Configure a LAN-to-LAN IPsec Tunnel Between Two Routers

Contents

Introduction

This document describes how to configure a policy-based VPN over Internet Key Exchange (IKEv1) between two Cisco routers (Cisco IOS® or Cisco IOS® XE).

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on a Cisco router with Cisco IOS® Release 15.7. It allows users to access resources across the sites over an IPsec VPN tunnel.

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, ensure that you understand the potential impact of any command.

Conventions

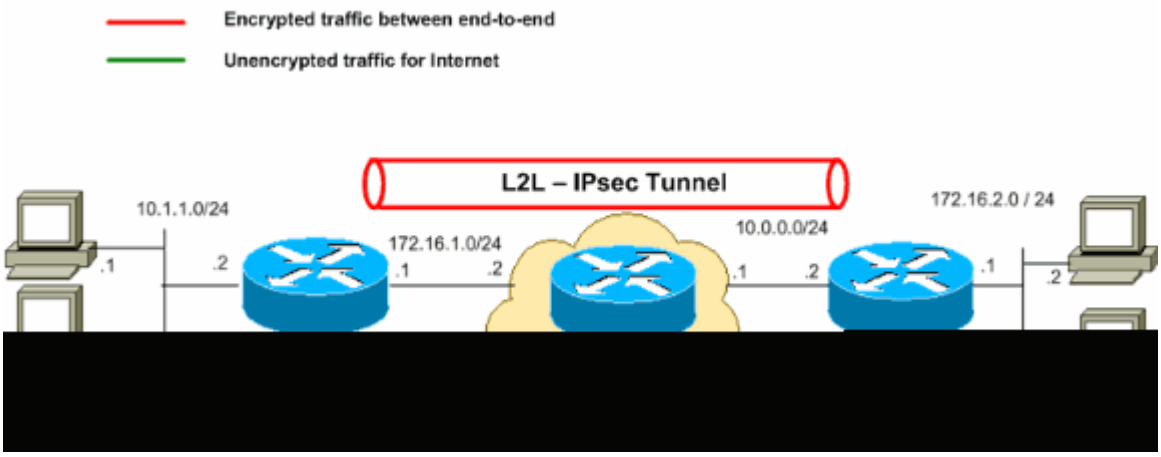
Refer to the Cisco Technical Tips Conventions for more information on document conventions.

Configure

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

Network Diagram

This document uses this network setup:



Note: The IP addressing schemes used in this configuration are not legally routable on the Internet. They are RFC 1918 addresses which have been used in a lab environment.

Configurations

This document uses these configurations:

- Router A
- Router B

Note: Cisco recommends that the ACL applied to the crypto map on both the devices be a mirror image of each other.

Router A

```
!--- Create an ISAKMP policy for Phase 1 negotiations for the L2L tunnels.

crypto isakmp policy 10
encryption aes
hash sha256
authentication pre-share
group 14

!--- Specify the pre-shared key and the remote peer address
!--- to match for the L2L tunnel.

crypto isakmp key vpnuser address 10.0.0.2

!--- Create the Phase 2 policy for IPsec negotiation.

crypto ipsec transform-set myset esp-aes esp-sha256-hmac

!--- Create an ACL for the traffic to be encrypted.
!--- In this example, the traffic from 10.1.1.0/24 to 172.16.2.0/24
!--- is encrypted. The traffic which does not match the access list
!--- is unencrypted for the Internet.
```

```
access-list 100 permit ip 10.1.1.0 0.0.0.255 172.16.2.0 0.0.0.255

!--- Create the actual crypto map. Specify an access control list (ACL),
!--- which defines the proxy identities (local and remote host/networks).

crypto map mymap 10 ipsec-isakmp
 set peer 10.0.0.2
 set transform-set myset
 match address 100

interface GigabitEthernet0/1
ip address 10.1.1.2 255.255.255.0

!--- Apply the crypto map on the outside interface.

interface GigabitEthernet0/0
 ip address 172.16.1.1 255.255.255.0
 crypto map mymap

!--- Route to the default gateway

ip route 0.0.0.0 0.0.0.0 172.16.1.2
```

Router B

```
!--- Create an ISAKMP policy for Phase 1 negotiations for the L2L tunnels.

crypto isakmp policy 10
encryption aes
hash sha256
authentication pre-share
group 14

!--- Specify the pre-shared key and the remote peer address
!--- to match for the L2L tunnel.

crypto isakmp key vpnuser address 172.16.1.1

!--- Create the Phase 2 policy for IPsec negotiation.

crypto ipsec transform-set myset esp-aes esp-sha256-hmac

!--- Create an ACL for the traffic to be encrypted.
!--- In this example, the traffic from 172.16.2.0/24 to 10.1.1.0/24
!--- is encrypted. The traffic which does not match the access list
!--- is unencrypted for the Internet.

access-list 100 permit ip 172.16.2.0 0.0.0.255 10.1.1.0 0.0.0.255

!--- Create the actual crypto map. Specify an access control list (ACL),
!--- which defines the proxy identities (local and remote host/networks).

!
crypto map mymap 10 ipsec-isakmp
 set peer 172.16.1.1
 set transform-set myset
 match address 100

interface GigabitEthernet0/1
```

```
ip address 172.16.2.1 255.255.255.0
!

!--- Apply the crypto map on the outside interface.

interface GigabitEthernet0/0
ip address 10.0.0.2 255.255.255.0
crypto map mymap

!--- Route to the default gateway.

ip route 0.0.0.0 0.0.0.0 10.0.01
```

Verify

Use this section in order to confirm that your configuration works properly.

The Cisco CLI Analyzer (registered customers only) supports certain **show** commands. Use the Cisco CLI Analyzer to view an analysis of **show** command output.

- **show crypto ipsec sa** - Shows the settings, number of encaps and decaps, local and remote proxy identities, and Security Parameter Indexes (SPIs), inbound and outbound, used by current Security Associations (SAs).

<#root>

RouterA#

show crypto ipsec sa

interface: Serial2/0
    Crypto map tag: mymap, local addr 172.16.1.1

    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): (172.16.2.0/255.255.255.0/0/0)
   current_peer 10.0.0.2 port 500
     PERMIT, flags={origin_is_acl,}

    #pkts encaps: 21, #pkts encrypt: 21, #pkts digest: 21
    #pkts decaps: 21, #pkts decrypt: 21, #pkts verify: 21

    #pkts compressed: 0, #pkts decompressed: 0
    #pkts not compressed: 0, #pkts compr. failed: 0
    #pkts not decompressed: 0, #pkts decompress failed: 0
    #send errors 0, #recv errors 0

local crypto endpt.: 172.16.1.1, remote crypto endpt.: 10.0.0.2

     plaintext mtu 1438, path mtu 1500, ip mtu 1500, ip mtu idb GigabitEthernet0/0
     current outbound spi: 0x8767D399(2271728537)
     PFS (Y/N): N, DH group: none

```
inbound esp sas:
    spi: 0x6E210372(1847657330)
      transform: esp-aes esp-sha256-hmac ,

      in use settings ={Tunnel, }
      conn id: 2007, flow_id: Onboard VPN:7, sibling_flags 80004040, crypto map: mymap
      sa timing: remaining key lifetime (k/sec): (4338240/3269)
      IV size: 16 bytes
      replay detection support: Y
      Status: ACTIVE(ACTIVE)

  inbound ah sas:

  inbound pcp sas:



 outbound esp sas:
    spi: 0x8767D399(2271728537)
      transform: esp-aes esp-sha256-hmac ,

      in use settings ={Tunnel, }
      conn id: 2008, flow_id: Onboard VPN:8, sibling_flags 80004040, crypto map: mymap
      sa timing: remaining key lifetime (k/sec): (4338240/3269)
      IV size: 16 bytes
      replay detection support: Y
      Status: ACTIVE(ACTIVE)

  outbound ah sas:

  outbound pcp sas:
```

- **show crypto isakmp sa** - Shows all current IKE SAs and the status.

<#root>

```
RouterA#
```

show crypto isakmp sa

```
dst             src             state          conn-id slot status
10.0.0.2        172.16.1.1      QM_IDLE              1    0
```

ACTIVE

- **show crypto map** - Shows the crypto map structure created with:
  - Name of the crypto map and sequence number.
  - Peer address.
  - Name of the ACL applied along with the local and remote proxy identities.
  - Values of the IPsec transform-set used.
  - Interface on which the crypto map is binded.

<#root>

```
RouterA#
```

show crypto map

```
Crypto Map IPv4 "mymap" 10 ipsec-isakmp
                Peer = 10.0.0.2

                Extended IP access list

100



access-list 100 permit ip 10.1.1.0 0.0.0.255 172.16.2.0 0.0.0.255

                Current peer: 10.0.0.2
                Security association lifetime: 4608000 kilobytes/3600 seconds
                Responder-Only (Y/N): N
                PFS (Y/N): N
                Mixed-mode : Disabled


Transform sets={
                                myset:  { esp-aes esp-sha256-hmac  } ,

                }
                Interfaces using crypto map mymap:


GigabitEthernet0/0


RouterB#

show crypto map

                Interfaces using crypto map NiStTeSt1:

Crypto Map IPv4 "mymap" 10 ipsec-isakmp


 Peer = 172.16.1.1

                Extended IP access list

100



access-list 100 permit ip 172.16.2.0 0.0.0.255 10.1.1.0 0.0.0.255

                Current peer: 10.0.0.1
                Security association lifetime: 4608000 kilobytes/3600 seconds
                Responder-Only (Y/N): N
                PFS (Y/N): N
                Mixed-mode : Disabled


Transform sets={
                                myset:  { esp-aes esp-sha256-hmac  } ,

                }
                Interfaces using crypto map mymap:


 GigabitEthernet0/0
```

- **show crypto session remote <*IP address of peer VPN endpoint*> detail**

```
<#root>

RouterA#

show crypto session remote 10.0.0.2 detail


Crypto session current status

Interface: GigabitEthernet0/0

Uptime: 00:39:16
Session status: UP-ACTIVE   >>>>> Status of the VPN

Peer: 10.0.0.2 port 500 fvrf: (none) ivrf: (none)
      Phase1_id: 10.0.0.2
      Desc: (none)
  Session ID: 0
  IKEv1 SA: local 172.16.1.1/500 remote 10.0.0.2/500 Active
          Capabilities:(none) connid:1004 lifetime:23:20:43
  IPSEC FLOW: permit ip 10.1.1.0/255.255.255.0 172.16.2.0/255.255.255.0
        Active SAs: 2, origin: crypto map
        Inbound:  #pkts dec'ed 21 drop 0 life (KB/Sec) 4338240/1243
        Outbound: #pkts enc'ed 21 drop 0 life (KB/Sec) 4338240/1243


RouterB#

show crypto session remote 172.16.1.1 detail

Crypto session current status

Interface: GigabitEthernet0/0

Uptime: 00:40:43
Session status: UP-ACTIVE    >>>>> Status of the VPN

Peer: 172.16.1.1 port 500 fvrf: (none) ivrf: (none)
      Phase1_id: 172.16.1.1
      Desc: (none)
  Session ID: 0
  IKEv1 SA: local 10.0.0.2/500 remote 172.16.1.1/500 Active
          Capabilities:(none) connid:1004 lifetime:23:19:16
  IPSEC FLOW: permit ip 172.16.2.0/255.255.255.0 10.1.1.0/255.255.255.0
        Active SAs: 2, origin: crypto map
        Inbound:  #pkts dec'ed 21 drop 0 life (KB/Sec) 4271304/1156
        Outbound: #pkts enc'ed 21 drop 0 life (KB/Sec) 4271304/1156
```

Troubleshoot

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

Commands

The Cisco CLI Analyzer (registered customers only) supports certain **show** commands. Use the Cisco CLI Analyzer to view an analysis of **show** command output.

Note: Refer to Important Information on Debug Commands before you use **debug** commands.

- **debug crypto isakmp** - Displays the ISAKMP negotiations of Phase 1.
- **debug crypto ipsec** - Displays the IPsec negotiations of Phase 2.

Sample Debug Output

The sample debug output is from RouterA (initiator) for a successful VPN negotiation.

Router

<#root>

```
RouterA#
```

debug crypto isakmp

```
Jul  1 04:08:49.558: ISAKMP: (0):SA request profile is (NULL)
Jul  1 04:08:49.558: ISAKMP: (0):Created a peer struct for 10.0.0.2, peer port 500
Jul  1 04:08:49.558: ISAKMP: (0):New peer created peer = 0x2108BC48 peer_handle = 0x80000005
Jul  1 04:08:49.558: ISAKMP: (0):Locking peer struct 0x2108BC48, refcount 1 for isakmp_initiator
Jul  1 04:08:49.558: ISAKMP: (0):local port 500, remote port 500
Jul  1 04:08:49.558: ISAKMP: (0):set new node 0 to QM_IDLE
Jul  1 04:08:49.558: ISAKMP: (0):Find a dup sa in the avl tree during calling isadb_insert sa = 3DA022D8
Jul  1 04:08:49.558: ISAKMP: (0):Can not start Aggressive mode,.!
Success rate is 50 percent (1/2), round-trip min/avg/max = 1/1/1 ms
Router# trying Main mode.
Jul  1 04:08:49.558: ISAKMP: (0):found peer pre-shared key matching 10.0.0.2
Jul  1 04:08:49.558: ISAKMP: (0):constructed NAT-T vendor-rfc3947 ID
Jul  1 04:08:49.558: ISAKMP: (0):constructed NAT-T vendor-07 ID
Jul  1 04:08:49.558: ISAKMP: (0):constructed NAT-T vendor-03 ID
Jul  1 04:08:49.558: ISAKMP: (0):constructed NAT-T vendor-02 ID
Jul  1 04:08:49.558: ISAKMP: (0):Input = IKE_MESG_FROM_IPSEC, IKE_SA_REQ_MM
Jul  1 04:08:49.558: ISAKMP: (0):Old State = IKE_READY  New State = IKE_I_MM1

Jul  1 04:08:49.562: ISAKMP: (0):beginning Main Mode exchange
Jul  1 04:08:49.562: ISAKMP-PAK: (0):sending packet to 10.0.0.2 my_port 500 peer_port 500 (I) MM_NO_STAT
Jul  1 04:08:49.562: ISAKMP: (0):Sending an IKE IPv4 Packet.
Jul  1 04:08:49.690: ISAKMP-PAK: (0):received packet from 10.0.0.2 dport 500 sport 500 Global (I) MM_NO_
Jul  1 04:08:49.690: ISAKMP: (0):Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH
Jul  1 04:08:49.690: ISAKMP: (0):Old State = IKE_I_MM1  New State = IKE_I_MM2

Jul  1 04:08:49.690: ISAKMP: (0):processing SA payload. message ID = 0
Jul  1 04:08:49.690: ISAKMP: (0):processing vendor id payload
Jul  1 04:08:49.690: ISAKMP: (0):vendor ID seems Unity/DPD but major 69 mismatch
Jul  1 04:08:49.690: ISAKMP: (0):vendor ID is NAT-T RFC 3947
Jul  1 04:08:49.690: ISAKMP: (0):found peer pre-shared key matching 10.0.0.2
Jul  1 04:08:49.690: ISAKMP: (0):local preshared key found
Jul  1 04:08:49.690: ISAKMP: (0):Scanning profiles for xauth ...
Jul  1 04:08:49.690: ISAKMP: (0):Checking ISAKMP transform 1 against priority 10 policy
Jul  1 04:08:49.690: ISAKMP: (0):      encryption AES-CBC
Jul  1 04:08:49.690: ISAKMP: (0):      keylength of 128
Jul  1 04:08:49.690: ISAKMP: (0):      hash SHA256
Jul  1 04:08:49.690: ISAKMP: (0):      default group 14
Jul  1 04:08:49.690: ISAKMP: (0):      auth pre-share
Jul  1 04:08:49.690: ISAKMP: (0):      life type in seconds
Jul  1 04:08:49.690: ISAKMP:      life duration (VPI) of  0x0 0x1 0x51 0x80
Jul  1 04:08:49.690: ISAKMP: (0):atts are acceptable. Next payload is 0
Jul  1 04:08:49.690: ISAKMP: (0):Acceptable atts:actual life: 0
Jul  1 04:08:49.690: ISAKMP: (0):Acceptable atts:life: 0
Jul  1 04:08:49.690: ISAKMP: (0):Fill atts in sa vpi_length:4
```

```
Jul  1 04:08:49.690: ISAKMP: (0):Fill atts in sa life_in_seconds:86400
Jul  1 04:08:49.690: ISAKMP: (0):Returning Actual lifetime: 86400
Jul  1 04:08:49.690: ISAKMP: (0):Started lifetime timer: 86400.

Jul  1 04:08:49.814: ISAKMP: (0):processing vendor id payload
Jul  1 04:08:49.814: ISAKMP: (0):vendor ID seems Unity/DPD but major 69 mismatch
Jul  1 04:08:49.814: ISAKMP: (0):vendor ID is NAT-T RFC 3947
Jul  1 04:08:49.814: ISAKMP: (0):Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE
Jul  1 04:08:49.814: ISAKMP: (0):Old State = IKE_I_MM2  New State = IKE_I_MM2

Jul  1 04:08:49.818: ISAKMP-PAK: (0):sending packet to 10.0.0.2 my_port 500 peer_port 500 (I) MM_SA_SETU
Jul  1 04:08:49.818: ISAKMP: (0):Sending an IKE IPv4 Packet.
Jul  1 04:08:49.818: ISAKMP: (0):Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE
Jul  1 04:08:49.818: ISAKMP: (0):Old State = IKE_I_MM2  New State = IKE_I_MM3

Jul  1 04:08:49.978: ISAKMP-PAK: (0):received packet from 10.0.0.2 dport 500 sport 500 Global (I) MM_SA_
Jul  1 04:08:49.978: ISAKMP: (0):Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH
Jul  1 04:08:49.978: ISAKMP: (0):Old State = IKE_I_MM3  New State = IKE_I_MM4

Jul  1 04:08:49.978: ISAKMP: (0):processing KE payload. message ID = 0
Jul  1 04:08:50.138: ISAKMP: (0):processing NONCE payload. message ID = 0
Jul  1 04:08:50.138: ISAKMP: (0):found peer pre-shared key matching 10.0.0.2
Jul  1 04:08:50.138: ISAKMP: (1004):processing vendor id payload
Jul  1 04:08:50.138: ISAKMP: (1004):vendor ID is Unity
Jul  1 04:08:50.138: ISAKMP: (1004):processing vendor id payload
Jul  1 04:08:50.138: ISAKMP: (1004):vendor ID is DPD
Jul  1 04:08:50.138: ISAKMP: (1004):processing vendor id payload
Jul  1 04:08:50.138: ISAKMP: (1004):speaking to another IOS box!
Jul  1 04:08:50.138: ISAKMP: (1004):received payload type 20
Jul  1 04:08:50.138: ISAKMP: (1004):His hash no match - this node outside NAT
Jul  1 04:08:50.138: ISAKMP: (1004):received payload type 20
Jul  1 04:08:50.138: ISAKMP: (1004):No NAT Found for self or peer
Jul  1 04:08:50.138: ISAKMP: (1004):Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE
Jul  1 04:08:50.138: ISAKMP: (1004):Old State = IKE_I_MM4  New State = IKE_I_MM4

Jul  1 04:08:50.138: ISAKMP: (1004):Send initial contact
Jul  1 04:08:50.138: ISAKMP: (1004):SA is doing
Jul  1 04:08:50.138: ISAKMP: (1004):pre-shared key authentication using id type ID_IPV4_ADDR
Jul  1 04:08:50.138: ISAKMP: (1004):
```

ID payload

```
               next-payload : 8
               type         : 1
Jul  1 04:08:50.138: ISAKMP: (1004):        address      :
```

172.16.1.1   >>>>> IKE ID sent

```
Jul  1 04:08:50.138: ISAKMP: (1004):        protocol     : 17
               port         : 500
               length       : 12
Jul  1 04:08:50.138: ISAKMP: (1004):Total payload length: 12
Jul  1 04:08:50.138: ISAKMP-PAK: (1004):sending packet to 10.0.0.2 my_port 500 peer_port 500 (I) MM_KEY_
Jul  1 04:08:50.138: ISAKMP: (1004):Sending an IKE IPv4 Packet.
Jul  1 04:08:50.138: ISAKMP: (1004):Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE
Jul  1 04:08:50.138: ISAKMP: (1004):Old State = IKE_I_MM4  New State = IKE_I_MM5

Jul  1 04:08:50.138: ISAKMP-PAK: (1004):received packet from 10.0.0.2 dport 500 sport 500 Global (I) MM_
Jul  1 04:08:50.142: ISAKMP: (1004):processing ID payload. message ID = 0
Jul  1 04:08:50.142: ISAKMP: (1004):
```

ID payload

```
               next-payload : 8
```

```
                type         : 1
Jul  1 04:08:50.142: ISAKMP: (1004):        address      :
```

10.0.0.2   >>>>> IKE ID received

```
Jul  1 04:08:50.142: ISAKMP: (1004):        protocol     : 17
                port         : 500
                length       : 12
Jul  1 04:08:50.142: ISAKMP: (0):peer matches *none* of the profiles
Jul  1 04:08:50.142: ISAKMP: (1004):processing HASH payload. message ID = 0
Jul  1 04:08:50.142: ISAKMP: (1004):SA authentication status:
                authenticated
Jul  1 04:08:50.142: ISAKMP: (1004):SA has been authenticated with 10.0.0.2
Jul  1 04:08:50.142: ISAKMP: (0):Trying to insert a peer 172.16.1.1/10.0.0.2/500/,
Jul  1 04:08:50.142: ISAKMP: (0): and inserted successfully 2108BC48.
Jul  1 04:08:50.142: ISAKMP: (1004):Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH
Jul  1 04:08:50.142: ISAKMP: (1004):Old State = IKE_I_MM5  New State = IKE_I_MM6

Jul  1 04:08:50.142: ISAKMP: (1004):Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE
Jul  1 04:08:50.142: ISAKMP: (1004):Old State = IKE_I_MM6  New State = IKE_I_MM6

Jul  1 04:08:50.142: ISAKMP: (1004):Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE
Jul  1 04:08:50.142: ISAKMP: (1004):Old State = IKE_I_MM6  New State = IKE_P1_COMPLETE

Jul  1 04:08:50.142: ISAKMP: (1004):beginning Quick Mode exchange, M-ID of 3184909968
Jul  1 04:08:50.142: ISAKMP: (1004):QM Initiator gets spi
Jul  1 04:08:50.142: ISAKMP-PAK: (1004):sending packet to 10.0.0.2 my_port 500 peer_port 500 (I) QM_IDLE
Jul  1 04:08:50.142: ISAKMP: (1004):Sending an IKE IPv4 Packet.
Jul  1 04:08:50.142: ISAKMP: (1004):Node 3184909968, Input = IKE_MESG_INTERNAL, IKE_INIT_QM
Jul  1 04:08:50.142: ISAKMP: (1004):Old State = IKE_QM_READY  New State = IKE_QM_I_QM1
```

Jul 1 04:08:50.142: ISAKMP: (1004):Input = IKE_MESG_INTERNAL, IKE_PHASE1_COMPLETE   >>>>> Phase1 negoti

```
Jul  1 04:08:50.142: ISAKMP: (1004):Old State = IKE_P1_COMPLETE  New State = IKE_P1_COMPLETE

Jul  1 04:08:50.146: ISAKMP-PAK: (1004):received packet from 10.0.0.2 dport 500 sport 500 Global (I) QM_
Jul  1 04:08:50.146: ISAKMP: (1004):processing HASH payload. message ID = 3184909968
Jul  1 04:08:50.146: ISAKMP: (1004):processing SA payload. message ID = 3184909968
Jul  1 04:08:50.146: ISAKMP: (1004):Checking IPSec proposal 1
Jul  1 04:08:50.146: ISAKMP: (1004):transform 1, ESP_AES
Jul  1 04:08:50.146: ISAKMP: (1004):   attributes in transform:
Jul  1 04:08:50.146: ISAKMP: (1004):      encaps is 1 (Tunnel)
Jul  1 04:08:50.146: ISAKMP: (1004):      SA life type in seconds
Jul  1 04:08:50.146: ISAKMP: (1004):      SA life duration (basic) of 3600
Jul  1 04:08:50.146: ISAKMP: (1004):      SA life type in kilobytes
Jul  1 04:08:50.146: ISAKMP:      SA life duration (VPI) of  0x0 0x46 0x50 0x0
Jul  1 04:08:50.146: ISAKMP: (1004):      authenticator is HMAC-SHA256
Jul  1 04:08:50.146: ISAKMP: (1004):      key length is 128
Jul  1 04:08:50.146: ISAKMP: (1004):atts are acceptable.
Jul  1 04:08:50.146: IPSEC(validate_proposal_request): proposal part #1
Jul  1 04:08:50.146: IPSEC(validate_proposal_request): proposal part #1,
  (key eng. msg.) INBOUND local= 172.16.1.1:0, remote= 10.0.0.2:0,
    local_proxy= 10.1.1.0/255.255.255.0/256/0,
    remote_proxy= 172.16.2.0/255.255.255.0/256/0,
    protocol= ESP, transform= esp-aes esp-sha256-hmac  (Tunnel),
    lifedur= 0s and 0kb,
    spi= 0x0(0), conn_id= 0, keysize= 128, flags= 0x0
Jul  1 04:08:50.146: Crypto mapdb : proxy_match
                src addr     : 10.1.1.0
                dst addr     : 172.16.2.0
                protocol     : 0
                src port     : 0
                dst port     : 0
```

```
Jul  1 04:08:50.146: (ipsec_process_proposal)Map Accepted: mymap, 10

Jul  1 04:08:50.146: ISAKMP: (1004):processing NONCE payload. message ID = 3184909968
Jul  1 04:08:50.146: ISAKMP: (1004):processing ID payload. message ID = 3184909968
Jul  1 04:08:50.146: ISAKMP: (1004):processing ID payload. message ID = 3184909968
Jul  1 04:08:50.146: ISAKMP: (1004):Node 3184909968, Input = IKE_MESG_FROM_PEER, IKE_QM_EXCH
Jul  1 04:08:50.146: ISAKMP: (1004):Old State = IKE_QM_I_QM1  New State = IKE_QM_IPSEC_INSTALL_AWAIT
Jul  1 04:08:50.146: IPSEC(key_engine): got a queue event with 1 KMI message(s)
Jul  1 04:08:50.146: Crypto mapdb : proxy_match
               src addr     : 10.1.1.0
               dst addr     : 172.16.2.0
               protocol     : 256
               src port     : 0
               dst port     : 0
Jul  1 04:08:50.146: IPSEC(crypto_ipsec_create_ipsec_sas): Map found mymap, 10
Jul  1 04:08:50.146: IPSEC(crypto_ipsec_sa_find_ident_head): reconnecting with the same proxies and peer
Jul  1 04:08:50.146: IPSEC(get_old_outbound_sa_for_peer): No outbound SA found for peer 22C55798
Jul  1 04:08:50.146: IPSEC(create_sa): sa created,
  (sa) sa_dest= 172.16.1.1, sa_proto= 50,


sa_spi= 0x6E210372(1847657330),    >>>>> Inbound SPI

    sa_trans= esp-aes esp-sha256-hmac , sa_conn_id= 2007
    sa_lifetime(k/sec)= (4608000/3600),
  (identity) local= 172.16.1.1:0, remote= 10.0.0.2:0,
    local_proxy= 10.1.1.0/255.255.255.0/256/0,
    remote_proxy= 172.16.2.0/255.255.255.0/256/0
Jul  1 04:08:50.146: IPSEC(create_sa): sa created,
  (sa) sa_dest= 10.0.0.2, sa_proto= 50,


sa_spi= 0x8767D399(2271728537),   >>>>> Outbound SPI

    sa_trans= esp-aes esp-sha256-hmac , sa_conn_id= 2008
    sa_lifetime(k/sec)= (4608000/3600),
  (identity) local= 172.16.1.1:0, remote= 10.0.0.2:0,
    local_proxy= 10.1.1.0/255.255.255.0/256/0,
    remote_proxy= 172.16.2.0/255.255.255.0/256/0
Jul  1 04:08:50.150: IPSEC: Expand action denied, notify RP
Jul  1 04:08:50.150: ISAKMP-ERROR: (0):Failed to find peer index node to update peer_info_list
Jul  1 04:08:50.150: ISAKMP: (1004):Received IPSec Install callback... proceeding with the negotiation

Jul  1 04:08:50.150: ISAKMP: (1004):Successfully installed IPSEC SA (SPI:0x6E210372) on GigabitEthernet0

Jul  1 04:08:50.150: ISAKMP-PAK: (1004):sending packet to 10.0.0.2 my_port 500 peer_port 500 (I) QM_IDLE
Jul  1 04:08:50.150: ISAKMP: (1004):Sending an IKE IPv4 Packet.
Jul  1 04:08:50.150: ISAKMP: (1004):deleting node -1110057328 error FALSE reason "No Error"
Jul  1 04:08:50.150: ISAKMP: (1004):Node 3184909968, Input = IKE_MESG_FROM_IPSEC, IPSEC_INSTALL_DONE

Jul  1 04:08:50.150: ISAKMP: (1004):Old State = IKE_QM_IPSEC_INSTALL_AWAIT  New State = IKE_QM_PHASE2_CO

Jul  1 04:08:50.950: ISAKMP: (1003):purging node -262896492
Jul  1 04:09:09.710: ISAKMP: (1003):purging SA., sa=3DA05D84, delme=3DA05D84
```

Related Information

- **IPsec Negotiation/IKE Protocols**
- **Technical Support & Documentation - Cisco Systems**