V7设备与Juniper防火墙做ipsec

IPSec VPN 程咪 2019-11-28 发表

问题描述

V7设备与Juniper防火墙做ipsec

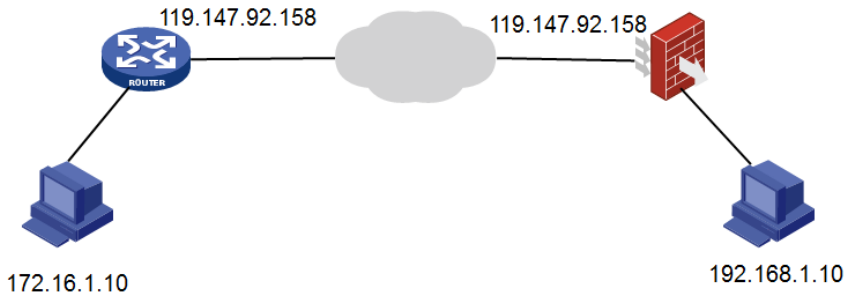
解决方法

功能需求：

总部双出口，分支为Juniper防火墙，为了保证总部于分支的局域网可以正常互通，同时，也要保证数据传输的安全性，需要使用ipsec VPN来实现该功能

组网信息及描述：

总部存在172.16.0.0/16的网段，分支存在192.168.0.0/16的网段，两端通过固定地址建立ipsec VPN。



配置步骤：

第 1 步：我司设备主要配置

```
#
controller Cellular0/0
#
controller Cellular0/1
#
interface Aux0
#
interface Ethernet1/0
 port link-mode route
#
interface Ethernet1/0.1
 ip policy-based-route 1
#
interface Ethernet1/0.2
 ip address 172.16.2.1 255.255.255.0
 vlan-type dot1q vid 2
 ip policy-based-route 1
#
interface Ethernet1/0.3
 ip address 172.16.3.1 255.255.255.0
 vlan-type dot1q vid 3
 ip policy-based-route 1
#
interface Ethernet1/0.4
 ip address 172.16.4.1 255.255.255.0
 vlan-type dot1q vid 4
 ip policy-based-route 1
#
interface Ethernet1/0.5
 ip address 172.16.5.1 255.255.255.0
 vlan-type dot1q vid 5
 ip policy-based-route 1
```

```
#
interface Ethernet1/1
 port link-mode route
#
interface Ethernet1/1.1
 ip policy-based-route 1
#
interface Ethernet1/1.2
 ip policy-based-route 1
#
interface Ethernet1/1.6
 ip address 172.16.6.1 255.255.255.0
 vlan-type dot1q vid 6
 ip policy-based-route 1
#
interface Ethernet1/2
 port link-mode route
#
interface Ethernet1/2.7
 ip address 172.16.7.1 255.255.255.0
 vlan-type dot1q vid 7
 ip policy-based-route 1
#
interface Ethernet1/3
 port link-mode route
#
interface Virtual-Template1
 ppp authentication-mode chap domain system
 remote address pool 7
 ip address 172.16.10.1 255.255.255.0
#
interface NULL0
#
interface LoopBack0
#
interface GigabitEthernet0/1
 port link-mode route
 ip address 219.133.71.196 255.255.255.248
 nat outbound 3006
 ipsec apply policy JJS              //绑定ipsec策略
#
 ip route-static 0.0.0.0 0 Dialer1    //此路由作为备份
 ip route-static 0.0.0.0 0 219.133.71.193 preference 50        //默认路由优先走固定地址接口
 ip route-static 119.147.92.158 32 219.133.71.193
#
acl advanced 3005      //配置ipsec的感兴趣流
 rule 0 permit ip source 172.16.0.0 0.0.255.255 destination 192.168.0.0 0.0.255.255
#
acl advanced 3006       //配置地址转换acl，禁止ipsec感兴趣流量进行抵制转换
 rule 0 deny ip source 172.16.0.0 0.0.255.255 destination 192.168.0.0 0.0.255.255
 rule 5 permit ip
#
ipsec transform-set JJS         //创建ipsec安全提议
 esp encryption-algorithm 3des-cbc
 esp authentication-algorithm sha1
 pfs dh-group2
#
ipsec policy JJS 10 isakmp         //创建ipsec策略
 transform-set JJS
 security acl 3005
 local-address 219.133.71.196
 remote-address 119.147.92.158
 ike-profile JJS
 sa duration time-based 3600
```

```
#
ike profile JJS        //创建ipsec  profile
 keychain JJS
 local-identity address 219.133.71.196
 match remote identity address 119.147.92.158 255.255.255.255
 proposal 1
#
ike proposal 1         //创建ike  proposal
 encryption-algorithm 3des-cbc
 dh group2
 authentication-algorithm md5
 sa duration 28800
#
ike keychain JJS           //创建ike  kenchain
 pre-shared-key address 119.147.92.158 255.255.255.255 key cipher $c$3$YsnapP3lxP/mnLe
kI3KOLxuzakii9rW6NQ==
#
return
```

第 2 步：Juniper配置

1、创建ike proposal

2、创建ike对等体，使用主模式对接

http://kms.h3c.com/uploadfile/20151103/14133826840174393917 9.png

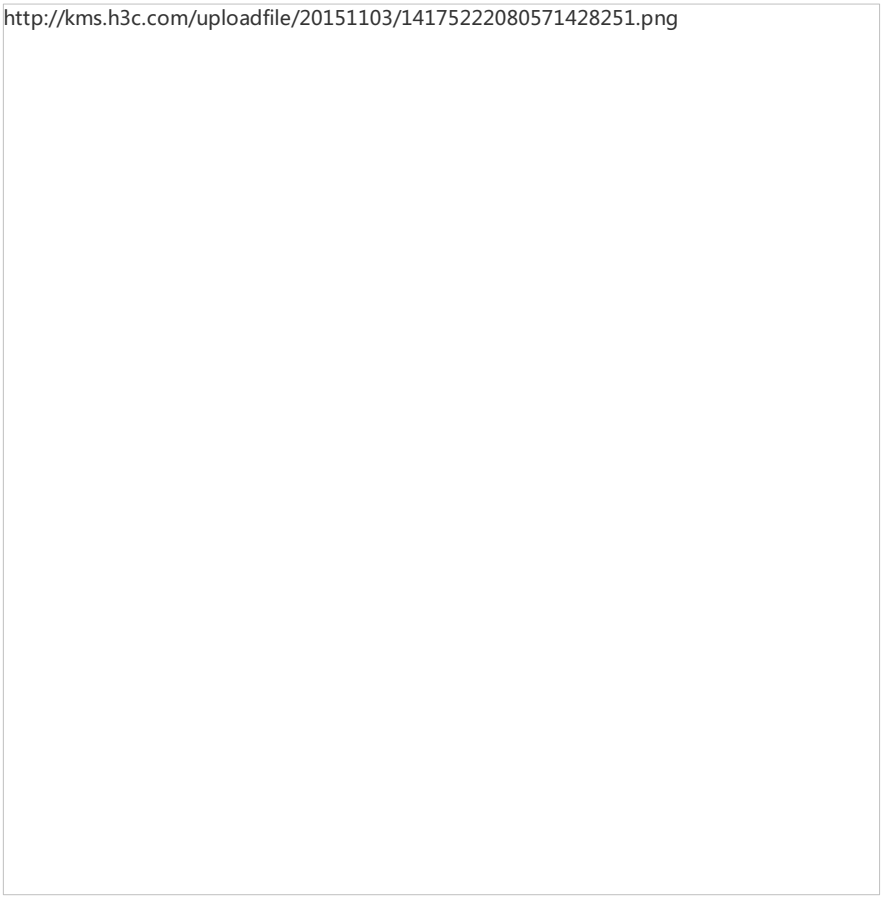
3、创建ike对等体的预共享密钥

http://kms.h3c.com/uploadfile/20151103/14141898440121472183 6.png

4、在ike对等体中指定对端公网地址

5、配置ipsec proposal

6、配置ipsec策略，使用dh-group2



7、创建ipsec策略，绑定ike对等体和ipsec模版

8、创建ipsec感兴趣流量

return

9、将ipsec策略调用到相应的域间策略上，两个方向都需要调用。

http://kms.h3c.com/uploadfile/20151103/14223801280244386356.png

第 3 步：结果验证

```
[H3C-JJS]disp ike sa
   Connection-ID   Remote              Flag        DOI
-----------------------------------------------------------------------
   3741          119.147.92.158       RD          IPsec
Flags:
RD--READY RL--REPLACED FD-FADING
[H3C-JJS]disp ips sa
---------------------------------
Interface: GigabitEthernet0/1
---------------------------------
  -------------------------------
  IPsec policy: JJS
  Sequence number: 10
  Mode: ISAKMP
  -------------------------------
    Tunnel id: 0
    Encapsulation mode: tunnel
    Perfect forward secrecy: dh-group2
    Inside VPN:
    Path MTU: 1443
    Tunnel:
        local  address: 219.133.71.196
        remote address: 119.147.92.158
    Flow:
        sour addr: 172.16.0.0/255.255.0.0  port: 0  protocol: ip
        dest addr: 192.168.0.0/255.255.0.0  port: 0  protocol: ip
    [Inbound ESP SAs]
      SPI: 3719319854 (0xddb0512e)
      Connection ID: 7743826034786
      Transform set:  ESP-ENCRYPT-3DES-CBC ESP-AUTH-SHA1
      SA duration (kilobytes/sec): 1843200/28800
      SA remaining duration (kilobytes/sec): 1843200/2206
```

Max received sequence-number: 0
Anti-replay check enable: Y
Anti-replay window size: 64
UDP encapsulation used for NAT traversal: N
Status: Active
[Outbound ESP SAs]
SPI: 159650169 (0x09841179)
Connection ID: 11343008628835
Transform set: ESP-ENCRYPT-3DES-CBC ESP-AUTH-SHA1
SA duration (kilobytes/sec): 1843200/28800
SA remaining duration (kilobytes/sec): 1839651/2206
Max sent sequence-number: 55990
UDP encapsulation used for NAT traversal: N
Status: Active

第 1 步：我司设备主要配置

```
#
policy-based-route 1 permit node 1
 if-match acl 3002
 apply output-interface Dialer1
#
policy-based-route 1 permit node 2
 if-match acl 3003              //创建空节点，使内网互访的流量不走策略路由
#
policy-based-route 1 permit node 3
 if-match acl 3004              //创建空节点，使ipsec互访的流量不走策略路由
#
policy-based-route 1 permit node 4
 if-match acl 3001
 apply output-interface Dialer1
#
controller Cellular0/0
#
controller Cellular0/1
#
interface Aux0
#
interface Dialer1     //配置拨号
 ppp chap password cipher $c$3$wfoaPwdpecAprIG9fHN700HiHoIG3KIlgtVk
 ppp chap user 075506566013@163.gd
 ppp pap local-user 075506566013@163.gd password cipher $c$3$WWO/uBLpX90iMJRESC
yeJKLNv3dsxAyNUl+1
 dialer bundle enable
 dialer-group 1
 dialer timer idle 0
 dialer timer autodial 60
 ip address ppp-negotiate
 nat outbound 3001
#
interface Ethernet1/0
 port link-mode route
#
interface Ethernet1/0.1
 ip policy-based-route 1
#
interface Ethernet1/0.2
 ip address 172.16.2.1 255.255.255.0
 vlan-type dot1q vid 2
 ip policy-based-route 1
#
interface Ethernet1/0.3
 ip address 172.16.3.1 255.255.255.0
 vlan-type dot1q vid 3
 ip policy-based-route 1
```

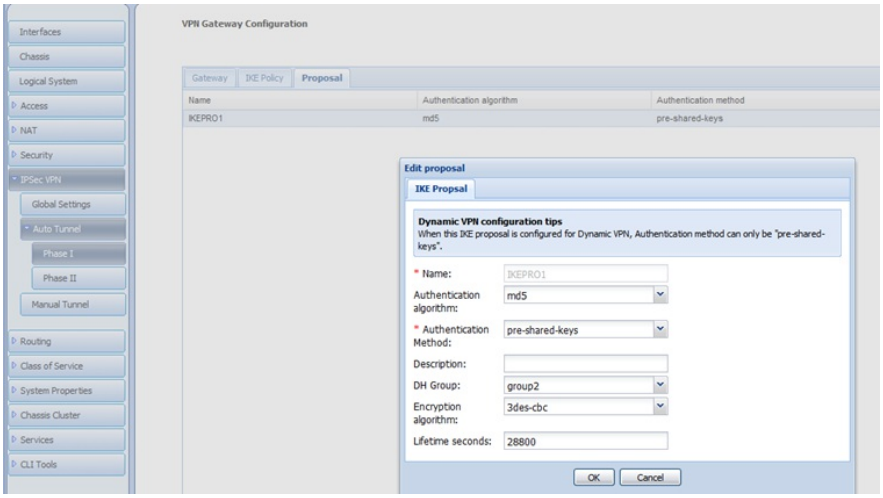
```
#
interface Ethernet1/0.4
 ip address 172.16.4.1 255.255.255.0
 vlan-type dot1q vid 4
 ip policy-based-route 1
#
interface Ethernet1/0.5
 ip address 172.16.5.1 255.255.255.0
 vlan-type dot1q vid 5
 ip policy-based-route 1
#
interface Ethernet1/1
 port link-mode route
#
interface Ethernet1/1.1
 ip policy-based-route 1
#
interface Ethernet1/1.2
 ip policy-based-route 1
#
interface Ethernet1/1.6
 ip address 172.16.6.1 255.255.255.0
 vlan-type dot1q vid 6
 ip policy-based-route 1
#
interface Ethernet1/2
 port link-mode route
#
interface Ethernet1/2.7
 ip address 172.16.7.1 255.255.255.0
 vlan-type dot1q vid 7
 ip policy-based-route 1
#
interface Ethernet1/3
 port link-mode route
#
interface Virtual-Template1
 ppp authentication-mode chap domain system
 remote address pool 7
 ip address 172.16.10.1 255.255.255.0
#
interface NULL0
#
interface LoopBack0
#
interface GigabitEthernet0/0       //0口为拨号上网接口
 port link-mode route
 combo enable copper
 tcp mss 1460
 pppoe-client dial-bundle-number 1
#
interface GigabitEthernet0/1
 port link-mode route
 mtu 1400
 ip address 219.133.71.196 255.255.255.248
 tcp mss 1024
 nat outbound 3006
 nat server protocol tcp global 219.133.71.196 1521 inside 172.16.7.53 1521
 nat server protocol tcp global 219.133.71.196 8081 inside 172.16.2.218 8081
 nat server protocol tcp global 219.133.71.196 33099 inside 172.16.6.121 3389
 ipsec apply policy JJS              //绑定ipsec策略
#
interface GigabitEthernet0/2
 port link-mode route
```

```
#
 scheduler logfile size 16
#
line class aux
 user-role network-admin
#
line class tty
 user-role network-operator
#
line class vty
 user-role network-operator
#
line aux 0
 user-role network-admin
#
line vty 0 4
 authentication-mode scheme
 user-role network-operator
#
line vty 5 63
 user-role network-operator
#
 ip route-static 0.0.0.0 0 Dialer1     //此路由作为备份
 ip route-static 0.0.0.0 0 219.133.71.193 preference 50         //默认路由优先走固定地址接口
 ip route-static 119.147.92.158 32 219.133.71.193
#
acl advanced 3001
 rule 0 permit ip source 172.16.0.0 0.0.255.255
 rule 10 permit icmp
#
acl advanced 3002
 rule 1 permit ip destination 119.147.92.139 0
 rule 3 permit ip destination 119.147.92.141 0
 rule 5 permit ip destination 119.147.92.142 0
 rule 7 permit ip destination 119.147.92.146 0
 rule 9 permit ip destination 119.147.92.148 0
 rule 11 permit ip destination 119.147.92.149 0
 rule 13 permit ip destination 119.147.92.150 0
 rule 15 permit ip destination 119.147.92.154 0
#
acl advanced 3003
 rule 0 permit ip source 172.16.0.0 0.0.255.255 destination 172.16.0.0 0.0.255.255
 rule 5 permit ip destination 119.147.92.0 0.0.0.255
 rule 10 deny ip source 172.16.7.53 0 destination 172.16.0.0 0.0.255.255
 rule 15 permit ip source 172.16.7.53 0
 rule 20 deny ip source 172.16.2.218 0 destination 172.16.0.0 0.0.255.255
 rule 25 permit ip source 172.16.2.218 0
 rule 30 deny ip source 172.16.6.121 0 destination 172.16.0.0 0.0.255.255
 rule 35 permit ip source 172.16.6.121 0
#
acl advanced 3004
 rule 5 permit ip destination 172.16.10.0 0.0.0.255
 rule 10 permit ip source 172.16.0.0 0.0.255.255 destination 192.168.0.0 0.0.255.255
#
acl advanced 3005       //配置ipsec的感兴趣流
 rule 0 permit ip source 172.16.0.0 0.0.255.255 destination 192.168.0.0 0.0.255.255
#
acl advanced 3006        //配置地址转换acl，禁止ipsec感兴趣流量进行抵制转换
 rule 0 deny ip source 172.16.0.0 0.0.255.255 destination 192.168.0.0 0.0.255.255
 rule 5 permit ip
#
ipsec transform-set JJS          //创建ipsec安全提议
 esp encryption-algorithm 3des-cbc
 esp authentication-algorithm sha1
```

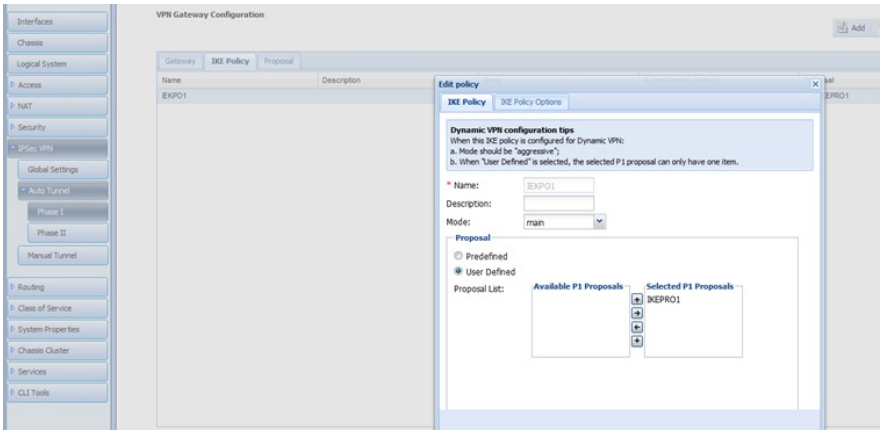
```
 pfs dh-group2
#
ipsec policy JJS 10 isakmp          //创建ipsec策略
 transform-set JJS
 security acl 3005
 local-address 219.133.71.196
 remote-address 119.147.92.158
 ike-profile JJS
 sa duration time-based 3600
#
l2tp-group 1 mode lns
 allow l2tp virtual-template 1
 undo tunnel authentication
 tunnel name LNS
#
 l2tp enable
#
ike profile JJS        //创建ipsec  profile
 keychain JJS
 local-identity address 219.133.71.196
 match remote identity address 119.147.92.158 255.255.255.255
 proposal 1
#
ike proposal 1          //创建ike  proposal
 encryption-algorithm 3des-cbc
 dh group2
 authentication-algorithm md5
 sa duration 28800
#
ike keychain JJS           //黄建ike  kenchain
 pre-shared-key address 119.147.92.158 255.255.255.255 key cipher $c$3$YsnapP3lxP/mnLe
kI3KOLxuzakii9rW6NQ==
#
return
```

第 2 步：Juniper配置

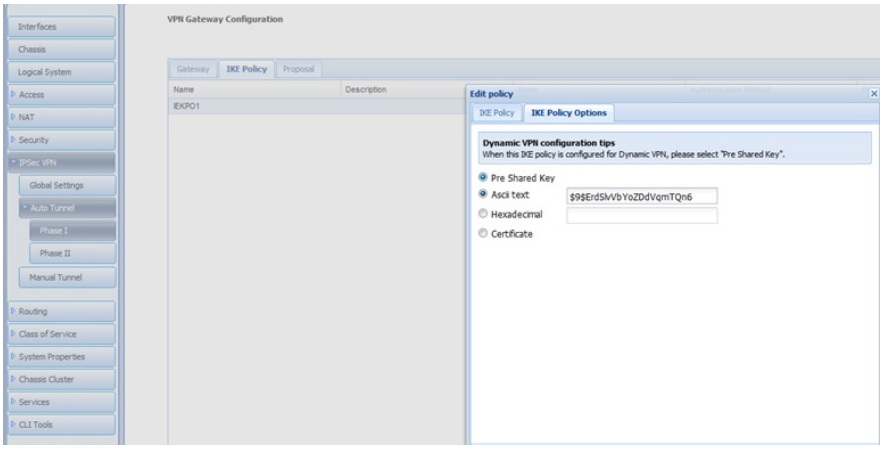
1、创建ike proposal



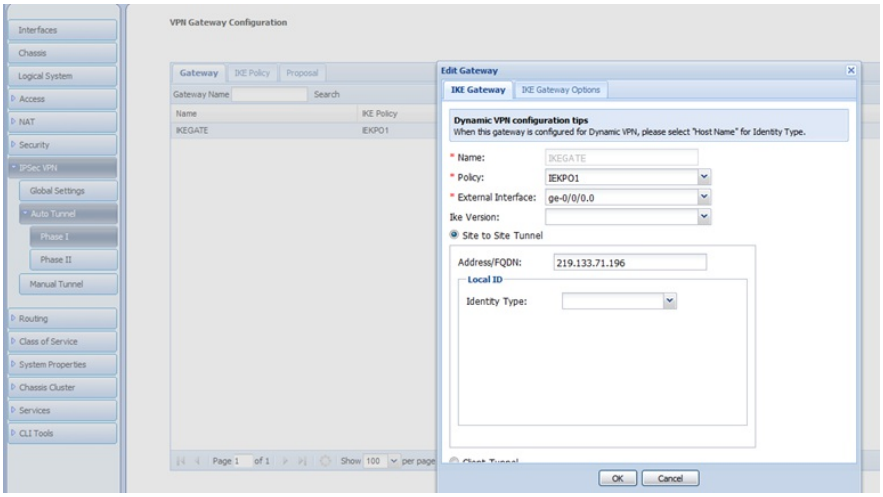
2、创建ike对等体，使用主模式对接



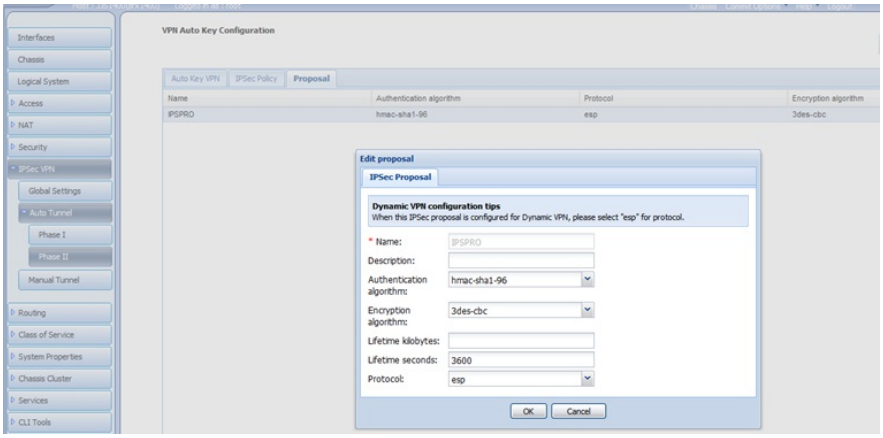
3、创建ike对等体的预共享密钥



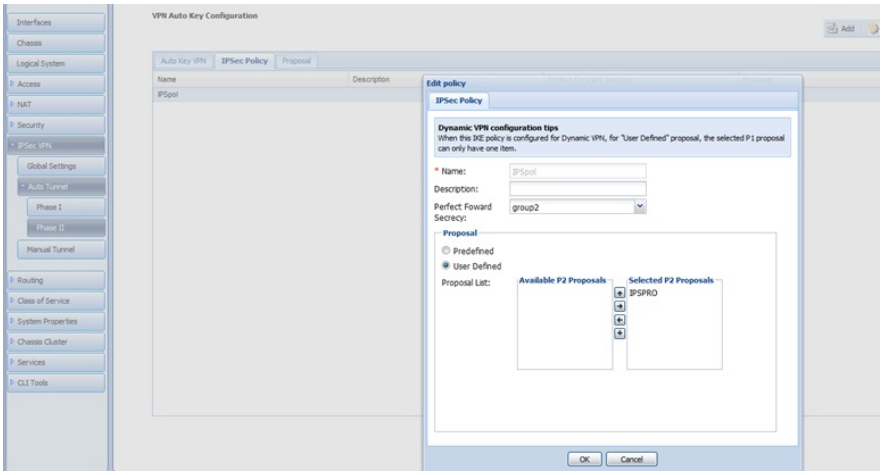
4、在ike对等体中指定对端公网地址



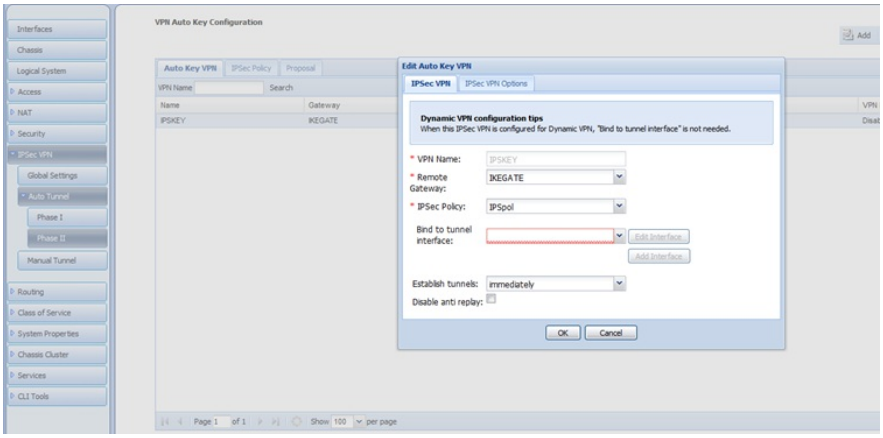
5、配置ipsec proposal



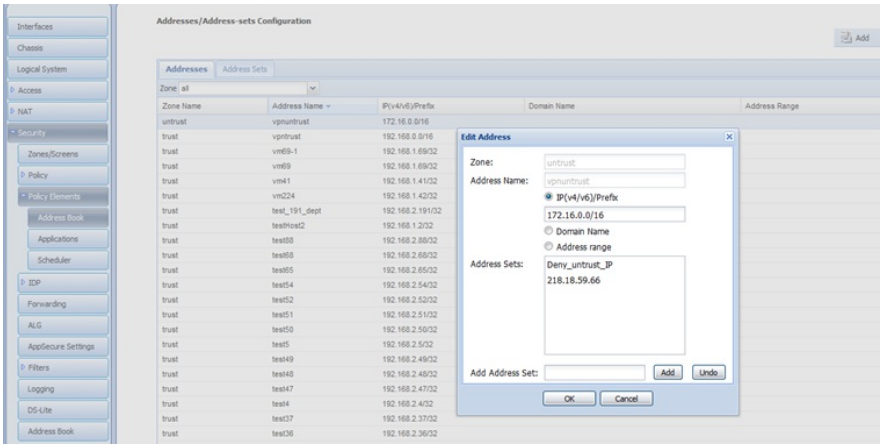
6、配置ipsec策略，使用dh-group2



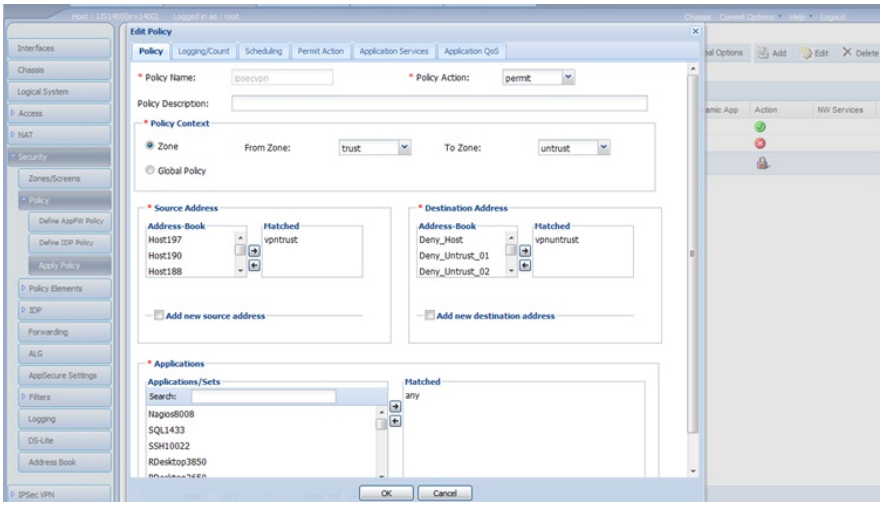
7、创建ipsec策略，绑定ike对等体和ipsec模版

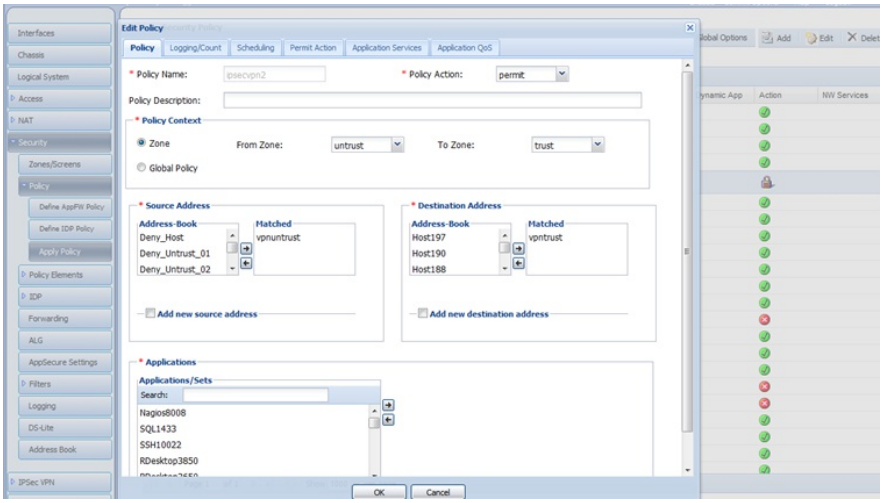


8、创建ipsec感兴趣流量



9、将ipsec策略调用到相应的域间策略上，两个方向都需要调用。





第 3 步：结果验证

```
[H3C-JJS]disp ike sa
   Connection-ID   Remote              Flag        DOI
-----------------------------------------------------------------------------
   3741          119.147.92.158       RD          IPsec
Flags:
RD--READY RL--REPLACED FD-FADING
[H3C-JJS]disp ips sa
-------------------------------
Interface: GigabitEthernet0/1
-------------------------------
  -------------------------------
  IPsec policy: JJS
  Sequence number: 10
  Mode: ISAKMP
  -------------------------------
    Tunnel id: 0
    Encapsulation mode: tunnel
    Perfect forward secrecy: dh-group2
    Inside VPN:
    Path MTU: 1443
    Tunnel:
        local  address: 219.133.71.196
        remote address: 119.147.92.158
    Flow:
        sour addr: 172.16.0.0/255.255.0.0  port: 0  protocol: ip
        dest addr: 192.168.0.0/255.255.0.0  port: 0  protocol: ip
    [Inbound ESP SAs]
      SPI: 3719319854 (0xddb0512e)
      Connection ID: 7743826034786
      Transform set:  ESP-ENCRYPT-3DES-CBC ESP-AUTH-SHA1
      SA duration (kilobytes/sec): 1843200/28800
      SA remaining duration (kilobytes/sec): 1843200/2206
      Max received sequence-number: 0
      Anti-replay check enable: Y
      Anti-replay window size: 64
      UDP encapsulation used for NAT traversal: N
      Status: Active
    [Outbound ESP SAs]
      SPI: 159650169 (0x09841179)
      Connection ID: 11343008628835
      Transform set:  ESP-ENCRYPT-3DES-CBC ESP-AUTH-SHA1
      SA duration (kilobytes/sec): 1843200/28800
      SA remaining duration (kilobytes/sec): 1839651/2206
      Max sent sequence-number: 55990
      UDP encapsulation used for NAT traversal: N
      Status: Active
```