Configuración de GRE sobre IPSec entre un router del IOS de Cisco y un concentrador VPN 5000 mediante ruteo dinámico.

Contenido

Introducción

Esta configuración de muestra describe cómo configurar el Generic Routing Encapsulation (GRE) sobre el IPSec entre un concentrador del Cisco VPN 5000 y un router Cisco que funcionan con el software de Cisco IOS®. Función de GRE sobre IPSec fue introducido en la versión de software del VPN 5000 concentrator 6.0(19). El Dynamic Routing Protocol del Open Shortest Path First (OSPF) se utiliza en esta muestra para rutear el tráfico a través del túnel VPN.

prerrequisitos

Requisitos

No hay requisitos específicos para este documento.

Componentes Utilizados

La información que contiene este documento se basa en las siguientes versiones de software y

hardware.

- Software Release 12.2(3) de Cisco IOS®
- Software Release 6.0(19) del VPN 5000 concentrator

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

Para obtener más información sobre las convenciones del documento, consulte las Convenciones de Consejos Técnicos de Cisco.

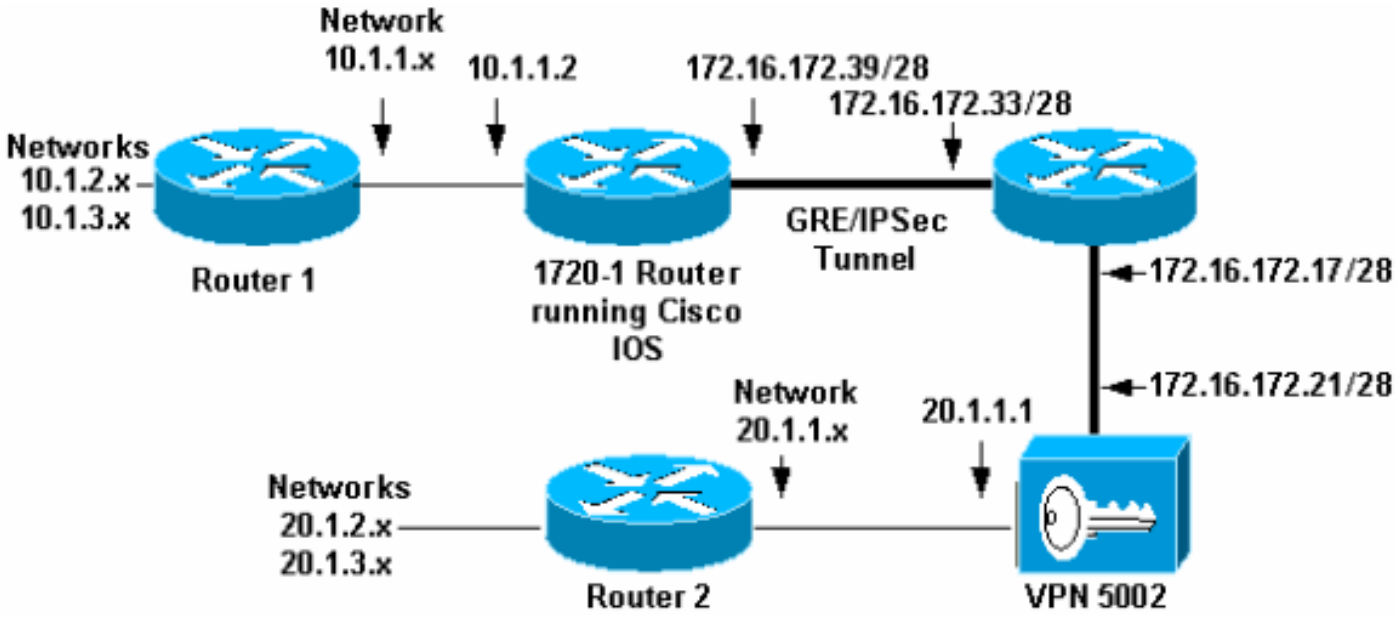
Configurar

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

Note: Para obtener información adicional sobre los comandos que se utilizan en este documento, use la Command Lookup Tool (solo para clientes registrados).

Diagrama de la red

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



El GRE sobre IPSec se configura entre el router del Cisco IOS (1720-1) y el concentrador VPN 5002. Detrás de estos dispositivos, las Redes múltiples se hacen publicidad vía el OSPF, que se ejecuta dentro del túnel GRE entre 1720-1 y del VPN 5002.

Estas redes están detrás del 1720-1 Router.

- 10.1.1.0/24
- 10.1.2.0/24

- 10.1.3.0/24

Estas redes están detrás del concentrador VPN 5002.

- 20.1.1.0/24
- 20.1.2.0/24
- 20.1.3.0/24

Note: Para esta topología, todos los segmentos de red se ponen en la área OSPF 0.

Configuraciones

Este documento usa estas configuraciones.

- Router del Cisco IOS
- Concentrador VPN 5000

Router del Cisco IOS

```
Building configuration...
Current configuration : 1351 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname 1720-1
!
no logging buffered
no logging monitor
enable secret 5 $1$vIzI$RqD0LqlqbSFCCjVELFLfH/
!
memory-size iomem 15
ip subnet-zero
no ip domain-lookup
!
ip audit notify log
ip audit po max-events 100
ip ssh time-out 120
ip ssh authentication-retries 3
!
crypto isakmp policy 1
 hash md5
 authentication pre-share
crypto isakmp key cisco123 address 172.16.172.21
!
!
crypto ipsec transform-set myset esp-des esp-md5-hmac
 mode transport
!
crypto dynamic-map dyna 10
 set transform-set myset
 match address 102
!
!
crypto map vpn 10 ipsec-isakmp dynamic dyna
!
cns event-service server
!
```

```
!
!
interface Tunnel0
 ip address 50.1.1.1 255.255.255.252
 ip ospf mtu-ignore
 tunnel source FastEthernet0
 tunnel destination 172.16.172.21
 crypto map vpn
!
interface FastEthernet0
 ip address 172.16.172.39 255.255.255.240
 speed auto
 crypto map vpn
!
interface Serial0
 ip address 10.1.1.2 255.255.255.0
 encapsulation ppp
!
router ospf 1
 log-adjacency-changes
 network 10.1.1.0 0.0.0.255 area 0
 network 50.1.1.0 0.0.0.3 area 0
!
ip classless
ip route 0.0.0.0 0.0.0.0 172.16.172.33
no ip http server
!
access-list 102 permit gre host 172.16.172.39 host
172.16.172.21
!
line con 0
line aux 0
line vty 0 4
password cisco
login
!
end
```

Concentrador VPN 5000

```
VPN5002_8_323E9040: Main# show config

Edited Configuration not Present, using Running

[ General ]
VPNGateway = 172.16.172.17
IPSecGateway = 198.91.10.1
EthernetAddress = 00:05:32:3e:90:40
DeviceType = VPN 5002/8 Concentrator
ConfiguredOn = Timeserver not configured
ConfiguredFrom = Command Line, from Console
[ IKE Policy ]
Protection = MD5_DES_G1
[ IP Ethernet 1:0 ]
Mode = Routed
IPBroadcast = 172.16.172.32
SubnetMask = 255.255.255.240
IPAddress = 172.16.172.21
[ Logging ]
Level = Debug
LogToAuxPort = On
Enabled = On
[ Ethernet Interface Ethernet 0:0 ]
```

```
DUPLEX = half
SPEED = 10meg
[ IP Ethernet 0:0 ]
OSPFenabled = On
OSPFAreaID = 0
Mode = Routed
IPBroadcast = 20.1.1.255
SubnetMask = 255.255.255.0
IPAddress = 20.1.1.1

[ IP Static ]
0.0.0.0 0.0.0.0 150.1.1.1

[ Tunnel Partner VPN 1 ]
Partner = 172.16.172.39
KeyManage = Reliable
Mode = Main
Certificates = Off
SharedKey = "cisco123"
BindTo = "Ethernet 1:0"
Transform = ESP(MD5,DES)
InactivityTimeout = 120
TunnelType = GREinIPSec
KeepaliveInterval = 120
KeyLifeSecs = 3500

[ IP VPN 1 ]
Mode = Routed
Numbered = On
DirectedBroadcast = Off
IPAddress = 50.1.1.2
SubnetMask = 255.255.255.252
OSPFenabled = On
OSPFAreaID = 0
HelloInterval = 10

[ OSPF Area "0" ]
OSPFAuthtype = None
StubArea = Off

Configuration size is 1781 out of 65500 bytes.

VPN5002_8_323E9040: Main#
```

El dispositivo IOS y el VPN 5000 concentrator se configuran para sacar a colación un túnel GRE con uno a. El router IOS también tiene una correspondencia cifrada dinámica configurada para la dirección IP del VPN 5000 concentrator. La configuración del túnel VPN5000 refleja que inicia un túnel del GRE-con-transporte-MODE-IPSec al dispositivo IOS. Cuando el dispositivo IOS comienza, no tiene ninguna ruta para los destinos a través del túnel. No remite el tráfico de red privada en el claro. Cuando el concentrador VPN comienza, negocia automáticamente la asociación de seguridad crypto (SA) para proteger el tráfico GRE entre los dos pares. En este momento, el túnel es en servicio y las dos rutas del intercambio de los pares para las redes participantes. El concentrador VPN reintroduce continuamente la conexión en base de las palabras claves de “InactivityTimeout” y de “KeepAliveInterval”. Si el router IOS fuerza una reintroducción, los dos pares no están de acuerdo con qué SA a utilizar y el concentrador VPN renegocia el túnel debido a los segundos *x de la* inactividad (donde *x* representa el valor especificado en “InactivityTimeout”).

Note: Esta configuración del túnel permanece para arriba para siempre. No hay opción de inactividad-desconexión. Este túnel no se debe utilizar en los links cuyo uso es pago y costoso, o

donde se espera que al router remoto (IOS) desconecte después de los períodos inactivos.

Verificación

En esta sección encontrará información que puede utilizar para confirmar que su configuración esté funcionando correctamente.

La herramienta Output Interpreter (sólo para clientes registrados) permite utilizar algunos comandos “show” y ver un análisis del resultado de estos comandos.

Router del Cisco IOS

- **muestre isakmp crypto sa** — Muestra todo el Internet Security Association and Key Management Protocol (ISAKMP) actual SA.
- **muestre IPSec crypto sa** — Muestra todo el IPSec actual SA.
- **show crypto engine connection active** — Muestra el contador de la encripción de paquetes/del desciframiento por IPSec SA.

Concentrador VPN 5000

- **show system log buffer** — Muestra la información básica de Syslog.
- **volcado de la traza del vpn** — Muestra la información detallada en los procesos VPN.

Troubleshooting

En esta sección encontrará información que puede utilizar para solucionar problemas de configuración.

Comandos para resolución de problemas

Estos comandos se pueden utilizar en el router del Cisco IOS.

Note: Antes de ejecutar un comando debug, consulte Información Importante sobre Comandos Debug.

- **isakmp del debug crypto** — Muestra la información detallada en la negociación de la fase de intercambio de claves de Internet (IKE) I (modo principal).
- **IPSec del debug crypto** — Muestra la información detallada en la negociación de la fase II IKE (Quick Mode).
- **motor del debug crypto** — Encripción de paquetes de los debugs/desciframiento y proceso del Diffie-Hellman (DH).

Ejemplo de resultado del comando debug

Esta sección proporciona el ejemplo de salida del debug para los dispositivos de configuración.

- Router del Cisco IOS

- Concentrador VPN 5000

Router del Cisco IOS

Esta salida fue generada usando los **comandos debug crypto isakmp y debug crypto ipsec** en el router del Cisco IOS. Éste es debug correcta en el router y el VPN 5000 concentrator del Cisco IOS.

```
1720-1#show debug
Cryptographic Subsystem:
  Crypto ISAKMP debugging is on
  Crypto Engine debugging is on
  Crypto IPSEC debugging is on
1720-1#

19:16:24: ISAKMP (0:0): received packet from 172.16.172.21 (N) NEW SA
19:16:24: ISAKMP: local port 500, remote port 500
19:16:24: ISAKMP (0:2): processing SA payload. message ID = 0
19:16:24: ISAKMP (0:2): found peer pre-shared key matching 172.16.172.21
19:16:24: ISAKMP (0:2): Checking ISAKMP transform 1 against priority 1 policy
19:16:24: ISAKMP:      encryption DES-CBC
19:16:24: ISAKMP:      hash MD5
19:16:24: ISAKMP:      auth pre-share
19:16:24: ISAKMP:      default group 1
19:16:24: ISAKMP (0:2): atts are acceptable. Next payload is 0
19:16:24: CryptoEngine0: generate alg parameter
19:16:24: CryptoEngine0: CRYPTO_ISA_DH_CREATE(hw)(ipsec)
19:16:24: CRYPTO_ENGINE: Dh phase 1 status: 0
19:16:24: ISAKMP (0:2): processing vendor id payload
19:16:24: ISAKMP (0:2): SA is doing pre-shared key authentication using
   id type ID_IPV4_ADDR
19:16:24: ISAKMP (0:2): sending packet to 172.16.172.21 (R) MM_SA_SETUP
19:16:24: ISAKMP (0:2): received packet from 172.16.172.21 (R) MM_SA_SETUP
19:16:24: ISAKMP (0:2): processing KE payload. message ID = 0
19:16:24: CryptoEngine0: generate alg parameter
19:16:24: CryptoEngine0: CRYPTO_ISA_DH_SHARE_SECRET(hw)(ipsec)
19:16:24: ISAKMP (0:2): processing NONCE payload. message ID = 0
19:16:24: ISAKMP (0:2): found peer pre-shared key matching 172.16.172.21
19:16:24: CryptoEngine0: create ISAKMP SKEYID for conn id 2
19:16:24: CryptoEngine0: CRYPTO_ISA_SA_CREATE(hw)(ipsec)
19:16:24: ISAKMP (0:2): SKEYID state generated
19:16:24: ISAKMP (0:2): sending packet to 172.16.172.21 (R) MM_KEY_EXCH
19:16:24: ISAKMP (0:2): received packet from 172.16.172.21 (R) MM_KEY_EXCH
19:16:24: CryptoEngine0: CRYPTO_ISA_IKE_DECRYPT(hw)(ipsec)
19:16:24: ISAKMP (0:2): processing ID payload. message ID = 0
19:16:24: ISAKMP (0:2): processing HASH payload. message ID = 0
19:16:24: CryptoEngine0: generate hmac context for conn id 2
19:16:24: CryptoEngine0: CRYPTO_ISA_IKE_HMAC(hw)(ipsec)
19:16:24: ISAKMP (0:2): SA has been authenticated with 172.16.172.21
19:16:24: ISAKMP (2): ID payload
        next-payload : 8
        type         : 1
        protocol     : 17
        port         : 500
        length       : 8
19:16:24: ISAKMP (2): Total payload length: 12
19:16:24: CryptoEngine0: generate hmac context for conn id 2
19:16:24: CryptoEngine0: CRYPTO_ISA_IKE_HMAC(hw)(ipsec)
19:16:24: CryptoEngine0: clear dh number for conn id 1
19:16:24: CryptoEngine0: CRYPTO_ISA_DH_DELETE(hw)(ipsec)
```

```
19:16:24: CryptoEngine0: CRYPTO_ISA_IKE_ENCRYPT(hw)(ipsec)
19:16:24: ISAKMP (0:2): sending packet to 172.16.172.21 (R) QM_IDLE
19:16:24: ISAKMP (0:2): received packet from 172.16.172.21 (R) QM_IDLE
19:16:24: CryptoEngine0: CRYPTO_ISA_IKE_DECRYPT(hw)(ipsec)
19:16:24: CryptoEngine0: generate hmac context for conn id 2
19:16:24: CryptoEngine0: CRYPTO_ISA_IKE_HMAC(hw)(ipsec)
19:16:24: ISAKMP (0:2): processing HASH payload. message ID = 49
19:16:24: ISAKMP (0:2): processing SA payload. message ID = 49
19:16:24: ISAKMP (0:2): Checking IPSec proposal 1
19:16:24: ISAKMP: transform 1, ESP_DES
19:16:24: ISAKMP:   attributes in transform:
19:16:24: ISAKMP:      SA life type in seconds
19:16:24: ISAKMP:      SA life duration (VPI) of  0x0 0x0 0xD 0xAC
19:16:24: ISAKMP:      SA life type in kilobytes
19:16:24: ISAKMP:      SA life duration (VPI) of  0x0 0x10 0x0 0x0
19:16:24: ISAKMP:      encaps is 2
19:16:24: ISAKMP:      authenticator is HMAC-MD5
19:16:24: validate proposal 0
19:16:24: ISAKMP (0:2): atts are acceptable.
19:16:24: IPSEC(validate_proposal_request): proposal part #1,
  (key eng. msg.) dest= 172.16.172.39, src= 172.16.172.21,
    dest_proxy= 172.16.172.39/255.255.255.255/47/0 (type=1),
    src_proxy= 172.16.172.21/255.255.255.255/47/0 (type=1),
    protocol= ESP, transform= esp-des esp-md5-hmac ,
    lifedur= 0s and 0kb,
    spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x0
19:16:24: validate proposal request 0
19:16:24: ISAKMP (0:2): processing NONCE payload. message ID = 49
19:16:24: ISAKMP (0:2): processing ID payload. message ID = 49
19:16:24: ISAKMP (2): ID_IPV4_ADDR src 172.16.172.21 prot 47 port 0
19:16:24: ISAKMP (0:2): processing ID payload. message ID = 49
19:16:24: ISAKMP (2): ID_IPV4_ADDR dst 172.16.172.39 prot 47 port 0
19:16:24: ISAKMP (0:2): asking for 1 spis from ipsec
19:16:24: IPSEC(key_engine): got a queue event...
19:16:24: IPSEC(spi_response): getting spi 3854485305 for SA
        from 172.16.172.21   to 172.16.172.39   for prot 3
19:16:24: ISAKMP: received ke message (2/1)
19:16:24: CryptoEngine0: generate hmac context for conn id 2
19:16:24: CryptoEngine0: CRYPTO_ISA_IKE_HMAC(hw)(ipsec)
19:16:24: CryptoEngine0: CRYPTO_ISA_IKE_ENCRYPT(hw)(ipsec)
19:16:24: ISAKMP (0:2): sending packet to 172.16.172.21 (R) QM_IDLE
19:16:24: ISAKMP (0:2): received packet from 172.16.172.21 (R) QM_IDLE
19:16:24: CryptoEngine0: CRYPTO_ISA_IKE_DECRYPT(hw)(ipsec)
19:16:24: CryptoEngine0: generate hmac context for conn id 2
19:16:24: CryptoEngine0: CRYPTO_ISA_IKE_HMAC(hw)(ipsec)
19:16:24: ipsec allocate flow 0
19:16:24: ipsec allocate flow 0
19:16:24: CryptoEngine0: CRYPTO_ISA_IPSEC_KEY_CREATE(hw)(ipsec)
19:16:25: CryptoEngine0: CRYPTO_ISA_IPSEC_KEY_CREATE(hw)(ipsec)
19:16:25: ISAKMP (0:2): Creating IPSec SAs
19:16:25:         inbound SA from 172.16.172.21 to 172.16.172.39
        (proxy 172.16.172.21 to 172.16.172.39)
19:16:25:         has spi 0xE5BEC739 and conn_id 200 and flags 0
19:16:25:         lifetime of 3500 seconds
19:16:25:         lifetime of 1048576 kilobytes
19:16:25:         outbound SA from 172.16.172.39 to 172.16.172.21
   (proxy 172.16.172.39 to 172.16.172.21  )
19:16:25:         has spi 298 and conn_id 201 and flags 0
19:16:25:         lifetime of 3500 seconds
19:16:25:         lifetime of 1048576 kilobytes
19:16:25: ISAKMP (0:2): deleting node 49 error FALSE
   reason "quick mode done (await()"
19:16:25: IPSEC(key_engine): got a queue event...
19:16:25: IPSEC(initialize_sas): ,
```

```
  (key eng. msg.) dest= 172.16.172.39, src= 172.16.172.21,
    dest_proxy= 172.16.172.39/0.0.0.0/47/0 (type=1),
    src_proxy= 172.16.172.21/0.0.0.0/47/0 (type=1),
    protocol= ESP, transform= esp-des esp-md5-hmac ,
    lifedur= 3500s and 1048576kb,
    spi= 0xE5BEC739(3854485305), conn_id= 200, keysize= 0, flags= 0x0
19:16:25: IPSEC(initialize_sas): ,
  (key eng. msg.) src= 172.16.172.39, dest= 172.16.172.21,
    src_proxy= 172.16.172.39/0.0.0.0/47/0 (type=1),
    dest_proxy= 172.16.172.21/0.0.0.0/47/0 (type=1),
    protocol= ESP, transform= esp-des esp-md5-hmac ,
    lifedur= 3500s and 1048576kb,
    spi= 0x12A(298), conn_id= 201, keysize= 0, flags= 0x0
19:16:25: IPSEC(create_sa): sa created,
  (sa) sa_dest= 172.16.172.39, sa_prot= 50,
    sa_spi= 0xE5BEC739(3854485305),
    sa_trans= esp-des esp-md5-hmac , sa_conn_id= 200
19:16:25: IPSEC(create_sa): sa created,
  (sa) sa_dest= 172.16.172.21, sa_prot= 50,
    sa_spi= 0x12A(298),
    sa_trans= esp-des esp-md5-hmac , sa_conn_id= 201
1720-1#


VPN5002_8_323E9040: Main# show sys log buffer

VPN5002_8_323E9040: Main# VPN 0:1 opened for 172.16.172.39 from 172.16.172.39.
User assigned IP address 50.1.1.2


1720-1#show crypto isakmp sa
dst             src             state          conn-id    slot
172.16.172.39   172.16.172.21   QM_IDLE              1       0

1720-1#show crypto ipsec sa
interface: Tunnel0
         Crypto map tag: vpn, local addr. 172.16.172.39

        local  ident (addr/mask/prot/port): (172.16.172.39/255.255.255.255/47/0)
        remote ident (addr/mask/prot/port): (172.16.172.21/255.255.255.255/47/0)
        current_peer: 172.16.172.21
          PERMIT, flags={transport_parent,}
         #pkts encaps: 3051, #pkts encrypt: 3051, #pkts digest 3051
         #pkts decaps: 3055, #pkts decrypt: 3055, #pkts verify 3055
         #pkts compressed: 0, #pkts decompressed: 0
         #pkts not compressed: 0, #pkts compr. failed: 0
         #pkts decompress failed: 0, #send errors 0, #recv errors 0

          local crypto endpt.: 172.16.172.39, remote crypto endpt.: 172.16.172.21
          path mtu 1514, media mtu 1514
          current outbound spi: 129

          inbound esp sas:
           spi: 0x9161FD66(2439118182)
             transform: esp-des esp-md5-hmac ,
             in use settings ={Transport, }
             slot: 0, conn id: 216, flow_id: 17, crypto map: vpn
             sa timing: remaining key lifetime (k/sec): (1048543/912)
             IV size: 8 bytes
             replay detection support: Y

          inbound ah sas:

          inbound pcp sas:
```

```
      outbound esp sas:
       spi: 0x129(297)
         transform: esp-des esp-md5-hmac ,
         in use settings ={Transport, }
         slot: 0, conn id: 217, flow_id: 18, crypto map: vpn
         sa timing: remaining key lifetime (k/sec): (1048543/912)
         IV size: 8 bytes
         replay detection support: Y

      outbound ah sas:

      outbound pcp sas:



  interface: FastEthernet0
      Crypto map tag: vpn, local addr. 172.16.172.39

     local  ident (addr/mask/prot/port): (172.16.172.39/255.255.255.255/47/0)
     remote ident (addr/mask/prot/port): (172.16.172.21/255.255.255.255/47/0)
     current_peer: 172.16.172.21
       PERMIT, flags={transport_parent,}
      #pkts encaps: 3052, #pkts encrypt: 3052, #pkts digest 3052
      #pkts decaps: 3056, #pkts decrypt: 3056, #pkts verify 3056
      #pkts compressed: 0, #pkts decompressed: 0
      #pkts not compressed: 0, #pkts compr. failed: 0
      #pkts decompress failed: 0, #send errors 0, #recv errors 0

       local crypto endpt.: 172.16.172.39, remote crypto endpt.: 172.16.172.21
       path mtu 1514, media mtu 1514
       current outbound spi: 129

       inbound esp sas:
        spi: 0x9161FD66(2439118182)
         transform: esp-des esp-md5-hmac ,
         in use settings ={Transport, }
         slot: 0, conn id: 216, flow_id: 17, crypto map: vpn
         sa timing: remaining key lifetime (k/sec): (1048543/903)
         IV size: 8 bytes
         replay detection support: Y

       inbound ah sas:

       inbound pcp sas:

       outbound esp sas:
        spi: 0x129(297)
         transform: esp-des esp-md5-hmac ,
         in use settings ={Transport, }
         slot: 0, conn id: 217, flow_id: 18, crypto map: vpn
         sa timing: remaining key lifetime (k/sec): (1048543/903)
         IV size: 8 bytes
         replay detection support: Y

       outbound ah sas:

       outbound pcp sas:

1720-1#show crypto ipsec sa

  interface: FastEthernet0
      Crypto map tag: vpn, local addr. 172.16.172.39
```

```
local  ident (addr/mask/prot/port): (172.16.172.39/255.255.255.255/0/0)
remote ident (addr/mask/prot/port): (172.16.172.21/255.255.255.255/0/0)
current_peer: 172.16.172.21
  PERMIT, flags={transport_parent,}
 #pkts encaps: 0, #pkts encrypt: 0, #pkts digest 0
 #pkts decaps: 0, #pkts decrypt: 0, #pkts verify 0
 #pkts compressed: 0, #pkts decompressed: 0
 #pkts not compressed: 0, #pkts compr. failed: 0
 #pkts decompress failed: 0, #send errors 0, #recv errors 0

  local crypto endpt.: 172.16.172.39, remote crypto endpt.: 172.16.172.21
  path mtu 1514, media mtu 1514
  current outbound spi: 0

  inbound esp sas:

  inbound ah sas:

  inbound pcp sas:

  outbound esp sas:

  outbound ah sas:

  outbound pcp sas:

local  ident (addr/mask/prot/port): (172.16.172.39/255.255.255.255/47/0)
remote ident (addr/mask/prot/port): (172.16.172.21/255.255.255.255/47/0)
current_peer: 172.16.172.21
  PERMIT, flags={origin_is_acl,transport_parent,parent_is_transport,}
 #pkts encaps: 34901, #pkts encrypt: 34901, #pkts digest 34901
 #pkts decaps: 34900, #pkts decrypt: 34900, #pkts verify 34900
 #pkts compressed: 0, #pkts decompressed: 0
 #pkts not compressed: 0, #pkts compr. failed: 0
 #pkts decompress failed: 0, #send errors 0, #recv errors 0

  local crypto endpt.: 172.16.172.39, remote crypto endpt.: 172.16.172.21
  path mtu 1500, media mtu 1500
  current outbound spi: 151

  inbound esp sas:
   spi: 0x356141A8(895566248)
     transform: esp-des esp-md5-hmac ,
     in use settings ={Transport, }
     slot: 0, conn id: 362, flow_id: 163, crypto map: vpn
     sa timing: remaining key lifetime (k/sec): (1046258/3306)
     IV size: 8 bytes
     replay detection support: Y

  inbound ah sas:

  inbound pcp sas:

  outbound esp sas:
   spi: 0x151(337)
     transform: esp-des esp-md5-hmac ,
     in use settings ={Transport, }
     slot: 0, conn id: 363, flow_id: 164, crypto map: vpn
     sa timing: remaining key lifetime (k/sec): (1046258/3306)
     IV size: 8 bytes
     replay detection support: Y

  outbound ah sas:
```

```
     outbound pcp sas:



interface: Tunnel0
    Crypto map tag: vpn, local addr. 172.16.172.39

   local  ident (addr/mask/prot/port): (172.16.172.39/255.255.255.255/0/0)
   remote ident (addr/mask/prot/port): (172.16.172.21/255.255.255.255/0/0)
   current_peer: 172.16.172.21
     PERMIT, flags={transport_parent,}
    #pkts encaps: 0, #pkts encrypt: 0, #pkts digest 0
    #pkts decaps: 0, #pkts decrypt: 0, #pkts verify 0
    #pkts compressed: 0, #pkts decompressed: 0
    #pkts not compressed: 0, #pkts compr. failed: 0
    #pkts decompress failed: 0, #send errors 0, #recv errors 0

     local crypto endpt.: 172.16.172.39, remote crypto endpt.: 172.16.172.21
     path mtu 1514, media mtu 1514
     current outbound spi: 0

     inbound esp sas:

     inbound ah sas:

     inbound pcp sas:

     outbound esp sas:

     outbound ah sas:

     outbound pcp sas:



   local  ident (addr/mask/prot/port): (172.16.172.39/255.255.255.255/47/0)
   remote ident (addr/mask/prot/port): (172.16.172.21/255.255.255.255/47/0)
   current_peer: 172.16.172.21
     PERMIT, flags={origin_is_acl,transport_parent,parent_is_transport,}
    #pkts encaps: 35657, #pkts encrypt: 35657, #pkts digest 35657
    #pkts decaps: 35656, #pkts decrypt: 35656, #pkts verify 35656
    #pkts compressed: 0, #pkts decompressed: 0
    #pkts not compressed: 0, #pkts compr. failed: 0
    #pkts decompress failed: 0, #send errors 0, #recv errors 0

     local crypto endpt.: 172.16.172.39, remote crypto endpt.: 172.16.172.21
     path mtu 1500, media mtu 1500
     current outbound spi: 151

     inbound esp sas:
      spi: 0x356141A8(895566248)
        transform: esp-des esp-md5-hmac ,
        in use settings ={Transport, }
        slot: 0, conn id: 362, flow_id: 163, crypto map: vpn
        sa timing: remaining key lifetime (k/sec): (1046154/3302)
        IV size: 8 bytes
        replay detection support: Y

     inbound ah sas:

     inbound pcp sas:

     outbound esp sas:
      spi: 0x151(337)
```

```
            transform: esp-des esp-md5-hmac ,
            in use settings ={Transport, }
            slot: 0, conn id: 363, flow_id: 164, crypto map: vpn
            sa timing: remaining key lifetime (k/sec): (1046154/3302)
            IV size: 8 bytes
            replay detection support: Y

          outbound ah sas:

          outbound pcp sas:

1720-1#show crypto engine connections active

     ID Interface      IP-Address     State Algorithm          Encrypt Decrypt
      1 FastEthernet0  172.16.172.39  set   HMAC_MD5+DES_56_CB       0       0
    216 FastEthernet0  172.16.172.39  set   HMAC_MD5+DES_56_CB       0     267
    217 FastEthernet0  172.16.172.39  set   HMAC_MD5+DES_56_CB     266       0


1720-1#show ip ospf ne

Neighbor ID   Pri   State       Dead Time   Address     Interface
20.1.1.1        0   FULL/  -    00:00:37    50.1.1.2    Tunnel0
10.1.3.1        1   FULL/  -    00:00:36    10.1.1.1    Serial0
1720-1#

1720-1#show ip ospf database

OSPF Router with ID (50.1.1.1) (Process ID 1)

                    Router Link States (Area 0)

     Link ID         ADV Router      Age         Seq#       Checksum Link count
     10.1.3.1        10.1.3.1        1056        0x80000025 0xAB29   4
     20.1.1.1        20.1.1.1        722         0x80000032 0x1AD3   3
     20.1.3.1        20.1.3.1        1004        0x80000004 0xB6C4   3
     50.1.1.1        50.1.1.1        1707        0x8000002C 0xFD27   4

                    Net Link States (Area 0)

     Link ID         ADV Router      Age         Seq#       Checksum
     20.1.1.1        20.1.1.1        722         0x80000003 0x718A

1720-1#show ip route

Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
            D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
            N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
            E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
            i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2,
            ia - IS-IS inter area, * - candidate default,
            U - per-user static route, o - ODR,
            P - periodic downloaded static route

     Gateway of last resort is 172.16.172.33 to network 0.0.0.0

          50.0.0.0/30 is subnetted, 1 subnets
     C       50.1.1.0 is directly connected, Tunnel0
          20.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
     O       20.1.1.0/24 [110/11121] via 50.1.1.2, 00:50:19, Tunnel0
     O       20.1.2.1/32 [110/11122] via 50.1.1.2, 00:50:19, Tunnel0
     O       20.1.3.1/32 [110/11122] via 50.1.1.2, 00:50:19, Tunnel0
          172.16.0.0/28 is subnetted, 1 subnets
     C       172.16.172.32 is directly connected, FastEthernet0
```

```
     10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
O       10.1.2.1/32 [110/65] via 10.1.1.1, 00:50:21, Serial0
O       10.1.3.1/32 [110/65] via 10.1.1.1, 00:50:21, Serial0
C       10.1.1.0/24 is directly connected, Serial0
C       10.1.1.1/32 is directly connected, Serial0
S*   0.0.0.0/0 [1/0] via 172.16.172.33
```

Concentrador VPN 5000

```
VPN5002_8_323E9040: Main#show vpn partner ver

     Port        Partner         Partner  Default  Bindto          Connect
     Number      Address         Port     Partner  Address         Time
     ------------------------------------------------------------------------
     VPN 0:1     172.16.172.39   500      No       172.16.172.21   00:08:20:51
          Auth/Encrypt: MD5e/DES  User Auth: Shared Key
          Access: Static Peer: 172.16.172.39    Local: 172.16.172.21
          Start:39307 seconds Managed:69315 seconds State:imnt_maintenance

     IOP slot 1:
     No active connections found.

VPN5002_8_323E9040: Main#show vpn stat ver

               Current  In       High     Running  Script   Script   Script
               Active   Negot    Water    Total    Starts   OK       Error
               ------------------------------------------------------------
     Users     0        0        0        0        0        0        0
     Partners  1        0        1        4        22       4        38
     Total     1        0        1        4        22       4        38

     Stats             VPN0:1
     Wrapped             3072
     Unwrapped           3068
     BadEncap               0
     BadAuth                0
     BadEncrypt             0
     rx IP               3068
     rx IPX                 0
     rx Other               0
     tx IP               3072
     tx IPX                 0
     tx Other               0
     IKE rekey              8

     Input VPN pkts dropped due to no SA: 0

     Input VPN pkts dropped due to no free queue entries: 0

     IOP slot 1:

               Current  In       High     Running  Script   Script   Script
               Active   Negot    Water    Total    Starts   OK       Error
               ------------------------------------------------------------
     Users     0        0        0        0        0        0        0
     Partners  0        0        0        0        0        0        0
     Total     0        0        0        0        0        0        0

     Stats
     Wrapped
     Unwrapped
     BadEncap
```

```
     BadAuth
     BadEncrypt
     rx IP
     rx IPX
     rx Other
     tx IP
     tx IPX
     tx Other
     IKE rekey

     Input VPN pkts dropped due to no SA: 0

     Input VPN pkts dropped due to no free queue entries: 0


VPN5002_8_323E9040: Main#show ospf nbr

============================================================================
                          OSPF NEIGHBORS
----------------------------------------------------------------------------
Ether0:0  RtrID: 20.1.3.1         Addr: 20.1.1.2         State:  FULL
VPN0:1    RtrID: 50.1.1.1         Addr: 50.1.1.1         State:  FULL
============================================================================


VPN5002_8_323E9040: Main#show ospf db all

OSPF Router, Net and Summary Databases:

Area 0:
        STUB    AdvRtr 50.1.1.1 Len 24(24) Age 3600 Seq 00000000
          LS ID: 50.1.1.0 Mask: 255.255.255.252 Network: 50.1.1.0
                Nexthops(1):
                        50.1.1.1  Interface: VPN0:1

        STUB    AdvRtr 50.1.1.1 Len 24(24) Age 3600 Seq 00000000
          LS ID: 10.1.1.0 Mask: 255.255.255.0 Network: 10.1.1.0
                Nexthops(1):
                        50.1.1.1  Interface: VPN0:1

        STUB    AdvRtr 20.1.1.1 Len 24(24) Age 3600 Seq 00000000
          LS ID: 20.1.1.0 Mask: 255.255.255.0 Network: 20.1.1.0

        STUB    AdvRtr 20.1.1.1 Len 24(24) Age 3368 Seq 00000000
          LS ID: 50.1.1.2 Mask: 255.255.255.252 Network: 50.1.1.0

        STUB    AdvRtr 20.1.3.1 Len 24(24) Age 3372 Seq 00000000
          LS ID: 20.1.3.1 Mask: 255.255.255.255 Network: 20.1.3.1
                Nexthops(1):
                        20.1.1.2  Interface: Ether0:0

        STUB    AdvRtr 20.1.3.1 Len 24(24) Age 3374 Seq 00000000
          LS ID: 20.1.2.1 Mask: 255.255.255.255 Network: 20.1.2.1
                Nexthops(1):
                        20.1.1.2  Interface: Ether0:0

        STUB    AdvRtr 10.1.3.1 Len 24(24) Age 3442 Seq 00000000
          LS ID: 10.1.3.1 Mask: 255.255.255.255 Network: 10.1.3.1
                Nexthops(1):
                        50.1.1.1  Interface: VPN0:1

        STUB    AdvRtr 10.1.3.1 Len 24(24) Age 3442 Seq 00000000
          LS ID: 10.1.2.1 Mask: 255.255.255.255 Network: 10.1.2.1
                Nexthops(1):
```

```
                50.1.1.1  Interface: VPN0:1

    RTR     AdvRtr 50.1.1.1 Len 72(72) Age 63 Seq 8000002d
      LS ID: 50.1.1.1  Area Border: Off  AS Border: Off
            Connect Type: RTR       Cost: 11111
            RouterID: 20.1.1.1      Address: 50.1.1.1
            Connect Type: STUB or HOST      Cost: 11111
            Network: 50.1.1.0       NetMask: 255.255.255.252
            Connect Type: RTR       Cost: 64
            RouterID: 10.1.3.1      Address: 10.1.1.2
            Connect Type: STUB or HOST      Cost: 64
            Network: 10.1.1.0       NetMask: 255.255.255.0
            Nexthops(1):
                    50.1.1.1  Interface: VPN0:1

    RTR     AdvRtr 20.1.1.1 Len 60(72) Age 1093 Seq 80000032
      LS ID: 20.1.1.1  Area Border: Off  AS Border: Off
            Connect Type: TRANS NET Cost: 10
            DR: 20.1.1.1    Address: 20.1.1.1
            Connect Type: STUB or HOST      Cost: 10
            Network: 50.1.1.2       NetMask: 255.255.255.252
            Connect Type: RTR       Cost: 10
            RouterID: 50.1.1.1      Address: 50.1.1.2

    RTR     AdvRtr 20.1.3.1 Len 60(60) Age 1375 Seq 80000004
      LS ID: 20.1.3.1  Area Border: Off  AS Border: Off
            Connect Type: STUB or HOST      Cost: 1
            Network: 20.1.3.1       NetMask: 255.255.255.255
            Connect Type: STUB or HOST      Cost: 1
            Network: 20.1.2.1       NetMask: 255.255.255.255
            Connect Type: TRANS NET Cost: 1
            DR: 20.1.1.1    Address: 20.1.1.2
            Nexthops(1):
                    20.1.1.2  Interface: Ether0:0

    RTR     AdvRtr 10.1.3.1 Len 72(72) Age 1430 Seq 80000025
      LS ID: 10.1.3.1  Area Border: Off  AS Border: Off
            Connect Type: RTR       Cost: 64
            RouterID: 50.1.1.1      Address: 10.1.1.1
            Connect Type: STUB or HOST      Cost: 64
            Network: 10.1.1.0       NetMask: 255.255.255.0
            Connect Type: STUB or HOST      Cost: 1
            Network: 10.1.3.1       NetMask: 255.255.255.255
            Connect Type: STUB or HOST      Cost: 1
            Network: 10.1.2.1       NetMask: 255.255.255.255
            Nexthops(1):
                    50.1.1.1  Interface: VPN0:1

    NET     AdvRtr 20.1.1.1 Len 32(32) Age 1094 Seq 80000003
      LS ID: 20.1.1.1 Mask: 255.255.255.0 Network: 20.1.1.0
            Attached Router: 20.1.1.1
            Attached Router: 20.1.3.1
            Nexthops(1):
             20.1.1.2  Interface: Ether0:0

VPN5002_8_323E9040: Main#show ip routing

     IP Routing Table for Main
     Directly Connected Routes:
     Destination      Mask      Ref   Uses Type  Interface
     20.1.1.0         FFFFFF00    4587 STIF Ether0:0
     20.1.1.0         FFFFFFFF       0 STIF Local
     20.1.1.1        @FFFFFFFF      36 LocalLocal
     20.1.1.255       FFFFFFFF       0 STIF Local
```

```
50.1.1.0         FFFFFFFC       5 STIF VPN0:1
50.1.1.0         FFFFFFFF       0 STIF Local
50.1.1.2        @FFFFFFFF       5 LocalLocal
50.1.1.3         FFFFFFFF       0 STIF Local
127.0.0.1        FFFFFFFF       0 STIF Local
172.16.172.16    FFFFFFF0       0 STIF Ether1:0
172.16.172.16    FFFFFFFF       0 STIF Local
172.16.172.21   @FFFFFFFF       1 LocalLocal
172.16.172.32    FFFFFFFF       0 STIF Local
224.0.0.5        FFFFFFFF    8535 STIF Local
224.0.0.6        FFFFFFFF       0 STIF Local
224.0.0.9        FFFFFFFF       0 STIF Local
255.255.255.255 @FFFFFFFF    5393 LocalLocal

Static Routes:
Destination      Mask     Gateway         Metric Ref   Uses  Type Interface
172.16.172.39   @FFFFFFFF 172.16.172.21   2            0 *Stat   VPN0:1

Dynamic Routes:
                     Flash Cfg: 31: Error: Invalid syntax: too few fields
                            Src/
Destination    Mask     Gateway     Metric Ref   Uses Type TTL  Interface
10.1.1.0       FFFFFF00 50.1.1.1    74           0 OSPF STUB    VPN0:1
10.1.2.1      @FFFFFFFF 50.1.1.1    75           0 OSPF HOST    VPN0:1
10.1.3.1      @FFFFFFFF 50.1.1.1    75           0 OSPF HOST    VPN0:1
20.1.2.1      @FFFFFFFF 20.1.1.2    11           0 OSPF HOST    Ether0:0
20.1.3.1      @FFFFFFFF 20.1.1.2    11           0 OSPF HOST    Ether0:0

Configured IP Routes:
  None.

Total Routes in use: 23     Mask -> @Host route  Type -> Redist *rip #ospf

VPNGateway set to 172.16.172.17 using interface Ether1:0
VPN5002_8_323E9040: Main#
```

Qué Puede Salir Mal

- El VPN 5000 concentrator propone el modo de transporte por abandono cuando se utiliza el GRE sobre IPSec. Cuando configuran mal al router del Cisco IOS para el modo túnel, estos errores resultan.**Depuración de IOS**

```
VPN5002_8_323E9040: Main#show vpn partner ver

     Port        Partner         Partner  Default  Bindto          Connect
     Number      Address         Port     Partner  Address         Time
     ------------------------------------------------------------------------
     VPN 0:1     172.16.172.39   500      No       172.16.172.21   00:08:20:51
          Auth/Encrypt: MD5e/DES  User Auth: Shared Key
          Access: Static Peer: 172.16.172.39    Local: 172.16.172.21
          Start:39307 seconds Managed:69315 seconds State:imnt_maintenance

     IOP slot 1:
     No active connections found.

VPN5002_8_323E9040: Main#show vpn stat ver

               Current  In       High     Running  Script   Script   Script
               Active   Negot    Water    Total    Starts   OK       Error
               ------------------------------------------------------------
     Users     0        0        0        0        0        0        0
     Partners  1        0        1        4        22       4        38
     Total     1        0        1        4        22       4        38
```

```
     Stats             VPN0:1
     Wrapped             3072
     Unwrapped           3068
     BadEncap               0
     BadAuth                0
     BadEncrypt             0
     rx IP               3068
     rx IPX                 0
     rx Other               0
     tx IP               3072
     tx IPX                 0
     tx Other               0
     IKE rekey              8

     Input VPN pkts dropped due to no SA: 0

     Input VPN pkts dropped due to no free queue entries: 0

     IOP slot 1:

               Current  In       High     Running  Script   Script   Script
               Active   Negot    Water    Total    Starts   OK       Error
               ------------------------------------------------------------
     Users     0        0        0        0        0        0        0
     Partners  0        0        0        0        0        0        0
     Total     0        0        0        0        0        0        0

     Stats
     Wrapped
     Unwrapped
     BadEncap
     BadAuth
     BadEncrypt
     rx IP
     rx IPX
     rx Other
     tx IP
     tx IPX
     tx Other
     IKE rekey

     Input VPN pkts dropped due to no SA: 0

     Input VPN pkts dropped due to no free queue entries: 0


VPN5002_8_323E9040: Main#show ospf nbr

============================================================================
                          OSPF NEIGHBORS
----------------------------------------------------------------------------
Ether0:0  RtrID: 20.1.3.1         Addr: 20.1.1.2         State:  FULL
VPN0:1    RtrID: 50.1.1.1         Addr: 50.1.1.1         State:  FULL
============================================================================


VPN5002_8_323E9040: Main#show ospf db all

OSPF Router, Net and Summary Databases:

Area 0:
        STUB    AdvRtr 50.1.1.1 Len 24(24) Age 3600 Seq 00000000
          LS ID: 50.1.1.0 Mask: 255.255.255.252 Network: 50.1.1.0
                Nexthops(1):
```

```
                50.1.1.1  Interface: VPN0:1

STUB    AdvRtr 50.1.1.1 Len 24(24) Age 3600 Seq 00000000
  LS ID: 10.1.1.0 Mask: 255.255.255.0 Network: 10.1.1.0
        Nexthops(1):
                50.1.1.1  Interface: VPN0:1

STUB    AdvRtr 20.1.1.1 Len 24(24) Age 3600 Seq 00000000
  LS ID: 20.1.1.0 Mask: 255.255.255.0 Network: 20.1.1.0

STUB    AdvRtr 20.1.1.1 Len 24(24) Age 3368 Seq 00000000
  LS ID: 50.1.1.2 Mask: 255.255.255.252 Network: 50.1.1.0

STUB    AdvRtr 20.1.3.1 Len 24(24) Age 3372 Seq 00000000
  LS ID: 20.1.3.1 Mask: 255.255.255.255 Network: 20.1.3.1
        Nexthops(1):
                20.1.1.2  Interface: Ether0:0

STUB    AdvRtr 20.1.3.1 Len 24(24) Age 3374 Seq 00000000
  LS ID: 20.1.2.1 Mask: 255.255.255.255 Network: 20.1.2.1
        Nexthops(1):
                20.1.1.2  Interface: Ether0:0

STUB    AdvRtr 10.1.3.1 Len 24(24) Age 3442 Seq 00000000
  LS ID: 10.1.3.1 Mask: 255.255.255.255 Network: 10.1.3.1
        Nexthops(1):
                50.1.1.1  Interface: VPN0:1

STUB    AdvRtr 10.1.3.1 Len 24(24) Age 3442 Seq 00000000
  LS ID: 10.1.2.1 Mask: 255.255.255.255 Network: 10.1.2.1
        Nexthops(1):
                50.1.1.1  Interface: VPN0:1

RTR     AdvRtr 50.1.1.1 Len 72(72) Age 63 Seq 8000002d
  LS ID: 50.1.1.1  Area Border: Off  AS Border: Off
        Connect Type: RTR       Cost: 11111
        RouterID: 20.1.1.1      Address: 50.1.1.1
        Connect Type: STUB or HOST      Cost: 11111
        Network: 50.1.1.0       NetMask: 255.255.255.252
        Connect Type: RTR       Cost: 64
        RouterID: 10.1.3.1      Address: 10.1.1.2
        Connect Type: STUB or HOST      Cost: 64
        Network: 10.1.1.0       NetMask: 255.255.255.0
        Nexthops(1):
                50.1.1.1  Interface: VPN0:1

RTR     AdvRtr 20.1.1.1 Len 60(72) Age 1093 Seq 80000032
  LS ID: 20.1.1.1  Area Border: Off  AS Border: Off
        Connect Type: TRANS NET Cost: 10
        DR: 20.1.1.1    Address: 20.1.1.1
        Connect Type: STUB or HOST      Cost: 10
        Network: 50.1.1.2       NetMask: 255.255.255.252
        Connect Type: RTR       Cost: 10
        RouterID: 50.1.1.1      Address: 50.1.1.2

RTR     AdvRtr 20.1.3.1 Len 60(60) Age 1375 Seq 80000004
  LS ID: 20.1.3.1  Area Border: Off  AS Border: Off
        Connect Type: STUB or HOST      Cost: 1
        Network: 20.1.3.1       NetMask: 255.255.255.255
        Connect Type: STUB or HOST      Cost: 1
        Network: 20.1.2.1       NetMask: 255.255.255.255
        Connect Type: TRANS NET Cost: 1
        DR: 20.1.1.1    Address: 20.1.1.2
        Nexthops(1):
```

```
                    20.1.1.2  Interface: Ether0:0

      RTR     AdvRtr 10.1.3.1 Len 72(72) Age 1430 Seq 80000025
        LS ID: 10.1.3.1  Area Border: Off  AS Border: Off
              Connect Type: RTR       Cost: 64
              RouterID: 50.1.1.1      Address: 10.1.1.1
              Connect Type: STUB or HOST      Cost: 64
              Network: 10.1.1.0       NetMask: 255.255.255.0
              Connect Type: STUB or HOST      Cost: 1
              Network: 10.1.3.1       NetMask: 255.255.255.255
              Connect Type: STUB or HOST      Cost: 1
              Network: 10.1.2.1       NetMask: 255.255.255.255
              Nexthops(1):
                     50.1.1.1  Interface: VPN0:1

      NET     AdvRtr 20.1.1.1 Len 32(32) Age 1094 Seq 80000003
        LS ID: 20.1.1.1 Mask: 255.255.255.0 Network: 20.1.1.0
              Attached Router: 20.1.1.1
              Attached Router: 20.1.3.1
              Nexthops(1):
               20.1.1.2  Interface: Ether0:0

VPN5002_8_323E9040: Main#show ip routing

     IP Routing Table for Main
     Directly Connected Routes:
     Destination      Mask      Ref   Uses Type  Interface
     20.1.1.0         FFFFFF00    4587 STIF Ether0:0
     20.1.1.0         FFFFFFFF       0 STIF Local
     20.1.1.1        @FFFFFFFF      36 LocalLocal
     20.1.1.255       FFFFFFFF       0 STIF Local
     50.1.1.0         FFFFFFFC       5 STIF VPN0:1
     50.1.1.0         FFFFFFFF       0 STIF Local
     50.1.1.2        @FFFFFFFF       5 LocalLocal
     50.1.1.3         FFFFFFFF       0 STIF Local
     127.0.0.1        FFFFFFFF       0 STIF Local
     172.16.172.16    FFFFFFF0       0 STIF Ether1:0
     172.16.172.16    FFFFFFFF       0 STIF Local
     172.16.172.21   @FFFFFFFF       1 LocalLocal
     172.16.172.32    FFFFFFFF       0 STIF Local
     224.0.0.5        FFFFFFFF    8535 STIF Local
     224.0.0.6        FFFFFFFF       0 STIF Local
     224.0.0.9        FFFFFFFF       0 STIF Local
     255.255.255.255 @FFFFFFFF    5393 LocalLocal

     Static Routes:
     Destination      Mask     Gateway         Metric Ref   Uses  Type Interface
     172.16.172.39   @FFFFFFFF 172.16.172.21   2            0 *Stat   VPN0:1

     Dynamic Routes:
                          Flash Cfg: 31: Error: Invalid syntax: too few fields
                                 Src/
     Destination    Mask     Gateway     Metric Ref   Uses Type TTL  Interface
     10.1.1.0       FFFFFF00 50.1.1.1    74           0 OSPF STUB    VPN0:1
     10.1.2.1      @FFFFFFFF 50.1.1.1    75           0 OSPF HOST    VPN0:1
     10.1.3.1      @FFFFFFFF 50.1.1.1    75           0 OSPF HOST    VPN0:1
     20.1.2.1      @FFFFFFFF 20.1.1.2    11           0 OSPF HOST    Ether0:0
     20.1.3.1      @FFFFFFFF 20.1.1.2    11           0 OSPF HOST    Ether0:0

     Configured IP Routes:
       None.

     Total Routes in use: 23     Mask -> @Host route  Type -> Redist *rip #ospf
```

```
     VPNGateway set to 172.16.172.17 using interface Ether1:0
     VPN5002_8_323E9040: Main#
```

Registro VPN5000

```
VPN5002_8_323E9040: Main#show vpn partner ver

     Port        Partner         Partner  Default  Bindto          Connect
     Number      Address         Port     Partner  Address         Time
     ------------------------------------------------------------------------
     VPN 0:1     172.16.172.39   500      No       172.16.172.21   00:08:20:51
          Auth/Encrypt: MD5e/DES  User Auth: Shared Key
          Access: Static Peer: 172.16.172.39    Local: 172.16.172.21
          Start:39307 seconds Managed:69315 seconds State:imnt_maintenance

     IOP slot 1:
     No active connections found.

VPN5002_8_323E9040: Main#show vpn stat ver

               Current  In       High     Running  Script   Script   Script
               Active   Negot    Water    Total    Starts   OK       Error
               ------------------------------------------------------------
     Users     0        0        0        0        0        0        0
     Partners  1        0        1        4        22       4        38
     Total     1        0        1        4        22       4        38

     Stats             VPN0:1
     Wrapped             3072
     Unwrapped           3068
     BadEncap               0
     BadAuth                0
     BadEncrypt             0
     rx IP               3068
     rx IPX                 0
     rx Other               0
     tx IP               3072
     tx IPX                 0
     tx Other               0
     IKE rekey              8

     Input VPN pkts dropped due to no SA: 0

     Input VPN pkts dropped due to no free queue entries: 0

     IOP slot 1:

               Current  In       High     Running  Script   Script   Script
               Active   Negot    Water    Total    Starts   OK       Error
               ------------------------------------------------------------
     Users     0        0        0        0        0        0        0
     Partners  0        0        0        0        0        0        0
     Total     0        0        0        0        0        0        0

     Stats
     Wrapped
     Unwrapped
     BadEncap
     BadAuth
     BadEncrypt
     rx IP
     rx IPX
     rx Other
     tx IP
     tx IPX
```

```
     tx Other
     IKE rekey

     Input VPN pkts dropped due to no SA: 0

     Input VPN pkts dropped due to no free queue entries: 0


VPN5002_8_323E9040: Main#show ospf nbr

========================================================================
                         OSPF NEIGHBORS
------------------------------------------------------------------------
Ether0:0  RtrID: 20.1.3.1         Addr: 20.1.1.2         State:  FULL
VPN0:1    RtrID: 50.1.1.1         Addr: 50.1.1.1         State:  FULL
========================================================================


VPN5002_8_323E9040: Main#show ospf db all

OSPF Router, Net and Summary Databases:

Area 0:
        STUB    AdvRtr 50.1.1.1 Len 24(24) Age 3600 Seq 00000000
          LS ID: 50.1.1.0 Mask: 255.255.255.252 Network: 50.1.1.0
                Nexthops(1):
                        50.1.1.1  Interface: VPN0:1

        STUB    AdvRtr 50.1.1.1 Len 24(24) Age 3600 Seq 00000000
          LS ID: 10.1.1.0 Mask: 255.255.255.0 Network: 10.1.1.0
                Nexthops(1):
                        50.1.1.1  Interface: VPN0:1

        STUB    AdvRtr 20.1.1.1 Len 24(24) Age 3600 Seq 00000000
          LS ID: 20.1.1.0 Mask: 255.255.255.0 Network: 20.1.1.0

        STUB    AdvRtr 20.1.1.1 Len 24(24) Age 3368 Seq 00000000
          LS ID: 50.1.1.2 Mask: 255.255.255.252 Network: 50.1.1.0

        STUB    AdvRtr 20.1.3.1 Len 24(24) Age 3372 Seq 00000000
          LS ID: 20.1.3.1 Mask: 255.255.255.255 Network: 20.1.3.1
                Nexthops(1):
                        20.1.1.2  Interface: Ether0:0

        STUB    AdvRtr 20.1.3.1 Len 24(24) Age 3374 Seq 00000000
          LS ID: 20.1.2.1 Mask: 255.255.255.255 Network: 20.1.2.1
                Nexthops(1):
                        20.1.1.2  Interface: Ether0:0

        STUB    AdvRtr 10.1.3.1 Len 24(24) Age 3442 Seq 00000000
          LS ID: 10.1.3.1 Mask: 255.255.255.255 Network: 10.1.3.1
                Nexthops(1):
                        50.1.1.1  Interface: VPN0:1

        STUB    AdvRtr 10.1.3.1 Len 24(24) Age 3442 Seq 00000000
          LS ID: 10.1.2.1 Mask: 255.255.255.255 Network: 10.1.2.1
                Nexthops(1):
                        50.1.1.1  Interface: VPN0:1

        RTR     AdvRtr 50.1.1.1 Len 72(72) Age 63 Seq 8000002d
          LS ID: 50.1.1.1  Area Border: Off  AS Border: Off
                Connect Type: RTR       Cost: 11111
                RouterID: 20.1.1.1      Address: 50.1.1.1
                Connect Type: STUB or HOST      Cost: 11111
```

```
                Network: 50.1.1.0       NetMask: 255.255.255.252
                Connect Type: RTR       Cost: 64
                RouterID: 10.1.3.1      Address: 10.1.1.2
                Connect Type: STUB or HOST      Cost: 64
                Network: 10.1.1.0       NetMask: 255.255.255.0
                Nexthops(1):
                        50.1.1.1  Interface: VPN0:1

        RTR     AdvRtr 20.1.1.1 Len 60(72) Age 1093 Seq 80000032
          LS ID: 20.1.1.1  Area Border: Off  AS Border: Off
                Connect Type: TRANS NET Cost: 10
                DR: 20.1.1.1    Address: 20.1.1.1
                Connect Type: STUB or HOST      Cost: 10
                Network: 50.1.1.2       NetMask: 255.255.255.252
                Connect Type: RTR       Cost: 10
                RouterID: 50.1.1.1      Address: 50.1.1.2

        RTR     AdvRtr 20.1.3.1 Len 60(60) Age 1375 Seq 80000004
          LS ID: 20.1.3.1  Area Border: Off  AS Border: Off
                Connect Type: STUB or HOST      Cost: 1
                Network: 20.1.3.1       NetMask: 255.255.255.255
                Connect Type: STUB or HOST      Cost: 1
                Network: 20.1.2.1       NetMask: 255.255.255.255
                Connect Type: TRANS NET Cost: 1
                DR: 20.1.1.1    Address: 20.1.1.2
                Nexthops(1):
                        20.1.1.2  Interface: Ether0:0

        RTR     AdvRtr 10.1.3.1 Len 72(72) Age 1430 Seq 80000025
          LS ID: 10.1.3.1  Area Border: Off  AS Border: Off
                Connect Type: RTR       Cost: 64
                RouterID: 50.1.1.1      Address: 10.1.1.1
                Connect Type: STUB or HOST      Cost: 64
                Network: 10.1.1.0       NetMask: 255.255.255.0
                Connect Type: STUB or HOST      Cost: 1
                Network: 10.1.3.1       NetMask: 255.255.255.255
                Connect Type: STUB or HOST      Cost: 1
                Network: 10.1.2.1       NetMask: 255.255.255.255
                Nexthops(1):
                        50.1.1.1  Interface: VPN0:1

        NET     AdvRtr 20.1.1.1 Len 32(32) Age 1094 Seq 80000003
          LS ID: 20.1.1.1 Mask: 255.255.255.0 Network: 20.1.1.0
                Attached Router: 20.1.1.1
                Attached Router: 20.1.3.1
                Nexthops(1):
                 20.1.1.2  Interface: Ether0:0

VPN5002_8_323E9040: Main#show ip routing

     IP Routing Table for Main
     Directly Connected Routes:
     Destination      Mask      Ref   Uses Type  Interface
     20.1.1.0         FFFFFF00    4587 STIF Ether0:0
     20.1.1.0         FFFFFFFF       0 STIF Local
     20.1.1.1        @FFFFFFFF      36 LocalLocal
     20.1.1.255       FFFFFFFF       0 STIF Local
     50.1.1.0         FFFFFFFC       5 STIF VPN0:1
     50.1.1.0         FFFFFFFF       0 STIF Local
     50.1.1.2        @FFFFFFFF       5 LocalLocal
     50.1.1.3         FFFFFFFF       0 STIF Local
     127.0.0.1        FFFFFFFF       0 STIF Local
     172.16.172.16    FFFFFFF0       0 STIF Ether1:0
     172.16.172.16    FFFFFFFF       0 STIF Local
```

```
172.16.172.21   @FFFFFFFF       1 LocalLocal
172.16.172.32    FFFFFFFF       0 STIF Local
224.0.0.5        FFFFFFFF    8535 STIF Local
224.0.0.6        FFFFFFFF       0 STIF Local
224.0.0.9        FFFFFFFF       0 STIF Local
255.255.255.255 @FFFFFFFF    5393 LocalLocal

Static Routes:
Destination      Mask     Gateway         Metric Ref   Uses  Type Interface
172.16.172.39   @FFFFFFFF 172.16.172.21   2            0 *Stat   VPN0:1

Dynamic Routes:
                      Flash Cfg: 31: Error: Invalid syntax: too few fields
                            Src/
Destination    Mask     Gateway     Metric Ref   Uses Type TTL  Interface
10.1.1.0       FFFFFF00 50.1.1.1    74           0 OSPF STUB    VPN0:1
10.1.2.1      @FFFFFFFF 50.1.1.1    75           0 OSPF HOST    VPN0:1
10.1.3.1      @FFFFFFFF 50.1.1.1    75           0 OSPF HOST    VPN0:1
20.1.2.1      @FFFFFFFF 20.1.1.2    11           0 OSPF HOST    Ether0:0
20.1.3.1      @FFFFFFFF 20.1.1.2    11           0 OSPF HOST    Ether0:0

Configured IP Routes:
  None.

Total Routes in use: 23     Mask -> @Host route  Type -> Redist *rip #ospf

VPNGateway set to 172.16.172.17 using interface Ether1:0
VPN5002_8_323E9040: Main#
```

- Si no configuran al router del Cisco IOS para ignorar las unidades de transmisión máxima OSPF (MTU), estos errores resultan cuando la adyacencia entre el router y el VPN 5000 concentrator se forma. Pegan al **comando show ip ospf ne** en el router en el estado EXSTART.En el router del Cisco IOS, el **comando debug ip ospf adj** muestra esta salida.

```
VPN5002_8_323E9040: Main#show vpn partner ver

Port        Partner         Partner  Default  Bindto          Connect
Number      Address         Port     Partner  Address         Time
-------------------------------------------------------------------------
VPN 0:1     172.16.172.39   500      No       172.16.172.21   00:08:20:51
     Auth/Encrypt: MD5e/DES  User Auth: Shared Key
     Access: Static Peer: 172.16.172.39    Local: 172.16.172.21
     Start:39307 seconds Managed:69315 seconds State:imnt_maintenance

IOP slot 1:
No active connections found.

VPN5002_8_323E9040: Main#show vpn stat ver

           Current  In       High     Running  Script   Script   Script
           Active   Negot    Water    Total    Starts   OK       Error
           ---------------------------------------------------------------
Users      0        0        0        0        0        0        0
Partners   1        0        1        4        22       4        38
Total      1        0        1        4        22       4        38

Stats             VPN0:1
Wrapped             3072
Unwrapped           3068
BadEncap               0
BadAuth                0
BadEncrypt             0
rx IP               3068
rx IPX                 0
```

```
     rx Other              0
     tx IP              3072
     tx IPX                0
     tx Other              0
     IKE rekey             8

     Input VPN pkts dropped due to no SA: 0

     Input VPN pkts dropped due to no free queue entries: 0

     IOP slot 1:

               Current  In       High     Running  Script   Script   Script
               Active   Negot    Water    Total    Starts   OK       Error
               ------------------------------------------------------------
     Users     0        0        0        0        0        0        0
     Partners  0        0        0        0        0        0        0
     Total     0        0        0        0        0        0        0

     Stats
     Wrapped
     Unwrapped
     BadEncap
     BadAuth
     BadEncrypt
     rx IP
     rx IPX
     rx Other
     tx IP
     tx IPX
     tx Other
     IKE rekey

     Input VPN pkts dropped due to no SA: 0

     Input VPN pkts dropped due to no free queue entries: 0


VPN5002_8_323E9040: Main#show ospf nbr

=========================================================================
                          OSPF NEIGHBORS
-------------------------------------------------------------------------
Ether0:0  RtrID: 20.1.3.1         Addr: 20.1.1.2         State:  FULL
VPN0:1    RtrID: 50.1.1.1         Addr: 50.1.1.1         State:  FULL
=========================================================================


VPN5002_8_323E9040: Main#show ospf db all

OSPF Router, Net and Summary Databases:

Area 0:
        STUB    AdvRtr 50.1.1.1 Len 24(24) Age 3600 Seq 00000000
          LS ID: 50.1.1.0 Mask: 255.255.255.252 Network: 50.1.1.0
                Nexthops(1):
                        50.1.1.1  Interface: VPN0:1

        STUB    AdvRtr 50.1.1.1 Len 24(24) Age 3600 Seq 00000000
          LS ID: 10.1.1.0 Mask: 255.255.255.0 Network: 10.1.1.0
                Nexthops(1):
                        50.1.1.1  Interface: VPN0:1

        STUB    AdvRtr 20.1.1.1 Len 24(24) Age 3600 Seq 00000000
```

```
  LS ID: 20.1.1.0 Mask: 255.255.255.0 Network: 20.1.1.0

STUB    AdvRtr 20.1.1.1 Len 24(24) Age 3368 Seq 00000000
  LS ID: 50.1.1.2 Mask: 255.255.255.252 Network: 50.1.1.0

STUB    AdvRtr 20.1.3.1 Len 24(24) Age 3372 Seq 00000000
  LS ID: 20.1.3.1 Mask: 255.255.255.255 Network: 20.1.3.1
        Nexthops(1):
                20.1.1.2  Interface: Ether0:0

STUB    AdvRtr 20.1.3.1 Len 24(24) Age 3374 Seq 00000000
  LS ID: 20.1.2.1 Mask: 255.255.255.255 Network: 20.1.2.1
        Nexthops(1):
                20.1.1.2  Interface: Ether0:0

STUB    AdvRtr 10.1.3.1 Len 24(24) Age 3442 Seq 00000000
  LS ID: 10.1.3.1 Mask: 255.255.255.255 Network: 10.1.3.1
        Nexthops(1):
                50.1.1.1  Interface: VPN0:1

STUB    AdvRtr 10.1.3.1 Len 24(24) Age 3442 Seq 00000000
  LS ID: 10.1.2.1 Mask: 255.255.255.255 Network: 10.1.2.1
        Nexthops(1):
                50.1.1.1  Interface: VPN0:1

RTR     AdvRtr 50.1.1.1 Len 72(72) Age 63 Seq 8000002d
  LS ID: 50.1.1.1  Area Border: Off  AS Border: Off
        Connect Type: RTR       Cost: 11111
        RouterID: 20.1.1.1      Address: 50.1.1.1
        Connect Type: STUB or HOST      Cost: 11111
        Network: 50.1.1.0       NetMask: 255.255.255.252
        Connect Type: RTR       Cost: 64
        RouterID: 10.1.3.1      Address: 10.1.1.2
        Connect Type: STUB or HOST      Cost: 64
        Network: 10.1.1.0       NetMask: 255.255.255.0
        Nexthops(1):
                50.1.1.1  Interface: VPN0:1

RTR     AdvRtr 20.1.1.1 Len 60(72) Age 1093 Seq 80000032
  LS ID: 20.1.1.1  Area Border: Off  AS Border: Off
        Connect Type: TRANS NET Cost: 10
        DR: 20.1.1.1    Address: 20.1.1.1
        Connect Type: STUB or HOST      Cost: 10
        Network: 50.1.1.2       NetMask: 255.255.255.252
        Connect Type: RTR       Cost: 10
        RouterID: 50.1.1.1      Address: 50.1.1.2

RTR     AdvRtr 20.1.3.1 Len 60(60) Age 1375 Seq 80000004
  LS ID: 20.1.3.1  Area Border: Off  AS Border: Off
        Connect Type: STUB or HOST      Cost: 1
        Network: 20.1.3.1       NetMask: 255.255.255.255
        Connect Type: STUB or HOST      Cost: 1
        Network: 20.1.2.1       NetMask: 255.255.255.255
        Connect Type: TRANS NET Cost: 1
        DR: 20.1.1.1    Address: 20.1.1.2
        Nexthops(1):
                20.1.1.2  Interface: Ether0:0

RTR     AdvRtr 10.1.3.1 Len 72(72) Age 1430 Seq 80000025
  LS ID: 10.1.3.1  Area Border: Off  AS Border: Off
        Connect Type: RTR       Cost: 64
        RouterID: 50.1.1.1      Address: 10.1.1.1
        Connect Type: STUB or HOST      Cost: 64
        Network: 10.1.1.0       NetMask: 255.255.255.0
```

```
                Connect Type: STUB or HOST      Cost: 1
                Network: 10.1.3.1       NetMask: 255.255.255.255
                Connect Type: STUB or HOST      Cost: 1
                Network: 10.1.2.1       NetMask: 255.255.255.255
                Nexthops(1):
                        50.1.1.1  Interface: VPN0:1

          NET     AdvRtr 20.1.1.1 Len 32(32) Age 1094 Seq 80000003
            LS ID: 20.1.1.1 Mask: 255.255.255.0 Network: 20.1.1.0
                Attached Router: 20.1.1.1
                Attached Router: 20.1.3.1
                Nexthops(1):
                 20.1.1.2  Interface: Ether0:0

VPN5002_8_323E9040: Main#show ip routing

     IP Routing Table for Main
     Directly Connected Routes:
     Destination      Mask      Ref   Uses Type  Interface
     20.1.1.0         FFFFFF00    4587 STIF Ether0:0
     20.1.1.0         FFFFFFFF       0 STIF Local
     20.1.1.1        @FFFFFFFF      36 LocalLocal
     20.1.1.255       FFFFFFFF       0 STIF Local
     50.1.1.0         FFFFFFFC       5 STIF VPN0:1
     50.1.1.0         FFFFFFFF       0 STIF Local
     50.1.1.2        @FFFFFFFF       5 LocalLocal
     50.1.1.3         FFFFFFFF       0 STIF Local
     127.0.0.1        FFFFFFFF       0 STIF Local
     172.16.172.16    FFFFFFF0       0 STIF Ether1:0
     172.16.172.16    FFFFFFFF       0 STIF Local
     172.16.172.21   @FFFFFFFF       1 LocalLocal
     172.16.172.32    FFFFFFFF       0 STIF Local
     224.0.0.5        FFFFFFFF    8535 STIF Local
     224.0.0.6        FFFFFFFF       0 STIF Local
     224.0.0.9        FFFFFFFF       0 STIF Local
     255.255.255.255 @FFFFFFFF    5393 LocalLocal

     Static Routes:
     Destination      Mask     Gateway         Metric Ref   Uses  Type Interface
     172.16.172.39   @FFFFFFFF 172.16.172.21   2            0 *Stat   VPN0:1

     Dynamic Routes:
                          Flash Cfg: 31: Error: Invalid syntax: too few fields
                                 Src/
     Destination    Mask     Gateway     Metric Ref   Uses Type TTL  Interface
     10.1.1.0       FFFFFF00 50.1.1.1    74           0 OSPF STUB    VPN0:1
     10.1.2.1      @FFFFFFFF 50.1.1.1    75           0 OSPF HOST    VPN0:1
     10.1.3.1      @FFFFFFFF 50.1.1.1    75           0 OSPF HOST    VPN0:1
     20.1.2.1      @FFFFFFFF 20.1.1.2    11           0 OSPF HOST    Ether0:0
     20.1.3.1      @FFFFFFFF 20.1.1.2    11           0 OSPF HOST    Ether0:0

     Configured IP Routes:
       None.

     Total Routes in use: 23     Mask -> @Host route  Type -> Redist *rip #ospf

     VPNGateway set to 172.16.172.17 using interface Ether1:0
     VPN5002_8_323E9040: Main#
```

La solución alternativa es utilizar el **comando ip ospf mtu-ignore** bajo interfaz del túnel del router de inhabilitar la verificación de MTU.

Información Relacionada

- Página de soporte del Concentradores Cisco VPN de la serie 5000
- Página de soporte para Cisco VPN 5000 Client
- Página de Soporte de IPSec (Protocolo de Seguridad IP)
- Soporte Técnico - Cisco Systems