Configuración de IPSec entre dos routers y un cliente VPN 4.x de Cisco

Contenido

Introducción

Este documento demuestra cómo configurar IPsec entre dos routers Cisco y el Cisco VPN Client 4.x. Las versiones 12.2(8)T y posteriores de Cisco IOS® Software soportan conexiones desde el cliente Cisco VPN 3.x y versiones posteriores.

Consulte Configuración de un Peer LAN a LAN Dinámico de Router IPSec y Clientes VPN para obtener más información sobre el escenario en el que un extremo del túnel L2L tiene asignada una dirección IP dinámicamente por el otro extremo.

Prerequisites

Requirements

Asegúrese de cumplir estos requisitos antes de intentar esta configuración:

- Una agrupación de direcciones que se asignarán para IPSec
- Un grupo llamado **3000clients** con una clave previamente compartida de **cisco123** para los clientes VPN
- La autenticación de grupo y usuario se realiza localmente en el router para VPN Clients.
- El parámetro **no-xauth** se utiliza en el comando **ISAKMP key** para el túnel de LAN a LAN.

Componentes Utilizados

La información que contiene este documento se basa en estas versiones de software y hardware.

- Routers que ejecutan Cisco IOS Software Release 12.2(8)T.**Nota:** Este documento se probó recientemente con Cisco IOS Software Release 12.3(1). No se requieren cambios.
- Cisco VPN Client para Windows versión 4.x (cualquier VPN Client 3.x y posterior funciona).

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

En este resultado se muestra el resultado del comando **show version** en el router.

```
vpn2611#show version
Cisco Internetwork Operating System Software
IOS (tm) C2600 Software (C2600-JK9O3S-M), Version 12.2(8)T,
   RELEASE SOFTWARE (fc2)
TAC Support: http://www.cisco.com/tac
Copyright (c) 1986-2002 by cisco Systems, Inc.
Compiled Thu 14-Feb-02 16:50 by ccai
Image text-base: 0x80008070, data-base: 0x81816184

ROM: System Bootstrap, Version 11.3(2)XA4, RELEASE SOFTWARE (fc1)

vpn2611 uptime is 1 hour, 15 minutes
System returned to ROM by reload
System image file is "flash:c2600-jk9o3s-mz.122-8.T"

cisco 2611 (MPC860) processor (revision 0x203)
   with 61440K/4096K bytes of memory.
Processor board ID JAD04370EEG (2285146560)
M860 processor: part number 0, mask 49
Bridging software.
X.25 software, Version 3.0.0.
SuperLAT software (copyright 1990 by Meridian Technology Corp).
TN3270 Emulation software.
2 Ethernet/IEEE 802.3 interface(s)
1 Serial network interface(s)
32K bytes of non-volatile configuration memory.
16384K bytes of processor board System flash (Read/Write)

Configuration register is 0x2102
```

Convenciones

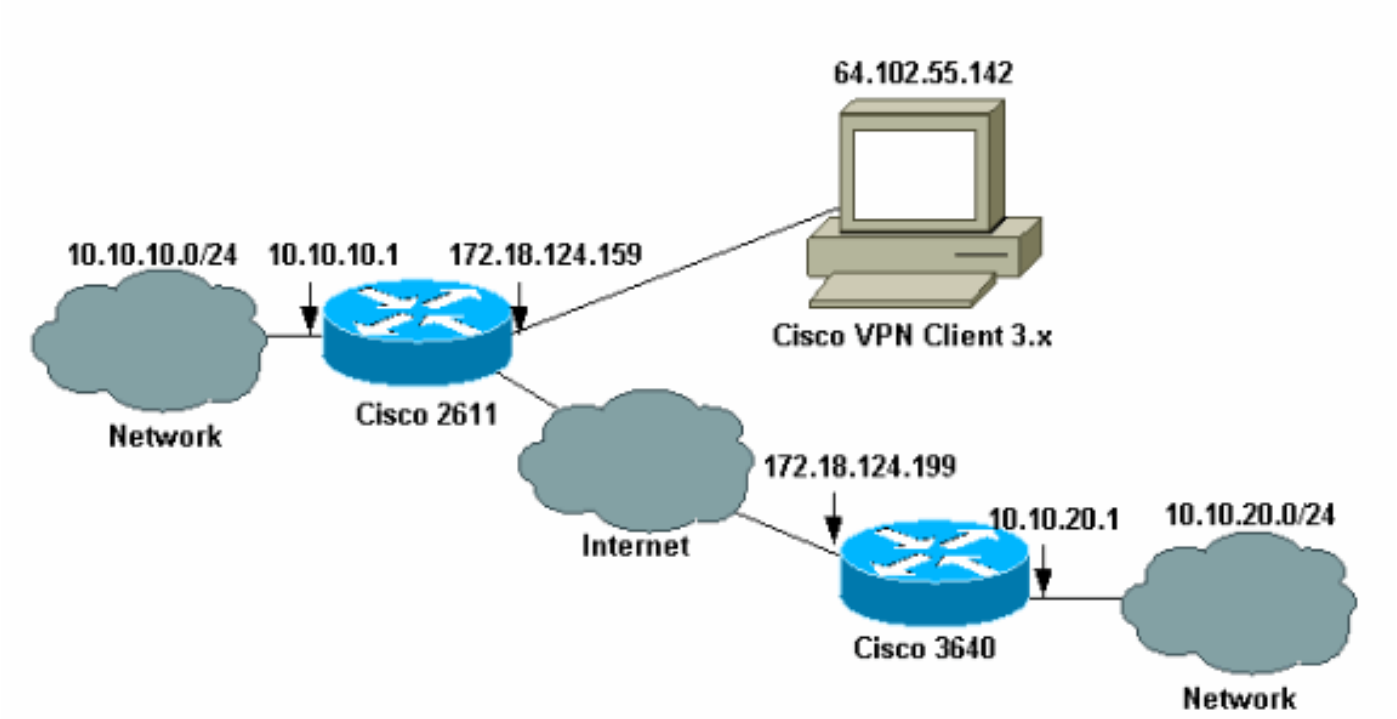
Consulte Convenciones de Consejos Técnicos de Cisco para obtener más información sobre las convenciones sobre documentos.

Configurar

En esta sección, se presenta la información utilizada para configurar las funciones descritas en este documento.

Diagrama de la red

Este documento utiliza esta configuración de red:



Nota: Las direcciones IP de este ejemplo no son enrutables en la Internet global porque son direcciones IP privadas en una red de laboratorio.

Configuraciones

Configuración del router Cisco 2611

Router 2611 de Cisco

```
vpn2611#show run
Building configuration...

Current configuration : 2265 bytes
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname vpn2611
!
!--- Enable AAA for user authentication !--- and group
authorization. aaa new-model
!
!
!--- In order to enable X-Auth for user authentication,
!--- enable the aaa authentication commands.

aaa authentication login userauthen local

!--- In order to enable group authorization, enable !---
the aaa authorization commands.
```

```
aaa authorization network groupauthor local
aaa session-id common
!

!--- For local authentication of the IPSec user, !---
create the user with a password. username cisco password
0 cisco
ip subnet-zero
!
!
!
ip audit notify log
ip audit po max-events 100
!

!--- Create an Internet Security Association and !---
Key Management Protocol (ISAKMP) !--- policy for Phase 1
negotiations for the VPN 3.x Clients. crypto isakmp
policy 3
encr 3des
authentication pre-share
group 2
!

!--- Create an ISAKMP policy for Phase 1 !---
negotiations for the LAN-to-LAN tunnels. crypto isakmp
policy 10
hash md5
authentication pre-share

!--- Specify the PreShared key for the LAN-to-LAN
tunnel. !--- Make sure that you use the !--- no-xauth
parameter with your ISAKMP key.

crypto isakmp key cisco123 address 172.18.124.199 no-
xauth
!

!--- Create a group that is used to !--- specify the
WINS, DNS servers' address !--- to the client, along
with the pre-shared !--- key for authentication. crypto
isakmp client configuration group 3000client
key cisco123
dns 10.10.10.10
wins 10.10.10.20
domain cisco.com
pool ippool
!
!

!--- Create the Phase 2 Policy for actual data
encryption. crypto ipsec transform-set myset esp-3des
esp-md5-hmac
!

!--- Create a dynamic map and apply !--- the transform
set that was created earlier. crypto dynamic-map dynmap
10
set transform-set myset
!
!

!--- Create the actual crypto map, and !--- apply the
AAA lists that were created !--- earlier. Also create a
```

```
new instance for your !--- LAN-to-LAN tunnel. Specify
the peer IP address, !--- transform set, and an Access
Control List (ACL) for this !--- instance. crypto map
clientmap client authentication list userauthen
crypto map clientmap isakmp authorization list
groupauthor
crypto map clientmap client configuration address
respond
crypto map clientmap 1 ipsec-isakmp
set peer 172.18.124.199
set transform-set myset
match address 100
crypto map clientmap 10 ipsec-isakmp dynamic dynmap
!
!
fax interface-type fax-mail
mta receive maximum-recipients 0
!
!

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

interface Ethernet0/0
ip address 172.18.124.159 255.255.255.0
half-duplex
crypto map clientmap
!
interface Serial0/0
no ip address
shutdown
!
interface Ethernet0/1
ip address 10.10.10.1 255.255.255.0
no keepalive
half-duplex
!
!
!--- Create a pool of addresses to be !--- assigned to
the VPN Clients. ip local pool ippool 14.1.1.100
14.1.1.200
ip classless
ip route 0.0.0.0 0.0.0.0 172.18.124.1
ip http server
ip pim bidir-enable
!
!

!--- Create an ACL for the traffic !--- to be encrypted.
In this example, !--- the traffic from 10.10.10.0/24 to
10.10.20.0/24 !--- is encrypted. access-list 100 permit
ip 10.10.10.0 0.0.0.255 10.10.20.0 0.0.0.255
!
!
snmp-server community foobar RO
call rsvp-sync
!
!
mgcp profile default
!
dial-peer cor custom
!
!
line con 0
exec-timeout 0 0
```

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

Configuración del router 3640

Cisco 3640 Router

```
vpn3640#show run
Building configuration...

Current configuration : 1287 bytes
!
! Last configuration change at 13:47:37 UTC Wed Mar 6
2002
!
version 12.2
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname vpn3640
!
!
ip subnet-zero
ip cef
!
!--- Create an ISAKMP policy for Phase 1 !---
negotiations for the LAN-to-LAN tunnels. crypto isakmp
policy 10
hash md5
authentication pre-share

!--- Specify the PreShared key for the LAN-to-LAN !---
tunnel. You do not have to add the !--- X-Auth
parameter, as this !--- router does not do Cisco Unity
Client IPsec !--- authentication.

crypto isakmp key cisco123 address 172.18.124.159
!
!

!--- Create the Phase 2 Policy for actual data
encryption. crypto ipsec transform-set myset esp-3des
esp-md5-hmac
!

!--- Create the actual crypto map. Specify !--- the peer
IP address, transform !--- set, and an ACL for this
instance. crypto map mymap 10 ipsec-isakmp
set peer 172.18.124.159
set transform-set myset
match address 100
!
call RSVP-sync
!
!
!
```

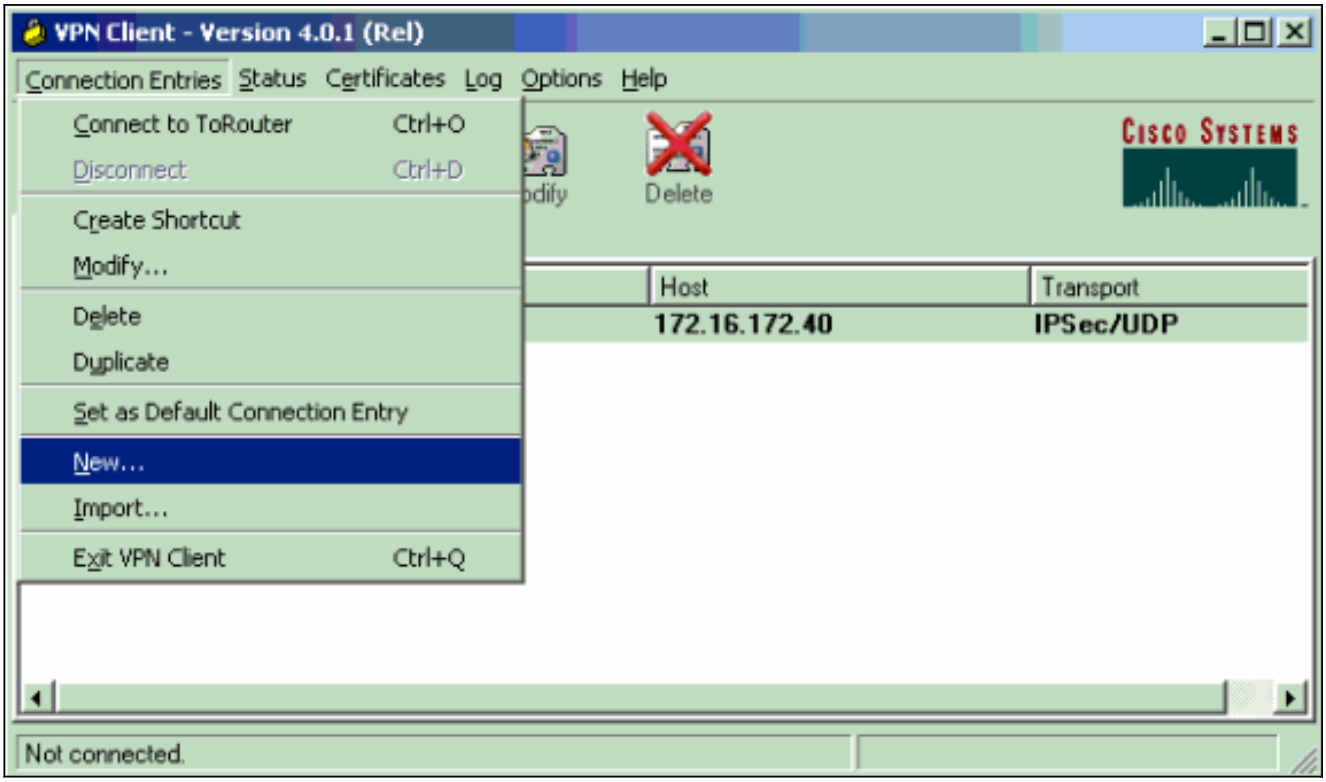
```
!--- Apply the crypto map on the outside interface.
interface Ethernet0/0
ip address 172.18.124.199 255.255.255.0
half-duplex
crypto map mymap
!
interface Ethernet0/1
ip address 10.10.20.1 255.255.255.0
half-duplex
!
ip classless
ip route 0.0.0.0 0.0.0.0 172.18.124.1
ip http server
ip pim bidir-enable
!

!--- Create an ACL for the traffic to !--- be encrypted.
In this example, !--- the traffic from 10.10.20.0/24 to
10.10.10.0/24 !--- is encrypted. access-list 100 permit
ip 10.10.20.0 0.0.0.255 10.10.10.0 0.0.0.255
snmp-server community foobar RO
!
dial-peer cor custom
!
!
line con 0
exec-timeout 0 0
line aux 0
line vty 0 4
login
!
end
```

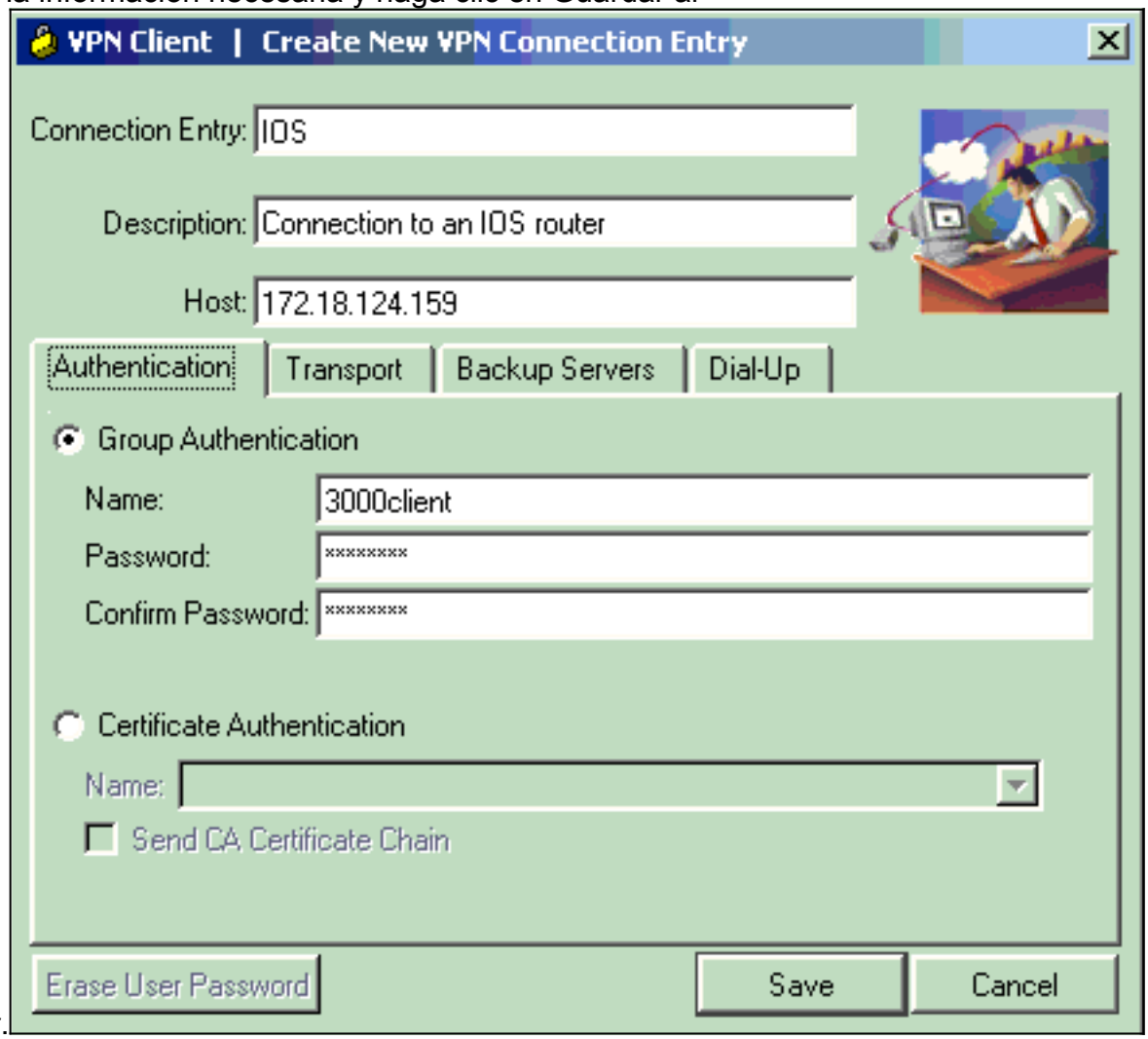
Configuración de VPN Client 4.x

Siga estos pasos para configurar Cisco VPN Client 4.x.

1. Inicie VPN Client y luego haga clic en **New** para crear una nueva conexión.

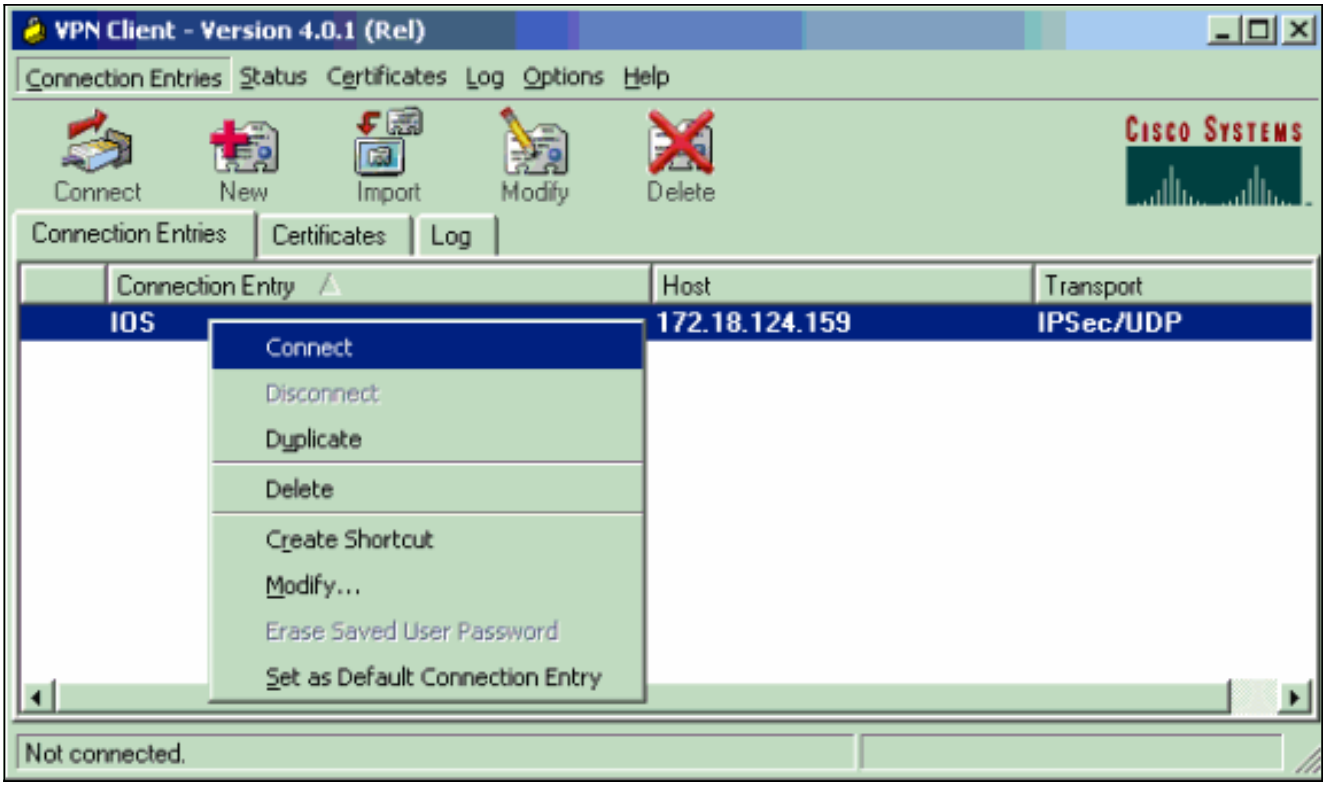


2. Ingrese la información necesaria y haga clic en Guardar al

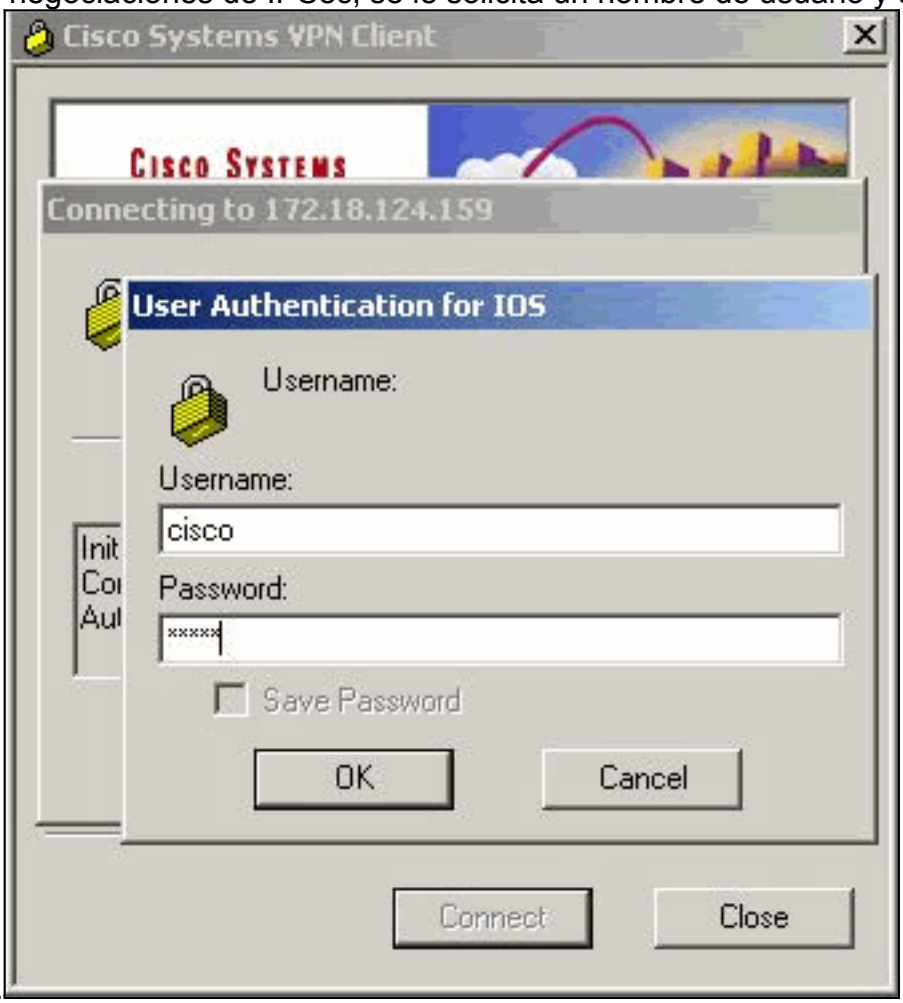


finalizar.

3. Haga clic con el botón derecho en la entrada de conexión recién creada y haga clic en **Connect** para conectarse al router.



4. Durante las negociaciones de IPSec, se le solicita un nombre de usuario y una contraseña.



5. La ventana muestra mensajes que dicen "Negociar perfiles de seguridad" y "Su enlace ahora es seguro".

Verificación

Esta sección proporciona información que le ayuda a confirmar que su configuración funciona correctamente.

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

Cisco VPN 2611

```
vpn2611#show crypto isakmp sa
dst src state conn-id slot
172.18.124.159 172.18.124.199 QM_IDLE 5 0
!--- For the LAN-to-LAN tunnel peer. 172.18.124.159 64.102.55.142 QM_IDLE 6 0
!--- For the Cisco Unity Client tunnel peer. vpn2611#show crypto ipsec sa

interface: Ethernet0/0
Crypto map tag: clientmap, local addr. 172.18.124.159

protected vrf:
local ident (addr/mask/prot/port): (10.10.10.0/255.255.255.0/0/0)
remote ident (addr/mask/prot/port): (10.10.20.0/255.255.255.0/0/0)
current_peer: 172.18.124.199:500
!--- For the LAN-to-LAN tunnel peer. PERMIT, flags={origin_is_acl,} #pkts encaps: 4, #pkts
encrypt: 4, #pkts digest 4
#pkts decaps: 4, #pkts decrypt: 4, #pkts verify 4
#pkts compressed: 0, #pkts decompressed: 0
#pkts not compressed: 0, #pkts compr. failed: 0, #pkts decompress
failed: 0
#send errors 0, #recv errors 0

local crypto endpt.: 172.18.124.159, remote crypto endpt.:
172.18.124.199
path mtu 1500, media mtu 1500
current outbound spi: 892741BC

inbound esp sas:
spi: 0x7B7B2015(2071666709)
transform: esp-3des esp-md5-hmac ,
in use settings ={Tunnel, }
slot: 0, conn id: 2000, flow_id: 1, crypto map: clientmap
sa timing: remaining key lifetime (k/sec): (4607999/1182)
IV size: 8 bytes
replay detection support: Y

inbound ah sas:

inbound pcp sas:

outbound ESP sas:
spi: 0x892741BC(2301051324)
transform: esp-3des esp-md5-hmac ,
in use settings ={Tunnel, }
slot: 0, conn id: 2001, flow_id: 2, crypto map: clientmap
sa timing: remaining key lifetime (k/sec): (4607999/1182)
IV size: 8 bytes
replay detection support: Y

outbound ah sas:

outbound PCP sas:
```

```
protected vrf:
local ident (addr/mask/prot/port): (172.18.124.159/255.255.255.255/0/0)
remote ident (addr/mask/prot/port): (14.1.1.106/255.255.255.255/0/0)
current_peer: 64.102.55.142:500
!--- For the Cisco Unity Client tunnel peer. PERMIT, flags={} #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.: 172.18.124.159, remote crypto endpt.:
64.102.55.142
path mtu 1500, media mtu 1500
current outbound spi: 81F39EFA

inbound ESP sas:
spi: 0xC4483102(3293065474)
transform: esp-3des esp-md5-hmac ,
in use settings ={Tunnel, }
slot: 0, conn id: 2002, flow_id: 3, crypto map: clientmap
sa timing: remaining key lifetime (k/sec): (4608000/3484)
IV size: 8 bytes
replay detection support: Y

inbound ah sas:

inbound PCP sas:

outbound ESP sas:
spi: 0x81F39EFA(2180226810)
transform: esp-3des esp-md5-hmac ,
in use settings ={Tunnel, }
slot: 0, conn id: 2003, flow_id: 4, crypto map: clientmap
sa timing: remaining key lifetime (k/sec): (4608000/3484)
IV size: 8 bytes
replay detection support: Y

outbound ah sas:

outbound PCP sas:

protected vrf:
local ident (addr/mask/prot/port): (0.0.0.0/0.0.0.0/0/0)
remote ident (addr/mask/prot/port): (14.1.1.106/255.255.255.255/0/0)
current_peer: 64.102.55.142:500
!--- For the Cisco Unity Client tunnel peer. PERMIT, flags={} #pkts encaps: 4, #pkts encrypt: 4,
#pkts digest 4
#pkts decaps: 20, #pkts decrypt: 20, #pkts verify 20
#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.: 172.18.124.159, remote crypto endpt.:
64.102.55.142
path mtu 1500, media mtu 1500
current outbound spi: B7F84138

inbound ESP sas:
spi: 0x5209917C(1376358780)
transform: esp-3des esp-md5-hmac ,
in use settings ={Tunnel, }
```

```
slot: 0, conn id: 2004, flow_id: 5, crypto map: clientmap
sa timing: remaining key lifetime (k/sec): (4607998/3474)
IV size: 8 bytes
replay detection support: Y
spi: 0xDE6C99C0(3731659200)
transform: esp-3des esp-md5-hmac ,
in use settings ={Tunnel, }
slot: 0, conn id: 2006, flow_id: 7, crypto map: clientmap
sa timing: remaining key lifetime (k/sec): (4607998/3493)
IV size: 8 bytes
replay detection support: Y

inbound ah sas:

inbound PCP sas:

outbound ESP sas:
spi: 0x58886878(1485334648)
transform: esp-3des esp-md5-hmac ,
in use settings ={Tunnel, }
slot: 0, conn id: 2005, flow_id: 6, crypto map: clientmap
sa timing: remaining key lifetime (k/sec): (4608000/3474)
IV size: 8 bytes
replay detection support: Y
spi: 0xB7F84138(3086500152)
transform: esp-3des esp-md5-hmac ,
in use settings ={Tunnel, }
slot: 0, conn id: 2007, flow_id: 8, crypto map: clientmap
sa timing: remaining key lifetime (k/sec): (4607999/3486)
IV size: 8 bytes
replay detection support: Y

outbound ah sas:

outbound PCP sas:



vpn2611#show crypto engine connection active
ID Interface IP-Address State Algorithm Encrypt Decrypt
5 Ethernet0/0 172.18.124.159 set HMAC_MD5+DES_56_CB 0 0
6 Ethernet0/0 172.18.124.159 set HMAC_SHA+3DES_56_C 0 0
2000 Ethernet0/0 172.18.124.159 set HMAC_MD5+3DES_56_C 0 4
2001 Ethernet0/0 172.18.124.159 set HMAC_MD5+3DES_56_C 4 0
2002 Ethernet0/0 172.18.124.159 set HMAC_MD5+3DES_56_C 0 0
2003 Ethernet0/0 172.18.124.159 set HMAC_MD5+3DES_56_C 0 0
2004 Ethernet0/0 172.18.124.159 set HMAC_MD5+3DES_56_C 0 9
2005 Ethernet0/0 172.18.124.159 set HMAC_MD5+3DES_56_C 0 0
2006 Ethernet0/0 172.18.124.159 set HMAC_MD5+3DES_56_C 0 79
2007 Ethernet0/0 172.18.124.159 set HMAC_MD5+3DES_56_C 4 0
vpn2611#
```

Cisco VPN 3640

```
vpn3640#show crypto isakmp sa
 DST src state conn-id slot
 172.18.124.159 172.18.124.199 QM_IDLE 4 0
!--- For the LAN-to-LAN tunnel peer. vpn3640#show crypto ipsec sa

 interface: Ethernet0/0
 Crypto map tag: mymap, local addr. 172.18.124.199
```

```
protected vrf:
 local ident (addr/mask/prot/port): (10.10.20.0/255.255.255.0/0/0)
 remote ident (addr/mask/prot/port): (10.10.10.0/255.255.255.0/0/0)
 current_peer: 172.18.124.159:500
 !--- For the LAN-to-LAN tunnel peer. PERMIT, flags={origin_is_acl,} #pkts encaps: 4, #pkts
encrypt: 4, #pkts digest 4
 #pkts decaps: 4, #pkts decrypt: 4, #pkts verify 4
 #pkts compressed: 0, #pkts decompressed: 0
 #pkts not compressed: 0, #pkts compr. Failed: 0, #pkts decompress failed: 0
 #send errors 11, #recv errors 0

 local crypto endpt.: 172.18.124.199, remote crypto endpt.: 172.18.124.159
 path mtu 1500, media mtu 1500
 current outbound spi: 7B7B2015

 inbound ESP sas:
 spi: 0x892741BC(2301051324)
 transform: esp-3des esp-md5-hmac ,
 in use settings ={Tunnel, }
 slot: 0, conn id: 940, flow_id: 1, crypto map: mymap
 sa timing: remaining key lifetime (k/sec): (4607998/1237)
 IV size: 8 bytes
 replay detection support: Y

 inbound ah sas:

 inbound PCP sas:

 outbound ESP sas:
 spi: 0x7B7B2015(2071666709)
 transform: esp-3des esp-md5-hmac ,
 in use settings ={Tunnel, }
 slot: 0, conn id: 941, flow_id: 2, crypto map: mymap
 sa timing: remaining key lifetime (k/sec): (4607999/1237)
 IV size: 8 bytes
 replay detection support: Y

 outbound ah sas:

 outbound PCP sas:


 vpn3640# show crypto engine connection active

 ID Interface IP-Address State Algorithm Encrypt Decrypt
 4




940 Ethernet0/0 172.18.124.199 set HMAC_MD5+3DES_56_C 0 4
 941 Ethernet0/0 172.18.124.199 set HMAC_MD5+3DES_56_C 4 0
```

Verificar los Números de Secuencia de Crypto Map

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 están numeradas 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 10
set transform-set myset
crypto map clientmap 1 ipsec-isakmp
set peer 172.18.124.199
set transform-set myset
match address 100
crypto map clientmap 10 ipsec-isakmp dynamic dynmap
```

Troubleshoot

Esta sección proporciona información que ayuda a resolver problemas de su configuración.

Comandos para resolución de problemas

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

Nota: Consulte la Información Importante sobre Comandos Debug antes de ejecutar los **comandos debug**.

- **debug crypto ipsec — Muestra eventos de IPSec.** La forma *no* de este comando inhabilita el resultado de la depuración.
- **debug crypto isakmp — Muestra mensajes acerca de eventos IKE.** La forma *no* de este comando inhabilita el resultado de la depuración.
- **debug crypto engine**: muestra la información que pertenece al motor de criptografía, como cuando el software Cisco IOS realiza operaciones de cifrado o descifrado.

Información Relacionada

- Página de Soporte del Protocolo IKE/la Negociación de IPSec
- Soporte Técnico y Documentación - Cisco Systems