مثال تكوين IPsec الديناميكي بين ASA وIOS الذي تم توجيهه بشكل ثابت وموجه الذي تم توجيهه ديناميكيا باستخدام NAT

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المقدمة

يقدم هذا المستند نموذجا لتكوين كيفية تمكين جهاز الأمان القابل للتكيف (ASA) لقبول إتصالات IPsec الديناميكية من موجه IOS.

المتطلبات الأساسية

المتطلبات

قبل أن تحاول إجراء هذا التكوين، تأكد من أن كل من ASA والموجه يتوفر لهما اتصال الإنترنت لإنشاء نفق IPsec.

يفترض هذا المستند أنك قمت بالفعل بتعيين عناوين IP على كل من الواجهات العامة والخاصة وأنه يمكنك إختبار اتصال عنوان IP لجهاز VPN البعيد.

المكونات المستخدمة

تستند المعلومات الواردة في هذا المستند إلى إصدارات البرامج والمكونات المادية التالية:

- cisco 2900 مسحاج تخديد مع cisco ios برمجية إطلاق M3(4)15.2

• برنامج جهاز الأمان القابل للتكيف من Cisco، الإصدار 9.4(1)

تم إنشاء المعلومات الواردة في هذا المستند من الأجهزة الموجودة في بيئة معملية خاصة. بدأت جميع الأجهزة المستخدمة في هذا المستند بتكوين ممسوح (افتراضي). إذا كانت شبكتك مباشرة، فتأكد من فهمك للتأثير المحتمل لأي أمر.

الاصطلاحات

راجع اصطلاحات تلميحات Cisco التقنية للحصول على مزيد من المعلومات حول اصطلاحات المستندات.

معلومات أساسية

يجري الموجه عن بعد ترجمة عنوان الشبكة (NAT) إذا وصلت الشبكة الخاصة x.10.1.1 إلى الإنترنت. استثنيت حركة مرور من x.10.1.1 إلى الشبكة الخاصة x.10.2.2 خلف ال ASA من عملية NAT. يتم إنشاء نفق IPsec فقط في حالة قيام حركة المرور (x.10.1.1) بدمج الاتصال من الموجه مع ASA الذي لديه شبكة بعيدة (x.10.2.2). يمكن أن يبدأ الموجه الاتصالات بالموجه، ولكن يتعذر على ASA بدء الاتصالات بالموجه.

يمكن هذا التكوين ASA من إنشاء نفق IPsec ديناميكي من شبكة LAN إلى شبكة LAN (L2L) باستخدام موجه VPN بعيد. يتلقى هذا الموجه بشكل ديناميكي عنوان IP الخارجي العام من موفر خدمة الإنترنت الخاص به. يوفر بروتوكول تكوين المضيف الديناميكي (DHCP) هذه الآلية من أجل تخصيص عناوين IP بشكل ديناميكي من الموفر. وهذا يسمح بإعادة إستخدام عناوين IP عندما لا تعود البيئات المضيفة بحاجة إليها.

على ال ASA أنت يستطيع شكلت يدوي nat أن يضمن الحركة مرور أن يمر عبر النفق لا يحصل ترجمت. في هذا المثال، إذا كنت على شبكة 10.2.2.0 وانتقلت إلى شبكة 10.1.1.0، يتم إستخدام NAT **اليدوي** للسماح بتشفير حركة مرور الشبكة 10.1.1.0 دون ترجمتها إلى عنوان IP للواجهة الخارجية. على الموجه، يتم إستخدام أوامر **route-map** و**access-list** للسماح بتشفير حركة مرور الشبكة 10.1.1.0 دون NAT. مهما، عندما يذهب أنت مكان آخر (مثل الإنترنت)، أنت ترجمت إلى القارن خارجي عنوان من خلال ترجمة عنوان أيسر (ضرب).

ملاحظة: راجع تطبيق NAT للحصول على مزيد من المعلومات حول NAT

هذا هو التشكيل أمر يتطلب على ال ASA in order to لا يركض حركة مرور من خلال ضرب عبر النفق، وحركة مرور إلى الإنترنت أن يركض من خلال ضرب

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

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

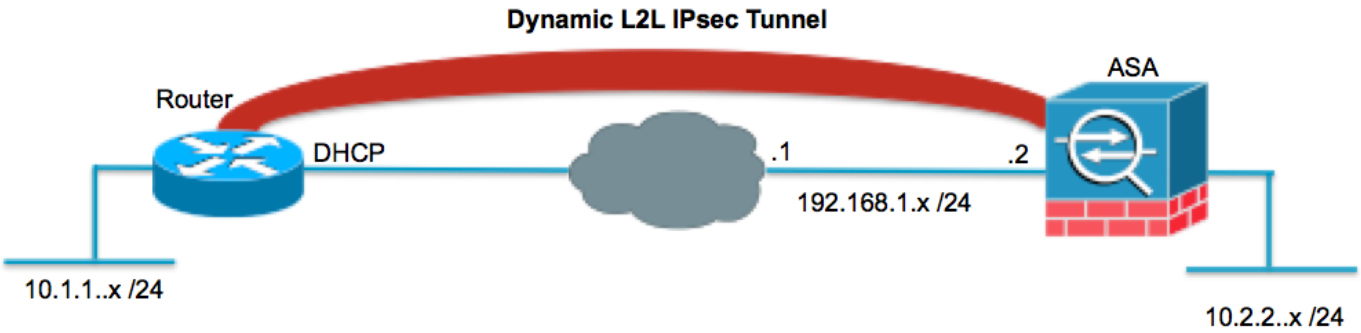
object network LOCAL
nat (inside,outside) dynamic interface
```

التكوين

في هذا القسم، تُقدّم لك معلومات تكوين الميزات الموضحة في هذا المستند.

الرسم التخطيطي للشبكة

يستخدم هذا المستند إعداد الشبكة التالي:



التكوينات

يستخدم هذا المستند التكوينات التالية:

الموجّه

```
Router#show running-config
Current configuration : 1354 bytes
!
version 15.2
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname Router
!
boot-start-marker
boot-end-marker
!
!
no aaa new-model
!
resource policy
!
ip cef


.Configuration for IKE policies ---!
(Enables the IKE policy configuration (config-isakmp ---!
command mode, where you can specify the parameters that ---!
.are used during an IKE negotiation ---!


crypto isakmp policy 1
encryption aes 256
hash sha
authentication pre-share
group 2


Specifies the preshared key "cisco123" which should ---!
be identical at both peers. This is a global ---!
.configuration mode command ---!


crypto isakmp key cisco123 address 192.168.1.2
```

```
                                                                        !
                                                                        !

                                        .Configuration for IPsec policies ---!
                              ,Enables the crypto transform configuration mode ---!
                        where you can specify the transform sets that are used ---!
                                                    .during an IPsec negotiation ---!


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


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


                                                    crypto map mymap 10 ipsec-isakmp


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


                                                         set peer 192.168.1.2


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


                                                       set transform-set myset


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


                                                    match address 101
                                                                        !
                                                                        !
                                                                        !
                                                                        !
                                                  interface FastEthernet0/0

                                The interface dynamically learns its IP address ---!
                                                    .from the service provider ---!


                                                         ip address DHCP

                                                    ip virtual-reassembly
                                                              half-duplex

                                          Configures the interface to use the ---!
                                                .crypto map "mymap" for IPsec ---!

                                                         crypto map mymap
                                                                        !
                                                  interface FastEthernet1/0
                                                       no ip address
                                                            shutdown
                                                         duplex auto
                                                          speed auto
                                                                        !
                                                 interface Serial2/0
```

```
 ip address 10.1.1.2 255.255.255.0
                 ip nat inside
          ip virtual-reassembly
                 no fair-queue
                             !
             interface Serial2/1
                  no ip address
                       shutdown
                             !
             interface Serial2/2
                  no ip address
                       shutdown
                             !
             interface Serial2/3
                  no ip address
                       shutdown
                             !
                  ip http server
        no ip http secure-server
                             !
ip route 0.0.0.0 0.0.0.0 FastEthernet0/0
                             !
ip nat inside source route-map nonat interface FastEthernet0/0 overload
                             !

                This crypto ACL 101 -permit identifies the ---!
.matching traffic flows to be protected via encryption ---!


access-list 101 permit ip 10.1.1.0 0.0.0.255 10.2.2.0 0.0.0.255


This ACL 110 identifies the traffic flows using route map and ---!
.(are PATed via outside interface (Ethernet0/0 ---!


access-list 110 deny ip 10.1.1.0 0.0.0.255 10.2.2.0 0.0.0.255
access-list 110 permit ip 10.1.1.0 0.0.0.255 any


                             !
        route-map nonat permit 10
            match ip address 110
                             !
                             !
                  control-plane
                             !

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

ASA

```
ASA#show running-config
     (ASA Version 9.4(1
                        !
              hostname ASA
```

```
enable password 8Ry2YjIyt7RRXU24 encrypted
names
!

.Configure the outside and inside interfaces ---!

interface GigabitEthernet0/0
nameif outside
security-level 0
ip address 192.168.1.2 255.255.255.0
!
interface GigabitEthernet0/1
nameif inside
security-level 100
ip address 10.2.2.1 255.255.255.0
!
!


.Output is suppressed ---!


!
passwd 2KFQnbNIdI.2KYOU encrypted
ftp mode passive


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

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


pager lines 24
mtu outside 1500
mtu inside 1500
no failover
no asdm history enable
arp timeout 14400


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


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

route outside 0.0.0.0 0.0.0.0 192.168.1.1 1

timeout xlate 3:00:00
timeout conn 1:00:00 half-closed 0:10:00 udp 0:02:00 icmp 0:00:02
timeout sunrpc 0:10:00 h323 0:05:00 h225 1:00:00 mgcp 0:05:00 mgcp-pat 0:05:00
timeout sip 0:30:00 sip_media 0:02:00 sip-invite 0:03:00 sip-disconnect 0:02:00
timeout uauth 0:05:00 absolute
```

```
                                                    no snmp-server location
                                                    no snmp-server contact
snmp-server enable traps snmp authentication linkup linkdown coldstart


                                                !--- PHASE 2 CONFIGURATION ---!
                                .The encryption types for Phase 2 are defined here ---!


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


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


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


                                .Binds the dynamic map to the IPsec/ISAKMP process ---!


                                       crypto map dyn-map 10 ipsec-isakmp dynamic cisco


                                            Specifies the interface to be used with ---!
                                           .the settings defined in this configuration ---!


                                                 crypto map dyn-map interface outside


                                                !--- PHASE 1 CONFIGURATION ---!

                                         .This configuration uses isakmp policy 10 ---!
                                The configuration commands here define the Phase ---!
                                               .policy parameters that are used 1 ---!

                                                    crypto ikev1 enable outside
                                                        crypto isakmp policy 10
                                                      authentication pre-share
                                                           encryption aes-256
                                                                     hash sha
                                                                      group 2
                                                                 lifetime 86400

                             The security appliance provides the default tunnel groups ---!
for Lan to Lan access (DefaultL2LGroup) and configure the preshared key ---!
                                           .cisco123) to authenticate the remote router) ---!


                                        tunnel-group DefaultL2LGroup ipsec-attributes
                                                      pre-shared-key cisco123

                                                               telnet timeout 5
                                                                  ssh timeout 5
                                                              console timeout 0
                                                                              !
                                                     class-map inspection_default
                                                  match default-inspection-traffic
                                                                              !
                                                                              !
                                          policy-map type inspect dns preset_dns_map
                                                                   parameters
```

```
message-length maximum 512
    policy-map global_policy
   class inspection_default
inspect dns preset_dns_map
          inspect ftp
     inspect h323 h225
      inspect h323 ras
       inspect netbios
           inspect rsh
         inspect rtsp
       inspect skinny
        inspect esmtp
       inspect sqlnet
       inspect sunrpc
         inspect tftp
          inspect sip
       inspect xdmcp
                    !
service-policy global_policy global
        prompt hostname context
Cryptochecksum:6ed4a7bce392a439d0a16e86743e2663
                    end :
```

مسح اقترانات الأمان (SAs)

في الوضع ذي الامتيازات ل ASA، أستخدم الأوامر التالية:

- **مسح تشفير IPsec**—يحذف رسائل IPsec النشطة. تشفير الكلمة الأساسية إختياري.
- **مسح التشفير isakmp sa**—يحذف شبكات IKE النشطة. تشفير الكلمة الأساسية إختياري.

التحقق من الصحة

استخدم هذا القسم لتأكيد عمل التكوين بشكل صحيح.

يدعم Cisco CLI Analyzer (محلل واجهة سطر الأوامر من Cisco) (للعملاء المسجلين فقط) أوامر **show** معينة. استخدم Cisco CLI Analyzer (محلل واجهة سطر الأوامر من Cisco) لعرض تحليل لمُخرَج الأمر **show**.

جهاز أمان ASA - show commands

- **show crypto isakmp sa**— يعرض جميع شبكات IKE الحالية في نظير.

```
ASA#show crypto isakmp sa

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

                                 IKE Peer: 172.16.1.3   1
Type    : L2L                     Role    : responder
Rekey   : no                      State   : MM_ACTIVE
```

- **show crypto ipSec sa**— يعرض جميع معرفات فئات خدمة IPsec الحالية في نظير.

```
ASA#show crypto ipsec sa
                        interface: outside
        Crypto map tag: cisco, seq num: 1, local addr: 192.168.1.2

      (local ident (addr/mask/prot/port): (10.2.2.0/255.255.255.0/0/0
     (remote ident (addr/mask/prot/port): (10.1.1.0/255.255.255.0/0/0
                                current_peer: 172.16.1.3
```

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

          local crypto endpt.: 192.168.1.2, remote crypto endpt.: 172.16.1.3

                       path mtu 1500, ipsec overhead 58, media mtu 1500
                                    current outbound spi: 28C8C1BD

                                                    :inbound esp sas
                                               (spi: 0x33785672 (863524466
                                         transform: esp-3des esp-md5-hmac
                                         { ,in use settings ={L2L, Tunnel
                                  slot: 0, conn_id: 6, crypto-map: cisco
               (sa timing: remaining key lifetime (kB/sec): (4274999/3564
                                                  IV size: 8 bytes
                                       replay detection support: Y
                                                   :outbound esp sas
                                               (spi: 0x28C8C1BD (684245437
                                         transform: esp-3des esp-md5-hmac
                                         { ,in use settings ={L2L, Tunnel
                                  slot: 0, conn_id: 6, crypto-map: cisco
               (sa timing: remaining key lifetime (kB/sec): (4274999/3562
                                                  IV size: 8 bytes
                                       replay detection support: Y
```

موجه IOS البعيد - إظهار الأوامر

- **show crypto isakmp sa**— يعرض جميع شبكات IKE الحالية في نظير.

```
Router#show crypto isakmp sa

dst             src           state          conn-id slot status
QM_IDLE               1    0 ACTIVE      172.16.1.3     192.168.1.2
```

- **show crypto ipSec sa**— يعرض جميع معرفات فئات خدمة IPsec الحالية في نظير.

```
                                    Router#show crypto ipsec sa
                                         interface: Ethernet0/0
                                 Crypto map tag: pix, local addr 172.16.1.3

                                                   (protected vrf: (none
      (local  ident (addr/mask/prot/port): (10.1.1.0/255.255.255.0/0/0
      (remote ident (addr/mask/prot/port): (10.2.2.0/255.255.255.0/0/0
                                      current_peer 192.168.1.2 port 500
                                        {,PERMIT, flags={origin_is_acl
                        pkts encaps: 4, #pkts encrypt: 4, #pkts digest: 4#
                        pkts decaps: 4, #pkts decrypt: 4, #pkts verify: 4#
                              pkts compressed: 0, #pkts decompressed: 0#
                           pkts not compressed: 0, #pkts compr. failed: 0#
                    pkts not decompressed: 0, #pkts decompress failed: 0#
                                      send errors 62, #recv errors 0#

          local crypto endpt.: 172.16.1.3, remote crypto endpt.: 192.168.1.2
                        path mtu 1500, ip mtu 1500, ip mtu idb Ethernet0/0
                               (current outbound spi: 0x33785672(863524466

                                                    :inbound esp sas
                                               (spi: 0x28C8C1BD(684245437
                                    , transform: esp-3des esp-md5-hmac
```

```
                                        { ,in use settings ={Tunnel
                                conn id: 2002, flow_id: SW:2, crypto map: pix
                        (sa timing: remaining key lifetime (k/sec): (4431817/3288
                                                    IV size: 8 bytes
                                                replay detection support: Y
                                                        Status: ACTIVE

                                                          :inbound ah sas

                                                         :inbound pcp sas

                                                       :outbound esp sas
                                                  (spi: 0x33785672(863524466
                                        , transform: esp-3des esp-md5-hmac
                                                        { ,in use settings ={Tunnel
                                conn id: 2001, flow_id: SW:1, crypto map: pix
                        (sa timing: remaining key lifetime (k/sec): (4431817/3286
                                                    IV size: 8 bytes
                                                replay detection support: Y
                                                        Status: ACTIVE

                                                         :outbound ah sas

                                                        :outbound pcp sas
```

استكشاف الأخطاء وإصلاحها

يوفر هذا القسم معلومات يمكنك استخدامها لاستكشاف أخطاء التكوين وإصلاحها.

يدعم Cisco CLI Analyzer (محلل واجهة سطر الأوامر من Cisco) (للعملاء المسجلين فقط) أوامر **show** معينة. استخدم Cisco CLI Analyzer (محلل واجهة سطر الأوامر من Cisco) لعرض تحليل لمُخرَج الأمر **show**.

ملاحظة: ارجع إلى معلومات مهمة حول أوامر تصحيح الأخطاء وأستكشاف أخطاء أمان IP وإصلاحها - فهم أوامر تصحيح الأخطاء واستخدامها قبل أن تستخدم أوامر **debug**.

- جهاز الأمان القابل للتكيف - مخرجات تصحيح الأخطاء7 **debug crypto ips**—يعرض مفاوضات IPsec للمرحلة 1.
- 2.7 **debug crypto isakmp**—يعرض مفاوضات ISAKMP للمرحلة 1.
- موجه IOS البعيد - مخرجات تصحيح الأخطاء**debug crypto ipSec**—يعرض مفاوضات IPsec للمرحلة 1.
- 2.**debug crypto isakmp**—يعرض مفاوضات ISAKMP للمرحلة 1.

ASA - مخرجات تصحيح الأخطاء

```
ASA#debug crypto isakmp 7
                Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Messa
) ge (msgid=0) with payloads : HDR + SA (1) + VENDOR (13) + VENDOR (13) + VENDOR
                                                NONE (0) total length : 144 + (13
            Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing SA payload
    Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Oakley proposal is acceptable
           Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
           Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received NAT-Traversal ver 03 VID
           Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received NAT-Traversal ver 02 VID
        Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing IKE SA payload
 # Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, IKE SA Proposal # 1, Transform
                                        acceptable  Matches global IKE entry # 3 1
```

```
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing ISAKMP SA payload
+ Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing Fragmentation VID
                                                    extended capabilities payload
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE SENDING Message (msgid=0) w
          ith payloads : HDR + SA (1) + VENDOR (13) + NONE (0) total length : 108
 (Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Message (msgid=0
) with payloads : HDR + KE (4) + NONCE (10) + VENDOR (13) + VENDOR (13) + VENDOR
                                    VENDOR (13) + NONE (0) total length : 256 + (13
             Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing ke payload
          Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing ISA_KE payload
           Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing nonce payload
             Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
 Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received Cisco Unity client VID
           Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
                 Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received DPD VID
             Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Processing IOS/PIX Vendor ID pay
                                    (load (version: 1.0.0, capabilities: 0000077f
             Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, processing VID payload
              Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Received xauth V6 VID
            Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing ke payload
         Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing nonce payload
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing Cisco Unity VID payload
   Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing xauth V6 VID payload
                        Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Send IOS VID
Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Constructing ASA spoofing IOS Ve
                            (ndor ID payload (version: 1.0.0, capabilities: 20000001
           Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, constructing VID payload
                  Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Send Altiga/Cisco
                                                        VPN3000/CiscoASA GW VID
     Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, Connection landed on tunnel_group
                                                            DefaultL2LGroup
Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, Generat
                                                    ...ing keys for Responder
Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE SENDING Message (msgid=0) w
ith payloads : HDR + KE (4) + NONCE (10) + VENDOR (13) + VENDOR (13) + VENDOR (1
                                    VENDOR (13) + NONE (0) total length : 256 + (3
 (Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Message (msgid=0
with payloads : HDR + ID (5) + HASH (8) + NOTIFY (11) + NONE (0) total length :88
        ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                        processing ID payload
        ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                    processing hash payload
        ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                    Computing hash for ISAKMP
        ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                    processing notify payload
     Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, Connection landed on tunnel_group
                                                            DefaultL2LGroup
      Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, Freeing
                        previously allocated memory for authorization-dn-attributes
        ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                    constructing ID payload
        ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                    constructing hash payload
        ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                    Computing hash for ISAKMP
     Jan 01 21:42:13 [IKEv1 DEBUG]: IP = 172.16.1.3, Constructing IOS keep alive
                                                .payload: proposal=32767/32767 sec
        ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                    constructing dpd vid payload
   (Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE SENDING Message (msgid=0
    + (with payloads : HDR + ID (5) + HASH (8) + IOS KEEPALIVE (128) + VENDOR (13
                                                        NONE (0) total length : 92
```

```
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, PHASE 1 COMPLETED
  Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, Keep-alive type for this connection: DPD
   Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, Starting
                                                    .P1 rekey timer: 82080 seconds
    Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Message (msgid=4bc
     + (07a70) with payloads : HDR + HASH (8) + SA (1) + NONCE (10) + ID (5) + ID (5
                                                    NONE (0) total length : 164
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                        processing hash payload
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                        processing SA payload
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                      processing nonce payload
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                        processing ID payload
               ,Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                    :Received remote IP Proxy Subnet data in ID Payload
                               Address 10.1.1.0, Mask 255.255.255.0, Protocol 0, Port 0
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                        processing ID payload
               ,Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                     :Received local IP Proxy Subnet data in ID Payload
                               Address 10.2.2.0, Mask 255.255.255.0, Protocol 0, Port 0
               ,Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                              QM IsRekeyedold sa not found by addr
               ,Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                         IKE Remote Peer configured for crypto map: cisco
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                    processing IPSec SA payload
    Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3, IPSec S
         A Proposal # 1, Transform # 1 acceptable  Matches global IPSec SA entry # 1
             :Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, IKE
                                                            !requesting SPI
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                          IKE got SPI from key engine: SPI = 0xc3fe4fb0
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                oakleyconstucting quick mode
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                               constructing blank hash payload
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                               constructing IPSec SA payload
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                             constructing IPSec nonce payload
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                    constructing proxy ID
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                    :Transmitting Proxy Id
                    Remote subnet: 10.1.1.0  Mask 255.255.255.0 Protocol 0  Port 0
                    Local subnet:  10.2.2.0  mask 255.255.255.0 Protocol 0  Port 0
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                  constructing qm hash payload
    Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE SENDING Message (msgid=4bc0
    7a70) with payloads : HDR + HASH (8) + SA (1) + NONCE (10) + ID (5) + ID (5) + N
                                                    ONE (0) total length : 164
    Jan 01 21:42:13 [IKEv1]: IP = 172.16.1.3, IKE_DECODE RECEIVED Message (msgid=4bc
                  07a70) with payloads : HDR + HASH (8) + NONE (0) total length : 48
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                        processing hash payload
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                        loading all IPSEC SAs
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                    !Generating Quick Mode Key
          ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                                    !Generating Quick Mode Key
```

```
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, Security nego
              ,tiation complete for LAN-to-LAN Group (DefaultL2LGroup)  Responder
                                  Inbound SPI= 0xc3fe4fb0, Outbound SPI = 0x9ac1e72c
         ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                       IKE got a KEY_ADD msg for SA: SPI = 0x9ac1e72c
         ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                     Pitcher: received KEY_UPDATE, spi 0xc3fe4fb0
         ,Jan 01 21:42:13 [IKEv1 DEBUG]: Group = DefaultL2LGroup, IP = 172.16.1.3
                                    .Starting P2 rekey timer: 3420 seconds
Jan 01 21:42:13 [IKEv1]: Group = DefaultL2LGroup, IP = 172.16.1.3, PHASE 2 COMPL
                                                          (ETED (msgid=4bc07a70


                                                  pixfirewall#debug crypto ipsec 7
                       ,pixfirewall# IPSEC: New embryonic SA created @ 0x028B6EE0
                                                         ,SCB: 0x028B6E50
                                                    Direction: inbound
                                                  SPI      : 0x97550AC8
                                                 Session ID: 0x00000009
                                                 VPIF num  : 0x00000001
                                                       Tunnel type: l2l
                                                       Protocol   : esp
                                                Lifetime   : 240 seconds
                        ,IPSEC: New embryonic SA created @ 0x028B75E8
                                                         ,SCB: 0x028B7528
                                                   Direction: outbound
                                                  SPI      : 0xB857E226
                                                 Session ID: 0x00000009
                                                 VPIF num  : 0x00000001
                                                       Tunnel type: l2l
                                                       Protocol   : esp
                                                Lifetime   : 240 seconds
                          IPSEC: Completed host OBSA update, SPI 0xB857E226
                       IPSEC: Creating outbound VPN context, SPI 0xB857E226
                                                      Flags: 0x00000005
                                                      SA   : 0x028B75E8
                                                      SPI  : 0xB857E226
                                                      MTU  : 1500 bytes
                                                      VCID : 0x00000000
                                                      Peer : 0x00000000
                                                      SCB  : 0x028B7528
                                                   Channel: 0x01693F28
                     IPSEC: Completed outbound VPN context, SPI 0xB857E226
                                                 VPN handle: 0x0002524C
                         IPSEC: New outbound encrypt rule, SPI 0xB857E226
                                                   Src addr: 10.2.2.0
                                                Src mask: 255.255.255.0
                                                   Dst addr: 10.1.1.0
                                                Dst mask: 255.255.255.0
                                                            Src ports
                                                          Upper: 0
                                                          Lower: 0
                                                       Op   : ignore
                                                            Dst ports
                                                          Upper: 0
                                                          Lower: 0
                                                       Op   : ignore
                                                      Protocol: 0
                                                 Use protocol: false
                                                      SPI: 0x00000000
                                                       Use SPI: false
                     IPSEC: Completed outbound encrypt rule, SPI 0xB857E226
                                                 Rule ID: 0x028A9988
                         IPSEC: New outbound permit rule, SPI 0xB857E226
```

```
                                                  Src addr: 192.168.1.2
                                                Src mask: 255.255.255.255
                                                  Dst addr: 172.16.1.3
                                                Dst mask: 255.255.255.255
                                                           Src ports
                                                          Upper: 0
                                                          Lower: 0
                                                       Op    : ignore
                                                           Dst ports
                                                          Upper: 0
                                                          Lower: 0
                                                       Op    : ignore
                                                        Protocol: 50
                                                    Use protocol: true
                                                       SPI: 0xB857E226
                                                      Use SPI: true
                          IPSEC: Completed outbound permit rule, SPI 0xB857E226
                                                    Rule ID: 0x028B5D90
                             IPSEC: Completed host IBSA update, SPI 0x97550AC8
                           IPSEC: Creating inbound VPN context, SPI 0x97550AC8
                                                    Flags: 0x00000006
                                                    SA   : 0x028B6EE0
                                                    SPI  : 0x97550AC8
                                                      MTU  : 0 bytes
                                                    VCID : 0x00000000
                                                    Peer : 0x0002524C
                                                    SCB  : 0x028B6E50
                                                   Channel: 0x01693F28
                         IPSEC: Completed inbound VPN context, SPI 0x97550AC8
                                                  VPN handle: 0x0002B344
        IPSEC: Updating outbound VPN context 0x0002524C, SPI 0xB857E226
                                                    Flags: 0x00000005
                                                    SA   : 0x028B75E8
                                                    SPI  : 0xB857E226
                                                    MTU  : 1500 bytes
                                                    VCID : 0x00000000
                                                    Peer : 0x0002B344
                                                    SCB  : 0x028B7528
                                                   Channel: 0x01693F28
                          IPSEC: Completed outbound VPN context, SPI 0xB857E226
                                                  VPN handle: 0x0002524C
                         IPSEC: Completed outbound inner rule, SPI 0xB857E226
                                                    Rule ID: 0x028A9988
                   IPSEC: Completed outbound outer SPD rule, SPI 0xB857E226
                                                    Rule ID: 0x028B5D90
                        IPSEC: New inbound tunnel flow rule, SPI 0x97550AC8
                                                  Src addr: 10.1.1.0
                                                Src mask: 255.255.255.0
                                                  Dst addr: 10.2.2.0
                                                Dst mask: 255.255.255.0
                                                           Src ports
                                                          Upper: 0
                                                          Lower: 0
                                                       Op    : ignore
                                                           Dst ports
                                                          Upper: 0
                                                          Lower: 0
                                                       Op    : ignore
                                                            Protocol: 0
                                                    Use protocol: false
                                                       SPI: 0x00000000
                                                      Use SPI: false
                      IPSEC: Completed inbound tunnel flow rule, SPI 0x97550AC8
                                                    Rule ID: 0x027FF7F8
```

```
IPSEC: New inbound decrypt rule, SPI 0x97550AC8
                                    Src addr: 172.16.1.3
                                Src mask: 255.255.255.255
                                    Dst addr: 192.168.1.2
                                Dst mask: 255.255.255.255
                                             Src ports
                                           Upper: 0
                                           Lower: 0
                                        Op   : ignore
                                             Dst ports
                                           Upper: 0
                                           Lower: 0
                                        Op   : ignore
                                      Protocol: 50
                                Use protocol: true
                                   SPI: 0x97550AC8
                                     Use SPI: true
IPSEC: Completed inbound decrypt rule, SPI 0x97550AC8
                                    Rule ID: 0x028BB318
IPSEC: New inbound permit rule, SPI 0x97550AC8
                                    Src addr: 172.16.1.3
                                Src mask: 255.255.255.255
                                    Dst addr: 192.168.1.2
                                Dst mask: 255.255.255.255
                                             Src ports
                                           Upper: 0
                                           Lower: 0
                                        Op   : ignore
                                             Dst ports
                                           Upper: 0
                                           Lower: 0
                                        Op   : ignore
                                      Protocol: 50
                                Use protocol: true
                                   SPI: 0x97550AC8
                                     Use SPI: true
IPSEC: Completed inbound permit rule, SPI 0x97550AC8
                                    Rule ID: 0x028A7460
```

موجه IOS البعيد - مخرجات تصحيح الأخطاء

```
                                    Router#debug crypto isakmp
                (Dec 31 01:18:51.830: ISAKMP: received ke message (1/1*
        (Dec 31 01:18:51.830: ISAKMP:(0:0:N/A:0): SA request profile is (NULL*
Dec 31 01:18:51.830: ISAKMP: Created a peer struct for 192.168.1.2, peer port 500*
  Dec 31 01:18:51.830: ISAKMP: New peer created peer = 0x64DC2CB4 peer_handle = 0*
                                                                    x80000022
  Dec 31 01:18:51.834: ISAKMP: Locking peer struct 0x64DC2CB4, IKE refcount 1 for*
                                                          isakmp_initiator
                Dec 31 01:18:51.834: ISAKMP: local port 500, remote port 500*
                      Dec 31 01:18:51.834: ISAKMP: set new node 0 to QM_IDLE*
                   Dec 31 01:18:51.834: insert sa successfully sa = 640D2660*
    ,Dec 31 01:18:51.834: ISAKMP:(0:0:N/A:0):Can not start Aggressive mode*
                                                          .trying Main mode
         Dec 31 01:18:51.834: ISAKMP:(0:0:N/A:0):found peer pre-shared key*
                                                        matching 192.168.1.2
     Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0): constructed NAT-T vendor-07 ID*
     Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0): constructed NAT-T vendor-03 ID*
     Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0): constructed NAT-T vendor-02 ID*
Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0):Input = IKE_MESG_FROM_IPSEC, IKE_SA_REQ_MM*
Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0):Old State = IKE_READY  New State = IKE_I_MM1*

      Dec 31 01:18:51.838: ISAKMP:(0:0:N/A:0): beginning Main Mode exchange*
```

```
Dec 31 01:18:51.842: ISAKMP:(0:0:N/A:0): sending packet to 192.168.1.2 my_port*
                                                peer_port 500 (I) MM_NO_STATE 500
Dec 31 01:18:51.846: ISAKMP (0:0): received packet from 192.168.1.2 dport 500 s*
                                                port 500 Global (I) MM_NO_STATE
Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0):Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH*
Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0):Old State = IKE_I_MM1  New State = IKE_I_MM2*

Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0): processing SA payload. message ID = 0*
          Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0): processing vendor id payload*
         Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0): vendor ID seems Unity/DPD but*
                                                major 194 mismatch
             Dec 31 01:18:51.850: ISAKMP:(0:0:N/A:0):found peer pre-shared key*
                                                matching 192.168.1.2
            Dec 31 01:18:51.854: ISAKMP:(0:0:N/A:0): local preshared key found*
                 ... Dec 31 01:18:51.854: ISAKMP : Scanning profiles for xauth*
           Dec 31 01:18:51.854: ISAKMP:(0:0:N/A:0):Checking ISAKMP transform 1*
                                                against priority 1 policy
                                Dec 31 01:18:51.854: ISAKMP:      encryption 3DES-CBC*
                                          Dec 31 01:18:51.854: ISAKMP:      hash MD5*
                                     Dec 31 01:18:51.854: ISAKMP:      default group 2*
                                      Dec 31 01:18:51.854: ISAKMP:      auth pre-share*
                                    Dec 31 01:18:51.854: ISAKMP:      life type in seconds*
   Dec 31 01:18:51.854: ISAKMP:      life duration (VPI) of  0x0 0x1 0x51 0x80*
Dec 31 01:18:51.858: ISAKMP:(0:0:N/A:0):atts are acceptable. Next payload is 0*
          Dec 31 01:18:51.998: ISAKMP:(0:1:SW:1): processing vendor id payload*
         Dec 31 01:18:51.998: ISAKMP:(0:1:SW:1): vendor ID seems Unity/DPD but*
                                                major 194 mismatch
            ,Dec 31 01:18:51.998: ISAKMP:(0:1:SW:1):Input = IKE_MESG_INTERNAL*
                                                IKE_PROCESS_MAIN_MODE
Dec 31 01:18:51.998: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM2  New State = IKE_I_MM2*
Dec 31 01:18:52.002: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my_port 5*
                                                peer_port 500 (I) MM_SA_SETUP 00
            ,Dec 31 01:18:52.006: ISAKMP:(0:1:SW:1):Input = IKE_MESG_INTERNAL*
                                                IKE_PROCESS_COMPLETE
Dec 31 01:18:52.006: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM2  New State = IKE_I_MM3*
Dec 31 01:18:52.066: ISAKMP (0:134217729): received packet from 192.168.1.2 dpo*
                                                rt 500 sport 500 Global (I) MM_SA_SETUP
Dec 31 01:18:52.066: ISAKMP:(0:1:SW:1):Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH*
Dec 31 01:18:52.066: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM3  New State = IKE_I_MM4*
 Dec 31 01:18:52.070: ISAKMP:(0:1:SW:1): processing KE payload. message ID = 0*
Dec 31 01:18:52.246: ISAKMP:(0:1:SW:1): processing NONCE payload. message ID =0*
Dec 31 01:18:52.246: ISAKMP:(0:1:SW:1):found peer pre-shared key matching 192.168.1.2*
                     Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1):SKEYID state generated*
          Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): processing vendor id payload*
                     Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): vendor ID is Unity*
          Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): processing vendor id payload*
         Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): vendor ID seems Unity/DPD but*
                                                major 227 mismatch
                     Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): vendor ID is XAUTH*
          Dec 31 01:18:52.250: ISAKMP:(0:1:SW:1): processing vendor id payload*
          !Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1): speaking to another IOS box*
          Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1): processing vendor id payload*
Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1):vendor ID seems Unity/DPD but hash mismatch*
            ,Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1):Input = IKE_MESG_INTERNAL*
                                                IKE_PROCESS_MAIN_MODE
Dec 31 01:18:52.254: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM4  New State = IKE_I_MM4*
                     Dec 31 01:18:52.262: ISAKMP:(0:1:SW:1):Send initial contact*
             Dec 31 01:18:52.262: ISAKMP:(0:1:SW:1):SA is doing pre-shared key*
                                                authentication using id type ID_IPV4_ADDR
                          Dec 31 01:18:52.266: ISAKMP (0:134217729): ID payload*
                                                next-payload : 8
                                                type         : 1
                                             address      : 172.16.1.3
                                                protocol     : 17
```

```
                                                    port         : 500
                                                     length       : 12
                        Dec 31 01:18:52.266: ISAKMP:(0:1:SW:1):Total payload length: 12*
          Dec 31 01:18:52.266: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my_port 5*
                                                  peer_port 500 (I) MM_KEY_EXCH 00
Dec 31 01:18:52.270: ISAKMP:(0:1:SW:1):Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE*
   Dec 31 01:18:52.270: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM4  New State = IKE_I_MM5*
          Dec 31 01:18:52.342: ISAKMP (0:134217729): received packet from 192.168.1.2 dpo*
                                                 rt 500 sport 500 Global (I) MM_KEY_EXCH
            Dec 31 01:18:52.342: ISAKMP:(0:1:SW:1): processing ID payload. message ID = 0*
                                Dec 31 01:18:52.342: ISAKMP (0:134217729): ID payload*
                                                     next-payload : 8
                                                     type         : 1
                                               address      : 192.168.1.2
                                                     protocol     : 17
                                                    port         : 500
                                                     length       : 12
             Dec 31 01:18:52.342: ISAKMP:(0:1:SW:1):: peer matches *none* of the profiles*
          Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1): processing HASH payload. message ID = 0*
                                      Dec 31 01:18:52.346: ISAKMP:received payload type 17*
                        Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1): processing vendor id payload*
                                   Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1): vendor ID is DPD*
           Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1):SA authentication status: authenticated*
        Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1):SA has been authenticated with 192.168.1.2*
          Dec 31 01:18:52.346: ISAKMP: Trying to insert a peer 172.16.1.3/192.168.1.2/500*
                                                 .and inserted successfully 64DC2CB4  ,/
          Dec 31 01:18:52.346: ISAKMP:(0:1:SW:1):Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH*
               = Dec 31 01:18:52.350: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM5  New State*
                                                                          IKE_I_MM6
                       ,Dec 31 01:18:52.350: ISAKMP:(0:1:SW:1):Input = IKE_MESG_INTERNAL*
                                                                 IKE_PROCESS_MAIN_MODE
   Dec 31 01:18:52.350: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM6  New State = IKE_I_MM6*
                       ,Dec 31 01:18:52.354: ISAKMP:(0:1:SW:1):Input = IKE_MESG_INTERNAL*
                                                               IKE_PROCESS_COMPLETE
               = Dec 31 01:18:52.354: ISAKMP:(0:1:SW:1):Old State = IKE_I_MM6  New State*
                                                                       IKE_P1_COMPLETE
                Dec 31 01:18:52.358: ISAKMP:(0:1:SW:1):beginning Quick Mode exchange, M-ID*
                                                                       of 1270905456
          Dec 31 01:18:52.362: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my_port 5*
                                                        peer_port 500 (I) QM_IDLE 00
                        = Dec 31 01:18:52.362: ISAKMP:(0:1:SW:1):Node 1270905456, Input*
                                                      IKE_MESG_INTERNAL, IKE_INIT_QM
                        Dec 31 01:18:52.362: ISAKMP:(0:1:SW:1):Old State = IKE_QM_READY*
                                                               New State = IKE_QM_I_QM1
                       ,Dec 31 01:18:52.362: ISAKMP:(0:1:SW:1):Input = IKE_MESG_INTERNAL*
                                                                 IKE_PHASE1_COMPLETE
                      Dec 31 01:18:52.366: ISAKMP:(0:1:SW:1):Old State = IKE_P1_COMPLETE*
                                                      New State = IKE_P1_COMPLETE

          Dec 31 01:18:52.374: ISAKMP (0:134217729): received packet from 192.168.1.2 dpo*
                                                        rt 500 sport 500 Global (I) QM_IDLE
                       .Dec 31 01:18:52.378: ISAKMP:(0:1:SW:1): processing HASH payload*
                                                               message ID = 1270905456
                         .Dec 31 01:18:52.378: ISAKMP:(0:1:SW:1): processing SA payload*
                                                               message ID = 1270905456
                        Dec 31 01:18:52.378: ISAKMP:(0:1:SW:1):Checking IPSec proposal 1*
                                     Dec 31 01:18:52.378: ISAKMP: transform 1, ESP_3DES*
                                  :Dec 31 01:18:52.378: ISAKMP:   attributes in transform*
                                Dec 31 01:18:52.378: ISAKMP:      SA life type in seconds*
                      Dec 31 01:18:52.378: ISAKMP:      SA life duration (basic) of 3600*
                             Dec 31 01:18:52.378: ISAKMP:      SA life type in kilobytes*
           Dec 31 01:18:52.378: ISAKMP:      SA life duration (VPI) of  0x0 0x46 0x50 0x0*
                                 (Dec 31 01:18:52.378: ISAKMP:      encaps is 1 (Tunnel*
                             Dec 31 01:18:52.382: ISAKMP:      authenticator is HMAC-MD5*
```

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.Dec 31 01:18:52.382: ISAKMP:(0:1:SW:1):atts are acceptable*
.Dec 31 01:18:52.382: ISAKMP:(0:1:SW:1): processing NONCE payload*
                                                message ID =1270905456
.Dec 31 01:18:52.382: ISAKMP:(0:1:SW:1): processing ID payload*
                                                message ID = 1270905456
.Dec 31 01:18:52.382: ISAKMP:(0:1:SW:1): processing ID payload*
                                                message ID = 1270905456
,Dec 31 01:18:52.386: ISAKMP: Locking peer struct 0x64DC2CB4*
                                        IPSEC refcount 1 for for stuff_ke
Dec 31 01:18:52.390: ISAKMP:(0:1:SW:1): Creating IPSec SAs*
Dec 31 01:18:52.390:         inbound SA from 192.168.1.2 to 172.16.1.3 (f/i)  0*
                                                                      0 /
                                        (proxy 10.2.2.0 to 10.1.1.0)
Dec 31 01:18:52.390:         has spi 0x9AC1E72C and conn_id 0 and flags 2*
Dec 31 01:18:52.390:         lifetime of 3600 seconds*
Dec 31 01:18:52.390:         lifetime of 4608000 kilobytes*
Dec 31 01:18:52.390:         has client flags 0x0*
Dec 31 01:18:52.390:         outbound SA from 172.16.1.3 to 192.168.1.2 (f/i) 0*
                                                                      0/
                                        (proxy 10.1.1.0 to 10.2.2.0)
Dec 31 01:18:52.394:         has spi -1006743632 and conn_id 0 and flags A*
Dec 31 01:18:52.394:         lifetime of 3600 seconds*
Dec 31 01:18:52.394:         lifetime of 4608000 kilobytes*
Dec 31 01:18:52.394:         has client flags 0x0*
Dec 31 01:18:52.394: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my_port 5*
                                                peer_port 500 (I) QM_IDLE 00
Dec 31 01:18:52.398: ISAKMP:(0:1:SW:1):deleting node 1270905456 error*
                                                "FALSE reason "No Error
= Dec 31 01:18:52.398: ISAKMP:(0:1:SW:1):Node 1270905456, Input*
                                        IKE_MESG_FROM_PEER, IKE_QM_EXCH
Dec 31 01:18:52.398: ISAKMP:(0:1:SW:1):Old State = IKE_QM_I_QM1*
                                        New State = IKE_QM_PHASE2_COMPLETE
Dec 31 01:18:52.402: ISAKMP: Locking peer struct 0x64DC2CB4, IPSEC*
                                        refcount 2 for from create_transforms
Dec 31 01:18:52.402: ISAKMP: Unlocking IPSEC struct 0x64DC2CB4 from*
                                                create_transforms, count 1
Dec 31 01:19:06.130: ISAKMP (0:134217729): received packet from 192.168.1.2 dpo*
                                        rt 500 sport 500 Global (I) QM_IDLE
Dec 31 01:19:06.130: ISAKMP: set new node 372376968 to QM_IDLE*
.Dec 31 01:19:06.130: ISAKMP:(0:1:SW:1): processing HASH payload*
                                                message ID = 372376968
Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1): processing NOTIFY DPD/R_U_THERE protocol 1*
                                spi 0, message ID = 372376968, sa = 640D2660
Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1):deleting node 372376968 error*
                                        "FALSE reason "Informational (in) state 1
,Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1):Input = IKE_MESG_FROM_PEER*
                                                IKE_INFO_NOTIFY
Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1):Old State = IKE_P1_COMPLETE*
                                        New State = IKE_P1_COMPLETE

Dec 31 01:19:06.134: ISAKMP:(0:1:SW:1):DPD/R_U_THERE received from*
                                        peer 192.168.1.2, sequence 0x7E805468
Dec 31 01:19:06.138: ISAKMP: set new node 2096423279 to QM_IDLE*
Dec 31 01:19:06.138: ISAKMP:(0:1:SW:1):Sending NOTIFY DPD/R_U_THERE_ACK protocol 1*
                                spi 1689358936, message ID = 2096423279
Dec 31 01:19:06.138: ISAKMP:(0:1:SW:1): seq. no 0x7E805468*
Dec 31 01:19:06.138: ISAKMP:(0:1:SW:1): sending packet to 192.168.1.2 my_port 5*
                                        peer_port 500 (I) QM_IDLE 00
Dec 31 01:19:06.142: ISAKMP:(0:1:SW:1):purging node 2096423279*
,Dec 31 01:19:06.142: ISAKMP:(0:1:SW:1):Input = IKE_MESG_FROM_PEER*
                                                IKE_MESG_KEEP_ALIVE
Dec 31 01:19:06.142: ISAKMP:(0:1:SW:1):Old State = IKE_P1_COMPLETE*
                                        New State = IKE_P1_COMPLETE
```

```
Router#debug crypto ipsec
, :(Dec 31 01:29:05.402: IPSEC(sa_request*
,key eng. msg.) OUTBOUND local= 172.16.1.3, remote= 192.168.1.2)
,(local_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4
,(remote_proxy= 10.2.2.0/255.255.255.0/0/0 (type=4
,(protocol= ESP, transform= esp-3des esp-md5-hmac  (Tunnel
,lifedur= 3600s and 4608000kb
spi= 0xB857E226(3092767270), conn_id= 0, keysize= 0, flags= 0x400A
,Dec 31 01:29:05.774: IPSEC(validate_proposal_request): proposal part #1*
,key eng. msg.) INBOUND local= 172.16.1.3, remote= 192.168.1.2)
,(local_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4
,(remote_proxy= 10.2.2.0/255.255.255.0/0/0 (type=4
,(protocol= ESP, transform= esp-3des esp-md5-hmac  (Tunnel
,lifedur= 0s and 0kb
spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x2
Dec 31 01:29:05.778: Crypto mapdb : proxy_match*
src addr     : 10.1.1.0
dst addr     : 10.2.2.0
protocol     : 0
src port     : 0
dst port     : 0
Dec 31 01:29:05.782: IPSEC(key_engine): got a queue event with 2 kei messages*
, :(Dec 31 01:29:05.782: IPSEC(initialize_sas*
,key eng. msg.) INBOUND local= 172.16.1.3, remote= 192.168.1.2)
,(local_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4
,(remote_proxy= 10.2.2.0/255.255.255.0/0/0 (type=4
,(protocol= ESP, transform= esp-3des esp-md5-hmac  (Tunnel
,lifedur= 3600s and 4608000kb
spi= 0xB857E226(3092767270), conn_id= 0, keysize= 0, flags= 0x2
, :(Dec 31 01:29:05.786: IPSEC(initialize_sas*
,key eng. msg.) OUTBOUND local= 172.16.1.3, remote= 192.168.1.2)
,(local_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4
,(remote_proxy= 10.2.2.0/255.255.255.0/0/0 (type=4
,(protocol= ESP, transform= esp-3des esp-md5-hmac  (Tunnel
,lifedur= 3600s and 4608000kb
spi= 0x97550AC8(2538932936), conn_id= 0, keysize= 0, flags= 0xA
Dec 31 01:29:05.786: Crypto mapdb : proxy_match*
src addr     : 10.1.1.0
dst addr     : 10.2.2.0
protocol     : 0
src port     : 0
dst port     : 0
Dec 31 01:29:05.786: IPSEC(crypto_ipsec_sa_find_ident_head): reconnecting with*
the same proxies and 192.168.1.2
Dec 31 01:29:05.786: IPSec: Flow_switching Allocated flow for sibling 80000006*
Dec 31 01:29:05.786: IPSEC(policy_db_add_ident): src 10.1.1.0, dest 10.2.2.0, d*
est_port 0

,Dec 31 01:29:05.790: IPSEC(create_sa): sa created*
,sa) sa_dest= 172.16.1.3, sa_proto= 50)
,(sa_spi= 0xB857E226(3092767270
sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 2001
,Dec 31 01:29:05.790: IPSEC(create_sa): sa created*
,sa) sa_dest= 192.168.1.2, sa_proto= 50)
,(sa_spi= 0x97550AC8(2538932936
sa_trans= esp-3des esp-md5-hmac , sa_conn_id= 2002
```

معلومات ذات صلة

- جدران الحماية من الجيل التالي من Cisco ASA 5500-X Series
- مراجع أوامر ASA من Cisco
- صفحة دعم مفاوضة IPSec/بروتوكولات IKE
- طلبات التعليقات (RFCs)
- الدعم التقني والمستندات - Cisco Systems

حول هذه الترجمة
ترجمت Cisco هذا المستند باستخدام مجموعة من التقنيات الآلية والبشرية لتقديم محتوى دعم للمستخدمين في جميع أنحاء العالم بلغتهم الخاصة. يُرجى ملاحظة أن أفضل ترجمة آلية لن تكون دقيقة كما هو الحال مع الترجمة الاحترافية التي يقدمها مترجم محترف. تخلي Cisco Systems مسئوليتها عن دقة هذه الترجمات وتُوصي بالرجوع دائمًا إلى المستند الإنجليزي الأصلي (الرابط متوفر).