

Configurar un par dinámico y a los clientes VPN del LAN a LAN del router IPSec

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Introducción

Esta configuración muestra una configuración de LAN a LAN entre dos routers en un entorno de hub-spoke. Cisco VPN Clients también conectan con el hub y utilizan Autenticación ampliada (Xauth).

El router radial en este escenario obtiene su dirección IP dinámicamente vía el DHCP. El uso del Protocolo de configuración dinámica de host (DHCP) es común en las situaciones donde el spoke está conectado con Internet vía un DSL o un módem de cable. Esto es porque el ISP provisions a menudo los IP Addresses dinámicamente usando el DHCP en estas conexiones baratas.

Sin la configuración adicional, el uso de una clave comodín previamente compartida en el router de eje de conexión no es posible en esta situación. Esto es porque el Xauth para las conexiones de cliente VPN rompe la conexión de LAN a LAN. Sin embargo, cuando usted inhabilita el Xauth, reduce la capacidad de autenticar a los clientes VPN.

La introducción de perfiles ISAKMP en el Software Release 12.2(15)T de Cisco IOS® hace esta configuración posible puesto que usted puede hacer juego en otras propiedades de la conexión (grupo del cliente VPN, IP Address de Peer, [FQDN] del Nombre de dominio totalmente calificado (FQDN), y así sucesivamente) bastante que apenas el IP Address de Peer. Los perfiles ISAKMP son el tema de esta configuración.

Nota: Usted puede también utilizar la palabra clave del ninguno-**Xauth** con el **comando crypto isakmp key** de desviar el Xauth para los pares del LAN a LAN. Refiera al [Capacidad para deshabilitar Xauth para dispositivos estáticos Ipsec](#) y [IPSec el configurar entre dos Routers y un](#)

[Cliente Cisco VPN 4.x](#) para más información.

[La configuración del router radial](#) en este documento se puede replicar en el resto de los routers radiales que conecten en el mismo concentrador. La única diferencia entre el spokes es la lista de acceso que se refiere al tráfico que se cifrará.

Refiera al [cliente EzVPN y al servidor en el ejemplo de configuración del mismo router](#) para aprender más sobre el escenario donde usted puede configurar a un router como cliente EzVPN y el servidor en lo mismo interconecta.

Refiera a los [túneles de LAN a LAN en un concentrador VPN 3000 con un firewall PIX configurado para que el DHCP](#) configure el Cisco VPN 3000 Concentrator Series para crear los túneles IPsec dinámicamente con los Firewall remotos del Cisco PIX que utilizan el DHCP para conseguir los IP Addresses en sus interfaces públicas.

Refiera al [túnel ipsec de LAN a LAN en un concentrador VPN 3000 con un router del Cisco IOS configurado por el ejemplo de la configuración DHCP](#) para configurar el VPN 3000 Concentrator Series para crear los túneles IPsec dinámicamente con los dispositivos VPN remotos que reciben los IP Address dinámicos en sus interfaces públicas.

Refiera al [IPSec entre un router IOS estático y un PIX/ASA dinámico 7.x con el ejemplo de la configuración del NAT](#) para permitir al dispositivo de seguridad del PIX/ASA para validar las conexiones dinámicas del IPSec del router IOS®.

prerrequisitos

Requisitos

No hay requisitos específicos para este documento.

Componentes Utilizados

Los perfiles de ipsec fueron introducidos en el Cisco IOS Software Release 12.2(15)T. Debido al Id. de bug Cisco [CSCea77140 \(clientes registrados solamente\)](#) que usted necesita funcionar con el Cisco IOS Software Release 12.3(3) o Posterior, o al Cisco IOS Software Release 12.3(2)T o Posterior para que esta configuración trabaje con éxito. Estas configuraciones fueron probadas usando estas versiones de software:

- Cisco IOS Software Release 12.3(6a) en el router de eje de conexión
- Cisco IOS Software Release 12.2(23a) en el router radial (ésta puede ser cualquier versión de criptografía)
- Cliente VPN de Cisco versión 4.0(4) en el Windows 2000

La información que contiene este documento se creó a partir de los dispositivos en un ambiente de laboratorio específico. Todos los dispositivos que se utilizan en este documento se pusieron en funcionamiento con una configuración verificada (predeterminada). Si la red está funcionando, asegúrese de haber comprendido el impacto que puede tener cualquier comando.

Convenciones

Consulte [Convenciones de Consejos TécnicosCisco](#) para obtener más información sobre las

convenciones del documento.

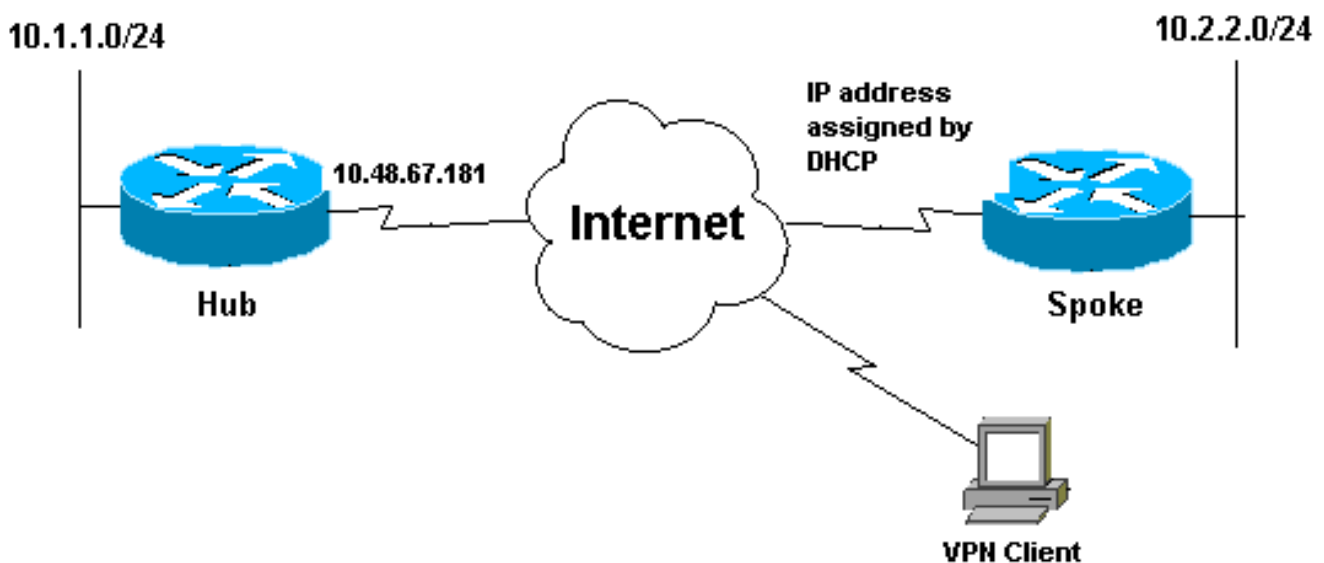
Configurar

En esta sección encontrará la información para configurar las funciones descritas en este documento.

Nota: Use la herramienta [Command Lookup Tool](#) ([clientes registrados solamente](#)) para encontrar más información sobre los comandos usados en este documento.

Diagrama de la red

Este documento utiliza la configuración de red que se muestra en el siguiente diagrama.



Configuraciones

En este documento, se utiliza esta configuración de red:

- [Configuración del hub](#)
- [Configuración radial](#)

Configuración del hub

```
version 12.3
service timestamps debug datetime msec
service timestamps log datetime msec
service password-encryption
!
hostname Hub ! no logging on ! username gfullage
password 7 0201024E070A0E2649 aaa new-model ! ! aaa
authentication login clientauth local aaa authorization
network groupauth local aaa session-id common ip
subnet-zero ! ! no ip domain lookup ! ! !--- Keyring
that defines wildcard pre-shared key. crypto keyring
spokes pre-shared-key address 0.0.0.0 0.0.0.0 key
cisco123 ! crypto isakmp policy 10 encr 3des
authentication pre-share group 2 ! !--- VPN Client
```

```

configuration for group "testgroup" !--- (this name is
configured in the VPN Client). crypto isakmp client
configuration group testgroup key cisco321 dns 1.1.1.1
2.2.2.2 wins 3.3.3.3 4.4.4.4 domain cisco.com pool
ippool ! !--- Profile for LAN-to-LAN connection, that
references !--- the wildcard pre-shared key and a
wildcard !--- identity (this is what is broken in !---
Cisco bug ID CSCea77140) and no Xauth. crypto isakmp
profile L2L description LAN-to-LAN for spoke router(s)
connection keyring spokes match identity address 0.0.0.0
!--- Profile for VPN Client connections, that matches !-
-- the "testgroup" group and defines the Xauth
properties. crypto isakmp profile VPNclient description
VPN clients profile match identity group testgroup
client authentication list clientauth isakmp
authorization list groupauthor client configuration
address respond ! ! crypto ipsec transform-set myset
esp-3des esp-sha-hmac ! !--- Two instances of the
dynamic crypto map !--- reference the two previous IPsec
profiles. crypto dynamic-map dynmap 5 set transform-set
myset set isakmp-profile VPNclient crypto dynamic-map
dynmap 10 set transform-set myset set isakmp-profile L2L
! ! !--- Crypto-map only references the two !---
instances of the previous dynamic crypto map. crypto map
mymap 10 ipsec-isakmp dynamic dynmap ! ! ! interface
FastEthernet0/0 description Outside interface ip address
10.48.67.181 255.255.255.224 no ip mroute-cache duplex
auto speed auto crypto map mymap ! interface
FastEthernet0/1 description Inside interface ip address
10.1.1.1 255.255.254.0 duplex auto speed auto no
keepalive ! ip local pool ippool 10.5.5.1 10.5.5.254 no
ip http server no ip http secure-server ip classless ip
route 0.0.0.0 0.0.0.0 10.48.66.181 ! ! call rsvp-sync !
! dial-peer cor custom ! ! line con 0 exec-timeout 0 0
escape-character 27 line aux 0 line vty 0 4 password 7
121A0C041104 ! ! end

```

Configuración radial

```

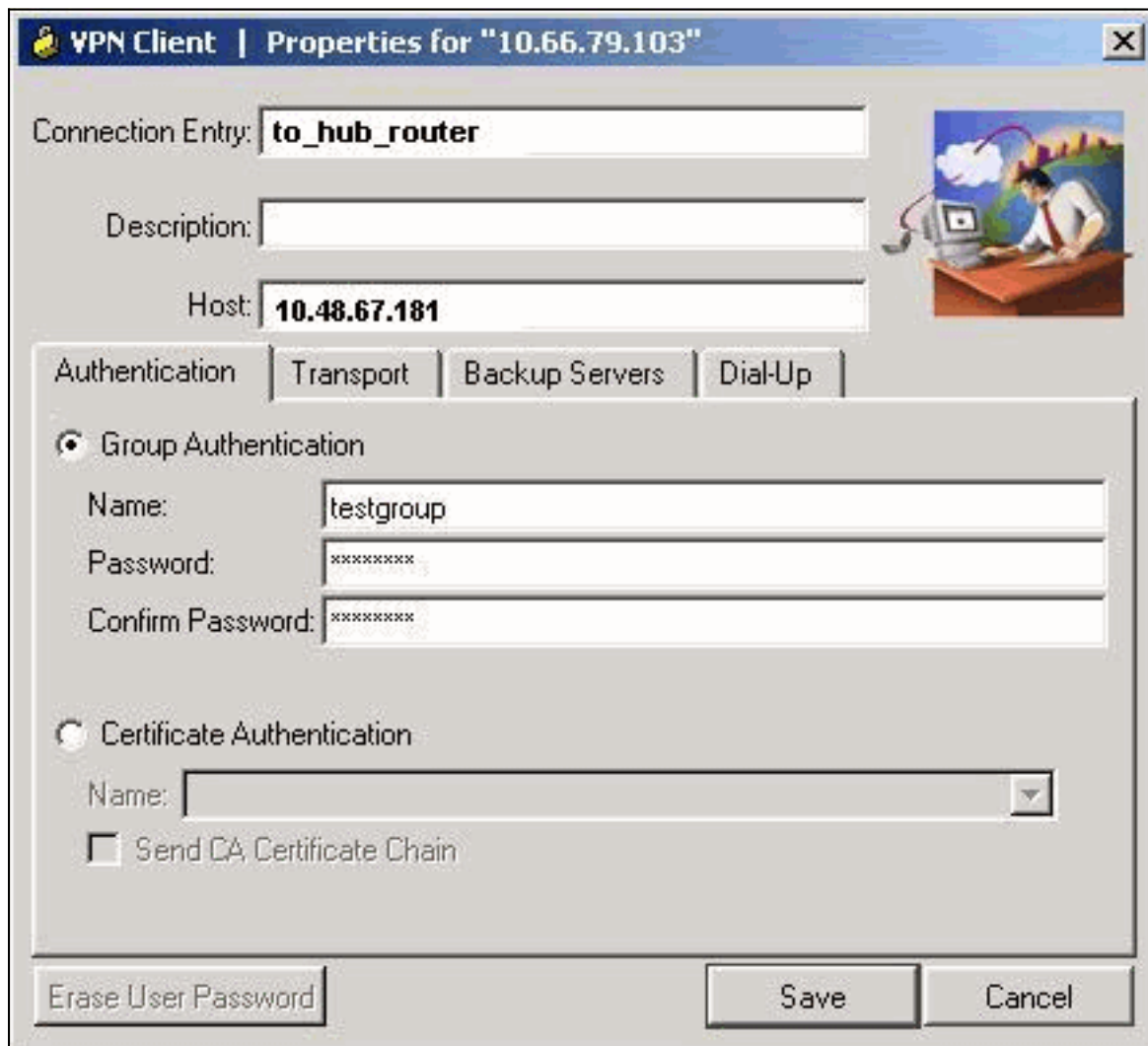
version 12.2
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname Spoke ! no logging on ! ip subnet-zero no ip
domain lookup ! ip cef ! ! crypto isakmp policy 10 encr
3des authentication pre-share group 2 crypto isakmp key
cisco123 address 10.48.67.181 ! ! crypto ipsec
transform-set myset esp-3des esp-sha-hmac ! !---
Standard crypto map on the spoke router !--- that
references the known hub IP address. crypto map mymap 10
ipsec-isakmp set peer 10.48.67.181 set transform-set
myset match address 100 ! ! controller ISA 5/1 ! !
interface FastEthernet0/0 description Outside interface
ip address dhcp duplex auto speed auto crypto map mymap
! interface FastEthernet0/1 description Inside interface
ip address 10.2.2.2 255.255.255.0 duplex auto speed auto
no keepalive ! interface ATM1/0 no ip address shutdown
no atm ilmi-keepalive ! ip classless ip route 0.0.0.0
0.0.0.0 10.100.2.3 no ip http server no ip http secure-
server ! ! !--- Standard access-list that references
traffic to be !--- encrypted. This is the only thing
that needs !--- to be changed between different spoke
routers. access-list 100 permit ip 10.2.0.0 0.0.255.255
10.1.0.0 0.0.255.255 ! ! call rsvp-sync ! ! mgcp profile

```

```
default !! line con 0 exec-timeout 0 0 line aux 0 line
vty 0 4 password cisco login !! end
```

Cliente VPN

Cree una entrada de la nueva conexión que se refiera a la dirección IP del router de eje de conexión. El nombre del grupo en este ejemplo es "testgroup" y la contraseña es el "cisco321". Esto se puede ver en la [configuración del router de eje de conexión](#).



The screenshot shows the 'VPN Client | Properties for "10.66.79.103"' dialog box. The 'Connection Entry' field is set to 'to_hub_router'. The 'Host' field is set to '10.48.67.181'. Under the 'Authentication' tab, 'Group Authentication' is selected. The 'Name' field is 'testgroup', and both 'Password' and 'Confirm Password' fields are filled with '*****'. The 'Certificate Authentication' section is unselected. At the bottom, there are buttons for 'Erase User Password', 'Save', and 'Cancel'.

Verificación

Use esta sección para confirmar que su configuración funciona correctamente.

Los comandos Debug que se ejecutan en el router de eje de conexión pueden confirmar que los parámetros correctos están correspondidos con para el spoke y las conexiones de cliente VPN.

[La herramienta Output Interpreter Tool \(clientes registrados solamente\)](#) (OIT) soporta ciertos comandos show. Utilice la OIT para ver un análisis del resultado del comando show.

Nota: Consulte [Información Importante sobre Comandos de Debug](#) antes de usar un **comando debug**.

- **muestre la interfaz del IP** — Visualiza la asignación de la dirección IP al router radial.

- **muestre el detalle crypto isakmp sa** — Visualiza el IKE SA, que se han puesto entre los iniciadores del IPsec. Por ejemplo, el router radial y el cliente VPN, y el router de eje de conexión.
- **muestre IPsec crypto sa** — Visualiza el SA de IPsec, que se han puesto entre los iniciadores del IPsec. Por ejemplo, el router radial y el cliente VPN, y el router de eje de conexión.
- **debug crypto isakmp** — Muestra mensajes acerca de eventos de intercambio de claves por Internet (IKE).
- **IPsec del debug crypto** — Eventos del IPsec de las visualizaciones.
- **motor del debug crypto** — Visualiza los eventos del motor de criptografía.

Ésta es la salida del comando **show ip interface f0/0**.

```
spoke#show ip interface f0/0 FastEthernet0/1 is up, line protocol is up Internet address is
10.100.2.102/24 Broadcast address is 255.255.255.255 Address determined by DHCP
```

Ésta es la salida del comando **show crypto isakmp sa detail**.

```
hub#show crypto isakmp sa detail Codes: C - IKE configuration mode, D - Dead Peer Detection K -
Keepalives, N - NAT-traversal X - IKE Extended Authentication psk - Preshared key, rsig - RSA
signature renc - RSA encryption C-id Local Remote I-VRF Encr Hash Auth DH Lifetime Cap. 1
10.48.67.181 10.100.2.102 3des sha psk 2 04:15:43 2 10.48.67.181 10.51.82.100 3des sha 2
05:31:58 CX
```

Ésta es la salida del comando **show crypto ipsec sa**.

```
hub#show crypto ipsec sa interface: FastEthernet0/0 Crypto map tag: mymap, local addr.
10.48.67.181 protected vrf: local ident (addr/mask/prot/port): (0.0.0.0/0.0.0.0/0/0) remote
ident (addr/mask/prot/port): (10.5.5.1/255.255.255.255/0/0) current_peer: 10.51.82.100:500
PERMIT, flags={ } #pkts encaps: 8, #pkts encrypt: 8, #pkts digest 8 #pkts decaps: 189, #pkts
decrypt: 189, #pkts verify 189 #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.: 10.48.67.181, remote crypto endpt.: 10.51.82.100 path mtu
1500, ip mtu 1500 current outbound spi: B0C0F4AC inbound esp sas: spi: 0x7A1AB8F3(2048571635)
transform: esp-3des esp-sha-hmac , in use settings = {Tunnel, } slot: 0, conn id: 2004, flow_id:
5, crypto map: mymap sa timing: remaining key lifetime (k/sec): (4602415/3169) IV size: 8 bytes
replay detection support: Y inbound ah sas: inbound pcp sas: outbound esp sas: spi:
0xB0C0F4AC(2965435564) transform: esp-3des esp-sha-hmac , in use settings = {Tunnel, } slot: 0,
conn id: 2005, flow_id: 6, crypto map: mymap sa timing: remaining key lifetime (k/sec):
(4602445/3169) IV size: 8 bytes replay detection support: Y outbound ah sas: outbound pcp sas:
protected vrf: local ident (addr/mask/prot/port): (10.1.0.0/255.255.0.0/0/0) remote ident
(addr/mask/prot/port): (10.2.0.0/255.255.0.0/0/0) current_peer: 10.100.2.102:500 PERMIT,
flags={ } #pkts encaps: 19, #pkts encrypt: 19, #pkts digest 19 #pkts decaps: 19, #pkts decrypt:
19, #pkts verify 19 #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.: 10.48.67.181, remote crypto endpt.: 10.100.2.102 path mtu 1500, ip
mtu 1500 current outbound spi: 5FBE5408 inbound esp sas: spi: 0x9CD7288C(2631346316) transform:
esp-3des esp-sha-hmac , in use settings = {Tunnel, } slot: 0, conn id: 2002, flow_id: 3, crypto
map: mymap sa timing: remaining key lifetime (k/sec): (4569060/2071) IV size: 8 bytes replay
detection support: Y inbound ah sas: inbound pcp sas: outbound esp sas: spi:
0x5FBE5408(1606308872) transform: esp-3des esp-sha-hmac , in use settings = {Tunnel, } slot: 0,
conn id: 2003, flow_id: 4, crypto map: mymap sa timing: remaining key lifetime (k/sec):
(4569060/2070) IV size: 8 bytes replay detection support: Y outbound ah sas: outbound pcp sas:
```

Han recogido a esta salida de los debugs en el router de eje de conexión, cuando el router radial inicia el IKE y el SA de IPsec.

```
ISAKMP (0:0): received packet from 10.100.2.102 dport 500 sport 500
Global (N) NEW SA
ISAKMP: local port 500, remote port 500
ISAKMP: insert sa successfully sa = 63D5BE0C
ISAKMP (0:1): Input = IKE_MSG_FROM_PEER, IKE_MM_EXCH
ISAKMP (0:1): Old State = IKE_READY New State = IKE_R_MM1
```

ISAKMP (0:1): processing SA payload. message ID = 0
ISAKMP: Looking for a matching key for 10.100.2.102 in default
ISAKMP: Looking for a matching key for 10.100.2.102 in spokes : success ISAKMP (0:1): found peer pre-shared key matching 10.100.2.102 ISAKMP (0:1) local preshared key found ISAKMP : Scanning profiles for xauth ... L2L VPNclient ISAKMP (0:1) Authentication by xauth preshared ISAKMP (0:1): Checking ISAKMP transform 1 against priority 10 policy ISAKMP: encryption 3DES-CBC ISAKMP: hash SHA ISAKMP: default group 2 ISAKMP: auth pre-share ISAKMP: life type in seconds ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80 **ISAKMP (0:1): atts are acceptable. Next payload is 0** CryptoEngine0: generate alg parameter CRYPTO_ENGINE: Dh phase 1 status: 0 CRYPTO_ENGINE: Dh phase 1 status: 0 ISAKMP (0:1): Input = IKE_MSG_INTERNAL, IKE_PROCESS_MAIN_MODE ISAKMP (0:1): Old State = IKE_R_MM1 New State = IKE_R_MM1 ISAKMP (0:1): sending packet to 10.100.2.102 my_port 500 peer_port 500 (R) MM_SA_SETUP ISAKMP (0:1): Input = IKE_MSG_INTERNAL, IKE_PROCESS_COMPLETE ISAKMP (0:1): Old State = IKE_R_MM1 New State = IKE_R_MM2 ISAKMP (0:1): received packet from 10.100.2.102 dport 500 sport 500 Global (R) MM_SA_SETUP ISAKMP (0:1): Input = IKE_MSG_FROM_PEER, IKE_MM_EXCH ISAKMP (0:1): Old State = IKE_R_MM2 New State = IKE_R_MM3 ISAKMP (0:1): processing KE payload. message ID = 0 CryptoEngine0: generate alg parameter ISAKMP (0:1): processing NONCE payload. message ID = 0 ISAKMP: Looking for a matching key for 10.100.2.102 in default ISAKMP: Looking for a matching key for 10.100.2.102 in spokes : success ISAKMP (0:1): found peer pre-shared key matching 10.100.2.102 CryptoEngine0: create ISAKMP SKEYID for conn id 1 ISAKMP (0:1): SKEYID state generated ISAKMP (0:1): processing vendor id payload ISAKMP (0:1): speaking to another IOS box! ISAKMP (0:1): Input = IKE_MSG_INTERNAL, IKE_PROCESS_MAIN_MODE ISAKMP (0:1): Old State = IKE_R_MM3 New State = IKE_R_MM3 ISAKMP (0:1): sending packet to 10.100.2.102 my_port 500 peer_port 500 (R) MM_KEY_EXCH ISAKMP (0:1): Input = IKE_MSG_INTERNAL, IKE_PROCESS_COMPLETE ISAKMP (0:1): Old State = IKE_R_MM3 New State = IKE_R_MM4 ISAKMP (0:1): received packet from 10.100.2.102 dport 500 sport 500 Global (R) MM_KEY_EXCH ISAKMP (0:1): Input = IKE_MSG_FROM_PEER, IKE_MM_EXCH ISAKMP (0:1): Old State = IKE_R_MM4 New State = IKE_R_MM5 ISAKMP (0:1): processing ID payload. message ID = 0 ISAKMP (0:1): ID payload next-payload : 8 type : 1 address : 10.100.2.102 protocol : 17 port : 500 length : 12 **ISAKMP (0:1): peer matches L2L profile** ISAKMP: Looking for a matching key for 10.100.2.102 in default ISAKMP: Looking for a matching key for 10.100.2.102 in spokes : success **ISAKMP (0:1): Found ADDRESS key in keyring spokes** ISAKMP (0:1): processing HASH payload. message ID = 0 CryptoEngine0: generate hmac context for conn id 1 **ISAKMP (0:1): SA authentication status: authenticated ISAKMP (0:1): SA has been authenticated with 10.100.2.102** ISAKMP (0:1): Input = IKE_MSG_INTERNAL, IKE_PROCESS_MAIN_MODE ISAKMP (0:1): Old State = IKE_R_MM5 New State = IKE_R_MM5 ISAKMP (0:1): SA is doing pre-shared key authentication using id type ID_IPV4_ADDR ISAKMP (0:1): ID payload next-payload : 8 type : 1 address : 10.48.67.181 protocol : 17 port : 500 length : 12 ISAKMP (1): Total payload length: 12 CryptoEngine0: generate hmac context for conn id 1 CryptoEngine0: clear dh number for conn id 1 ISAKMP (0:1): sending packet to 10.100.2.102 my_port 500 peer_port 500 (R) MM_KEY_EXCH ISAKMP (0:1): Input = IKE_MSG_INTERNAL, IKE_PROCESS_COMPLETE ISAKMP (0:1): Old State = IKE_R_MM5 New State = IKE_P1_COMPLETE ISAKMP (0:1): Input = IKE_MSG_INTERNAL, IKE_PHASE1_COMPLETE ISAKMP (0:1): Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE *!--- IKE phase 1 is complete.* ISAKMP (0:1): received packet from 10.100.2.102 dport 500 sport 500 Global (R) QM_IDLE ISAKMP: set new node 904613356 to QM_IDLE CryptoEngine0: generate hmac context for conn id 1 ISAKMP (0:1): processing HASH payload. message ID = 904613356 ISAKMP (0:1): processing SA payload. message ID = 904613356 ISAKMP (0:1): Checking IPsec proposal 1 ISAKMP: transform 1, ESP_3DES ISAKMP: attributes in transform: ISAKMP: encaps is 1 (Tunnel) ISAKMP: SA life type in seconds ISAKMP: SA life duration (basic) of 3600 ISAKMP: SA life type in kilobytes ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0 ISAKMP: authenticator is HMAC-SHA CryptoEngine0: validate proposal **ISAKMP (0:1): atts are acceptable.** IPSEC(validate_proposal_request): proposal part #1, (key eng. msg.) INBOUND local= 10.48.67.181, remote= 10.100.2.102, **local_proxy= 10.1.0.0/255.255.0.0/0/0 (type=4), remote_proxy= 10.2.0.0/255.255.0.0/0/0 (type=4), protocol= ESP, transform= esp-3des esp-sha-hmac (Tunnel),** lifedur= 0s and 0kb, spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x2 CryptoEngine0: validate proposal request IPSEC(kei_proxy): head = mymap, map->ivrf = , kei->ivrf = IPSEC(kei_proxy): head = mymap, map->ivrf = , kei->ivrf = ISAKMP (0:1): processing NONCE payload. message ID = 904613356 ISAKMP (0:1): processing ID payload. message ID = 904613356 ISAKMP (0:1): processing ID payload. message ID = 904613356 ISAKMP (0:1): asking for 1 spis from ipsec ISAKMP (0:1): Node 904613356, Input = IKE_MSG_FROM_PEER, IKE_QM_EXCH ISAKMP (0:1): Old State = IKE_QM_READY New State = IKE_QM_SPI_STARVE IPSEC(key_engine): got a queue event... IPSEC(spi_response): **getting spi 4172528328 for SA from 10.48.67.181 to 10.100.2.102 for prot 3** ISAKMP: received ke message (2/1) CryptoEngine0: generate hmac context for conn id 1 ISAKMP (0:1): sending packet to 10.100.2.102 my_port 500 peer_port 500 (R) QM_IDLE ISAKMP (0:1): Node 904613356, Input = IKE_MSG_FROM_IPSEC, IKE_SPI_REPLY ISAKMP (0:1): Old State = IKE_QM_SPI_STARVE New State =

```
IKE_QM_R_QM2 ISAKMP (0:1): received packet from 10.100.2.102 dport 500 sport 500 Global (R)
QM_IDLE CryptoEngine0: generate hmac context for conn id 1 CryptoEngine0: ipsec allocate flow
CryptoEngine0: ipsec allocate flow ISAKMP (0:1): Creating IPsec SAs inbound SA from 10.100.2.102
to 10.48.67.181 (f/i) 0/ 0 (proxy 10.2.0.0 to 10.1.0.0) has spi 0xF8B3BAC8 and conn_id 2000 and
flags 2 lifetime of 3600 seconds lifetime of 4608000 kilobytes has client flags 0x0 outbound SA
from 10.48.67.181 to 10.100.2.102 (f/i) 0/ 0 (proxy 10.1.0.0 to 10.2.0.0 ) has spi 1757151497
and conn_id 2001 and flags A lifetime of 3600 seconds lifetime of 4608000 kilobytes has client
flags 0x0 ISAKMP (0:1): deleting node 904613356 error FALSE reason "quick mode done (await)"
ISAKMP (0:1): Node 904613356, Input = IKE_MSG_FROM_PEER, IKE_QM_EXCH ISAKMP (0:1): Old State =
IKE_QM_R_QM2 New State = IKE_QM_PHASE2_COMPLETE IPSEC(key_engine): got a queue event...
IPSEC(initialize_sas): , (key eng. msg.) INBOUND local= 10.48.67.181, remote= 10.100.2.102,
local_proxy= 10.1.0.0/255.255.0.0/0/0 (type=4), remote_proxy= 10.2.0.0/255.255.0.0/0/0 (type=4),
protocol= ESP, transform= esp-3des esp-sha-hmac (Tunnel), lifedur= 3600s and 4608000kb, spi=
0xF8B3BAC8(4172528328), conn_id= 2000, keysize= 0, flags= 0x2 IPSEC(initialize_sas): , (key eng.
msg.) OUTBOUND local= 10.48.67.181, remote= 10.100.2.102, local_proxy= 10.1.0.0/255.255.0.0/0/0
(type=4), remote_proxy= 10.2.0.0/255.255.0.0/0/0 (type=4), protocol= ESP, transform= esp-3des
esp-sha-hmac (Tunnel), lifedur= 3600s and 4608000kb, spi= 0x68BC0109(1757151497), conn_id= 2001,
keysize= 0, flags= 0xA IPSEC(kei_proxy): head = mymap, map->ivrf = , kei->ivrf =
IPSEC(kei_proxy): head = mymap, map->ivrf = , kei->ivrf = IPSEC(addmtree): src 10.1.0.0, dest
10.2.0.0, dest_port 0 IPSEC(create_sa): sa created, (sa) sa_dest= 10.48.67.181, sa_prot= 50,
sa_spi= 0xF8B3BAC8(4172528328), sa_trans= esp-3des esp-sha-hmac , sa_conn_id= 2000
IPSEC(create_sa): sa created, (sa) sa_dest= 10.100.2.102, sa_prot= 50, sa_spi=
0x68BC0109(1757151497), sa_trans= esp-3des esp-sha-hmac , sa_conn_id= 2001
```

Han recogido a esta salida de los debugs en el router de eje de conexión, cuando el cliente VPN inicia el IKE y el SA de IPsec.

```
ISAKMP (0:0): received packet from 10.51.82.100 dport 500 sport 500 Global
(N) NEW SA
ISAKMP: local port 500, remote port 500
ISAKMP: insert sa successfully sa = 63D3D804
ISAKMP (0:2): processing SA payload. message ID = 0
ISAKMP (0:2): processing ID payload. message ID = 0
ISAKMP (0:2): ID payload
next-payload : 13
type : 11
group id : testgroup
protocol : 17
port : 500
length : 17
ISAKMP (0:2): peer matches VPNclient profile ISAKMP: Looking for a matching key for 10.51.82.100
in default ISAKMP: Looking for a matching key for 10.51.82.100 in spokes : success ISAKMP:
Created a peer struct for 10.51.82.100, peer port 500 ISAKMP: Locking peer struct 0x644AFC7C,
IKE refcount 1 for crypto_ikmp_config_initialize_sa ISAKMP (0:2): Setting client config settings
644AFCF8 ISAKMP (0:2): (Re)Setting client xauth list and state ISAKMP (0:2): processing vendor
id payload ISAKMP (0:2): vendor ID seems Unity/DPD but major 215 mismatch ISAKMP (0:2): vendor
ID is Xauth ISAKMP (0:2): processing vendor id payload ISAKMP (0:2): vendor ID is DPD ISAKMP
(0:2): processing vendor id payload ISAKMP (0:2): vendor ID seems Unity/DPD but major 123
mismatch ISAKMP (0:2): vendor ID is NAT-T v2 ISAKMP (0:2): processing vendor id payload ISAKMP
(0:2): vendor ID seems Unity/DPD but major 194 mismatch ISAKMP (0:2): processing vendor id
payload ISAKMP (0:2): vendor ID is Unity ISAKMP (0:2) Authentication by xauth preshared !---
Check of ISAKMP transforms against the configured ISAKMP policy. ISAKMP (0:2): Checking ISAKMP
transform 9 against priority 10 policy ISAKMP: encryption 3DES-CBC ISAKMP: hash SHA ISAKMP:
default group 2 ISAKMP: auth XAUTHInitPreShared ISAKMP: life type in seconds ISAKMP: life
duration (VPI) of 0x0 0x20 0xC4 0x9B ISAKMP (0:2): atts are acceptable. Next payload is 3
CryptoEngine0: generate alg parameter CRYPTO_ENGINE: Dh phase 1 status: 0 CRYPTO_ENGINE: Dh
phase 1 status: 0 ISAKMP (0:2): processing KE payload. message ID = 0 CryptoEngine0: generate
alg parameter ISAKMP (0:2): processing NONCE payload. message ID = 0 ISAKMP (0:2): vendor ID is
NAT-T v2 ISAKMP (0:2): Input = IKE_MSG_FROM_PEER, IKE_AM_EXCH ISAKMP (0:2): Old State =
IKE_READY New State = IKE_R_AM_AAA_AWAIT ISAKMP: got callback 1 CryptoEngine0: create ISAKMP
SKEYID for conn id 2 ISAKMP (0:2): SKEYID state generated ISAKMP (0:2): constructed NAT-T
vendor-02 ID ISAKMP (0:2): SA is doing pre-shared key authentication plus XAUTH using id type
ID_IPV4_ADDR ISAKMP (0:2): ID payload next-payload : 10 type : 1 address : 10.48.67.181 protocol
: 17 port : 0 length : 12 ISAKMP (2): Total payload length: 12 CryptoEngine0: generate hmac
```


context for conn id 2 ISAKMP (0:2): sending packet to 10.51.82.100 my_port 500 peer_port 500 (R) AG_INIT_EXCH ISAKMP (0:2): Input = IKE_MSG_FROM_AAA, PRESHARED_KEY_REPLY ISAKMP (0:2): Old State = IKE_R_AM_AAA_AWAIT New State = IKE_R_AM2 ISAKMP (0:2): received packet from 10.51.82.100 dport 500 sport 500 Global (R) AG_INIT_EXCH ISAKMP (0:2): processing HASH payload. message ID = 0 CryptoEngine0: generate hmac context for conn id 2 ISAKMP (0:2): processing NOTIFY INITIAL_CONTACT protocol 1 spi 0, message ID = 0, sa = 63D3D804 ISAKMP (0:2): SA authentication status: authenticated ISAKMP (0:2): Process initial contact, bring down existing phase 1 and 2 SA's with local 10.48.67.181 remote 10.51.82.100 remote port 500 ISAKMP (0:2): returning IP addr to the address pool IPSEC(key_engine): got a queue event... ISAKMP:received payload type 17 ISAKMP:received payload type 17 **ISAKMP (0:2): SA authentication status: authenticated ISAKMP (0:2): SA has been authenticated with 10.51.82.100** CryptoEngine0: clear dh number for conn id 1 ISAKMP: Trying to insert a peer 10.48.67.181/10.51.82.100/500/, and inserted successfully. ISAKMP: set new node 1257790711 to CONF_XAUTH CryptoEngine0: generate hmac context for conn id 2 ISAKMP (0:2): sending packet to 10.51.82.100 my_port 500 peer_port 500 (R) QM_IDLE ISAKMP (0:2): purging node 1257790711 ISAKMP: Sending phase 1 responder lifetime 86400 ISAKMP (0:2): Input = IKE_MSG_FROM_PEER, IKE_AM_EXCH ISAKMP (0:2): Old State = IKE_R_AM2 New State = IKE_P1_COMPLETE ISAKMP (0:2): Need XAUTH ISAKMP (0:2): Input = IKE_MSG_INTERNAL, IKE_PHASE1_COMPLETE ISAKMP (0:2): Old State = IKE_P1_COMPLETE New State = IKE_XAUTH_AAA_START_LOGIN_AWAIT ISAKMP: got callback 1 ISAKMP: set new node 955647754 to CONF_XAUTH *!--- Extended authentication begins.* **ISAKMP/xauth: request attribute XAUTH_USER_NAME_V2 ISAKMP/xauth: request attribute XAUTH_USER_PASSWORD_V2** CryptoEngine0: generate hmac context for conn id 2 ISAKMP (0:2): initiating peer config to 10.51.82.100. ID = 955647754 ISAKMP (0:2): sending packet to 10.51.82.100 my_port 500 peer_port 500 (R) CONF_XAUTH ISAKMP (0:2): Input = IKE_MSG_FROM_AAA, IKE_AAA_START_LOGIN ISAKMP (0:2): Old State = IKE_XAUTH_AAA_START_LOGIN_AWAIT New State = IKE_XAUTH_REQ_SENT ISAKMP (0:2): received packet from 10.51.82.100 dport 500 sport 500 Global (R) CONF_XAUTH ISAKMP (0:2): processing transaction payload from 10.51.82.100. message ID = 955647754 CryptoEngine0: generate hmac context for conn id 2 ISAKMP: Config payload REPLY *!--- Username/password received from the VPN Client.* **ISAKMP/xauth: reply attribute XAUTH_USER_NAME_V2 ISAKMP/xauth: reply attribute XAUTH_USER_PASSWORD_V2** ISAKMP (0:2): deleting node 955647754 error FALSE reason "done with xauth request/reply exchange" ISAKMP (0:2): Input = IKE_MSG_FROM_PEER, IKE_CFG_REPLY ISAKMP (0:2): Old State = IKE_XAUTH_REQ_SENT New State = IKE_XAUTH_AAA_CONT_LOGIN_AWAIT ISAKMP: got callback 1 ISAKMP: set new node -1118110738 to CONF_XAUTH CryptoEngine0: generate hmac context for conn id 2 ISAKMP (0:2): initiating peer config to 10.51.82.100. ID = -1118110738 ISAKMP (0:2): sending packet to 10.51.82.100 my_port 500 peer_port 500 (R) CONF_XAUTH ISAKMP (0:2): Input = IKE_MSG_FROM_AAA, IKE_AAA_CONT_LOGIN ISAKMP (0:2): Old State = IKE_XAUTH_AAA_CONT_LOGIN_AWAIT New State = IKE_XAUTH_SET_SENT ISAKMP (0:2): received packet from 10.51.82.100 dport 500 sport 500 Global (R) CONF_XAUTH ISAKMP (0:2): processing transaction payload from 10.51.82.100. message ID = -1118110738 CryptoEngine0: generate hmac context for conn id 2 *!--- Success* ISAKMP: Config payload ACK **ISAKMP (0:2): XAUTH ACK Processed** ISAKMP (0:2): deleting node -1118110738 error FALSE reason "done with transaction" ISAKMP (0:2): Input = IKE_MSG_FROM_PEER, IKE_CFG_ACK ISAKMP (0:2): Old State = IKE_XAUTH_SET_SENT New State = IKE_P1_COMPLETE ISAKMP (0:2): Input = IKE_MSG_INTERNAL, IKE_PHASE1_COMPLETE ISAKMP (0:2): Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE ISAKMP (0:2): received packet from 10.51.82.100 dport 500 sport 500 Global (R) QM_IDLE ISAKMP: set new node -798495444 to QM_IDLE ISAKMP (0:2): processing transaction payload from 10.51.82.100. message ID = -798495444 CryptoEngine0: generate hmac context for conn id 2 ISAKMP: Config payload REQUEST ISAKMP (0:2): checking request: ISAKMP: IP4_ADDRESS ISAKMP: IP4_NETMASK ISAKMP: IP4_DNS ISAKMP: IP4_NBNS ISAKMP: ADDRESS_EXPIRY ISAKMP: UNKNOWN Unknown Attr: 0x7000 ISAKMP: UNKNOWN Unknown Attr: 0x7001 ISAKMP: DEFAULT_DOMAIN ISAKMP: SPLIT_INCLUDE ISAKMP: UNKNOWN Unknown Attr: 0x7003 ISAKMP: UNKNOWN Unknown Attr: 0x7007 ISAKMP: UNKNOWN Unknown Attr: 0x7009 ISAKMP: APPLICATION_VERSION ISAKMP: UNKNOWN Unknown Attr: 0x7008 ISAKMP: UNKNOWN Unknown Attr: 0x700A ISAKMP: UNKNOWN Unknown Attr: 0x7005 ISAKMP (0:2): Input = IKE_MSG_FROM_PEER, IKE_CFG_REQUEST ISAKMP (0:2): Old State = IKE_P1_COMPLETE New State = IKE_CONFIG_AUTHOR_AAA_AWAIT ISAKMP: got callback 1 ISAKMP (0:2): attributes sent in message: Address: 0.2.0.0 **ISAKMP (0:2): allocating address 10.5.5.1 ISAKMP: Sending private address: 10.5.5.1 ISAKMP: Sending IP4_DNS server address: 1.1.1.1 ISAKMP: Sending IP4_DNS server address: 2.2.2.2 ISAKMP: Sending IP4_NBNS server address: 3.3.3.3 ISAKMP: Sending IP4_NBNS server address: 4.4.4.4** ISAKMP: Sending ADDRESS_EXPIRY seconds left to use the address: 86386 ISAKMP (0/2): Unknown Attr: UNKNOWN (0x7000) ISAKMP (0/2): Unknown Attr: UNKNOWN (0x7001) ISAKMP: Sending DEFAULT_DOMAIN default domain name: cisco.com ISAKMP (0/2): Unknown Attr: UNKNOWN (0x7003) ISAKMP (0/2): Unknown Attr: UNKNOWN (0x7007) ISAKMP (0/2): Unknown Attr: UNKNOWN (0x7009) ISAKMP: Sending APPLICATION_VERSION string: Cisco Internetwork Operating System Software IOS (tm) 7200 Software (C7200-IK9S-M), Version 12.3(6a), RELEASE SOFTWARE (fc4) Copyright (c) 1986-2004 by cisco Systems, Inc. Compiled Fri 02-Apr-04 15:52 by kellythw ISAKMP

```

(0/2): Unknown Attr: UNKNOWN (0x7008) ISAKMP (0/2): Unknown Attr: UNKNOWN (0x700A) ISAKMP (0/2):
Unknown Attr: UNKNOWN (0x7005) CryptoEngine0: generate hmac context for conn id 2 ISAKMP (0/2):
responding to peer config from 10.51.82.100. ID = -798495444 ISAKMP (0/2): sending packet to
10.51.82.100 my_port 500 peer_port 500 (R) CONF_ADDR ISAKMP (0/2): deleting node -798495444
error FALSE reason "" ISAKMP (0/2): Input = IKE_MSG_FROM_AAA, IKE_AAA_GROUP_ATTR ISAKMP (0/2):
Old State = IKE_CONFIG_AUTHOR_AAA_AWAIT New State = IKE_P1_COMPLETE ISAKMP (0/2): Input =
IKE_MSG_INTERNAL, IKE_PHASE1_COMPLETE ISAKMP (0/2): Old State = IKE_P1_COMPLETE New State =
IKE_P1_COMPLETE !--- IKE phase 1 and Config Mode complete. !--- Check of IPsec proposals against
configured transform set(s). ISAKMP (0/2): Checking IPsec proposal 12 ISAKMP: transform 1,
ESP_3DES ISAKMP: attributes in transform: ISAKMP: authenticator is HMAC-SHA ISAKMP: encaps is 1
(Tunnel) ISAKMP: SA life type in seconds ISAKMP: SA life duration (VPI) of 0x0 0x20 0xC4 0x9B
CryptoEngine0: validate proposal ISAKMP (0/2): atts are acceptable.
IPSEC(validate_proposal_request): proposal part #1, (key eng. msg.) INBOUND local= 10.48.67.181,
remote= 10.51.82.100, local_proxy= 0.0.0.0/0.0.0.0/0/0 (type=4), remote_proxy=
10.5.5.1/255.255.255.255/0/0 (type=1), protocol= ESP, transform= esp-3des esp-sha-hmac (Tunnel),
lifedur= 0s and 0kb, spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x2 CryptoEngine0: validate
proposal request IPSEC(kei_proxy): head = mymap, map->ivrf = , kei->ivrf = IPSEC(kei_proxy):
head = mymap, map->ivrf = , kei->ivrf = ISAKMP (0/2): processing NONCE payload. message ID =
381726614 ISAKMP (0/2): processing ID payload. message ID = 381726614 ISAKMP (0/2): processing
ID payload. message ID = 381726614 ISAKMP (0/2): asking for 1 spis from ipsec ISAKMP (0/2): Node
381726614, Input = IKE_MSG_FROM_PEER, IKE_QM_EXCH ISAKMP (0/2): Old State = IKE_QM_READY New
State = IKE_QM_SPI_STARVE IPSEC(key_engine): got a queue event... IPSEC(spi_response): getting
spi 2048571635 for SA from 10.48.67.181 to 10.51.82.100 for prot 3 ISAKMP: received ke message
(2/1) CryptoEngine0: generate hmac context for conn id 2 ISAKMP (0/2): sending packet to
10.51.82.100 my_port 500 peer_port 500 (R) QM_IDLE ISAKMP (0/2): Node 381726614, Input =
IKE_MSG_FROM_IPSEC, IKE_SPI_REPLY ISAKMP (0/2): Old State = IKE_QM_SPI_STARVE New State =
IKE_QM_R_QM2 ISAKMP (0/2): received packet from 10.51.82.100 dport 500 sport 500 Global (R)
QM_IDLE CryptoEngine0: generate hmac context for conn id 2 CryptoEngine0: ipsec allocate flow
CryptoEngine0: ipsec allocate flow ISAKMP: Locking peer struct 0x644AFC7C, IPSEC refcount 1 for
for stuff_ke ISAKMP (0/2): Creating IPsec SAs inbound SA from 10.51.82.100 to 10.48.67.181 (f/i)
0/ 0 (proxy 10.5.5.1 to 0.0.0.0) has spi 0x7A1AB8F3 and conn_id 2004 and flags 2 lifetime of
2147483 seconds has client flags 0x0 outbound SA from 10.48.67.181 to 10.51.82.100 (f/i) 0/ 0
(proxy 0.0.0.0 to 10.5.5.1 ) has spi -1329531732 and conn_id 2005 and flags A lifetime of
2147483 seconds has client flags 0x0 ISAKMP (0/2): deleting node 381726614 error FALSE reason
"quick mode done (await)" ISAKMP (0/2): Node 381726614, Input = IKE_MSG_FROM_PEER, IKE_QM_EXCH
ISAKMP (0/2): Old State = IKE_QM_R_QM2 New State = IKE_QM_PHASE2_COMPLETE IPSEC(key_engine): got
a queue event... IPSEC(initialize_sas): , (key eng. msg.) INBOUND local= 10.48.67.181, remote=
10.51.82.100, local_proxy= 0.0.0.0/0.0.0.0/0/0 (type=4), remote_proxy= 10.5.5.1/0.0.0.0/0/0
(type=1), protocol= ESP, transform= esp-3des esp-sha-hmac (Tunnel), lifedur= 2147483s and 0kb,
spi= 0x7A1AB8F3(2048571635), conn_id= 2004, keysize= 0, flags= 0x2 IPSEC(initialize_sas): , (key
eng. msg.) OUTBOUND local= 10.48.67.181, remote= 10.51.82.100, local_proxy= 0.0.0.0/0.0.0.0/0/0
(type=4), remote_proxy= 10.5.5.1/0.0.0.0/0/0 (type=1), protocol= ESP, transform= esp-3des esp-
sha-hmac (Tunnel), lifedur= 2147483s and 0kb, spi= 0xB0C0F4AC(2965435564), conn_id= 2005,
keysize= 0, flags= 0xA IPSEC(kei_proxy): head = mymap, map->ivrf = , kei->ivrf =
IPSEC(kei_proxy): head = mymap, map->ivrf = , kei->ivrf = IPSEC(addmtree): src 0.0.0.0, dest
10.5.5.1, dest_port 0 IPSEC(create_sa): sa created, (sa) sa_dest= 10.48.67.181, sa_prot= 50,
sa_spi= 0x7A1AB8F3(2048571635), sa_trans= esp-3des esp-sha-hmac , sa_conn_id= 2004
IPSEC(create_sa): sa created, (sa) sa_dest= 10.51.82.100, sa_prot= 50, sa_spi=
0xB0C0F4AC(2965435564), sa_trans= esp-3des esp-sha-hmac , sa_conn_id= 2005

```

[Verifique los números de secuencia de la correspondencia de criptografía](#)

Si los peers estáticos y dinámicos están configurados en el mismo mapa crypto, el orden de las entradas de mapa crypto es muy importante. El número de secuencia de la entrada de mapa crypto dinámica **debe ser** mayor que todas las otras entradas de mapa crypto estáticas. Si las Entradas estáticas se numeran más arriba que la entrada dinámica, las conexiones con esos pares fallan.

A continuación, se proporciona un ejemplo de un mapa crypto numerado correctamente que contiene una entrada estática y una entrada dinámica. Observe que la entrada dinámica tiene el número de secuencia más alto y que se ha dejado espacio para agregar entradas estáticas adicionales:

```
crypto dynamic-map dynmap 20
set transform-set myset
crypto map mymap 10 ipsec-isakmp
match address 100
set peer 172.16.77.10
set transform-set myset
crypto map mymap 60000 ipsec-isakmp dynamic dynmap
```

[Troubleshooting](#)

Actualmente, no hay información específica de troubleshooting disponible para esta configuración.

[Información Relacionada](#)

- [Configuración del perfil de ipsec](#)
- [Nuevas funciones del Cisco IOS Software Release 12.2\(15\)T](#)
- [Página de Soporte del Protocolo IKE/la Negociación de IPsec](#)
- [Soporte Técnico y Documentación - Cisco Systems](#)