



Cisco pxGrid로 인증서 배포

*CA(Certificate Authority) 서명 pxGrid 클라이언트 및 자체 서명 ISE pxGrid
노드 인증서*

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이 문서 정보

이 문서에서는 CA 권한으로 서명된 인증서 및 ISE pxGrid 노드의 ISE를 위한 ISE 자체 서명 인증서를 사용하여 pxGrid 클라이언트를 구성하는 데 필요한 컨피그레이션 단계에 대해 설명합니다. 이 문서는 Cisco pxGrid를 구축하는 Cisco 현장 엔지니어, 기술 마케팅 엔지니어, 파트너 및 고객을 대상으로 합니다. 또한 pxGrid에 대해 잘 알고 있어야 합니다. pxGrid에 대해 잘 모르는 사용자는 아래의 [Configure_and_Test_Integration_with_Cisco_pxGrid.pdf](http://www.cisco.com/c/dam/en/us/td/docs/security/ise/how_to/HowTo-84-Configure_and_Test_Integration_with_Cisco_pxGrid.pdf)를 참조하십시오.
http://www.cisco.com/c/dam/en/us/td/docs/security/ise/how_to/HowTo-84-Configure_and_Test_Integration_with_Cisco_pxGrid.pdf

Cisco 어카운트 팀에서 pxGrid sdk를 받습니다.

Cisco ISE(Identity Services Engine) 1.3이 설치된 것을 전제로 합니다. OSX 10.8.5를 실행 중인 MAC은 pxGrid 클라이언트로 사용됩니다. Linux OS도 사용할 수 있습니다. pxGrid 클라이언트에는 Oracle Java Development Kit 7 또는 8이 필요합니다.

Deploying pxGrid with Certificates 시리즈에는 다음과 같은 두 가지 다른 문서가 있습니다.

- ISE pxGrid 노드 및 pxGrid 클라이언트에 CA 서명 인증서 사용
- ISE pxGrid 노드 및 ISE pxGrid 클라이언트에 자체 서명 인증서 사용

서론

이 섹션에서는 ISE 독립형 구축 시 pxGrid 클라이언트 및 ISE pxGrid 노드의 CA 서명 인증서 컨피그레이션에 대해 자세히 다룹니다. 이 경우 pxGrid 클라이언트에는 Entrus 같은 퍼블릭 CA에 의해 서명된 인증서가 포함될 수 있습니다. 사용자 지정 pxGrid 템플릿은 클라이언트 인증(1.3.6.5.5.7.3.2) 및 서버 인증(1.3.6.1.5.5.7.3.1)에 모두 EKU(Enhanced Key Usage) ISO 정의 OID(object identifier)가 수반됩니다. ISE pxGrid 노드에는 ISE 트러스트된 인증서 저장소의 자체 서명 ISE ID 인증서가 포함됩니다. Microsoft Enterprise CA 2008 R2는 pxGrid 클라이언트의 인증서에 서명할 수 있는 CA 권한으로 사용됩니다. Microsoft CA 권한의 CA 루트 인증서는 ISE 트러스트된 인증서 저장소에 추가됩니다. ISE 퍼블릭 인증서는 pxGrid 클라이언트의 키 저장소에 추가됩니다.

pxGrid 클라이언트가 ISE pxGrid 노드에 연결할 경우 두 퍼블릭 인증서 모두 성공적인 pxGrid 연결을 위해 SASL(Simple Authentication and Security Layer)에 트러스트됩니다.

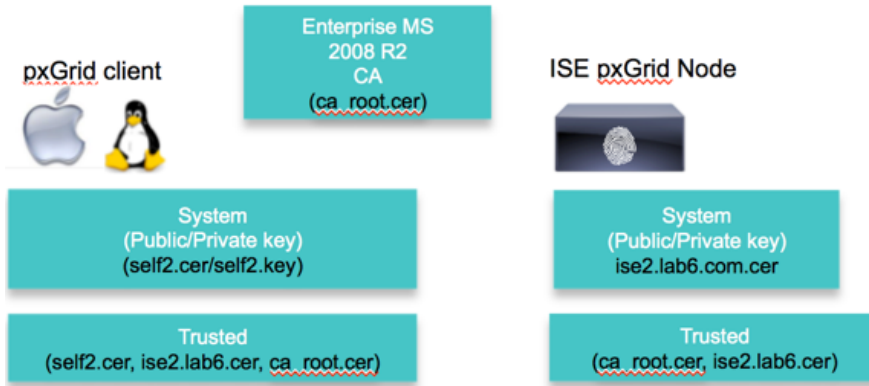
다음 다이어그램에는 정보의 인증서 플로우가 나와 있습니다.

pxGrid and Certificates



인증서 컨피그레이션 예

다음은 이 문서에 사용된 인증서 예를 나타냅니다.

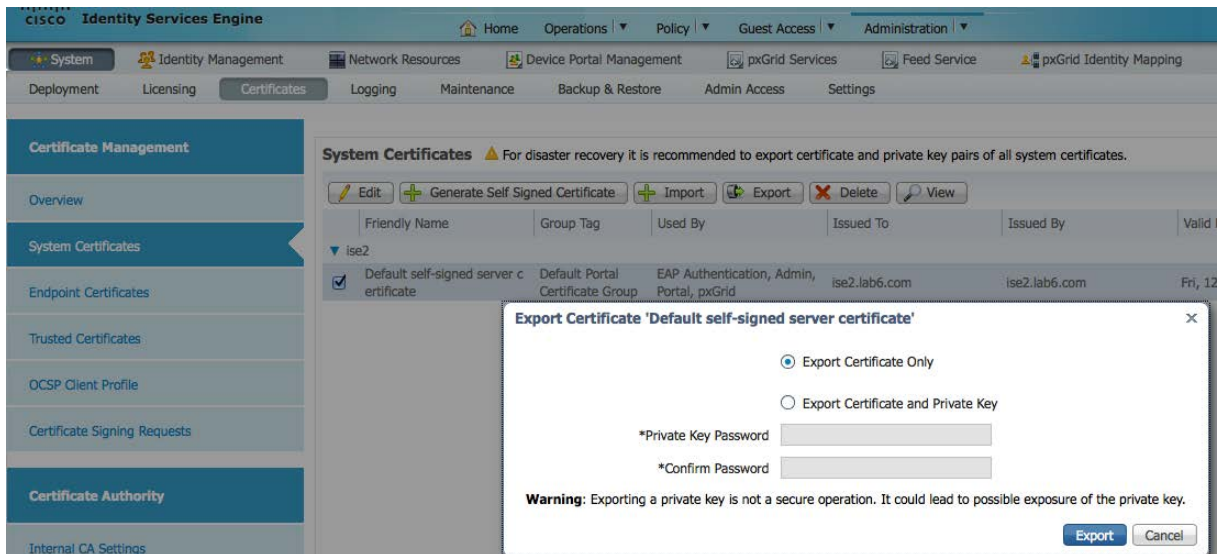


Keystore values:
 self2jks- used for keystoreFilename in pxGrid script
 root.jks- used for truststoreFilename in pxGrid script

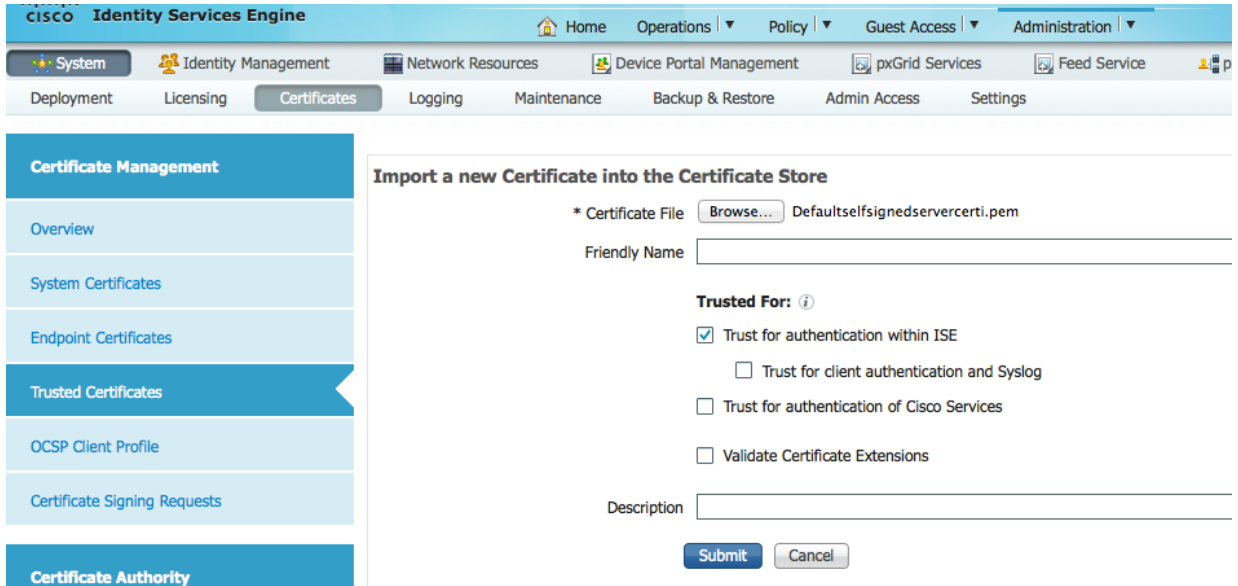
자체 서명 ISE pxGrid 노드 인증서 및 pxGrid 페르소나 컨피그레이션

이 예에서는 ISE 자체 서명 인증서를 ISE 트러스트된 인증서 저장소로 가져옵니다. ISE ID 인증서가 트러스트된 인증서 저장소에 있으면 ISE 노드의 pxGrid 페르소나를 활성화하고 이를 Primary 노드로 변경할 수 있습니다. 게시된 노드는 pxGrid Services View에 표시됩니다.

- 1단계** 자체 서명 ISE ID 인증서를 내보내고 .pem 파일로 저장합니다. **Administration->System->Certificates**를 차례로 누른 다음 **ISE identity cert->Export(퍼블릭 키만)**를 선택합니다.



2단계 저장된 ISE .pem 파일을 ISE 트러스트된 인증서 저장소로 가져옵니다.
Administration->System->Certificates->Trusted Certificates->Browse를 차례로 누른 다음 파일을 업로드하고 **Submit**을 누릅니다.



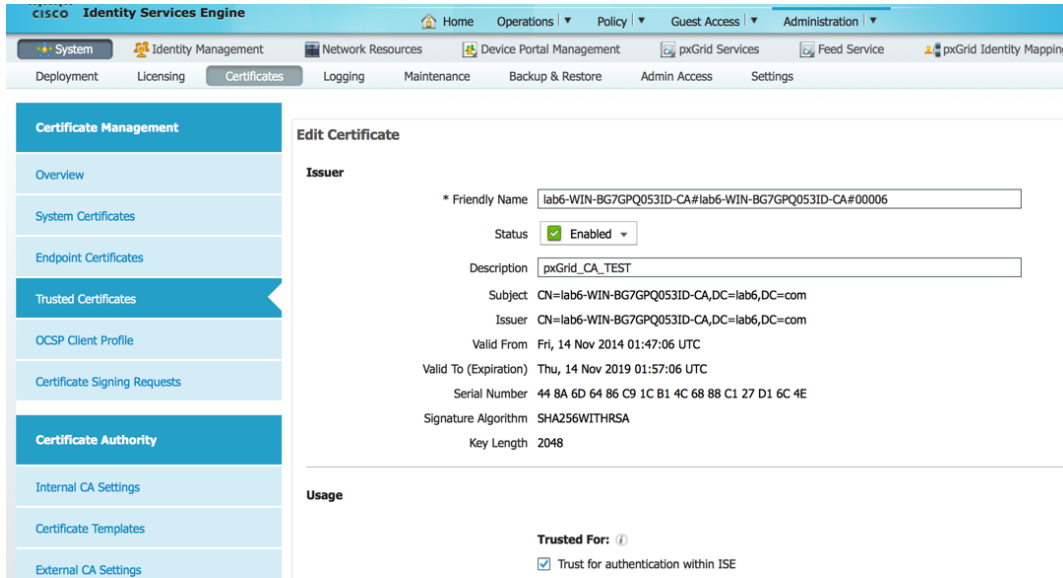
ISE 트러스트된 인증서 가져오기가 표시됩니다.

Trusted Certificates

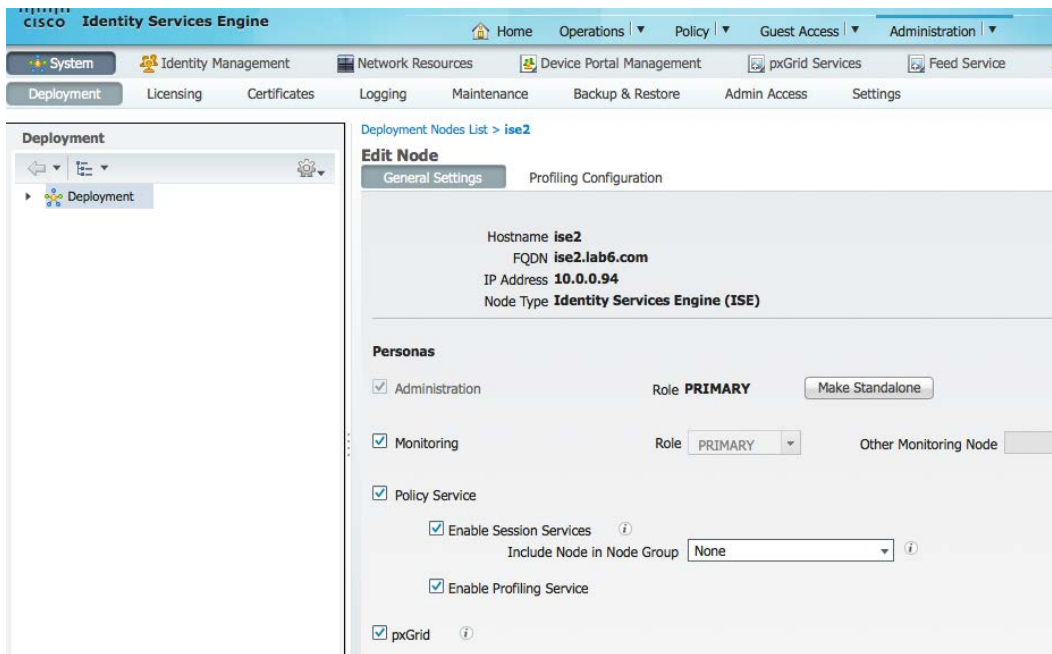
Edit
+ Import
Export
Delete

<input type="checkbox"/>	Friendly Name	Status	Trusted For	Serial Number	Issued To
<input type="checkbox"/>	Baltimore CyberTrust Root	Enabled	Cisco Services	02 00 00 B9	Baltimore CyberTrust
<input type="checkbox"/>	Certificate Services Endpoint Sub CA - ise2#00001	Enabled	Infrastructure Endpoints	0B A4 C8 E2 A9 A4...	Certificate Services E
<input type="checkbox"/>	Certificate Services OSCP Responder - ise2#00003	Enabled	Infrastructure	1A E3 25 3B 98 CA...	Certificate Services C
<input type="checkbox"/>	Certificate Services Root CA - ise2#00002	Enabled	Infrastructure Endpoints	0D 9F C1 A1 C1 9D...	Certificate Services R
<input type="checkbox"/>	Cisco CA Manufacturing	Disabled	Endpoints Infrastructure	6A 69 67 B3 00 00 ...	Cisco Manufacturing
<input type="checkbox"/>	Cisco Root CA 2048	Disabled	Endpoints Infrastructure	5F F8 7B 28 2B 54 ...	Cisco Root CA 2048
<input type="checkbox"/>	ise2.lab6.com#ise2.lab6.com#00004	Enabled	Infrastructure	54 8A 31 DD 00 00...	ise2.lab6.com
<input type="checkbox"/>	Thawte Primary Root CA	Enabled	Cisco Services	34 4E D5 57 20 D5...	thawte Primary Root

3단계 CA 루트 인증서를 다운로드하고 ISE 트러스트된 인증서 저장소에 업로드한 다음 ISE 커뮤니케이션에 트러스트 활성화를 선택합니다.
Administration->System->Certificates->Trusted Certificates->Import를 차례로 누른 다음 CA 루트 인증서를 업로드합니다.

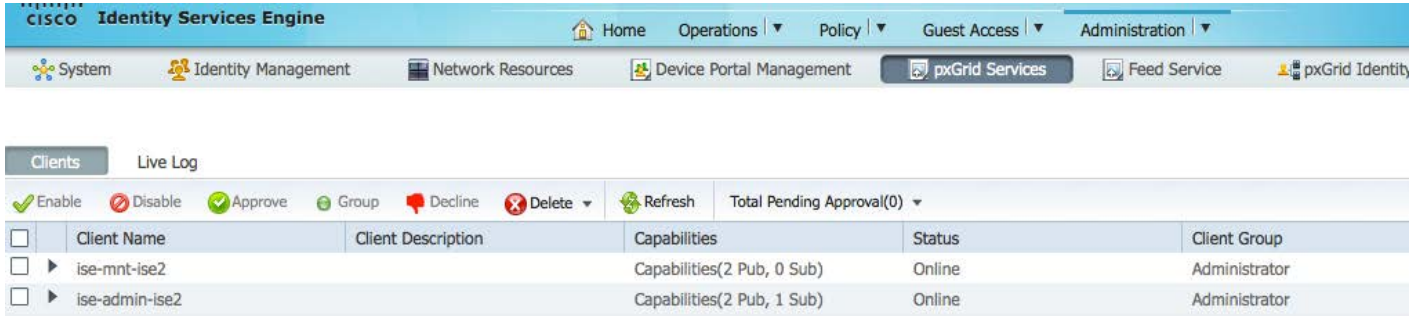


4단계 ISE에서 pxGrid 페르소나를 활성화합니다.
Administration->System->Deployment->Enable pxGrid를 차례로 누른 다음 역할을 **Primary**로 변경하고 **Save**를 누릅니다.



참고: 역할을 Primary로 반드시 변경해야 하는 것은 아닙니다.

5단계 게시된 서비스가 시작되었는지 확인합니다.
Administration->pxGrid Services



참고: ISE 게시 노드가 표시되기 전까지 지연이 발생할 수 있습니다. pxGrid 페르소나가 활성화되기 전에 인증서를 설치해야 합니다.

pxGrid 클라이언트 인증서 컨피그레이션

이 섹션에서는 pxGrid 클라이언트 자체 인증서 생성 프로세스를 단계별로 살펴봅니다. 인증서 퍼블릭/프라이빗 키 쌍이 생성되면 프라이빗 키인 self2.key에서 PKCS12 파일이 생성됩니다.

PKCS12 파일은 ID 키 저장소인 self1.jks로 가져오기됩니다. 이 ID 키 저장소 및 관련 비밀번호는 pxGrid 스크립트의 keystoreFilename 및 keystorePassword 역할을 합니다. pxGrid 클라이언트 인증서인 self2.cer도 ID 키 저장소에 추가됩니다.

ISE ID 인증서인 isemnt는 모두 벌크 세션 다운로드에 필요하며, CA 루트 인증서는 트러스트 키 저장소인 root.jks에 추가됩니다. 이 트러스트 키 저장소 및 관련 비밀번호는 pxGrid 스크립트의 truststoreFilename 및 truststorePassword 역할을 합니다.

1단계 pxGrid 클라이언트에 대한 프라이빗 키(예: self2.key)를 생성합니다.

```

openssl genrsa -out self2.key 4096

Generating RSA private key, 4096 bit long modulus
.....++
.....++
e is 65537 (0x10001)

```

2단계 CA 권한에 대한 CSR(예: self2.csr) 요청을 생성합니다. 챌린지 비밀번호(예: cisco123)를 제공합니다.


```
openssl req -new -key self2.key -out self2.csr
```

You are about to be asked to enter information that will be incorporated into your certificate request. What you are about to enter is what is called a Distinguished Name or a DN. There are quite a few fields but you can leave some blank For some fields there will be a default value, If you enter '.', the field will be left blank.

Country Name (2 letter code) [AU]:
State or Province Name (full name) [Some-State]:
Locality Name (eg, city) []:
Organization Name (eg, company) [Internet Widgits Pty Ltd]:
Organizational Unit Name (eg, section) []:
Common Name (e.g. server FQDN or YOUR name) []:
Email Address []:

Please enter the following 'extra' attributes to be sent with your certificate request
A challenge password []:cisco123
An optional company name []:Eppich,Inc

Note: Keep the same password throughout this document, easier to maintain, and cut down on errors

3단계 CA 권한은 클라이언트 인증 및 서버 인증을 위한 EKU(Enhanced Key Usage) ISO 정의 OID(object identifier)가 포함된 사용자 정의 템플릿(예: pxGrid)을 사용하여 사용자 인증서를 지원해야 합니다.

참고: pxGrid 템플릿은 CA 권한에서 생성됩니다. 이는 중복된 사용자 템플릿이며, Windows 2003 형식을 사용하므로 Certificate Template 드롭다운 메뉴에 해당 템플릿이 표시됩니다. EKU 클라이언트 인증 및 서버 인증이 모두 템플릿에 추가되었습니다.

Microsoft Active Directory Certificate Services -- lab6-WIN-BG7GPQ053ID-CA

Submit a Certificate Request or Renewal Request

To submit a saved request to the CA, paste a base-64-encoded CMC or PKCS #10 certificate request or PKCS #7 request by an external source (such as a Web server) in the Saved Request box.

Saved Request:

Base-64-encoded certificate request (CMC or PKCS #10 or PKCS #7):

```

OQAQEAxjh+u8GMpwxadhin6yxCwKYI8YhOY5jrURxf
wcs4Jq7PY4tQ6a/1Gk3chergzdBkMyXVzhxZhqg
Ptz3cMgOCyAscTxhn8NlfsvLZyk5ayPpmuaH3L3
Hm+6thRTVhrrKOG61ejxFd+0lzQxEn19YMov7sRSWfU1
jJf+Z+ptK87AYGzPYvWr/kl86b8TG1hSuMMF+Aglcp
QQZ3lwmp40gYabvhP6nmku4jQ8g==
JEST-----

```

Certificate Template:

pxGrid

Additional Attributes:

Attributes:

Submit >

4단계 pxGrid 클라이언트 인증서(예: self2.cer)의 프라이빗 키에서 pxGrid 클라이언트 pkcs12 파일(self2.p12)을 생성합니다. 이는 키 저장소 관리에 사용됩니다. CA 루트 파일(예: ca_root.cer)을 포함합니다.

```
openssl pkcs12 -export -out self2.p12 -inkey self2.key -in self2.cer -chain -CAfile ca_root.cer

Enter Export Password: cisco123
Verifying - Enter Export Password: cisco123
Johns-MacBook-Pro:pxGridsdk jeppich$
```

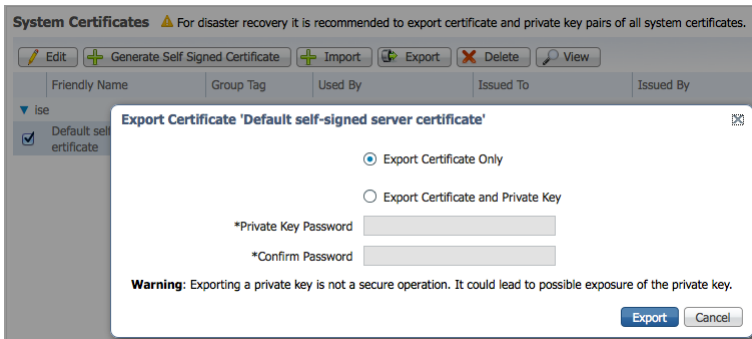
참고: cisco123은 이 문서 전체에서 사용되는 비밀번호입니다.

5단계 pxGrid 클라이언트 ID 키 저장소(예: self2.jks)를 생성합니다. 이는 pxGrid 스크립트 예에서 keystoreFilename 및 관련 keystorePassword 역할을 합니다.

```
keytool -importkeystore -srckeystore self2.p12 -destkeystore self2.jks -srcstoretype PKCS12

Enter destination keystore password: cisco123
Re-enter new password: cisco123
Enter source keystore password: cisco123
Entry for alias 1 successfully imported.
Import command completed: 1 entries successfully imported, 0 entries failed or cancelled
```

6단계 퍼블릭 ISE ID 인증서만 pxGrid 클라이언트로 내보내며, 이는 .pem 형식으로 이루어집니다. 확장자가 .pem인 파일의 이름을 더 읽기 쉽게 변경할 수 있습니다. 이 예에서 파일의 이름은 isemnt.pem으로 변경되었습니다.



7단계 .pem 파일을 .der 형식으로 변환합니다.

```
openssl x509 -outform der -in isemnt.pem -out isemnt.der
```

8단계 ISE ID 인증서를 트러스트 키 저장소(예: root.jks)에 추가합니다. 이는 pxGrid 스크립트에 사용된 truststoreFilename 및 관련 truststorePassword가 됩니다.

```
keytool -import -alias mnt -keystore root.jks -file isemnt.der

Enter keystore password: cisco123
Re-enter new password: cisco123
Owner: CN=ise.lab6.com
Issuer: CN=ise.lab6.com
Serial number: 548502f500000000ec27e53c1dd64f46
Valid from: Sun Dec 07 17:46:29 PST 2014 until: Mon Dec 07 17:46:29 PST 2015
Certificate fingerprints:
    MD5: 04:7D:67:04:EC:D2:F5:BC:DC:79:4D:0A:FF:62:09:FD
    SHA1: 5A:7B:02:E4:07:A1:D2:0B:7D:A5:AE:83:27:3B:E7:33:33:30:1E:32
    SHA256:
C4:21:6C:6F:5B:06:F3:D7:26:35:CB:BE:2B:1B:FF:0E:EE:09:91:F6:B6:54:0C:6F:63:CB:43:1F:77:F2:37
    Signature algorithm name: SHA1withRSA
    Version: 3

Extensions:

#1: ObjectId: 2.5.29.19 Criticality=false
BasicConstraints:[
  CA:true
  PathLen:2147483647
]

#2: ObjectId: 2.5.29.37 Criticality=false
ExtendedKeyUsages [
  serverAuth
  clientAuth
]

#3: ObjectId: 2.5.29.15 Criticality=false
KeyUsage [
  DigitalSignature
  Key_Encipherment
  Key_Agreement
  Key_CertSign
]

#4: ObjectId: 2.16.840.1.113730.1.1 Criticality=false
NetscapeCertType [
  SSL server
]

#5: ObjectId: 2.5.29.14 Criticality=false
SubjectKeyIdentifier [
  KeyIdentifier [
0000: C4 F3 1A 9E 7B 1B 14 4F 51 9E A4 88 33 07 7A AC .....OQ...3.z.
0010: 75 37 36 D4 u76.
  ]
]

Trust this certificate? [no]: yes
Certificate was added to keystore
Johns-MacBook-Pro:pxGridsdk jeppich$
```

9단계 pxGrid 클라이언트 인증서를 ID 키 저장소로 가져옵니다.

```
keytool -import -alias pxGridclient -keystore self2.jks -file self2.cer

Enter keystore password: cisco123
Certificate already exists in keystore under alias <1>
Do you still want to add it? [no]: no
Certificate was not added to keystroke
```

10단계 CA 루트 인증서를 트러스트 키 저장소에 추가합니다. 두 인증서는 모두 트러스트 키 저장소에 상주해야 합니다.

```
keytool -import -alias root -keystore root.jks -file ca_root.cer
Enter keystore password: cisco123
Owner: CN=lab6-WIN-BG7GPQ053ID-CA, DC=lab6, DC=com
Issuer: CN=lab6-WIN-BG7GPQ053ID-CA, DC=lab6, DC=com
Serial number: 448a6d6486c91cb14c6888c127d16c4e
Valid from: Thu Nov 13 17:47:06 PST 2014 until: Wed Nov 13 17:57:06 PST 2019
Certificate fingerprints:
    MD5: 41:10:8A:F5:36:76:79:9C:2C:00:03:47:55:F8:CF:7B
    SHA1: 9D:DA:06:AF:06:3F:8F:5E:84:C7:F4:58:50:95:03:22:64:48:96:9F
    SHA256:
DB:28:50:D6:47:CA:C0:6A:E9:7B:87:B4:0E:9C:3A:C1:A2:61:EA:D1:29:8B:45:B4:76:4B:DA:2A:F1:D8:E0:A3
Signature algorithm name: SHA256withRSA
Version: 3

Extensions:

#1: ObjectId: 1.3.6.1.4.1.311.21.1 Criticality=false
0000: 02 01 00 ...

#2: ObjectId: 2.5.29.19 Criticality=true
BasicConstraints:[
  CA:true
  PathLen:2147483647
]

#3: ObjectId: 2.5.29.15 Criticality=false
KeyUsage [
  DigitalSignature
  Key_CertSign
  Crl_Sign
]

#4: ObjectId: 2.5.29.14 Criticality=false
SubjectKeyIdentifier [
KeyIdentifier [
0000: A9 C7 8E 26 9C F5 37 0A E6 5A 15 36 26 D4 A2 06 ...&...7...Z.6&...
0010: 6A C8 79 2C j.y,
]
]

Trust this certificate? [no]: yes
Certificate was added to keystore
```

11단계 ID 키 저장소(예: self2.jks) 및 트러스트 키 저장소(예: root.jks)를 ../samples/bin 폴더에 복사합니다.

pxGrid 클라이언트 및 ISE pxGrid 노드 테스트

샘플 pxGrid 스크립트인 register.sh 및 session_download.sh는 pxGrid 클라이언트 연결 및 pxGrid 등록을 확인하기 위해 실행됩니다. 세션 다운로드에는 ISE MNT 인증서 및 pxGrid 클라이언트에 문제가 없는지 확인합니다.

1단계 pxGrid 클라이언트 등록

```
./register.sh -keystoreFilename self2.jks -keystorePassword cisco123 -truststoreFilename root.jks -
truststorePassword cisco123 -group Session -description test -hostname 10.0.0.96 -username JohnMACbook

----- properties -----
version=1.0.0
hostnames=10.0.0.96
username=JohnMACbook
descriptipon=test
keystoreFilename=self2.jks
keystorePassword=cisco123
truststoreFilename=root.jks
truststorePassword=cisco123
-----
registering...
connecting...
connected.
done registering.
connection closed
```

2단계 세션 다운로드 실행

```
./session_download.sh -keystoreFilename self2.jks -keystorePassword cisco123 -truststoreFilename root.jks -
truststorePassword cisco123 -hostname 10.0.0.96 -username JohnMACbook

----- properties -----
version=1.0.0
hostnames=10.0.0.96
username=JohnMACbook
keystoreFilename=self2.jks
keystorePassword=cisco123
truststoreFilename=root.jks
truststorePassword=cisco123
filter=null
start=null
end=null
-----
connecting...
connected.
starting at Wed Dec 10 09:55:36 PST 2014...

session (ip=10.0.0.18, Audit Session Id=0A0000020000000B006E1086, User Name=jepich, AD User DNS
Domain=lab6.com, AD Host DNS Domain=null, AD User NetBIOS Name=LAB6, AD Host NETBIOS Name=null, Calling
station id=00:0C:29:D1:8D:90, Session state= STARTED, Epsstatus=null, Security Group=null, Endpoint
Profile=VMWare-Device, NAS IP=10.0.0.2, NAS Port=GigabitEthernet1/0/15, RADIUSAVPairs=[ Acct-Session-
Id=00000002], Posture Status=null, Posture Timestamp=, Session Last Update Time=Wed Dec 10 08:27:59 PST
2014 )... ending at: Wed Dec 10 09:55:36 PST 2014

-----
downloaded 1 sessions in 100 milliseconds
-----

connection closed
```

키 저장소 항목 보기

키 저장소 항목을 확인하여 ID 및 트러스트 키 저장소의 트러스트된 인증서 항목을 볼 수 있습니다.

```
keytool -list -v -keystore self2.jks
Enter keystore password:

Keystore type: JKS
Keystore provider: SUN

Your keystore contains 2 entries

Alias name: isecert
Creation date: Dec 10, 2014
Entry type: trustedCertEntry

Owner: CN=ise.lab6.com
Issuer: CN=ise.lab6.com
Serial number: 548502f500000000ec27e53c1dd64f46
Valid from: Sun Dec 07 17:46:29 PST 2014 until: Mon Dec 07 17:46:29 PST 2015
Certificate fingerprints:
    MD5: 04:7D:67:04:EC:D2:F5:BC:DC:79:4D:0A:FF:62:09:FD
    SHA1: 5A:7B:02:E4:07:A1:D2:0B:7D:A5:AE:83:27:3B:E7:33:30:1E:32
    SHA256:
C4:21:6C:6F:5B:06:F3:2C:D7:26:35:CB:BE:2B:1B:FF:0E:EE:09:91:F6:B6:54:0C:6F:63:CB:43:1F:77:F2:37
    Signature algorithm name: SHA1withRSA
    Version: 3

Extensions:

#1: ObjectID: 2.5.29.19 Criticality=false
BasicConstraints:[
  CA:true
  PathLen:2147483647
]

#2: ObjectID: 2.5.29.37 Criticality=false
ExtendedKeyUsages [
  serverAuth
  clientAuth
]

#3: ObjectID: 2.5.29.15 Criticality=false
KeyUsage [
  DigitalSignature
  Key_Encipherment
  Key_Agreement
  Key_CertSign
]

#4: ObjectID: 2.16.840.1.113730.1.1 Criticality=false
NetscapeCertType [
  SSL server
]

#5: ObjectID: 2.5.29.14 Criticality=false
SubjectKeyIdentifier [
KeyIdentifier [
0000: C4 F3 1A 9E 7B 1B 14 4F 51 9E A4 88 33 07 7A AC .....OQ...3.z.
0010: 75 37 36 D4 u76.
]
]

*****
*****
```

```

Alias name: 1
Creation date: Dec 10, 2014
Entry type: PrivateKeyEntry
Certificate chain length: 2
Certificate[1]:
Owner: O=Internet Widgits Pty Ltd, ST=Some-State, C=AU
Issuer: CN=lab6-WIN-BG7GPQ053ID-CA, DC=lab6, DC=com
Serial number: 6105dce6000000000000a
Valid from: Wed Dec 10 09:01:44 PST 2014 until: Sat Dec 10 09:11:44 PST 2016
Certificate fingerprints:
  MD5: 76:3E:43:48:A7:FD:2C:5B:A3:FD:76:3F:6E:DF:2D:B8
  SHA1: A9:E4:66:D9:34:C6:62:67:2B:C0:AF:E1:68:83:EA:36:3D:2A:23:CC
  SHA256:
0E:D8:04:30:39:3E:0B:06:D5:3E:29:94:ED:C7:76:7A:5E:27:1C:14:CF:CD:1E:4D:10:AF:22:A7:54:E5:52:7B
  Signature algorithm name: SHA256withRSA
  Version: 3

Extensions:

#1: ObjectID: 1.2.840.113549.1.9.15 Criticality=false
0000: 30 35 30 0E 06 08 2A 86 48 86 F7 0D 03 02 02 02 050...*.H.....
0010: 00 80 30 0E 06 08 2A 86 48 86 F7 0D 03 04 02 02 ..0...*.H.....
0020: 00 80 30 07 06 05 2B 0E 03 02 07 30 0A 06 08 2A ..0...+....0...*
0030: 86 48 86 F7 0D 03 07 .H.....

#2: ObjectID: 1.3.6.1.4.1.311.21.10 Criticality=false
0000: 30 32 30 0A 06 08 2B 06 01 05 05 07 03 01 30 0A 020...+.....0.
0010: 06 08 2B 06 01 05 05 07 03 02 30 0A 06 08 2B 06 ..+.....0...+
0020: 01 05 07 03 04 30 0C 06 0A 2B 06 01 04 01 82 .....0...+.....
0030: 37 0A 03 04 7...

#3: ObjectID: 1.3.6.1.4.1.311.21.7 Criticality=false
0000: 30 2D 06 25 2B 06 01 04 01 82 37 15 08 DC FD 1A 0-..%+.....7.....
0010: 87 CB EB 79 81 89 9D 2D 86 E6 FC 53 86 82 A1 38 ...y...-...S...8
0020: 5E 86 D1 B8 23 85 FC EF 40 02 01 64 02 01 03 ^...#...@...d...

#4: ObjectID: 1.3.6.1.5.5.7.1.1 Criticality=false
AuthorityInfoAccess [
  [
    accessMethod: caIssuers
    accessLocation: URName: ldap:///CN=lab6-WIN-BG7GPQ053ID-
CA,CN=AIA,CN=Public%20Key%20Services,CN=Services,CN=Configuration,DC=lab6,DC=com?cACertificate?base?objectC
lass=certificationAuthority
  ]
]

#5: ObjectID: 2.5.29.35 Criticality=false
AuthorityKeyIdentifier [
KeyIdentifier [
0000: A9 C7 8E 26 9C F5 37 0A E6 5A 15 36 26 D4 A2 06 ...&..7..Z.6&...
0010: 6A C8 79 2C j.Y,
]
]

#6: ObjectID: 2.5.29.31 Criticality=false
CRLDistributionPoints [
  [DistributionPoint:
  [URName: ldap:///CN=lab6-WIN-BG7GPQ053ID-CA,CN=WIN-
BG7GPQ053ID,CN=CDP,CN=Public%20Key%20Services,CN=Services,CN=Configuration,DC=lab6,DC=com?certificateRevoca
tionList?base?objectClass=cRLDistributionPoint]
]]

#7: ObjectID: 2.5.29.32 Criticality=false
CertificatePolicies [
  [CertificatePolicyId: [2.5.29.32.0]
[] ]
]

```



```

#8: ObjectID: 2.5.29.37 Criticality=false
ExtendedKeyUsages [
  serverAuth
  clientAuth
  emailProtection
  1.3.6.1.4.1.311.10.3.4
]

#9: ObjectID: 2.5.29.15 Criticality=true
KeyUsage [
  DigitalSignature
  Key_Encipherment
]

#10: ObjectID: 2.5.29.14 Criticality=false
SubjectKeyIdentifier [
KeyIdentifier [
0000: 36 E2 1A 09 D1 51 72 4D   C3 6A 18 C1 C4 EB AE B5   6....QrM.j.....
0010: E4 48 39 4E                               .H9N
]
]

Certificate[2]:
Owner: CN=lab6-WIN-BG7GPQ053ID-CA, DC=lab6, DC=com
Issuer: CN=lab6-WIN-BG7GPQ053ID-CA, DC=lab6, DC=com
Serial number: 448a6d6486c91cb14c6888c127d16c4e
Valid from: Thu Nov 13 17:47:06 PST 2014 until: Wed Nov 13 17:57:06 PST 2019
Certificate fingerprints:
  MD5: 41:10:8A:F5:36:76:79:9C:2C:00:03:47:55:F8:CF:7B
  SHA1: 9D:DA:06:AF:06:3F:8F:5E:84:C7:F4:58:50:95:03:22:64:48:96:9F
  SHA256:
DB:28:50:D6:47:CA:C0:6A:E9:7B:87:B4:0E:9C:3A:C1:A2:61:EA:D1:29:8B:45:B4:76:4B:DA:2A:F1:D8:E0:A3
Signature algorithm name: SHA256withRSA
Version: 3

Extensions:

#1: ObjectID: 1.3.6.1.4.1.311.21.1 Criticality=false
0000: 02 01 00                                     ...

#2: ObjectID: 2.5.29.19 Criticality=true
BasicConstraints:[
  CA:true
  PathLen:2147483647
]

#3: ObjectID: 2.5.29.15 Criticality=false
KeyUsage [
  DigitalSignature
  Key_CertSign
  Crl_Sign
]

#4: ObjectID: 2.5.29.14 Criticality=false
SubjectKeyIdentifier [
KeyIdentifier [
0000: A9 C7 8E 26 9C F5 37 0A   E6 5A 15 36 26 D4 A2 06   ...&..7..Z.6&...
0010: 6A C8 79 2C                               j-y,
]
]

*****
*****
keytool -list -v -keystore root.jks
Enter keystore password:

Keystore type: JKS

```

```

Keystore provider: SUN

Your keystore contains 2 entries

Alias name: root
Creation date: Dec 10, 2014
Entry type: trustedCertEntry

Owner: CN=lab6-WIN-BG7GPQ053ID-CA, DC=lab6, DC=com
Issuer: CN=lab6-WIN-BG7GPQ053ID-CA, DC=lab6, DC=com
Serial number: 448a6d6486c91cb14c6888c127d16c4e
Valid from: Thu Nov 13 17:47:06 PST 2014 until: Wed Nov 13 17:57:06 PST 2019
Certificate fingerprints:
    MD5: 41:10:8A:F5:36:76:79:9C:2C:00:03:47:55:F8:CF:7B
    SHA1: 9D:DA:06:AF:06:3F:8F:5E:84:C7:F4:58:50:95:03:22:64:48:96:9F
    SHA256:
DB:28:50:D6:47:CA:C0:6A:E9:7B:87:B4:0E:9C:3A:C1:A2:61:EA:D1:29:8B:45:B4:76:4B:DA:2A:F1:D8:E0:A3
    Signature algorithm name: SHA256withRSA
    Version: 3

Extensions:

#1: ObjectId: 1.3.6.1.4.1.311.21.1 Criticality=false
0000: 02 01 00          ...

#2: ObjectId: 2.5.29.19 Criticality=true
BasicConstraints: [
    CA:true
    PathLen:2147483647
]

#3: ObjectId: 2.5.29.15 Criticality=false
KeyUsage [
    DigitalSignature
    Key_CertSign
    Crl_Sign
]

#4: ObjectId: 2.5.29.14 Criticality=false
SubjectKeyIdentifier [
KeyIdentifier [
0000: A9 C7 8E 26 9C F5 37 0A   E6 5A 15 36 26 D4 A2 06   ...&..7..Z.6&...
0010: 6A C8 79 2C                   j.Y,
]
]

*****
*****

Alias name: mnt
Creation date: Dec 10, 2014
Entry type: trustedCertEntry

Owner: CN=ise.lab6.com
Issuer: CN=ise.lab6.com
Serial number: 548502f500000000ec27e53c1dd64f46
Valid from: Sun Dec 07 17:46:29 PST 2014 until: Mon Dec 07 17:46:29 PST 2015
Certificate fingerprints:
    MD5: 04:7D:67:04:EC:D2:F5:BC:DC:79:4D:0A:FF:62:09:FD
    SHA1: 5A:7B:02:E4:07:A1:D2:0B:7D:A5:AE:83:27:3B:E7:33:33:30:1E:32
    SHA256:
C4:21:6C:6F:5B:06:F3:2C:D7:26:35:CB:BE:2B:1B:FF:0E:EE:09:91:F6:B6:54:0C:6F:63:CB:43:1F:77:F2:37
    Signature algorithm name: SHA1withRSA
    Version: 3

Extensions:
    
```

```

#1: ObjectId: 2.5.29.19 Criticality=false
BasicConstraints:[
  CA:true
  PathLen:2147483647
]

#2: ObjectId: 2.5.29.37 Criticality=false
ExtendedKeyUsages [
  serverAuth
  clientAuth
]

#3: ObjectId: 2.5.29.15 Criticality=false
KeyUsage [
  DigitalSignature
  Key_Encipherment
  Key_Agreement
  Key_CertSign
]

#4: ObjectId: 2.16.840.1.113730.1.1 Criticality=false
NetscapeCertType [
  SSL server
]

#5: ObjectId: 2.5.29.14 Criticality=false
SubjectKeyIdentifier [
KeyIdentifier [
0000: C4 F3 1A 9E 7B 1B 14 4F 51 9E A4 88 33 07 7A AC .....OQ...3.z.
0010: 75 37 36 D4 u76.
]
]

*****
*****

```

문제 해결

이 섹션에서는 트러블슈팅에 대한 정보를 제공합니다.

- pxGrid 클라이언트 호스트 이름 및 ISE pxGrid가 DNS를 통해 확인 가능한지 파악하여 pxGrid 스크립팅 오류 메시지를 방지합니다.
- 트러스트 저장소가 변경되고 유사한 오류 메시지가 표시될 경우, ISE VM에서 ISE 애플리케이션을 중지하고 다시 시작합니다.

```
./register.sh -keystoreFilename self1.jks -keysrePassword cisco123 -truststoreFilename root1.jks -
truststorePassword cisco123 -username pxGridclient -hostname 10.0.0.96 -group Session -description test1
----- properties -----
version=1.0.0
hostnames=10.0.0.96
username=pxGridclient
descriptipon=test1
keystoreFilename=self1.jks
keystorePassword=cisco123
truststoreFilename=root1.jks
truststorePassword=cisco123
-----
registering...
connecting...
javax.net.ssl.SSLHandshakeException: Received fatal alert: unknown_ca
    at sun.security.ssl.Alerts.getSSLException(Alerts.java:192)
    at sun.security.ssl.Alerts.getSSLException(Alerts.java:154)
    at sun.security.ssl.SSLSocketImpl.recvAlert(SSLSocketImpl.java:1991)
    at sun.security.ssl.SSLSocketImpl.readRecord(SSLSocketImpl.java:1104)
    at sun.security.ssl.SSLSocketImpl.performInitialHandshake(SSLSocketImpl.java:1343)
    at sun.security.ssl.SSLSocketImpl.startHandshake(SSLSocketImpl.java:1371)
    at sun.security.ssl.SSLSocketImpl.startHandshake(SSLSocketImpl.java:1355)
    at org.jivesoftware.smack.XMPPConnection.proceedTLSReceived(XMPPConnection.java:806)
    at org.jivesoftware.smack.PacketReader.parsePackets(PacketReader.java:267)
    at org.jivesoftware.smack.PacketReader.access$000(PacketReader.java:43)
    at org.jivesoftware.smack.PacketReader$1.run(PacketReader.java:70)
Exception in thread "main" com.cisco.pxgrid.GCLEException: SASL authentication failed:
    at com.cisco.pxgrid.GridConnection.connect(GridConnection.java:197)
    at com.cisco.pxgrid.samples.ise.Register.main(Register.java:99)
Caused by: SASL authentication failed:
    at org.jivesoftware.smack.SASLAuthentication.authenticate(SASLAuthentication.java:281)
    at org.jivesoftware.smack.XMPPConnection.login(XMPPConnection.java:206)
    at com.cisco.pxgrid.Configuration.connect(Configuration.java:194)
    at com.cisco.pxgrid.GridConnection.connect(GridConnection.java:134)
    ... 1 more
```

- ISE 서비스 다시 시작

```
application stop ise
application start ise
```

- pxGrid 프로세스가 초기화 중인지 확인합니다.

```
sh application status ise
```

- 유사한 오류 메시지가 표시되면 루트 인증서를 truststoreFilename 키 저장소(이 예에서는 root3.jks)에 추가해야 합니다.

```
./register.sh -keystoreFilename pxGridClient.jks -keystorePassword cisco123 -truststoreFilename root3.jks -
truststorePassword cisco123 -group Session -description MACBOOK -username Macbook_PRO -hostname 10.0.0.96
----- properties -----
version=1.0.0
hostnames=10.0.0.96
username=Macbook_PRO
descriptipon=MACBOOK
keystoreFilename=pxGridClient.jks
keystorePassword=cisco123
```

```
truststoreFilename=root3.jks
truststorePassword=cisco123
-----
registering...
connecting...
javax.net.ssl.SSLHandshakeException: java.security.cert.CertificateException: root certificate not trusted
of [ise.lab6.com]
    at sun.security.ssl.Alerts.getSSLException(Alerts.java:192)
    at sun.security.ssl.SSLSocketImpl.fatal(SSLSocketImpl.java:1917)
    at sun.security.ssl.Handshaker.fatalSE(Handshaker.java:301)
    at sun.security.ssl.Handshaker.fatalSE(Handshaker.java:295)
    at sun.security.ssl.ClientHandshaker.serverCertificate(ClientHandshaker.java:1471)
    at sun.security.ssl.ClientHandshaker.processMessage(ClientHandshaker.java:212)
    at sun.security.ssl.Handshaker.processLoop(Handshaker.java:936)
    at sun.security.ssl.Handshaker.process_record(Handshaker.java:871)
    at sun.security.ssl.SSLSocketImpl.readRecord(SSLSocketImpl.java:1043)
    at sun.security.ssl.SSLSocketImpl.performInitialHandshake(SSLSocketImpl.java:1343)
    at sun.security.ssl.SSLSocketImpl.startHandshake(SSLSocketImpl.java:1371)
    at sun.security.ssl.SSLSocketImpl.startHandshake(SSLSocketImpl.java:1355)
    at org.jivesoftware.smack.XMPPConnection.proceedTLSReceived(XMPPConnection.java:806)
    at org.jivesoftware.smack.PacketReader.parsePackets(PacketReader.java:267)
    at org.jivesoftware.smack.PacketReader.access$000(PacketReader.java:43)
    at org.jivesoftware.smack.PacketReader$1.run(PacketReader.java:70)
Caused by: java.security.cert.CertificateException: root certificate not trusted of [ise.lab6.com]
    at org.jivesoftware.smack.ServerTrustManager.checkServerTrusted(ServerTrustManager.java:144)
    at sun.security.ssl.AbstractTrustManagerWrapper.checkServerTrusted(SSLContextImpl.java:865)
    at sun.security.ssl.ClientHandshaker.serverCertificate(ClientHandshaker.java:1453)
    ... 11 more
```

- 아래와 같은 오류 메시지가 표시되면 pxGrid 클라이언트 및 ISE pxGrid FQDN 이름이 DNS를 통해 확인 가능한지 파악합니다.

```
./session_download.sh -keystoreFilename jeppich.jks -keystorePassword cisco123 -truststoreFilename
trust007.jks -truststorePassword cisco123 -hostname 10.0.0.96 -username mac2
----- properties -----
version=1.0.0
hostnames=10.0.0.96
username=mac2
keystoreFilename=jeppich.jks
keystorePassword=cisco123
truststoreFilename=trust007.jks
truststorePassword=cisco123
filter=null
start=null
end=null
-----
connecting...
connected.
20:18:07.181 [main] WARN o.a.cxf.phase.PhaseInterceptorChain - Interceptor for
{https://ise.lab6.com/pxgrid/mnt/sd}WebClient has thrown exception, unwinding now
org.apache.cxf.interceptor.Fault: Could not send Message.
    at
org.apache.cxf.interceptor.MessageSenderInterceptor$MessageSenderEndingInterceptor.handleMessage(MessageSen
derInterceptor.java:64) ~[cxf-api-2.7.3.jar:2.7.3]
    at org.apache.cxf.phase.PhaseInterceptorChain.doIntercept(PhaseInterceptorChain.java:271) ~[cxf-
api-2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.AbstractClient.doRunInterceptorChain(AbstractClient.java:581) [cxf-
rt-frontend-jaxrs-2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.WebClient.doChainedInvocation(WebClient.java:904) [cxf-rt-frontend-
jaxrs-2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.WebClient.doInvoke(WebClient.java:772) [cxf-rt-frontend-jaxrs-
2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.WebClient.doInvoke(WebClient.java:759) [cxf-rt-frontend-jaxrs-
2.7.3.jar:2.7.3]
```

```

    at org.apache.cxf.jaxrs.client.WebClient.invoke(WebClient.java:355) [cxf-rt-frontend-jaxrs-
2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.WebClient.post(WebClient.java:381) [cxf-rt-frontend-jaxrs-
2.7.3.jar:2.7.3]
    at com.cisco.pxgrid.stub.identity.impl.SessionIteratorImpl.open(SessionIteratorImpl.java:128)
[pxgrid-identity-client-stub-1.0.0.jar:1.0.0]
    at com.cisco.pxgrid.samples.ise.SessionDownload.main(SessionDownload.java:132) [pxgrid-sdk-
1.0.0.jar:1.0.0]
Caused by: java.net.UnknownHostException: UnknownHostException invoking
https://ise.lab6.com/pxgrid/mnt/sd/getSessionListByTime: ise.lab6.com
    at sun.reflect.NativeConstructorAccessorImpl.newInstance0(Native Method) ~[na:1.8.0_25]
    at sun.reflect.NativeConstructorAccessorImpl.newInstance(NativeConstructorAccessorImpl.java:62)
~[na:1.8.0_25]
    at
sun.reflect.DelegatingConstructorAccessorImpl.newInstance(DelegatingConstructorAccessorImpl.java:45)
~[na:1.8.0_25]
    at java.lang.reflect.Constructor.newInstance(Constructor.java:408) ~[na:1.8.0_25]
    at
org.apache.cxf.transport.http.HTTPConduit$WrappedOutputStream.mapException(HTTPConduit.java:1338) ~[cxf-rt-
transports-http-2.7.3.jar:2.7.3]
    at org.apache.cxf.transport.http.HTTPConduit$WrappedOutputStream.close(HTTPConduit.java:1322)
~[cxf-rt-transports-http-2.7.3.jar:2.7.3]
    at org.apache.cxf.transport.AbstractConduit.close(AbstractConduit.java:56) ~[cxf-api-
2.7.3.jar:2.7.3]
    at org.apache.cxf.transport.http.HTTPConduit.close(HTTPConduit.java:622) ~[cxf-rt-transports-http-
2.7.3.jar:2.7.3]
    at
org.apache.cxf.interceptor.MessageSenderInterceptor$MessageSenderEndingInterceptor.handleMessage(MessageSen-
derInterceptor.java:62) ~[cxf-api-2.7.3.jar:2.7.3]
    ... 9 common frames omitted
Caused by: java.net.UnknownHostException: ise.lab6.com
    at java.net.AbstractPlainSocketImpl.connect(AbstractPlainSocketImpl.java:184) ~[na:1.8.0_25]
    at java.net.SocksSocketImpl.connect(SocksSocketImpl.java:392) ~[na:1.8.0_25]
    at java.net.Socket.connect(Socket.java:589) ~[na:1.8.0_25]
    at sun.security.ssl.SSLSocketImpl.connect(SSLSocketImpl.java:649) ~[na:1.8.0_25]
    at sun.net.NetworkClient.doConnect(NetworkClient.java:175) ~[na:1.8.0_25]
    at sun.net.www.http.HttpClient.openServer(HttpClient.java:432) ~[na:1.8.0_25]
    at sun.net.www.http.HttpClient.openServer(HttpClient.java:527) ~[na:1.8.0_25]
    at sun.net.www.protocol.https.HttpsClient.<init>(HttpsClient.java:275) ~[na:1.8.0_25]
    at sun.net.www.protocol.https.HttpsClient.New(HttpsClient.java:371) ~[na:1.8.0_25]
    at
sun.net.www.protocol.https.AbstractDelegateHttpsURLConnection.getNewHttpClient(AbstractDelegateHttpsURLConn-
ection.java:191) ~[na:1.8.0_25]
    at sun.net.www.protocol.http.HttpURLConnection.plainConnect0(HttpURLConnection.java:1103)
~[na:1.8.0_25]
    at sun.net.www.protocol.http.HttpURLConnection.plainConnect(HttpURLConnection.java:997)
~[na:1.8.0_25]
    at
sun.net.www.protocol.https.AbstractDelegateHttpsURLConnection.connect(AbstractDelegateHttpsURLConnection.ja-
va:177) ~[na:1.8.0_25]
    at sun.net.www.protocol.http.HttpURLConnection.getOutputStream0(HttpURLConnection.java:1281)
~[na:1.8.0_25]
    at sun.net.www.protocol.http.HttpURLConnection.getOutputStream(HttpURLConnection.java:1256)
~[na:1.8.0_25]
    at
sun.net.www.protocol.https.HttpsURLConnectionImpl.getOutputStream(HttpsURLConnectionImpl.java:250)
~[na:1.8.0_25]
    at
org.apache.cxf.transport.http.URLConnectionHTTPConduit$URLConnectionWrappedOutputStream.setupWrappedStream(
URLConnectionHTTPConduit.java:170) ~[cxf-rt-transports-http-2.7.3.jar:2.7.3]
    at
org.apache.cxf.transport.http.HTTPConduit$WrappedOutputStream.handleHeadersTrustCaching(HTTPConduit.java:12
82) ~[cxf-rt-transports-http-2.7.3.jar:2.7.3]
    at
org.apache.cxf.transport.http.HTTPConduit$WrappedOutputStream.onFirstWrite(HTTPConduit.java:1233) ~[cxf-rt-
transports-http-2.7.3.jar:2.7.3]

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    at
org.apache.cxf.transport.http.URLConnectionHTTPConduit$URLConnectionWrappedOutputStream.onFirstWrite (URLCon
nectionHTTPConduit.java:183) ~[cxf-rt-transport-http-2.7.3.jar:2.7.3]
    at org.apache.cxf.io.AbstractWrappedOutputStream.write (AbstractWrappedOutputStream.java:47) ~[cxf-
api-2.7.3.jar:2.7.3]
    at org.apache.cxf.io.AbstractThresholdOutputStream.write (AbstractThresholdOutputStream.java:69)
~[cxf-api-2.7.3.jar:2.7.3]
    at org.apache.cxf.transport.http.HTTPConduit$WrappedOutputStream.close (HTTPConduit.java:1295)
~[cxf-rt-transport-http-2.7.3.jar:2.7.3]
    ... 12 common frames omitted
20:18:07.185 [main] WARN  c.c.p.s.i.impl.SessionIteratorImpl - unsuccessful attempt made to session
directory ise.lab6.com
javax.ws.rs.client.ClientException: javax.ws.rs.client.ClientException: org.apache.cxf.interceptor.Fault:
Could not send Message.
    at org.apache.cxf.jaxrs.client.WebClient.doResponse (WebClient.java:946) ~[cxf-rt-frontend-jaxrs-
2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.WebClient.doChainedInvocation (WebClient.java:905) ~[cxf-rt-frontend-
jaxrs-2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.WebClient.doInvoke (WebClient.java:772) ~[cxf-rt-frontend-jaxrs-
2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.WebClient.doInvoke (WebClient.java:759) ~[cxf-rt-frontend-jaxrs-
2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.WebClient.invoke (WebClient.java:355) ~[cxf-rt-frontend-jaxrs-
2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.WebClient.post (WebClient.java:381) ~[cxf-rt-frontend-jaxrs-
2.7.3.jar:2.7.3]
    at com.cisco.pxgrid.stub.identity.impl.SessionIteratorImpl.open (SessionIteratorImpl.java:128)
~[pxgrid-identity-client-stub-1.0.0.jar:1.0.0]
    at com.cisco.pxgrid.samples.ise.SessionDownload.main (SessionDownload.java:132) [pxgrid-sdk-
1.0.0.jar:1.0.0]
Caused by: javax.ws.rs.client.ClientException: org.apache.cxf.interceptor.Fault: Could not send Message.
    at org.apache.cxf.jaxrs.client.AbstractClient.checkClientException (AbstractClient.java:522) ~[cxf-
rt-frontend-jaxrs-2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.AbstractClient.preProcessResult (AbstractClient.java:508) ~[cxf-rt-
frontend-jaxrs-2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.WebClient.doResponse (WebClient.java:941) ~[cxf-rt-frontend-jaxrs-
2.7.3.jar:2.7.3]
    ... 7 common frames omitted
Caused by: org.apache.cxf.interceptor.Fault: Could not send Message.
    at
org.apache.cxf.interceptor.MessageSenderInterceptor$MessageSenderEndingInterceptor.handleMessage (MessageSen
derInterceptor.java:64) ~[cxf-api-2.7.3.jar:2.7.3]
    at org.apache.cxf.phase.PhaseInterceptorChain.doIntercept (PhaseInterceptorChain.java:271) ~[cxf-
api-2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.AbstractClient.doRunInterceptorChain (AbstractClient.java:581) ~[cxf-
rt-frontend-jaxrs-2.7.3.jar:2.7.3]
    at org.apache.cxf.jaxrs.client.WebClient.doChainedInvocation (WebClient.java:904) ~[cxf-rt-frontend-
jaxrs-2.7.3.jar:2.7.3]
    ... 6 common frames omitted
Caused by: java.net.UnknownHostException: UnknownHostException invoking
https://ise.lab6.com/pxgrid/mnt/sd/getSessionListByTime: ise.lab6.com
    at sun.reflect.NativeConstructorAccessorImpl.newInstance0 (Native Method) ~[na:1.8.0_25]
    at sun.reflect.NativeConstructorAccessorImpl.newInstance (NativeConstructorAccessorImpl.java:62)
~[na:1.8.0_25]
    at
sun.reflect.DelegatingConstructorAccessorImpl.newInstance (DelegatingConstructorAccessorImpl.java:45)
~[na:1.8.0_25]
    at java.lang.reflect.Constructor.newInstance (Constructor.java:408) ~[na:1.8.0_25]
    at
org.apache.cxf.transport.http.HTTPConduit$WrappedOutputStream.mapException (HTTPConduit.java:1338) ~[cxf-rt-
transport-http-2.7.3.jar:2.7.3]
    at org.apache.cxf.transport.http.HTTPConduit$WrappedOutputStream.close (HTTPConduit.java:1322)
~[cxf-rt-transport-http-2.7.3.jar:2.7.3]
    at org.apache.cxf.transport.AbstractConduit.close (AbstractConduit.java:56) ~[cxf-api-
2.7.3.jar:2.7.3]
    at org.apache.cxf.transport.http.HTTPConduit.close (HTTPConduit.java:622) ~[cxf-rt-transport-http-
2.7.3.jar:2.7.3]

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    at
org.apache.cxf.interceptor.MessageSenderInterceptor$MessageSenderEndingInterceptor.handleMessage(MessageSenderInterceptor.java:62) ~[cxf-api-2.7.3.jar:2.7.3]
    ... 9 common frames omitted
Caused by: java.net.UnknownHostException: ise.lab6.com
    at java.net.AbstractPlainSocketImpl.connect(AbstractPlainSocketImpl.java:184) ~[na:1.8.0_25]
    at java.net.SocksSocketImpl.connect(SocksSocketImpl.java:392) ~[na:1.8.0_25]
    at java.net.Socket.connect(Socket.java:589) ~[na:1.8.0_25]
    at sun.security.ssl.SSLSocketImpl.connect(SSLSocketImpl.java:649) ~[na:1.8.0_25]
    at sun.net.NetworkClient.doConnect(NetworkClient.java:175) ~[na:1.8.0_25]
    at sun.net.www.http.HttpClient.openServer(HttpClient.java:432) ~[na:1.8.0_25]
    at sun.net.www.http.HttpClient.openServer(HttpClient.java:527) ~[na:1.8.0_25]
    at sun.net.www.protocol.https.HttpsClient.<init>(HttpsClient.java:275) ~[na:1.8.0_25]
    at sun.net.www.protocol.https.HttpsClient.New(HttpsClient.java:371) ~[na:1.8.0_25]
    at
sun.net.www.protocol.https.AbstractDelegateHttpsURLConnection.getNewHttpClient(AbstractDelegateHttpsURLConnection.java:191) ~[na:1.8.0_25]
    at sun.net.www.protocol.http.HttpURLConnection.plainConnect0(HttpURLConnection.java:1103)
~[na:1.8.0_25]
    at sun.net.www.protocol.http.HttpURLConnection.plainConnect(HttpURLConnection.java:997)
~[na:1.8.0_25]
    at
sun.net.www.protocol.https.AbstractDelegateHttpsURLConnection.connect(AbstractDelegateHttpsURLConnection.java:177) ~[na:1.8.0_25]
    at sun.net.www.protocol.http.HttpURLConnection.getOutputStream0(HttpURLConnection.java:1281)
~[na:1.8.0_25]
    at sun.net.www.protocol.http.HttpURLConnection.getOutputStream(HttpURLConnection.java:1256)
~[na:1.8.0_25]
    at
sun.net.www.protocol.https.HttpURLConnectionImpl.getOutputStream(HttpURLConnectionImpl.java:250)
~[na:1.8.0_25]
    at
org.apache.cxf.transport.http.URLConnectionHTTPConduit$URLConnectionWrappedOutputStream.setupWrappedStream(URLConnectionHTTPConduit.java:170) ~[cxf-rt-transport-http-2.7.3.jar:2.7.3]
    at
org.apache.cxf.transport.http.HTTPConduit$WrappedOutputStream.handleHeadersTrustCaching(HTTPConduit.java:1282) ~[cxf-rt-transport-http-2.7.3.jar:2.7.3]
    at
org.apache.cxf.transport.http.HTTPConduit$WrappedOutputStream.onFirstWrite(HTTPConduit.java:1233) ~[cxf-rt-transport-http-2.7.3.jar:2.7.3]
    at
org.apache.cxf.transport.http.URLConnectionHTTPConduit$URLConnectionWrappedOutputStream.onFirstWrite(URLConnectionHTTPConduit.java:183) ~[cxf-rt-transport-http-2.7.3.jar:2.7.3]
    at org.apache.cxf.io.AbstractWrappedOutputStream.write(AbstractWrappedOutputStream.java:47) ~[cxf-api-2.7.3.jar:2.7.3]
    at org.apache.cxf.io.AbstractThresholdOutputStream.write(AbstractThresholdOutputStream.java:69)
~[cxf-api-2.7.3.jar:2.7.3]
    at org.apache.cxf.transport.http.HTTPConduit$WrappedOutputStream.close(HTTPConduit.java:1295)
~[cxf-rt-transport-http-2.7.3.jar:2.7.3]
    ... 12 common frames omitted
Exception in thread "main" java.io.IOException: unsuccessful attempts made to all session directories
    at com.cisco.pxgrid.stub.identity.impl.SessionIteratorImpl.open(SessionIteratorImpl.java:148)
    at com.cisco.pxgrid.samples.ise.SessionDownload.main(SessionDownload.java:132)

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