تكوين مرجع شهادات الهوية المتعددة على موجهات Cisco IOS

المحتويات

المقدمة

يصف هذا وثيقة كيف أن يشكل cisco IOS® مسحاج تخديد أن يساند يتعدد هوية هيئة شهادة (CA). في بعض الحالات، مثل مشروع مشترك بين شركتين أو وحدتين من وحدات العمل، تحتاج الموجهات على كل جانب (التي تسجل إلى وحدات CA مختلفة ليس لها أي علاقة ثقة) إلى الاتصال باستخدام شبكات VPN الخاصة ببروتوكول IPSec. قد يحتاج موجه الحافة أن يكون لديه مجموعتان من شهادات الهوية للاتصال بالموجهات على كل من مجالات CA. يوضح هذا المستند كيفية تسجيل موجه Cisco إلى خوادم CA مختلفة للحصول على شهادات هوية متعددة، ويتم توفير التحقق باستخدام مثال بسيط.

المتطلبات الأساسية

المتطلبات

يتم تقديم الميزة في برنامج Cisco IOS® الإصدار 12.2(2)T. لن تتمكن الإصدارات السابقة من البرنامج من إستخدام التكوين الموضح في هذا المستند.

المكونات المستخدمة

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

- cisco 7200 مسحاج تخديد مع cisco ios برمجية إطلاق 12.2(4)T1

- خادم Microsoft CA على خادم Windows 2000
- إنشاء خادم CA على خادم Windows NT

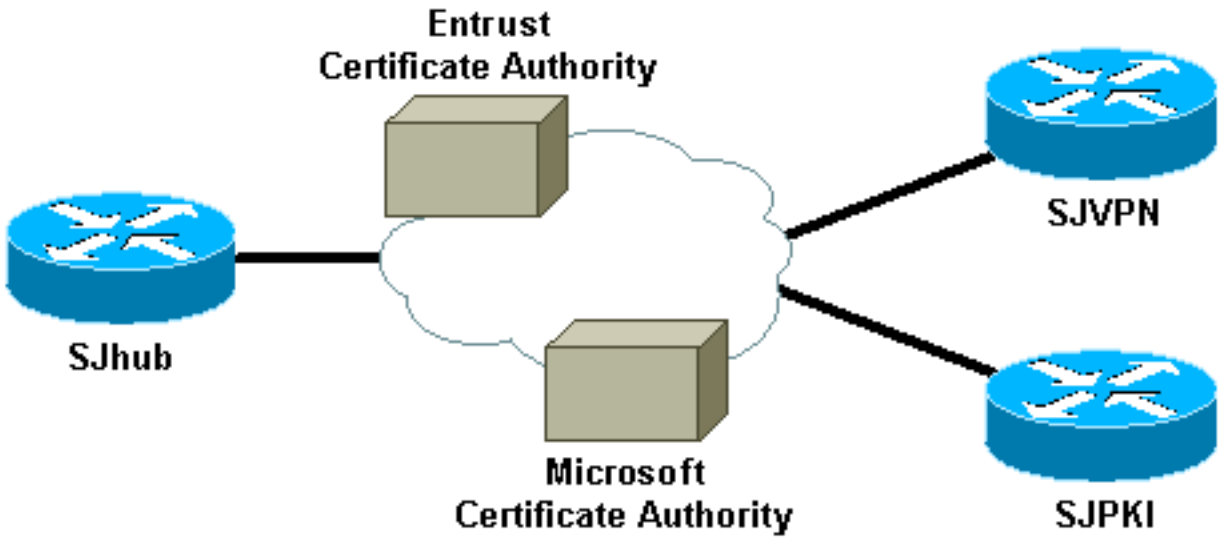
تم إنشاء المعلومات الواردة في هذا المستند من الأجهزة الموجودة في بيئة معملية خاصة. بدأت جميع الأجهزة المستخدمة في هذا المستند بتكوين ممسوح (افتراضي). إذا كانت شبكتك مباشرة، فتأكد من فهمك للتأثير المحتمل لأي أمر.

الاصطلاحات

للحصول على مزيد من المعلومات حول اصطلاحات المستندات، ارجع إلى اصطلاحات تلميحات Cisco التقنية.

الرسم التخطيطي للشبكة

في المخطط المبين أدناه، تعد SJhub و SJVPN و SJPKI ثلاثة موجهات Cisco 7200 متصلة بالشبكة الأساسية. SJhub هو الموجه الرئيسي، مع شهادات متعددة الهوية من خوادم Entrust CA و Microsoft CA الموجودة في الشبكة الأساسية. يقوم SJVPN بالتسجيل إلى خادم Entrust CA، ويسجل SJPKI إلى خادم Microsoft CA.



تكوين موجه Cisco IOS للحصول على شهادات متعددة

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

ملاحظة: للعثور على معلومات إضافية حول الأوامر المستخدمة في هذا المستند، أستخدم أداة بحث الأوامر (للعملاء المسجلين فقط).

ملاحظة: تم تضمين بعض المخرجات الموضحة في الإجراء أدناه بعدة سطور لاعتبارات المسافات.

1. قم بإنشاء مفاتيح RSA على الموجه.

```
SJhub#configure terminal
.Enter configuration commands, one per line. End with CNTL/Z
SJhub(config)#ip domain-name sjtac.com
SJhub(config)#crypto key generate rsa
The name for the keys will be: SJhub.sjtac.com
Choose the size of the key modulus in the range of 360 to 2048 for your
 General Purpose Keys. Choosing a key modulus greater than 512 may take
.a few minutes

:[How many bits in the modulus [512
```

```
... Generating RSA keys
[OK]
```

2. قم بتحديد هوية CA للتشفير الأول على الموجه. الخادم المستخدم هنا هو خادم Entrust CA.

```
SJhub(config)#crypto ca identity EntrustPKI
SJhub(ca-identity)#enrollment url http://171.69.89.16
SJhub(ca-identity)#enrollment mode ra
SJhub(ca-identity)#query url ldap://171.69.89.16
SJhub(ca-identity)#exit
```

3. احصل على شهادات المرجع المصدق (CA) وهيئة التسجيل (RA) وأدخل الموجه إلى المرجع المصدق (CA) المفوض.

```
SJhub(config)#crypto ca authenticate EntrustPKI
:Certificate has the following attributes
Fingerprint: 1FCDF2C8 2DEDA6AC 4819D4C4 B4CFF2F5
  Do you accept this certificate? [yes/no]: y %

SJhub(config)#crypto ca enroll EntrustPKI
%
.. Start certificate enrollment %
Create a challenge password. You will need to verbally provide this %
.password to the CA Administrator in order to revoke your certificate
.For security reasons your password will not be saved in the configuration
.Please make a note of it

:Password
:Re-enter password

The subject name in the certificate will be: SJhub.sjtac.com %
Include the router serial number in the subject name? [yes/no]: n %
Include an IP address in the subject name? [yes/no]: n %
Request certificate from CA? [yes/no]: y
Certificate request sent to Certificate Authority %
.The certificate request fingerprint will be displayed %
.The 'show crypto ca certificate' command will also show the fingerprint %


SJhub(config)# Fingerprint: B530BB30 70D2C565 E6F20A88 BB86A75A
```

4. تحقق من الشهادات.

```
SJhub#show crypto ca certificates
Certificate
Status: Available
Certificate Serial Number: 3B2FD63F
Key Usage: General Purpose
:Issuer
OU = sjvpn
O = cisco
C = us
:Subject Name Contains
Name: SJhub.sjtac.com
:CRL Distribution Point
CN = CRL1, OU = sjvpn, O = cisco, C = us
:Validity Date
start date: 21:48:52 UTC Jan 9 2002
end date: 22:18:52 UTC Jan 9 2003
Associated Identity: EntrustPKI
RA Signature Certificate
Status: Available
Certificate Serial Number: 3B2FD319
Key Usage: Signature
:Issuer
OU = sjvpn
O = cisco
```

```
                                                C = us
                                              :Subject
                                    CN = First Officer
                                           OU = sjvpn
                                            O = cisco
                                              C = us
                                   :CRL Distribution Point
        CN = CRL1, OU = sjvpn, O = cisco, C = us
                                       :Validity Date
            start date: 22:03:31 UTC Jun 19 2001
              end date: 22:33:31 UTC Jun 19 2004
                 Associated Identity: EntrustPKI

                         RA KeyEncipher Certificate
                                  Status: Available
             Certificate Serial Number: 3B2FD318
                           Key Usage: Encryption
                                              :Issuer
                                           OU = sjvpn
                                            O = cisco
                                              C = us
                                             :Subject
                                    CN = First Officer
                                           OU = sjvpn
                                            O = cisco
                                              C = us
                                   :CRL Distribution Point
        CN = CRL1, OU = sjvpn, O = cisco, C = us
                                       :Validity Date
            start date: 22:03:31 UTC Jun 19 2001
              end date: 22:33:31 UTC Jun 19 2004
                 Associated Identity: EntrustPKI

                                    CA Certificate
                                  Status: Available
             Certificate Serial Number: 3B2FD307
                           Key Usage: General Purpose
                                              :Issuer
                                           OU = sjvpn
                                            O = cisco
                                              C = us
                                             :Subject
                                           OU = sjvpn
                                            O = cisco
                                              C = us
                                   :CRL Distribution Point
        CN = CRL1, OU = sjvpn, O = cisco, C = us
                                       :Validity Date
            start date: 22:02:40 UTC Jun 19 2001
              end date: 22:32:40 UTC Jun 19 2021
                 Associated Identity: EntrustPKI
```

5. قم بتحديد هوية المرجع المصدق (CA) المشفرة للمرجع المصدق الثاني على الموجه. يتم إستخدام خادم Microsoft CA هنا.

```
SJhub(config)#crypto ca identity MicrosoftCA
SJhub(ca-identity)#enrollment url
$.http://171.69.89.182:80/certsrv/mscep/mscep
SJhub(ca-identity)#enrollment mode ra
SJhub(ca-identity)#query url ldap://171.69.89.182
SJhub(ca-identity)#exit
```

6. الحصول على شهادات CA و RA من خادم Microsoft CA.

```
SJhub(config)#crypto ca authenticate MicrosoftCA
```

```
:Certificate has the following attributes
Fingerprint: 5FC47E85 9A2724A2 7242F172 BFB87F7E
Do you accept this certificate? [yes/no]: y %
```

7. التسجيل إلى خادم Microsoft CA والحصول على شهادة هوية الموجه.

```
SJhub(config)#crypto ca enroll MicrosoftCA
%
.. Start certificate enrollment %
Create a challenge password. You will need to verbally provide this %
.password to the CA Administrator in order to revoke your certificate
.For security reasons your password will not be saved in the configuration
.Please make a note of it
:Password
:Re-enter password

The subject name in the certificate will be: SJhub.sjtac.com %
Include the router serial number in the subject name? [yes/no]: n %
Include an IP address in the subject name? [yes/no]: n %
Request certificate from CA? [yes/no]: y
Certificate request sent to Certificate Authority %
.The certificate request fingerprint will be displayed %
.The 'show crypto ca certificate' command will also show the fingerprint %

SJhub(config)# Fingerprint: 4046052F 2D32A725 235D55E9 694DF3EA
```

8. تحقق من الشهادات. يجب أن ترى مجموعتين من الشهادات.

```
SJhub#show crypto ca certificates
Certificate
Status: Available
Certificate Serial Number: 132BD14C000000000000B
Key Usage: General Purpose
:Issuer
CN = SJPKICA
OU = SJPKI
O = SJTAC
L = SAN JOSE
ST = CA
C = US
:Subject Name Contains
Name: SJhub.sjtac.com
:CRL Distribution Point
,ldap:///CN=SJPKICA,CN=sjvpnmspki,CN=CDP,CN=Public%20Key%20Services
,CN=Services, CN=Configuration,DC=sjpki
?DC=com?certificateRevocationList?base
objectclass=cRLDistributionPoint
:Validity Date
start date: 18:36:23 UTC Jan 13 2002
end date: 18:36:23 UTC Jan 13 2004
Associated Identity: MicrosoftCA
RA Signature Certificate
Status: Available
Certificate Serial Number: 054E60AD000000000002
Key Usage: Signature
:Issuer
CN = SJPKICA
OU = SJPKI
O = SJTAC
L = SAN JOSE
ST = CA
C = US
:Subject
CN = SJVPNRA
OU = SJPKI
O = SJTAC
L = SAN JOSE
```

ST = CA
C = US
:CRL Distribution Point
,ldap:///CN=SJPKICA,CN=sjvpnmspki,CN=CDP,CN=Public%20Key%20Services
,CN=Services,CN=Configuration,DC=sjpki
?DC=com?certificateRevocationList?base
objectclass=cRLDistributionPoint
:Validity Date
start date: 01:59:27 UTC Jan 11 2002
end date: 01:59:27 UTC Jan 11 2004
Associated Identity: MicrosoftCA

RA KeyEncipher Certificate
Status: Available
Certificate Serial Number: 054E63CE000000000003
Key Usage: Encryption
:Issuer
CN = SJPKICA
OU = SJPKI
O = SJTAC
L = SAN JOSE
ST = CA
C = US
:Subject
CN = SJVPNRA
OU = SJPKI
O = SJTAC
L = SAN JOSE
ST = CA
C = US
:CRL Distribution Point
,ldap:///CN=SJPKICA,CN=sjvpnmspki,CN=CDP,CN=Public%20Key%20Services
,CN=Services,CN=Configuration,DC=sjpki
?DC=com?certificateRevocationList?base
objectclass=cRLDistributionPoint
:Validity Date
start date: 01:59:28 UTC Jan 11 2002
end date: 01:59:28 UTC Jan 11 2004
Associated Identity: MicrosoftCA

CA Certificate
Status: Available
Certificate Serial Number: 091B47AEE8CFE2A94D3E8B38F292F5AF
Key Usage: General Purpose
:Issuer
CN = SJPKICA
OU = SJPKI
O = SJTAC
L = SAN JOSE
ST = CA
C = US
:Subject
CN = SJPKICA
OU = SJPKI
O = SJTAC
L = SAN JOSE
ST = CA
C = US
:CRL Distribution Point
,ldap:///CN=SJPKICA,CN=sjvpnmspki,CN=CDP,CN=Public%20Key%20Services
,CN=Services,CN=Configuration,DC=sjpki
?DC=com?certificateRevocationList?base
objectclass=cRLDistributionPoint
:Validity Date

start date: 01:51:39 UTC Jan 11 2002
end date: 02:00:04 UTC Jan 11 2007
Associated Identity: MicrosoftCA

CA Certificate
Status: Available
Certificate Serial Number: 3B2FD307
Key Usage: General Purpose
:Issuer
OU = sjvpn
O = cisco
C = us
:Subject
OU = sjvpn
O = cisco
C = us
:CRL Distribution Point
CN = CRL1, OU = sjvpn, O = cisco, C = us
:Validity Date
start date: 22:02:40 UTC Jun 19 2001
end date: 22:32:40 UTC Jun 19 2021
Associated Identity: EntrustPKI

RA KeyEncipher Certificate
Status: Available
Certificate Serial Number: 3B2FD318
Key Usage: Encryption
:Issuer
OU = sjvpn
O = cisco
C = us
:Subject
CN = First Officer
OU = sjvpn
O = cisco
C = us
:CRL Distribution Point
CN = CRL1, OU = sjvpn, O = cisco, C = us
:Validity Date
start date: 22:03:31 UTC Jun 19 2001
end date: 22:33:31 UTC Jun 19 2004
Associated Identity: EntrustPKI

RA Signature Certificate
Status: Available
Certificate Serial Number: 3B2FD319
Key Usage: Signature
:Issuer
OU = sjvpn
O = cisco
C = us
:Subject
CN = First Officer
OU = sjvpn
O = cisco
C = us
:CRL Distribution Point
CN = CRL1, OU = sjvpn, O = cisco, C = us
:Validity Date
start date: 22:03:31 UTC Jun 19 2001
end date: 22:33:31 UTC Jun 19 2004
Associated Identity: EntrustPKI

Certificate

```
                                Status: Available
                Certificate Serial Number: 3B2FD63F
                        Key Usage: General Purpose
                                          :Issuer
                                    OU = sjvpn
                                    O = cisco
                                       C = us
                                :Subject Name Contains
                                 Name: SJhub.sjtac.com
                                :CRL Distribution Point
            CN = CRL1, OU = sjvpn, O = cisco, C = us
                                     :Validity Date
                start date: 21:48:52 UTC Jan 9 2002
                  end date: 22:18:52 UTC Jan 9 2003
                    Associated Identity: EntrustPKI
```

التحقق من الصحة

يستخدم هذا القسم إعداد بسيط للتحقق من كيفية معالجة موجهات IOS لشهادات هوية متعددة. يوضح الرسم التخطيطي للشبكة أعلاه ثلاثة موجهات طراز 7200 تعمل على تكوين مخطط محوري. يحتوي موجه الموزع (SJhub) على شهادة هوية - واحدة من خادم Entrust CA وواحدة من خادم Microsoft CA. يحتوي الموجه المتكلم (SJVPN) على شهادة هوية من خادم Entrust CA نفسه، بينما يحتوي الموجه المتكلم الآخر (SJPKI) على شهادة هوية من خادم Microsoft CA نفسه. في هذا المثال، يحاكي موجه الموزع نقطة الربط بين شركتين في مشروع مشترك، وبمساعدة دعم CA متعدد الهويات، يمكن للمحور الاتصال بأي من الجانبين على الرغم من تسجيل الفروع إلى مرجع مصدق مختلف.

أمثلة التكوين

يتم سرد تكوينات جميع الموجهات أدناه كمرجع.

- SJhub
- سجي في بي إن
- سجي بي كي

SJhub (موجه الموزع)

```
                                SJhub#write terminal
                              ...Building configuration

                          Current configuration : 19665 bytes
                                                          !
Last configuration change at 18:40:55 UTC Sun Jan 13 !
                                                       2002
NVRAM config last updated at 18:41:45 UTC Sun Jan 13 !
                                                       2002
                                                          !
                                       version 12.2
                                   no parser cache
                          service timestamps debug uptime
                            service timestamps log uptime
                          no service password-encryption
                                                          !
                                       hostname SJhub
                                                          !
                                   enable password cisco
                                                          !
                                    ip subnet-zero
```

```
                                                ip cef
                                                !
                                                !
                  ip telnet source-interface Loopback88
                                     no ip domain-lookup
                                ip domain-name sjtac.com
                                                !
                                     ip audit notify log
                                ip audit po max-events 100
                                     ip ssh time-out 120
                           ip ssh authentication-retries 3
                                                !
                             crypto ca identity EntrustPKI
                                     enrollment mode ra
                  enrollment url http://171.69.89.16:80
                            query url ldap://171.69.89.16
                                                !
                            crypto ca identity MicrosoftCA
                                     enrollment mode ra
                                         enrollment url
        http://171.69.89.182:80/certsrv/mscep/mscep.dll
                           query url ldap://171.69.89.182
                                           crl optional
                  crypto ca certificate chain EntrustPKI
                                  certificate ca 3B2FD307
308202E4 3082024D A0030201 0202043B 2FD30730 0D06092A
                                           864886F7 0D010105
0500302D 310B3009 06035504 06130275 73310E30 0C060355
                                           040A1305 63697363
6F310E30 0C060355 040B1305 736A7670 6E301E17 0D303130
                                           36313932 32303234
305A170D 32313036 31393232 33323430 5A302D31 0B300906
                                           03550406 13027573
310E300C 06035504 0A130563 6973636F 310E300C 06035504
                                           0B130573 6A76706E
  30819F30 0D06092A 864886F7 0D010101 05000381 8D003081
                                           89028181 00E8C25B
EDF4A6EE A352B142 C16578F4 FBDAF45E 4F2F7733 8D2B8879
                                           96138C63 1DB713BF
753BF845 2D7E600F AAF4D75B 9E959513 BB13FF13 36696F48
                                           86C464F2 CF854A66
4F8E83F8 025F216B A44D4BB2 39ADD1A5 1BCCF812 09A19BDC
                                           468EEAE1 B6C2A378
69C81348 1A9CD61C 551216F2 8B168FBB 94CBEF37 E1D9A8F7
                                           80BBC17F D1020301
0001A382 010F3082 010B3011 06096086 480186F8 42010104
                                           04030200 07304F06
03551D1F 04483046 3044A042 A040A43E 303C310B 30090603
                                           55040613 02757331
0E300C06 0355040A 13056369 73636F31 0E300C06 0355040B
                                           1305736A 76706E31
0D300B06 03550403 13044352 4C31302B 0603551D 10042430
                                           22800F32 30303130
305A810F 32303231 30363139 32323332 32303234 36313932
                                           34305A30 0B060355
1D0F0404 03020106 301F0603 551D2304 18301680 1446C160
                                           9CDBEA53 EE80A480
601A9658 3B0DF80D 2F301D06 03551D0E 04160414 46C1609C
                                           DBEA53EE 80A48060
1A96583B 0DF80D2F 300C0603 551D1304 05300301 01FF301D
                                           06092A86 4886F67D
10300E1B 0856352E 303A342E 30030204 90300D06 07410004
                                           092A8648 86F70D01
7E3DBAC4 8CAE7D5A B19C0625 8780D222 03818100 01050500
```

```
                                                F965A1A2 C0C25B84
CBC5A203 BF50FAC4 9656699A 52D8CB46 40776237 87163118
                                                8F3C0F47 D2CAA36B
6AB34F99 AB71269E 78C0AC10 DA0B9EC5 AE448B46 701254CF
                                                3EBC64C1 5DBB2EE5
56C0140B B0C83497 D79FB148 80018F51 3A4B6174 590B85AA
                                                9CE3B391 629406AA
                                               7CE9CC0D 01593E6B
                                                              quit
                         certificate ra-encrypt 3B2FD318
308202D0 30820239 A0030201 0202043B 2FD31830 0D06092A
                                                864886F7 0D010105
0500302D 310B3009 06035504 06130275 73310E30 0C060355
                                                040A1305 63697363
6F310E30 0C060355 040B1305 736A7670 6E301E17 0D303130
                                                36313932 32303333
315A170D 30343036 31393232 33333331 5A304531 0B300906
                                                03550406 13027573
310E300C 06035504 0A130563 6973636F 310E300C 06035504
                                                0B130573 6A76706E
03130D46 69727374 204F6666 69636572 06035504 31163014
                                                30819F30 0D06092A
864886F7 0D010101 05000381 8D003081 89028181 00BFC427
                                                727E15E9 30CB1BCB
C0EFFB2F 3E4916D4 EC365F57 C13D1356 6388E66D 7BCCBCB9
                                                04DA2E7C C9639F31
AF15E7B1 E698A33C 0EB447E4 B3B72EC8 766EADCF 9883E612
                                                AD782E39 B0603A90
0322CE78 D6735E07 BDC022F1 1164EC9E 31FC5309 9AA9DC1D
                                                69ECC316 8727A6CB
ADCFB488 FF904D6D 9D9E5778 05B24D4B BB5B4F5F 4D020301
                                                0001A381 E43081E1
300B0603 551D0F04 04030205 20301B06 03551D09 04143012
                                                30100609 2A864886
F67D0744 1D310302 0100304F 0603551D 1F044830 463044A0
                                                42A040A4 3E303C31
0B300906 03550406 13027573 310E300C 06035504 0A130563
                                                6973636F 310E300C
0B130573 6A76706E 310D300B 06035504 03130443 06035504
                                                524C3130 1F060355
1D230418 30168014 46C1609C DBEA53EE 80A48060 1A96583B
                                                0DF80D2F 301D0603
551D0E04 16041400 A7C3DD9F 9FAB0A25 E1485FC7 DB88A63F
                                                78CE4830 09060355
1D130402 30003019 06092A86 4886F67D 07410004 0C300A1B
                                                0456352E 30030204
B0300D06 092A8648 86F70D01 01050500 03818100 69105382
                                                0BE0BA59 B0CD2652
9C6A4585 940C7882 DCEB1D1E 610B8525 0C032A76 2C8758C2
                                                F5CA1EF4 B946848A
C49047D5 6D1EF218 FA082A00 16CCD9FC 42DF3B05 A8EF2AAD
                                                151637DE 67885BB2
BA0BB6A1 308F63FF 21C3CB00 9272257A 3C292645 FD62D486
                                                C247F067 301C2FEE
         5CF6D12B 6CFA1DAA E74E8B8E 5B017A2E 5BB6C5F9
                                                              quit
                              certificate ra-sign 3B2FD319
  308202FF 30820268 A0030201 0202043B 2FD31930 0D06092A
                                                864886F7 0D010105
0500302D 310B3009 06035504 06130275 73310E30 0C060355
                                                040A1305 63697363
6F310E30 0C060355 040B1305 736A7670 6E301E17 0D303130
                                                36313932 32303333
315A170D 30343036 31393232 33333331 5A304531 0B300906
```

```
                                                  03550406 13027573
310E300C 06035504 0A130563 6973636F 310E300C 06035504
                                                  0B130573 6A76706E
03130D46 69727374 204F6666 69636572 06035504 31163014
                                                  30819F30 0D06092A
864886F7 0D010101 05000381 8D003081 89028181 00E85434
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                                                      quit
                                                         !
                                     crypto isakmp policy 1
                                                 hash md5
                                                         !
                           crypto isakmp identity hostname
                                crypto isakmp keepalive 10
                                                         !
                                                         !
  crypto ipsec transform-set myset esp-des esp-md5-hmac
       crypto mib ipsec flowmib history tunnel size 200
      crypto mib ipsec flowmib history failure size 200
                                                         !
                            crypto map vpn 10 ipsec-isakmp
                                    set peer 172.16.172.52
                                  set transform-set myset
                                        match address 101
                            crypto map vpn 20 ipsec-isakmp
                                    set peer 172.16.172.10
                                  set transform-set myset
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                                        match address 102
                                                        !
                                                        !
                                        interface Loopback1
                        ip address 20.1.1.1 255.255.255.0
                                                        !
                                        interface Loopback88
                                              no ip address
                                                        !
                                    interface FastEthernet0/0
                                              no ip address
                                               no keepalive
                                                   shutdown
                                                duplex half
                                             media-type MII
                                                        !
                                        interface Ethernet4/0
                  ip address 172.16.172.69 255.255.255.240
                                 ip route-cache same-interface
                                       no ip mroute-cache
                                                duplex half
                                            crypto map vpn
                                                        !
                                        interface Ethernet4/1
                                              no ip address
                                                duplex half
                                                        !
                                        interface Ethernet4/2
                                              no ip address
                                                   shutdown
                                                duplex half
                                                        !
                                        interface Ethernet4/3
                                              no ip address
                                                   shutdown
                                                duplex half
                                                        !
                          ip default-gateway 172.16.172.65
                                                ip classless
                    ip route 0.0.0.0 0.0.0.0 172.16.172.65
                                              ip http server
                                     ip pim bidir-enable
                                                        !
access-list 101 permit ip 20.1.1.0 0.0.0.255 50.1.1.0
                                                  0.0.0.255
access-list 102 permit ip 20.1.1.0 0.0.0.255 10.1.1.0
                                                  0.0.0.255
                                                        !
                                                        !
                                              call rsvp-sync
                                                        !
                                                        !
                                        mgcp profile default
                                                        !
                                        dial-peer cor custom
                                                        !
                                                        !
                                                        !
                                                        !
                                                gatekeeper
                                                 shutdown
                                                        !
                                                        !
                                               line con 0
```

```
                                        exec-timeout 0 0
                                               line aux 0
                                             line vty 0 4
                                          password cisco
                                                 login
                                           line vty 5 15
                                                 login
                                                     !
                                    no scheduler max-task-time
                                                     !
                                                   end
```

SJVPN (الموجه المتحدث المسجل لخادم Entrust CA)

```
                                        SJVPN#write terminal
                                    ...Building configuration

                                Current configuration : 8980 bytes
                                                     !
Last configuration change at 10:28:19 UTC Sun Jan 13 !
                                                  2002
NVRAM config last updated at 10:28:20 UTC Sun Jan 13 !
                                                  2002
                                                     !
                                               version 12.2
                                service timestamps debug uptime
                                  service timestamps log uptime
                                 no service password-encryption
                                      service udp-small-servers
                                      service tcp-small-servers
                                                no service dhcp
                                                     !
                                             hostname SJVPN
                                                     !
                                         enable password cisco
                                                     !
                                             ip subnet-zero
                                                    ip cef
                                                     !
                                                     !
                                           no ip domain-lookup
                                     ip domain-name sjvpn.com
                                                     !
                                           ip audit notify log
                                    ip audit po max-events 100
                                           ip ssh time-out 120
                                ip ssh authentication-retries 3
                                                     !
                                  crypto ca identity EntrustPKI
                                           enrollment mode ra
                        enrollment url http://171.69.89.16:80
                                 query url ldap://171.69.89.16
                        crypto ca certificate chain EntrustPKI
                                      certificate ca 3B2FD307
308202E4 3082024D A0030201 0202043B 2FD30730 0D06092A
                                        864886F7 0D010105
0500302D 310B3009 06035504 06130275 73310E30 0C060355
                                        040A1305 63697363
6F310E30 0C060355 040B1305 736A7670 6E301E17 0D303130
                                        36313932 32303234
305A170D 32313036 31393232 33323430 5A302D31 0B300906
                                        03550406 13027573
310E300C 06035504 0A130563 6973636F 310E300C 06035504
```

```
                                                 0B130573 6A76706E
30819F30 0D06092A 864886F7 0D010101 05000381 8D003081
                                                 89028181 00E8C25B
EDF4A6EE A352B142 C16578F4 FBDAF45E 4F2F7733 8D2B8879
                                                 96138C63 1DB713BF
753BF845 2D7E600F AAF4D75B 9E959513 BB13FF13 36696F48
                                                 86C464F2 CF854A66
4F8E83F8 025F216B A44D4BB2 39ADD1A5 1BCCF812 09A19BDC
                                                 468EEAE1 B6C2A378
  69C81348 1A9CD61C 551216F2 8B168FBB 94CBEF37 E1D9A8F7
                                                 80BBC17F D1020301
0001A382 010F3082 010B3011 06096086 480186F8 42010104
                                                 04030200 07304F06
03551D1F 04483046 3044A042 A040A43E 303C310B 30090603
                                                 55040613 02757331
0E300C06 0355040A 13056369 73636F31 0E300C06 0355040B
                                                 1305736A 76706E31
0D300B06 03550403 13044352 4C31302B 0603551D 10042430
                                                 22800F32 30303130
305A810F 32303231 30363139 32323332 32303234 36313932
                                                 34305A30 0B060355
1D0F0404 03020106 301F0603 551D2304 18301680 1446C160
                                                 9CDBEA53 EE80A480
601A9658 3B0DF80D 2F301D06 03551D0E 04160414 46C1609C
                                                 DBEA53EE 80A48060
1A96583B 0DF80D2F 300C0603 551D1304 05300301 01FF301D
                                                 06092A86 4886F67D
10300E1B 0856352E 303A342E 30030204 90300D06 07410004
                                                 092A8648 86F70D01
7E3DBAC4 8CAE7D5A B19C0625 8780D222 03818100 01050500
                                                 F965A1A2 C0C25B84
CBC5A203 BF50FAC4 9656699A 52D8CB46 40776237 87163118
                                                 8F3C0F47 D2CAA36B
6AB34F99 AB71269E 78C0AC10 DA0B9EC5 AE448B46 701254CF
                                                 3EBC64C1 5DBB2EE5
56C0140B B0C83497 D79FB148 80018F51 3A4B6174 590B85AA
                                                 9CE3B391 629406AA
                                                 7CE9CC0D 01593E6B
                                                          quit
                          certificate ra-encrypt 3B2FD318
308202D0 30820239 A0030201 0202043B 2FD31830 0D06092A
                                                 864886F7 0D010105
0500302D 310B3009 06035504 06130275 73310E30 0C060355
                                                 040A1305 63697363
6F310E30 0C060355 040B1305 736A7670 6E301E17 0D303130
                                                 36313932 32303333
315A170D 30343036 31393232 33333331 5A304531 0B300906
                                                 03550406 13027573
310E300C 06035504 0A130563 6973636F 310E300C 06035504
                                                 0B130573 6A76706E
03130D46 69727374 204F6666 69636572 06035504 31163014
                                                 30819F30 0D06092A
864886F7 0D010101 05000381 8D003081 89028181 00BFC427
                                                 727E15E9 30CB1BCB
C0EFFB2F 3E4916D4 EC365F57 C13D1356 6388E66D 7BCCBCB9
                                                 04DA2E7C C9639F31
AF15E7B1 E698A33C 0EB447E4 B3B72EC8 766EADCF 9883E612
                                                 AD782E39 B0603A90
0322CE78 D6735E07 BDC022F1 1164EC9E 31FC5309 9AA9DC1D
                                                 69ECC316 8727A6CB
ADCFB488 FF904D6D 9D9E5778 05B24D4B BB5B4F5F 4D020301
                                                 0001A381 E43081E1
300B0603 551D0F04 04030205 20301B06 03551D09 04143012
                                                 30100609 2A864886
```

```
F67D0744 1D310302 0100304F 0603551D 1F044830 463044A0
                                                42A040A4 3E303C31
0B300906 03550406 13027573 310E300C 06035504 0A130563
                                                6973636F 310E300C

0B130573 6A76706E 310D300B 06035504 03130443 06035504
                                                524C3130 1F060355
1D230418 30168014 46C1609C DBEA53EE 80A48060 1A96583B
                                                0DF80D2F 301D0603
551D0E04 16041400 A7C3DD9F 9FAB0A25 E1485FC7 DB88A63F
                                                78CE4830 09060355
1D130402 30003019 06092A86 4886F67D 07410004 0C300A1B
                                                0456352E 30030204
B0300D06 092A8648 86F70D01 01050500 03818100 69105382
                                                0BE0BA59 B0CD2652
9C6A4585 940C7882 DCEB1D1E 610B8525 0C032A76 2C8758C2
                                                F5CA1EF4 B946848A
C49047D5 6D1EF218 FA082A00 16CCD9FC 42DF3B05 A8EF2AAD
                                                151637DE 67885BB2
BA0BB6A1 308F63FF 21C3CB00 9272257A 3C292645 FD62D486
                                                C247F067 301C2FEE
         5CF6D12B 6CFA1DAA E74E8B8E 5B017A2E 5BB6C5F9
                                                        quit
                                  certificate ra-sign 3B2FD319
308202FF 30820268 A0030201 0202043B 2FD31930 0D06092A
                                                864886F7 0D010105
0500302D 310B3009 06035504 06130275 73310E30 0C060355
                                                040A1305 63697363
6F310E30 0C060355 040B1305 736A7670 6E301E17 0D303130
                                                36313932 32303333
315A170D 30343036 31393232 33333331 5A304531 0B300906
                                                03550406 13027573
  310E300C 06035504 0A130563 6973636F 310E300C 06035504
                                                0B130573 6A76706E
03130D46 69727374 204F6666 69636572 06035504 31163014
                                                30819F30 0D06092A
864886F7 0D010101 05000381 8D003081 89028181 00E85434
                                                395790E9 416ED13D
72F1A411 333A0984 66B8F68A 0ECA7E2B CBC40C39 A21E2D8A
                                                5F94772D 69846720
E43D46B6 B2D1DDC5 385C5135 DB2075F1 4D252ACF 73227891
                                                AC80DA4C 2111946F
26F7193B 8EA1CA66 8332D2A1 5310B2D7 07C985A8 0B44CE37
                                                BC95EAFF C328D4C6
73B3B35E 0F6D25F5 DCAC6AFA 2DAAD6D1 47BB3396 E1020301
                                                0001A382 01123082
010E300B 0603551D 0F040403 02078030 2B060355 1D100424
                                                3022800F 32303031
33315A81 0F323030 33303732 37303233 32323033 30363139
                                                3333315A 301B0603
551D0904 14301230 1006092A 864886F6 7D07441D 31030201
                                                00304F06 03551D1F
3044A042 A040A43E 303C310B 30090603 55040613 04483046
                                                02757331 0E300C06
0355040A 13056369 73636F31 0E300C06 0355040B 1305736A
                                                76706E31 0D300B06
4C31301F 0603551D 23041830 16801446 13044352 03550403
                                                C1609CDB EA53EE80
A480601A 96583B0D F80D2F30 1D060355 1D0E0416 04147BD2
                                                620C611F 3AC69FB3
155FD8F9 8A7CF353 3A583009 0603551D 13040230 00301906
                                                092A8648 86F67D07
4100040C 300A1B04 56352E30 030204B0 300D0609 2A864886
                                                F70D0101 05050003
```

```
8181003A A6431D7D 1979DDF9 CC99D8F8 CC987F67 DBF67280
                                                2A9418E9 C6255B08
DECDE1C2 50FCB1A6 544F1D51 C214162E E2403DAB 2F1294C4
                                                841240ED FD6F799C
130A0B24 AC74DD74 C60EB5CD EC648631 E0B88B3F 3D19A2E1
                                                6492958E 9F64746E
45C080AE E5A6C245 7827D7B1 380A6FE8 A01D9022 7F52AD9C
                                    B596743A 853549C5 771DA2
                                                        quit
                                             certificate 3B2FD65B
308202C2 3082022B A0030201 0202043B 2FD65B30 0D06092A
                                                864886F7 0D010105
0500302D 310B3009 06035504 06130275 73310E30 0C060355
                                                040A1305 63697363
6F310E30 0C060355 040B1305 736A7670 6E301E17 0D303230
                                                31313132 30313630
385A170D 30333031 31313230 34363038 5A304D31 0B300906
                                                03550406 13027573
310E300C 06035504 0A130563 6973636F 310E300C 06035504
                                                0B130573 6A76706E
311E301C 06092A86 4886F70D 01090216 0F534A56 504E2E73
                                                6A76706E 2E636F6D
305C300D 06092A86 4886F70D 01010105 00034B00 30480241
                                                00EC4BE5 44E6ABC4
404BBBAD FE61E486 F2F85AC5 751EAC1D E68BD930 09958131
                                                A977BA90 13BFD94D
297E41CA 23CDB0A3 EC38A296 49F61BBE 8037C94E F7FF6F35
                                                29020301 0001A382
010D300B 0603551D 0F040403 0205A030 1A060355 01113082
                                                1D110413 3011820F
534A5650 4E2E736A 76706E2E 636F6D30 2B060355 1D100424
                                                3022800F 32303032
30385A81 0F323030 32303932 34303834 32303136 30313131
                                                3630385A 304F0603
551D1F04 48304630 44A042A0 40A43E30 3C310B30 09060355
                                                04061302 7573310E
300C0603 55040A13 05636973 636F310E 300C0603 55040B13
                                                05736A76 706E310D
300B0603 55040313 0443524C 31301F06 03551D23 04183016
                                                801446C1 609CDBEA
53EE80A4 80601A96 583B0DF8 0D2F301D 0603551D 0E041604
                                                14494FC9 CE8C0C8E
2B078D54 EF43111B 3F1FAAB2 8A300906 03551D13 04023000
                                                30190609 2A864886
F67D0741 00040C30 0A1B0456 352E3003 0204B030 0D06092A
                                                864886F7 0D010105
81006C96 16AB6674 1FF8D1AB 27FA7384 0C08272A 05000381
                                                8D68C826 8F80006B
0C146105 2FB8BDF9 CCC85262 2133F1EF FC7AA2F9 48191740
                                                86AFC27C EF5AD773
768C5597 A953316B 839617FE 210B1195 3E5CD64A B643ADFC
                                                43A57C8E 1D56BD39
5812109B 2C8301E1 BC30A6E1 8E634030 1851AC22 CD941F9C
                                                65F21608 0229AFB4
                                                  126FD11A 6825
                                                          quit
                                                            !
                                         crypto isakmp policy 1
                                                      hash md5
                                                            !
                                crypto isakmp identity hostname
                                     crypto isakmp keepalive 10
                                                            !
                                                            !
```

```
crypto ipsec transform-set myset esp-des esp-md5-hmac
crypto mib ipsec flowmib history tunnel size 200
crypto mib ipsec flowmib history failure size 200
!
crypto map vpn 10 ipsec-isakmp
set peer 172.16.172.69
set transform-set myset
match address 101
!
!
!
!
!
!
!
!
!
controller ISA 3/1
!
!
!
!
interface Ethernet1/0
ip address 172.16.172.52 255.255.255.248
no ip redirects
duplex half
crypto map vpn
!
interface Ethernet1/1
ip address 50.1.1.1 255.255.255.0
no ip redirects
duplex half
!
interface Ethernet1/2
no ip address
shutdown
duplex half
!
interface Ethernet1/3
no ip address
shutdown
duplex half
!
ip classless
ip route 0.0.0.0 0.0.0.0 172.16.172.49
no ip http server
ip pim bidir-enable
!
access-list 101 permit ip 50.1.1.0 0.0.0.255 20.1.1.0
0.0.0.255
!
snmp-server community public RO
!
call rsvp-sync
!
!
mgcp profile default
!
dial-peer cor custom
!
!
!
!
gatekeeper
```

```
                                                shutdown
                                                      !
                                                      !
                                                line con 0
                                           exec-timeout 0 0
                                                line aux 0
                                              line vty 0 4
                                            password cisco
                                                   no login
                                             line vty 5 15
                                                   login
                                                      !
                                    no scheduler max-task-time
                                                      !
                                                    end

                        SJVPN#show crypto ca certificates
                                             CA Certificate
                                    Status: Available
                  Certificate Serial Number: 3B2FD307
                           Key Usage: General Purpose
                                                 :Issuer
                                       OU = sjvpn
                                       O = cisco
                                          C = us
                                           :Subject
                                       OU = sjvpn
                                       O = cisco
                                          C = us
                                :CRL Distribution Point
              CN = CRL1, OU = sjvpn, O = cisco, C = us
                                     :Validity Date
            start date: 22:02:40 UTC Jun 19 2001
            end   date: 22:32:40 UTC Jun 19 2021
                   Associated Identity: EntrustPKI

                             RA KeyEncipher Certificate
                                    Status: Available
                  Certificate Serial Number: 3B2FD318
                             Key Usage: Encryption
                                                 :Issuer
                                       OU = sjvpn
                                       O = cisco
                                          C = us
                                           :Subject
                                CN = First Officer
                                       OU = sjvpn
                                       O = cisco
                                          C = us
                                :CRL Distribution Point
              CN = CRL1, OU = sjvpn, O = cisco, C = us
                                     :Validity Date
            start date: 22:03:31 UTC Jun 19 2001
            end   date: 22:33:31 UTC Jun 19 2004
                   Associated Identity: EntrustPKI

                              RA Signature Certificate
                                    Status: Available
                  Certificate Serial Number: 3B2FD319
                             Key Usage: Signature
                                                 :Issuer
                                       OU = sjvpn
                                       O = cisco
                                                C = us
```

```
                                        :Subject
                                CN = First Officer
                                      OU = sjvpn
                                       O = cisco
                                          C = us
                                :CRL Distribution Point
        CN = CRL1, OU = sjvpn, O = cisco, C = us
                                        :Validity Date
            start date: 22:03:31 UTC Jun 19 2001
            end   date: 22:33:31 UTC Jun 19 2004
                   Associated Identity: EntrustPKI

                                       Certificate
                                Status: Available
                  Certificate Serial Number: 3B2FD65B
                           Key Usage: General Purpose
                                        :Issuer
                                      OU = sjvpn
                                      O = cisco

                                          C = us
                                 :Subject Name Contains
                                Name: SJVPN.sjvpn.com
                                :CRL Distribution Point
        CN = CRL1, OU = sjvpn, O = cisco, C = us
                                        :Validity Date
            start date: 20:16:08 UTC Jan 11 2002
            end   date: 20:46:08 UTC Jan 11 2003
                   Associated Identity: EntrustPKI
```

SJPKI (الموجه المتحدث مسجل في خادم Microsoft CA)

```
                                SJPKI#write terminal
                              ...Building configuration

                     Current configuration : 12452 bytes
                                                     !
Last configuration change at 18:40:41 UTC Sun Jan 13 !
                                                  2002
NVRAM config last updated at 18:42:15 UTC Sun Jan 13 !
                                                  2002
                                                     !
                                          version 12.2
                        service timestamps debug uptime
                          service timestamps log uptime
                         no service password-encryption
                              service udp-small-servers
                              service tcp-small-servers
                                                     !
                                       hostname SJPKI
                                                     !
                                                     !
                                       ip subnet-zero
                                               ip cef
                                                     !
                                                     !
                                    ip domain-name sjtac
                                                     !
                                     ip audit notify log
                                ip audit po max-events 100
                                       ip ssh time-out 120
                            ip ssh authentication-retries 3
                                                     !
```

```
                        crypto ca identity MicrosoftPKI
                                        enrollment mode ra
                                           enrollment url
        http://171.69.89.182:80/certsrv/mscep/mscep.dll
                                query url ldap://171.69.89.182
                                             crl optional
                                                           !
                                                           !
                crypto ca certificate chain MicrosoftPKI
       certificate ca 091B47AEE8CFE2A94D3E8B38F292F5AF
3082032C 308202D6 A0030201 02021009 1B47AEE8 CFE2A94D
                                                 3E8B38F2 92F5AF30
0D06092A 864886F7 0D010105 0500305F 310B3009 06035504
                                                 06130255 53310B30
300F0603 55040713 0853414E 43413111 04081302 09060355
                                                 204A4F53 45310E30
0C060355 040A1305 534A5441 43310E30 0C060355 040B1305
                                                 534A504B 49311030
0E060355 04031307 534A504B 49434130 1E170D30 32303131
                                                 31303135 3133395A
170D3037 30313131 30323030 30345A30 5F310B30 09060355
                                                 04061302 5553310B
11300F06 03550407 13085341 02434131 55040813 30090603
                                                 4E204A4F 5345310E
300C0603 55040A13 05534A54 4143310E 300C0603 55040B13
                                                 05534A50 4B493110
300E0603 55040313 07534A50 4B494341 305C300D 06092A86
                                                 4886F70D 01010105
  00034B00 30480241 00AEC268 0C6388F1 404A2E97 3C94742D
                                                 37070BE0 368069BF
C98A7AB3 E81131A5 DDC3E41F B9D9EB66 AF504D65 2BD2864C
                                                 87260696 8AAFF871
88A80301 1500F11D 63020301 0001A382 016C3082 01683013
                                                 06092B06 01040182
061E0400 43004130 0B060355 1D0F0404 03020146 37140204
                                                 300F0603 551D1301
01FF0405 30030101 FF301D06 03551D0E 04160414 2315574F
                                                 05405281 E113C7E8
6D83CBF2 33B71CB1 30820100 0603551D 1F0481F8 3081F530
                                                 81B8A081 B5A081B2
8681AF6C 6461703A 2F2F2F43 4E3D534A 504B4943 412C434E
                                                 3D736A76 706E6D73
706B692C 434E3D43 44502C43 4E3D5075 626C6963 2532304B
                                                 65792532 30536572
732C434E 3D536572 76696365 732C434E 3D436F6E 76696365
                                                 66696775 72617469
6F6E2C44 433D736A 706B692C 44433D63 6F6D3F63 65727469
                                                 66696361 74655265
766F6361 74696F6E 4C697374 3F626173 653F6F62 6A656374
                                                 636C6173 733D6352
4C446973 74726962 7574696F 6E506F69 6E743038 A036A034
                                                 86326874 74703A2F
2F736A76 706E6D73 706B692E 736A706B 692E636F 6D2F4365
                                                 7274456E 726F6C6C
2F534A50 4B494341 2E63726C 30100609 2B060104 01823715
                                                 01040302 0100300D
06092A86 4886F70D 01010505 00034100 735977DF 7822B944
                                                 96A50106 722108F0
1A60EF86 EFEDA9ED 2C7C9174 5EF48909 B4A66A08 226FBD11
                                                 3F20BA61 C556182A
                    8E914788 AE6C5363 A769805F 9E2F6458
                                                       quit
            certificate ra-encrypt 054E63CE000000000003
3082048E 30820438 A0030201 02020A05 4E63CE00 00000000
```

```
                                                  03300D06 092A8648
86F70D01 01050500 305F310B 30090603 55040613 02555331
                                                  0B300906 03550408
3111300F 06035504 07130853 414E204A 4F534531 13024341
                                                  0E300C06 0355040A
1305534A 54414331 0E300C06 0355040B 1305534A 504B4931
                                                  10300E06 03550403
1307534A 504B4943 41301E17 0D303230 31313130 31353932
                                                  385A170D 30343031
5A305F31 0B300906 03550406 13025553 35393238 31313031
                                                  310B3009 06035504
0F060355 04071308 53414E20 4A4F5345 41311130 08130243
                                                  310E300C 06035504
0A130553 4A544143 310E300C 06035504 0B130553 4A504B49
                                                  3110300E 06035504
4A56504E 52413081 9F300D06 092A8648 86F70D01 03130753
                                                  01010500 03818D00
818100C6 E17A9C97 9CD883ED CCE68AAD DA4AF518 30818902
                                                  1D1B0056 EAE19CF7
40A1CBA7 622A83DB 4131898F 5FC662A6 5486D0FB CE253DE5
                                                  26A85487 27CCC45C
54803AB6 F5644F21 6967296A B075E6A3 0392704C 862A3344
                                                  8F15F512 FE86F257
6465A4C5 B265DBA5 EBA53F19 D488839E 5881EA32 2943CDF2
                                                  2D03B889 5E47A30B
C908D29B 64656102 03010001 A3820290 3082028C 300B0603
                                                  551D0F04 04030205
03551D25 040E300C 060A2B06 01040182 37140201 20301506
                                                  30290609 2B060104
02041C1E 1A004300 45005000 45006E00 63007200 01823714
                                                  79007000 74006900
6F006E30 1D060355 1D0E0416 04148F6F 02D57617 E11F78D2
                                                  48547776 FE42DBE3
D8CC3081 98060355 1D230481 9030818D 80142315 574F0540
                                                  5281E113 C7E86D83
CBF233B7 1CB1A163 A461305F 310B3009 06035504 06130255
                                                  53310B30 09060355
300F0603 55040713 0853414E 204A4F53 43413111 04081302
                                                  45310E30 0C060355
040A1305 534A5441 43310E30 0C060355 040B1305 534A504B
                                                  49311030 0E060355
534A504B 49434182 10091B47 AEE8CFE2 A94D3E8B 04031307
                                                  38F292F5 AF3081C6
0603551D 1F0481BE 3081BB30 81B8A081 B5A081B2 8681AF6C
                                                  6461703A 2F2F2F43
4E3D534A 504B4943 412C434E 3D736A76 706E6D73 706B692C
                                                  434E3D43 44502C43
4E3D5075 626C6963 2532304B 65792532 30536572 76696365
                                                  732C434E 3D536572
732C434E 3D436F6E 66696775 72617469 6F6E2C44 76696365
                                                  433D736A 706B692C
44433D63 6F6D3F63 65727469 66696361 74655265 766F6361
                                                  74696F6E 4C697374
  3F626173 653F6F62 6A656374 636C6173 733D6352 4C446973
                                                  74726962 7574696F
6E506F69 6E743081 B706082B 06010505 07010104 81AA3081
                                                  A73081A4 06082B06
976C6461 703A2F2F 2F434E3D 534A504B 30028681 01050507
                                                  4943412C 434E3D41
49412C43 4E3D5075 626C6963 2532304B 65792532 30536572
                                                  76696365 732C434E
3D536572 76696365 732C434E 3D436F6E 66696775 72617469
                                                  6F6E2C44 433D736A
706B692C 44433D63 6F6D3F63 41436572 74696669 63617465
```

```
                                                 3F626173 653F6F62
6A656374 636C6173 733D6365 72746966 69636174 696F6E41
                                                 7574686F 72697479
300D0609 2A864886 F70D0101 05050003 41008FE9 45687473
                                                 3798A614 D3A41747
D357B72B 8D286162 91A7B519 B100159E CF283215 28DE4504
                                                 EBB55282 247A9164
             DC6B8185 63F159DC 18F6541B E289FC37 EC74
                                                      quit
              certificate ra-sign 054E60AD000000000002
308204A0 3082044A A0030201 02020A05 4E60AD00 00000000
                                                 02300D06 092A8648
86F70D01 01050500 305F310B 30090603 55040613 02555331
                                                 0B300906 03550408
3111300F 06035504 07130853 414E204A 4F534531 13024341
                                                 0E300C06 0355040A
1305534A 54414331 0E300C06 0355040B 1305534A 504B4931
                                                 10300E06 03550403
1307534A 504B4943 41301E17 0D303230 31313130 31353932
                                                 375A170D 30343031
5A305F31 0B300906 03550406 13025553 35393237 31313031
                                                 310B3009 06035504
0F060355 04071308 53414E20 4A4F5345 41311130 08130243
                                                 310E300C 06035504
0A130553 4A544143 310E300C 06035504 0B130553 4A504B49
                                                 3110300E 06035504
4A56504E 52413081 9F300D06 092A8648 86F70D01 03130753
                                                 01010500 03818D00
818100E2 61FD62D2 64BED93E 7DBF1FDE 52F0D811 30818902
                                                 479A4F4E 48E56811
83ED9285 F2A3907B F236F508 43742D4A E89A76EF 3CB98722
                                                 D0A7DC1F 432F386C
721A3379 D50B7EA7 43C07AD0 AA6C087D FDA7BDBF 0BA92FA3
                                                 711A7F54 FBCAFBF6
633FCEFA AA9D9A8D 2C79550F 99314B3E FC97F764 BC6D6D67
                                                 D79A7292 A679B42F
4B5C083F 0AA6C902 03010001 A38202A2 3082029E 300B0603
                                                 551D0F04 04030207
03551D25 040E300C 060A2B06 01040182 37140201 80301506
                                                 303B0609 2B060104
02042E1E 2C004500 6E007200 6F006C00 6C006D00 01823714
                                                 65006E00 74004100
6E007400 4F006600 66006C00 69006E00 65301D06 67006500
                                                 03551D0E 04160414
09AD6911 B0F87B73 06A2ECAE 24853CA4 DBB12A9E 30819806
                                                 03551D23 04819030
818D8014 2315574F 05405281 E113C7E8 6D83CBF2 33B71CB1
                                                 A163A461 305F310B
0B300906 03550408 13024341 02555331 55040613 30090603
                                                 3111300F 06035504
414E204A 4F534531 0E300C06 0355040A 1305534A 07130853
                                                 54414331 0E300C06
0355040B 1305534A 504B4931 10300E06 03550403 1307534A
                                                 504B4943 41821009
1B47AEE8 CFE2A94D 3E8B38F2 92F5AF30 81C60603 551D1F04
                                                 81BE3081 BB3081B8
A081B5A0 81B28681 AF6C6461 703A2F2F 2F434E3D 534A504B
                                                 4943412C 434E3D73
6A76706E 6D73706B 692C434E 3D434450 2C434E3D 5075626C
                                                 69632532 304B6579
6365732C 434E3D53 65727669 6365732C 65727669 25323053
                                                 434E3D43 6F6E6669
74696F6E 2C44433D 736A706B 692C4443 3D636F6D 67757261
                                                 3F636572 74696669
```

```
5265766F 63617469 6F6E4C69 73743F62 6173653F 63617465
                                                 6F626A65 6374636C
6173733D 63524C44 69737472 69627574 696F6E50 6F696E74
                                                 3081B706 082B0601
010481AA 3081A730 81A40608 2B060105 05073002 05050701
                                                 8681976C 6461703A
2F2F2F43 4E3D534A 504B4943 412C434E 3D414941 2C434E3D
                                                 5075626C 69632532
304B6579 25323053 65727669 6365732C 434E3D53 65727669
                                                 6365732C 434E3D43
6F6E6669 67757261 74696F6E 2C44433D 736A706B 692C4443
                                                 3D636F6D 3F634143
74653F62 6173653F 6F626A65 6374636C 66696361 65727469
                                                 6173733D 63657274
  6174696F 6E417574 686F7269 7479300D 06092A86 69666963
                                                 4886F70D 01010505
2CEFFC7E B2C42AED 167FA630 AB3F9460 5E12B77F 00034100
                                                 07BC860A 48A5DBDB
E942F9B8 1B053148 05A70A17 B2EF37D4 F4234622 DD59571B
                                    F8D8AF09 2B54D40C 9145302D
                                                       quit
                          certificate 0961EAC400000000000A
308203EE A0030201 02020A09 61EAC400 00000000 30820444
                                                 0A300D06 092A8648
86F70D01 01050500 305F310B 30090603 55040613 02555331
                                                 0B300906 03550408
3111300F 06035504 07130853 414E204A 4F534531 13024341
                                                 0E300C06 0355040A
1305534A 54414331 0E300C06 0355040B 1305534A 504B4931
                                                 10300E06 03550403
1307534A 504B4943 41301E17 0D303230 31313132 30353931
                                                 375A170D 30343031
5A301C31 1A301806 092A8648 86F70D01 35393137 31313230
                                                 0902130B 534A504B
492E736A 74616330 5C300D06 092A8648 86F70D01 01010500
                                                 034B0030 48024100
C7FB363F 410E22E5 1B5649A6 8948CC05 D8A58518 A3633227
                                                 F6908EE1 7809600F
80771B65 09316FA0 DCB317D3 7FB6D7DF BBAC418D 2D8E2ABA
                                                 418A49AE 7961560D
01A38202 CD308202 C9300B06 03551D0F 04040302 02030100
                                                 05A0301D 0603551D
0E041604 142C9F6B 2DAFF8F8 C040121B B78AA486 0CD207E0
                                                 DF308198 0603551D
30818D80 14231557 4F054052 81E113C7 E86D83CB 23048190
                                                 F233B71C B1A163A4
61305F31 0B300906 03550406 13025553 310B3009 06035504
                                                 08130243 41311130
0F060355 04071308 53414E20 4A4F5345 310E300C 06035504
                                                 0A130553 4A544143
310E300C 06035504 0B130553 4A504B49 3110300E 06035504
                                                 03130753 4A504B49
091B47AE E8CFE2A9 4D3E8B38 F292F5AF 30190603 43418210
                                                 551D1101 01FF040F
300D820B 534A504B 492E736A 74616330 81C60603 551D1F04
                                                 81BE3081 BB3081B8
A081B5A0 81B28681 AF6C6461 703A2F2F 2F434E3D 534A504B
                                                 4943412C 434E3D73
6A76706E 6D73706B 692C434E 3D434450 2C434E3D 5075626C
                                                 69632532 304B6579
6365732C 434E3D53 65727669 6365732C 65727669 25323053
                                                 434E3D43 6F6E6669
74696F6E 2C44433D 736A706B 692C4443 3D636F6D 67757261
                                                 3F636572 74696669
```

```
5265766F 63617469 6F6E4C69 73743F62 6173653F 63617465
                                                6F626A65 6374636C
6173733D 63524C44 69737472 69627574 696F6E50 6F696E74
                                                3081B706 082B0601
010481AA 3081A730 81A40608 2B060105 05073002 05050701
                                                8681976C 6461703A
2F2F2F43 4E3D534A 504B4943 412C434E 3D414941 2C434E3D
                                                5075626C 69632532
304B6579 25323053 65727669 6365732C 434E3D53 65727669
                                                6365732C 434E3D43
6F6E6669 67757261 74696F6E 2C44433D 736A706B 692C4443
                                                3D636F6D 3F634143
74653F62 6173653F 6F626A65 6374636C 66696361 65727469
                                                6173733D 63657274
6174696F 6E417574 686F7269 7479300C 0603551D 69666963
                                                130101FF 04023000
551D2504 0C300A06 082B0601 05050802 02303F06 30130603
                                                092B0601 04018237
1E300049 00500053 00450043 0049006E 00740065 14020432
                                                0072006D 00650064
004F0066 0066006C 0069006E 0065300D 00740065 00690061
                                                06092A86 4886F70D
377A0F69 2909A243 11F41B30 4F3B125F 00034100 01010505
                                                DDE22145 0BEA2BF1
4E030C8E B82DCFF9 3639C047 AF40A0A7 EE0FF252 71E48C82
                                                4AA309C4 9343BFB6
                                             2C9C2D81 FE788AF3
                                                          quit
                                                             !
                                       crypto isakmp policy 1
                                                    hash md5
                                                             !
                              crypto isakmp identity hostname
                                   crypto isakmp keepalive 10
                                                             !
                                                             !
  crypto ipsec transform-set myset esp-des esp-md5-hmac
       crypto mib ipsec flowmib history tunnel size 200
      crypto mib ipsec flowmib history failure size 200
                                                             !
                               crypto map vpn 10 ipsec-isakmp
                                       set peer 172.16.172.69
                                    set transform-set myset
                                          match address 101
                                                             !
                                                             !
                                                             !
                                                             !
                                                             !
                                                             !
                                                             !
                                                             !
                                                             !
                                          controller ISA 2/1
                                                             !
                                                             !
                                                             !
                                                             !
                                       interface Ethernet1/0
                    ip address 172.16.172.10 255.255.255.240
                           ip broadcast-address 172.16.172.0
                                             no ip redirects
                                                 duplex half
                                              crypto map vpn
```

```
!
interface Ethernet1/1
ip address 10.1.1.2 255.255.255.0
ip broadcast-address 10.1.1.0
duplex half
!
interface Ethernet1/2
no ip address
ip broadcast-address 0.0.0.0
shutdown
duplex half
!
interface Ethernet1/3
no ip address
ip broadcast-address 0.0.0.0
shutdown
duplex half
!
router ospf 1
log-adjacency-changes
redistribute static subnets
network 10.1.1.0 0.0.0.255 area 0
!
ip classless
ip route 0.0.0.0 0.0.0.0 172.16.172.1
no ip http server
ip pim bidir-enable
!
access-list 101 permit ip 10.1.1.0 0.0.0.255 20.1.1.0
0.0.0.255
!
route-map tftp permit 10
match ip address 150
!
!
call rsvp-sync
!
!
mgcp profile default
!
dial-peer cor custom
!
!
!
!
gatekeeper
shutdown
!
!
line con 0
exec-timeout 0 0
line aux 0
line vty 0 4
login
line vty 5 15
login
!
!
end

SJPKI#show crypto ca cert
CA Certificate
Status: Available
Certificate Serial Number:
```

```
                                091B47AEE8CFE2A94D3E8B38F292F5AF
                                    Key Usage: General Purpose
                                                       :Issuer
                                                    CN = SJPKICA
                                                     OU = SJPKI
                                                      O = SJTAC
                                                   L = SAN JOSE
                                                        ST = CA
                                                         C = US
                                                        :Subject
                                                    CN = SJPKICA
                                                     OU = SJPKI
                                                      O = SJTAC
                                                   L = SAN JOSE
                                                        ST = CA
                                                         C = US
                                          :CRL Distribution Point

ldap:///CN=SJPKICA,CN=sjvpnmspki,CN=CDP,CN=Public%20Key%
                                                    ,20Services
          ?CN=Services,CN=Configuration,DC=sjpki,DC=com

certificateRevocationList?base?objectclass=cRLDistributi
                                                    onPoint
                                                 :Validity Date
                start date: 01:51:39 UTC Jan 11 2002
                end   date: 02:00:04 UTC Jan 11 2007
                     Associated Identity: MicrosoftPKI

                                       RA KeyEncipher Certificate
                                              Status: Available
      Certificate Serial Number: 054E63CE000000000003
                                     Key Usage: Encryption
                                                       :Issuer
                                                    CN = SJPKICA
                                                     OU = SJPKI
                                                      O = SJTAC
                                                   L = SAN JOSE
                                                        ST = CA
                                                         C = US
                                                        :Subject
                                                    CN = SJVPNRA
                                                     OU = SJPKI
                                                      O = SJTAC
                                                   L = SAN JOSE
                                                        ST = CA
                                                         C = US
                                          :CRL Distribution Point
ldap:///CN=SJPKICA,CN=sjvpnmspki,CN=CDP,CN=Public%20Key%
                                                    ,20Services
          ?CN=Services,CN=Configuration,DC=sjpki,DC=com

certificateRevocationList?base?objectclass=cRLDistributi
                                                    onPoint
                                                 :Validity Date
                start date: 01:59:28 UTC Jan 11 2002
                end   date: 01:59:28 UTC Jan 11 2004
                     Associated Identity: MicrosoftPKI

                                    RA Signature Certificate
                                         Status: Available
      Certificate Serial Number: 054E60AD000000000002
                                       Key Usage: Signature
                                                       :Issuer
```

```
                                        CN = SJPKICA
                                        OU = SJPKI
                                         O = SJTAC
                                      L = SAN JOSE
                                           ST = CA
                                            C = US
                                           :Subject
                                       CN = SJVPNRA
                                        OU = SJPKI
                                         O = SJTAC
                                      L = SAN JOSE
                                           ST = CA
                                            C = US
                                  :CRL Distribution Point

ldap:///CN=SJPKICA,CN=sjvpnmspki,CN=CDP,CN=Public%20Key%
                                                ,20Services
          ?CN=Services,CN=Configuration,DC=sjpki,DC=com

certificateRevocationList?base?objectclass=cRLDistributi
                                                    onPoint
                                        :Validity Date
               start date: 01:59:27 UTC Jan 11 2002
               end   date: 01:59:27 UTC Jan 11 2004
                    Associated Identity: MicrosoftPKI

                                                Certificate
                                     Status: Available
      Certificate Serial Number: 0961EAC400000000000A
                               Key Usage: General Purpose
                                           :Issuer
                                        CN = SJPKICA
                                         OU = SJPKI
                                          O = SJTAC
                                       L = SAN JOSE
                                            ST = CA
                                             C = US
                                  :Subject Name Contains
                                    Name: SJPKI.sjtac
                                  :CRL Distribution Point

ldap:///CN=SJPKICA,CN=sjvpnmspki,CN=CDP,CN=Public%20Key%
                                                ,20Services
          ?CN=Services,CN=Configuration,DC=sjpki,DC=com

certificateRevocationList?base?objectclass=cRLDistributi
                                                    onPoint
                                        :Validity Date
               start date: 20:59:17 UTC Jan 11 2002
               end   date: 20:59:17 UTC Jan 11 2004
                    Associated Identity: MicrosoftPKI
```

استكشاف الأخطاء وإصلاحها

أوامر استكشاف الأخطاء وإصلاحها

يمكنك إستخدام بعض أوامر تصحيح أخطاء IOS المتعلقة ب IPSec لمعرفة كيفية عمل تفاوض Internet Key Exchange (IKE) مع شهادات هوية متعددة.

يتم دعم بعض أوامر **العرض بواسطة** أداة مترجم الإخراج (العملاء المسجلون فقط)، والتي تتيح لك عرض تحليل

إخراج أمر **العرض**.

ملاحظة: قبل إصدار أوامر **تصحيح الأخطاء**، راجع المعلومات المهمة في أوامر تصحيح الأخطاء.

- **debug crypto isakmp**—يعرض الرسائل المتعلقة بأحداث IKE.
- **debug crypto ipSec**—يعرض أحداث IPSec.
- **debug crypto pki transaction**—يعرض رسائل تصحيح الأخطاء لتتبع التفاعل (نوع الرسالة) بين CA والموجه.
- **debug crypto pki message**—يعرض رسائل تصحيح الأخطاء لتفاصيل التفاعل (تفريغ الرسالة) بين CA والموجه.

الشهادات من خادم CA Entrust

تم تجميع تصحيح الأخطاء التالية على SJVPN و SJhub. بشكل نموذجي، يحاول SJVPN بدء نفق IPSec إلى موجه الموزع SJhub. يرسل SJhub حمولة CERT_REQ لكل مجال CA يدعمه. تحتوي كل **حمولة CERT_REQ** على الاسم المميز (DN) لمصدر الشهادات. ثم يحاول SJVPN تعيين DN في CERT_REQ وإرسال الشهادات الخاصة به إلى SJhub.

في الأمثلة التالية، يرسل موجه SJhub شهاداته استنادا إلى **CERT_REQ** الذي تم إرساله بواسطة موجه SJVPN. يتم إستخدام الشهادات من خادم Entrust CA.

- تم تجميع تصحيح الأخطاء على SJVPN
- تم تجميع تصحيح الأخطاء على SJhub
- التخزين المؤقت لقائمة إبطال الشهادات (CRL) على الموجهات

تم تجميع تصحيح الأخطاء على SJVPN

```
, :(IPSEC(sa_request :00:02:24
,key eng. msg.) src= 172.16.172.52, dest= 172.16.172.69)
,(src_proxy= 50.1.1.0/255.255.255.0/0/0 (type=4
,(dest_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
, protocol= ESP, transform= esp-des esp-md5-hmac
,lifedur= 3600s and 4608000kb
spi= 0xFA8261EB(4202848747), conn_id= 0, keysize= 0, flags= 0x4004
(ISAKMP: received ke message (1/1 :00:02:24
ISAKMP: local port 500, remote port 500 :00:02:24
ISAKMP (0:2): Input = IKE_MESG_FROM_IPSEC, IKE_SA_REQ_MM :00:02:24
Old State = IKE_READY New State = IKE_I_MM1
ISAKMP (0:2): beginning Main Mode exchange :00:02:24
ISAKMP (0:2): sending packet to 172.16.172.69 (I) MM_NO_STATE :00:02:24
ISAKMP (0:2): received packet from 172.16.172.69 (I) MM_NO_STATE :00:02:24
ISAKMP (0:2): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH :00:02:24
Old State = IKE_I_MM1 New State = IKE_I_MM2

ISAKMP (0:2): processing SA payload. message ID = 0 :00:02:24
ISAKMP (0:2): Checking ISAKMP transform 1 :00:02:24
against priority 1 policy
ISAKMP: encryption DES-CBC :00:02:24
ISAKMP: hash MD5 :00:02:24
ISAKMP: default group 1 :00:02:24
ISAKMP: auth RSA sig :00:02:24
ISAKMP: life type in seconds :00:02:24
ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80 :00:02:24
ISAKMP (0:2): atts are acceptable. Next payload is 0 :00:02:24
ISAKMP (0:2): SA is doing RSA signature authentication :00:02:24
```

```
                                                    using id type ID_FQDN
   ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE :00:02:24
                                 Old State = IKE_I_MM2 New State = IKE_I_MM2

     ISAKMP (0:2): sending packet to 172.16.172.69 (I) MM_SA_SETUP :00:02:24
     ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE :00:02:24
                                 Old State = IKE_I_MM2 New State = IKE_I_MM3

 ISAKMP (0:2): received packet from 172.16.172.69 (I) MM_SA_SETUP :00:02:24
           ISAKMP (0:2): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH :00:02:24
                                 ld State = IKE_I_MM3 New State = IKE_I_MM4.

              ISAKMP (0:2): processing KE payload. message ID = 0 :00:02:24
           ISAKMP (0:2): processing NONCE payload. message ID = 0 :00:02:24
                               ISAKMP (0:2): SKEYID state generated :00:02:24
      ISAKMP (0:2): processing CERT_REQ payload. message ID = 0 :00:02:24
              ISAKMP (0:2): peer wants a CT_X509_SIGNATURE cert :00:02:24
          ,ISAKMP (0:2): peer want cert issued by CN = SJPKICA :00:02:24
                    OU = SJPKI, O = SJTAC, L = SAN JOSE, ST = CA, C = US
           !ISAKMP (0:2): can't find router cert for signature :00:02:24
                .ISAKMP (2): issuer name is not a trusted root :00:02:24
      ISAKMP (0:2): processing CERT_REQ payload. message ID = 0 :00:02:24
              ISAKMP (0:2): peer wants a CT_X509_SIGNATURE cert :00:02:24
           ,ISAKMP (0:2): peer want cert issued by OU = sjvpn :00:02:24
                                                  O = cisco, C = us
                         ISAKMP (0:2): processing vendor id payload :00:02:24
                         !ISAKMP (0:2): speaking to another IOS box :00:02:24
   ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE :00:02:24
                                 Old State = IKE_I_MM4 New State = IKE_I_MM4

                                              ISAKMP (2): ID payload :00:02:24
                                                      next-payload : 6
                                                              type : 2
                                                         protocol : 17
                                                             port : 500
                                                           length : 19
                                 ISAKMP (2): Total payload length: 23 :00:02:24
     ISAKMP (0:2): sending packet to 172.16.172.69 (I) MM_KEY_EXCH :00:02:24
     ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE :00:02:24
                                 Old State = IKE_I_MM4 New State = IKE_I_MM5
                                                                          .
 ISAKMP (0:2): received packet from 172.16.172.69 (I) MM_KEY_EXCH :00:02:26
           ISAKMP (0:2): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH :00:02:26
                                   Old State = IKE_I_MM5 New State = UNKNOWN

              ISAKMP (0:2): processing ID payload. message ID = 0 :00:02:26
             ISAKMP (0:2): processing CERT payload. message ID = 0 :00:02:26
                 ISAKMP (0:2): processing a CT_X509_SIGNATURE cert :00:02:26
                                  CRYPTO_PKI: status = 0: poll CRL :00:02:26
                               .CRYPTO_PKI: ldap_bind() succeeded :00:02:27
                  CRYPTO_PKI: set CRL update timer with delay: 46206 :00:02:27
    CRYPTO_PKI: the current router time: 13:07:32 UTC Jan 14 2002 :00:02:27

     CRYPTO_PKI: the last CRL update time: 00:57:38 UTC Jan 14 2002 :00:02:27
     CRYPTO_PKI: the next CRL update time: 01:57:38 UTC Jan 15 2002 :00:02:27
CRYPTO_PKI: status = 0: failed to get public key from the storage :00:02:27
  CRYPTO_PKI: status = 65535: failed to get issuer pubkey in cert :00:02:27
CRYPTO_PKI: status = 0: failed to get public key from the storage :00:02:27
  CRYPTO_PKI: status = 65535: failed to get issuer pubkey in cert :00:02:27
CRYPTO_PKI: status = 0: failed to get public key from the storage :00:02:27
  CRYPTO_PKI: status = 65535: failed to get issuer pubkey in cert :00:02:27
                       CRYPTO_PKI: transaction GetCRL completed :00:02:28
                  CRYPTO_PKI: blocking callback received status: 105 :00:02:28
                  CRYPTO_PKI: Certificate verified, chain status= 1 :00:02:28
```

ISAKMP (0:2): processing SIG payload. message ID = 0 :00:02:28
ISAKMP (2): sa->peer.name = , sa->peer_id.id.id_fqdn.fqdn :00:02:28
SJhub.sjtac.com =
ISAKMP:received payload type 14 :00:02:28
,.ISAKMP (0:2): processing keep alive: proposal=10/2 sec :00:02:28
.actual=10/2 sec
!!.ISA :00:02:28
Success rate is 40 percent (2/5), round-trip min/avg/max = 1/2/4 ms
.SJVPN#KMP (0:2): peer knows about the keepalive extension mechanism
ISAKMP (0:2): read keepalive extended attribute VPI: /0x2/0x4 :00:02:28
ISAKMP (0:2): peer keepalives capabilities: 0x1 :00:02:28
ISAKMP (0:2): SA has been authenticated with 172.16.172.69 :00:02:28
ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE :00:02:28
Old State = UNKNOWN New State = UNKNOWN

ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE :00:02:28
Old State = UNKNOWN New State = IKE_P1_COMPLETE

ISAKMP (0:2): beginning Quick Mode exchange, M-ID of -304515331 :00:02:28
ISAKMP (0:2): sending packet to 172.16.172.69 (I) QM_IDLE :00:02:28
ISAKMP (0:2): Node -304515331, Input = IKE_MESG_INTERNAL, IKE_INIT_QM :00:02:28
Old State = IKE_QM_READY New State = IKE_QM_I_QM1

ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PHASE1_COMPLETE :00:02:28
Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE

ISAKMP (0:2): received packet from 172.16.172.69 (I) QM_IDLE :00:02:28
ISAKMP (0:2): processing HASH payload. message ID = -304515331 :00:02:28
ISAKMP (0:2): processing SA payload. message ID = -304515331 :00:02:28
ISAKMP (0:2): Checking IPSec proposal 1 :00:02:28
ISAKMP: transform 1, ESP_DES :00:02:28
:ISAKMP: attributes in transform :00:02:28
ISAKMP: encaps is 1 :00:02:28
ISAKMP: SA life type in seconds :00:02:28
ISAKMP: SA life duration (basic) of 3600 :00:02:28
ISAKMP: SA life type in kilobytes :00:02:28
ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0 :00:02:28
ISAKMP: authenticator is HMAC-MD5 :00:02:28
.ISAKMP (0:2): atts are acceptable :00:02:28
,IPSEC(validate_proposal_request): proposal part #1 :00:02:28
,key eng. msg.) dest= 172.16.172.69, src= 172.16.172.52)
,(dest_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
,(src_proxy= 50.1.1.0/255.255.255.0/0/0 (type=4
, protocol= ESP, transform= esp-des esp-md5-hmac
,lifedur= 0s and 0kb
spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x4
ISAKMP (0:2): processing NONCE payload. message ID = -304515331 :00:02:28
ISAKMP (0:2): processing ID payload. message ID = -304515331 :00:02:28
ISAKMP (0:2): processing ID payload. message ID = -304515331 :00:02:28
ISAKMP (0:2): Creating IPSec SAs :00:02:28
inbound SA from 172.16.172.69 to 172.16.172.52 :00:02:28
(proxy 20.1.1.0 to 50.1.1.0)
has spi 0xFA8261EB and conn_id 2029 and flags 4 :00:02:28
lifetime of 3600 seconds :00:02:28
lifetime of 4608000 kilobytes :00:02:28
outbound SA from 172.16.172.52 to 172.16.172.69 :00:02:28
(proxy 50.1.1.0 to 20.1.1.0)
has spi 206728450 and conn_id 2030 and flags 4 :00:02:28
lifetime of 3600 seconds :00:02:28
lifetime of 4608000 kilobytes :00:02:28
...IPSEC(key_engine): got a queue event :00:02:28
, :(IPSEC(initialize_sas :00:02:28
,key eng. msg.) dest= 172.16.172.52, src= 172.16.172.69)
,(dest_proxy= 50.1.1.0/255.255.255.0/0/0 (type=4

```
                                ,(src_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
                               , protocol= ESP, transform= esp-des esp-md5-hmac
                                          ,lifedur= 3600s and 4608000kb
          spi= 0xFA8261EB(4202848747), conn_id= 2029, keysize= 0, flags= 0x4
                                       , :(IPSEC(initialize_sas :00:02:28
                    ,key eng. msg.) src= 172.16.172.52, dest= 172.16.172.69)
                                ,(src_proxy= 50.1.1.0/255.255.255.0/0/0 (type=4
                               ,(dest_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
                               , protocol= ESP, transform= esp-des esp-md5-hmac
                                          ,lifedur= 3600s and 4608000kb
            spi= 0xC526D02(206728450), conn_id= 2030, keysize= 0, flags= 0x4
                                    ,IPSEC(create_sa): sa created :00:02:28
                                ,sa) sa_dest= 172.16.172.52, sa_prot= 50)
                                          ,(sa_spi= 0xFA8261EB(4202848747
                           sa_trans= esp-des esp-md5-hmac , sa_conn_id= 2029
                                    ,IPSEC(create_sa): sa created :00:02:28
                                ,sa) sa_dest= 172.16.172.69, sa_prot= 50)
                                          ,(sa_spi= 0xC526D02(206728450
                           sa_trans= esp-des esp-md5-hmac , sa_conn_id= 2030
      ISAKMP (0:2): sending packet to 172.16.172.69 (I) QM_IDLE :00:02:28
"" ISAKMP (0:2): deleting node -304515331 error FALSE reason :00:02:28
  ,ISAKMP (0:2): Node -304515331, Input = IKE_MESG_FROM_PEER :00:02:28
                                                              IKE_QM_EXCH
          Old State = IKE_QM_I_QM1 New State = IKE_QM_PHASE2_COMPLETE

   ISAKMP (0:2): received packet from 172.16.172.69 (I) QM_IDLE :00:02:36
ISAKMP (0:2): processing HASH payload. message ID = -2051070354 :00:02:36
      ISAKMP (0:2): processing NOTIFY ITS_ALIVE protocol 1 :00:02:36
                        spi 0, message ID = -2051070354, sa = 62DF2768
             ISAKMP (0:2): deleting node -2051070354 error :00:02:36
                          "FALSE reason "informational (in) state 1
      ISAKMP (0:2): Input = IKE_MESG_FROM_PEER, IKE_INFO_NOTIFY :00:02:36
             Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE

      ISAKMP (0:2): sending packet to 172.16.172.69 (I) QM_IDLE :00:02:36
                        ISAKMP (0:2): purging node -739583249 :00:02:36
ISAKMP (0:2): Input = IKE_MESG_FROM_PEER, IKE_MESG_KEEP_ALIVE :00:02:36
             Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE
```

[تم تجميع تصحيح الأخطاء على SJhub]

```
 ISAKMP (0:0): received packet from 172.16.172.52 (N) NEW SA :00:02:18
                        ISAKMP: local port 500, remote port 500 :00:02:18
       ISAKMP (0:2): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH :00:02:18
                           Old State = IKE_READY New State = IKE_R_MM1
         ISAKMP (0:2): processing SA payload. message ID = 0 :00:02:18
ISAKMP (0:2): Checking ISAKMP transform 1 against priority 1 policy :00:02:18
                                ISAKMP: encryption DES-CBC :00:02:18
                                        ISAKMP: hash MD5 :00:02:18
                                   ISAKMP: default group 1 :00:02:18
                                      ISAKMP: auth RSA sig :00:02:18
                                ISAKMP: life type in seconds :00:02:18
                ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80 :00:02:18
          ISAKMP (0:2): atts are acceptable. Next payload is 3 :00:02:18
 ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE :00:02:18
                           Old State = IKE_R_MM1 New State = IKE_R_MM1

       ISAKMP (0:2): SA is doing RSA signature authentication :00:02:18
                                             using id type ID_FQDN
  ISAKMP (0:2): sending packet to 172.16.172.52 (R) MM_SA_SETUP :00:02:18
  ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE :00:02:18
                           Old State = IKE_R_MM1 New State = IKE_R_MM2
```

ISAKMP (0:2): received packet from 172.16.172.52 (R) MM_SA_SETUP :00:02:18
ISAKMP (0:2): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH :00:02:18
Old State = IKE_R_MM2 New State = IKE_R_MM3

ISAKMP (0:2): processing KE payload. message ID = 0 :00:02:18
ISAKMP (0:2): processing NONCE payload. message ID = 0 :00:02:19
ISAKMP (0:2): SKEYID state generated :00:02:19
ISAKMP (0:2): processing CERT_REQ payload. message ID = 0 :00:02:19
ISAKMP (0:2): peer wants a CT_X509_SIGNATURE cert :00:02:19
ISAKMP (0:2): peer want cert issued by OU = sjvpn, O = cisco, C = us :00:02:19
ISAKMP (0:2): processing vendor id payload :00:02:19
!ISAKMP (0:2): speaking to another IOS box :00:02:19
ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE :00:02:19
Old State = IKE_R_MM3 New State = IKE_R_MM3

ISAKMP (0:2): sending packet to 172.16.172.52 (R) MM_KEY_EXCH :00:02:19
ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE :00:02:19
Old State = IKE_R_MM3 New State = IKE_R_MM4

ISAKMP (0:2): received packet from 172.16.172.52 (R) MM_KEY_EXCH :00:02:19
ISAKMP (0:2): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH :00:02:19
Old State = IKE_R_MM4 New State = IKE_R_MM5

ISAKMP (0:2): processing ID payload. message ID = 0 :00:02:19
ISAKMP (0:2): processing CERT payload. message ID = 0 :00:02:19
ISAKMP (0:2): processing a CT_X509_SIGNATURE cert :00:02:19
CRYPTO_PKI: status = 0: poll CRL :00:02:19
.CRYPTO_PKI: ldap_bind() succeeded :00:02:19
CRYPTO_PKI: set CRL update timer with delay: 49920 :00:02:20
CRYPTO_PKI: the current router time: 12:05:38 UTC Jan 14 2002 :00:02:20

CRYPTO_PKI: the last CRL update time: 00:57:38 UTC Jan 14 2002 :00:02:20
CRYPTO_PKI: the next CRL update time: 01:57:38 UTC Jan 15 2002 :00:02:20
CRYPTO_PKI: status = 0: failed to get public key from the storage :00:02:20
CRYPTO_PKI: status = 65535: failed to get issuer pubkey in cert :00:02:20
CRYPTO_PKI: status = 0: failed to get public key from the storage :00:02:20
CRYPTO_PKI: status = 65535: failed to get issuer pubkey in cert :00:02:20
CRYPTO_PKI: status = 0: failed to get public key from the storage :00:02:20
CRYPTO_PKI: status = 65535: failed to get issuer pubkey in cert :00:02:20
CRYPTO_PKI: status = 0: failed to get public key from the storage :00:02:20
CRYPTO_PKI: status = 65535: failed to get issuer pubkey in cert :00:02:20
CRYPTO_PKI: status = 0: failed to get public key from the storage :00:02:20
CRYPTO_PKI: status = 65535: failed to get issuer pubkey in cert :00:02:20
CRYPTO_PKI: status = 0: failed to get public key from the storage :00:02:20
CRYPTO_PKI: status = 65535: failed to get issuer pubkey in cert :00:02:20
CRYPTO_PKI: transaction GetCRL completed :00:02:21
CRYPTO_PKI: blocking callback received status: 105 :00:02:21
CRYPTO_PKI: Certificate verified, chain status= 1 :00:02:21
ISAKMP (0:2): processing SIG payload. message ID = 0 :00:02:21
ISAKMP (2): sa->peer.name = , sa->peer_id.id.id_fqdn.fqdn :00:02:21
SJVPN.sjvpn.com =
ISAKMP:received payload type 14 :00:02:21
,.ISAKMP (0:2): processing keep alive: proposal=10/2 sec :00:02:21
.actual=10/2 sec
.ISAKMP (0:2): peer knows about the keepalive extension mechanism :00:02:21
ISAKMP (0:2): read keepalive extended attribute VPI: /0x2/0x4 :00:02:21
ISAKMP (0:2): peer keepalives capabilities: 0x1 :00:02:21
ISAKMP (0:2): SA has been authenticated with 172.16.172.52 :00:02:21
ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE :00:02:21
Old State = IKE_R_MM5 New State = IKE_R_MM5

ISAKMP (2): ID payload :00:02:21
next-payload : 6
type : 2

```
                                                                protocol : 17
                                                                   port : 500
                                                                  length : 19
                                    ISAKMP (2): Total payload length: 23 :00:02:21
                        ISAKMP (0:2): sending packet to 172.16.172.52 (R) QM_IDLE :00:02:21
                  ISAKMP (0:2): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE :00:02:21
                                    Old State = IKE_R_MM5 New State = IKE_P1_COMPLETE

                     ISAKMP (0:2): received packet from 172.16.172.52 (R) QM_IDLE :00:02:23
                 ISAKMP (0:2): processing HASH payload. message ID = -304515331 :00:02:23
                   ISAKMP (0:2): processing SA payload. message ID = -304515331 :00:02:23
                                ISAKMP (0:2): Checking IPSec proposal 1 :00:02:23
                                         ISAKMP: transform 1, ESP_DES :00:02:23
                                    :ISAKMP: attributes in transform :00:02:23
                                                 ISAKMP: encaps is 1 :00:02:23
                                     ISAKMP: SA life type in seconds :00:02:23
                               ISAKMP: SA life duration (basic) of 3600 :00:02:23
                                        ISAKMP: SA life type in kilobytes :00:02:23
                      ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0 :00:02:23
                                        ISAKMP: authenticator is HMAC-MD5 :00:02:23
                                     .ISAKMP (0:2): atts are acceptable :00:02:23
                     ,IPSEC(validate_proposal_request): proposal part #1 :00:02:23
                          ,key eng. msg.) dest= 172.16.172.69, src= 172.16.172.52)
                                  ,(dest_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
                                   ,(src_proxy= 50.1.1.0/255.255.255.0/0/0 (type=4
                                   , protocol= ESP, transform= esp-des esp-md5-hmac
                                                          ,lifedur= 0s and 0kb
                                    spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x4
                 ISAKMP (0:2): processing NONCE payload. message ID = -304515331 :00:02:23
                     ISAKMP (0:2): processing ID payload. message ID = -304515331 :00:02:23
                       ISAKMP (2): ID_IPV4_ADDR_SUBNET src 50.1.1.0/255.255.255.0 :00:02:23

                                                                  prot 0 port 0
                     ISAKMP (0:2): processing ID payload. message ID = -304515331 :00:02:23
                       ISAKMP (2): ID_IPV4_ADDR_SUBNET dst 20.1.1.0/255.255.255.0 :00:02:23
                                                                  prot 0 port 0
                                ISAKMP (0:2): asking for 1 spis from ipsec :00:02:23
                       ,ISAKMP (0:2): Node -304515331, Input = IKE_MESG_FROM_PEER :00:02:23
                                                                    IKE_QM_EXCH
                              Old State = IKE_QM_READY New State = IKE_QM_SPI_STARVE

                                    ...IPSEC(key_engine): got a queue event :00:02:23
                           IPSEC(spi_response): getting spi 206728450 for SA :00:02:23
                                         from 172.16.172.52 to 172.16.172.69 for prot 3
                                            (ISAKMP: received ke message (2/1 :00:02:23
                        ISAKMP (0:2): sending packet to 172.16.172.52 (R) QM_IDLE :00:02:23
                     ,ISAKMP (0:2): Node -304515331, Input = IKE_MESG_FROM_IPSEC :00:02:23
                                                                  IKE_SPI_REPLY
                              Old State = IKE_QM_SPI_STARVE New State = IKE_QM_R_QM2

                     ISAKMP (0:2): received packet from 172.16.172.52 (R) QM_IDLE :00:02:23
                                         ISAKMP (0:2): Creating IPSec SAs :00:02:23
                              inbound SA from 172.16.172.52 to 172.16.172.69 :00:02:23
                                                   (proxy 50.1.1.0 to 20.1.1.0)
                              has spi 0xC526D02 and conn_id 2000 and flags 4 :00:02:23
                                                 lifetime of 3600 seconds :00:02:23
                                              lifetime of 4608000 kilobytes :00:02:23
                            outbound SA from 172.16.172.69 to 172.16.172.52 :00:02:23
                                                ( proxy 20.1.1.0 to 50.1.1.0)
                              has spi -92118549 and conn_id 2001 and flags 4 :00:02:23
                                                 lifetime of 3600 seconds :00:02:23
                                              lifetime of 4608000 kilobytes :00:02:23
                                ISAKMP (0:2): deleting node -304515331 error :00:02:23
                                            "()FALSE reason "quick mode done (await
```

```
,ISAKMP (0:2): Node -304515331, Input = IKE_MESG_FROM_PEER :00:02:23
                                                        IKE_QM_EXCH
        Old State = IKE_QM_R_QM2 New State = IKE_QM_PHASE2_COMPLETE

                        ...IPSEC(key_engine): got a queue event :00:02:23
                                        , :(IPSEC(initialize_sas :00:02:23
                    ,key eng. msg.) dest= 172.16.172.69, src= 172.16.172.52)
                            ,(dest_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
                             ,(src_proxy= 50.1.1.0/255.255.255.0/0/0 (type=4
                             , protocol= ESP, transform= esp-des esp-md5-hmac
                                             ,lifedur= 3600s and 4608000kb
       spi= 0xC526D02(206728450), conn_id= 2000, keysize= 0, flags= 0x4
                                        , :(IPSEC(initialize_sas :00:02:23
                    ,key eng. msg.) src= 172.16.172.69, dest= 172.16.172.52)
                            ,(src_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
                            ,(dest_proxy= 50.1.1.0/255.255.255.0/0/0 (type=4
                             , protocol= ESP, transform= esp-des esp-md5-hmac
                                             ,lifedur= 3600s and 4608000kb
      spi= 0xFA8261EB(4202848747), conn_id= 2001, keysize= 0, flags= 0x4
                                    ,IPSEC(create_sa): sa created :00:02:23
                                ,sa) sa_dest= 172.16.172.69, sa_prot= 50)
                                             ,(sa_spi= 0xC526D02(206728450
                        sa_trans= esp-des esp-md5-hmac , sa_conn_id= 2000
                                    ,IPSEC(create_sa): sa created :00:02:23
                                ,sa) sa_dest= 172.16.172.52, sa_prot= 50)
                                          ,(sa_spi= 0xFA8261EB(4202848747
                        sa_trans= esp-des esp-md5-hmac , sa_conn_id= 2001
    ISAKMP (0:2): sending packet to 172.16.172.52 (R) QM_IDLE :00:02:31
                     ISAKMP (0:2): purging node -2051070354 :00:02:31
 ISAKMP (0:2): Input = IKE_MESG_FROM_TIMER, IKE_TIMER_IM_ALIVE :00:02:31
                    Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE

  ISAKMP (0:2): received packet from 172.16.172.52 (R) QM_IDLE :00:02:31
ISAKMP (0:2): processing HASH payload. message ID = -739583249 :00:02:31
      ISAKMP (0:2): processing NOTIFY ITS_ALIVE_ACK protocol 1 :00:02:31
                              spi 0, message ID = -739583249, sa = 62DF5324
                    !ISAKMP (0:2): peer 172.16.172.52 is alive :00:02:31
                  ISAKMP (0:2): deleting node -739583249 error :00:02:31
                              "FALSE reason "informational (in) state 1
    ISAKMP (0:2): Input = IKE_MESG_FROM_PEER, IKE_INFO_NOTIFY :00:02:31
                Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE
```

التخزين المؤقت لقائمة إبطال الشهادات (CRL) على الموجهات

```
                                                SJVPN#show crypto ca crls
                                                        :CRL Issuer Name
                                                OU = sjvpn, O = cisco, C = us
                                              LastUpdate: 00:57:38 UTC Jan 14 2002
                                              NextUpdate: 01:57:38 UTC Jan 15 2002
                                            :Retrieved from CRL Distribution Point
                                    LDAP: CN = CRL1, OU = sjvpn, O = cisco, C = us
                                                SJhub#show crypto ca crls
                                                        :CRL Issuer Name
                                                OU = sjvpn, O = cisco, C = us
                                              LastUpdate: 00:57:38 UTC Jan 14 2002
                                              NextUpdate: 01:57:38 UTC Jan 15 2002
                                            :Retrieved from CRL Distribution Point
                                    LDAP: CN = CRL1, OU = sjvpn, O = cisco, C = us
```

شهادات من خادم Microsoft CA

تم تجميع تصحيح الأخطاء التالية على SJPKI و SJhub أثناء تفاوض IKE. بعد أن يقوم SJPKI بالتحقق من

الحمولة الأولى من CERT_REQ، يقوم بالفعل بالبحث عن الشهادات المطابقة في قاعدة بياناته، حتى لا يستمر في البحث في الحمولة الثانية من CERT_REQ. في هذه الحالة، يتم إستخدام الشهادات من خادم Microsoft CA لمصادقة IKE.

- تم تجميع تصحيح الأخطاء على SJPKI
- تم تجميع تصحيح الأخطاء على SJhub

تم تجميع تصحيح الأخطاء على SJPKI

```
                                                , :(2d21h: IPSEC(sa_request
                                  ,key eng. msg.) src= 172.16.172.10, dest= 172.16.172.69)
                                           ,(src_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4
                                          ,(dest_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
                                          , protocol= ESP, transform= esp-des esp-md5-hmac
                                                       ,lifedur= 3600s and 4608000kb
                                spi= 0xE8559075(3897921653), conn_id= 0, keysize= 0, flags= 0x4004
                                                    (2d21h: ISAKMP: received ke message (1/1
                                             2d21h: ISAKMP: local port 500, remote port 500
                                2d21h: ISAKMP (0:1): Input = IKE_MESG_FROM_IPSEC, IKE_SA_REQ_MM
                                                   Old State = IKE_READY New State = IKE_I_MM1
                                          2d21h: ISAKMP (0:1): beginning Main Mode exchange
                             2d21h: ISAKMP (0:1): sending packet to 172.16.172.69 (I) MM_NO_STATE
                          2d21h: ISAKMP (0:1): received packet from 172.16.172.69 (I) MM_NO_STATE
                                2d21h: ISAKMP (0:1): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH
                                                   Old State = IKE_I_MM1 New State = IKE_I_MM2

                                        2d21h: ISAKMP (0:1): processing SA payload. message ID = 0
                        2d21h: ISAKMP (0:1): Checking ISAKMP transform 1 against priority 1 policy
                                                    2d21h: ISAKMP: encryption DES-CBC
                                                       2d21h: ISAKMP: hash MD5
                                                 2d21h: ISAKMP: default group 1
                                                    2d21h: ISAKMP: auth RSA sig
                                               2d21h: ISAKMP: life type in seconds
                                   2d21h: ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80
                                 2d21h: ISAKMP (0:1): atts are acceptable. Next payload is 0
                              2d21h: ISAKMP (0:1): SA is doing RSA signature authentication
                                                        using id type ID_FQDN
                          2d21h: ISAKMP (0:1): Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE
                                                   Old State = IKE_I_MM2 New State = IKE_I_MM2

                             2d21h: ISAKMP (0:1): sending packet to 172.16.172.69 (I) MM_SA_SETUP
                             2d21h: ISAKMP (0:1): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE
                                                   Old State = IKE_I_MM2 New State = IKE_I_MM3

                          2d21h: ISAKMP (0:1): received packet from 172.16.172.69 (I) MM_SA_SETUP
                                2d21h: ISAKMP (0:1): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH
                                                   Old State = IKE_I_MM3 New State = IKE_I_MM4

                                        2d21h: ISAKMP (0:1): processing KE payload. message ID = 0
                                                                        !!!!.:2d21h
                            Success rate is 80 percent (4/5), round-trip min/avg/max = 1/3/4 ms
                                  SJPKI# ISAKMP (0:1): processing NONCE payload. message ID = 0
                                                   2d21h: ISAKMP (0:1): SKEYID state generated
                                2d21h: ISAKMP (0:1): processing CERT_REQ payload. message ID = 0
                                        2d21h: ISAKMP (0:1): peer wants a CT_X509_SIGNATURE cert
                                ,2d21h: ISAKMP (0:1): peer want cert issued by CN = SJPKICA
                                          OU = SJPKI, O = SJTAC, L = SAN JOSE, ST = CA, C = US
                                .2d21h: ISAKMP (0:1): already have a matching cert for this peer
                                                                .Finish processing cert req
                                                   2d21h: ISAKMP (0:1): processing vendor id payload
```

```
                                !2d21h: ISAKMP (0:1): speaking to another IOS box
                    2d21h: ISAKMP (0:1): Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE
                                    Old State = IKE_I_MM4 New State = IKE_I_MM4

                                                          2d21h: ISAKMP (1): ID payload
                                                                  next-payload : 6
                                                                          type : 2
                                                                     protocol : 17
                                                                        port : 500
                                                                      length : 15
                                    2d21h: ISAKMP (1): Total payload length: 19
                               2d21h: ISKAMP: growing send buffer from 1024 to 3072
                    2d21h: ISAKMP (0:1): sending packet to 172.16.172.69 (I) MM_KEY_EXCH
                    2d21h: ISAKMP (0:1): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE
                                    Old State = IKE_I_MM4 New State = IKE_I_MM5

                  2d21h: ISAKMP (0:1): received packet from 172.16.172.69 (I) MM_KEY_EXCH
                            2d21h: ISAKMP (0:1): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH
                                     Old State = IKE_I_MM5 New State = UNKNOWN

                                2d21h: ISAKMP (0:1): processing ID payload. message ID = 0
                               2d21h: ISAKMP (0:1): processing CERT payload. message ID = 0
                                   2d21h: ISAKMP (0:1): processing a CT_X509_SIGNATURE cert
                                           2d21h: CRYPTO_PKI: status = 0: crl check ignored
                                      2d21h: CRYPTO_PKI: WARNING: Certificate, private key
                                           or CRL was not found while selecting CRL

                                     .2d21h: CRYPTO_PKI: cert revocation status unknown
                                        2d21h: ISAKMP (0:1): cert approved with warning
                                2d21h: ISAKMP (0:1): processing SIG payload. message ID = 0
                            2d21h: ISAKMP (1): sa->peer.name = , sa->peer_id.id.id_fqdn.fqdn
                                                                    SJhub.sjtac.com =
                                                  2d21h: ISAKMP:received payload type 14
                          ,.2d21h: ISAKMP (0:1): processing keep alive: proposal=10/2 sec
                                                                    .actual=10/2 sec
                     .2d21h: ISAKMP (0:1): peer knows about the keepalive extension mechanism
                        2d21h: ISAKMP (0:1): read keepalive extended attribute VPI: /0x2/0x4
                                2d21h: ISAKMP (0:1): peer keepalives capabilities: 0x1
                           2d21h: ISAKMP (0:1): SA has been authenticated with 172.16.172.69
                    2d21h: ISAKMP (0:1): Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE
                                     Old State = UNKNOWN New State = UNKNOWN

                    2d21h: ISAKMP (0:1): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE
                                    Old State = UNKNOWN New State = IKE_P1_COMPLETE

                  2d21h: ISAKMP (0:1): beginning Quick Mode exchange, M-ID of -1644677681
                        2d21h: ISAKMP (0:1): sending packet to 172.16.172.69 (I) QM_IDLE
2d21h: ISAKMP (0:1): Node -1644677681, Input = IKE_MESG_INTERNAL, IKE_INIT_QM
                                    Old State = IKE_QM_READY New State = IKE_QM_I_QM1

                     2d21h: ISAKMP (0:1): Input = IKE_MESG_INTERNAL, IKE_PHASE1_COMPLETE
                                Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE

                     2d21h: ISAKMP (0:1): received packet from 172.16.172.69 (I) QM_IDLE
                   2d21h: ISAKMP (0:1): processing HASH payload. message ID = -1644677681

                    2d21h: ISAKMP (0:1): processing SA payload. message ID = -1644677681
                                    2d21h: ISAKMP (0:1): Checking IPSec proposal 1
                                                2d21h: ISAKMP: transform 1, ESP_DES
                                             :2d21h: ISAKMP: attributes in transform
                                                          2d21h: ISAKMP: encaps is 1
                                              2d21h: ISAKMP: SA life type in seconds
                                    2d21h: ISAKMP: SA life duration (basic) of 3600
                                           2d21h: ISAKMP: SA life type in kilobytes
```

```
                    2d21h: ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0
                                    2d21h: ISAKMP: authenticator is HMAC-MD5
                                   .2d21h: ISAKMP (0:1): atts are acceptable
                  ,2d21h: IPSEC(validate_proposal_request): proposal part #1
                    ,key eng. msg.) dest= 172.16.172.69, src= 172.16.172.10)
                            ,(dest_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
                             ,(src_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4
                            , protocol= ESP, transform= esp-des esp-md5-hmac
                                                      ,lifedur= 0s and 0kb
                             spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x4
2d21h: ISAKMP (0:1): processing NONCE payload. message ID = -1644677681
   2d21h: ISAKMP (0:1): processing ID payload. message ID = -1644677681
   2d21h: ISAKMP (0:1): processing ID payload. message ID = -1644677681
                                  2d21h: ISAKMP (0:1): Creating IPSec SAs
                       2d21h: inbound SA from 172.16.172.69 to 172.16.172.10
                                             (proxy 20.1.1.0 to 10.1.1.0)
                     2d21h: has spi 0xE8559075 and conn_id 2029 and flags 4
                                          2d21h: lifetime of 3600 seconds
                                      2d21h: lifetime of 4608000 kilobytes
                     2d21h: outbound SA from 172.16.172.10 to 172.16.172.69
                                        ( proxy 10.1.1.0 to 20.1.1.0)
                     2d21h: has spi -889328648 and conn_id 2030 and flags 4
                                          2d21h: lifetime of 3600 seconds
                                      2d21h: lifetime of 4608000 kilobytes
                               ...2d21h: IPSEC(key_engine): got a queue event
                                          , :(2d21h: IPSEC(initialize_sas
                    ,key eng. msg.) dest= 172.16.172.10, src= 172.16.172.69)
                            ,(dest_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4
                             ,(src_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
                            , protocol= ESP, transform= esp-des esp-md5-hmac
                                            ,lifedur= 3600s and 4608000kb
       spi= 0xE8559075(3897921653), conn_id= 2029, keysize= 0, flags= 0x4
                                          , :(2d21h: IPSEC(initialize_sas
                    ,key eng. msg.) src= 172.16.172.10, dest= 172.16.172.69)
                             ,(src_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4
                            ,(dest_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
                            , protocol= ESP, transform= esp-des esp-md5-hmac
                                            ,lifedur= 3600s and 4608000kb
       spi= 0xCAFDEBF8(3405638648), conn_id= 2030, keysize= 0, flags= 0x4
                                       ,2d21h: IPSEC(create_sa): sa created
                                  ,sa) sa_dest= 172.16.172.10, sa_prot= 50)
                                          ,(sa_spi= 0xE8559075(3897921653
                         sa_trans= esp-des esp-md5-hmac , sa_conn_id= 2029
                                       ,2d21h: IPSEC(create_sa): sa created
                                  ,sa) sa_dest= 172.16.172.69, sa_prot= 50)
                                          ,(sa_spi= 0xCAFDEBF8(3405638648
                         sa_trans= esp-des esp-md5-hmac , sa_conn_id= 2030
          2d21h: ISAKMP (0:1): sending packet to 172.16.172.69 (I) QM_IDLE
     "" 2d21h: ISAKMP (0:1): deleting node -1644677681 error FALSE reason
       ,2d21h: ISAKMP (0:1): Node -1644677681, Input = IKE_MESG_FROM_PEER
                                                          IKE_QM_EXCH
                Old State = IKE_QM_I_QM1 New State = IKE_QM_PHASE2_COMPLETE

                                                                  #SJPKI
      2d22h: ISAKMP (0:1): received packet from 172.16.172.69 (I) QM_IDLE
   2d22h: ISAKMP (0:1): processing HASH payload. message ID = -2115263482
              2d22h: ISAKMP (0:1): processing NOTIFY ITS_ALIVE protocol 1
                           spi 0, message ID = -2115263482, sa = 6335D814
                     2d22h: ISAKMP (0:1): deleting node -2115263482 error
                              "FALSE reason "informational (in) state 1
          2d22h: ISAKMP (0:1): Input = IKE_MESG_FROM_PEER, IKE_INFO_NOTIFY
                    Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE

          2d22h: ISAKMP (0:1): sending packet to 172.16.172.69 (I) QM_IDLE
```

```
2d22h: ISAKMP (0:1): purging node -1850875331
2d22h: ISAKMP (0:1): Input = IKE_MESG_FROM_PEER, IKE_MESG_KEEP_ALIVE

SJPKI#Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE
```

تم تجميع تصحيح الأخطاء على SJhub

```
                                                                #SJhub
      ISAKMP (0:0): received packet from 172.16.172.10 (N) NEW SA :00:07:26
                          ISAKMP: local port 500, remote port 500 :00:07:26
            ISAKMP (0:3): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH :00:07:26
                                  Old State = IKE_READY New State = IKE_R_MM1
             ISAKMP (0:3): processing SA payload. message ID = 0 :00:07:26
ISAKMP (0:3): Checking ISAKMP transform 1 against priority 1 policy :00:07:26
                                      ISAKMP: encryption DES-CBC :00:07:26
                                              ISAKMP: hash MD5 :00:07:26
                                         ISAKMP: default group 1 :00:07:26
                                            ISAKMP: auth RSA sig :00:07:26
                                    ISAKMP: life type in seconds :00:07:26
                ISAKMP: life duration (VPI) of 0x0 0x1 0x51 0x80 :00:07:26
              ISAKMP (0:3): atts are acceptable. Next payload is 3 :00:07:26
  ISAKMP (0:3): Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE :00:07:26
                                  Old State = IKE_R_MM1 New State = IKE_R_MM1

         ISAKMP (0:3): SA is doing RSA signature authentication :00:07:26
                                                 using id type ID_FQDN
    ISAKMP (0:3): sending packet to 172.16.172.10 (R) MM_SA_SETUP :00:07:26
    ISAKMP (0:3): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE :00:07:26
                                  Old State = IKE_R_MM1 New State = IKE_R_MM2

 ISAKMP (0:3): received packet from 172.16.172.10 (R) MM_SA_SETUP :00:07:26
            ISAKMP (0:3): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH :00:07:26
                                  Old State = IKE_R_MM2 New State = IKE_R_MM3

              ISAKMP (0:3): processing KE payload. message ID = 0 :00:07:26
           ISAKMP (0:3): processing NONCE payload. message ID = 0 :00:07:26
                                ISAKMP (0:3): SKEYID state generated :00:07:26
      ISAKMP (0:3): processing CERT_REQ payload. message ID = 0 :00:07:26
             ISAKMP (0:3): peer wants a CT_X509_SIGNATURE cert :00:07:26
,ISAKMP (0:3): peer want cert issued by CN = SJPKICA :00:07:26
                    OU = SJPKI, O = SJTAC, L = SAN JOSE, ST = CA, C = US
                       ISAKMP (0:3): processing vendor id payload :00:07:26
                       !ISAKMP (0:3): speaking to another IOS box :00:07:26
  ISAKMP (0:3): Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE :00:07:26
                                  Old State = IKE_R_MM3 New State = IKE_R_MM3

    ISAKMP (0:3): sending packet to 172.16.172.10 (R) MM_KEY_EXCH :00:07:26
    ISAKMP (0:3): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE :00:07:26
                                  Old State = IKE_R_MM3 New State = IKE_R_MM4

 ISAKMP (0:3): received packet from 172.16.172.10 (R) MM_KEY_EXCH :00:07:26
            ISAKMP (0:3): Input = IKE_MESG_FROM_PEER, IKE_MM_EXCH :00:07:26
                                  Old State = IKE_R_MM4 New State = IKE_R_MM5

              ISAKMP (0:3): processing ID payload. message ID = 0 :00:07:26
      ISAKMP (0:3): processing CERT payload. message ID = 0 :00:07:26
         ISAKMP (0:3): processing a CT_X509_SIGNATURE cert :00:07:26
                 CRYPTO_PKI: status = 0: crl check ignored :00:07:26
       CRYPTO_PKI: WARNING: Certificate, private key :00:07:26
                 or CRL was not found while selecting CRL

                .CRYPTO_PKI: cert revocation status unknown :00:07:26
                   ISAKMP (0:3): cert approved with warning :00:07:26
```

ISAKMP (0:3): processing SIG payload. message ID = 0 :00:07:26
ISAKMP (3): sa->peer.name = , sa->peer_id.id.id_fqdn.fqdn :00:07:26
SJPKI.sjtac =
ISAKMP:received payload type 14 :00:07:26
,.ISAKMP (0:3): processing keep alive: proposal=10/2 sec :00:07:26
.actual=10/2 sec
.ISAKMP (0:3): peer knows about the keepalive extension mechanism :00:07:26
ISAKMP (0:3): read keepalive extended attribute VPI: /0x2/0x4 :00:07:26
ISAKMP (0:3): peer keepalives capabilities: 0x1 :00:07:26
ISAKMP (0:3): SA has been authenticated with 172.16.172.10 :00:07:26
ISAKMP (0:3): Input = IKE_MESG_INTERNAL, IKE_PROCESS_MAIN_MODE :00:07:26
Old State = IKE_R_MM5 New State = IKE_R_MM5

ISAKMP (3): ID payload :00:07:26
next-payload : 6
type : 2
protocol : 17
port : 500
length : 19
ISAKMP (3): Total payload length: 23 :00:07:26
ISKAMP: growing send buffer from 1024 to 3072 :00:07:26
ISAKMP (0:3): sending packet to 172.16.172.10 (R) QM_IDLE :00:07:26
ISAKMP (0:3): Input = IKE_MESG_INTERNAL, IKE_PROCESS_COMPLETE :00:07:26
Old State = IKE_R_MM5 New State = IKE_P1_COMPLETE

ISAKMP (0:3): received packet from 172.16.172.10 (R) QM_IDLE :00:07:26
ISAKMP (0:3): processing HASH payload. message ID = -1644677681 :00:07:26
ISAKMP (0:3): processing SA payload. message ID = -1644677681 :00:07:26
ISAKMP (0:3): Checking IPSec proposal 1 :00:07:26
ISAKMP: transform 1, ESP_DES :00:07:26
:ISAKMP: attributes in transform :00:07:26
ISAKMP: encaps is 1 :00:07:26
ISAKMP: SA life type in seconds :00:07:26
ISAKMP: SA life duration (basic) of 3600 :00:07:26
ISAKMP: SA life type in kilobytes :00:07:26
ISAKMP: SA life duration (VPI) of 0x0 0x46 0x50 0x0 :00:07:26
ISAKMP: authenticator is HMAC-MD5 :00:07:26
.ISAKMP (0:3): atts are acceptable :00:07:26
,IPSEC(validate_proposal_request): proposal part #1 :00:07:26
,key eng. msg.) dest= 172.16.172.69, src= 172.16.172.10)
,(dest_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
,(src_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4
, protocol= ESP, transform= esp-des esp-md5-hmac
,lifedur= 0s and 0kb
spi= 0x0(0), conn_id= 0, keysize= 0, flags= 0x4
ISAKMP (0:3): processing NONCE payload. message ID = -1644677681 :00:07:26
ISAKMP (0:3): processing ID payload. message ID = -1644677681 :00:07:26
ISAKMP (3): ID_IPV4_ADDR_SUBNET src 10.1.1.0/255.255.255.0 :00:07:26
prot 0 port 0
ISAKMP (0:3): processing ID payload. message ID = -1644677681 :00:07:26
ISAKMP (3): ID_IPV4_ADDR_SUBNET dst 20.1.1.0/255.255.255.0 :00:07:26
prot 0 port 0
ISAKMP (0:3): asking for 1 spis from ipsec :00:07:26
,ISAKMP (0:3): Node -1644677681 :00:07:26
Input = IKE_MESG_FROM_PEER, IKE_QM_EXCH
Old State = IKE_QM_READY New State = IKE_QM_SPI_STARVE

...IPSEC(key_engine): got a queue event :00:07:26
IPSEC(spi_response): getting spi 3405638648 for SA :00:07:26
from 172.16.172.10 to 172.16.172.69 for prot 3
(ISAKMP: received ke message (2/1 :00:07:26
ISAKMP (0:3): sending packet to 172.16.172.10 (R) QM_IDLE :00:07:27
,ISAKMP (0:3): Node -1644677681, Input = IKE_MESG_FROM_IPSEC :00:07:27
IKE_SPI_REPLY

```
                    Old State = IKE_QM_SPI_STARVE New State = IKE_QM_R_QM2

 ISAKMP (0:3): received packet from 172.16.172.10 (R) QM_IDLE :00:07:27
                               ISAKMP (0:3): Creating IPSec SAs :00:07:27
                 inbound SA from 172.16.172.10 to 172.16.172.69 :00:07:27
                                          (proxy 10.1.1.0 to 20.1.1.0)
                has spi 0xCAFDEBF8 and conn_id 2002 and flags 4 :00:07:27
                                    lifetime of 3600 seconds :00:07:27
                                lifetime of 4608000 kilobytes :00:07:27
                outbound SA from 172.16.172.69 to 172.16.172.10 :00:07:27
                                      ( proxy 20.1.1.0 to 10.1.1.0)
                has spi -397045643 and conn_id 2003 and flags 4 :00:07:27
                                    lifetime of 3600 seconds :00:07:27
                                lifetime of 4608000 kilobytes :00:07:27
                  ISAKMP (0:3): deleting node -1644677681 error :00:07:27
                               "()FALSE reason "quick mode done (await
  ,ISAKMP (0:3): Node -1644677681, Input = IKE_MESG_FROM_PEER :00:07:27
                                                          IKE_QM_EXCH
             Old State = IKE_QM_R_QM2 New State = IKE_QM_PHASE2_COMPLETE

                          ...IPSEC(key_engine): got a queue event :00:07:27
                                       , :(IPSEC(initialize_sas :00:07:27
                  ,key eng. msg.) dest= 172.16.172.69, src= 172.16.172.10)
                           ,(dest_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
                            ,(src_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4
                            , protocol= ESP, transform= esp-des esp-md5-hmac
                                          ,lifedur= 3600s and 4608000kb
     spi= 0xCAFDEBF8(3405638648), conn_id= 2002, keysize= 0, flags= 0x4
                                       , :(IPSEC(initialize_sas :00:07:27
                  ,key eng. msg.) src= 172.16.172.69, dest= 172.16.172.10)
                           ,(src_proxy= 20.1.1.0/255.255.255.0/0/0 (type=4
                           ,(dest_proxy= 10.1.1.0/255.255.255.0/0/0 (type=4
                            , protocol= ESP, transform= esp-des esp-md5-hmac
                                          ,lifedur= 3600s and 4608000kb
     spi= 0xE8559075(3897921653), conn_id= 2003, keysize= 0, flags= 0x4
                                    ,IPSEC(create_sa): sa created :00:07:27
                                ,sa) sa_dest= 172.16.172.69, sa_prot= 50)
                                          ,(sa_spi= 0xCAFDEBF8(3405638648
                          sa_trans= esp-des esp-md5-hmac , sa_conn_id= 2002
                                    ,IPSEC(create_sa): sa created :00:07:27
                                ,sa) sa_dest= 172.16.172.10, sa_prot= 50)
                                          ,(sa_spi= 0xE8559075(3897921653
                          sa_trans= esp-des esp-md5-hmac , sa_conn_id= 2003
    ISAKMP (0:2): sending packet to 172.16.172.52 (R) QM_IDLE :00:07:30
                             ISAKMP (0:2): purging node -652282805 :00:07:30
ISAKMP (0:2): Input = IKE_MESG_FROM_TIMER, IKE_TIMER_IM_ALIVE :00:07:30
                 Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE

 ISAKMP (0:2): received packet from 172.16.172.52 (R) QM_IDLE :00:07:30
ISAKMP (0:2): processing HASH payload. message ID = 564680579 :00:07:30
     ISAKMP (0:2): processing NOTIFY ITS_ALIVE_ACK protocol 1 :00:07:30
                               spi 0, message ID = 564680579, sa = 62DF5324
                      !ISAKMP (0:2): peer 172.16.172.52 is alive :00:07:30
                    ISAKMP (0:2): deleting node 564680579 error :00:07:30
                               "FALSE reason "informational (in) state 1
    ISAKMP (0:2): Input = IKE_MESG_FROM_PEER, IKE_INFO_NOTIFY :00:07:30
                 Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE

                             ISAKMP (0:2): purging node 1414513005 :00:07:32
    ISAKMP (0:3): sending packet to 172.16.172.10 (R) QM_IDLE :00:07:36
                           ISAKMP (0:3): purging node -2115263482 :00:07:36
ISAKMP (0:3): Input = IKE_MESG_FROM_TIMER, IKE_TIMER_IM_ALIVE :00:07:36
                 Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE
```

```
ISAKMP (0:3): received packet from 172.16.172.10 (R) QM_IDLE :00:07:36
ISAKMP (0:3): processing HASH payload. message ID = -1850875331 :00:07:36
ISAKMP (0:3): processing NOTIFY ITS_ALIVE_ACK protocol 1 :00:07:36
                        spi 0, message ID = -1850875331, sa = 63338630
                    !ISAKMP (0:3): peer 172.16.172.10 is alive :00:07:36
                ISAKMP (0:3): deleting node -1850875331 error :00:07:36
                          "FALSE reason "informational (in) state 1
    ISAKMP (0:3): Input = IKE_MESG_FROM_PEER, IKE_INFO_NOTIFY :00:07:36
                Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE

ISAKMP (0:2): received packet from 172.16.172.52 (R) QM_IDLE :00:07:40
ISAKMP (0:2): processing HASH payload. message ID = 2075099983 :00:07:40
        ISAKMP (0:2): processing NOTIFY ITS_ALIVE protocol 1 :00:07:40
                        spi 0, message ID = 2075099983, sa = 62DF5324
                ISAKMP (0:2): deleting node 2075099983 error :00:07:40
                          "FALSE reason "informational (in) state 1
    ISAKMP (0:2): Input = IKE_MESG_FROM_PEER, IKE_INFO_NOTIFY :00:07:40
                Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE

    ISAKMP (0:2): sending packet to 172.16.172.52 (R) QM_IDLE :00:07:40
                        ISAKMP (0:2): purging node 1356214450 :00:07:40
ISAKMP (0:2): Input = IKE_MESG_FROM_PEER, IKE_MESG_KEEP_ALIVE :00:07:40
                Old State = IKE_P1_COMPLETE New State = IKE_P1_COMPLETE
```

عرض إخراج الأمر

يمكنك إستخدام الأمر **show crypto ipSec sa** للتحقق من اقترانات أمان ISAKMP و IPSec على الموجهات بعد التفاوض حول الأنفاق بنجاح. يتم عرض عينة الإخراج أدناه.

```
SJhub#show crypto isakmp sa
 dst src state conn-id slot
QM_IDLE 3 0 172.16.172.10 172.16.172.69
QM_IDLE 2 0 172.16.172.52 172.16.172.69


SJhub#show crypto ipsec sa

interface: Ethernet4/0
Crypto map tag: vpn, local addr. 172.16.172.69

(local ident (addr/mask/prot/port): (20.1.1.0/255.255.255.0/0/0
(remote ident (addr/mask/prot/port): (10.1.1.0/255.255.255.0/0/0
current_peer: 172.16.172.10
{,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.: 172.16.172.69, remote crypto endpt.: 172.16.172.10
path mtu 1500, media mtu 1500
current outbound spi: E8559075

:inbound esp sas
(spi: 0xCAFDEBF8(3405638648
, transform: esp-des esp-md5-hmac
{ ,in use settings ={Tunnel
slot: 0, conn id: 2002, flow_id: 3, crypto map: vpn
(sa timing: remaining key lifetime (k/sec): (4607998/3434
IV size: 8 bytes
replay detection support: Y
```

:inbound ah sas

:inbound pcp sas

:outbound esp sas
(spi: 0xE8559075(3897921653
, transform: esp-des esp-md5-hmac
{ ,in use settings ={Tunnel
slot: 0, conn id: 2003, flow_id: 4, crypto map: vpn
(sa timing: remaining key lifetime (k/sec): (4607999/3434
IV size: 8 bytes
replay detection support: Y

:outbound ah sas

:outbound pcp sas

(local ident (addr/mask/prot/port): (20.1.1.0/255.255.255.0/0/0
(remote ident (addr/mask/prot/port): (50.1.1.0/255.255.255.0/0/0
current_peer: 172.16.172.52
{,PERMIT, flags={origin_is_acl
pkts encaps: 2, #pkts encrypt: 2, #pkts digest 2#
pkts decaps: 2, #pkts decrypt: 2, #pkts verify 2#
pkts compressed: 0, #pkts decompressed: 0#
pkts not compressed: 0, #pkts compr. failed: 0, #pkts decompress failed: 0#
send errors 0, #recv errors 0#

local crypto endpt.: 172.16.172.69, remote crypto endpt.: 172.16.172.52
path mtu 1500, media mtu 1500
current outbound spi: FA8261EB

:inbound esp sas
(spi: 0xC526D02(206728450
, transform: esp-des esp-md5-hmac
{ ,in use settings ={Tunnel
slot: 0, conn id: 2000, flow_id: 1, crypto map: vpn
(sa timing: remaining key lifetime (k/sec): (4607999/3108
IV size: 8 bytes
replay detection support: Y

:inbound ah sas

:inbound pcp sas

:outbound esp sas
(spi: 0xFA8261EB(4202848747
, transform: esp-des esp-md5-hmac
{ ,in use settings ={Tunnel
slot: 0, conn id: 2001, flow_id: 2, crypto map: vpn
(sa timing: remaining key lifetime (k/sec): (4607999/3108
IV size: 8 bytes
replay detection support: Y

:outbound ah sas

:outbound pcp sas

SJVPN#**show crypto isakmp sa**
dst src state conn-id slot
QM_IDLE 2 0 172.16.172.52 172.16.172.69

```
SJVPN#show crypto ipsec sa

interface: Ethernet1/0
Crypto map tag: vpn, local addr. 172.16.172.52

(local ident (addr/mask/prot/port): (50.1.1.0/255.255.255.0/0/0
(remote ident (addr/mask/prot/port): (20.1.1.0/255.255.255.0/0/0
current_peer: 172.16.172.69
{,PERMIT, flags={origin_is_acl
pkts encaps: 2, #pkts encrypt: 2, #pkts digest 2#
pkts decaps: 2, #pkts decrypt: 2, #pkts verify 2#
pkts compressed: 0, #pkts decompressed: 0#
pkts not compressed: 0, #pkts compr. failed: 0, #pkts decompress failed: 0#
send errors 3, #recv errors 0#

local crypto endpt.: 172.16.172.52, remote crypto endpt.: 172.16.172.69
path mtu 1500, media mtu 1500
current outbound spi: C526D02

:inbound esp sas
(spi: 0xFA8261EB(4202848747
, transform: esp-des esp-md5-hmac
{ ,in use settings ={Tunnel
slot: 0, conn id: 2029, flow_id: 1, crypto map: vpn
(sa timing: remaining key lifetime (k/sec): (4607999/3398
IV size: 8 bytes
replay detection support: Y

:inbound ah sas

:inbound pcp sas

:outbound esp sas
(spi: 0xC526D02(206728450
, transform: esp-des esp-md5-hmac
{ ,in use settings ={Tunnel
slot: 0, conn id: 2030, flow_id: 2, crypto map: vpn
(sa timing: remaining key lifetime (k/sec): (4607999/3389
IV size: 8 bytes
replay detection support: Y

:outbound ah sas

:outbound pcp sas

SJPKI#show crypto isa sa
dst src state conn-id slot
QM_IDLE 1 0 172.16.172.10 172.16.172.69

SJPKI#show crypto ipsec sa

interface: Ethernet1/0
Crypto map tag: vpn, local addr. 172.16.172.10

(local ident (addr/mask/prot/port): (10.1.1.0/255.255.255.0/0/0
(remote ident (addr/mask/prot/port): (20.1.1.0/255.255.255.0/0/0
current_peer: 172.16.172.69
{,PERMIT, flags={origin_is_acl
pkts encaps: 7, #pkts encrypt: 7, #pkts digest 7#
pkts decaps: 7, #pkts decrypt: 7, #pkts verify 7#
pkts compressed: 0, #pkts decompressed: 0#
pkts not compressed: 0, #pkts compr. failed: 0, #pkts decompress failed: 0#
send errors 3, #recv errors 0#
```

```
local crypto endpt.: 172.16.172.10, remote crypto endpt.: 172.16.172.69
                                                path mtu 1500, media mtu 1500
                                              current outbound spi: CAFDEBF8

                                                              :inbound esp sas
                                                     (spi: 0xE8559075(3897921653
                                           , transform: esp-des esp-md5-hmac
                                                    { ,in use settings ={Tunnel
                                  slot: 0, conn id: 2029, flow_id: 1, crypto map: vpn
                                (sa timing: remaining key lifetime (k/sec): (4607998/3308
                                                              IV size: 8 bytes
                                                     replay detection support: Y

                                                               :inbound ah sas

                                                              :inbound pcp sas

                                                             :outbound esp sas
                                                     (spi: 0xCAFDEBF8(3405638648
                                           , transform: esp-des esp-md5-hmac
                                                    { ,in use settings ={Tunnel
                                  slot: 0, conn id: 2030, flow_id: 2, crypto map: vpn
                                (sa timing: remaining key lifetime (k/sec): (4607999/3308
                                                              IV size: 8 bytes
                                                     replay detection support: Y

                                                              :outbound ah sas

                                                             :outbound pcp sas
```

معلومات ذات صلة

- صفحات دعم منتجات أمان IP (IPSec)
- الدعم الفني - 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).