

PIX/ASA 7.x and later : Dynamic IPsec Between a Statically addressed PIX and a Dynamically addressed IOS Router with NAT Configuration Example

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Introduction

This document provides a sample configuration for how to enable the PIX/ASA Security Appliance to accept dynamic IPsec connections from the IOS® router. The remote router performs Network Address Translation (NAT) if private network 10.1.1.x accesses the Internet. Traffic from 10.1.1.x to private network 10.2.2.x behind the PIX Security Appliance is excluded from the NAT process. The IPsec tunnel establishes only if the traffic (10.1.1.x) initiates the connection from the router with the PIX Security Appliance that has a remote network (10.2.2.x). The router can initiate connections to the PIX, but the PIX cannot initiate connections to the router.

This configuration enables the PIX Security Appliance to create a dynamic IPsec LAN-to-LAN (L2L) tunnel with a remote VPN router. This router dynamically receives its outside public IP address from its Internet service provider. Dynamic Host Configuration Protocol (DHCP) provides this mechanism in order to allocate IP addresses dynamically from the provider. This allows IP addresses to be reused when hosts no longer need them.

Refer to [Configuring PIX-to-Router Dynamic-to-Static IPsec With NAT](#) for more information on the scenario where the PIX 6.x accepts dynamic IPsec connections from the router.

Refer to [Router-to-PIX Dynamic-to-Static IPsec with NAT Configuration Example](#) for more information on a scenario where the router accepts dynamic IPsec connections from a PIX Firewall that runs 6.x.

Refer to [IPsec Between a Static PIX/ASA 7.x and a Dynamic IOS Router with NAT Configuration Example](#) in order to learn more about the same scenario where the PIX/ASA Security Appliance runs software version

7.x and later.

Refer to LAN-to-LAN Tunnels on a VPN 3000 Concentrator With a PIX Firewall Configured for DHCP to configure the Cisco VPN 3000 Concentrator Series to create IPsec tunnels dynamically with remote Cisco PIX Firewalls that use DHCP to get IP addresses on their public interfaces.

Refer to IPsec LAN-to-LAN Tunnel on a VPN 3000 Concentrator with a Cisco IOS Router Configured for DHCP Configuration Example to configure the VPN 3000 Concentrator Series in order to create IPsec tunnels dynamically with remote VPN devices that receive dynamic IP addresses on their public interfaces.

Refer to Configuring an IPsec Router Dynamic LAN-to-LAN Peer and VPN Clients for more information on a LAN-to-LAN configuration between two routers in a hub-spoke environment.

Prerequisites

Requirements

Before you attempt this configuration, ensure that both the PIX and router have Internet connectivity for establishing the IPsec tunnel.

This document assumes that you have already assigned the IP addresses on both the public and private interfaces and that you are able to ping the IP address of the remote VPN device.

Components Used

The information in this document is based on these software and hardware versions:

- Cisco 3600 that runs Cisco IOS Software Release 12.4
- PIX 515E Series Security Appliance Software Release 7.x and later

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Related Products

Cisco ASA 5500 series version 7.x runs a similar software version of PIX version 7.x. The configurations in this document are applicable to both product lines.

Conventions

Refer to the Cisco Technical Tips Conventions for more information on document conventions.

Background Information

On the PIX, the **access-list** and **nat 0** commands work together. In this example, when a user on the 10.1.1.0 network goes to the 10.2.2.0 network, the **access-list** is used to permit the 10.1.1.0 network traffic to be encrypted without Network Address Translation (NAT). On the router, the **route-map** and **access-list** commands are used to permit the 10.2.2.0 network traffic to be encrypted without NAT. However, when those same users go anywhere else (like the Internet), they are translated to the outside interface IP address through Port Address Translation (PAT).

Note: Refer to Applying NAT for more information on NAT.

These are the configuration commands required on the PIX Security Appliance in order for traffic *not* to run through PAT over the tunnel, and traffic to the Internet to run through PAT

```
access-list nonat permit ip 10.1.1.0 255.255.255.0 10.2.2.0 255.255.255.0
nat (inside) 0 access-list nonat
nat (inside) 1 10.1.1.0 255.255.255.0 0 0
```

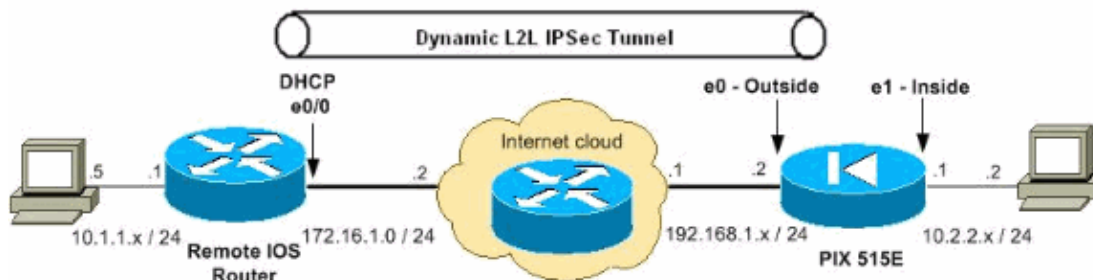
Configure

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

Note: Use the Command Lookup Tool (registered customers only) to obtain more information on the commands used in this section.

Network Diagram

This document uses this network setup:



Configurations

This document uses these configurations:

- Router
- PIX Security Appliance

Router
<pre>Router#show running-config Current configuration : 1354 bytes ! version 12.4 service timestamps debug datetime msec service timestamps log datetime msec no service password-encryption ! hostname Router ! boot-start-marker boot-end-marker ! ! no aaa new-model ! resource policy ! ip cef</pre>

```
!--- Configuration for IKE policies.  
!--- Enables the IKE policy configuration (config-isakmp)  
!--- command mode, where you can specify the parameters that  
!--- are used during an IKE negotiation.
```

```
crypto isakmp policy 1  
  encr 3des  
  hash md5  
  authentication pre-share  
  group 2
```

```
!--- Specifies the preshared key "cisco123" which should  
!--- be identical at both peers. This is a global  
!--- configuration mode command.
```

```
crypto isakmp key cisco123 address 192.168.1.2  
!  
!
```

```
!--- Configuration for IPsec policies.  
!--- Enables the crypto transform configuration mode,  
!--- where you can specify the transform sets that are used  
!--- during an IPsec negotiation.
```

```
crypto ipsec transform-set pix-set esp-3des esp-md5-hmac
```

```
!--- Indicates that IKE is used to establish  
!--- the IPsec Security Association for protecting the  
!--- traffic specified by this crypto map entry.
```

```
crypto map pix 10 ipsec-isakmp
```

```
!--- Sets the IP address of the remote end.
```

```
set peer 192.168.1.2
```

```
!--- Configures IPsec to use the transform-set  
!--- "pix-set" defined earlier in this configuration.
```

```
set transform-set pix-set
```

```
!--- Specifies the interesting traffic to be encrypted.
```

```
match address 101
```

```
!  
!  
!  
!
```

```
interface Ethernet0/0
```

```
!--- The interface dynamically learns its IP address  
!--- from the service provider.
```

```
ip address DHCP
```

```
ip virtual-reassembly  
half-duplex
```

```
!--- Configures the interface to use the  
!--- crypto map "pix" for IPsec.
```

```
crypto map pix
```

```
!  
interface FastEthernet1/0  
no ip address  
shutdown  
duplex auto  
speed auto  
!  
interface Serial2/0  
ip address 10.1.1.2 255.255.255.0  
ip nat inside  
ip virtual-reassembly  
no fair-queue  
!  
interface Serial2/1  
no ip address  
shutdown  
!  
interface Serial2/2  
no ip address  
shutdown  
!  
interface Serial2/3  
no ip address  
shutdown  
!  
ip http server  
no ip http secure-server  
!  
ip route 0.0.0.0 0.0.0.0 Ethernet0/0  
!  
ip nat inside source route-map nonat interface Ethernet0/0 overload  
!
```

```
!--- This crypto ACL 101 -permit identifies the  
!--- matching traffic flows to be protected via encryption.
```

```
access-list 101 permit ip 10.1.1.0 0.0.0.255 10.2.2.0 0.0.0.255
```

```
!--- This ACL 110 identifies the traffic flows using route map and  
!--- are PATed via outside interface (Ethernet0/0).
```

```
access-list 110 deny ip 10.1.1.0 0.0.0.255 10.2.2.0 0.0.0.255  
access-list 110 permit ip 10.1.1.0 0.0.0.255 any
```

```
!  
route-map nonat permit 10  
match ip address 110  
!  
!  
control-plane  
!
```

```
!  
line con 0  
line aux 0  
line vty 0 4  
!  
!  
end
```

PIX 7.X

```
pixfirewall#show running-config  
PIX Version 7.2(1)  
!  
hostname pixfirewall  
enable password 8Ry2YjIyt7RRXU24 encrypted  
names  
!  
!--- Configure the outside and inside interfaces.  
  
interface Ethernet0  
  nameif outside  
  security-level 0  
  ip address 192.168.1.2 255.255.255.0  
!  
interface Ethernet1  
  nameif inside  
  security-level 100  
  ip address 10.2.2.1 255.255.255.0  
!  
!  
!--- Output is suppressed.  
  
!  
passwd 2KFQnbNIdI.2KYOU encrypted  
ftp mode passive  
  
!--- This access list is used for a nat zero command that prevents  
!--- traffic which matches the access list from undergoing NAT.  
  
access-list nonat extended permit ip 10.2.2.0 255.255.255.0 10.1.1.0 255.255.255.0  
  
pager lines 24  
mtu outside 1500  
mtu inside 1500  
no failover  
no asdm history enable  
arp timeout 14400  
  
!--- NAT 0 prevents NAT for networks specified in the ACL - nonat.  
!--- The nat 1 command specifies PAT using  
!--- the outside interface for all other traffic.  
  
global (outside) 1 interface  
nat (inside) 0 access-list nonat
```

```

nat (inside) 1 0.0.0.0 0.0.0.0

route outside 0.0.0.0 0.0.0.0 192.168.1.1 1

timeout xlate 3:00:00
timeout conn 1:00:00 half-closed 0:10:00 udp 0:02:00 icmp 0:00:02
timeout sunrpc 0:10:00 h323 0:05:00 h225 1:00:00 mgcp 0:05:00 mgcp-pat 0:05:00
timeout sip 0:30:00 sip_media 0:02:00 sip-invite 0:03:00 sip-disconnect 0:02:00
timeout uauth 0:05:00 absolute
no snmp-server location
no snmp-server contact
snmp-server enable traps snmp authentication linkup linkdown coldstart

!--- PHASE 2 CONFIGURATION ---!
!--- The encryption types for Phase 2 are defined here.
!--- A triple single 3DES encryption with
!--- the md5 hash algorithm is used.

crypto ipsec transform-set router-set esp-3des esp-md5-hmac

!--- Defines a dynamic crypto map with
!--- the specified encryption settings.

crypto dynamic-map cisco 1 set transform-set router-set

!--- Enable Reverse Route Injection (RRI), which allows the Security Appliance
!--- to learn routing information for connected clients.

crypto dynamic-map cisco 1 set reverse-route

!--- Binds the dynamic map to the IPsec/ISAKMP process.

crypto map dyn-map 10 ipsec-isakmp dynamic cisco

!--- Specifies the interface to be used with
!--- the settings defined in this configuration.

crypto map dyn-map interface outside

!--- PHASE 1 CONFIGURATION ---!

!--- This configuration uses isakmp policy 10.
!--- Policy 65535 is included in the config by default.
!--- The configuration commands here define the Phase
!--- 1 policy parameters that are used.

crypto isakmp policy 10
 authentication pre-share
 encryption 3des
 hash md5
 group 2
 lifetime 86400

crypto isakmp policy 65535

```

```

authentication pre-share
encryption 3des
hash sha
group 2
lifetime 86400

!--- The security appliance provides the default tunnel groups
!--- for Lan to Lan access (DefaultL2LGroup) and configure the preshared key
!--- (cisco123) to authenticate the remote router.

tunnel-group DefaultL2LGroup ipsec-attributes
pre-shared-key *

telnet timeout 5
ssh timeout 5
console timeout 0
!
class-map inspection_default
match default-inspection-traffic
!
!
policy-map type inspect dns preset_dns_map
parameters
  message-length maximum 512
policy-map global_policy
class inspection_default
  inspect dns preset_dns_map
  inspect ftp
  inspect h323 h225
  inspect h323 ras
  inspect netbios
  inspect rsh
  inspect rtsp
  inspect skinny
  inspect esmtp
  inspect sqlnet
  inspect sunrpc
  inspect tftp
  inspect sip
  inspect xdmcp
!
service-policy global_policy global
prompt hostname context
Cryptochecksum:6ed4a7bce392a439d0a16e86743e2663
: end

```

Clear Security Associations (SAs)

In the privileged mode of the PIX, use these commands:

- **clear [crypto] ipsec sa** Deletes the active IPsec SAs. The keyword **crypto** is optional.
- **clear [crypto] isakmp sa** Deletes the active IKE SAs. The keyword **crypto** is optional.

Verify

Use this section to confirm that your configuration works properly.

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

- PIX Security Appliance – **show** Commands
- Remote IOS Router – **show** Commands

PIX Security Appliance – show Commands

- **show crypto isakmp sa** Shows all current IKE SAs at a peer.

```

pixfirewall#show crypto isakmp sa

Active SA: 1
Rekey SA: 0 (A tunnel will report 1 Active and 1 Rekey SA during rekey)
Total IKE SA: 1

1 IKE Peer: 172.16.1.3
  Type      : L2L                Role       : responder
  Rekey     : no                State      : MM_ACTIVE

```

- **show crypto ipsec sa** Shows all current IPsec SAs at a peer.

```

pixfirewall#show crypto ipsec sa
                    interface: outside
Crypto map tag: cisco, seq num: 1, local addr: 192.168.1.2

local ident (addr/mask/prot/port): (10.2.2.0/255.255.255.0/0/0)
remote ident (addr/mask/prot/port): (10.1.1.0/255.255.255.0/0/0)
current_peer: 172.16.1.3

#pkts encaps: 4, #pkts encrypt: 4, #pkts digest: 4
#pkts decaps: 4, #pkts decrypt: 4, #pkts verify: 4
#pkts compressed: 0, #pkts decompressed: 0
#pkts not compressed: 4, #pkts comp failed: 0, #pkts decomp failed: 0
#pre-frag successes: 0, #pre-frag failures: 0, #fragments created: 0
#PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs needing reassembly: 0
#send errors: 0, #recv errors: 0

local crypto endpt.: 192.168.1.2, remote crypto endpt.: 172.16.1.3

path mtu 1500, ipsec overhead 58, media mtu 1500
current outbound spi: 28C8C1BD

inbound esp sas:
  spi: 0x33785672 (863524466)
    transform: esp-3des esp-md5-hmac
    in use settings = {L2L, Tunnel, }
    slot: 0, conn_id: 6, crypto-map: cisco
    sa timing: remaining key lifetime (kB/sec): (4274999/3564)
    IV size: 8 bytes
    replay detection support: Y
outbound esp sas:
  spi: 0x28C8C1BD (684245437)
    transform: esp-3des esp-md5-hmac
    in use settings = {L2L, Tunnel, }
    slot: 0, conn_id: 6, crypto-map: cisco
    sa timing: remaining key lifetime (kB/sec): (4274999/3562)
    IV size: 8 bytes
    replay detection support: Y

```

Remote IOS Router – show Commands

- **show crypto isakmp sa** Shows all current IKE SAs at a peer.

```

Router#show crypto isakmp sa

dst          src          state          conn-id slot status

```

192.168.1.2 172.16.1.3 QM_IDLE 1 0 ACTIVE

- **show crypto ipsec sa** Shows all current IPsec SAs at a peer.

```
Router#show crypto ipsec sa
      interface: Ethernet0/0
      Crypto map tag: pix, local addr 172.16.1.3

protected vrf: (none)
local ident (addr/mask/prot/port): (10.1.1.0/255.255.255.0/0/0)
remote ident (addr/mask/prot/port): (10.2.2.0/255.255.255.0/0/0)
current_peer 192.168.1.2 port 500
  PERMIT, flags={origin_is_acl,}
  #pkts encaps: 4, #pkts encrypt: 4, #pkts digest: 4
  #pkts decaps: 4, #pkts decrypt: 4, #pkts verify: 4
  #pkts compressed: 0, #pkts decompressed: 0
  #pkts not compressed: 0, #pkts compr. failed: 0
  #pkts not decompressed: 0, #pkts decompress failed: 0
  #send errors 62, #recv errors 0

local crypto endpt.: 172.16.1.3, remote crypto endpt.: 192.168.1.2
path mtu 1500, ip mtu 1500, ip mtu idb Ethernet0/0
current outbound spi: 0x33785672(863524466)

inbound esp sas:
  spi: 0x28C8C1BD(684245437)
    transform: esp-3des esp-md5-hmac ,
    in use settings ={Tunnel, }
    conn id: 2002, flow_id: SW:2, crypto map: pix
    sa timing: remaining key lifetime (k/sec): (4431817/3288)
    IV size: 8 bytes
    replay detection support: Y
    Status: ACTIVE

inbound ah sas:

inbound pcp sas:

outbound esp sas:
  spi: 0x33785672(863524466)
    transform: esp-3des esp-md5-hmac ,
    in use settings ={Tunnel, }
    conn id: 2001, flow_id: SW:1, crypto map: pix
    sa timing: remaining key lifetime (k/sec): (4431817/3286)
    IV size: 8 bytes
    replay detection support: Y
    Status: ACTIVE

outbound ah sas:

outbound pcp sas:
```

- **show crypto engine connections active** Shows current connections and information regarding encrypted and decrypted packets (router only).

```
Router#show crypto engine connections active
```

ID	Interface	IP-Address	State	Algorithm	Encrypt	Decrypt
1	Ethernet0/0	172.16.1.3	set	HMAC_MD5+3DES_56_C	0	0
2001	Ethernet0/0	172.16.1.3	set	3DES+MD5	4	0
2002	Ethernet0/0	172.16.1.3	set	3DES+MD5	0	4

Troubleshoot

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

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

Note: Refer to Important Information on Debug Commands and IP Security Troubleshooting – Understanding and Using debug Commands before you use **debug** commands.

- PIX Security Appliance – debug Outputs

debug crypto ipsec 7 Displays the IPsec negotiations of phase 2.

debug crypto isakmp 7 Displays the ISAKMP negotiations of phase 1.

- Remote IOS Router – debug Outputs

debug crypto ipsec Displays the IPsec negotiations of phase 2.

debug crypto isakmp Displays the ISAKMP negotiations of phase 1.

PIX Security Appliance – debug Outputs

```
PIX#debug crypto isakmp 7
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Message (msgid=0) with payloads : HDR + SA (1) + VENDOR (13) + VENDOR (13) + VENDOR (13) + NONE (0) total length : 144
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing SA payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Oakley proposal is acceptable
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received NAT-Traversal ver 03 VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing NAT payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received NAT-Traversal ver 02 VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing IKE SA payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, IKE SA Proposal # 1, Transform # 1 acceptable Matches global IKE entry # 3
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing ISAKMP SA payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing Fragmentation VID + extended capabilities payload
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE SENDING Message (msgid=0) with payloads : HDR + SA (1) + VENDOR (13) + NONE (0) total length : 108
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Message (msgid=0) with payloads : HDR + KE (4) + NONCE (10) + VENDOR (13) + VENDOR (13) + VENDOR (13) + VENDOR (13) + NONE (0) total length : 256
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing ke payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing ISA_KE payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing nonce payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received Cisco Unity client VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received DPD VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Processing IOS/PIX Vendor ID payload (version: 1.0.0, capabilities: 0000077f)
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received xauth V6 VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing ke payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing nonce payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing Cisco Unity VID payload
```

Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing xauth V6 VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Send IOS VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Constructing ASA spoofing IOS Vendor ID payload (version: 1.0.0, capabilities: 20000001)
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Send Altiga/Cisco VPN3000/CiscoASA GW VID
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, Connection landed on tunnel_group DefaultL2LGroup
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, Generating keys for Responder...
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE SENDING Message (msgid=0) with payloads : HDR + KE (4) + NONCE (10) + VENDOR (13) + VENDOR (13) + VENDOR (13) + VENDOR (13) + NONE (0) total length : 256
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Message (msgid=0) with payloads : HDR + ID (5) + HASH (8) + NOTIFY (11) + NONE (0) total length : 88
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, processing ID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, processing hash payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, Computing hash for ISAKMP
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, processing notify payload
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, Connection landed on tunnel_group DefaultL2LGroup
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, Freeing previously allocated memory for authorization-dn-attributes
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, constructing ID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, constructing hash payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, Computing hash for ISAKMP
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Constructing IOS keep alive payload: proposal=32767/32767 sec.
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, constructing dpd vid payload
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE SENDING Message (msgid=0) with payloads : HDR + ID (5) + HASH (8) + IOS KEEPALIVE (128) + VENDOR (13) + NONE (0) total length : 92
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, **PHASE 1 COMPLETED**
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, Keep-alive type for this connection: DPD
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, Starting P1 rekey timer: 82080 seconds.
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Message (msgid=4bc07a70) with payloads : HDR + HASH (8) + SA (1) + NONCE (10) + ID (5) + ID (5) + NONE (0) total length : 164
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, processing hash payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, processing SA payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, processing nonce payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, processing ID payload
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, Received remote IP Proxy Subnet data in ID Payload:
Address 10.1.1.0, Mask 255.255.255.0, Protocol 0, Port 0
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, processing ID payload
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, Received local IP Proxy Subnet data in ID Payload:
Address 10.2.2.0, Mask 255.255.255.0, Protocol 0, Port 0
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, QM IsRekeyedold sa not found by addr

Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3,
IKE Remote Peer configured for crypto map: cisco
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
processing IPsec SA payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, IPsec S
A Proposal # 1, Transform # 1 acceptable Matches global IPsec SA entry # 1
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, IKE:
requesting SPI!
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
IKE got SPI from key engine: SPI = 0xc3fe4fb0
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
oakleyconstucting quick mode
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
constructing blank hash payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
constructing IPsec SA payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
constructing IPsec nonce payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
constructing proxy ID
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
Transmitting Proxy Id:
 Remote subnet: 10.1.1.0 Mask 255.255.255.0 Protocol 0 Port 0
 Local subnet: 10.2.2.0 mask 255.255.255.0 Protocol 0 Port 0
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
constructing qm hash payload
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE SENDING Message (msgid=4bc0
7a70) with payloads : HDR + HASH (8) + SA (1) + NONCE (10) + ID (5) + ID (5) + N
ONE (0) total length : 164
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Message (msgid=4bc
07a70) with payloads : HDR + HASH (8) + NONE (0) total length : 48
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
processing hash payload
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
loading all IPSEC SAs
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
Generating Quick Mode Key!
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
Generating Quick Mode Key!
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, Security nego
tiation complete for LAN-to-LAN Group (DefaultL2LGroup) Responder,
Inbound SPI= 0xc3fe4fb0, Outbound SPI = 0x9acle72c
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
IKE got a KEY_ADD msg for SA: SPI = 0x9acle72c
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
Pitcher: received KEY_UPDATE, spi 0xc3fe4fb0
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
Starting P2 rekey timer: 3420 seconds.
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, **PHASE 2 COMPL
ETED** (msgid=4bc07a70)

pixfirewall#debug crypto ipsec 7

pixfirewall# IPSEC: New embryonic SA created @ 0x028B6EE0,
 SCB: 0x028B6E50,
 Direction: inbound
 SPI : 0x97550AC8
 Session ID: 0x00000009
 VPIF num : 0x00000001
 Tunnel type: l2l
 Protocol : esp
 Lifetime : 240 seconds
IPSEC: New embryonic SA created @ 0x028B75E8,
 SCB: 0x028B7528,
 Direction: outbound
 SPI : 0xB857E226

Session ID: 0x00000009
VPIF num : 0x00000001
Tunnel type: l2l
Protocol : esp
Lifetime : 240 seconds
IPSEC: Completed host OBSA update, SPI 0xB857E226
IPSEC: Creating outbound VPN context, SPI 0xB857E226
Flags: 0x00000005
SA : 0x028B75E8
SPI : 0xB857E226
MTU : 1500 bytes
VCID : 0x00000000
Peer : 0x00000000
SCB : 0x028B7528
Channel: 0x01693F28
IPSEC: Completed outbound VPN context, SPI 0xB857E226
VPN handle: 0x0002524C
IPSEC: New outbound encrypt rule, SPI 0xB857E226
Src addr: 10.2.2.0
Src mask: 255.255.255.0
Dst addr: 10.1.1.0
Dst mask: 255.255.255.0
Src ports
Upper: 0
Lower: 0
Op : ignore
Dst ports
Upper: 0
Lower: 0
Op : ignore
Protocol: 0
Use protocol: false
SPI: 0x00000000
Use SPI: false
IPSEC: Completed outbound encrypt rule, SPI 0xB857E226
Rule ID: 0x028A9988
IPSEC: New outbound permit rule, SPI 0xB857E226
Src addr: 192.168.1.2
Src mask: 255.255.255.255
Dst addr: 172.16.1.3
Dst mask: 255.255.255.255
Src ports
Upper: 0
Lower: 0
Op : ignore
Dst ports
Upper: 0
Lower: 0
Op : ignore
Protocol: 50
Use protocol: true
SPI: 0xB857E226
Use SPI: true
IPSEC: Completed outbound permit rule, SPI 0xB857E226
Rule ID: 0x028B5D90
IPSEC: Completed host IBSA update, SPI 0x97550AC8
IPSEC: Creating inbound VPN context, SPI 0x97550AC8
Flags: 0x00000006
SA : 0x028B6EE0
SPI : 0x97550AC8
MTU : 0 bytes
VCID : 0x00000000
Peer : 0x0002524C
SCB : 0x028B6E50
Channel: 0x01693F28
IPSEC: Completed inbound VPN context, SPI 0x97550AC8

VPN handle: 0x0002B344
IPSEC: Updating outbound VPN context 0x0002524C, SPI 0xB857E226
Flags: 0x00000005
SA : 0x028B75E8
SPI : 0xB857E226
MTU : 1500 bytes
VCID : 0x00000000
Peer : 0x0002B344
SCB : 0x028B7528
Channel: 0x01693F28
IPSEC: Completed outbound VPN context, SPI 0xB857E226
VPN handle: 0x0002524C
IPSEC: Completed outbound inner rule, SPI 0xB857E226
Rule ID: 0x028A9988
IPSEC: Completed outbound outer SPD rule, SPI 0xB857E226
Rule ID: 0x028B5D90
IPSEC: New inbound tunnel flow rule, SPI 0x97550AC8
Src addr: 10.1.1.0
Src mask: 255.255.255.0
Dst addr: 10.2.2.0
Dst mask: 255.255.255.0
Src ports
Upper: 0
Lower: 0
Op : ignore
Dst ports
Upper: 0
Lower: 0
Op : ignore
Protocol: 0
Use protocol: false
SPI: 0x00000000
Use SPI: false
IPSEC: Completed inbound tunnel flow rule, SPI 0x97550AC8
Rule ID: 0x027FF7F8
IPSEC: New inbound decrypt rule, SPI 0x97550AC8
Src addr: 172.16.1.3
Src mask: 255.255.255.255
Dst addr: 192.168.1.2
Dst mask: 255.255.255.255
Src ports
Upper: 0
Lower: 0
Op : ignore
Dst ports
Upper: 0
Lower: 0
Op : ignore
Protocol: 50
Use protocol: true
SPI: 0x97550AC8
Use SPI: true
IPSEC: Completed inbound decrypt rule, SPI 0x97550AC8
Rule ID: 0x028BB318
IPSEC: New inbound permit rule, SPI 0x97550AC8
Src addr: 172.16.1.3
Src mask: 255.255.255.255
Dst addr: 192.168.1.2
Dst mask: 255.255.255.255
Src ports
Upper: 0
Lower: 0
Op : ignore
Dst ports
Upper: 0
Lower: 0

```
Op : ignore
Protocol: 50
Use protocol: true
SPI: 0x977550AC8
Use SPI: true
IPSEC: Completed inbound permit rule, SPI 0x977550AC8
Rule ID: 0x028A7460
```

Remote IOS Router – debug Outputs

```
Router#debug crypto isakmp
*Dec 31 01:18:51.830: ISAKMP: received ke message (1/1)
*Dec 31 01:18:51.830: ISAKMP:(0:0:N/A:0): SA request profile is (NULL)
*Dec 31 01:18:51.830: ISAKMP: Created a peer struct for 192.168.1.2, peer port 500
*Dec 31 01:18:51.830: ISAKMP: New peer created peer = 0x64DC2CB4 peer_handle = 0
x80000022
*Dec 31 01:18:51.834: ISAKMP: Locking peer struct 0x64DC2CB4, IKE refcount 1 for
isakmp_initiator
*Dec 31 01:18:51.834: ISAKMP: local port 500, remote port 500
*Dec 31 01:18:51.834: ISAKMP: set new node 0 to QM_IDLE
*Dec 31 01:18:51.834: insert sa successfully sa = 640D2660
*Dec 31 01:18:51.834: ISAKMP:(0:0:N/A:0):Can not start Aggressive mode,
trying Main mode.
*Dec 31 01:18:51.834: ISAKMP:(0:0:N/A:0):found peer pre-shared key
matching 192.168.1.2
*Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0): constructed NAT-T vendor-07 ID
*Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0): constructed NAT-T vendor-03 ID
*Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0): constructed NAT-T vendor-02 ID
*Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0):Input = IKE_MSG_FROM_IPSEC, IKE_SA_REQ_MM
*Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0):Old State = IKE_READY New State = IKE_I_MM1

*Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0): beginning Main Mode exchange
*Dec 31 01:18:51.842: ISAKMP:(0:0:N/A:0): sending packet to 192.168.1.2 my_port
500 peer_port 500 (I) MM_NO_STATE
*Dec 31 01:18:51.846: ISAKMP (0:0): received packet from 192.168.1.2 dport 500 s
port 500 Global (I) MM_NO_STATE
*Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0):Input = IKE_MSG_FROM_PEER, IKE_MM_EXCH
*Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0):Old State = IKE_I_MM1 New State = IKE_I_MM2

*Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0): processing SA payload. message ID = 0
*Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0): processing vendor id payload
*Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0): vendor ID seems Unity/DPD but
major 194 mismatch
*Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0):found peer pre-shared key
matching 192.168.1.2
*Dec 31 01:18:51.854: ISAKMP:(0:0:N/A:0): local preshared key found
*Dec 31 01:18:51.854: ISAKMP : Scanning profiles for xauth ...
*Dec 31 01:18:51.854: ISAKMP:(0:0:N/A:0):Checking ISAKMP transform 1
against priority 1 policy
*Dec 31 01:18:51.854: ISAKMP: encryption 3DES-CBC
*Dec 31 01:18:51.854: ISAKMP: hash MD5
*Dec 31 01:18:51.854: ISAKMP: default group 2
*Dec 31 01:18:51.854: ISAKMP: auth pre-share
*Dec 31 01:18:51.854: ISAKMP: life type in seconds
*Dec 31 01:18:51.854: ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80
*Dec 31 01:18:51.858: ISAKMP:(0:0:N/A:0):atts are acceptable. Next payload is 0
*Dec 31 01:18:51.998: ISAKMP:(0:1:SW:1): processing vendor id payload
*Dec 31 01:18:51.998: ISAKMP:(0:1:SW:1): vendor ID seems Unity/DPD but
major 194 mismatch
*Dec 31 01:18:51.998: ISAKMP:(0:1:SW:1):Input = IKE_MSG_INTERNAL,
IKE_PROCESS_MAIN_MODE
*Dec 31 01:18:51.998: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM2 New State = IKE_I_MM2
*Dec 31 01:18:52.002: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my_port 5
00 peer_port 500 (I) MM_SA_SETUP
*Dec 31 01:18:52.006: ISAKMP:(0:1:SW:1):Input = IKE_MSG_INTERNAL,
```

IKE_PROCESS_COMPLETE

```
*Dec 31 01:18:52.006: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM2 New State = IKE_I_MM3
*Dec 31 01:18:52.066: ISAKMP (0:134217729): received packet from 192.168.1.2 dpo
rt 500 sport 500 Global (I) MM_SA_SETUP
*Dec 31 01:18:52.066: ISAKMP:(0:1:SW:1):Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH
*Dec 31 01:18:52.066: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM3 New State = IKE_I_MM4
*Dec 31 01:18:52.070: ISAKMP:(0:1:SW:1): processing KE payload. message ID = 0
*Dec 31 01:18:52.246: ISAKMP:(0:1:SW:1): processing NONCE payload. message ID =0
*Dec 31 01:18:52.246: ISAKMP:(0:1:SW:1):found peer pre-shared key matching 192.168.1.2
*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1):SKEYID state generated
*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): processing vendor id payload
*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): vendor ID is Unity
*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): processing vendor id payload
*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): vendor ID seems Unity/DPD but
major 227 mismatch
*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): vendor ID is XAUTH
*Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): processing vendor id payload
*Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1): speaking to another IOS box!
*Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1): processing vendor id payload
*Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1):vendor ID seems Unity/DPD but hash mismatch
*Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1):Input = IKE_MESG_INTERNAL,
IKE_PROCESS_MAIN_MODE
*Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM4 New State = IKE_I_MM4
*Dec 31 01:18:52.262: ISAKMP:(0:1:SW:1):Send initial contact
*Dec 31 01:18:52.262: ISAKMP:(0:1:SW:1):SA is doing pre-shared key
authentication using id type ID_IPV4_ADDR
*Dec 31 01:18:52.266: ISAKMP (0:134217729): ID payload
    next-payload : 8
    type          : 1
    address       : 172.16.1.3
    protocol      : 17
    port         : 500
    length       : 12
*Dec 31 01:18:52.266: ISAKMP:(0:1:SW:1):Total payload length: 12
*Dec 31 01:18:52.266: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my_port 5
00 peer_port 500 (I) MM_KEY_EXCH
*Dec 31 01:18:52.270: ISAKMP:(0:1:SW:1):Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE
*Dec 31 01:18:52.270: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM4 New State = IKE_I_MM5
*Dec 31 01:18:52.342: ISAKMP (0:134217729): received packet from 192.168.1.2 dpo
rt 500 sport 500 Global (I) MM_KEY_EXCH
*Dec 31 01:18:52.342: ISAKMP:(0:1:SW:1): processing ID payload. message ID = 0
*Dec 31 01:18:52.342: ISAKMP (0:134217729): ID payload
    next-payload : 8
    type          : 1
    address       : 192.168.1.2
    protocol      : 17
    port         : 500
    length       : 12
*Dec 31 01:18:52.342: ISAKMP:(0:1:SW:1):: peer matches *none* of the profiles
*Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1): processing HASH payload. message ID = 0
*Dec 31 01:18:52.346: ISAKMP:received payload type 17
*Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1): processing vendor id payload
*Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1): vendor ID is DPD
*Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1):SA authentication status: authenticated
*Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1):SA has been authenticated with 192.168.1.2
*Dec 31 01:18:52.346: ISAKMP: Trying to insert a peer 172.16.1.3/192.168.1.2/500
/, and inserted successfully 64DC2CB4.
*Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1):Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH
*Dec 31 01:18:52.350: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM5 New State =
IKE_I_MM6
*Dec 31 01:18:52.350: ISAKMP:(0:1:SW:1):Input = IKE_MESG_INTERNAL,
IKE_PROCESS_MAIN_MODE
*Dec 31 01:18:52.350: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM6 New State = IKE_I_MM6
*Dec 31 01:18:52.354: ISAKMP:(0:1:SW:1):Input = IKE_MESG_INTERNAL,
IKE_PROCESS_COMPLETE
*Dec 31 01:18:52.354: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM6 New State =
```

```
IKE_P1_COMPLETE
*Dec 31 01:18:52.358: ISAKMP:(0:1:SW:1):beginning Quick Mode exchange, M-ID
of 1270905456
*Dec 31 01:18:52.362: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my_port 5
00 peer_port 500 (I) QM_IDLE
*Dec 31 01:18:52.362: ISAKMP:(0:1:SW:1):Node 1270905456, Input =
IKE_MSG_INTERNAL, IKE_INIT_QM
*Dec 31 01:18:52.362: ISAKMP:(0:1:SW:1):Old State = IKE_QM_READY
New State = IKE_QM_I_QM1
*Dec 31 01:18:52.362: ISAKMP:(0:1:SW:1):Input = IKE_MSG_INTERNAL,
IKE_PHASE1_COMPLETE
*Dec 31 01:18:52.366: ISAKMP:(0:1:SW:1):Old State = IKE_P1_COMPLETE
New State = IKE_P1_COMPLETE

*Dec 31 01:18:52.374: ISAKMP (0:134217729): received packet from 192.168.1.2 dpo
rt 500 sport 500 Global (I) QM_IDLE
*Dec 31 01:18:52.378: ISAKMP:(0:1:SW:1): processing HASH payload.
message ID = 1270905456
*Dec 31 01:18:52.378: ISAKMP:(0:1:SW:1): processing SA payload.
message ID = 1270905456
*Dec 31 01:18:52.378: ISAKMP:(0:1:SW:1):Checking IPsec proposal 1
*Dec 31 01:18:52.378: ISAKMP: transform 1, ESP_3DES
*Dec 31 01:18:52.378: ISAKMP: attributes in transform:
*Dec 31 01:18:52.378: ISAKMP: SA life type in seconds
*Dec 31 01:18:52.378: ISAKMP: SA life duration (basic) of 3600
*Dec 31 01:18:52.378: ISAKMP: SA life type in kilobytes
*Dec 31 01:18:52.378: ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0
*Dec 31 01:18:52.378: ISAKMP: encaps is 1 (Tunnel)
*Dec 31 01:18:52.382: ISAKMP: authenticator is HMAC-MD5
*Dec 31 01:18:52.382: ISAKMP:(0:1:SW:1):atts are acceptable.
*Dec 31 01:18:52.382: ISAKMP:(0:1:SW:1): processing NONCE payload.
message ID =1270905456
*Dec 31 01:18:52.382: ISAKMP:(0:1:SW:1): processing ID payload.
message ID = 1270905456
*Dec 31 01:18:52.382: ISAKMP:(0:1:SW:1): processing ID payload.
message ID = 1270905456
*Dec 31 01:18:52.386: ISAKMP: Locking peer struct 0x64DC2CB4,
IPSEC refcount 1 for for stuff_ke
*Dec 31 01:18:52.390: ISAKMP:(0:1:SW:1): Creating IPsec SAs
*Dec 31 01:18:52.390: inbound SA from 192.168.1.2 to 172.16.1.3 (f/i) 0
/ 0
(proxy 10.2.2.0 to 10.1.1.0)
*Dec 31 01:18:52.390: has spi 0x9AC1E72C and conn_id 0 and flags 2
*Dec 31 01:18:52.390: lifetime of 3600 seconds
*Dec 31 01:18:52.390: lifetime of 4608000 kilobytes
*Dec 31 01:18:52.390: has client flags 0x0
*Dec 31 01:18:52.390: outbound SA from 172.16.1.3 to 192.168.1.2 (f/i) 0
/0
(proxy 10.1.1.0 to 10.2.2.0)
*Dec 31 01:18:52.394: has spi -1006743632 and conn_id 0 and flags A
*Dec 31 01:18:52.394: lifetime of 3600 seconds
*Dec 31 01:18:52.394: lifetime of 4608000 kilobytes
*Dec 31 01:18:52.394: has client flags 0x0
*Dec 31 01:18:52.394: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my_port 5
00 peer_port 500 (I) QM_IDLE
*Dec 31 01:18:52.398: ISAKMP:(0:1:SW:1):deleting node 1270905456 error
FALSE reason "No Error"
*Dec 31 01:18:52.398: ISAKMP:(0:1:SW:1):Node 1270905456, Input =
IKE_MSG_FROM_PEER, IKE_QM_EXCH
*Dec 31 01:18:52.398: ISAKMP:(0:1:SW:1):Old State = IKE_QM_I_QM1
New State = IKE_QM_PHASE2_COMPLETE
*Dec 31 01:18:52.402: ISAKMP: Locking peer struct 0x64DC2CB4, IPSEC
refcount 2 for from create_transforms
*Dec 31 01:18:52.402: ISAKMP: Unlocking IPSEC struct 0x64DC2CB4 from
create_transforms, count 1
*Dec 31 01:19:06.130: ISAKMP (0:134217729): received packet from 192.168.1.2 dpo
```

```

rt 500 sport 500 Global (I) QM_IDLE
*Dec 31 01:19:06.130: ISAKMP: set new node 372376968 to QM_IDLE
*Dec 31 01:19:06.130: ISAKMP:(0:1:SW:1): processing HASH payload.
message ID = 372376968
*Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1): processing NOTIFY DPD/R_U_THERE protocol 1
spi 0, message ID = 372376968, sa = 640D2660
*Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1):deleting node 372376968 error
FALSE reason "Informational (in) state 1"
*Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1):Input = IKE_MSG_FROM_PEER,
IKE_INFO_NOTIFY
*Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1):Old State = IKE_P1_COMPLETE
New State = IKE_P1_COMPLETE

*Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1):DPD/R_U_THERE received from
peer 192.168.1.2, sequence 0x7E805468
*Dec 31 01:19:06.138: ISAKMP: set new node 2096423279 to QM_IDLE
*Dec 31 01:19:06.138: ISAKMP:(0:1:SW:1):Sending NOTIFY DPD/R_U_THERE_ACK protocol 1
spi 1689358936, message ID = 2096423279
*Dec 31 01:19:06.138: ISAKMP:(0:1:SW:1): seq. no 0x7E805468
*Dec 31 01:19:06.138: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my_port 5
00 peer_port 500 (I) QM_IDLE
*Dec 31 01:19:06.142: ISAKMP:(0:1:SW:1):purging node 2096423279
*Dec 31 01:19:06.142: ISAKMP:(0:1:SW:1):Input = IKE_MSG_FROM_PEER,
IKE_MSG_KEEP_ALIVE
*Dec 31 01:19:06.142: ISAKMP:(0:1:SW:1):Old State = IKE_P1_COMPLETE
New State = IKE_P1_COMPLETE

```

Router#**debug crypto ipsec**

```

*Dec 31 01:29:05.402: IPSEC(sa_request): ,
(key eng. msg.) OUTBOUND local= 172.16.1.3, remote= 192.168.1.2,
local_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4),
remote_proxy= 10.2.2.0/255.255.255.0/0/0 (type=4),
protocol= ESP, transform= esp-3des esp-md5-hmac (Tunnel),
lifedur= 3600s and 4608000kb,
spi= 0xB857E226(3092767270), conn_id= 0, keysize= 0, flags= 0x400A
*Dec 31 01:29:05.774: IPSEC(validate_proposal_request): proposal part #1,
(key eng. msg.) INBOUND local= 172.16.1.3, remote= 192.168.1.2,
local_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4),
remote_proxy= 10.2.2.0/255.255.255.0/0/0 (type=4),
protocol= ESP, transform= esp-3des esp-md5-hmac (Tunnel),
lifedur= 0s and 0kb,
spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x2
*Dec 31 01:29:05.778: Crypto mapdb : proxy_match
src addr : 10.1.1.0
dst addr : 10.2.2.0
protocol : 0
src port : 0
dst port : 0
*Dec 31 01:29:05.782: IPSEC(key_engine): got a queue event with 2 kei messages
*Dec 31 01:29:05.782: IPSEC(initialize_sas): ,
(key eng. msg.) INBOUND local= 172.16.1.3, remote= 192.168.1.2,
local_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4),
remote_proxy= 10.2.2.0/255.255.255.0/0/0 (type=4),
protocol= ESP, transform= esp-3des esp-md5-hmac (Tunnel),
lifedur= 3600s and 4608000kb,
spi= 0xB857E226(3092767270), conn_id= 0, keysize= 0, flags= 0x2
*Dec 31 01:29:05.786: IPSEC(initialize_sas): ,
(key eng. msg.) OUTBOUND local= 172.16.1.3, remote= 192.168.1.2,
local_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4),
remote_proxy= 10.2.2.0/255.255.255.0/0/0 (type=4),
protocol= ESP, transform= esp-3des esp-md5-hmac (Tunnel),
lifedur= 3600s and 4608000kb,
spi= 0x97550AC8(2538932936), conn_id= 0, keysize= 0, flags= 0xA
*Dec 31 01:29:05.786: Crypto mapdb : proxy_match
src addr : 10.1.1.0
dst addr : 10.2.2.0

```

```
      protocol      : 0
      src port      : 0
      dst port      : 0
*Dec 31 01:29:05.786: IPSEC(crypto_ipsec_sa_find_ident_head): reconnecting with
the same proxies and 192.168.1.2
*Dec 31 01:29:05.786: IPSec: Flow_switching Allocated flow for sibling 80000006
*Dec 31 01:29:05.786: IPSEC(policy_db_add_ident): src 10.1.1.0, dest 10.2.2.0, d
est_port 0

*Dec 31 01:29:05.790: IPSEC(create_sa): sa created,
(sa) sa_dest= 172.16.1.3, sa_proto= 50,
sa_spi= 0xB857E226(3092767270),
sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 2001
*Dec 31 01:29:05.790: IPSEC(create_sa): sa created,
(sa) sa_dest= 192.168.1.2, sa_proto= 50,
sa_spi= 0x97550AC8(2538932936),
sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 2002
```

Related Information

- [Cisco PIX 500 Series Security Appliances](#)
 - [Documentation for Cisco PIX Security Appliance OS Software](#)
 - [Cisco Secure PIX Firewall Command References](#)
 - [IPSec Negotiation/IKE Protocols Support Page](#)
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