

Configuring the Cisco VPN Client to Tunnel to Two Remote Sites Through One Hub PIX

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Introduction

This document demonstrates how to configure a Cisco VPN Client to connect to the inside of one PIX while connected via tunnel to another PIX. This is accomplished by terminating the tunnel on a different interface on the PIX to which the VPN Client is already connected.

Remote VPN Clients will connect to *snow* (PIX 525) and receive an IP address included in the range 12.0.0.1 – 12.0.0.34. The VPN Client will be able to establish full connectivity to the inside of *snow* (10.0.0.0/24) as well as to the inside of another PIX (called *rain* in this configuration).

Before You Begin

Conventions

For more information on document conventions, see the Cisco Technical Tips Conventions.

Prerequisites

Before attempting this configuration, please ensure that you meet the following prerequisites:

- **rain**

The configuration for *rain* is based on the sample configuration [Configuring a Simple PIX-to-PIX VPN Tunnel Using IPSec](#). The only difference is that the IP pool reserved for the client must be included in the **crypto map access-list**. In other words, we want to protect traffic going from our LAN (11.0.0.0/24) to the remote private LAN (10.0.0.0/24) and to the remote client (12.0.0.0/24).

- **snow**

To ensure that this configuration works properly, you need to have two different interfaces connected to the "outside" network, typically the Internet service provider (ISP). You also need to have two

crypto maps. One crypto map should be applied to intf2 (typically the DMZ) that will mirror the configuration of *rain*; this will protect the internal network (10.0.0.0/24) going to the remote LAN (11.0.0.0/24) while also protecting the VPN client pool (12.0.0.0/24) going to the remote LAN. The second crypto map should be applied to the outside interface (typically eth0) as a typical dynamic crypto map as described in Cisco PIX 5.1-to-VPN Client Wild-card, Pre-shared, Mode Configuration with Extended Authentication.

When the PIX (*rain* in this example) attempts to connect to the intf2 of (193.0.0.5), the Internet Key Exchange (IKE) negotiation will fail because the other PIX (*snow*) will answer with its outside address of 193.0.0.1. (This is because the PIX typically has a default route to the outside.) To resolve the issue, add a specific route to the remote LAN to the intf2 interface. Also add a host route to the outside address of the remote PIX going through intf2.

Regardless of the translation configured on the PIX, you must configure no translation for the VPN traffic (nat 0 translation). To do this, configure two access lists (**no-nat-inside** and **no-nat-intf2**) and apply them with the following commands:

```
nat (inside) 0 access-list no-nat-inside
nat (intf2) 0 access-list no-nat-intf2
```

Components Used

The information in this document is based on the software and hardware versions below.

- PIX 525 with Cisco PIX Firewall Software Version 6.2(2)
- PIX 515 with Cisco Secure PIX Firewall Software Version 6.2(2)
- Cisco IOS® 7200 Software (C7200-JO3S56I-M), Version 12.2(6)
- Cisco VPN Client 3.6.1 on Microsoft Windows 2000

The information presented in this document was created from devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If you are working in a live network, ensure that you understand the potential impact of any command before using it.

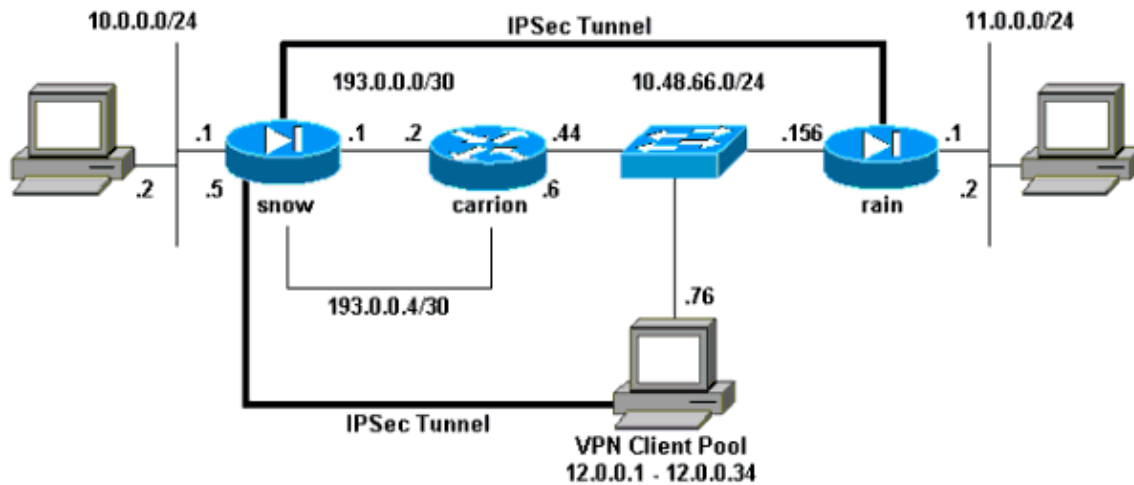
Configure

In this section, you are presented with the information to configure the features described in this document.

Note: To find additional information on the commands used in this document, use the Command Lookup Tool (registered customers only) .

Network Diagram

This document uses the network setup shown in the diagram below.



Configurations

This document uses the configurations shown below.

- snow
- rain
- carrion

snow
<pre> PIX Version 6.2(2) nameif ethernet0 outside security0 nameif ethernet1 inside security100 nameif ethernet2 intf2 security10 nameif ethernet3 intf3 security15 nameif ethernet4 intf4 security20 nameif ethernet5 intf5 security25 enable password 8Ry2YjIyt7RRXU24 encrypted passwd 2KFQnbNIdI.2KYOU encrypted hostname snow fixup protocol ftp 21 fixup protocol http 80 fixup protocol h323 1720 fixup protocol rsh 514 fixup protocol rtsp 554 fixup protocol smtp 25 fixup protocol sqlnet 1521 fixup protocol sip 5060 fixup protocol skinny 2000 names access-list acl-out permit icmp any any access-list acl-intf2 permit icmp any any access-list vpn-intf2 permit ip 10.0.0.0 255.255.255.0 11.0.0.0 255.255.255.0 access-list vpn-intf2 permit ip 12.0.0.0 255.255.255.0 11.0.0.0 255.255.255.0 access-list no-nat-inside permit ip 10.0.0.0 255.255.255.0 11.0.0.0 255.255.255.0 access-list no-nat-inside permit ip 10.0.0.0 255.255.255.0 12.0.0.0 255.255.255.0 access-list no-nat-intf2 permit ip 11.0.0.0 255.255.255.0 12.0.0.0 255.255.255.0 no pager logging on logging console debugging interface ethernet0 auto </pre>

```
interface ethernet1 auto
interface ethernet2 auto
interface ethernet3 auto shutdown
interface ethernet4 auto shutdown
interface ethernet5 auto shutdown
mtu outside 1500
mtu inside 1500
mtu intf2 1500
mtu intf3 1500
mtu intf4 1500
mtu intf5 1500
ip address outside 193.0.0.1 255.255.255.252
ip address inside 10.0.0.1 255.255.255.0
ip address intf2 193.0.0.5 255.255.255.252
ip address intf3 127.0.0.1 255.255.255.255
ip address intf4 127.0.0.1 255.255.255.255
ip address intf5 127.0.0.1 255.255.255.255
ip audit info action alarm
ip audit attack action alarm
ip local pool remote-VPN 12.0.0.1-12.0.0.34
no failover
failover timeout 0:00:00
failover poll 15
failover ip address outside 0.0.0.0
failover ip address inside 0.0.0.0
failover ip address intf2 0.0.0.0
failover ip address intf3 0.0.0.0
failover ip address intf4 0.0.0.0
failover ip address intf5 0.0.0.0
pdm history enable
arp timeout 14400
global (intf2) 1 interface
nat (inside) 0 access-list no-nat-inside
nat (inside) 1 10.0.0.0 255.255.255.0 0 0
nat (intf2) 0 access-list no-nat-intf2
access-group acl-out in interface outside
access-group acl-intf2 in interface intf2
route outside 0.0.0.0 0.0.0.0 193.0.0.2 1
route intf2 10.48.66.156 255.255.255.255 193.0.0.6 1
route intf2 11.0.0.0 255.255.255.0 193.0.0.6 1
timeout xlate 3:00:00
timeout conn 1:00:00 half-closed 0:10:00 udp 0:02:00
    rpc 0:10:00 h323 0:05:00 sip 0:30:00 sip_media 0:02:00
timeout uauth 0:05:00 absolute
aaa-server TACACS+ protocol tacacs+
aaa-server RADIUS protocol radius
no snmp-server location
no snmp-server contact
snmp-server community public
no snmp-server enable traps
no floodguard enable
sysopt connection permit-ipsec
no sysopt route dnat
crypto ipsec transform-set TRANS esp-des esp-sha-hmac
crypto ipsec transform-set remote-TRANS esp-des esp-md5-hmac
crypto dynamic-map DYN 10 set transform-set remote-TRANS
crypto map vpn-intf2 10 ipsec-isakmp
crypto map vpn-intf2 10 match address vpn-intf2
crypto map vpn-intf2 10 set peer 10.48.66.156
crypto map vpn-intf2 10 set transform-set TRANS
crypto map vpn-intf2 interface intf2
crypto map toOUT 10 ipsec-isakmp dynamic DYN
crypto map toOUT interface outside
isakmp enable outside
isakmp enable intf2
isakmp key ***** address 10.48.66.156 netmask 255.255.255.255
```

```
isakmp identity address
isakmp policy 10 authentication pre-share
isakmp policy 10 encryption des
isakmp policy 10 hash sha
isakmp policy 10 group 2
isakmp policy 10 lifetime 86400
vpngroup VPNclient address-pool remote-VPN
vpngroup VPNclient idle-time 1800
vpngroup VPNclient password *****
telnet timeout 5
ssh timeout 5
terminal width 80
Cryptochecksum:c5ad37a1288a0be866edc1dc1c09fcc9
: end
[OK]
```

rain

```
rain# write terminal
Building configuration...
: Saved
:
PIX Version 6.2(2)
nameif ethernet0 outside security0
nameif ethernet1 inside security100
nameif ethernet2 intf2 security10
nameif ethernet3 intf3 security15
nameif ethernet4 intf4 security20
nameif ethernet5 intf5 security25
enable password 8Ry2YjIyt7RRXU24 encrypted
passwd 2KFQnbNIdI.2KYOU encrypted
hostname rain
fixup protocol ftp 21
fixup protocol http 80
fixup protocol h323 1720
fixup protocol rsh 514
fixup protocol rtsp 554
fixup protocol smtp 25
fixup protocol sqlnet 1521
fixup protocol sip 5060
fixup protocol skinny 2000
names
access-list acl-out permit icmp any any
access-list vpn-to-snow permit ip 11.0.0.0 255.255.255.0
10.0.0.0 255.255.255.0
access-list vpn-to-snow permit ip 11.0.0.0 255.255.255.0
12.0.0.0 255.255.255.0
no pager
interface ethernet0 auto
interface ethernet1 auto
interface ethernet2 auto shutdown
interface ethernet3 auto shutdown
interface ethernet4 auto shutdown
interface ethernet5 auto shutdown
icmp permit any outside
mtu outside 1500
mtu inside 1500
mtu intf2 1500
mtu intf3 1500
mtu intf4 1500
mtu intf5 1500
ip address outside 10.48.66.156 255.255.255.0
ip address inside 11.0.0.1 255.255.255.0
ip address intf2 127.0.0.1 255.255.255.255
ip address intf3 127.0.0.1 255.255.255.255
```

```
ip address intf4 127.0.0.1 255.255.255.255
ip address intf5 127.0.0.1 255.255.255.255
ip audit info action alarm
ip audit attack action alarm
no failover
failover timeout 0:00:00
failover poll 15
failover ip address outside 0.0.0.0
failover ip address inside 0.0.0.0
failover ip address intf2 0.0.0.0
failover ip address intf3 0.0.0.0
failover ip address intf4 0.0.0.0
failover ip address intf5 0.0.0.0
pdm history enable
arp timeout 14400
nat (inside) 0 access-list vpn-to-snow
access-group acl-out in interface outside
route outside 10.0.0.0 255.255.255.0 193.0.0.5 1
route outside 12.0.0.0 255.255.255.0 193.0.0.5 1
route outside 193.0.0.0 255.255.255.0 10.48.66.44 1
timeout xlate 3:00:00
timeout conn 1:00:00 half-closed 0:10:00 udp 0:02:00
    rpc 0:10:00 h323 0:05:00 sip 0:30:00 sip_media 0:02:00
timeout uauth 0:05:00 absolute
aaa-server TACACS+ protocol tacacs+
aaa-server RADIUS protocol radius
no snmp-server location
no snmp-server contact
snmp-server community public
no snmp-server enable traps
no floodguard enable
sysopt connection permit-ipsec
no sysopt route dnat
crypto ipsec transform-set TRANS esp-des esp-sha-hmac
crypto map vpn-outside 10 ipsec-isakmp
crypto map vpn-outside 10 match address vpn-to-snow
crypto map vpn-outside 10 set peer 193.0.0.5
crypto map vpn-outside 10 set transform-set TRANS
crypto map vpn-outside interface outside
isakmp enable outside
isakmp key ***** address 193.0.0.5 netmask 255.255.255.255
isakmp policy 10 authentication pre-share
isakmp policy 10 encryption des
isakmp policy 10 hash sha
isakmp policy 10 group 2
isakmp policy 10 lifetime 86400
telnet timeout 5
ssh timeout 5
terminal width 80
Cryptochecksum:a2181c3b31cfcf3be90c24f622c17eed
: end
[OK]
```

carrion

Building configuration...

Current configuration : 3153 bytes

!

version 12.2

service timestamps debug uptime

service timestamps log uptime

no service password-encryption

service udp-small-servers

service tcp-small-servers

```
no service single-slot-reload-enable
!
hostname carrion
!
!
ip subnet-zero
ip tcp intercept list 111
ip tcp intercept connection-timeout 60
ip tcp intercept watch-timeout 10
ip tcp intercept max-incomplete low 2
ip tcp intercept max-incomplete high 3
ip domain-name cisco.com
ip name-server 144.254.6.77
!
ip cef
ip audit notify log
ip audit po max-events 100
ip ssh time-out 120
ip ssh authentication-retries 3
!
call rsvp-sync
!
!
!
!
!
!
!
!
interface Serial0/0
no ip address
no ip route-cache
no ip mroute-cache
shutdown
no fair-queue
!
interface Serial0/1
no ip address
no ip route-cache
no ip mroute-cache
shutdown
!
interface Serial0/2
no ip address
no ip route-cache
no ip mroute-cache
shutdown
!
interface Serial0/3
no ip address
no ip route-cache
no ip mroute-cache
shutdown
!
interface Serial0/4
no ip address
no ip route-cache
no ip mroute-cache
shutdown
!
interface Serial0/5
no ip address
no ip route-cache
no ip mroute-cache
shutdown
!
```

```
interface Serial0/6
  no ip address
  no ip route-cache
  no ip mroute-cache
  shutdown
!
interface Serial0/7
  no ip address
  no ip route-cache
  no ip mroute-cache
  shutdown
!
interface Serial1/0
  no ip address
  no ip route-cache
  no ip mroute-cache
  shutdown
!
interface Serial1/1
  no ip address
  no ip route-cache
  no ip mroute-cache
  shutdown
!
interface Serial1/2
  no ip address
  no ip route-cache
  no ip mroute-cache
  shutdown
!
interface Serial1/3
  no ip address
  no ip route-cache
  no ip mroute-cache
  shutdown
!
interface Serial1/4
  no ip address
  no ip route-cache
  no ip mroute-cache
  shutdown
!
interface Serial1/5
  no ip address
  no ip route-cache
  no ip mroute-cache
  shutdown
!
interface Serial1/6
  no ip address
  no ip route-cache
  no ip mroute-cache
  shutdown
!
interface Serial1/7
  no ip address
  no ip route-cache
  no ip mroute-cache
  shutdown
!
interface Serial2/0
  no ip address
  no ip route-cache
  no ip mroute-cache
!
interface Serial2/1
```

```
no ip address
no ip route-cache
no ip mroute-cache
!
interface Serial2/2
no ip address
no ip route-cache
no ip mroute-cache
!
interface Serial2/3
no ip address
no ip route-cache
no ip mroute-cache
!
interface Serial2/4
no ip address
no ip route-cache
no ip mroute-cache
!
interface Serial2/5
no ip address
no ip route-cache
no ip mroute-cache
!
interface Serial2/6
no ip address
no ip route-cache
no ip mroute-cache
!
interface Serial2/7
no ip address
no ip route-cache
no ip mroute-cache
!
interface Ethernet5/0
ip address 10.48.66.44 255.255.255.0
no ip route-cache
no ip mroute-cache
!
interface Ethernet5/1
ip address 193.0.0.2 255.255.255.252
no ip route-cache
no ip mroute-cache
!
interface Ethernet5/2
ip address 193.0.0.6 255.255.255.252
no ip route-cache
no ip mroute-cache
!
interface Ethernet5/3
no ip address
no ip route-cache
no ip mroute-cache
!
interface Hssi9/1/0
no ip address
shutdown
!
ip classless
no ip http server
ip pim bidir-enable
!
!
!
!
line con 0
```

```
line aux 0
line vty 0 4
  password ww
  login
!
end
```

Verify

This section provides information you can use to confirm your configuration is working properly.

Certain **show** commands are supported by the Output Interpreter Tool (registered customers only) , which allows you to view an analysis of **show** command output.

show Command Output

show Command Output for snow

```
snow# show version
```

```
Cisco PIX Firewall Version 6.2(2)
```

```
Compiled on Tue 11-Sep-01 07:45 by morlee
```

```
snow up 11 mins 19 secs
```

```
Hardware: PIX-525, 256 MB RAM, CPU Pentium III 600 MHz
Flash E28F128J3 @ 0x300, 16MB
BIOS Flash AM29F400B @ 0xffffd8000, 32KB
```

```
0: ethernet0: address is 0002.b945.9ff1, irq 10
1: ethernet1: address is 0002.b945.9ff2, irq 11
2: ethernet2: address is 00e0.b602.236f, irq 11
3: ethernet3: address is 00e0.b602.236e, irq 10
4: ethernet4: address is 00e0.b602.236d, irq 9
5: ethernet5: address is 00e0.b602.236c, irq 5
```

```
Licensed Features:
```

```
Failover: Enabled
VPN-DES: Enabled
VPN-3DES: Disabled
Maximum Interfaces: 8
Cut-through Proxy: Enabled
Guards: Enabled
Websense: Enabled
Inside Hosts: Unlimited
Throughput: Unlimited
ISAKMP peers: Unlimited
```

```
Serial Number: 480380577 (0xlca206a1)
```

```
Activation Key: 0x9c2c232e 0xaad98633 0x3667falb 0x76404050
```

```
snow#
```

```
snow(config)# show route
```

```
outside 0.0.0.0 0.0.0.0 193.0.0.2 1 OTHER static
inside 10.0.0.0 255.255.255.0 10.0.0.1 1 CONNECT static
intf2 10.48.66.156 255.255.255.255 193.0.0.6 1 OTHER static
intf2 11.0.0.0 255.255.255.0 193.0.0.6 1 OTHER static
intf3 127.0.0.1 255.255.255.255 127.0.0.1 1 CONNECT static
outside 193.0.0.0 255.255.255.252 193.0.0.1 1 CONNECT static
intf2 193.0.0.4 255.255.255.252 193.0.0.5 1 CONNECT static
```

```
snow(config)# show access-list
access-list acl-out permit icmp any any (hitcnt=0)
access-list acl-intf2 permit icmp any any (hitcnt=0)
access-list vpn-intf2 permit ip 10.0.0.0 255.255.255.0
    11.0.0.0 255.255.255.0 (hitcnt=12)
access-list vpn-intf2 permit ip 12.0.0.0 255.255.255.0
    11.0.0.0 255.255.255.0 (hitcnt=34)
access-list no-nat-inside permit ip 10.0.0.0 255.255.255.0
    11.0.0.0 255.255.255.0 (hitcnt=18)
access-list no-nat-inside permit ip 10.0.0.0 255.255.255.0
    12.0.0.0 255.255.255.0 (hitcnt=32)
access-list no-nat-intf2 permit ip 11.0.0.0 255.255.255.0
    12.0.0.0 255.255.255.0 (hitcnt=50)
access-list dynacl6 permit ip host 193.0.0.1 host 12.0.0.1 (hitcnt=0)
access-list dynacl7 permit ip any host 12.0.0.1 (hitcnt=6)
```

```
snow(config)# show crypto isa sa
```

```
Total      : 2
Embryonic   : 0
```

dst	src	state	pending	created
10.48.66.156	193.0.0.5	QM_IDLE	0	1
193.0.0.1	10.48.66.76	QM_IDLE	0	2

```
snow(config)# show crypto ipsec sa
```

```
interface: intf2
```

```
  Crypto map tag: vpn-intf2, local addr. 193.0.0.5
```

```
local ident (addr/mask/prot/port): (10.0.0.0/255.255.255.0/0/0)
```

```
remote ident (addr/mask/prot/port): (11.0.0.0/255.255.255.0/0/0)
```

```
current_peer: 10.48.66.156
```

```
  PERMIT, flags={origin_is_acl,}
```

```
  #pkts encaps: 0, #pkts encrypt: 0, #pkts digest 0
```

```
  #pkts decaps: 0, #pkts decrypt: 0, #pkts verify 0
```

```
  #pkts compressed: 0, #pkts decompressed: 0
```

```
  #pkts not compressed: 0, #pkts compr. failed: 0,
```

```
    #pkts decompress failed: 0
```

```
  #send errors 0, #recv errors 0
```

```
local crypto endpt.: 193.0.0.5, remote crypto endpt.: 10.48.66.156
```

```
path mtu 1500, ipsec overhead 0, media mtu 1500
```

```
current outbound spi: 0
```

```
inbound esp sas:
```

```
inbound ah sas:
```

```
inbound pcp sas:
```

```
outbound esp sas:
```

```
outbound ah sas:
```

```
outbound pcp sas:
```

```
local ident (addr/mask/prot/port): (12.0.0.0/255.255.255.0/0/0)
remote ident (addr/mask/prot/port): (11.0.0.0/255.255.255.0/0/0)
current_peer: 10.48.66.156
  PERMIT, flags={origin_is_acl,}
#pkts encaps: 6, #pkts encrypt: 6, #pkts digest 6
#pkts decaps: 6, #pkts decrypt: 6, #pkts verify 6
#pkts compressed: 0, #pkts decompressed: 0
#pkts not compressed: 0, #pkts compr. failed: 0,
  #pkts decompress failed: 0
#send errors 2, #recv errors 0

local crypto endpt.: 193.0.0.5, remote crypto endpt.: 10.48.66.156
path mtu 1500, ipsec overhead 56, media mtu 1500
current outbound spi: 8312e721
```

```
inbound esp sas:
  spi: 0x661d4fad(1713196973)
  transform: esp-des esp-sha-hmac ,
  in use settings = {Tunnel, }
  slot: 0, conn id: 1, crypto map: vpn-intf2
  sa timing: remaining key lifetime (k/sec): (4607999/27978)
  IV size: 8 bytes
  replay detection support: Y
```

```
inbound ah sas:
```

```
inbound pcp sas:
```

```
outbound esp sas:
  spi: 0x8312e721(2199054113)
  transform: esp-des esp-sha-hmac ,
  in use settings = {Tunnel, }
  slot: 0, conn id: 2, crypto map: vpn-intf2
  sa timing: remaining key lifetime (k/sec): (4607999/27978)
  IV size: 8 bytes
  replay detection support: Y
```

```
outbound ah sas:
```

```
outbound pcp sas:
```

```
interface: outside
```

```
  Crypto map tag: toOUT, local addr. 193.0.0.1
```

```
local ident (addr/mask/prot/port): (0.0.0.0/0.0.0.0/0/0)
remote ident (addr/mask/prot/port): (12.0.0.1/255.255.255.255/0/0)
current_peer: 10.48.66.76
dynamic allocated peer ip: 12.0.0.1
```

```
  PERMIT, flags={}
#pkts encaps: 6, #pkts encrypt: 6, #pkts digest 6
#pkts decaps: 28, #pkts decrypt: 28, #pkts verify 28
#pkts compressed: 0, #pkts decompressed: 0
#pkts not compressed: 0, #pkts compr. failed: 0,
  #pkts decompress failed: 0
#send errors 0, #recv errors 0
```

```
local crypto endpt.: 193.0.0.1, remote crypto endpt.: 10.48.66.76
```

path mtu 1500, ipsec overhead 56, media mtu 1500
current outbound spi: 62c47dd7

inbound esp sas:

spi: 0x331a3e87(857357959)
transform: esp-des esp-md5-hmac ,
in use settings ={Tunnel, }
slot: 0, conn id: 7, crypto map: toOUT
sa timing: remaining key lifetime (k/sec): (4607996/27359)
IV size: 8 bytes
replay detection support: Y

inbound ah sas:

inbound pcp sas:

outbound esp sas:

spi: 0x62c47dd7(1657044439)
transform: esp-des esp-md5-hmac ,
in use settings ={Tunnel, }
slot: 0, conn id: 8, crypto map: toOUT
sa timing: remaining key lifetime (k/sec): (4607999/27359)
IV size: 8 bytes
replay detection support: Y

outbound ah sas:

outbound pcp sas:

local ident (addr/mask/prot/port): (193.0.0.1/255.255.255.255/0/0)
remote ident (addr/mask/prot/port): (12.0.0.1/255.255.255.255/0/0)
current_peer: 10.48.66.76
dynamic allocated peer ip: 12.0.0.1

PERMIT, flags={}
#pkts encaps: 0, #pkts encrypt: 0, #pkts digest 0
#pkts decaps: 0, #pkts decrypt: 0, #pkts verify 0
#pkts compressed: 0, #pkts decompressed: 0
#pkts not compressed: 0, #pkts compr. failed: 0,
#pkts decompress failed: 0
#send errors 0, #recv errors 0

local crypto endpt.: 193.0.0.1, remote crypto endpt.: 10.48.66.76
path mtu 1500, ipsec overhead 56, media mtu 1500
current outbound spi: 4e13c751

inbound esp sas:

spi: 0x4f3e0026(1329463334)
transform: esp-des esp-md5-hmac ,
in use settings ={Tunnel, }
slot: 0, conn id: 3, crypto map: toOUT
sa timing: remaining key lifetime (k/sec): (4608000/27972)
IV size: 8 bytes
replay detection support: Y

inbound ah sas:

inbound pcp sas:

outbound esp sas:

```
spi: 0x4e13c751(1309919057)
  transform: esp-des esp-md5-hmac ,
  in use settings ={Tunnel, }
  slot: 0, conn id: 4, crypto map: toOUT
  sa timing: remaining key lifetime (k/sec): (4608000/27963)
  IV size: 8 bytes
  replay detection support: Y
```

outbound ah sas:

outbound pcp sas:

show Command Output for rain

rain# **show version**

Cisco PIX Firewall Version 6.2(2)

Compiled on Tue 11-Sep-01 07:45 by morlee

rain up 2 hours 23 mins

Hardware: PIX-525, 256 MB RAM, CPU Pentium III 600 MHz
Flash E28F128J3 @ 0x300, 16MB
BIOS Flash AM29F400B @ 0xffffd8000, 32KB

```
0: ethernet0: address is 0002.b945.a001, irq 10
1: ethernet1: address is 0002.b945.a002, irq 11
2: ethernet2: address is 00e0.b602.4797, irq 11
3: ethernet3: address is 00e0.b602.4796, irq 10
4: ethernet4: address is 00e0.b602.4795, irq 9
5: ethernet5: address is 00e0.b602.4794, irq 5
```

Licensed Features:

```
Failover:      Enabled
VPN-DES:      Enabled
VPN-3DES:     Enabled
Maximum Interfaces: 8
Cut-through Proxy: Enabled
Guards:      Enabled
Websense:    Enabled
Inside Hosts: Unlimited
Throughput:  Unlimited
ISAKMP peers: Unlimited
```

Serial Number: 480380580 (0x1ca206a4)

Activation Key: 0x3a08e996 0x3d4a15af 0x604a1272 0xd8fbe3b8

rain# **show route**

```
outside 10.0.0.0 255.255.255.0 193.0.0.5 1 OTHER static
outside 10.48.66.0 255.255.255.0 10.48.66.156 1 CONNECT static
inside 11.0.0.0 255.255.255.0 11.0.0.1 1 CONNECT static
outside 12.0.0.0 255.255.255.0 193.0.0.5 1 OTHER static
outside 193.0.0.0 255.255.255.0 10.48.66.44 1 OTHER static
```

rain# **show crypto isa sa**

```
Total      : 2
Embryonic  : 0
```

dst	src	state	pending	created
10.48.66.156	193.0.0.5	QM_IDLE	0	1
193.0.0.5	10.48.66.156	QM_IDLE	0	2

rain# show crypto ipsec sa

interface: outside

Crypto map tag: vpn-outside, local addr. 10.48.66.156

local ident (addr/mask/prot/port): (11.0.0.0/255.255.255.0/0/0)

remote ident (addr/mask/prot/port): (10.0.0.0/255.255.255.0/0/0)

current_peer: 193.0.0.5

PERMIT, flags={origin_is_acl,}

#pkts encaps: 8, #pkts encrypt: 8, #pkts digest 8

#pkts decaps: 8, #pkts decrypt: 8, #pkts verify 8

#pkts compressed: 0, #pkts decompressed: 0

#pkts not compressed: 0, #pkts compr. failed: 0,

#pkts decompress failed: 0

#send errors 0, #recv errors 0

local crypto endpt.: 10.48.66.156, remote crypto endpt.: 193.0.0.5

path mtu 1500, ipsec overhead 56, media mtu 1500

current outbound spi: 0

inbound esp sas:

inbound ah sas:

inbound pcp sas:

outbound esp sas:

outbound ah sas:

outbound pcp sas:

local ident (addr/mask/prot/port): (11.0.0.0/255.255.255.0/0/0)

remote ident (addr/mask/prot/port): (12.0.0.0/255.255.255.0/0/0)

current_peer: 193.0.0.5

PERMIT, flags={origin_is_acl,}

#pkts encaps: 22, #pkts encrypt: 22, #pkts digest 22

#pkts decaps: 22, #pkts decrypt: 22, #pkts verify 22

#pkts compressed: 0, #pkts decompressed: 0

#pkts not compressed: 0, #pkts compr. failed: 0,

#pkts decompress failed: 0

#send errors 0, #recv errors 0

local crypto endpt.: 10.48.66.156, remote crypto endpt.: 193.0.0.5

path mtu 1500, ipsec overhead 56, media mtu 1500

current outbound spi: 661d4fad

inbound esp sas:

spi: 0x8312e721(2199054113)

transform: esp-des esp-sha-hmac ,

in use settings ={Tunnel, }

slot: 0, conn id: 1, crypto map: vpn-outside

sa timing: remaining key lifetime (k/sec): (4607999/27529)

IV size: 8 bytes

```
replay detection support: Y

inbound ah sas:

inbound pcp sas:

outbound esp sas:
  spi: 0x661d4fad(1713196973)
  transform: esp-des esp-sha-hmac ,
  in use settings ={Tunnel, }
  slot: 0, conn id: 2, crypto map: vpn-outside
  sa timing: remaining key lifetime (k/sec): (4607999/27529)
  IV size: 8 bytes
  replay detection support: Y

outbound ah sas:

outbound pcp sas:
```

show Command Output for carrion

```
carrion# show version
Cisco Internetwork Operating System Software
IOS (tm) RSP Software (RSP-JK903SV-M), Version 12.2(6),
  RELEASE SOFTWARE (fc2)
Copyright (c) 1986-2001 by cisco Systems, Inc.
Compiled Wed 07-Nov-01 21:44 by pwade
Image text-base: 0x600109C8, data-base: 0x61B42000

ROM: System Bootstrap, Version 11.1(2) [nitin 2],
  RELEASE SOFTWARE (fc1)
BOOTLDR: RSP Software (RSP-BOOT-M), Version 12.2(6),
  RELEASE SOFTWARE (fc2)

carrion uptime is 2 weeks, 3 days, 22 hours, 32 minutes
System returned to ROM by reload at 12:27:14 UTC Wed Oct 10 2001
System image file is "slot0:rsp-jk9o3sv-mz.122-6.bin"

cisco RSP2 (R4700) processor with 131072K/2072K bytes of memory.
R4700 CPU at 100Mhz, Implementation 33, Rev 1.0
Last reset from power-on
G.703/E1 software, Version 1.0.
G.703/JT2 software, Version 1.0.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
Bridging software.
TN3270 Emulation software.
Chassis Interface.
1 EIP controller (4 Ethernet).
3 FSIP controllers (24 Serial).
1 VIP2 controller (1 HSSI).
4 Ethernet/IEEE 802.3 interface(s)
24 Serial network interface(s)
1 HSSI network interface(s)
123K bytes of non-volatile configuration memory.

20480K bytes of Flash PCMCIA card at slot 0 (Sector size 128K).
8192K bytes of Flash internal SIMM (Sector size 256K).
No slave installed in slot 7.
Configuration register is 0x2002
```

Troubleshoot

This section provides information you can use to troubleshoot your configuration.

debug Command Output

Note: Before issuing **debug** commands, please see Important Information on **Debug** Commands.

debug Command Output for snow

```
snow# show debug
debug crypto ipsec 1
debug crypto isakmp 1
debug crypto engine
debug icmp trace
debug fover status
    tx      Off
    rx      Off
    open    Off
    cable   Off
    txdmp   Off
    rxdmp   Off
    ifc     Off
    rxip    Off
    txip    Off
    get     Off
    put     Off
    verify  Off
    switch  Off
    fail    Off
    fmsg    Off
snow# no debug icmp trace
ICMP trace off
snow#
snow#
snow#
snow#
snow# configure terminal
    ! the      client is connecting !!!!!!!!!!!!!!!
Type help or '?' for a list of available commands.
snow#
crypto_isakmp_process_block: src 10.48.66.76, dest 193.0.0.1
VPN Peer: ISAKMP: Added new peer: ip:10.48.66.76 Total VPN Peers:1
VPN Peer: ISAKMP: Peer ip:10.48.66.76
    Ref cnt incremented to:1 Total VPN Peers:1
OAK_AG exchange
ISAKMP (0): processing SA payload. message ID = 0

ISAKMP (0): Checking ISAKMP transform 1 against priority 10 policy
ISAKMP:      encryption 3DES-CBC
ISAKMP:      hash SHA
ISAKMP:      default group 2
ISAKMP:      extended auth pre-share
ISAKMP:      life type in seconds
ISAKMP:      life duration (VPI) of  0x0 0x20 0xc4 0x9b
ISAKMP (0): atts are not acceptable. Next payload is 3
ISAKMP (0): Checking ISAKMP transform 2 against priority 10 policy
ISAKMP:      encryption 3DES-CBC
ISAKMP:      hash MD5
ISAKMP:      default group 2
ISAKMP:      extended auth pre-share
ISAKMP:      life type in seconds
ISAKMP:      life duration (VPI) of  0x0 0x20 0xc4 0x9b
```

```
ISAKMP (0): atts are not acceptable. Next payload is 3
ISAKMP (0): Checking ISAKMP transform 3 against priority 10 policy
ISAKMP: encryption 3DES-CBC
ISAKMP: hash SHA
ISAKMP: default group 2
ISAKMP: auth pre-share
ISAKMP: life type in seconds
ISAKMP: life duration (VPI) of 0x0 0x20 0xc4 0x9b
ISAKMP (0): atts are not acceptable. Next payload is 3
ISAKMP (0): Checking ISAKMP transform 4 against priority 10 policy
ISAKMP: encryption 3DES-CBC
ISAKMP: hash MD5
ISAKMP: default group 2
ISAKMP: auth pre-share
ISAKMP: life type in seconds
ISAKMP: life duration (VPI) of 0x0 0x20 0xc4 0x9b
ISAKMP (0): atts are not acceptable. Next payload is 3
ISAKMP (0): Checking ISAKMP transform 5 against priority 10 policy
ISAKMP: encryption DES-CBC
ISAKMP: hash SHA
ISAKMP: default group 2
ISAKMP: extended auth pre-share
ISAKMP: life type in seconds
ISAKMP: life duration (VPI) of 0x0 0x20 0xc4 0x9b
ISAKMP (0): atts are not acceptable. Next payload is 3
ISAKMP (0): Checking ISAKMP transform 6 against priority 10 policy
ISAKMP: encryption DES-CBC
ISAKMP: hash MD5
ISAKMP: default group 2
ISAKMP: extended auth pre-share
ISAKMP: life type in seconds
ISAKMP: life duration (VPI) of 0x0 0x20 0xc4 0x9b
ISAKMP (0): atts are not acceptable. Next payload is 3
ISAKMP (0): Checking ISAKMP transform 7 against priority 10 policy
ISAKMP: encryption DES-CBC
ISAKMP: hash SHA
ISAKMP: default group 2
ISAKMP: auth pre-share
ISAKMP: life type in seconds
ISAKMP: life duration (VPI) of 0x0 0x20 0xc4 0x9b
ISAKMP (0): atts are acceptable. Next payload is 3
ISAKMP (0): processing KE payload. message ID = 0

ISAKMP (0): processing NONCE payload. message ID = 0

ISAKMP (0): processing ID payload. message ID = 0
ISAKMP (0): processing vendor id payload

ISAKMP (0): processing vendor id payload

ISAKMP (0): remote peer supports dead peer detection

ISAKMP (0): processing vendor id payload

ISAKMP (0): speaking to a Unity client

ISAKMP: Created a peer node for 10.48.66.76
ISAKMP (0): ID payload
    next-payload : 10
    type          : 1
    protocol      : 17
    port         : 500
    length       : 8
ISAKMP (0): Total payload length: 12
return status is IKMP_NO_ERROR
crypto_isakmp_process_block: src 10.48.66.76, dest 193.0.0.1
```

```
OAK_AG exchange
ISAKMP (0): processing HASH payload. message ID = 0
ISAKMP (0): processing NOTIFY payload 24578 protocol 1
      spi 0, message ID = 0
ISAKMP (0): processing notify INITIAL_CONTACTIPSEC(key_engine):
      got a queue event...
IPSEC(key_engine_delete_sas): rec'd delete notify from ISAKMP
IPSEC(key_engine_delete_sas): delete all SAs shared with 10.48.66.76

ISAKMP (0): SA has been authenticated
return status is IKMP_NO_ERROR
crypto_isakmp_process_block: src 10.48.66.76, dest 193.0.0.1
ISAKMP_TRANSACTION exchange
ISAKMP (0:0): processing transaction payload from 10.48.66.76.
      message ID = 0
ISAKMP: Config payload CFG_REQUEST
ISAKMP (0:0): checking request:
ISAKMP: attribute      IP4_ADDRESS (1)
ISAKMP: attribute      IP4_NETMASK (2)
ISAKMP: attribute      IP4_DNS (3)
ISAKMP: attribute      IP4_NBNS (4)
ISAKMP: attribute      ADDRESS_EXPIRY (5)
      Unsupported Attr: 5
ISAKMP: attribute      APPLICATION_VERSION (7)
      Unsupported Attr: 7
ISAKMP: attribute      UNKNOWN (28672)
      Unsupported Attr: 28672
ISAKMP: attribute      UNKNOWN (28673)
      Unsupported Attr: 28673
ISAKMP: attribute      UNKNOWN (28674)
ISAKMP: attribute      UNKNOWN (28676)
ISAKMP: attribute      UNKNOWN (28679)
      Unsupported Attr: 28679
ISAKMP: attribute      UNKNOWN (28680)
      Unsupported Attr: 28680
ISAKMP: attribute      UNKNOWN (28677)
      Unsupported Attr: 28677
ISAKMP (0:0): responding to peer config from 10.48.66.76.
      ID = 1245965288
return status is IKMP_NO_ERROR
crypto_isakmp_process_block: src 10.48.66.76, dest 193.0.0.1
OAK_QM exchange
oakley_process_quick_mode:
OAK_QM_IDLE
ISAKMP (0): processing SA payload. message ID = 2141307752

ISAKMP : Checking IPsec proposal 1

ISAKMP: transform 1, ESP_3DES
ISAKMP:   attributes in transform:
ISAKMP:     authenticator is HMAC-MD5
ISAKMP:     encaps is 1
ISAKMP:     SA life type in seconds
ISAKMP:     SA life duration (VPI) of
      0x0 0x20 0xc4 0x9b IPSEC(validate_proposal): transform proposal
      (prot 3, trans 3, hmac_alg 1) not supported

ISAKMP (0): atts not acceptable. Next payload is 0
ISAKMP (0): skipping next ANDED proposal (1)
ISAKMP : Checking IPsec proposal 2

ISAKMP: transform 1, ESP_3DES
ISAKMP:   attributes in transform:
ISAKMP:     authenticator is HMAC-SHA
ISAKMP:     encaps is 1
ISAKMP:     SA life type in seconds
```

```
ISAKMP:      SA life duration (VPI) of
             0x0 0x20 0xc4 0x9b IPSEC(validate_proposal): transform proposal
             (prot 3, trans 3, hmac_alg 2) not supported

ISAKMP (0): atts not acceptable. Next payload is 0
ISAKMP (0): skipping next ANDED proposal (2)
ISAKMP : Checking IPsec proposal 3

ISAKMP: transform 1, ESP_3DES
ISAKMP:  attributes in transform:
ISAKMP:      authenticator is HMAC-MD5
ISAKMP:      encaps is 1
ISAKMP:      SA life type in seconds
ISAKMP:      SA life duration (VPI) of
             0x0 0x20 0xc4 0x9b IPSEC(validate_proposal): transform proposal
             (prot 3, trans 3, hmac_alg 1) not supported

ISAKMP (0): atts not acceptable. Next payload is 0
ISAKMP : Checking IPsec proposal 4

ISAKMP: transform 1, ESP_3DES
ISAKMP:  attributes in transform:
ISAKMP:      authenticator is HMAC-SHA
ISAKMP:      encaps is 1
ISAKMP:      SA life type in seconds
ISAKMP:      SA life duration (VPI) of
             0x0 0x20 0xc4 0x9b IPSEC(validate_proposal): transform proposal
             (prot 3, trans 3, hmac_alg 2) not supported

ISAKMP (0): atts not acceptable. Next payload is 0
ISAKMP : Checking IPsec proposal 5

ISAKMP: transform 1, ESP_DES
ISAKMP:  attributes in transform:
ISAKMP:      authenticator is HMAC-MD5
ISAKMP:      encaps is 1
ISAKMP:      SA life type in seconds
ISAKMP:      SA life duration (VPI) of  0x0 0x20 0xc4 0x9b
ISAKMP (0): atts are acceptable.
ISAKMP (0): bad SPI size of 2 octets!
ISAKMP : Checking IPsec proposal 6

ISAKMP: transform 1, ESP_DES
ISAKMP:  attributes in transform:
ISAKMP:      authenticator is HMAC-SHA
ISAKMP:      encaps is 1
ISAKMP:      SA life type in seconds
ISAKMP:      SA life duration (VPI) of
             0x0 0x20 0xc4 0x9b IPSEC(validate_proposal): transform proposal
             (prot 3, trans 2, hmac_alg 2) not supported

ISAKMP (0): atts not acceptable. Next payload is 0
ISAKMP (0): skipping next ANDED proposal (6)
ISAKMP : Checking IPsec proposal 7

ISAKMP: transform 1, ESP_DES
ISAKMP:  attributes in transform:
ISAKMP:      authenticator is HMAC-MD5
ISAKMP:      encaps is 1
ISAKMP:      SA life type in seconds
ISAKMP:      SA life duration (VPI) of  0x0 0x20 0xc4 0x9b
ISAKMP (0): atts are acceptable.IPSEC(validate_proposal_request):
             proposal part #1,
             (key eng. msg.) dest= 193.0.0.1, src= 10.48.66.76,
             dest_proxy= 193.0.0.1/255.255.255.255/0/0 (type=1),
             src_proxy= 12.0.0.1/255.255.255.255/0/0 (type=1),
```

```
    protocol= ESP, transform= esp-des esp-md5-hmac ,
    lifedur= 0s and 0kb,
    spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x4

ISAKMP (0): processing NONCE payload. message ID = 2141307752

ISAKMP (0): processing ID payload. message ID = 2141307752
ISAKMP (0): ID_IPV4_ADDR src 12.0.0.1 prot 0 port 0
ISAKMP (0): processing ID payload. message ID = 2141307752
ISAKMP (0): ID_IPV4_ADDR dst 193.0.0.1 prot 0 port 0 IPSEC(key_engine):
    got a queue event...
IPSEC(spi_response): getting spi 0x4f3e0026(1329463334) for SA
    from      10.48.66.76 to      193.0.0.1 for prot 3

return status is IKMP_NO_ERROR
crypto_isakmp_process_block: src 10.48.66.76, dest 193.0.0.1
OAK_QM exchange
oakley_process_quick_mode:
OAK_QM_IDLE
ISAKMP (0): processing SA payload. message ID = 2151626816

ISAKMP : Checking IPsec proposal 1

ISAKMP: transform 1, ESP_3DES
ISAKMP:  attributes in transform:
ISAKMP:      authenticator is HMAC-MD5
crypto_isakmp_process_block: src 10.48.66.76, dest 193.0.0.1
OAK_QM exchange
oakley_process_quick_mode:
OAK_QM_AUTH_AWAITmap_alloc_entry: allocating entry 3
map_alloc_entry: allocating entry 4

ISAKMP (0): Creating IPsec SAs
    inbound SA from      10.48.66.76 to      193.0.0.1 (proxy
        12.0.0.1 to      193.0.0.1)
    has spi 1329463334 and conn_id 3 and flags 4
    lifetime of 2147483 seconds
    outbound SA from      193.0.0.1 to      10.48.66.76 (proxy
        193.0.0.1 to      12.0.0.1)
    has spi 1309919057 and conn_id 4 and flags 4
    lifetime of 2147483 secondsIPSEC(key_engine): got a queue event...
IPSEC(initialize_sas): ,
    (key eng. msg.) dest= 193.0.0.1, src= 10.48.66.76,
    dest_proxy= 193.0.0.1/0.0.0.0/0/0 (type=1),
    src_proxy= 12.0.0.1/0.0.0.0/0/0 (type=1),
    protocol= ESP, transform= esp-des esp-md5-hmac ,
    lifedur= 2147483s and 0kb,
    spi= 0x4f3e0026(1329463334), conn_id= 3, keysize= 0, flags= 0x4
IPSEC(initialize_sas): ,
    (key eng. msg.) src= 193.0.0.1, dest= 10.48.66.76,
    src_proxy= 193.0.0.1/0.0.0.0/0/0 (type=1),
    dest_proxy= 12.0.0.1/0.0.0.0/0/0 (type=1),
    protocol= ESP, transform= esp-des esp-md5-hmac ,
    lifedur= 2147483s and 0kb,
    spi= 0x4e13c751(1309919057), conn_id= 4, keysize= 0, flags= 0x4

VPN Peer: IPSEC: Peer ip:10.48.66.76 Ref cnt
    incremented to:2 Total VPN Peers:1
VPN Peer: IPSEC: Peer ip:10.48.66.76 Ref cnt
    incremented to:3 Total VPN Peers:1
return status is IKMP_NO_ERROR
crypto_isakmp_process_block: src 10.48.66.76, dest 193.0.0.1
OAK_QM exchange
oakley_process_quick_mode:
OAK_QM_AUTH_AWAITmap_alloc_entry: allocating entry 7
map_alloc_entry: allocating entry 8
```

```
ISAKMP (0): Creating IPsec SAs
  inbound SA from 10.48.66.76 to 193.0.0.1 (proxy
                    12.0.0.1 to 0.0.0.0)
  has spi 857357959 and conn_id 7 and flags 4
  lifetime of 2147483 seconds
  outbound SA from 193.0.0.1 to 10.48.66.76 (proxy
                    0.0.0.0 to 12.0.0.1)
  has spi 1657044439 and conn_id 8 and flags 4
  lifetime of 2147483 secondsIPSEC(key_engine): got a queue event...
IPSEC(initialize_sas): ,
  (key eng. msg.) dest= 193.0.0.1, src= 10.48.66.76,
  dest_proxy= 0.0.0.0/0.0.0.0/0/0 (type=4),
  src_proxy= 12.0.0.1/0.0.0.0/0/0 (type=1),
  protocol= ESP, transform= esp-des esp-md5-hmac ,
  lifedur= 2147483s and 0kb,
  spi= 0x331a3e87(857357959), conn_id= 7, keysize= 0, flags= 0x4
IPSEC(initialize_sas): ,
  (key eng. msg.) src= 193.0.0.1, dest= 10.48.66.76,
  src_proxy= 0.0.0.0/0.0.0.0/0/0 (type=4),
  dest_proxy= 12.0.0.1/0.0.0.0/0/0 (type=1),
  protocol= ESP, transform= esp-des esp-md5-hmac ,
  lifedur= 2147483s and 0kb,
  spi= 0x62c47dd7(1657044439), conn_id= 8, keysize= 0, flags= 0x4

VPN Peer: IPSEC: Peer ip:10.48.66.76 Ref cnt incremented to:4 Total VPN Peers:1
VPN Peer: IPSEC: Peer ip:10.48.66.76 Ref cnt incremented to:5 Total VPN Peers:1
return status is IKMP_NO_ERROR602301: sa created, (sa) sa_dest= 193.0.0.1,
  sa_prot= 50, sa_spi= 0x4f3e0026(1329463334),
  sa_trans= esp-des esp-md5-hmac , sa_conn_id= 3

602301: sa created, (sa) sa_dest= 10.48.66.76, sa_prot= 50,
  sa_spi= 0x4e13c751(1309919057), sa_trans= esp-des esp-md5-hmac ,
  sa_conn_id= 4

602301: sa created, (sa) sa_dest= 193.0.0.1, sa_prot= 50,
  sa_spi= 0x331a3e87(857357959), sa_trans= esp-des esp-md5-hmac ,
  sa_conn_id= 7

602301: sa created, (sa) sa_dest= 10.48.66.76, sa_prot= 50,
  sa_spi= 0x62c47dd7(1657044439), sa_trans= esp-des esp-md5-hmac ,
  sa_conn_id= 8

ISADB: reaper checking SA 0x81153ac0, conn_id = 0
snow#
snow#
snow#
snow# 302010: 0 in use, 0 most used

snow#
snow#
snow#
snow#
snow# ! client will now ping 11.0.0.2
Type help or '?' for a list of available commands.
snow# 6
VPN Peer: ISAKMP: Added new peer: ip:10.48.66.156 Total VPN Peers:2
VPN Peer: ISAKMP: Peer ip:10.48.66.156
  Ref cnt incremented to:1 Total VPN Peers:2
ISAKMP (0): beginning Main Mode exchange09001:
  Built local-host intf2:11.0.0.

crypto_isakmp_process_block: src 10.48.66.156, dest 193.0.0.5
OAK_MM exchange
ISAKMP (0): processing SA payload. message ID = 0
```

```
ISAKMP (0): Checking ISAKMP transform 1 against priority 10 policy
ISAKMP:      encryption DES-CBC
ISAKMP:      hash SHA
ISAKMP:      default group 2
ISAKMP:      auth pre-share
ISAKMP:      life type in seconds
ISAKMP:      life duration (VPI) of  0x0 0x1 0x51 0x80
ISAKMP (0): atts are acceptable. Next payload is 0
ISAKMP (0): SA is doing pre-shared key authentication
      using id type ID_IPV4_ADDR
return status is IKMP_NO_ERROR2
702303: sa_request, (key eng. msg.
crypto_isakmp_process_block: src 10.48.66.156, dest 193.0.0.5
OAK_MM exchange
ISAKMP (0): processing KE payload. message ID = 0

ISAKMP (0): processing NONCE payload. message ID = 0

ISAKMP (0): processing vendor id payload

ISAKMP (0): processing vendor id payload

ISAKMP (0): remote peer supports dead peer detection

ISAKMP (0): processing vendor id payload

ISAKMP (0): speaking to another IOS box!

ISAKMP (0): ID payload
      next-payload : 8
      type          : 1
      protocol      : 17
      port          : 500
      length        : 8
ISAKMP (0): Total payload length: 12
return status is IKMP_NO_ERROR
crypto_isakmp_process_block: src 10.48.66.156, dest 193.0.0.5
OAK_MM exchange
ISAKMP (0): processing ID payload. message ID = 0
ISAKMP (0): processing HASH payload. message ID = 0
ISAKMP (0): SA has been authenticated

ISAKMP (0): beginning Quick Mode exchange,
      M-ID of -931180733:c87f4f43IPSEC(key_engine): got a queue event...
IPSEC(spi_response): getting spi 0x661d4fad(1713196973) for SA
      from 10.48.66.156 to 193.0.0.5 for prot 3

return status is IKMP_NO_ERROR
ISAKMP (0): sending INITIAL_CONTACT notify
crypto_isakmp_process_block: src 10.48.66.156, dest 193.0.0.5
OAK_QM exchange
oakley_process_quick_mode:
OAK_QM_IDLE
ISAKMP (0): processing SA payload. message ID = 3363786563

ISAKMP : Checking IPsec proposal 1

ISAKMP: transform 1, ESP_DES
ISAKMP:      attributes in transform:
ISAKMP:      encaps is 1
ISAKMP:      SA life type in seconds
ISAKMP:      SA life duration (basic) of 28800
ISAKMP:      SA life type in kilobytes
ISAKMP:      SA life duration (VPI) of  0x0 0x46 0x50 0x0
ISAKMP:      authenticator is HMAC-SHA
```

```

ISAKMP (0): atts are acceptable.IPSEC(validate_proposal_request):
  proposal part #1,
  (key eng. msg.) dest= 10.48.66.156, src= 193.0.0.5,
  dest_proxy= 11.0.0.0/255.255.255.0/0/0 (type=4),
  src_proxy= 12.0.0.0/255.255.255.0/0/0 (type=4),
  protocol= ESP, transform= esp-des esp-sha-hmac ,
  lifedur= 0s and 0kb,
  spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x4

ISAKMP (0): processing NONCE payload. message ID = 3363786563

ISAKMP (0): processing ID payload. message ID = 3363786563
ISAKMP (0): processing ID payload.
  message ID = 3363786563map_alloc_entry: allocating entry 1
map_alloc_entry: allocating entry 2

ISAKMP (0): Creating IPsec SAs
  inbound SA from 10.48.66.156 to 193.0.0.5 (proxy
    11.0.0.0 to 12.0.0.0)
  has spi 1713196973 and conn_id 1 and flags 4
  lifetime of 28800 seconds
  lifetime of 4608000 kilobytes
  outbound SA from 193.0.0.5 to 10.48.66.156 (proxy
    12.0.0.0 to 11.0.0.0)
  has spi 2199054113 and conn_id 2 and flags 4
  lifetime of 28800 seconds
  lifetime of 4608000 kilobytesIPSEC(key_engine): got a queue event...
IPSEC(initialize_sas): ,
  (key eng. msg.) dest= 193.0.0.5, src= 10.48.66.156,
  dest_proxy= 12.0.0.0/255.255.255.0/0/0 (type=4),
  src_proxy= 11.0.0.0/255.255.255.0/0/0 (type=4),
  protocol= ESP, transform= esp-des esp-sha-hmac ,
  lifedur= 28800s and 4608000kb,
  spi= 0x661d4fad(1713196973), conn_id= 1, keysize= 0, flags= 0x4
IPSEC(initialize_sas): ,
  (key eng. msg.) src= 193.0.0.5, dest= 10.48.66.156,
  src_proxy= 12.0.0.0/255.255.255.0/0/0 (type=4),
  dest_proxy= 11.0.0.0/255.255.255.0/0/0 (type=4),
  protocol= ESP, transform= esp-des esp-sha-hmac ,
  lifedur= 28800s and 4608000kb,
  spi= 0x8312e721(2199054113), conn_id= 2, keysize= 0, flags= 0x4

VPN Peer: IPSEC: Peer ip:10.48.66.156
  Ref cnt incremented to:2 Total VPN Peers:2
VPN Peer: IPSEC: Peer ip:10.48.66.156
  Ref cnt incremented to:3 Total VPN Peers:2
return status is IKMP_NO_ERROR) src= 193.0.0.5,
  dest= 10.48.66.156, src_proxy= 12.0.0.0/255.255.255.0/0/0 (type=4),
  dest_proxy= 11.0.0.0/255.255.255.0/0/0 (type=4), protocol= ESP,
  transform= esp-des esp-sha-hmac , lifedur= 28800s and 4608000kb,
  spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x4004

602301: sa created, (sa) sa_dest= 193.0.0.5, sa_prot= 50,
  sa_spi= 0x661d4fad(1713196973), sa_trans= esp-des esp-sha-hmac ,
  sa_conn_id= 1

602301: sa created, (sa) sa_dest= 10.48.66.156, sa_prot= 50,
  sa_spi= 0x8312e721(2199054113), sa_trans= esp-des esp-sha-hmac ,
  sa_conn_id= 2

```

debug Command Output for rain

```

rain# ! client will now ping 11.0.0.2
Type help or '?' for a list of available commands.
rain# sh debug
debug crypto ipsec 1

```

```
debug crypto isakmp 1
debug crypto engine
debug fover status
    tx      Off
    rx      Off
    open    Off
    cable   Off
    txdmp   Off
    rxdmp   Off
    ifc     Off
    rxip    Off
    txip    Off
    get     Off
    put     Off
    verify  Off
    switch  Off
    fail    Off
    fmsg    Off
rain#

crypto_isakmp_process_block: src 193.0.0.5, dest 10.48.66.156
VPN Peer: ISAKMP: Peer ip:193.0.0.5
    Ref cnt incremented to:2 Total VPN Peers:1
OAK_MM exchange
ISAKMP (0): processing SA payload. message ID = 0

ISAKMP (0): Checking ISAKMP transform 1 against priority 10 policy
ISAKMP:      encryption DES-CBC
ISAKMP:      hash SHA
ISAKMP:      default group 2
ISAKMP:      auth pre-share
ISAKMP (0): atts are acceptable. Next payload is 0
ISAKMP (0): SA is doing pre-shared key authentication using id type ID_FQDN
return status is IKMP_NO_ERROR
crypto_isakmp_process_block: src 193.0.0.5, dest 10.48.66.156
OAK_MM exchange
ISAKMP (0): processing KE payload. message ID = 0

ISAKMP (0): processing NONCE payload. message ID = 0

ISAKMP (0): processing vendor id payload

ISAKMP (0): processing vendor id payload

ISAKMP (0): remote peer supports dead peer detection

ISAKMP (0): processing vendor id payload

ISAKMP (0): speaking to another IOS box!

return status is IKMP_NO_ERROR
crypto_isakmp_process_block: src 193.0.0.5, dest 10.48.66.156
OAK_MM exchange
ISAKMP (0): processing ID payload. message ID = 0
ISAKMP (0): processing HASH payload. message ID = 0
ISAKMP (0): SA has been authenticated

ISAKMP (0): ID payload
    next-payload : 8
    type         : 2
    protocol     : 17
    port         : 500
    length       : 9
ISAKMP (0): Total payload length: 13
return status is IKMP_NO_ERROR
crypto_isakmp_process_block: src 193.0.0.5, dest 10.48.66.156
```

```
OAK_QM exchange
oakley_process_quick_mode:
OAK_QM_IDLE
ISAKMP (0): processing SA payload. message ID = 3363786563

ISAKMP : Checking IPsec proposal 1

ISAKMP: transform 1, ESP_DES
ISAKMP:  attributes in transform:
ISAKMP:  encaps is 1
ISAKMP:  SA life type in seconds
ISAKMP:  SA life duration (basic) of 28800
ISAKMP:  SA life type in kilobytes
ISAKMP:  SA life duration (VPI) of 0x0 0x46 0x50 0x0
ISAKMP:  authenticator is HMAC-SHA
ISAKMP (0): atts are acceptable.IPSEC(validate_proposal_request):
  proposal part #1,
  (key eng. msg.) dest= 10.48.66.156, src= 193.0.0.5,
  dest_proxy= 11.0.0.0/255.255.255.0/0/0 (type=4),
  src_proxy= 12.0.0.0/255.255.255.0/0/0 (type=4),
  protocol= ESP, transform= esp-des esp-sha-hmac ,
  lifedur= 0s and 0kb,
  spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x4

ISAKMP (0): processing NONCE payload. message ID = 3363786563

ISAKMP (0): processing ID payload. message ID = 3363786563
ISAKMP (0): ID_IPV4_ADDR_SUBNET src 12.0.0.0/255.255.255.0 prot 0 port 0
ISAKMP (0): processing ID payload. message ID = 3363786563
ISAKMP (0): ID_IPV4_ADDR_SUBNET dst 11.0.0.0/255.255.255.0 prot 0 port 0
ISAKMP (0): processing NOTIFY payload 24578 protocol 1
  spi 0, message ID = 3363786563
ISAKMP (0): processing notify INITIAL_CONTACTIPSEC(key_engine):
  got a queue event...
IPSEC(key_engine_delete_sas): rec'd delete notify from ISAKMP
IPSEC(key_engine_delete_sas): delete all SAs shared with 193.0.0.5
IPSEC(key_engine): got a queue event...
IPSEC(spi_response): getting spi 0x8312e721(2199054113) for SA
  from 193.0.0.5 to 10.48.66.156 for prot 3

return status is IKMP_NO_ERROR
crypto_isakmp_process_block: src 193.0.0.5, dest 10.48.66.156
OAK_QM exchange
oakley_process_quick_mode:
OAK_QM_AUTH_AWAITmap_alloc_entry: allocating entry 1
map_alloc_entry: allocating entry 2

ISAKMP (0): Creating IPsec SAs
  inbound SA from 193.0.0.5 to 10.48.66.156 (proxy
  12.0.0.0 to 11.0.0.0)
  has spi 2199054113 and conn_id 1 and flags 4
  lifetime of 28800 seconds
  lifetime of 4608000 kilobytes
  outbound SA from 10.48.66.156 to 193.0.0.5 (proxy
  11.0.0.0 to 12.0.0.0)
  has spi 1713196973 and conn_id 2 and flags 4
  lifetime of 28800 seconds
  lifetime of 4608000 kilobytesIPSEC(key_engine): got a queue event...
IPSEC(initialize_sas): ,
  (key eng. msg.) dest= 10.48.66.156, src= 193.0.0.5,
  dest_proxy= 11.0.0.0/255.255.255.0/0/0 (type=4),
  src_proxy= 12.0.0.0/255.255.255.0/0/0 (type=4),
  protocol= ESP, transform= esp-des esp-sha-hmac ,
  lifedur= 28800s and 4608000kb,
  spi= 0x8312e721(2199054113), conn_id= 1, keysize= 0, flags= 0x4
IPSEC(initialize_sas): ,
```

```
(key eng. msg.) src= 10.48.66.156, dest= 193.0.0.5,  
src_proxy= 11.0.0.0/255.255.255.0/0/0 (type=4),  
dest_proxy= 12.0.0.0/255.255.255.0/0/0 (type=4),  
protocol= ESP, transform= esp-des esp-sha-hmac ,  
lifedur= 28800s and 4608000kb,  
spi= 0x661d4fad(1713196973), conn_id= 2, keysize= 0, flags= 0x4
```

```
VPN Peer: IPSEC: Peer ip:193.0.0.5 Ref cnt incremented to:3 Total VPN Peers:1  
VPN Peer: IPSEC: Peer ip:193.0.0.5 Ref cnt incremented to:4 Total VPN Peers:1  
return status is IKMP_NO_ERROR  
ISADB: reaper checking SA 0x810a9b98, conn_id = 0  
ISADB: reaper checking SA 0x810b9240, conn_id = 0  
rain#
```

Related Information

- [Cisco VPN Client Support Page](#)
- [IPSec Support Page](#)
- [PIX Support Page](#)
- [Documentation for PIX Firewall](#)
- [PIX Command Reference](#)
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