ASA/PIX 7.x 이상: 동일한 인터페이스 컨피그레이션에서 LAN-to-LAN 및 EasyVPN IPsec 터널 종료 예

목차

소개

이 문서에서는 HUB ASA가 동일한 인터페이스에서 Site to Site Tunnel 및 Easy VPN IPsec Connections를 수락하는 방법에 대한 샘플 컨피그레이션을 제공합니다. Cisco ASA 5520과 Cisco ASA(Adaptive Security Appliance) 5505 사이의 IPsec은 NEM(Network Extension Mode)을 사용하는 Easy VPN을 사용합니다.

사전 요구 사항

요구 사항

이 문서에 대한 특정 요건이 없습니다.

사용되는 구성 요소

이 문서의 정보는 다음 소프트웨어 및 하드웨어 버전을 기반으로 합니다.

- 버전 7.x 이상을 실행하는 ASA 5500 Series(허브)**참고:** HUB ASA 컨피그레이션은 버전 7.x 이상을 실행하는 PIX Security Appliance 515, 515E, 525 및 535와 함께 사용할 수도 있습니다.
- 버전 7.x 이상을 실행하는 Easy VPN ASA 5505
- 버전 7.x 이상을 실행하는 PIX Security Appliance 515, 515E, 525 및 535

이 문서의 정보는 특정 랩 환경의 디바이스를 토대로 작성되었습니다. 이 문서에 사용된 모든 디바

이스는 초기화된(기본) 컨피그레이션으로 시작되었습니다. 현재 네트워크가 작동 중인 경우, 모든 명령어의 잠재적인 영향을 미리 숙지하시기 바랍니다.

표기 규칙

문서 규칙에 대한 자세한 내용은 Cisco 기술 팁 규칙을 참조하십시오.

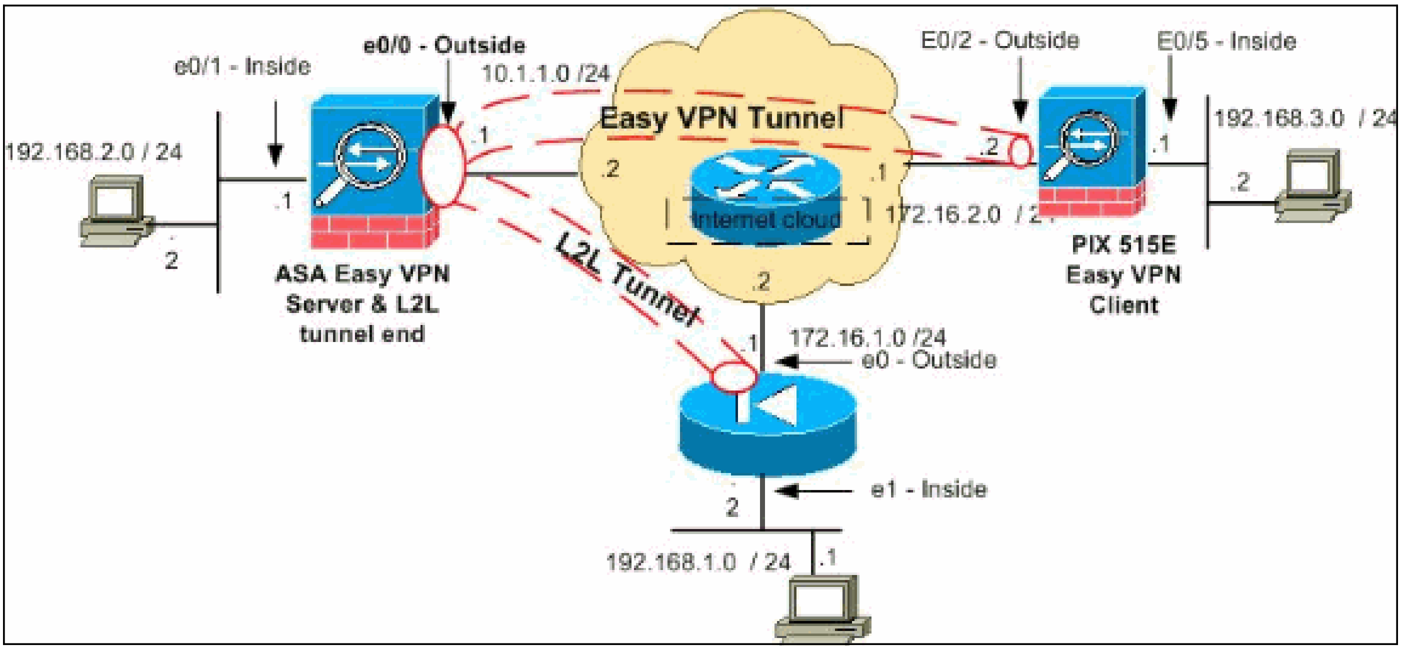
구성

이 섹션에서는 이 문서에서 설명하는 기능을 구성하는 데 사용할 수 있는 정보를 제공합니다.

참고: 이 섹션에 사용된 명령에 대한 자세한 내용을 보려면 명령 조회 도구(등록된 고객만 해당)를 사용하십시오.

네트워크 다이어그램

이 문서에서는 다음 네트워크 설정을 사용합니다.



참고: 이 구성에 사용된 IP 주소 지정 체계는 인터넷에서 합법적으로 라우팅할 수 없습니다. 실습 환경에서 사용되는 RFC 1918 주소입니다.

구성

이 문서에서는 다음 구성을 사용합니다.

- 허브 ASA
- Easy VPN Client ASA 5505
- PIX

허브 ASA
ASA Version 8.0(2)

```
!
hostname ciscoasa
enable password 8Ry2YjIyt7RRXU24 encrypted
names
!
interface Ethernet0/0
 nameif outside
 security-level 0
 ip address 10.1.1.1 255.255.255.0
!
interface Ethernet0/1
 nameif inside
 security-level 100
 ip address 192.168.2.1 255.255.255.0
!
!--- Output Suppressed. !--- Access-list for interesting
traffic (Site to Site) to be !--- encrypted between hub
ASA and spoke (PIX) networks. access-list
outside_cryptomap_20 extended permit ip 192.168.2.0
255.255.255.0 192.168.1.0 255.255.255.0 !--- Access-list
for interesting traffic to be !--- encrypted between hub
ASA and spoke easy vpn client ASA networks. access-list
ezvpn1 extended permit ip 192.168.2.0 255.255.255.0
192.168.3.0 255.255.255.0 !--- Access-list for traffic
to bypass the network address !--- translation (NAT)
process. access-list nonat extended permit ip
192.168.2.0 255.255.255.0 192.168.1.0 255.255.255.0
access-list nonat extended permit ip 192.168.2.0
255.255.255.0 192.168.3.0 255.255.255.0 !--- Output
Suppressed. !--- Specify the NAT configuration. !--- NAT
0 prevents NAT for the ACL defined in this
configuration. !--- The nat 1 command specifies NAT for
all other traffic. nat-control global (outside) 1
interface nat (inside) 0 access-list nonat nat (inside)
1 0.0.0.0 0.0.0.0 route outside 0.0.0.0 0.0.0.0 10.1.1.2
1 !--- Output Suppressed. !--- Configuration of IPsec
Phase 2 crypto ipsec transform-set myset esp-3des esp-
sha-hmac !--- IPsec configuration for the dynamic LAN-
to-LAN tunnel crypto dynamic-map ezvpn 30 set transform-
set myset !--- IPsec configuration for the static LAN-
to-LAN tunnel crypto map outside_map 20 match address
outside_cryptomap_20 crypto map outside_map 20 set peer
172.16.1.1 crypto map outside_map 20 set transform-set
myset !--- IPsec configuration that binds dynamic map to
crypto map crypto map outside_map 65535 ipsec-isakmp
dynamic ezvpn !--- Crypto map applied to the outside
interface of the ASA crypto map outside_map interface
outside isakmp enable outside !--- PHASE 1 CONFIGURATION
---! !--- This configuration uses isakmp policy 1. !---
These configuration commands !--- define the Phase 1
policies that are used. crypto isakmp policy 10
authentication pre-share encryption 3des hash sha group
2 lifetime 86400 !--- Output Suppressed. !--- This
defines the group policy you use with Easy VPN. !---
Specify the networks that can pass through !--- the
tunnel and that you want to !--- use network extension
mode. group-policy tunnel internal group-policy tunnel
attributes nem enable !--- The username and password
associated with !--- this VPN connection are defined
here. You !--- can also use AAA for this function.
username cisco password ffIRPGpDSOJh9YLq encrypted
tunnel-group 172.16.1.1 type ipsec-l2l tunnel-group
172.16.1.1 ipsec-attributes pre-shared-key * !--- The
tunnel-group commands bind the configurations !---
```

```
defined in this configuration to the tunnel that is !---
used for Easy VPN. This tunnel name is the one !---
specified on the remote side. tunnel-group mytunnel type
remote-access tunnel-group mytunnel general-attributes
default-group-policy tunnel !--- Defines the pre-shared
key used for !--- IKE authentication for the dynamic
tunnel. tunnel-group mytunnel ipsec-attributes pre-
shared-key * prompt hostname context
Cryptochecksum:e148bf43d04906f5db41fc6f90c52d34 : end
```

Easy VPN Client - ASA 5505

```

ASA Version 7.2(2)
!
hostname ciscoasa
domain-name default.domain.invalid
enable password 8Ry2YjIyt7RRXU24 encrypted
names
!
interface Vlan1
 nameif outside
 security-level 0
 ip address 172.16.2.2 255.255.255.0
!
interface Vlan2
 nameif inside
 security-level 100
 ip address 192.168.3.1 255.255.255.0
!
interface Ethernet0/0
!
interface Ethernet0/1
 shutdown
!
interface Ethernet0/2
!
interface Ethernet0/3
!
interface Ethernet0/4
 switchport access vlan 2

!--- Output Suppressed. ! route outside 0.0.0.0 0.0.0.0
172.16.2.1 1 !--- Output Suppressed. !--- Easy VPN
Client Configuration ---! !--- Specify the IP address of
the VPN server. vpnclient server 10.1.1.1 !--- This
example uses network extension mode. vpnclient mode
network-extension-mode !--- Specify the group name and
the pre-shared key. vpnclient vpngroup mytunnel password
******** !--- Specify the authentication username and
password. vpnclient username cisco password ******** !--
- In order to enable the device as hardware vpnclient,
use this command. vpnclient enable ! !--- Output
Suppressed.
Cryptochecksum:0458ce7a08e6b7f9417b17bc254eb4e2 : end
```

PIX

```

PIX Version 8.0(2)
!
hostname pixfirewall
enable password 8Ry2YjIyt7RRXU24 encrypted
names
!
```

```
interface Ethernet0
 nameif outside
 security-level 0
 ip address 172.16.1.1 255.255.255.0
!
interface Ethernet1
 nameif inside
 security-level 100
 ip address 192.168.1.2 255.255.255.0
!
passwd 2KFQnbNIdI.2KYOU encrypted
ftp mode passive
!--- This access list (inside_nat0_outbound) is used
with the nat zero command. !--- This prevents traffic
which matches the access list from undergoing !---
network address translation (NAT). access-list
inside_nat0_outbound extended permit ip 192.168.1.0
255.255.255.0 192.168.2.0 255.255.255.0 !--- The traffic
specified by this ACL is !--- traffic that is to be
encrypted and !--- sent across the VPN tunnel. This ACL
is intentionally !--- the same as
(inside_nat0_outbound). !--- Two separate access lists
must always be used in this configuration. access-list
outside_cryptomap_20 extended permit ip 192.168.1.0
255.255.255.0 192.168.2.0 255.255.255.0 !--- NAT 0
prevents NAT for networks specified in the ACL
inside_nat0_outbound. nat (inside) 0 access-list
inside_nat0_outbound !--- Output Suppressed. route
outside 0.0.0.0 0.0.0.0 172.16.1.2 1 !--- Output
Suppressed. !--- PHASE 2 CONFIGURATION ---! !--- The
encryption types for Phase 2 are defined here. !---
Define the transform set for Phase 2. crypto ipsec
transform-set myset esp-3des esp-sha-hmac !--- Define
which traffic can be sent to the IPsec peer. crypto map
outside_map 20 match address outside_cryptomap_20 !---
Sets the IPsec peer. crypto map outside_map 20 set peer
10.1.1.1 !--- Sets the IPsec transform set "myset" !---
to be used with the crypto map entry "outside_map".
crypto map outside_map 20 set transform-set myset !---
Specifies the interface to be used with !--- the
settings defined in this configuration. crypto map
outside_map interface outside !--- PHASE 1 CONFIGURATION
---! !--- This configuration uses isakmp policy 10. !---
Policy 65535 is included in the config by default. !---
The configuration commands here define the Phase !--- 1
policy parameters that are used. crypto isakmp enable
outside crypto isakmp policy 10 authentication pre-share
encryption 3des hash sha group 2 lifetime 86400 crypto
isakmp policy 65535 authentication pre-share encryption
3des hash sha group 2 lifetime 86400 !--- Output
Suppressed. !--- In order to create and manage the
database of connection-specific records !--- for ipsec-
l2l—IPsec (LAN-to-LAN) tunnels, use the tunnel-group !--
- command in global configuration mode. !--- For L2L
connections the name of the tunnel group MUST be the IP
!--- address of the IPsec peer. tunnel-group 10.1.1.1
type ipsec-l2l !--- Enter the pre-shared-key in order to
configure the authentication method. tunnel-group
10.1.1.1 ipsec-attributes pre-shared-key * prompt
hostname context
Cryptochecksum:4a2c70f2102113315de795f13f25c2aa : end
```

다음을 확인합니다.

이 섹션에서는 컨피그레이션이 제대로 작동하는지 확인하는 데 사용할 수 있는 정보를 제공합니다.

Output Interpreter 도구(등록된 고객만 해당)(OIT)는 특정 **show** 명령을 지원합니다. OIT를 사용하여 **show** 명령 출력의 분석을 봅니다.

- **show crypto isakmp sa** - 피어의 현재 IKE SA(Security Association)를 모두 표시합니다.
- **show crypto ipsec sa** - 현재 모든 SA를 표시합니다.

이 섹션에서는 다음에 대한 확인 구성의 예를 보여줍니다.

- 허브 ASA
- Easy VPN Client ASA 5505
- PIX

허브 ASA

```
ciscoasa #show crypto isakmp sa

   Active SA: 2
    Rekey SA: 0 (A tunnel will report 1 Active and 1
Rekey SA during rekey)
Total IKE SA: 2
!--- Dynamic LAN-to-LAN tunnel establishment 1 IKE Peer:
172.16.2.2 Type : user Role : responder Rekey : no State
: AM_ACTIVE !--- Static LAN-to-LAN tunnel establishment
2 IKE Peer: 172.16.1.1 Type : L2L Role : initiator Rekey
: no State : MM_ACTIVE ciscoasa #show crypto ipsec sa
ciscoasa(config)#sh crypto ipsec sa
interface: outside
    Crypto map tag: outside_map, seq num: 20, local
addr: 10.1.1.1


      access-list outside_cryptomap_20 permit ip
192.168.2.0 255.255.255.0
 192.168.1.0 255.255.255.0
      local ident (addr/mask/prot/port):
(192.168.2.0/255.255.255.0/0/0)
      remote ident (addr/mask/prot/port):
(192.168.1.0/255.255.255.0/0/0)
      current_peer: 172.16.1.1

      #pkts encaps: 4, #pkts encrypt: 4, #pkts digest: 4
      #pkts decaps: 4, #pkts decrypt: 4, #pkts verify: 4
      #pkts compressed: 0, #pkts decompressed: 0
      #pkts not compressed: 4, #pkts comp failed: 0,
#pkts decomp failed: 0
      #pre-frag successes: 0, #pre-frag failures: 0,
#fragments created: 0
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs
needing reassembly: 0
      #send errors: 0, #recv errors: 0

      local crypto endpt.: 10.1.1.1, remote crypto
endpt.: 172.16.1.1

      path mtu 1500, ipsec overhead 58, media mtu 1500
      current outbound spi: E4312E13

    inbound esp sas:
      spi: 0x9ABAC3DD (2595931101)
         transform: esp-3des esp-sha-hmac none
         in use settings ={L2L, Tunnel, }
         slot: 0, conn_id: 741376, crypto-map:
outside_map
         sa timing: remaining key lifetime (kB/sec):
(4274999/28783)
         IV size: 8 bytes
         replay detection support: Y
    outbound esp sas:
      spi: 0xE4312E13 (3828428307)
         transform: esp-3des esp-sha-hmac none
         in use settings ={L2L, Tunnel, }
         slot: 0, conn_id: 741376, crypto-map:
outside_map
         sa timing: remaining key lifetime (kB/sec):
(4274999/28783)
         IV size: 8 bytes
         replay detection support: Y

   Crypto map tag: ezvpn, seq num: 30, local addr:
10.1.1.1

     local ident (addr/mask/prot/port):
(10.1.1.1/255.255.255.255/0/0)
      remote ident (addr/mask/prot/port):
(172.16.2.2/255.255.255.255/0/0)
      current_peer: 172.16.2.2, username: cisco
      dynamic allocated peer ip: 0.0.0.0

      #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 comp failed: 0,
#pkts decomp failed: 0
      #pre-frag successes: 0, #pre-frag failures: 0,
#fragments created: 0
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs
needing reassembly: 0
      #send errors: 0, #recv errors: 0

      local crypto endpt.: 10.1.1.1, remote crypto
endpt.: 172.16.2.2

      path mtu 1500, ipsec overhead 58, media mtu 1500
      current outbound spi: 2647B59C

    inbound esp sas:
      spi: 0x21685AF8 (560487160)
         transform: esp-3des esp-sha-hmac none
         in use settings ={RA, Tunnel, }
         slot: 0, conn_id: 737280, crypto-map: ezvpn
         sa timing: remaining key lifetime (sec): 28146
         IV size: 8 bytes
         replay detection support: Y
    outbound esp sas:
      spi: 0x2647B59C (642233756)
         transform: esp-3des esp-sha-hmac none
         in use settings ={RA, Tunnel, }
         slot: 0, conn_id: 737280, crypto-map: ezvpn
         sa timing: remaining key lifetime (sec): 28146
         IV size: 8 bytes
         replay detection support: Y

    Crypto map tag: ezvpn, seq num: 30, local addr:
10.1.1.1

      local ident (addr/mask/prot/port):
(0.0.0.0/0.0.0.0/0/0)
      remote ident (addr/mask/prot/port):
(192.168.3.0/255.255.255.0/0/0)
      current_peer: 172.16.2.2, username: cisco
      dynamic allocated peer ip: 0.0.0.0

      #pkts encaps: 5, #pkts encrypt: 5, #pkts digest: 5
      #pkts decaps: 5, #pkts decrypt: 5, #pkts verify: 5
      #pkts compressed: 0, #pkts decompressed: 0
      #pkts not compressed: 5, #pkts comp failed: 0,
#pkts decomp failed: 0
      #pre-frag successes: 0, #pre-frag failures: 0,
#fragments created: 0
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs
needing reassembly: 0
      #send errors: 0, #recv errors: 0

      local crypto endpt.: 10.1.1.1, remote crypto
endpt.: 172.16.2.2

      path mtu 1500, ipsec overhead 58, media mtu 1500
      current outbound spi: 07997B21

    inbound esp sas:
      spi: 0xB5B6013D (3048603965)
         transform: esp-3des esp-sha-hmac none
         in use settings ={RA, Tunnel, }
         slot: 0, conn_id: 737280, crypto-map: ezvpn
         sa timing: remaining key lifetime (sec): 28145
         IV size: 8 bytes
         replay detection support: Y
    outbound esp sas:
      spi: 0x07997B21 (127499041)
         transform: esp-3des esp-sha-hmac none
         in use settings ={RA, Tunnel, }
         slot: 0, conn_id: 737280, crypto-map: ezvpn
         sa timing: remaining key lifetime (sec): 28145
         IV size: 8 bytes
         replay detection support: Y

    Crypto map tag: ezvpn, seq num: 30, local addr:
10.1.1.1

      local ident (addr/mask/prot/port):
(0.0.0.0/0.0.0.0/0/0)
      remote ident (addr/mask/prot/port):
(172.16.2.2/255.255.255.255/0/0)
      current_peer: 172.16.2.2, username: cisco
      dynamic allocated peer ip: 0.0.0.0

      #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 comp failed: 0,
#pkts decomp failed: 0
      #pre-frag successes: 0, #pre-frag failures: 0,
#fragments created: 0
```

```
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs
needing reassembly: 0
      #send errors: 0, #recv errors: 0

      local crypto endpt.: 10.1.1.1, remote crypto
endpt.: 172.16.2.2

      path mtu 1500, ipsec overhead 58, media mtu 1500
      current outbound spi: 0F0B1A75

    inbound esp sas:
      spi: 0x68B0EA75 (1756424821)
         transform: esp-3des esp-sha-hmac none
         in use settings ={RA, Tunnel, }
         slot: 0, conn_id: 737280, crypto-map: ezvpn
         sa timing: remaining key lifetime (sec): 28143
         IV size: 8 bytes
         replay detection support: Y
    outbound esp sas:
      spi: 0x0F0B1A75 (252385909)
         transform: esp-3des esp-sha-hmac none
         in use settings ={RA, Tunnel, }
         slot: 0, conn_id: 737280, crypto-map: ezvpn
         sa timing: remaining key lifetime (sec): 28143
         IV size: 8 bytes
         replay detection support: Y
```

Easy VPN Client ASA 5505

```
ciscoasa(config)# sh crypto isakmp sa

   Active SA: 1
    Rekey SA: 0 (A tunnel will report 1 Active and 1
Rekey SA during rekey)
Total IKE SA: 1

1   IKE Peer: 10.1.1.1
    Type    : user            Role    : initiator
    Rekey   : no              State   : AM_ACTIVE



ciscoasa(config)# sh crypto ipsec sa
interface: outside
    Crypto map tag: _vpnc_cm, seq num: 10, local addr:
172.16.2.2

      access-list _vpnc_acl permit ip host 172.16.2.2
host 10.1.1.1
      local ident (addr/mask/prot/port):
(172.16.2.2/255.255.255.255/0/0)
      remote ident (addr/mask/prot/port):
(10.1.1.1/255.255.255.255/0/0)
      current_peer: 10.1.1.1, username: 10.1.1.1
      dynamic allocated peer ip: 0.0.0.0

      #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 comp failed: 0,
#pkts decomp failed: 0
```

```
      #pre-frag successes: 0, #pre-frag failures: 0,
#fragments created: 0
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs
needing reassembly: 0
      #send errors: 0, #recv errors: 0

      local crypto endpt.: 172.16.2.2, remote crypto
endpt.: 10.1.1.1

      path mtu 1500, ipsec overhead 58, media mtu 1500
      current outbound spi: 21685AF8

    inbound esp sas:
      spi: 0x2647B59C (642233756)
         transform: esp-3des esp-sha-hmac none
         in use settings ={RA, Tunnel, }
         slot: 0, conn_id: 178, crypto-map: _vpnc_cm
         sa timing: remaining key lifetime (sec): 28298
         IV size: 8 bytes
         replay detection support: Y
    outbound esp sas:
      spi: 0x21685AF8 (560487160)
         transform: esp-3des esp-sha-hmac none
         in use settings ={RA, Tunnel, }
         slot: 0, conn_id: 178, crypto-map: _vpnc_cm
         sa timing: remaining key lifetime (sec): 28298
         IV size: 8 bytes
         replay detection support: Y

    Crypto map tag: _vpnc_cm, seq num: 10, local addr:
172.16.2.2

      access-list _vpnc_acl permit ip host 172.16.2.2
any
      local ident (addr/mask/prot/port):
(172.16.2.2/255.255.255.255/0/0)
      remote ident (addr/mask/prot/port):
(0.0.0.0/0.0.0.0/0/0)
      current_peer: 10.1.1.1, username: 10.1.1.1
      dynamic allocated peer ip: 0.0.0.0

      #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 comp failed: 0,
#pkts decomp failed: 0
      #pre-frag successes: 0, #pre-frag failures: 0,
#fragments created: 0
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs
needing reassembly: 0
      #send errors: 0, #recv errors: 0

      local crypto endpt.: 172.16.2.2, remote crypto
endpt.: 10.1.1.1

      path mtu 1500, ipsec overhead 58, media mtu 1500
      current outbound spi: 68B0EA75

    inbound esp sas:
      spi: 0x0F0B1A75 (252385909)
         transform: esp-3des esp-sha-hmac none
         in use settings ={RA, Tunnel, }
         slot: 0, conn_id: 178, crypto-map: _vpnc_cm
         sa timing: remaining key lifetime (sec): 28298
         IV size: 8 bytes
         replay detection support: Y
    outbound esp sas:
      spi: 0x68B0EA75 (1756424821)
         transform: esp-3des esp-sha-hmac none
         in use settings ={RA, Tunnel, }
         slot: 0, conn_id: 178, crypto-map: _vpnc_cm
         sa timing: remaining key lifetime (sec): 28298
         IV size: 8 bytes
         replay detection support: Y

    Crypto map tag: _vpnc_cm, seq num: 10, local addr:
172.16.2.2

      access-list _vpnc_acl permit ip 192.168.3.0
255.255.255.0 any
      local ident (addr/mask/prot/port):
(192.168.3.0/255.255.255.0/0/0)
      remote ident (addr/mask/prot/port):
(0.0.0.0/0.0.0.0/0/0)
      current_peer: 10.1.1.1, username: 10.1.1.1
      dynamic allocated peer ip: 0.0.0.0

      #pkts encaps: 5, #pkts encrypt: 5, #pkts digest: 5
      #pkts decaps: 5, #pkts decrypt: 5, #pkts verify: 5
      #pkts compressed: 0, #pkts decompressed: 0
      #pkts not compressed: 0, #pkts comp failed: 0,
#pkts decomp failed: 0
      #pre-frag successes: 0, #pre-frag failures: 0,
#fragments created: 0
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs
needing reassembly: 0
      #send errors: 0, #recv errors: 0

      local crypto endpt.: 172.16.2.2, remote crypto
endpt.: 10.1.1.1

      path mtu 1500, ipsec overhead 58, media mtu 1500
      current outbound spi: B5B6013D

    inbound esp sas:
      spi: 0x07997B21 (127499041)
         transform: esp-3des esp-sha-hmac none
         in use settings ={RA, Tunnel, }
         slot: 0, conn_id: 178, crypto-map: _vpnc_cm
         sa timing: remaining key lifetime (sec): 28294
         IV size: 8 bytes
         replay detection support: Y
    outbound esp sas:
      spi: 0xB5B6013D (3048603965)
         transform: esp-3des esp-sha-hmac none
         in use settings ={RA, Tunnel, }
         slot: 0, conn_id: 178, crypto-map: _vpnc_cm
         sa timing: remaining key lifetime (sec): 28294
         IV size: 8 bytes
         replay detection support: Y
```

PIX

```
pixfirewall(config)# sh crypto isakmp sa

   Active SA: 1
    Rekey SA: 0 (A tunnel will report 1 Active and 1
Rekey SA during rekey)
Total IKE SA: 1

1   IKE Peer: 10.1.1.1
    Type    : L2L              Role    : responder
    Rekey   : no               State   : MM_ACTIVE



pixfirewall(config)# sh crypto ipsec sa
interface: outside
    Crypto map tag: outside_map, seq num: 20, local
addr: 172.16.1.1

     access-list outside_cryptomap_20 permit ip
192.168.1.0 255.255.255.0
    192.168.2.0 255.255.255.0
      local ident (addr/mask/prot/port):
(192.168.1.0/255.255.255.0/0/0)
      remote ident (addr/mask/prot/port):
(192.168.2.0/255.255.255.0/0/0)
      current_peer: 10.1.1.1

      #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 comp failed: 0,
#pkts decomp failed: 0
      #pre-frag successes: 0, #pre-frag failures: 0,
#fragments created: 0
      #PMTUs sent: 0, #PMTUs rcvd: 0, #decapsulated frgs
needing reassembly: 0
      #send errors: 0, #recv errors: 0

      local crypto endpt.: 172.16.1.1, remote crypto
endpt.: 10.1.1.1

      path mtu 1500, ipsec overhead 58, media mtu 1500
      current outbound spi: 9ABAC3DD

    inbound esp sas:
      spi: 0xE4312E13 (3828428307)
         transform: esp-3des esp-sha-hmac none
         in use settings ={L2L, Tunnel, }
         slot: 0, conn_id: 12288, crypto-map:
outside_map
         sa timing: remaining key lifetime (kB/sec):
(3824999/28628)
         IV size: 8 bytes
         replay detection support: Y
    outbound esp sas:
      spi: 0x9ABAC3DD (2595931101)
         transform: esp-3des esp-sha-hmac none
         in use settings ={L2L, Tunnel, }
         slot: 0, conn_id: 12288, crypto-map:
outside_map
         sa timing: remaining key lifetime (kB/sec):
(3824999/28628)
         IV size: 8 bytes
         replay detection support: Y
```

문제 해결

이 섹션에서는 컨피그레이션 문제를 해결하는 데 사용할 수 있는 정보를 제공합니다.

문제 해결 명령

일부 show **명령은** 출력 인터프리터 툴 에서 지원되는데(등록된 고객만), 이 툴을 사용하면 **show 명령 출력의 분석 결과를 볼 수 있습니다.**

참고: 디버그 명령을 실행하기 전에 디버그 명령에 대한 중요 정보를 참조하십시오.

구성 모드에서 PIX 명령을 실행합니다.

- **clear crypto isakmp sa** - 1단계 SA를 지웁니다.
- **clear crypto ipsec sa** - 2단계 SA를 지웁니다.

VPN 터널의 **debug** 명령:

- **debug crypto isakmp sa** - ISAKMP SA 협상 디버깅
- **debug crypto ipsec sa** - IPSec SA 협상 디버깅

관련 정보

- Cisco PIX 500 Series 보안 어플라이언스 - 소개
- 가장 일반적인 L2L 및 원격 액세스 IPSec VPN 문제 해결 솔루션
- Cisco ASA 5500 Series Adaptive Security Appliances - 제품 지원
- IPSec 협상/IKE 프로토콜
- 기술 지원 및 문서 – Cisco Systems