Web Ą

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RGOS 10.3(4b6)p2

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⁋ ⁸ à à à à à è à è ⁋

Â

Ruijie Networks à à 锐捷网络 à

Ruijie à 锐捷网络 ® à ®

à RGOS® à

RGNOS® à à à

Red-Giant 锐捷 à 锐捷®

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˙ http://www.ruijie.com.cn/ Â

Л Љ à ǰ à
ᾱ à ˝ Â

˙ http://webchat.ruijie.com.cn Â

Л Љ 8:30 6 ˘ ľ Ł à

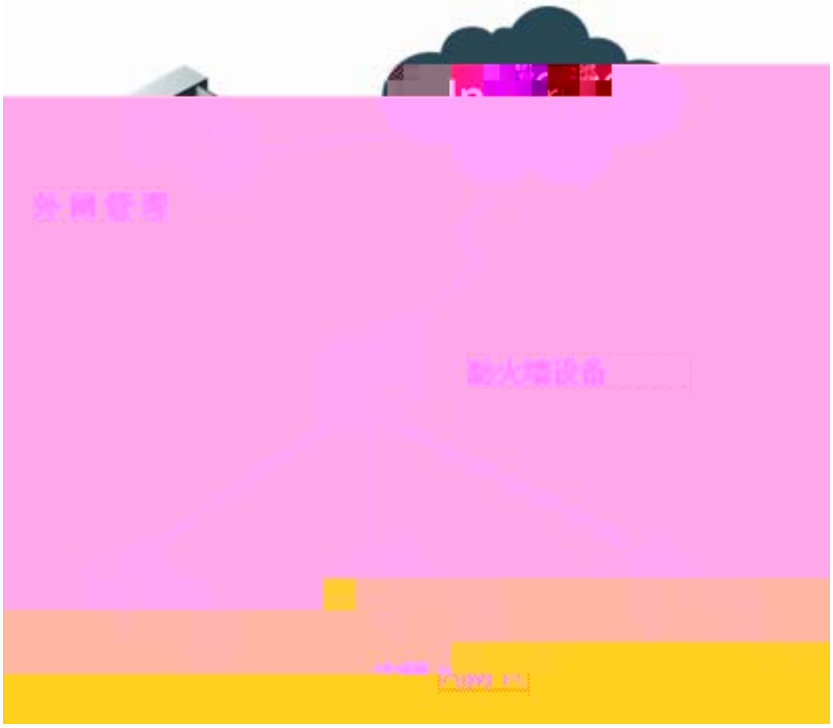
ʼ̏Ą̦ ̤ ѝ˓ RGOS®10.3 (4b6)p2 Â

www.ruijie.com.cn
4008-111-000

1.1

ù ˘ Web ╖ Â Л PC ˘ ˘ Л Ц Â

Web 1-1 Â



б Л . ЛЪ Л Â ˘ PC . ˘ ЛЪ Web Â PC IP ѝ˙ 192.168.201.122/255.255.255.0

˘ HA(Л) ЮЎ HA ЮЎ

‡ IP a˚ ˘ έ FW-FAILOVER-SCG.doc^ AS Ю˜ FW-FAILOVER-AA-SCG.doc^ AA Ю˜ Â

:

1˜

... VLAN 3Â Л GigabitEthernet 1/1 ѝ Access Л˘ ╗ VLAN 2Â

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

#^ Æ 4 ˜ TenGigabitethernet 4/1 TenGigabitethernet 4/2 (ч Л Л) ѝ Л Aggretegateport 4 ˙

```
Firewall(config)# interface TenGigabitethernet 4/1
Firewall(config-if)# port-group 4
Firewall(config-if)# exit
Firewall(config)# interface TenGigabitethernet 4/2
Firewall(config-if)# port-group 4
Firewall(config-if)# exit
```

Л Aggretegateport 4 Trunk ЮЎ VLAN 2 Â

```
Firewall(config)# interface Aggretegateport 4
Firewall(config-if)# switchport mode trunk
Firewall(config-if)# switchport trunk allowed vlan remove 1,3-4094
```

2˜

Firewall(config)#**interface vlan 2**

Firewall(config-if)#**ip address 192.168.201.1 255.255.255.0**

ˆ 3˜ ╟ http/https ╞

╟ http ╞

Firewall(config)# **enable service web-server http**

╟ https ╞

Firewall(config)# **enable service web-server https**

ˆ 4˜ Web й local ‘

Firewall(config)# **ip http authentication local**

ˆ 5˜

Firewall(config)# **user admin password admin**

ˆ й 15 ˘ ‡ ˜

Firewall(config)# **user admin privilege 15**

ˆ 6˜ ╕

Firewall(config)# service password-encryption

╕ ʒ ł˘ CLI ˘ ˘ ╕ ł Â й ˘ ╕ Â

(1) ¨ Web ˘ ‡ й local Â

(2) ˘ admin й ˘ è й ˘ ˘ Â

ˆ 3˜ admin ł˘ a ˘ a Â

ˆ 4˜ Л Ъ ╕˘ ˘ è Â

ˆ 5˜ ¨ Ҳ

Л Э ł ╠ ^ и Ч ˘ IE 8.0 Л Э ~ ˘
IP ľ 192.168.201.1 Ł ł ˘ Л Web ˘ 1-2 Â
¨ ľ admin Ł ľ admin Ł ˘ < > Л Â

1-2

1.3 Web

Web Э Э < > ˘ Л Web Â

1.4

Web ť и ' à Ъ à Ь ť ˘ 1-3 Â

1-3 Web

http	Firewall(config)#ip http port ? 80 Default port number <1025-65535> Port number range
https	Firewall(config)#ip http secure-port ? 443 Default port number <1025-65535> Port number range
Web	Firewall(config)#ip http authentication ? enable Use enable passwords local Use local username and passwords enable username xxx password xxx admin Firewall(config)#enable password xxxxx local username xxx password xxx local local enable WEB local

1.7

(1)Web Microsoft Internet Explorer 6.0 SP2 Mozilla Firefox 360 Google Chrome IE 8.0

(2)Web a Web a

Web

2-1


防火墙首页导航
CPU(1分钟均值): 0%
内存: 58%
接口部署
安全域
设备信息
名称:
设备基本信息
接口配置
配置概览
设备性能
管理黑名单
限制会话和流量
HA（高可靠性）
虚拟防火墙
管理虚拟防火墙
开始配置

2-1

⅄

. ⅄ ў ⅄˘ ⅄ ╖ Э a à
⅄ Â

⅄ Web Э VLAN ⅄ BVI ⅄^ ⅄˜ Â

VLAN ⅄' Ь Ю ⅄˘ ў VLAN Ь Â VLAN VLAN
⅄˘ й VLAN ⅄ IP ѣ˘ ⅄ ⅄ й VLAN ˘
IP Ь Â

BVI ⅄^ ⅄˜' ˘ Ү ˘ ў . Э
VLAN Â ⅄ Лъ a VLAN ╗ BVI ⅄˘ VLAN Â

⅄ ⅄ à … à VLAN ⅄ à BVI ⅄ ╖ Â

3.1 VLAN

3.1.1 ⅄

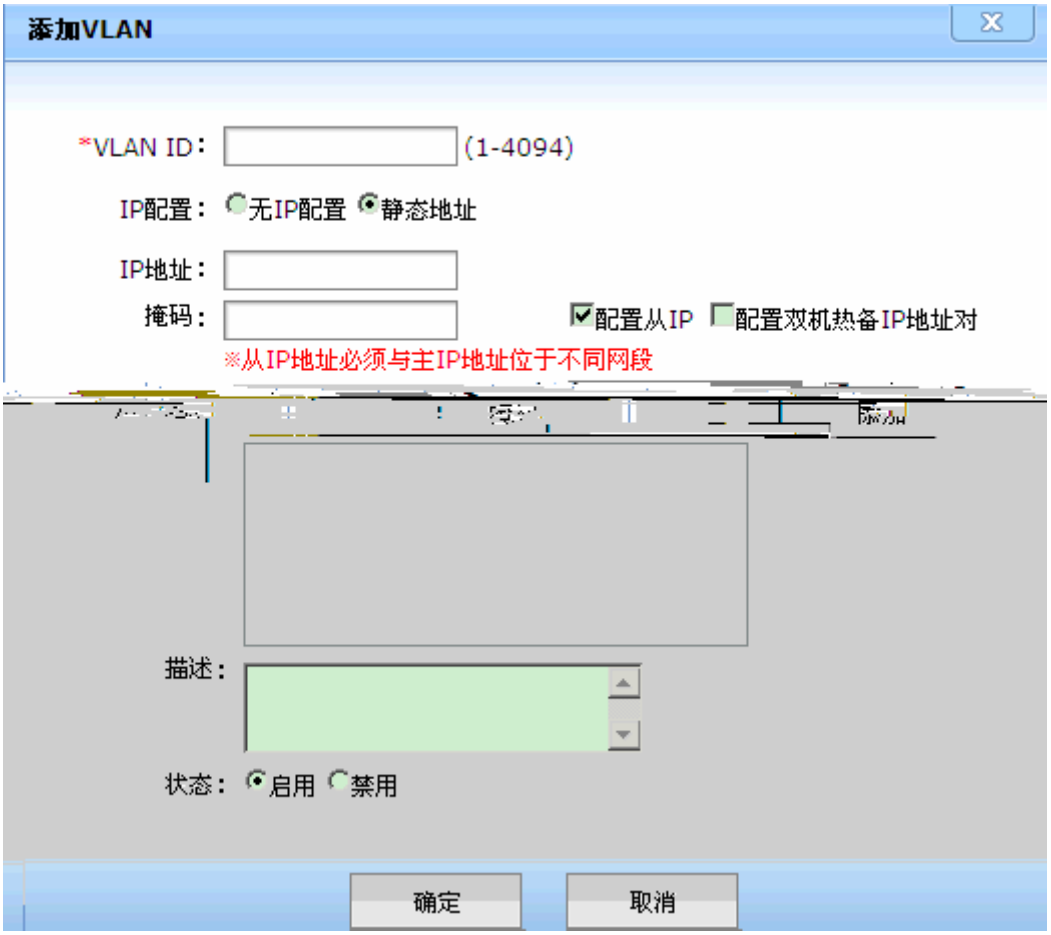
3-1 VLAN

	VLAN
IP /	IP IP IP DHCP IP
	UP: DOWN:

+ ...

-

ACL in/out ACL
ACL



3-2 VLAN ╗

VLAN ID	VLAN ⁄ ID
IP	IP ‘ a IP ˘ ˘ IP ’ ‘ ⁄ IP ˘ ў IP ÿ IP ’
IP	VLAN ⁄ ў IP ˘ IP ľ Ł ˘ Â IP ⁄ Â
ÿ IP	VLAN ⁄ ÿ IP ˘ IP ľ Ł ˘ Â ÿ IP ⁄ Â ÿ IP ł˘ ľ ╗ Ł ˘ ⁄ ÿ IP ╗ Ю Â

3.2 BVI

3.2.1 ⅄

Ľ > ⅄ Ł VLAN Â Ľ Ł ˘ ⅄ Â 3 3 Â

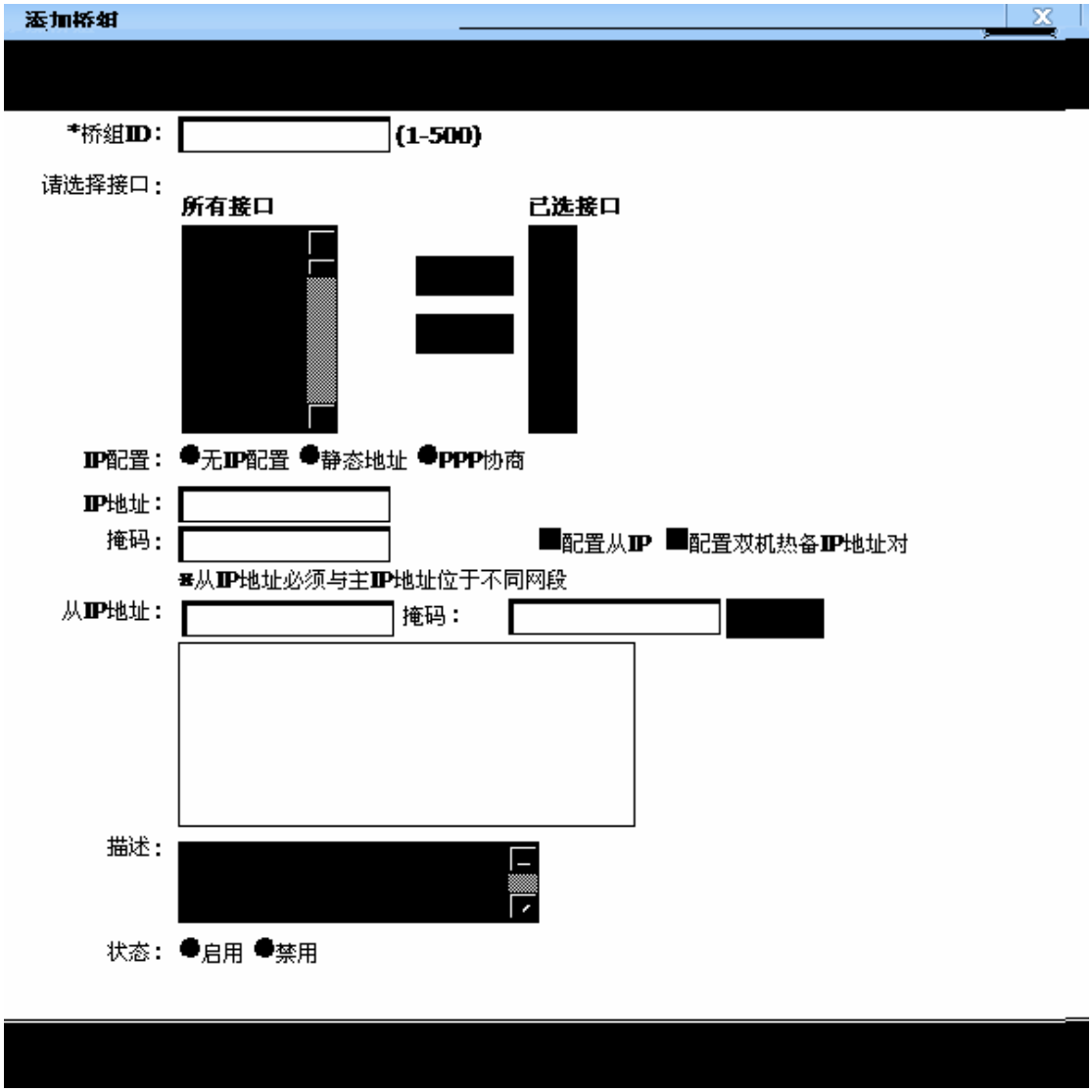
3-3

¨	¨
⅄	╕ VLAN ⅄ Â VLAN ⅄ ╕ ł˘ ⅄ Y ⅄˘ a Ą VLAN ⅄ Ю IP Â

IP /	⅄ IP ˘ IP ⅄ ѝ IP˝ ≠ ⅄ Л Ъ PPP ł ∧ IP Â
	⅄ ‘ UP: ⅄ DOWN: ⅄
	+ …‘ - ‘ IP ∧ ‘ IP à à PPP ⅄ ‘ Ь ⅄ Y ⅄’ ‘ ⅄ ˘ ’ ‘ ⅄ ˘ ⅄ ł ˘ ’ ACL ‡‘ ⅄ Э ACL ‡˘ ACL¨ ˘ ⅄ ^ in/out˜’ ACL ¨ ˘ ⅄ Л Ъ ACL ‡’ ÿ IP ‘ ⅄ ÿ IP ’
	‘ ⅄ ‘ ⅄

3.2.2 ⅄

BVI ^ 3-3 ˜˜ Ї ╗ Ь ˘ ╗ ˘ 3-4 ‘


添加桥组
*桥组ID:
(1-500)
请选择接口:
所有接口
已选接口
IP配置:
●无IP配置 ●静态地址 ●PPP协商
IP地址:
掩码:
■配置从IP ■配置双机热备IP地址对
*从IP地址必须与主IP地址位于不同网段
从IP地址:
掩码:
描述:
状态:
●启用 ●禁用

3-4

ID	ID,1-500

IP /	⅃ y̆ IP ˘ Â
ÿ IP /	⅃ ÿ IP ˘ ÿ IP ∕I Â ∕I ľ ╗ Ŀ ╗ ÿ IP Â

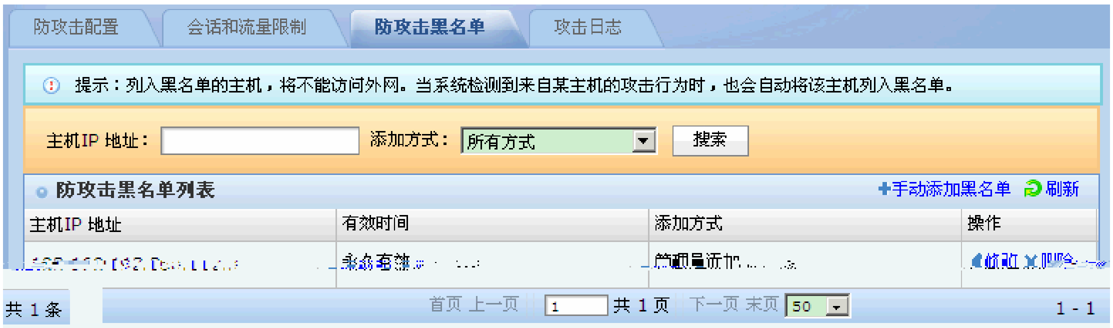
4.1

4.1.1

¨ ˘ IP Â ¨ ÿ ㄑ㇉
ip ㄐ ╟ ╗ ˘ й IP ɨ˘
ÿ ╟ ¨ ÿ IP Â ˘ ¨
Â ¨ ㄑ㇉ ╟ ⸗ ㄑ㇉ ╟ ╗ Â

4.1.2 ¨

ľ > Ŀ ¨ Â 4-1 Â



4-1 ¨

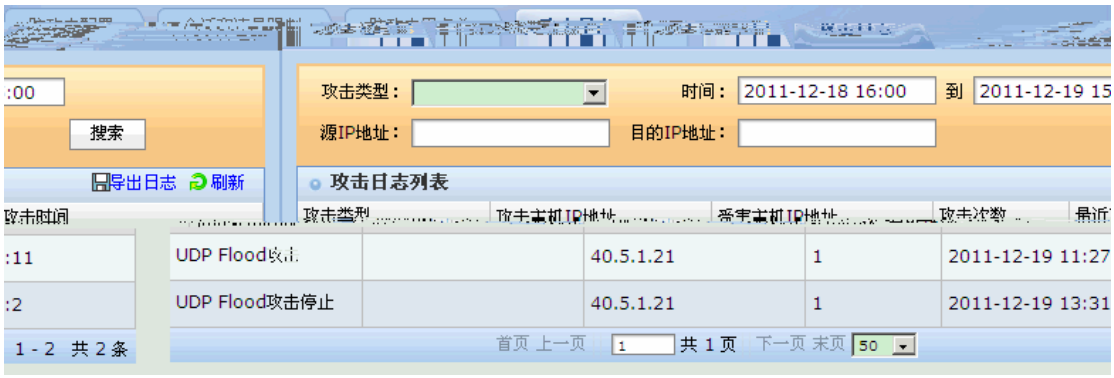
IP	╗ ¨ ÿ IP

╕	¨ ╕ ˘ 2 ╕ ¨ ˛ ╕ ˙ Ľ ╟ ╕ ¨ ˘ ╕ ’ ╟ ╕ ˙ ł ˘ ў ѝ ˘ ≠ ╟ ў IP ¨ ˘ ¨ ╟ ╕ Â
	╟ ╕ ¨ 8 ˘ ł ╟ Â ˘ ľ Ł ľ Ł

ў ¨ ł ˘ a Â

4.1.3 ╟ ╕ ¨

¨ ˆ 4-1 ~ Э



4-3

	SYN FLOOD UDP FLOOD ICMP FLOOD IP
IP	IP IP
IP	IP SYN FLOOD UDP

ŭ ip ip
flow flood

ŭ icmp flood
udp flood

4.3.2

ľ > Ł ł ľ Ł¦

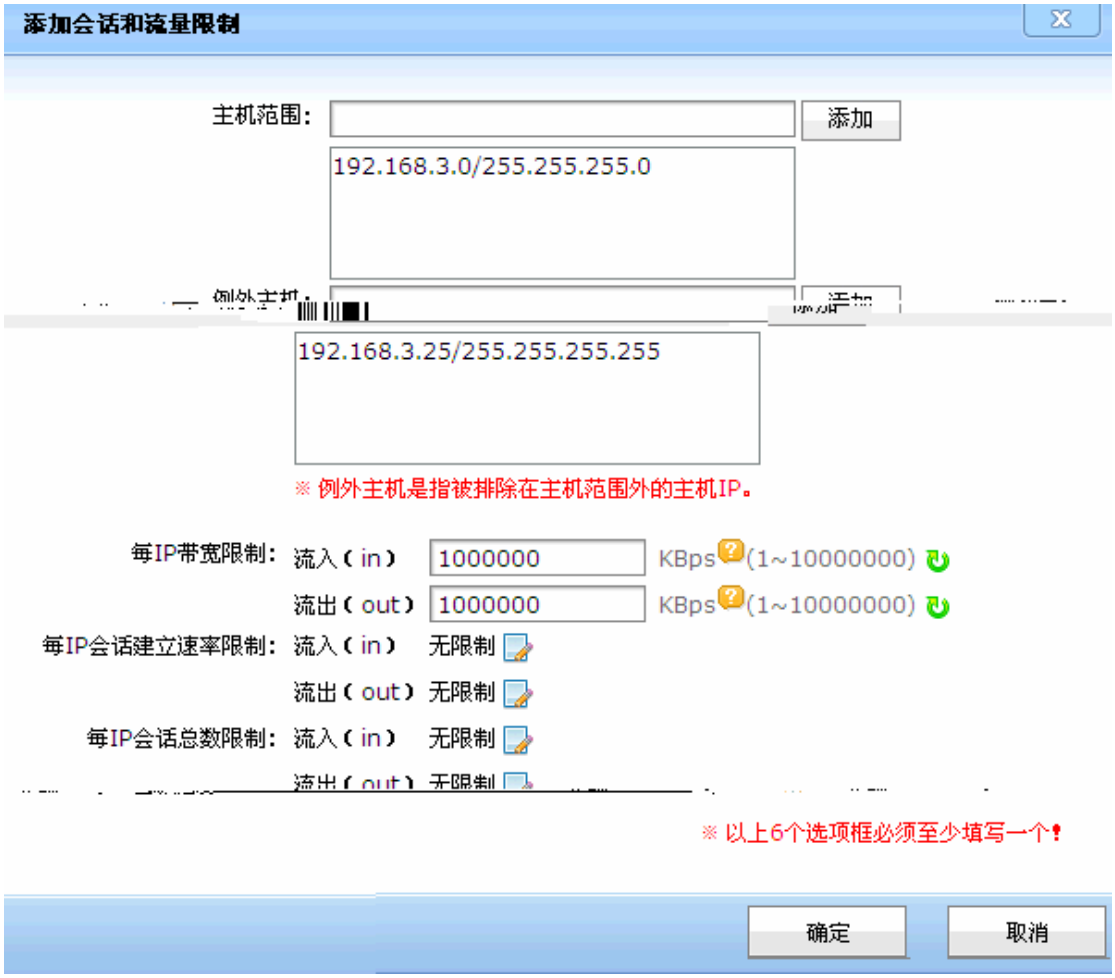
4-4

4-4

ŭ	ŭ IP
ŭ ‡	ľ ŭ Ł ŭ IP / à IP / IP /

4.3.3 ╗

4-4 ╗ ľ ╗ Ł 4-5



4-5 ╗ ⁸

ў	⁸ ў IP Â ʌ ѝ ў IP à IP any Â ѝ any ˇ ў Â
ў	ľ ў Ł ў Â ʌ ѝ ў IP à IP any Â ѝ any ˇ ў Â ʻ 192.168.3.25 192.168.3.0 ў ⁸ Â ‡ ʌ 4-5, ў ѝ 192.168.3.0 ˇ ў ѝ 192.168.3.25 ʌ Â
IP ⁸	ʻ IP IP ˇ IP ⁸ ^ 1-100000kBps)˘ a a ⁸ Â

Land	Land TCP SYN IP SYN-ACK ACK … Land UNIX Windows NT
Smurf	Smurf ICMP ICMP Smurf ICMP Smurf Fraggle
Winnuke	WinNuke Windows NetBIOS 139 OOB out-of-band NetBIOS
SYN Flood	TCP/IP TCP SYN Flood SYN SYN-ACK ACK … SYN Flood
ICMP Flood UDP Flood	ICMP ping UDP

Ping of Death	Ping of Death ICMP ÂIP ù 16 æ IP ù 65535Â ICMP 65507 ICMP IP (20) ICMP ^ 8 > 65535Â ł a à Â

4.4.2

ľ > Ł ł ľ Ł¦ Â æ 4-6 Â

4-6

ЛЬЮ ' Teardrop à Smurf à TCP Flag à Ping of Death ' è ù Л Ł Л Â

4.4.3

ľ > Ł ł ľ Ł¦ Â Ю 4-7 Â


扫描窥探型攻击
保存
检测所有主机
检测特定主机
引用ACL
只检测TCP、UDP和ICMP报文
不检测UDP报文
扫描速率：
medium
自定义速率阀值

4-7

ў ˘ ù Â

Л ЛЬЮ ‘

TCP à UDP ICMP

a TCP

a UDP

4-8 IP FLOOD

IP FLOOD	: IP FLOOD IP FLOOD
	pps
	IP FLOOD

4.4.4.2 ICMP

4-9

4-9 ICMP

ICMP	: ICMP ICMP
ICMP	ICMP ICMP 4000 bytes byte

4.4.4.3 SYN FLOOD

4-10

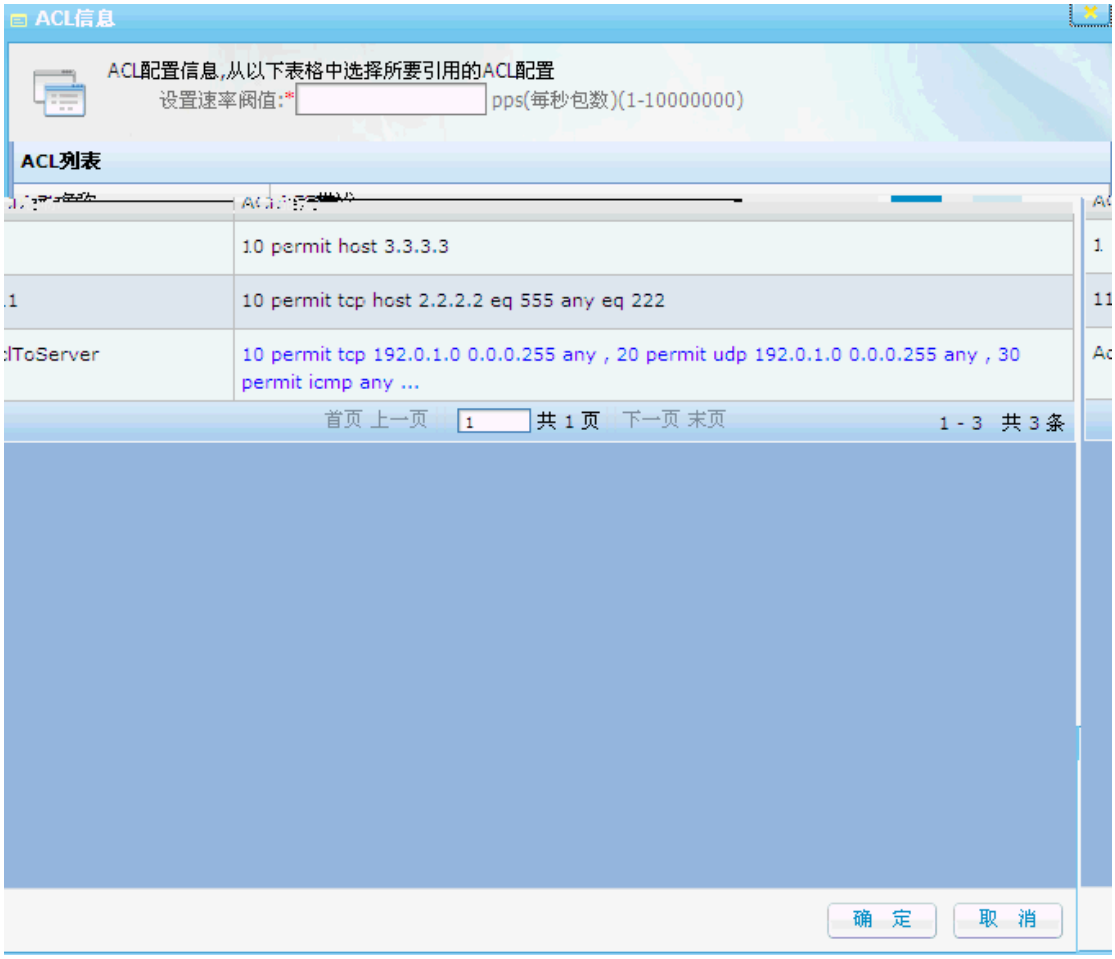
4-10 SYN FLOOD ŭ

SYN FLOOD	‘ HŎ Ĭ’ SYN FLOOD Ł ˘ ʒ ˂ ’ ‘ HŎ Ĭ’ SYN FLOOD Ł a ˘ ˂ ≠ a ’
ʌ ŭ IP|ACL¨	SYN FLOOD ŭ IP˝ Â ACL ŭ ˘ ACL ¨ Â ACL ¨ ˘ ʌ ACL Â
	‘ Ĭ’ Ł ˘ SYN FLOOD ˘ ’ ‘ ʌ Ĭ’ Ł ˘ ʌ ╗

Web ч SYN Flood ‘ 1˜ ╗ ʌ ŭ IP ’ 2˜ HЖ ACL IP Â

1) Ĭ’ ╗ ʌ IP Ł ŧ˘ Ĭ’ ╗ SYN Ł Â 4-11 ‘


添加SYN报文限速
* 受保护主机IP范围：
添加
* 速率阀值：
pps(每秒包数)(1-10000000)
确定
取消



4.4.4.4 UDP FLOOD

4-12 ‘

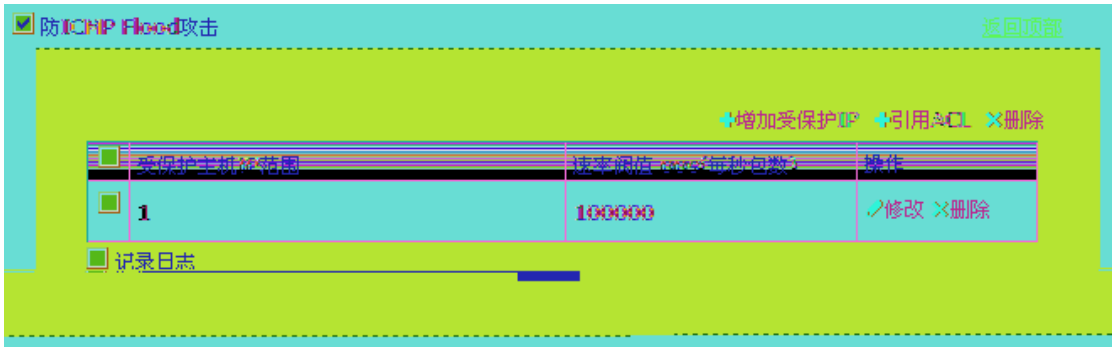
4-12 UDP FLOOD ў

ʌ ў IP	UDP FLOOD ў IP ˘ ў Â
	˘ Æ‘ Â ˘ ‡ ѝ UDP FLOOD Â

2˜ ACL 4.4.5.3 Â

4.4.4.5 ICMP FLOOD

4-14 ‘



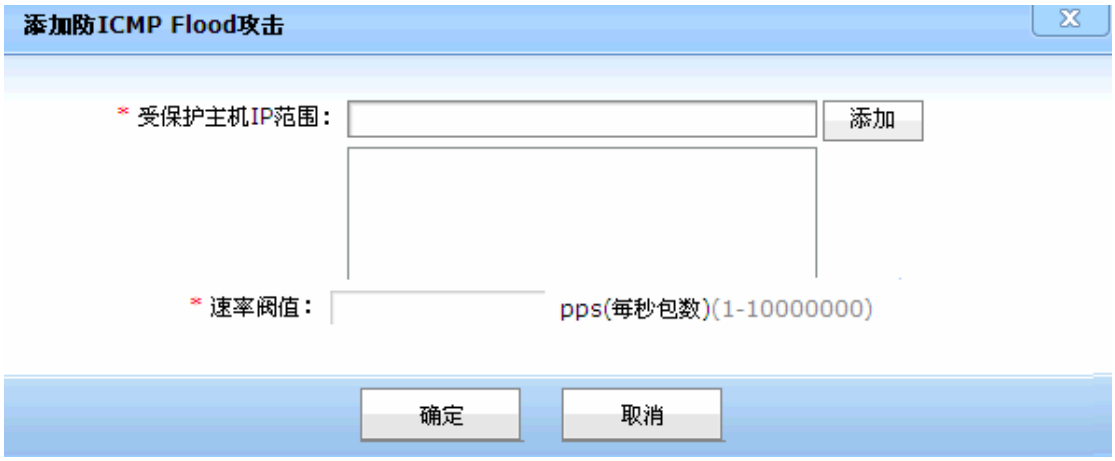
4-14 ICMP FLOOD ў

ICMP FLOOD	‘ ЮЃ ľ ICMP FLOOD Ł˘ ˘ з ‘ ’ ‘ ЮЃ ľ ICMP FLOOD Ł˘ a ˘ ‘ ≠ a ’
ʌ ў IP	ICMP FLOOD ў IP Ѓ Â ACL ў ˘ ACL ¨ Â ACL ¨ ˘ Л ACL Â
	˘ ˘ ‡ ѝ ICMP FLOOD Â ѝ ICMP FLOOD ˘ Â

	ICMP FLOOD

ч ICMP Flood 1˜ IP;2) ACL Â

1) 4-15



4-13 ICMP FLOOD

IP	ICMP FLOOD IP Â
	Â ICMP FLOOD Â

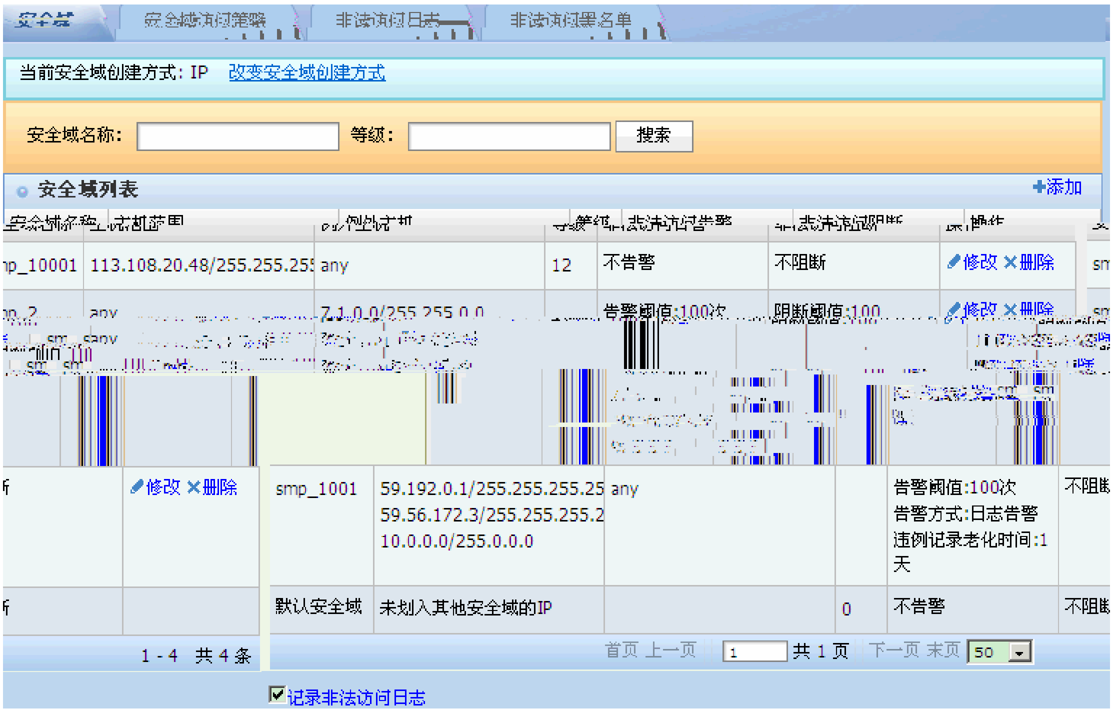
2˜ ACL 4.4.5.3 Â

5.1

	Ł	
1		Л ЉЮ ч IP Л Л
2	…	Ю default default Ю default a Л è ˘ è ≠ a Л default ^ Ю ~’ default ≠ a Л Â
3		Ю Л ў ╠ æ ’ æ a Л Â è ˘

5.2

ľ > Ł Â 5-1 Â



5-1

ľ ɬ … Ŀ ᛙ ˘ 5-2 Â

5-2 …

IP	ÿ IP ᛙ
ɺ	ɺ ᛙ

… Â

5.3 IP

5.3.1

… ŕ ľ IP ł Ł ŧ˘ IP ł ˘ 5-3 Â

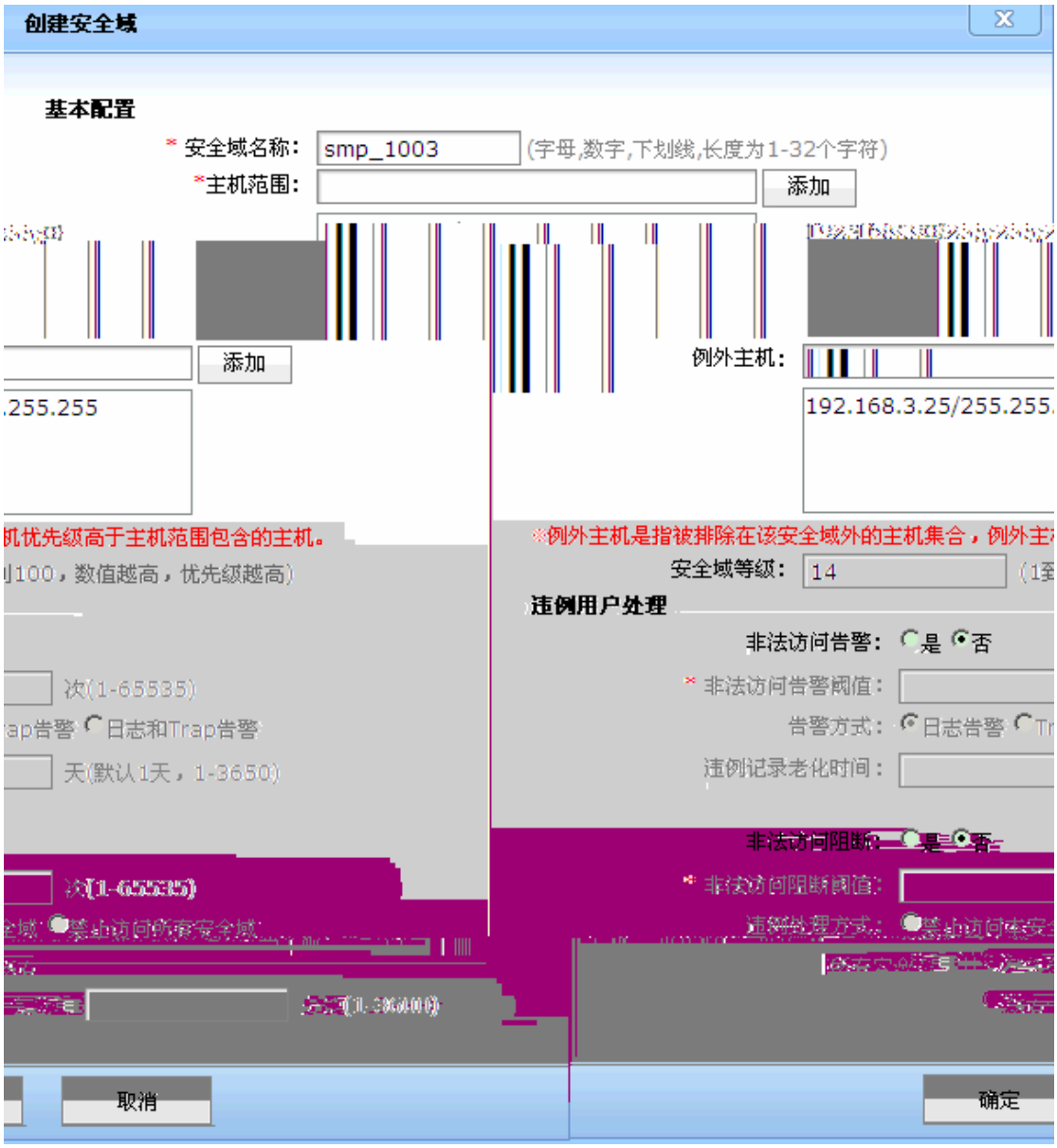
5-3 IP ł

¨	¨
ў	IP
ў	a ў Â IP ľ ў Ł Â
	˘ Â

	‘ Â ł˘ ’ HЖ a ’ ‘ ╟ ˘ à trap ˘ ˚ trap Ь ’ ’ ‘ ˘ ‘ 1
	‘ Â ł˘ ’ HЖ a ’ ‘ 1˜ ˆ ˘ ˜ ’ 2˜ ‘ ‘ ˘

5.3.2…

ˆ 5-3 ˜˜ l’ ╗ Ł … ˘ 5-4 Â



5-5 …

¨	¨
ў	IP ˇ Л и ў IP ąIP any Â и any ˇ ў Â

ў

5.3.3

1) ‡

ľ > Ł Â ľ Ł ˘
‡ ˘ 5-6 Â

5-6 ‡

‡	‡ Â ‘ A → B: A Λ Л B A ← B: B Λ Л A A ↔ B: A B Λ Л A ✕ B: A B a Λ
‡	‡ ‡˘ ‡ Â ‡ Â ‘ A → B: A Λ Л B A ← B: B Λ Л A

2) ‡

ˇ

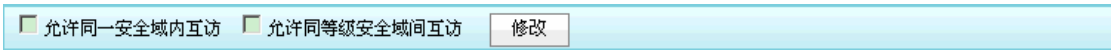
‡ a ˇ ˇ ˇ

Â ∧ 5-6 ЛЮ↘ Â

ˇ

‡ a ˇ ˇ ˇ Â

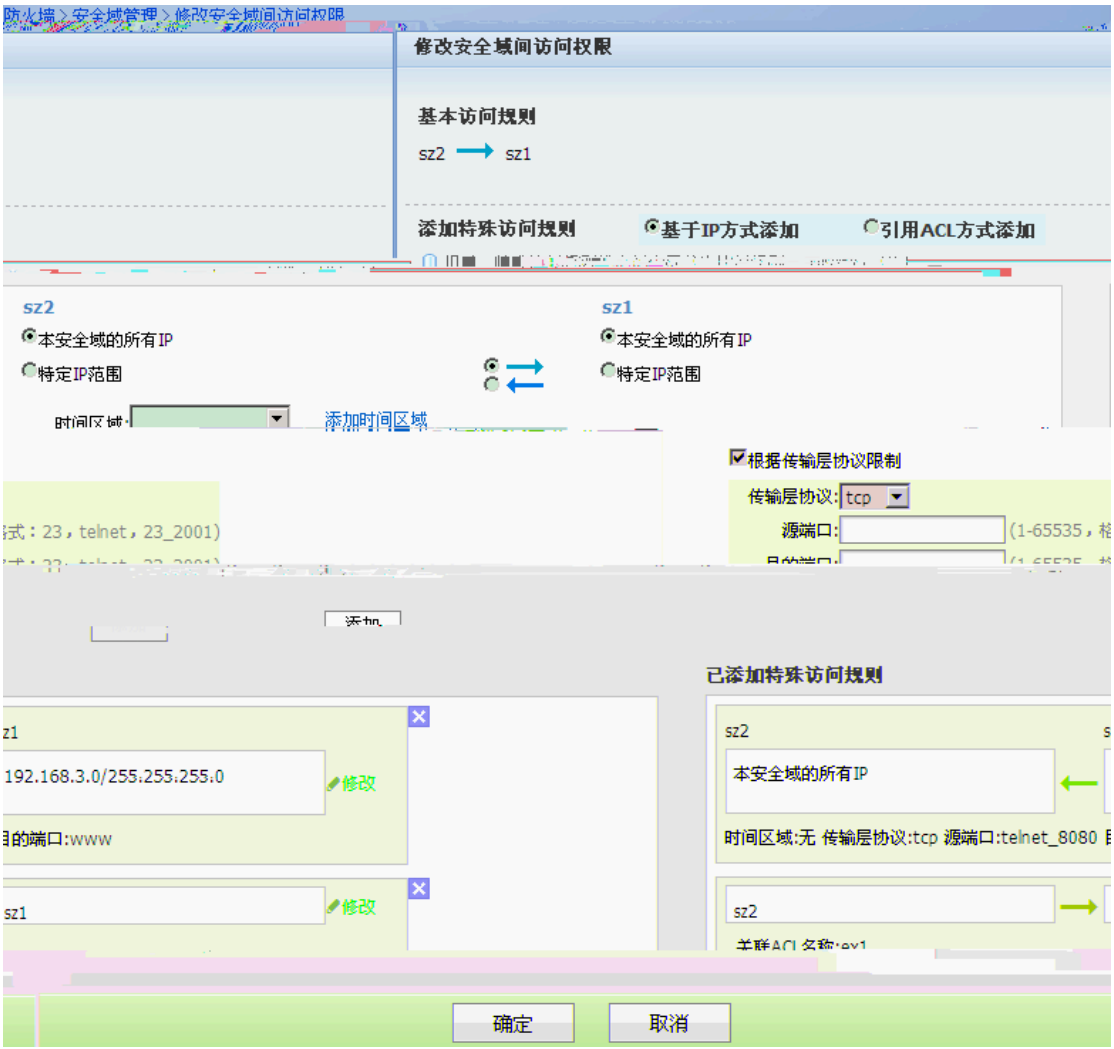
∧ 5-6 ЛЮ↘ Â



╗ ‡

‡ ˆ 5-6 ~~ ˘

‡ ˘ 5-7 Â

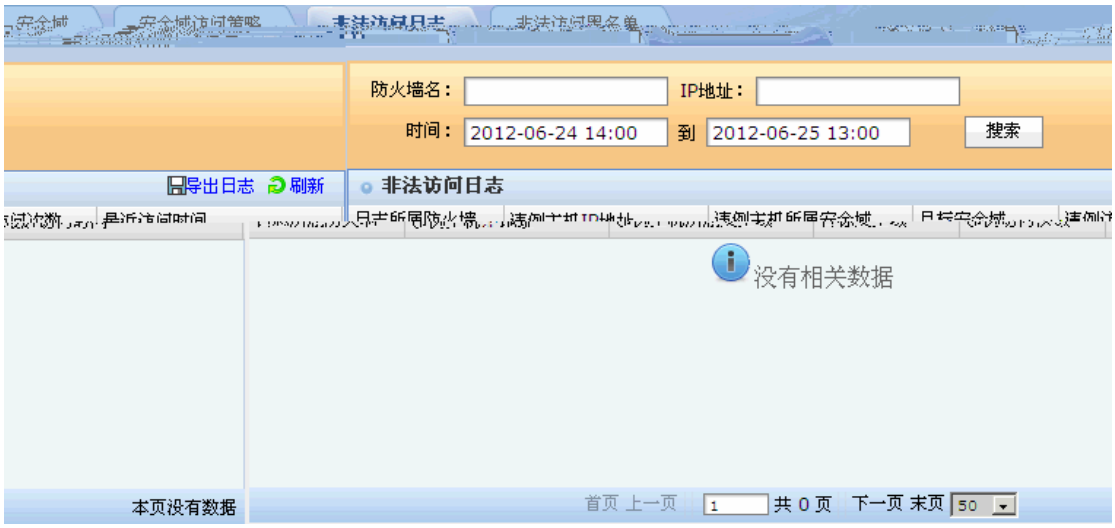


5-7 ‡

2 ‡˙

IP ╗˙ ⁄ Л Ъ ╗ ў IP ˇ ЬЖ ‡’

ACL ╗˙ ⁄ Л Ъ ЬЖ ACL ‡ˇ ACL ‡ ’



5-8

	Â Â
ŷ IP	ŷ IP
ŷ	ŷ
	ŷ

ľ > Ł Â ľ ¨ Ł ˘
¨ ˘ 5-9 Â

5-9 ¨

IP	IP
	8

5.4

5.4.1

… ѝ ľ Ѧ ł Ł ѣ˘ Ѧ ł ˘ 5-10 Â

5-11 Ʌ …

¨	¨ Â , ,Ю , a 16
Ʌ	Ʌ Ʌ˙ Ʌ з ╗ Ʌ Ʌ˙ Ʌ
	˘ Â Ʌ æ Â

5.4.3

Ʌ ‡ IP ‡ ˘ ɅЛ 5.2.2.3

IP

1) ‡

5.2.2.3 ‡

2) ‡

5.2.2.3 ‡

ACL Access Control List

ACL (Access Control Entry ACE)

6.1

ACL

1	ACL	ACL ACL
2	ACE	ACL ACE

6.2 ACL

> ACL ACL 6-1

6 1 ACL

ACL ACL ACL ACE ACE

ACE

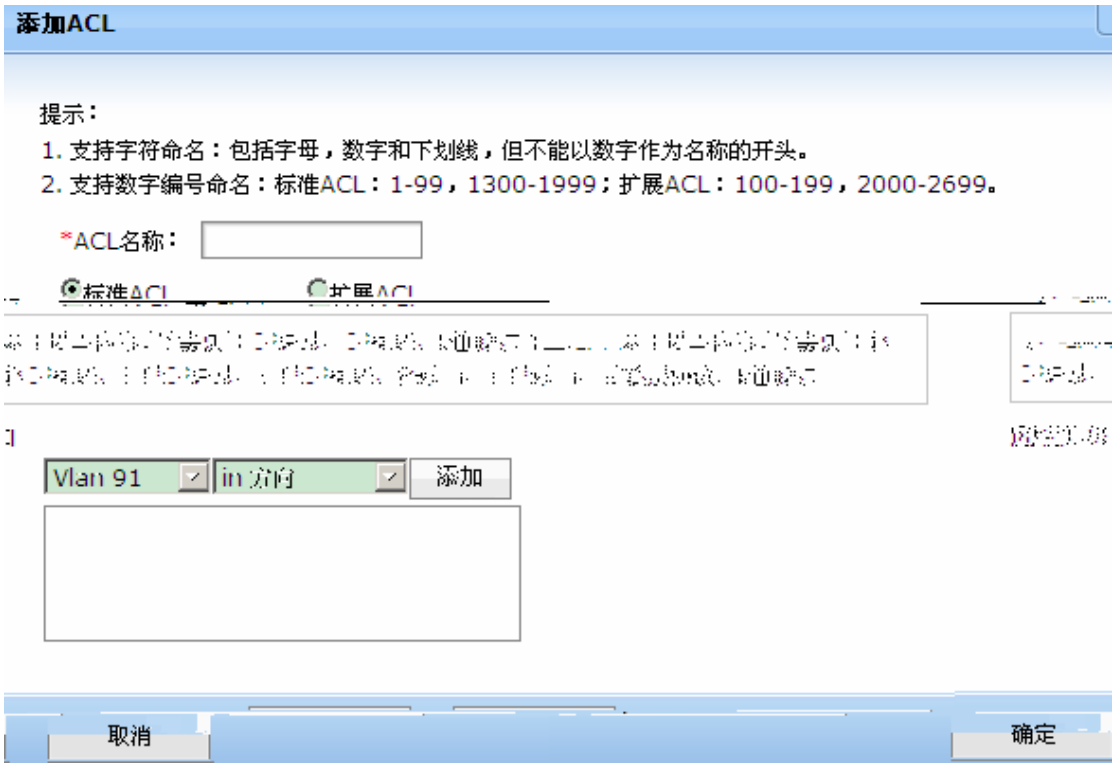
ACL	permit deny
IP	ACE IP IP IP
IP	ACE ACL

IP à ⅄	ACE ƀ ˚ Â ACL Â ˚ IP Ɲ ⅄
IP à ⅄	ACE ƀ ˚ Â ACL Â ˚ IP Ɲ ⅄
	ACE ƀ ˚ Â ⱨ ACE Â ˇ ‡ Â

ACE ƀ ш ACE ⅄ ˇ ÿ ⅄ ˇ
˚ ⅄ ƀ ˇ ж ł ⅄ ˇ a Ą ’ ˇ ⱨ ACE ˇ ш
ACE ƀ ACE Â

6.3 ACL

ACL ^ 6 1 ~ ˇ Ⅰ ╗ ACL Ł ˇ ACL ˇ 6 2 Â



6 2 ╗ ACL

ACL	ACL ACL Ю a Лъ ий Â ACL 1-99 1300-1999 ACL 100-199 2000-2699 Â
ACL	ACL IP ийй 1 - 99 1300 - 1999 IP ACL IP ийй 100 – 199 2000 - 2699 Э Â
	ЙЮ ACL in ACL б ACL ACE out ACL б ACL ACE Â

Web IP IP IP Â

MAC 8 MAC 8 Expert 8 Â

ЛъЭ CLI 8 Â

6.4 ACE ACL

ACL a ACE ий 2

ACL ACE ACL IP

ACL ACE ACL IP IP Й

ACE

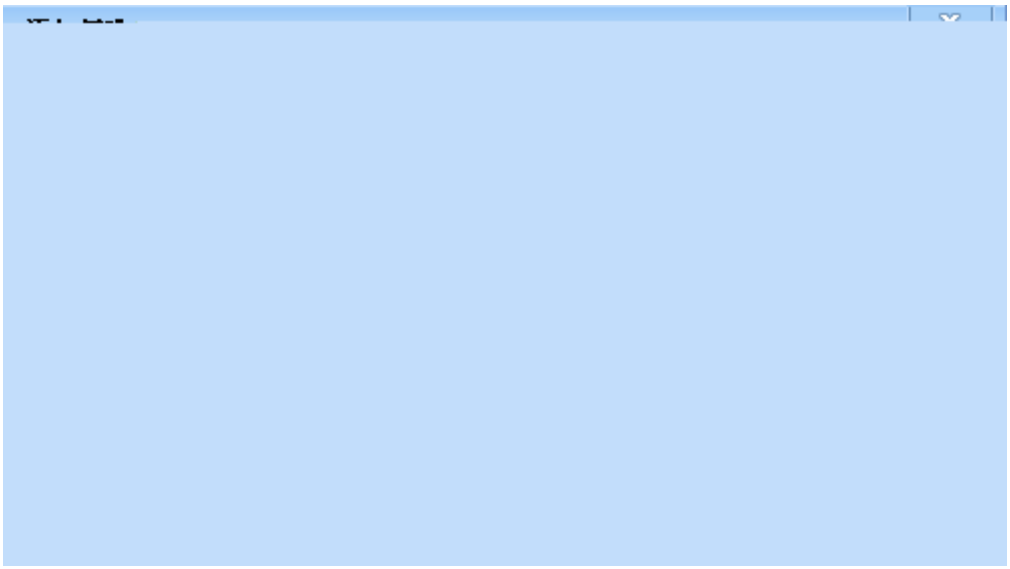
1. ACE

2.

ACL ACE

1)

ACL ACE



6 3 ACE

6 4 ╕ ACE

ƀ ACE ŧ˜ ‘

ACL ^ Permit˜‘

^ Deny˜

NAT Network Address Translation IP IP IP
NAT IP IP

7.1

NAT

IP

IP

IP

IP

IP

NAT

1 IP

2 IP

1	NAT	NAT NAT
2	NAT	NAT IP IP IP

7.2 NAT

> NAT IP NAT 7-1

7-1 ╟ NAT

╟ NAT Ľ NAT ˇ 7 2 Â

7 2 NAT

	ĺ NAT

7.3 IP

╟ NAT ^ 7 1 ~~ Ľ ╗ Ł ˇ ╗ IP ˇ 7 2 Â

7-2 ╗ à IP

⅄	⅄ б IP (⅄ NAT) ⅄˘ Â 2 ‘ 1˘ ---- Ⅸ ’ 2˘ ----
ACL	ACL ‡˘ ɔ ACL

7.4 IP NAPT

Ľ > NAT Ł ɨ Ł DMZ Ł ^ NAT˜ Ł ˇ Ł IP Â 7-3 Â

172.18.3.7 udp(2002)

172.18.3.7

UDP

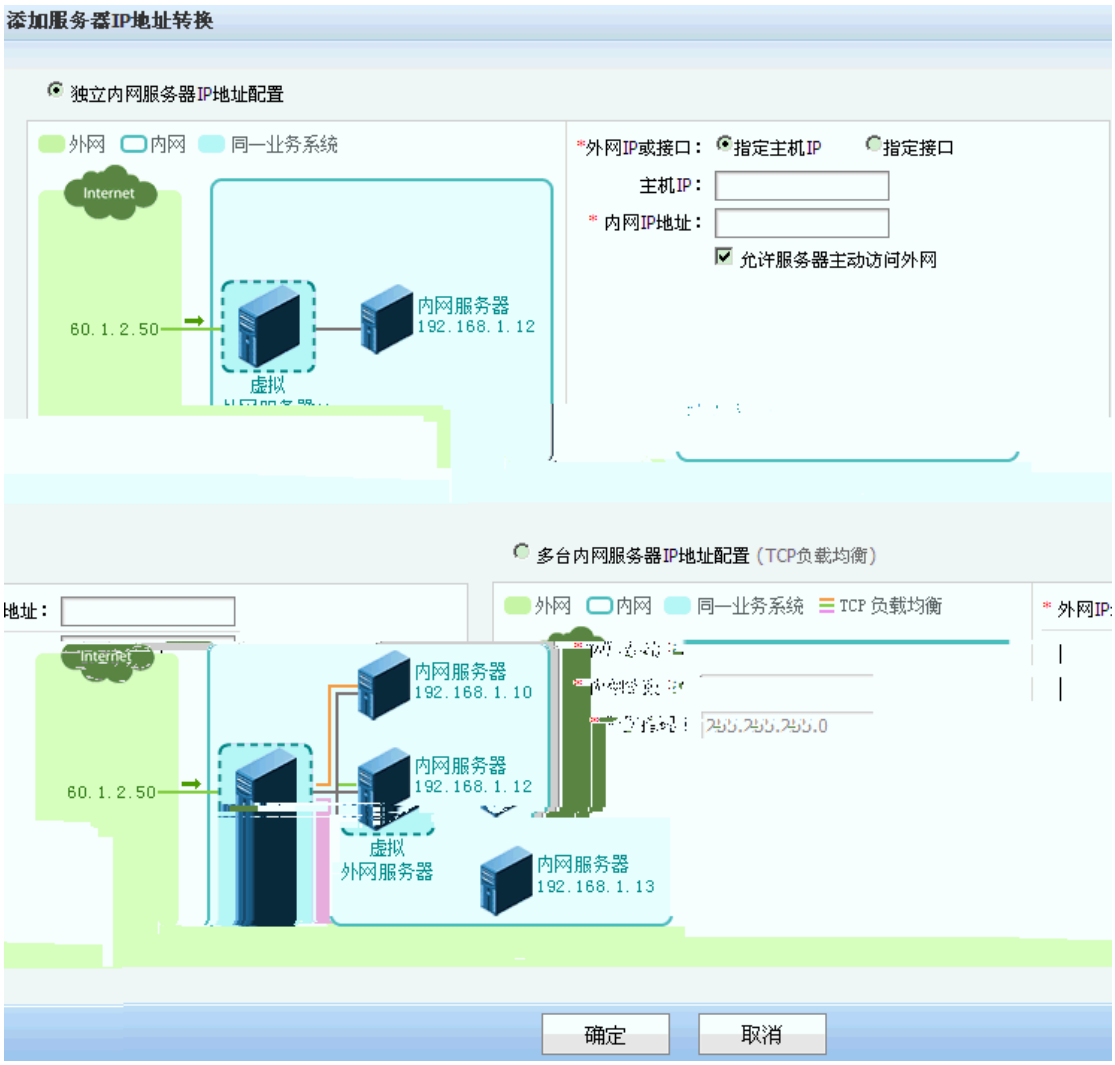
	Ł ˙ ѝ Ł ˘ IP ˘ 1 1 ʌ Ł ˙ ѝ ʌ Ł ˘ IP ˘ 1 Â
IP ʌ	Ł NAT ł IP ˘ ʌ ˘ ʌ Â
Ł IP	Ł IP

a ˙ Ł a ʌ Л ŭ ╟ Ł
ŭ ╟
˙ Ł

IP	⁄ 2 ‘ ў IP— NAT ł ў IP ⁄ — NAT ⁄
⁄	Ł ⁄˘ ⁄ ЛЪ IP + ⁄ ⁄ Ł
IP	NAT Ł IP
⁄	Ł NAT ⁄
	Ł NAT

7.5 IP (1 1 1)

NAT ˆ 7-3 ˜ Ł IP ˇ ╕ ˘ Ł IP ˘
7-5 Â



7-5 ╗ └ IP

└ IP ^ 1 1 ~

IP ⅄	NAT ɹ IP NAT ⅄

IP 3 NAT IT

IP	NAT IP
IP	NAT
IP	NAT

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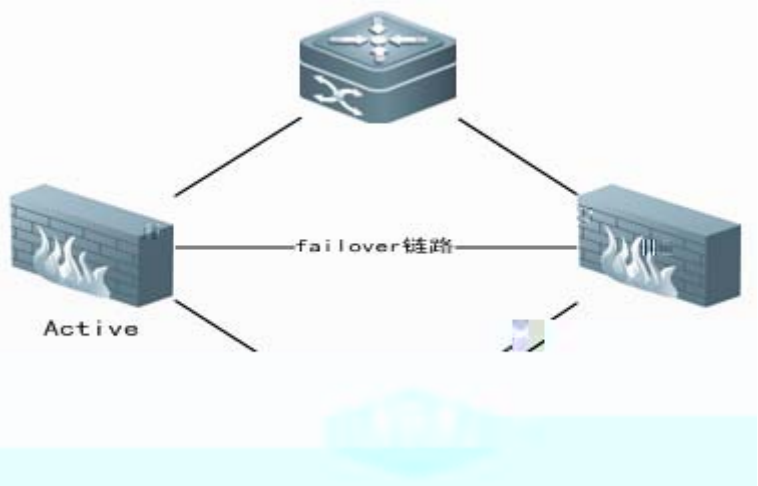
и Л a Л ˇ ЛЪ ч Л ˚ Â è
Л и ў ^ Active˜˜ Л Л ^ Standby˜ Â ў ℸ ˇ
‡ ў ˇ ╟ ў з a з
Ь˘ ÿ Â

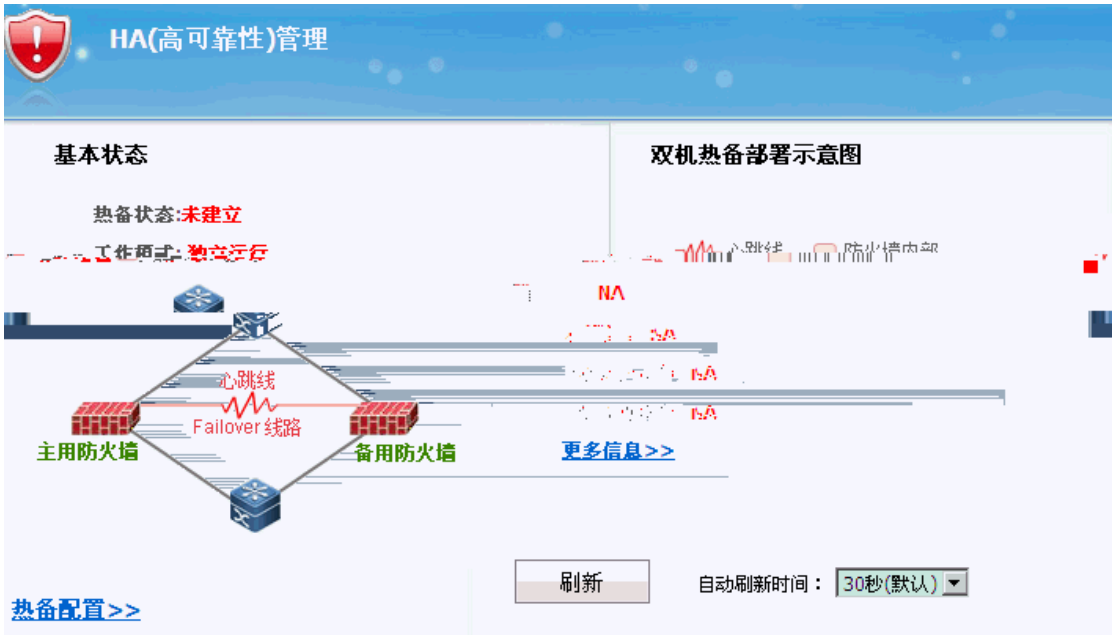


8-1 Л ή

ч Л ж ^ и failover ˜ Â ж à
з ÂFailover ſ ў ЮÂ

8.1 HA

ľ > HA Ł HA ў Â 8-1 Â



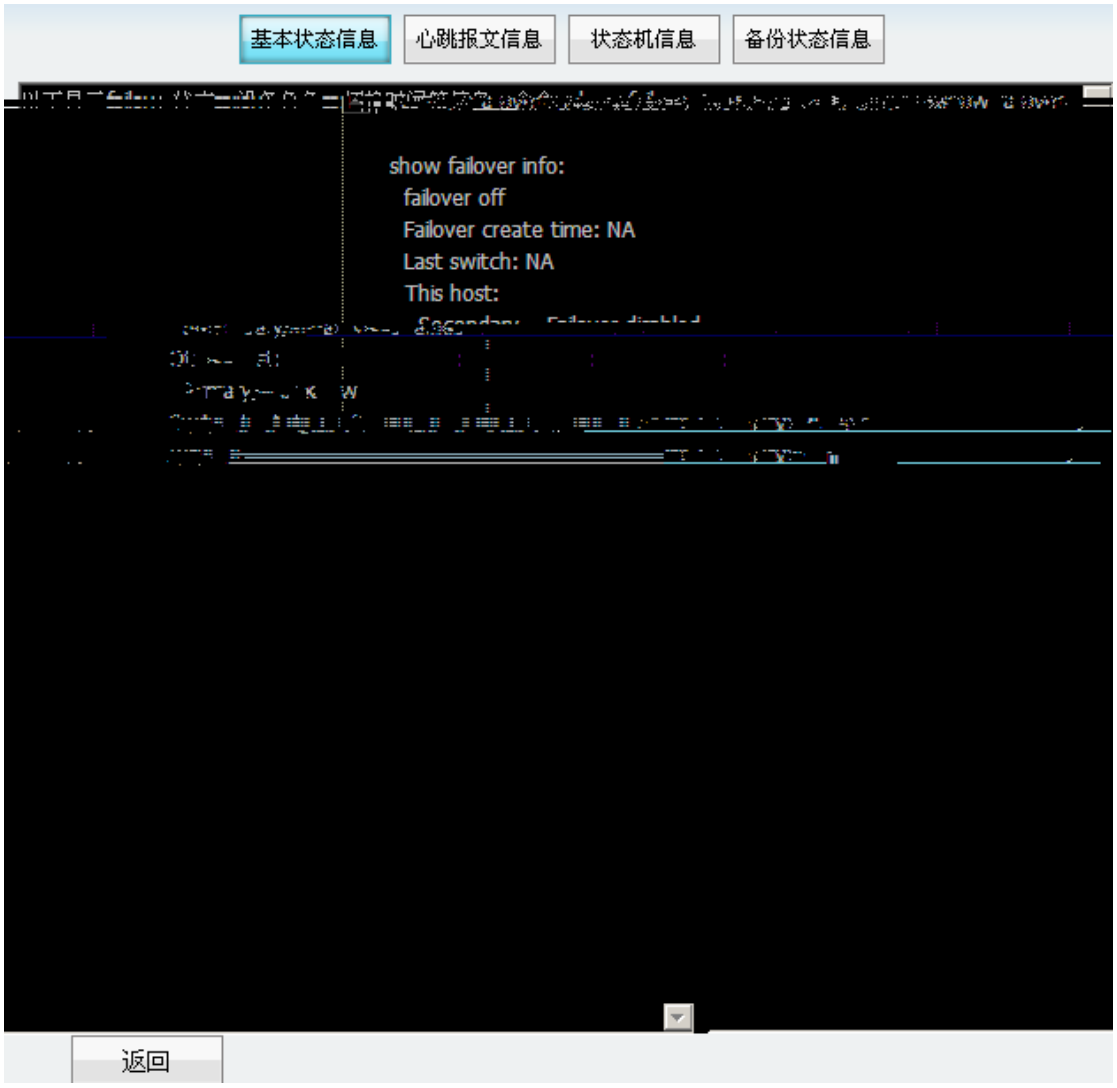
8-1 HA ў

	Ђ ‘ ^ ~ Ђ ‘ ^ ~
	‘ ˘ б è , AS ‘ б ˘ √ ˘ AS ’ AS Ю ^ Standby˜ ˘ a б Ł˘ ў ˘ ù Â AA ‘ б ˘ √ ˘ AA ’ AA Ю ≠ б Ł ˘ ў ˘ ù Â
	WEB ù standby ˘ ‡ ˘ ˘ ˘ ˘ Л Љ Â

	╥
ſ	ў ÿſ

╠ ⁹ ‘ ╠ ⁹ ╥ ˘ Лъ HA Â ╠ ⁹ Л Ю Â

>>` ſ >> Ł ˘ Л Ч Â 8-2 Â



8-2

8.2 HA

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8-3 HA

HA ‘

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2	ѝ ў /	

9 2 ╕

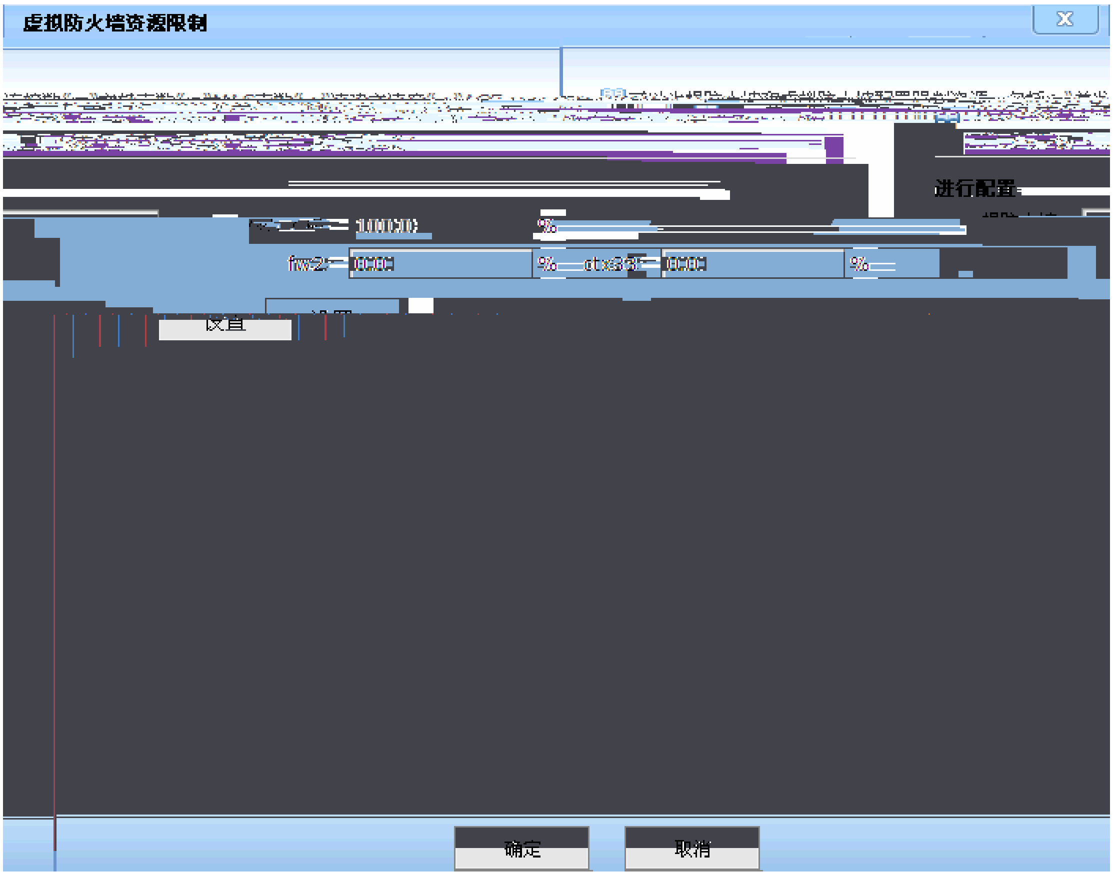
¨	¨ Â 1~15 Â
˅ ¨	˅ ¨ ˘ ˘ ˅ Â
⅄	╕ ⅄
	Â ⅄ ЛЧ ѝ Â

⅄ interface VLAN˜ ˘ Ю ⅄ interface VLAN˜ Â ⅄ ѫ ѫ Â

Ϻ IP Ю Â

9.3

ˆ 9 1 ˜ ľ ⁸ Ŀ ˘ Â 9 3 Â



9 3

Web ⁸ ˘ ⸕ ⁸ Â ˘ . ѝ 30%˜ ‡ ǎ ÿ ǎ MAC ѝ 30%˜ ÿ Â

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9.4

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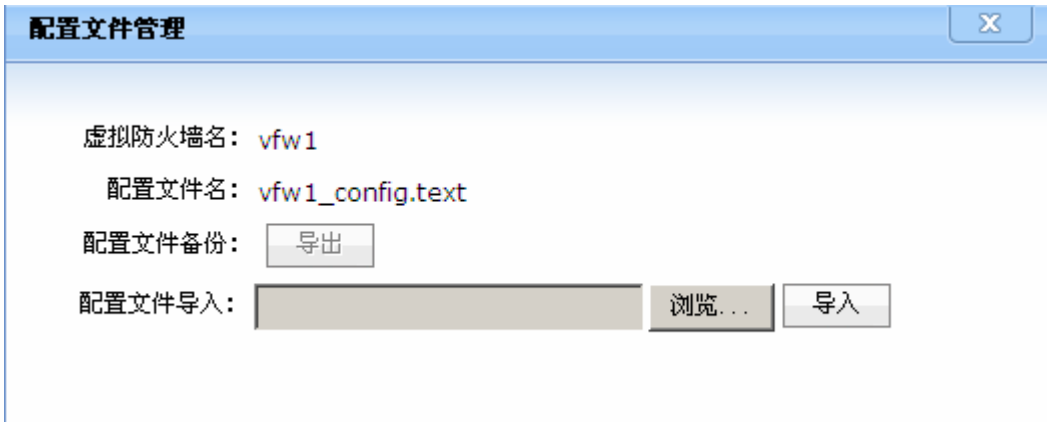

9 4 Э Ю

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a a Â IE

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10.1

l' > Ł ў ˇ 10-1 Â

10-1

IP	IP
	IP
Ю / ⅄	Ю ˋ Ю IP ⅄ˋ ⅄

‘

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10-2 ╗

IP	IP ˘ IP 0.0.0.0
	IP ˘ 0.0.0.0

Ю /	Ю IP Ю Ю Â Ю ÂЮ a IP a Â Э Ю Â б Â Ю Â a Ю NBMA à P2MP IP IP Â Ю Ю Â a à Virtual-Template à VLAN Ю Ю Â ю
	0 rip 120 ч

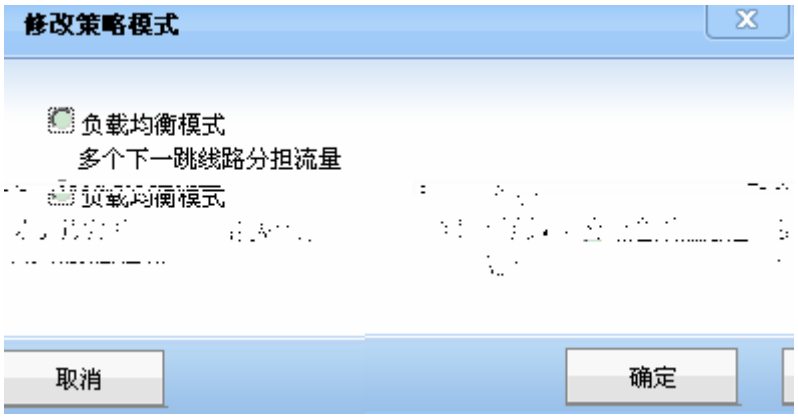
11.1

10-3

10-3

11.2

10 4



	Ю ˘ Л Л Ч
	Ю ˘ ˘ Ю ˘ ɨ Ю

11.3

ˆ 10 3 ˜ Ї ╕ L ˘ ˘ 10 5 Â

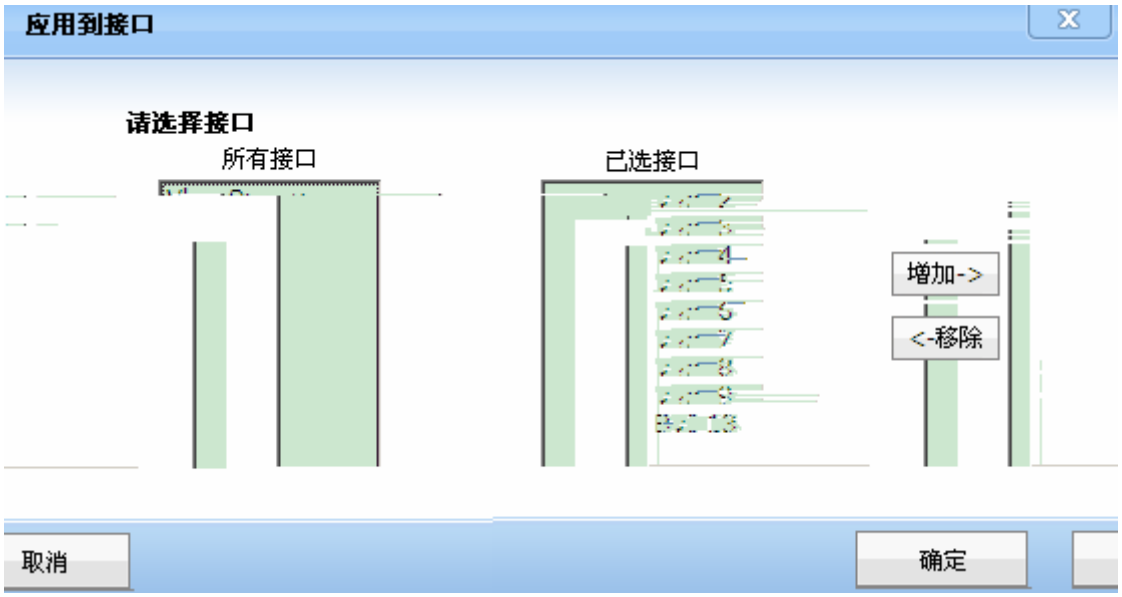
10 5

(route-map)	IP
	Â0 65535
IP	IP IP IP IP
IP	IP IP

10-5

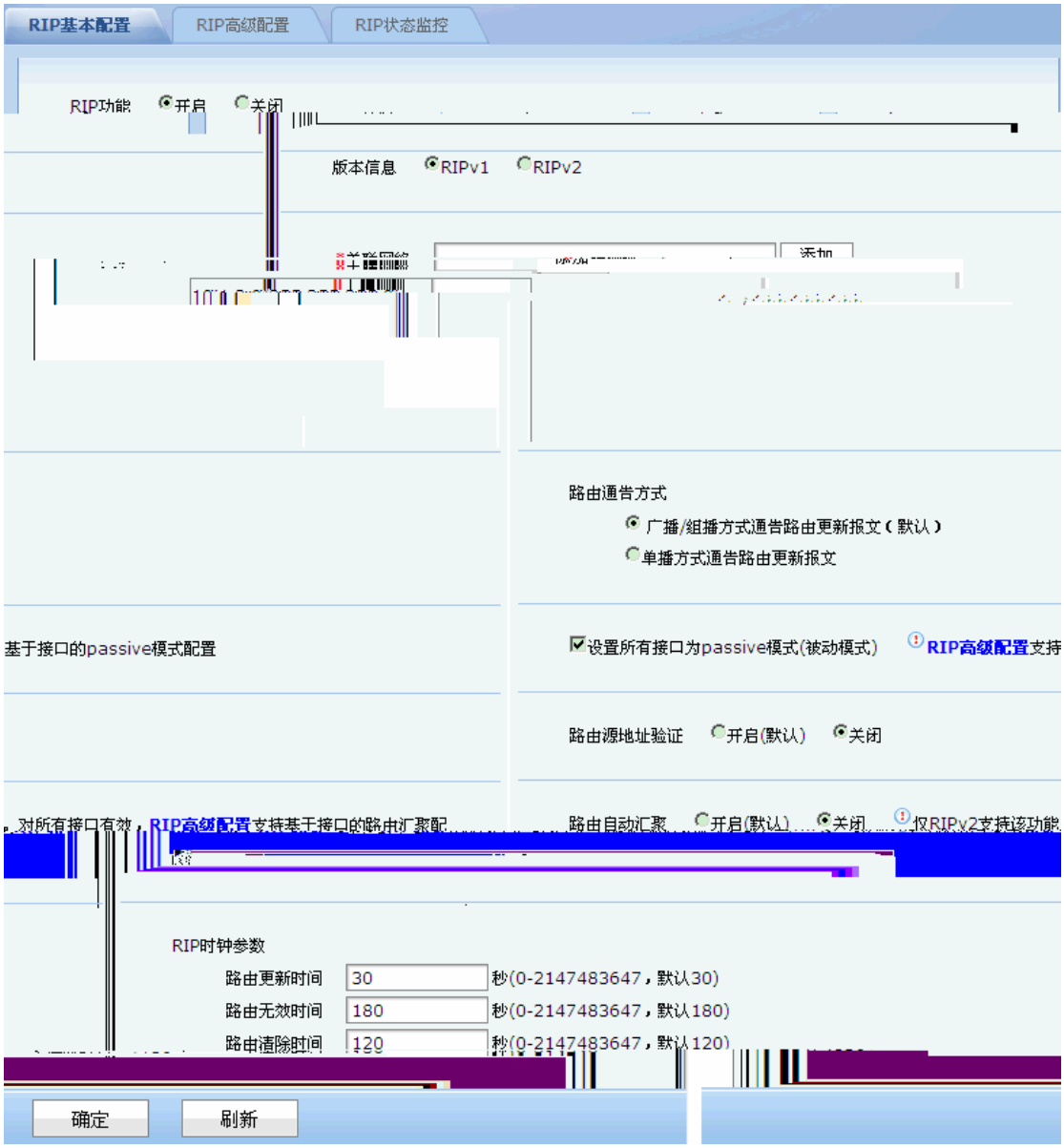
11.4

10 3 10 6



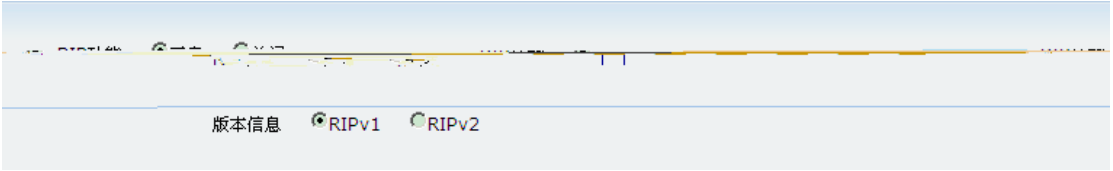
10 6

RIP (Routing Information Protocol)



' 11-2-1 RIP ў

12.2.1 Ⅱ



11-2-1-2 RIP

12.2.2

ˆ 1˜ ╕

l' RIP Ь ——> Ь Ь , Л Лъ Ю 2 ' ˆ 1˜
192.168.10.0/24ˆ ' Л / ˜ˆ 2˜ 192.168.10.0 255.255.255.0ˆ ' Л

11-2-1-6

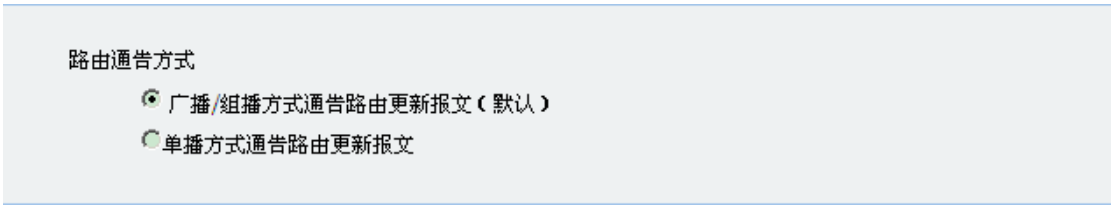
12.2.3

11-2-1-10

12.2.5

Rip

11-2-1-11



11-2-1-11 RIP

ip

1

单播方式通告路由更新报文

11-2-1-12

ip 192.168.5.2 3

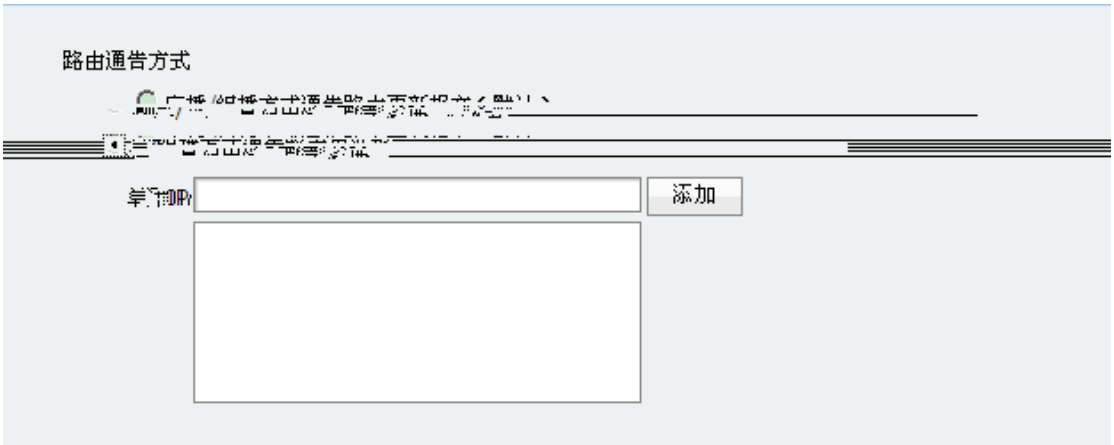
1 2 3

ip 192.168.5.2

11-2-1-13.

1 ip 192.168.5.2

11-2-1-14 2



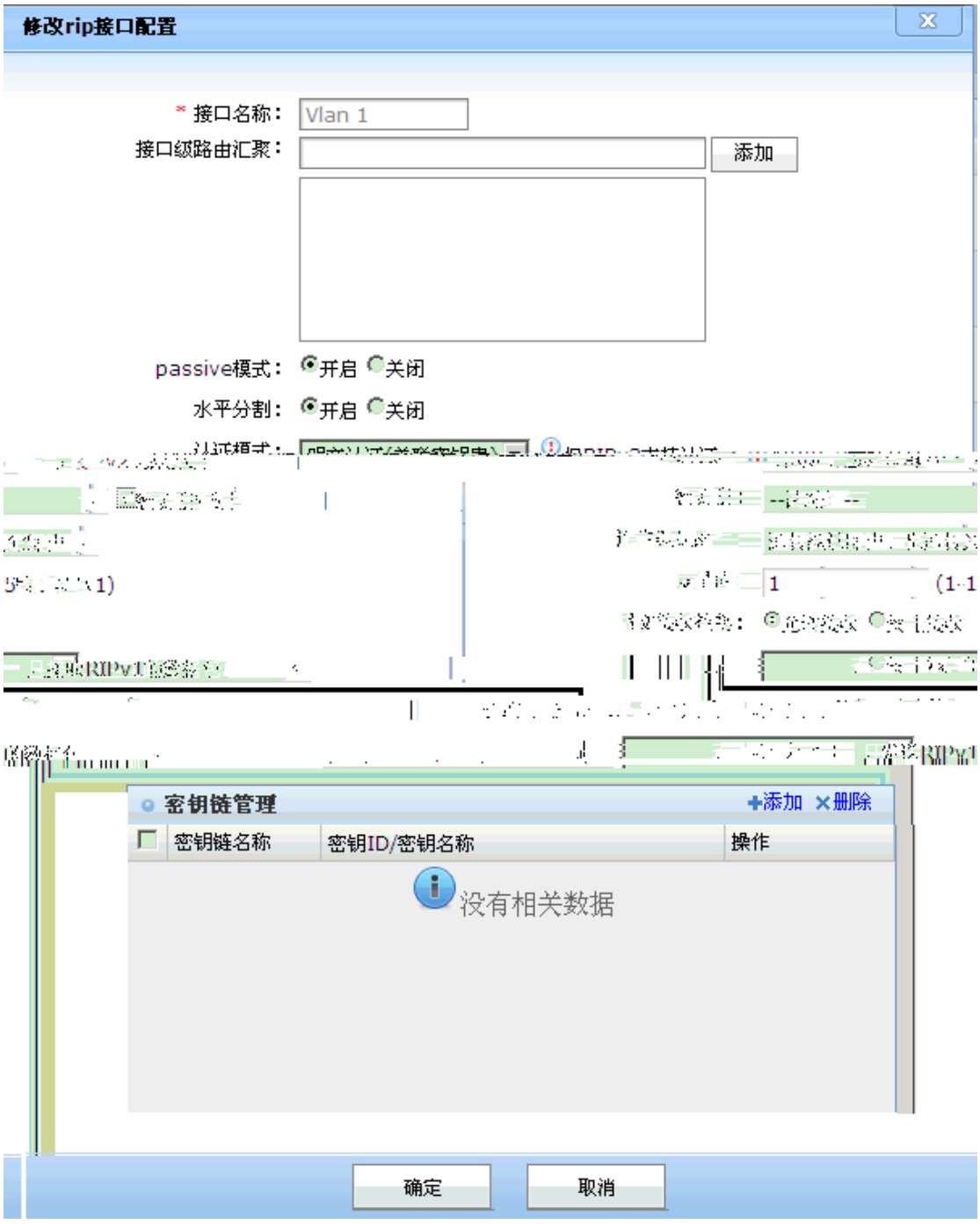
11-2-1-12

12.3RIP RIP

RIP ˇ Л VLAN Л ˇ : ˦ à à à à ╟ Л à à RIP ˇ Л à Â ў 11-2-2-1.

11-2-2-1 RIP ў

Ї Л ——> ——> Ł ˇ Л Л VLAN Л RIP Â ў Ю 11-2-2-2 Â



11-2-2-2 ў

12.3.1 ⅄ ^ ⅄˜

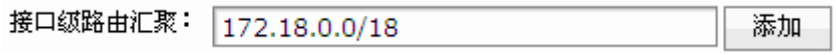
Ĭ RIP ——> ⅄ ——> Ł Ĭ 修改 Ł 11-2-2-2 Â
Ĭ ⅄ Ł ˘ Ю 11-2-2-3Â

(1) ╗ ⅄ ‘ ⅄ ˘ Ю 2 ‘ (a˜ 172.18.10.0/18ʻ ‘ ⅄ / ˘ 11-2-2-4˜ (b˜ 172.18.0.0 255.255.19

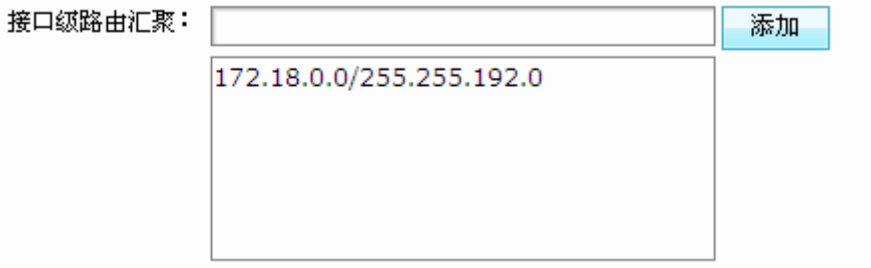
ﾊ ~ , ｷ ﾄ ╗ Ŀ ˘ ╗ ╖ ˘ ˙ 11-2-2-5Â

(2) ﾊ ˙ Э , ﾄ ✕ Ŀ 11-2-2-6˜˜ ﾄ ✕ Ŀ ﾊ ЛЪ Â б ﾄ 11.2.1.5 RIP Ŀ ﾄ 11.2.1.2 RIP Ŀ Â

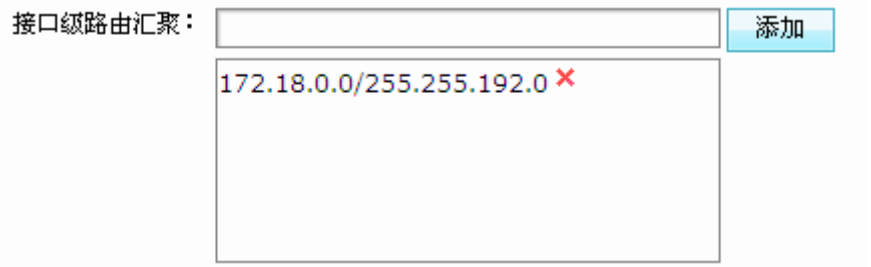
11-2-2-3



11-2-2-4



11-2-2-5 ╗



11-2-2-6

12.3.2 ╠ ﾊ^ ﾊ~

12.3.3

l' RIP ——> ——> Ł l' 修改 Ł 11-2-2-2 l' rip

╗ Â é ‘ ľ ——> ŁЮ ľ Ł

ľ Ł ˘ ‘ 11-2-2-15. ˘ Л Љ ľ ID Ł ľ

¨ Ł ľ Ł ˘ Л Љ ˘

11-2-2-16˝ ˚ Л Љ ˘ 11-2-2-17 Â ‘ ľ ID Ł
‘ 1˜ ľ ¨ Ł ‘ network˜˜ ľ Ł ˘ ľ Ł Ю
Љ ľ ID/ ¨ Ł 1/network˜ ˘ 11-2-2-18 Â

ˆ 3˜ ‘ ˆ ¨ ŕ ľ hello Ł 11-2-2-19˜˜ ł

ľ Ł Л Љ Â ł ľ Ł 11-2-2-20 Â

ˆ 4˜ ‘ ľ Ł ¨ ˘ ľ Ł è ˘ Л Љ

ľ Ł ˆ 11-2-2-21˜˜ ł Э ľ Ł

Â ł 11-2-2-22 Â

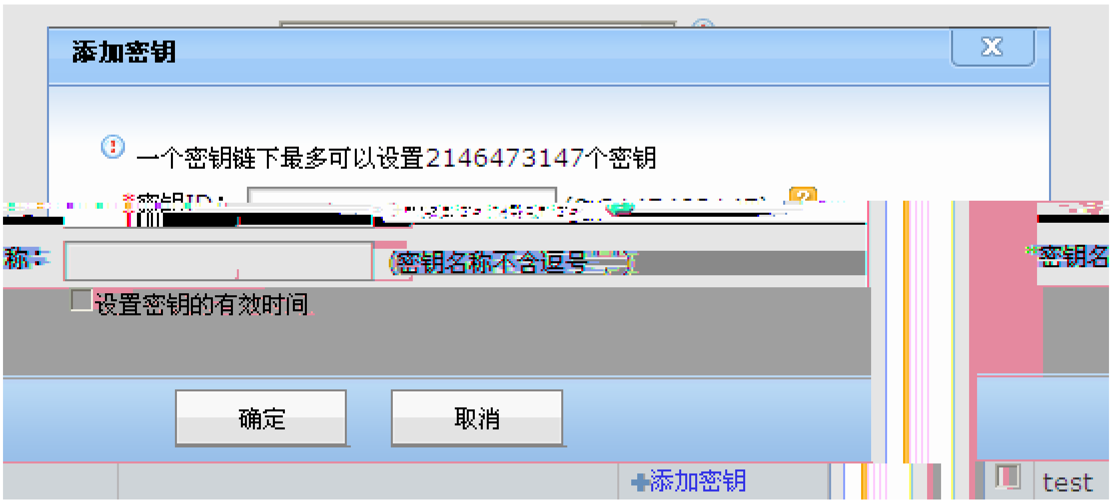
11-2-2-10

11-2-2-11

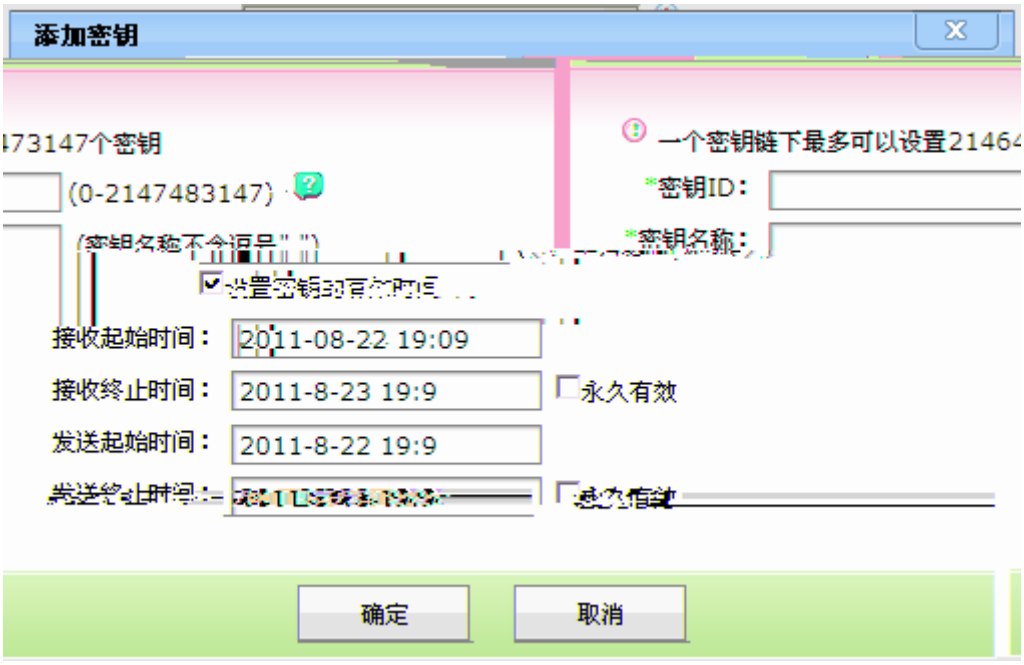
11-2-2-12 ╗

11-2-2-13 ╗¨ й ľ ruijie Ŀ

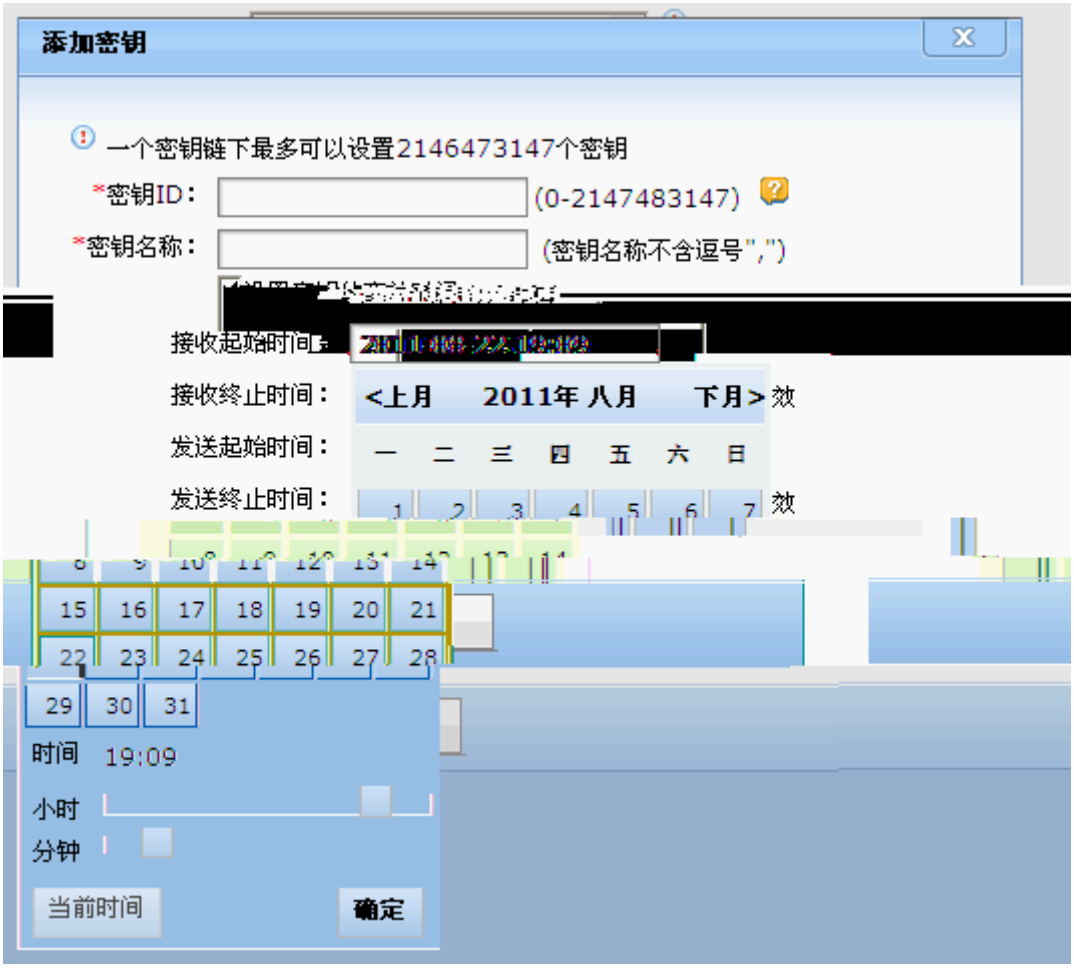
11-2-2-14



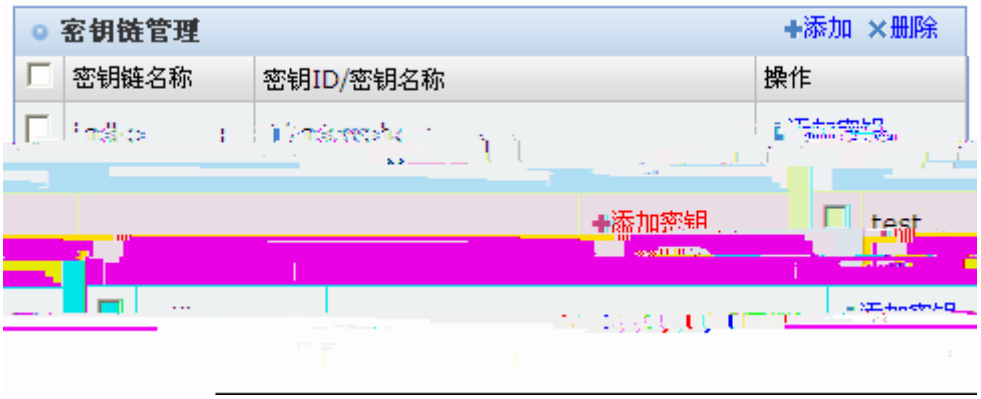
11-2-2-15


添加密钥
一个密钥链下最多可以设置21464
*密钥ID：
*密钥名称：
(0-2147483147)
接收起始时间：
2011-08-22 19:09
接收终止时间：
2011-8-23 19:9
永久有效
发送起始时间：
2011-8-22 19:9
确定
取消

11-2-2-16


添加密钥
一个密钥链下最多可以设置2146473147个密钥
*密钥ID：
(0-2147483147)
*密钥名称：
(密钥名称不含逗号",")
接收起始时间：
接收终止时间：
发送起始时间：
发送终止时间：
<上月
2011年 八月
下月>
效
一 二 三 四 五 六 日
1 2 3 4 5 6 7
15 16 17 18 19 20 21
22 23 24 25 26 27 28
29 30 31
时间 19:09
小时
分钟
当前时间
确定

11-2-2-17



11-2-2-18

11-2-2-19

11-2-2-20

11-2-2-21

11-2-2-22 ł

12.3.6 ˆ ˄˜

ľ rip ˄ Ł ˘ ˄Л ъ ˘ 3 ˆ ‘ 11-2-2-23˜‘ˆ a˜ a
ˆ ˜˜ b˜ ˘ a è ˆ c˜ ˘ ≠ è Â è
ˆ b˜ (c) ˄Л ъ й ˘ й 1~15 Â 11-2-2-24

11-2-2-23

11-2-2-24

12.3.7 ˆ ˄˜

ľ rip ˄ Ł ˘ ľ Ł ˘ ˄Л ъ ˄ RIP
ˆ 11-2-2-26˜ Â è ľ Ł¦ й ľ Ł б ľ Ł 2 ’
≠¦ й ľ Ł ľ Ł ľ Ł ľ Ł 3
11-2-2-27 б 11-2-2-28 ˘ é ˄ Â

11-2-2-26

11-2-2-27

11-2-2-28

12.3.8 ł

Ль Э ł˘ ľ rip Л Ł ľ Ł ˆ 11-2-2-29˜
ł˘ Л • ˘ Л Ль ľ RIP Ł Â 11-2-2-30˜

11-2-2-29

11-2-2-30

12.3.9

11-2-2-30 VLAN 2

11-2-2-31

11-2-2-31 . vlan2

11-2-2-31

11-2-2-32

12.3.10

2

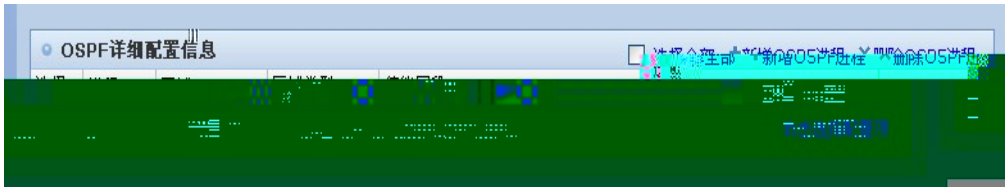
11-2-2-33 11-2-2-24

11-2-3-1RIP ў

OSPF Open

13.2.1

l' >0SPF Ł 0PSF ˘ ў 0SPF
╕˘ ˘ ╖ ˘ Ю

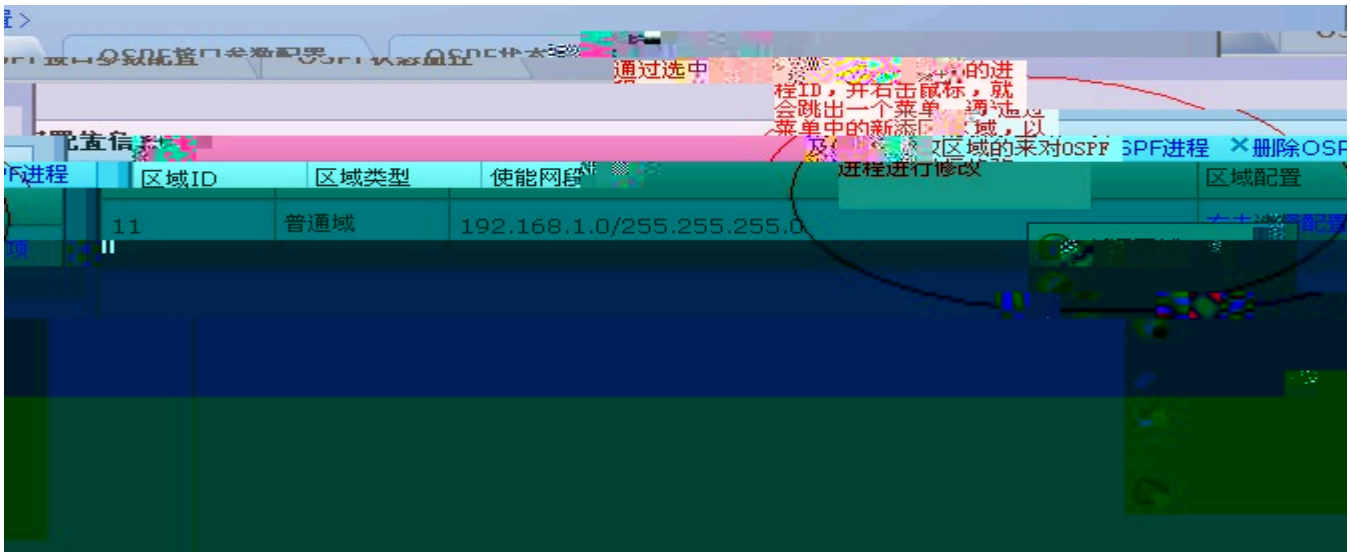


13.2.1.1 OSPF

… OSPF ˘ Ю ж б OSPF IP ˘ Л IP
OSPF ↘ Â OSPF IP Л à OSPF ˘ з
Л Â 64 OSPF Â

… OSPF ˘ Л Л Ю ‘

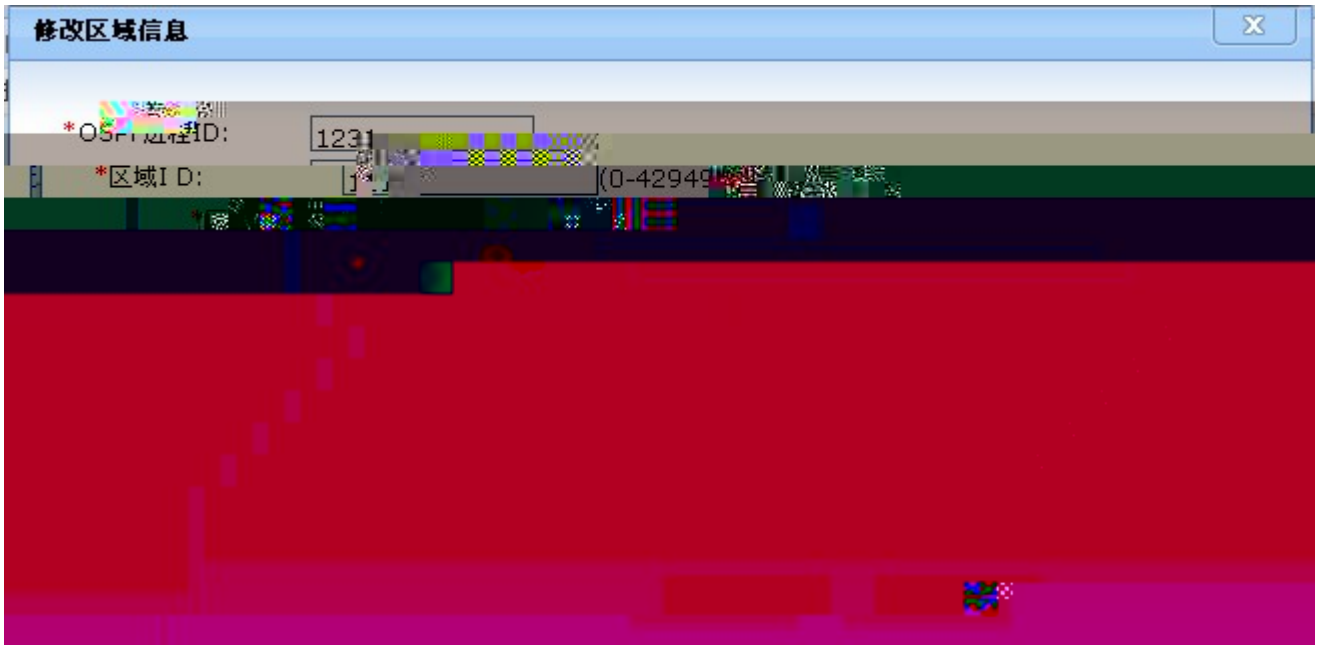
३	



OSPF é ID з

OSPF ID	OSPF
ID	й
	й OSPF ‡

OSPF



OSPF ID	OSPF
ID	OSPF
	OSPF

OSPF

OSPF , OSPF , OSPF ,
Ю

13.2.2

13.2.2.1

ᕂ й OSPF ⁄ ᕂ ˘ ᕂ а й ᕂ ˘ ≠ а OSPF ˘ ⁄ Љ ᕂ й ˆ Stub Area˜ Â Ь ʿ 1˜ ʾ 2˜ έ ᕂ ʾ 3˜ Â ˘ Љ ˘ ⁄ Љ ˘ ⁄ Љ й æ Â й Stub ᕂ ˆ LSA˜ ⁄ Љ ᕂ й (no summary) ч ʿ 1˜ ʾ 2˜ Â ˘ OSPF ˘ Â

⁄ Љ ˘ (area default cost) ⁄ Љ ⁸ Â

13.2.2.2 NASS

NSSA(Not So Stubby Area) OSPF STUB ᕂ ,NSSA ≠ 5 LSA(AS external LSA) NSSA æ , STUB а˘ NSSA ⁄ Љ OSPF .

ᛏ ˘ NSSA 7 NSSA ᕂ , 7 LSA NSSA ᕂ Э 5 LSA з ˘ ⁄ Љ Â

NSSA ЉЮ ʿ

ᕂ а NSSA˜ а NSSA й ᕂ Â

ᕂ NSSA˜ NSSA ᕂ area nssa ʾʅ ᕂ NSSA Â

ᕂ й NSSA ᕂ ˘ ЉЮ ʾʅ

	ʾʅ	
Step 1	Firewall(config-router)# **area** area-id **nssa** [**no-redistribution**] [**no-summary**] [**default-information-originate**[**metric** metric][**metric-type** [**1** | **2**]]]	ˆ ⁄ ˜ ҞЖ NSSA ᕂ ʾ
Step 2	Firewall(config-router)# **area** area-id **default-cost** cost	NSSA ᕂ

Type 7 LSA˜ nssa ABR ASBR Э ˘ ABR Э ˘ Type 7 LSA ˘ ASBR Э (≠ а ABR) ˘ Type 7 LSA Â

no redistribution ASBR

ABR Type-3 LSA **no-summary**	^ / ~ nssa (ABR) summary LSAs Type-3 LSA

13.2.2.3 STUB

OSPF

area id [ ]

area id [ ]

area-id	STUB
no-summary	ABR ABR

OSPF area stub ABR

(LSA) 1 1 LSA 2 2 LSA 3 3

LSA OSPF

ABR area s

Â area default-cost

ЛЬЮ 1

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

OSPF -> STUB OSPF -> ID

STUB , STUB Ю :

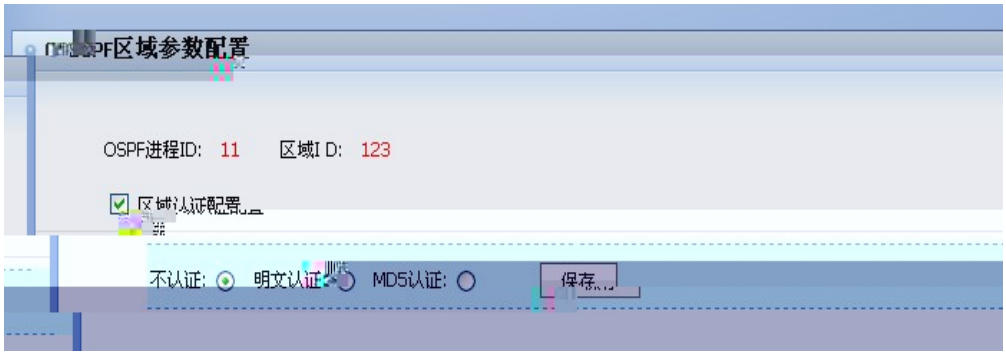
13.2.2.4

area-id	STUB

ù : **no-summary**	ˆ / ˜ ABR ˘ / ù Â ABR Â

OSPF ˇ ˘ ʒ Â ʒ OSPF ˇ Â

OSPF -> é OSPF ID



area-id ID	,
MD5 Authentication[message-digest]	MD5 a

13.2.2.5

OSPF

area id ip address net mask[|] [cost]

area id ip address net mask[ ]

area-id	OSPF
ip-address net-mask	
advertise | not-advertise	

	cost cost	0-16777215

Â

Â

б RFC1583 RFC1583
cost

area-id	OSPF
IP ip-address	IP,
net-mask	,
advertise | **not-advertise**	,advertise , not_advertise
cost cost	0-16777215

13.2.2.6

ABR area filter list

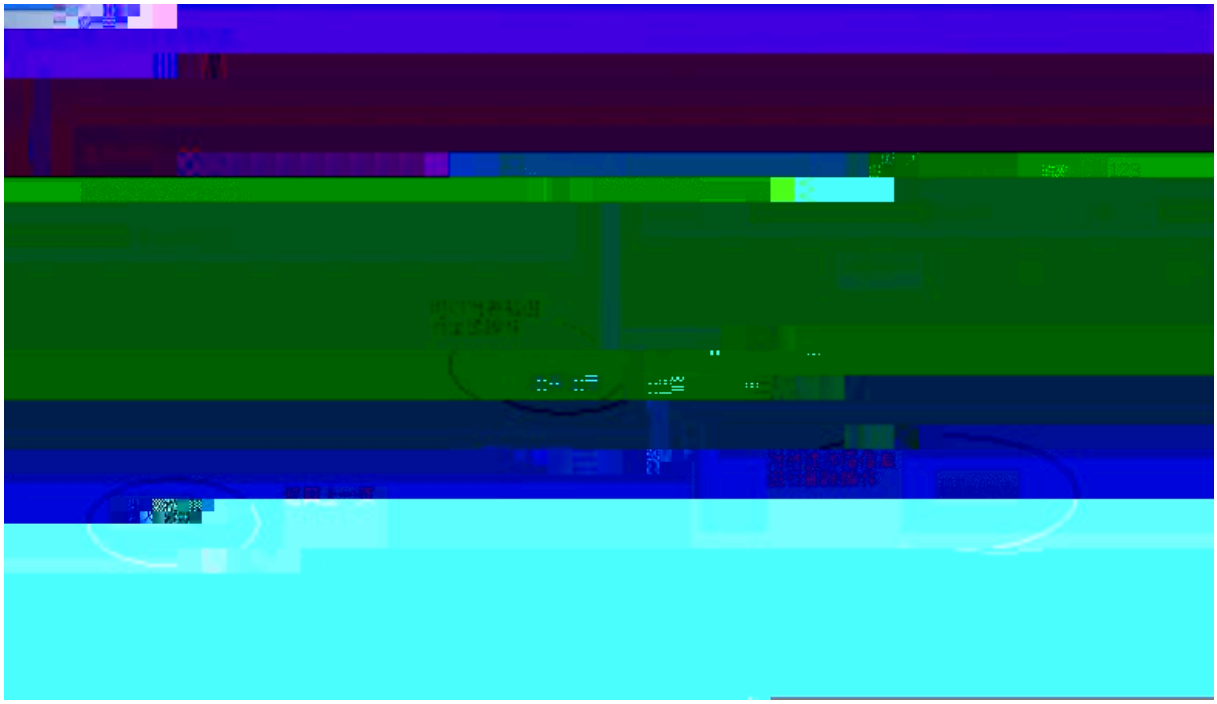
area id [acl name| prefix name] [|]

area id [acl name | prefix name] [|]

area-id	
acl-name	acl
prefix-name	prefix-list
access | **prefix**	prefix list ACL
in | **out**	|

ABR

ip-address	⁄ IP Â
poll-interval seconds	ˆ ⁄ ˜ ˘ Л ѝ Æ˘ ⁄ ˋ 1-2147483647 Â



Л Э a Л Л

ID	ID Â
IP	IP 192.168.1.1
	poll-interval ˆ Л ˜ ˇ Л и Æ ˇ Л ' 1-2147483647
	ˆ Л ˜ ˇ Л ' 0-255 Â (NBMA)
	ˆ Л ˜ ˇ Н Л Э cost ˇ Л ' 1-65535 Â (point-to-multipoint) Â

Л Ю

╟	

添加		Λ Л , ł , \ ╗ a Λ Λ Л
修改		a Λ , Λ Л "ospf Æ " ł Λ Л , ł ╗ \ a Λ Л ,, Λ Л

dead-interval seconds	ˆ /l ˜ ѬѪ ˘ Љ ѝ æ˘ ^l ˛ 1-65535 Â б Â
hello-interval seconds	ˆ /l ˜ OSPF Hello ˘ Љ ѝ æ˘ ^l ˛ 1-65535 Â б Â
retransmit-interval seconds	ˆ /l ˜ OSPF ˆ LSA˜ ˘ Љ ѝ æ˘ ^l ˛ 1-65535 Â ˘

è Â

OSPF ˘ ˂ б ˘ ˘
˘ ‡ Â
ч ˂ ˆ ABR˜ … ˘ ч ABR ˘
˂ й ˂ Â ˆ Stub Area˜ NSSA a й ˂
Â ≠ Л Љ è ˂ Â

router-id й OSPF ˘ a router-id ˘
show ip ospf neighbor ҂ Â Л Љ Loopback
Â

area virtual-link ҂ Ђ ˘
˂ OSPF ˘ ҂ **area authentication** Â

13.2.4.2

0SPF -> é 0SPF ID ˘ ˘
ľ Ł , Л Ю :

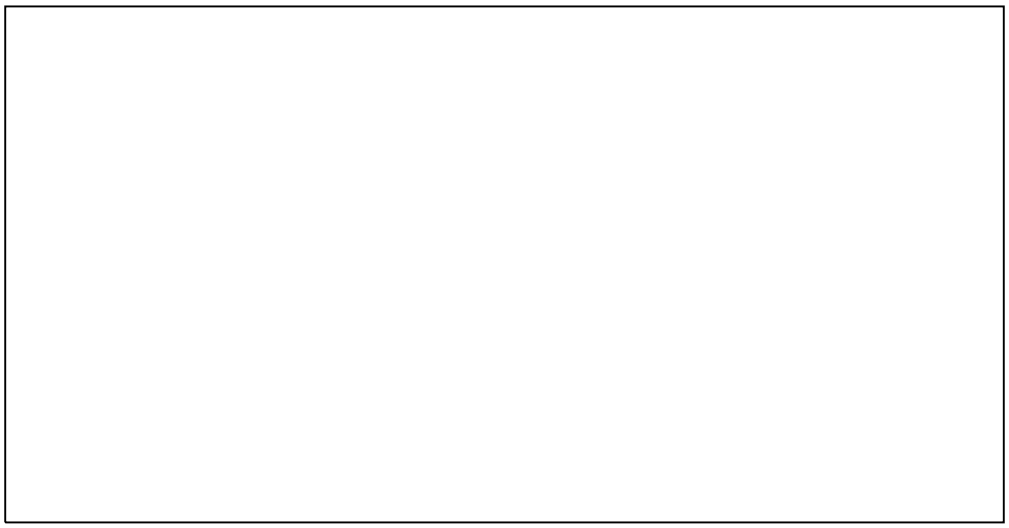
	ℸ
˂ **ID:area-id**	OSPF ˂ л Â˂ л Л Љ ⁸ ˘ ≠ Л Љ IP Â
Ospf ID:router-id	Â Л Љ show ip ospf ҂ Â

dead-interval seconds	ˆ Л ˜ ҞЖ ˘ Љ ѝ æ˘ Ϥ ʿ 1-65535 Â б Â
hello-interval seconds	ˆ Л ˜ OSPF Hello ˘ Љ ѝ æ˘ Ϥ ʿ 1-65535 Â б Â
LSA **retransmit-interval** seconds	ˆ Л ˜ OSPF ˆ LSA˜ ˘ Љ ѝ æ˘ Ϥ ʿ 1-65535 Â Э Â
LSA **transmit-delay** seconds	ˆ Л ˜ OSPF ˆ LSA˜ ˘ Љ ѝ æ˘ Ϥ ʿ 1-65535 Â ╗ LSA ˘ LSA ˘ LSA ⁹ Â
authentication-key key	ˆ Л ˜ ҞЖ OSPF Â Â service password-encryption ʒ Л Љ Љ╗ Â
message-digest-key key-id **md5** key	ˆ Л ˜ ҞЖ OSPF MD5 Â MD5 Â service password-encryption ʒ Л Љ Љ╗ Â
authentication	˘ Â
MD5 **authentication message-digest**	ѝ MD5 Â
null	ѝ а Â

13.2.5 Л

13.2.5.1

OSPF Л ў ʿ OSPF Л ˘ ˘ ˘ ˘ OSPF Ю Â



13.2.5.2

Л Тl

Л Тl ў ‘ , 0SPF ˘ Л 0SPF ' Тl
Â

˝)

ҙ LSA ǀ ł 9 Лъ ˘ ҙ **no**
Â

timers lsa-group-pacing seconds

no timers lsa-group-pacing

seconds	LSA ˘ ˘ ˘ Л : 10-1800 Â

240 Â

LSA (LSA age)˘ LSA LSA
˘ CPU Â и CPU ˘ LSA

Â

ҳ ʌ ѝ ╟ ʌ Â ҳ **no**
Â

passive-interface [**default** | **type** number]

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

type number	ѝ ╟ ʌ ʌ Â
default	ʌ ѝ ╟ ʌ Â

Ю ʌ ѝ ╟ ʌ˘ ʌ OSPF Â

ѝ è ╟ ˉ ˘ ʌ Л
ʌ ѝ ╟ ʌ Â

ʌ ╖

OSPF -> é OSPF ID ˘ ˘
ľ è OSPF ʌ Ł , ʌ OSPF ʌ ,Ю
:

ID	ID Â
	‡ , a ‡ a
OSPF	OSPF ℸ
OSPF	0SPF
╟ ⅄	⅄ ⅄ ѝ ╟ ⅄

13.2.5.3 OSPF

OSPF 110

OSPF

{distance| { distance| distance| distance}}

[ ]

distance	1-255
intra-area distance	1-255
inter-area distance	1-255
external distance	1-255

OSPF -> OSPF ID

OSPF , , ,

:

OSPF ID	
	1-255 110

			1-255	110
			1-255	110

13.2.5.4

OSPF SPF SPF

no

spf delayspf holdtime

spf delayspf holdtimespf max waittime

SPF

spf-delay

spf-delay spf-holdtime ˘ OSPF 1 ≠ ˘ ≠
˘ . CPU Â

timers spf б timers throttle spf

13.2.5.5

OSPF ˘ ʅ Â ʅ
ĿӜ Â

ip address net mask { | value }

ip address net mask { | value }

	ip-address	IP Â
	net-mask	Â
	not-advertise	a ˘ ‡ ӣ Â
	tag value	tag ˘ ᄮ ʿ 0-4294967295

ÿ ὲ ᛐ ˘ OSPF ˘ ᛐ Љ
OSPF Â ˘
Л Љ ˘ ÿ Â

б **area range** ʅ a ˘ ˘ area

always	OSPF
metric metric	0-16777214
metric-type type	OSPF 1 2
route-map map-name	route-map route-map

metric 1
metric-type 2

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

always OSPF

show

OSPF 1

OSPF -> é OSPF ID

13.3OSPF

13.3.1

OSPF ip ospf hello interval ip ospf dead interval ip ospf authentication ip ospf authentication key ip ospf message digest key,ip ospf network

OSPF

Step 1	Firewall# **configure terminal**	
Step 2	Firewall(config)# **ip routing**	
Step 3	Firewall(config)# **interface** interface-id	
Step 4	Firewall(config-if)# **ip ospf cost** cost-value	
Step 5	Firewall(config-if)# **ip ospf retransmit-interval** seconds	
Step 6	Firewall(config-if)# **ip ospf transmit-delay** seconds	
Step 7	Firewall(config-if)# **ip ospf hello-interval** seconds	hello
Step 8	Firewall(config-if)# **ip ospf dead-interval** seconds	
Step 9	Firewall(config-if)# **ip ospf priority** number	DR BDR

Step 10	Firewall(config-if)# **ip ospf priority** {broadcast non-broadcast point-to-multipoint non-broadcast] point-to-point}	broadcast OSPF non-broadcast OSPF NBMA point-to-multipoint [non-broadcast] OSPF , non-broadcast point-to-point OSPF
Step11	Firewall(config-if)# **ip ospf authentication** [**message-digest** | **null**]	(config-

Лъ Э Л

	Лъ
Л	╗ Л , Л
Л (Л)	a Л жˇ Л Лъ ѝ Â Л Лъ ˆ ˇ X.25˜ ˇ OSPF ˇ Â X.25 map Frame-relay map ҳˇ Л Лъ X.25 é ˇ OSPF Л Лъ X.25 Â Л Л Лъ ˇ OSPF ˇ ў Â б ЛъЮ ‘ ˇ a ˇ ≠ , ҳ ˇ a Â

	Ю ˘ OSPF Л й 100Mbps/Bandwidth˘ è Bandwidth й Л ˘ Л ę bandwidth Â ή OSPF Л й' ' 64K ˘ cost й 1562' ɣ ' E1 ˘ cost й 48' Ь ' 10M Лъ ˘ cost й 10' ' 100M Лъ ˘ cost й 1 Â **ip ospf cost** ę OSPF ˘ Â
Л (Л)	

(Л) 64K

hello ( )	hello hello OSPF hello hello a 10 PPP HDLC 10 10 X.25 30
( ) **dead-interval**	OSPF Hello OSPF Hello hello 4 hello OSPF a hello
( )	OSPF hello OSPF DR/BDR DR BDR DR BDR DR/BDR OSPF broadcast non-broadcast : DR BDR DR BDR

BFD (⁄)	, ‡ , a ‡ a ⁄ Ю **bfd all-interfaces** ҂ Â ⁄ Л Љ ˘ **ip ospf bfd** ҂ ⁄ BFD ˘ ≠ ⁄ Л Љ OSPF Ю ҂ **bfd all-interfaces** б OSPF ⁄ BFD ˘ **ip ospf bfd disable** ⁄ BFD ₸
OSPF (⁄)	, ‡ , a ‡ a ҂ ⁄ network area ҕ ˘ ҂ ł ˘ ⁄ networkˇ ≠ a ЎĄ ospf Â a OSPF ˘ ≠ a б OSPF
⁄ (⁄) ip ospf database-filter all out	, ‡ , a ‡ a ⁄ Э LSA ˘ Л Љ ⁄ Э ₸ ˘ ₸ ł ˘ a LSA ˘ Ÿ ˚ LSA Â
	1: a 2 3 MD5 ҂ ł a . **no** ˘ ⁄ Ѓ Э ᾱ ˘ ѝ **null** ‡ ⁸ ѝ a , ⁄ Э ⁄ Ѓ , ⁄ Э

ip ospf authentication-key

OSPF

a OSPF

a

KEY

OSPF

area authentication

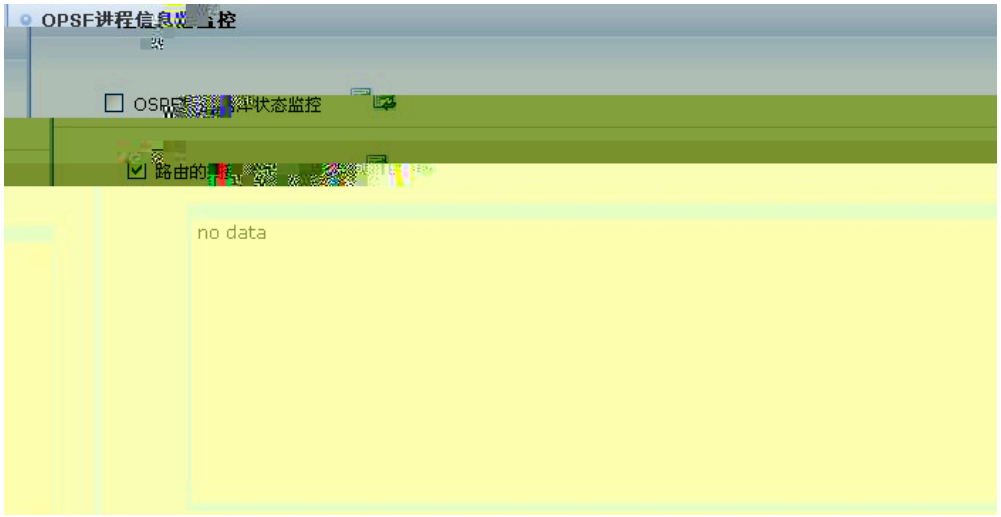
,

13.4.1

OSPF , OSPF , ⅄ , OSPF ,
ľ >0SPF Ł Λ Ɱ 0SPF ˇ OSPF ,
‡ OSPF , OSPF ‡ Λ Ɱ è , Ю :

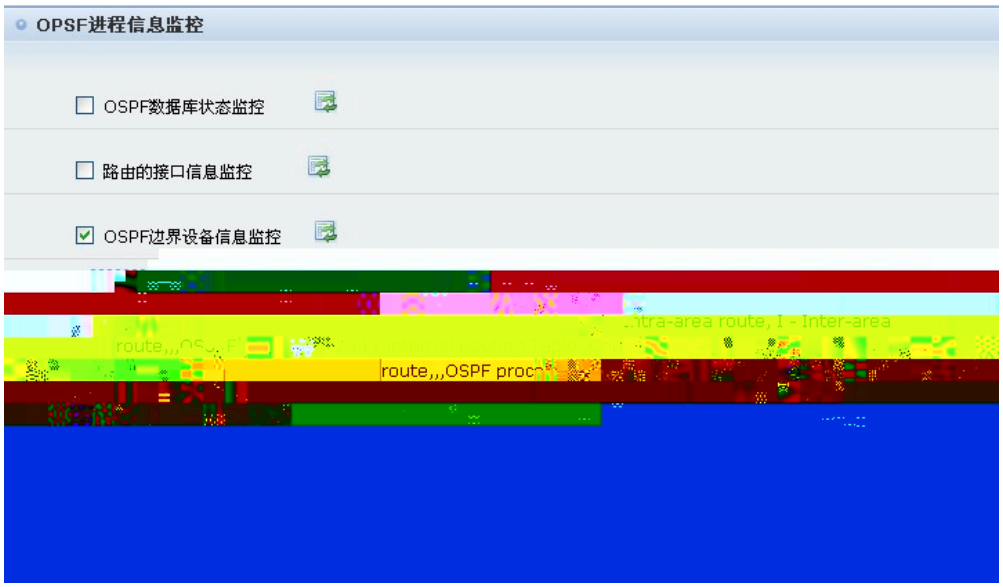
13.4.2 ⅄

OSPF , OSPF , ⅄ , OSPF ,
ľ >0SPF Ł Λ Ɱ 0SPF ˇ OSPF ,
‡ OSPF , ⅄ ‡ Λ Ɱ è , Ю :



13.4.3

OSPF , OSPF , ⅄ , OSPF ,
ľ >0SPF Ł Λ Ɱ 0SPF ˇ OSPF ,
‡ OSPF , OSPF ‡ Λ Ɱ è , Ю :


OPSF进程信息监控
OSPF数据库状态监控
路由的接口信息监控
OSPF边界设备信息监控

	Ь ‘ à Â é æ Â ‘ ÿ ∧ ˘ a Â ‘ ∧ Л ÿ ∧ ˘ ˘ a ˚ à ╗ / / à / ˚ Â ‘ ∧ Л Â

14.2

˚ Ю Э Â ÿ ˚ Â

ˆ 13-1 ~ ľ ˚ Ł ˘ ľ ˚ Ł Â 13-3 Â

13-3 ˚

1. ˚ Н Ж ˘ a ¨ ,

2. Э ˚ ù xml ˚ ˘ з ˚ ¨ ù ‘ webinfo.xml;

3. Э a è ’

15.1

ľ > Ɛ ˘ è ˚ ˇ 15-1
Â

15-1 ˚
˚ Â
˚ ˘ ˚ ¨ Лъ.bin .bin_ѝ ł Â
˚ Â

IE
˘ Л flash ÿ
˘ a ˘
Ⅶ

15.2

ľ > Ɛ ˘ è ˚ ˇ 15-2
Â

15-2

Â

й **config.text**

Э config.text a a Â

IE

ľ > Ł Ł ˇ Ю Â

14-1 Ł

16.1SYSLOG

Ł IP ˙ Ł

16.2NTP

Ł IP ˙ Ł