NAT を使用した静的にアドレス指定された ASA と動的にアドレス指定された IOS ルータ間の動的な IPsec の設定例

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概要

このドキュメントでは、IOS ルータからのダイナミック IPsec 接続を受け入れるために適応型セキュリティ アプライアンス（ASA）を有効にする方法に関するサンプル設定を示します。

前提条件

要件

この設定を試す前に、IPsec トンネルを確立するためのインターネット接続が ASA とルータの両方に備わっていることを確認してください。

このドキュメントでは、IP アドレスがパブリック インターフェイスとプライベート インターフェイスの両方に割り当てられており、リモート VPN デバイスの IP アドレスに ping できることを前提とします。

使用するコンポーネント

このドキュメントの情報は、次のソフトウェアとハードウェアのバージョンに基づいています。

- Cisco IOS ソフトウェア リリース 15.2(4)M3 がインストールされた Cisco 2900 ルータ
- Cisco 適応型セキュリティ アプライアンス ソフトウェア バージョン 9.4(1)

このドキュメントの情報は、特定のラボ環境にあるデバイスに基づいて作成されました。このドキュメントで使用するすべてのデバイスは、初期（デフォルト）設定の状態から起動しています。対象のネットワークが実稼働中である場合には、どのようなコマンドについても、その潜在的な影響について確実に理解しておく必要があります。

表記法

ドキュメント表記の詳細については、『シスコ テクニカル ティップスの表記法』を参照してください。

背景説明

プライベート ネットワーク 10.1.1.x からインターネットにアクセスする場合は、リモート ルータがネットワーク アドレス変換（NAT）を実行します。10.1.1.x から ASA の背後にあるプライベート ネットワーク 10.2.2.x へのトラフィックは、NAT プロセスから除外されます。ルータから、リモート ネットワーク（10.2.2.x）がある ASA との接続をトラフィック（10.1.1.x）が開始する場合にのみ、IPsec トンネルが確立されます。 ルータは ASA への接続を開始できますが、ASA はルータへの接続を開始できません。

この設定により、ASA は、リモート VPN ルータとのダイナミック IPsec LAN 間（L2L）トンネルを構築できます。このルータは、インターネット サービス プロバイダーから外部パブリック IP アドレスをダイナミックに受信します。プロバイダーからダイナミックに IP アドレスを割り当てる目的で、Dynamic Host Configuration Protocol（DHCP）がこのメカニズムを提供します。これにより、ホストで使用されなくなった IP アドレスを再利用できます。

ASAでは、トンネルを通過するトラフィックが変換されないように手動NATを設定できます。この例では、10.2.2.0ネットワーク上で10.1.1.0ネットワークに移動する場合、10.1.1.0ネットワークトラフィックを外部インターフェイスのIPアドレスに変換せずに暗号化できます。ルータでは、NAT なしで 10.1.1.0 ネットワーク トラフィックの暗号化を許可するために **route-map and access-list コマンドが使用されます。** ただし、他の場所（インターネットなど）にアクセスする場合は、ポート アドレス変換（PAT）を通して外部インターフェイス IP アドレスに変換されます。

注：NAT の詳細については、『NAT の適用』を参照してください

トンネル経由のトラフィックには PAT を通過させず、*インターネットへのトラフィックには PAT を通過させるには、次の設定コマンドが ASA で必要です*

```
object network LOCAL
 subnet 10.2.2.0 255.255.255.0
object network REMOTE
 subnet 10.1.1.0 255.255.255.0

nat (inside,outside) source static LOCAL LOCAL destination static REMOTE REMOTE

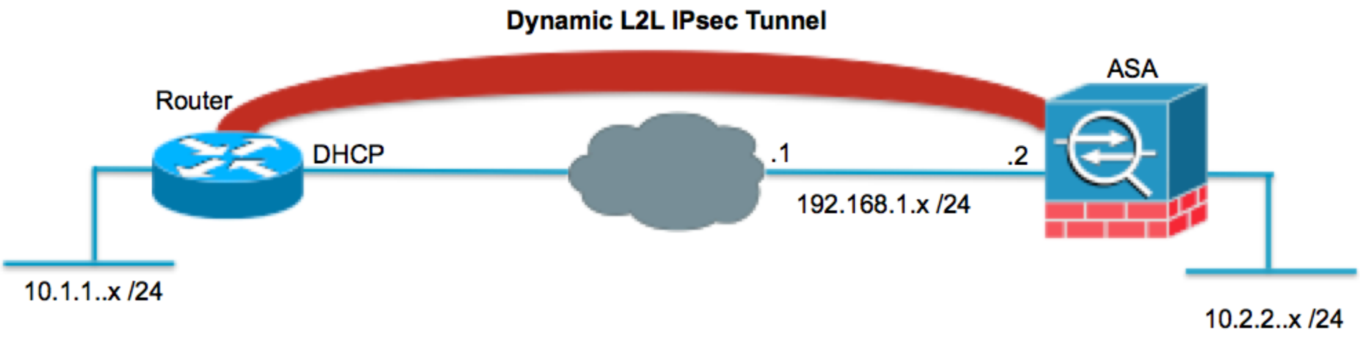
object network LOCAL
 nat (inside,outside) dynamic interface
```

設定

このセクションでは、このドキュメントで説明する機能を設定するために必要な情報を提供しています。

ネットワーク図

このドキュメントでは、次のネットワーク セットアップを使用します。



設定

このドキュメントでは、次の構成を使用します。

ルータ

```
Router#show running-config
Current configuration : 1354 bytes
!
version 15.2
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


!--- 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
```

```
 encryption aes 256
 hash sha
 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 myset esp-aes 256 esp-sha-hmac


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


crypto map mymap 10 ipsec-isakmp


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


 set peer 192.168.1.2


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


 set transform-set myset


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


 match address 101
!
!
!
!
interface FastEthernet0/0

!--- 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 "mymap" for IPsec.

 crypto map mymap
!
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 FastEthernet0/0
!
ip nat inside source route-map nonat interface FastEthernet0/0 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
```

ASA

```
ASA#show running-config
ASA Version 9.4(1)
!
hostname ASA
enable password 8Ry2YjIyt7RRXU24 encrypted
names
!

!--- Configure the outside and inside interfaces.

interface GigabitEthernet0/0
 nameif outside
 security-level 0
 ip address 192.168.1.2 255.255.255.0
!
interface GigabitEthernet0/1
 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


!--- Manual NAT prevents NAT for networks specified in the statement - nonat.
!--- The Object NAT 1 command specifies PAT using
!--- the outside interface for all other traffic.

object network LOCAL
 subnet 10.2.2.0 255.255.255.0
object network REMOTE
 subnet 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



!--- Manual NAT prevents NAT for networks specified in the statement - nonat.
!--- The Object NAT 1 command specifies PAT using
!--- the outside interface for all other traffic.
```

```
nat (inside,outside) source static LOCAL LOCAL destination static REMOTE REMOTE
!
object network LOCAL
 nat (inside,outside) dynamic interface

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.


crypto ipsec ikev1 transform-set myset esp-aes-256 esp-sha-hmac


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


crypto dynamic-map cisco 1 set ikev1 transform-set myset


!--- 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.
!--- The configuration commands here define the Phase
!--- 1 policy parameters that are used.

crypto ikev1 enable outside
crypto isakmp policy 10
 authentication pre-share
 encryption aes-256
 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 cisco123

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
```

セキュリティ アソシエーション（SA）の消去

ASA の特権モードで、次のコマンドを使用します。

- **clear crypto ipsec sa：アクティブな IPSec SA を削除します。**crypto キーワードはオプションです。
- **clear crypto isakmp sa：アクティブな IKE SA を削除します。**crypto キーワードはオプションです。

確認

ここでは、設定が正常に機能しているかどうかを確認します。

Cisco CLI アナライザ（登録ユーザ専用）は、特定の show コマンドをサポートします。show コマンド出力の分析を表示するには、Cisco CLI アナライザを使用します。

ASA セキュリティ アプライアンス - show コマンド

- **show crypto isakmp sa：ピアにある現在のすべての IKE SA を表示します。**

```
ASA#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：ピアにある現在のすべての IPsec SA を表示します。

```
ASA#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
```

リモート IOS ルータ - show コマンド

- show crypto isakmp sa：ピアにある現在のすべての IKE SA を表示します。

```
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：ピアにある現在のすべての IPsec SA を表示します。

```
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:
```

トラブルシュート

ここでは、設定のトラブルシューティングに使用できる情報を示します。

Cisco CLI アナライザ（登録ユーザ専用）は、特定の show コマンドをサポートします。show コマンド出力の分析を表示するには、Cisco CLI アナライザを使用します。

> **注：debug コマンドを使用する前に、『**debug コマンドの重要な情報』および『IP Security のトラブルシューティング：debug コマンドの説明と使用』を参照してください。

- 適応型セキュリティ アプライアンス - デバッグ出力**debug crypto ipsec 7：フェーズ 2 の IPsec ネゴシエーションを表示します。debug crypto isakmp 7**：フェーズ 1 の ISAKMP ネゴシエーションを表示します。
- リモート IOS ルータ - デバッグ出力**debug crypto ipsec：フェーズ 2 の IPsec ネゴシエーションを表示します。debug crypto isakmp**：フェーズ 1 の ISAKMP ネゴシエーションを表示します。

ASA - デバッグ出力

```
ASA#debug crypto isakmp 7
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Messa
ge (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 VID 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) w
ith 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 pay
load (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 Ve
ndor 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, Generat
ing keys for Responder...
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE SENDING Message (msgid=0) w
ith payloads : HDR + KE (4) + NONCE (10) + VENDOR (13) + VENDOR (13) + VENDOR (1
3) + 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=4bc
07a70) 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 = 0x9ac1e72c
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3,
IKE got a KEY_ADD msg for SA: SPI = 0x9ac1e72c
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: 0x97550AC8
    Use SPI: true
IPSEC: Completed inbound permit rule, SPI 0x97550AC8
    Rule ID: 0x028A7460
```

リモート IOS ルータ - デバッグ出力

```
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_MESG_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_MESG_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_MESG_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_MESG_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
```

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*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_MESG_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_MESG_INTERNAL,
IKE_PHASE1_COMPLETE
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*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_MESG_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_MESG_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_MESG_FROM_PEER,
IKE_MESG_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
```

関連情報

- Cisco ASA 5500-X シリーズ次世代ファイアウォール
- Cisco ASA コマンド リファレンス
- IPSec ネゴシエーション/IKE プロトコルに関するサポート ページ
- Requests for Comments (RFCs)
- テクニカル サポートとドキュメント – Cisco Systems