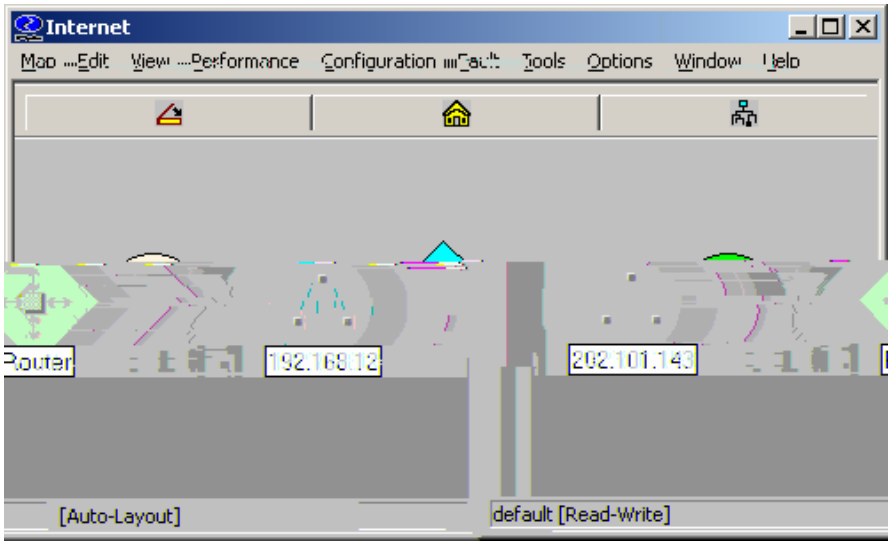
P P



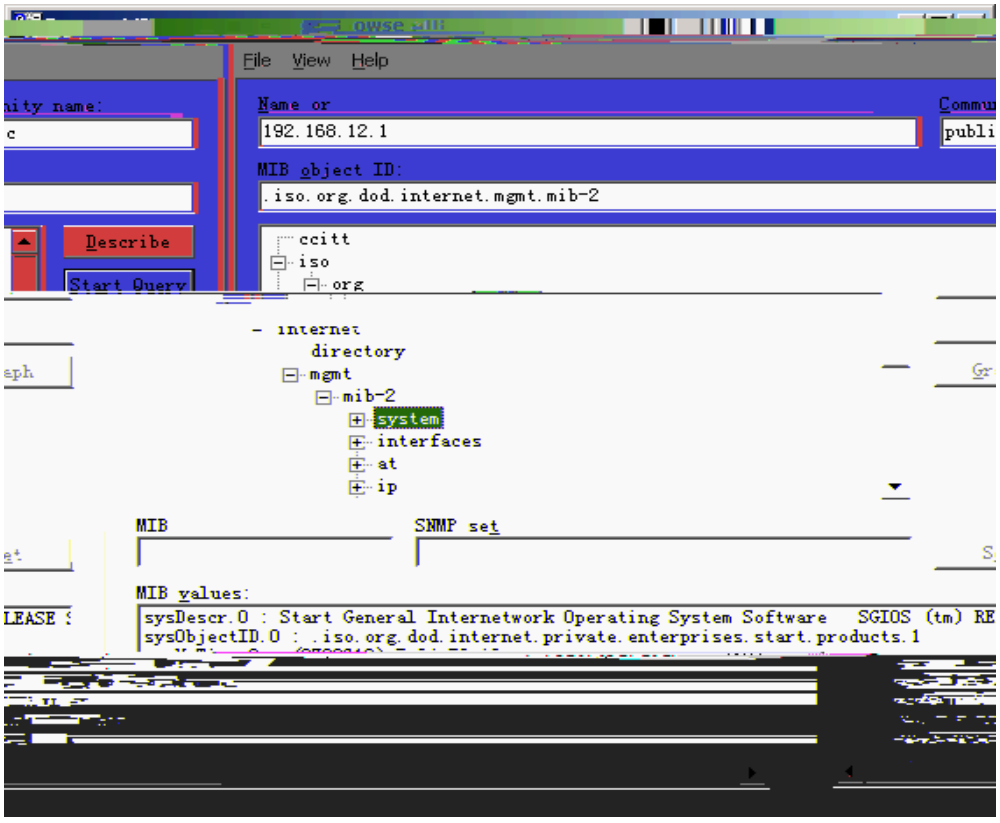
5 SNMP

```
Ruijie(config)# snmp-server community public RO
```

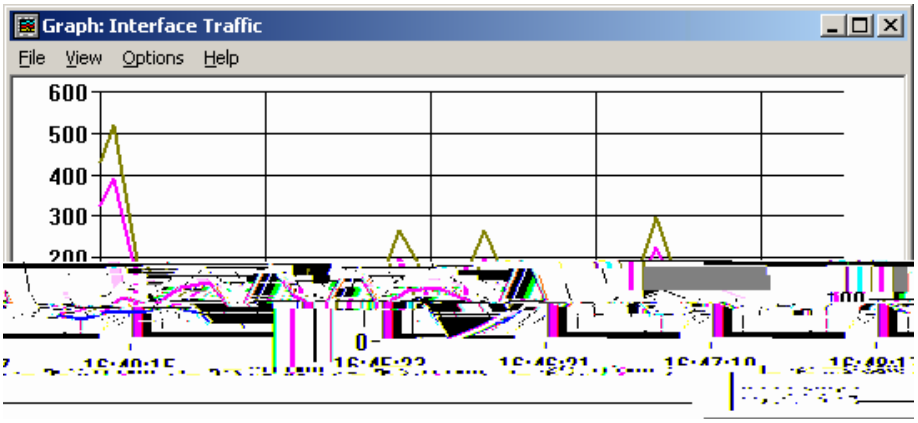
```
Ruijie(config)# snmp-server community private RW
```


Internet
Map Edit View Performance Configuration Fault Tools Options Window Help
Router
192.168.12
192.101.143
[Auto-Layout]
default [Read-Write]

6


File View Help
Name or
192.168.12.1
MIB object ID:
.iso.org.dod.internet.mgmt.mib-2
Describe
Start Query
ccitt
iso
org
internet
directory
mgmt
mib-2
system
interfaces
at
ip
MIB
SNMP set
MIB values:
sysDescr.0 : Start General Internetwork Operating System Software SGIOS (tm) RE
sysObjectID.0 : .iso.org.dod.internet.private.enterprises.start.products.1

7 MIB



8

38.4.2 SNMP

```
Ruijie(config)# access-list 1 permit 192.168.12.181
Ruijie(config)# snmp-server community public RO 1
```

38.4.3 SNMPv3

```
Ruijie (config)# snmp-server user v3user v3usergroup v3 auth
md5 md5-auth priv des56 des-priv
Ruijie (config)# snmp-server host 192.168.65.199 traps version
3 priv v3user
```

39 MIB

39.1 MIB

show snmp mib

```
Ruijie# show snmp mib
sysDescr
sysObjectID
sysUpTime
sysContact
```

```
ifEntry.ifIndex
ifEntry.ifDescr
ifEntry.ifType
ifEntry.ifMtu
ifEntry.ifSpeed
ifEntry.ifPhysAddress
ifEntry.ifAdminStatus
ifEntry.ifOperStatus
ifEntry.ifLastChange
ifEntry.ifInOctets
ifEntry.ifInUcastPkts
ifEntry.ifInNUcastPkts
ifEntry.ifInDiscards
ifEntry.ifInErrors
ifEntry.ifInUnknownProtos
ifEntry.ifOutOctets
ifEntry.ifOutUcastPkts
ifEntry.ifOutNUcastPkts
ifEntry.ifOutDiscards
ifEntry.ifOutErrors
ifEntry.ifOutQLen
ifEntry.ifSpecific
......
```

39.2 MIB