

CUCM 인증서 관리 및 변경 알림

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1. 소개

이 문서에서는 Cisco Unified Operating System의 Certificate Management가 CUCM 및 VOS 자체에서 매우 중요한 구성 요소에 대해 설명합니다. 다음과 같은 많은 애플리케이션과 기능이 인증서에 의존하기 때문입니다. TVS, CAPF, Security by Default 또는 Unified Serviceability 페이지. CertMgmt는 보안 및 TLS(Secure Data Transfer)를 쉽게 포함할 수 있도록 다른 구성 요소에 대한 인증서 및 API의 단일 저장소를 제공합니다.

"Cisco Certificate Change Notification" 서비스는 주로 클러스터의 노드 전체에서 일부 인증서를 동기화하기 위해 도입되었으며 ServM에 의해 모니터링됩니다. 따라서 더 큰 구축 환경에서 관리자가 더 쉽고 빠르게 인증서를 프로비저닝할 수 있습니다.

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2. 인증서 저장 방법

인증서는 파일 시스템뿐만 아니라 데이터베이스에 저장되며 CN 서비스는 노드 간에 동기화를 유지합니다. 파일 시스템 인증서는 DB 인증서보다 우선 순위가 높습니다.

DB 테이블:

- 인증서 - 주체, 발급자, 직렬, 인증서 등의 모든 인증서 세부 정보를 PEM 형식으로 저장합니다.
- Certificateeservicecertificatemap - 인증서 및 인증서 유형(예: CallManager-Trust, CAPF-Trust) 간 mapp
- CERTIFICATEhashtmap - 인증서의 인증서와 해시 간 매핑
- 인증서처리기다시 맵 - 인증서와 프로세서 노드 간 매핑
- 인증서 신뢰 ROLEMAP - 인증서와 role_enum 간 mapp
- TYPECERTIFICATESERVICE - CERTIFICATECERTIFICATEServiceccertificatemap에서 찾을 수 있는 열거형을 인증서 유형(예: tomcat, tomcat-trust, callmanager 등)에 매핑합니다.

파일 시스템의 스토리지:

- 인증서:공개 키(X509Certificate - Own certificate)(.description이 있는 .der 및 .pem 형식) 및 pkcs-12 keystore 형식도 있습니다.
- 키:개인 키 및 암호와 CSR입니다.
- 신뢰 인증서:모든 신뢰할 수 있는 인증서(.der & .pem 형식) 및 PKCS-12 키 저장소 형식

샘플 경로:

```
/usr/local/cm/.security/CallManager/
```

```
/usr/local/cm/.security/CAPF
```

```
/usr/local/platform/.security/tomcat
```

Trust-certs 하위 디렉터리에는 특별한 이름을 가진 .pem 파일을 참조하는 심볼 링크가 포함되어 있습니다. 이 링크는 openssl 해시로 구성되며 일반적으로 .0 확장명으로 구성되며 동일한 해시를 생성할 때 반복기로 사용할 수 있습니다.아래 예를 참조하십시오.

```
[root@cucmpub trust-certs]# pwd
/usr/local/cm/.security/CallManager/trust-certs
```

```
[root@cucmpub trust-certs]# ls -l cucmpub.pem
-rwxr-xr-x 1 certbase ccbase 993 Mar 15 2013 cucmpub.pem
```

```
[root@cucmpub trust-certs]# openssl x509 -noout -hash -in cucmpub.pem
5eb51e07
```

```
[root@cucmpub trust-certs]# ls -l 5eb51e07.0 lrwxrwxrwx 1 certbase ccbase 11 May 13 17:16
5eb51e07.0 -> cucmpub.pem
```

3. CertMgmt 및 인증서 CN 설계 개요

인증서가 OS 관리 페이지에서 업로드되면 .PEM 및 .DER 형식의 파일이 파일 시스템에 기록되고 DB 테이블이 업데이트됩니다.

이러한 인증서는 다음에 DB 복제를 통해 클러스터의 다른 노드로 복제됩니다.

일부 유형의 인증서는 원격 노드의 Cisco Certificate Change Notification 프로세스에 의해 선택되고 동일한 프로세스를 통해 파일 시스템에 업로드됩니다.

Cisco Certificate Change Notification 프로세스는 다음 테이블의 변경 사항에 대해 알림을 받습니다 .CERTIFICATE 및 CERTIFICATEServicecertificatemap입니다.

Cisco Certificate Change Notification에 의해 선택된 인증서는 다음의 구성 파일 /usr/local/platform/conf/certM.conf에 구성됩니다.

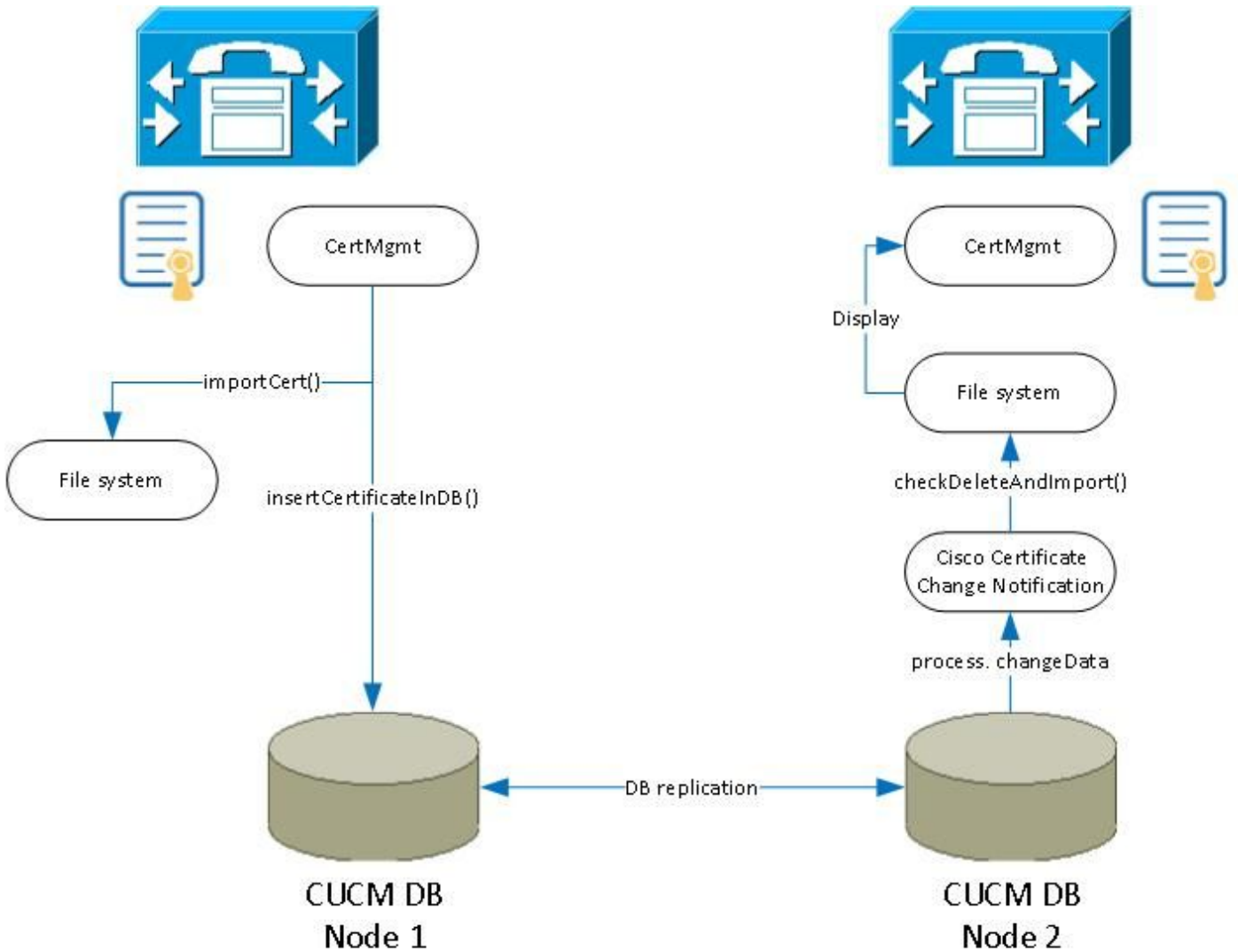
```
CHANGE_NOTIFICATION_UNIT=tomcat,tomcat-trust,directory-trust,CallManager,Phone-SAST-trust,CallManager-trust
```

또한 서비스는 기본적으로 30분(1800초)마다 실행되어 모든 인증서를 동기화합니다. 이 타이머는 위의 파일에서도 구성됩니다.CN_SYNC_TIMER=1800

업로드되고 원격 노드에 복제되고 파일 시스템에도 업로드되면 OS 관리 페이지에 인증서가 표시됨

니다.

OS 관리 페이지 및 기타 모든 서비스는 DB가 아닌 파일 시스템에서 인증서를 읽습니다.



4. 예

이 섹션에서는 인증서 관리의 3가지 시나리오를 살펴봅니다.

각 시나리오에 대해 프로세스를 자세히 따르고 스크린샷 및 로그를 사용합니다.

이러한 시나리오에서는 CUCM 버전 9.1.2.10000-28이 포함된 2 노드 클러스터를 사용합니다.

범례:

CM - 인증서 관리(로그는 'file list activelog platform/log/certMgmtXXXXX.log'에서 찾을 수 있음)

certCN - Certificate Change Notification Service(로그는 'file list activelog platform/log/certCNXXXXX.log' 아래에서 찾을 수 있음)

CUCM 클러스터 9.1.2.10000-28을 기반으로 한 예로는 두 개의 노드가 있습니다.

PUB, IP:10.48.46.29, 호스트 이름:CUCM861

하위, IP:10.48.46.30, 호스트 이름:CUCM861s

인증서는 10진수 형식의 일련 번호와 함께 OS 관리 페이지에 표시됩니다.DB는 이 숫자를 16진수로 저장합니다.HEX/DEC 간에 일련 번호를 변환하려면 이 온라인 [도구](#)를 사용할 수 있습니다.

로그 조각에 일부 주석이 포함되어 있습니다(굵게, '##'로 시작).

4.A.새 tomcat-trust 인증서를 삽입합니다.

첫 번째 시나리오에서 OS Admin(OS 관리) 페이지를 통해 tomcat-trust에 인증서를 업로드하면 클러스터의 두 노드에서 다음 단계가 발생합니다.

a.수동으로 인증서 업로드

b.인증서는 CM별로 파일 시스템에 저장됩니다.

c. CM이 인증서를 DB에 삽입합니다.

d.인증서는 DB 복제를 통해 구독자에게 복제됩니다.두 노드(pub 및 sub)의 CertCN에 변경 사항에 대한 알림이 전송됩니다.이 명령은 pub 노드에서 작업을 수행하지 않습니다.

e.하위 노드의 CertCN은 파일 시스템으로 인증서를 가져와 키 저장소에 추가합니다.

f.이러한 단계를 마치면 OS Admin(OS 관리) 페이지 아래의 GUI에서 인증서를 볼 수 있습니다.

a. PEM 파일에서 인증서 업로드가 발생하는 경우아래 스크린샷을 참조하십시오.

The image shows two screenshots from a web application. The top screenshot is the 'Certificate List' page, which displays a table of certificates. The bottom screenshot is a modal dialog box titled 'Upload Certificate/Certificate chain'.

Certificate List Table:

Certificate Name	Certificate Type	.PEM File
tomcat	certs	tomcat.pem
tomcat-trust	trust-certs	CUCM861.pem
tomcat-trust	trust-certs	CUCM861s.pem
tomcat-trust	trust-certs	VeriSign_Class_3_Secure_Server_CA_-_G3.p...

Upload Certificate/Certificate chain Dialog:

Status: Ready

Certificate Name*: tomcat-trust

Description: [Empty]

Upload File: [Przełóż...](#) tomcat.pem

*. indicates required item.

Certificate List

Generate New Upload Certificate/Certificate chain Download CTL Generate CSR

Status
5 records found

Certificate List (1 - 5 of 5)

Find Certificate List where Certificate Name begins with tomcat Find Clear Filter

Certificate Name	Certificate Type	.PEM File	.DER File	Description
tomcat	certs	tomcat.pem	tomcat.der	Self-signed certificate generated by system
tomcat-trust	trust-certs	<u>CUCM9X.pem</u>	<u>CUCM9X.der</u>	Signed Certificate
tomcat-trust	trust-certs	<u>CUCM851.pem</u>	<u>CUCM861.der</u>	Trust Certificate
tomcat-trust	trust-certs	<u>CUCM861s.pem</u>	<u>CUCM861s.der</u>	Trust Certificate
tomcat-trust	trust-certs	<u>VeriSign_Class_3_Secure_Server_CA - G3.pem</u>	<u>VeriSign_Class_3_Secure_Server_CA - G3.der</u>	Trust Certificate

Generate New Upload Certificate/Certificate chain Download CTL Generate CSR

Upload Certificate/Certificate chain - Mozilla Firefox

https://ghnizdur-1:8443/cmplatform/certificateUpload.do

Upload Certificate/Certificate chain

Upload File Close

Status
Success: Certificate Uploaded

Upload Certificate/Certificate chain

Certificate Name* tomcat-trust

Description



Upload File Przeglądaj... Nie wybrano pliku.

Upload File Close


*. indicates required item.

Show ▾ Settings ▾ Security ▾ Software Upgrades ▾ Services ▾ Help ▾

Certificate Configuration

 Delete  Download

Status

 Status: Ready

Certificate Settings

File Name CUCM9X.pem
 Certificate Name tomcat-trust
 Certificate Type trust-certs
 Certificate Group product-cpi
 Description Signed Certificate

Certificate File Data

```
[
Version: V3
Serial Number: 162503161730851213217569888696899890998
Signature Algorithm: SHA256withRSA (1.2.840.113549.1.1.11)
Issuer Name: L=Krakow, ST=Malopolska, CN=CUCM9X, OU=TAC, O=Cisco Systems, C=PL
Validity From: Mon Aug 04 15:19:07 CEST 2014
To: Sat Aug 03 15:19:06 CEST 2019
Subject Name: L=Krakow, ST=Malopolska, CN=CUCM9X, OU=TAC, O=Cisco Systems, C=PL
Key: RSA (1.2.840.113549.1.1.1)
Key value:
3082010a0282010100cb42282338f20e9682fe018c4f0b0951aa32bc0771c1184052fb2ba3b96aafceace37e1d002964115d4f0f6a
2f452ff9c02f09329f5ec978409225eafc5c31606ac05e92d4e230004f43ca1636664b9188b5f43b6e1e4677f7d0578f1fd8e5e5e55
553097808a6954b7c5af72abac9a61ae28ecf13a432a4af520c82a6d881d0ea3d475f6e995cb28b2499878452b972715ba3eed45
3376d884bb7f97050b674d0b12fdb33ba156dcb32a98b9a41d76b4f966bce8f50123c7806e33adbddbd8e611c82623f390e4ee2c
692f9d123c7dbbe83dae6acdbaf674a60b6c1c75372228de3d90a72a6e49138a220b5a88db35304de72f91893e3126745de5f237
65ab910203010001
Extensions: 3 present
[
Extension: KeyUsage (OID.2.5.29.15)
Critical: false
Usage: digitalSignature, keyEncipherment, dataEncipherment, keyAgreement, keyCertSign,
]
[
Extension: ExtKeyUsageSyntax (OID.2.5.29.37)
Critical: false
Usage oids: 1.3.6.1.5.5.7.3.1, 1.3.6.1.5.5.7.3.2, 1.3.6.1.5.5.7.3.5,
]
]
```

새 인증서의 일련 번호:
 12월:162503161730851213217569888696899890998
 16진수:7A40F8743A793B44FE802B5F3E1E6F36

인증서가 파일 시스템에 기록됩니다(다음 단계에서 이 프로세스를 따릅니다).

```
[root@CUCM861 tomcat]# pwd
/usr/local/platform/.security/tomcat
[root@CUCM861 tomcat]# ls -la
total 40
drwxr-xr-x 5 root root 4096 Apr 4 12:47 .
drwxr-xr-x 5 root root 4096 Apr 4 12:47 ..
drwxr-xr-x 2 certbase ccbase 4096 Aug 2 23:36 certs
drwxr-xr-x 2 certbase ccbase 4096 Aug 2 23:36 keys
drwxr-xr-x 2 certbase ccbase 4096 Aug 4 15:21 trust-certs
```

```

[root@CUCM861 tomcat]# ls -la certs
total 48
drwxr-xr-x 2 certbase ccmbase 4096 Aug  2 23:36 .
drwxr-xr-x 5 root      root    4096 Apr  4 12:47 ..
-rwxr-xr-x 1 certbase ccmbase  939 Aug  2 23:36 tomcat.der
-rwxr-xr-x 1 certbase ccmbase   64 Aug  2 23:36 tomcat.description
-rwxr-xr-x 1 certbase ccmbase 2598 Aug  2 23:36 tomcat.keystore
-rwxr-xr-x 1 certbase ccmbase 1326 Aug  2 23:36 tomcat.pem

[root@CUCM861 tomcat]# ls -la trust-certs total 140 drwxr-xr-x 2 certbase ccmbase 4096 Aug  4
15:21 . drwxr-xr-x 5 root root 4096 Apr  4 12:47 .. lrwxrwxrwx 1 certbase ccmbase 11 Aug  4 15:21
101f99a6.0 -> CUCM861.pem lrwxrwxrwx 1 certbase ccmbase 10 Aug  4 15:21 25ffab9b.0 -> CUCM9X.pem
lrwxrwxrwx 1 certbase ccmbase  42 Aug  4 15:21 7e0370f0.0 ->
VeriSign_Class_3_Secure_Server_CA_-_G3.pem
-rwxr-xr-x 1 certbase ccmbase  939 Aug  2 23:36 CUCM861.der
-rwxr-xr-x 1 certbase ccmbase   44 Aug  2 23:36 CUCM861.description
-rwxr-xr-x 1 certbase ccmbase 1326 Aug  2 23:36 CUCM861.pem
-rwxr-xr-x 1 certbase ccmbase  941 Aug  2 22:51 CUCM861s.der
-rwxr-xr-x 1 certbase ccmbase   44 Aug  2 22:51 CUCM861s.description
-rwxr-xr-x 1 certbase ccmbase 1330 Aug  2 22:51 CUCM861s.pem
-rwxr-xr-x 1 certbase ccmbase  953 Aug  4 15:21 CUCM9X.der
-rwxr-xr-x 1 certbase ccmbase   45 Aug  4 15:21 CUCM9X.description
-rwxr-xr-x 1 certbase ccmbase 1346 Aug  4 15:21 CUCM9X.pem
lrwxrwxrwx 1 certbase ccmbase  12 Aug  4 15:21 d0aacffb.0 -> CUCM861s.pem
-rwxr-xr-x 1 certbase ccmbase 4939 Aug  4 15:21 tomcat-trust.keystore
-rwxr-xr-x 1 certbase ccmbase 1520 Apr  4 12:47 VeriSign_Class_3_Secure_Server_CA_-_G3.der
-rwxr-xr-x 1 certbase ccmbase   44 Apr  4 12:47 VeriSign_Class_3_Secure_Server_CA_-_
_G3.description
-rwxr-xr-x 1 certbase ccmbase 2114 Apr  4 12:47 VeriSign_Class_3_Secure_Server_CA_-_G3.pem

[root@CUCM861 tomcat]# md5sum trust-certs/CUCM9X.pem a0a2e12a42e4bbbf10655c9b299839d9 trust-
certs/CUCM9X.pem

```

보시다시피 새 인증서는 trust-certs 디렉터리에 저장됩니다. CUCM 노드의 호스트 이름과 같은 일반 이름이 파일 이름으로 사용되었습니다. pem 및 der로 저장되었습니다.

심볼 링크 **25ffab9b.0 -> CUCM9X.pem**도 생성되었으며 인증서가 tomcat-trust.keystore에 추가되었습니다.

마지막으로, 하위 노드에서 인증서 파일의 md5 체크섬을 비교하여 동일한 인증서임을 입증합니다.

b. 이제 인증서가 파일 시스템에 저장되었는지 자세히 살펴보겠습니다. CM 로그에서(코드 조각에 있는 코멘트는 굵게, ##으로 시작):

```

2014-08-04 15:21:21,116 INFO [main] - log4j configuration successful.
2014-08-04 15:21:21,239 INFO [main] - IN -- CertMgr.java - mainInternal(args) -
2014-08-04 15:21:21,241 INFO [main] - decode

## import is the operation that will be performed
2014-08-04 15:21:21,241 INFO [main] - op:import
2014-08-04 15:21:21,241 INFO [main] - type:trust-certs
2014-08-04 15:21:21,241 INFO [main] - unit:tomcat-trust
2014-08-04 15:21:21,241 INFO [main] - src-
cert:%2Fusr%2Flocal%2Fplatform%2Fupload%2Fcerts%2Ftomcat.pem
2014-08-04 15:21:21,241 INFO [main] - cert-
dir:%2Fusr%2Flocal%2Fplatform%2F.security%2Ftomcat%2Ftrust-certs
2014-08-04 15:21:21,241 INFO [main] - key-
dir:%2Fusr%2Flocal%2Fplatform%2F.security%2Ftomcat%2Fkeys
2014-08-04 15:21:21,241 INFO [main] - rootCA-cert:Dummy+Root+cert
2014-08-04 15:21:21,241 INFO [main] - trust-
dir:%2Fusr%2Flocal%2Fplatform%2F.security%2Ftomcat%2Ftrust-certs
2014-08-04 15:21:21,241 INFO [main] - logfile:%2Fvar%2Flog%2Factive%2Fplatform%2Flog%2Fcert-
mgmt.log
2014-08-04 15:21:21,241 INFO [main] -

```

```
resultfile:%2Fvar%2Flog%2Factive%2Fplatform%2Flog%2Fcertde-info.xml
2014-08-04 15:21:21,241 INFO [main] - description:Signed+Certificate
2014-08-04 15:21:21,294 INFO [main] - Parsed information
2014-08-04 15:21:21,294 INFO [main] - OrgName: CISCO
2014-08-04 15:21:21,294 INFO [main] - OrgUnit: TAC
2014-08-04 15:21:21,294 INFO [main] - Location: KRAKOW
2014-08-04 15:21:21,294 INFO [main] - Country: PL
2014-08-04 15:21:21,294 INFO [main] - State: MALOPOLSKA
2014-08-04 15:21:21,294 INFO [main] - Hostname: CUCM861
2014-08-04 15:21:21,294 INFO [main] - AlternateHostname: null
2014-08-04 15:21:21,294 INFO [main] - Domain Name:
2014-08-04 15:21:21,294 INFO [main] - IPAddress: 10.48.46.29
2014-08-04 15:21:21,296 INFO [main] - In parseXML()
2014-08-04 15:21:21,359 INFO [main] - FQDN Name retrived by InetAddress : CUCM861
2014-08-04 15:21:21,360 INFO [main] - CN: CUCM861
2014-08-04 15:21:21,360 INFO [main] - Temp before mod is
2014-08-04 15:21:21,361 INFO [main] - Temp afer mod is TAC
2014-08-04 15:21:21,361 INFO [main] - Temp in else is TAC
2014-08-04 15:21:21,361 INFO [main] - Temp before mod is
2014-08-04 15:21:21,361 INFO [main] - Temp afer mod is TAC
2014-08-04 15:21:21,361 INFO [main] - Temp in else is TAC
2014-08-04 15:21:21,361 INFO [main] - OuFields are TAC
2014-08-04 15:21:21,361 DEBUG [main] - Field after encoding: TAC
2014-08-04 15:21:21,361 DEBUG [main] - Field after encoding: CISCO
2014-08-04 15:21:21,362 DEBUG [main] - Field after encoding: KRAKOW
2014-08-04 15:21:21,362 DEBUG [main] - Field after encoding: MALOPOLSKA
2014-08-04 15:21:21,362 DEBUG [main] - Field after encoding: PL
2014-08-04 15:21:21,366 INFO [main] - OU field is :TAC
2014-08-04 15:21:21,366 INFO [main] - SubjectDN ::
CN=CUCM861,OU=TAC,O=CISCO,L=KRAKOW,ST=MALOPOLSKA,C=PL
2014-08-04 15:21:21,366 INFO [main] - IN -- CertMgr.java - getCertMgrObj(unit) - tomcat-trust
2014-08-04 15:21:21,386 INFO [main] - OUT -- CertMgr.java - getCertMgrObj -
com.cisco.cpi.certMgmt.manager.TomcatCertMgr@162dbb6
2014-08-04 15:21:21,386 INFO [main] - Dummy loadProperties
2014-08-04 15:21:21,386 INFO [main] - IN -- CertMgr.java - doOp(info) -
2014-08-04 15:21:21,387 INFO [main] - IN -- DefaultCertMgr.java - importCert(info) -
decode:      true
op:          import
unit:        tomcat-trust
keystoreUnit:tomcat-trust
logFile:     /var/log/active/platform/log/cert-mgmt.log
resultFile:  /var/log/active/platform/log/certde-info.xml
keyDir:      /usr/local/platform/.security/tomcat/keys
certDir:     /usr/local/platform/.security/tomcat/trust-certs
srcCert:     /usr/local/platform/upload/certs/tomcat.pem
type:        trust-certs
rootCACert:  Dummy Root cert
trustDir:    /usr/local/platform/.security/tomcat/trust-certs
DNAME:       CN=CUCM861,OU=TAC,O=CISCO,L=KRAKOW,ST=MALOPOLSKA,C=PL
description:Signed Certificate
isDBInsert:true

2014-08-04 15:21:21,387 INFO [main] - IN -- DefaultCertMgr.java - loadInputCert(info) -
2014-08-04 15:21:22,246 DEBUG [main] - Loading RSA providers explicitly...
2014-08-04 15:21:25,159 DEBUG [main] - RSA providers are loaded explicitly...
2014-08-04 15:21:25,159 DEBUG [main] - New security.provider.1=JsafeJCE
2014-08-04 15:21:25,159 DEBUG [main] - New security.provider.2=RsaJsse
2014-08-04 15:21:25,159 DEBUG [main] - New security.provider.3=BC
2014-08-04 15:21:25,159 DEBUG [main] - New security.provider.4=SUN
2014-08-04 15:21:25,159 DEBUG [main] - New security.provider.5=SunRsaSign
2014-08-04 15:21:25,159 DEBUG [main] - New security.provider.6=SunJSSE
2014-08-04 15:21:25,159 DEBUG [main] - New security.provider.7=SunJCE
2014-08-04 15:21:25,159 DEBUG [main] - New security.provider.8=SunJGSS
2014-08-04 15:21:25,160 DEBUG [main] - New security.provider.9=SunSASL
```



```
2014-08-04 15:21:25,160 DEBUG [main] - New security.provider.10=XMLDSig
2014-08-04 15:21:25,160 DEBUG [main] - New security.provider.11=SunPCSC
2014-08-04 15:21:25,160 INFO [main] - IN -- RSACryptoEngine.java - loadCertificates(..) -
2014-08-04 15:21:25,160 INFO [main] - IN -- RSACryptoEngine.java - loadCertificate(..) -
2014-08-04 15:21:25,772 INFO [main] - OUT -- RSACryptoEngine.java - loadCertificate -
2014-08-04 15:21:25,772 INFO [main] - OUT -- RSACryptoEngine.java - loadCertificates -
2014-08-04 15:21:25,772 INFO [main] - OUT -- DefaultCertMgr.java - loadInputCert - Successfully
loaded input cert
2014-08-04 15:21:25,772 DEBUG [main] - Checking validity of cert
2014-08-04 15:21:25,772 INFO [main] - Verifying certificate
L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL
2014-08-04 15:21:25,772 INFO [main] - IN -- CertUtil.java - parseCNfromDN(DN, sSearchStr) -
2014-08-04 15:21:25,773 DEBUG [main] - parseCNfromDN( certSubjDN:
'L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL')
2014-08-04 15:21:25,773 DEBUG [main] - Truncating CN 'CUCM9X,OU=TAC,O=Cisco Systems,C=PL' ->
'CUCM9X'
2014-08-04 15:21:25,773 INFO [main] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-04 15:21:25,773 DEBUG [main] - Parsed CN 'CUCM9X' from DN
'L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL'
2014-08-04 15:21:25,773 INFO [main] - trying to load cert from trust store
::/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.pem
2014-08-04 15:21:25,773 INFO [main] - cert not available in trust store
::L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL
2014-08-04 15:21:25,773 INFO [main] - IN -- DefaultCertMgr.java - importTrustCert(info, cert) -
2014-08-04 15:21:25,773 INFO [main] - IN -- DefaultCertMgr.java - saveToTrustStore(info, cert) -
2014-08-04 15:21:25,773 INFO [main] - IN -- DefaultCertMgr.java - saveTrustCert(cert, targetDir,
certType) -
2014-08-04 15:21:25,773 INFO [main] - IN -- CertUtil.java - parseCNfromDN(DN, sSearchStr) -
2014-08-04 15:21:25,773 DEBUG [main] - parseCNfromDN( certSubjDN:
'L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL')
2014-08-04 15:21:25,773 DEBUG [main] - Truncating CN 'CUCM9X,OU=TAC,O=Cisco Systems,C=PL' ->
'CUCM9X'
2014-08-04 15:21:25,773 INFO [main] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-04 15:21:25,773 DEBUG [main] - Parsed CN 'CUCM9X' from DN
'L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL'
2014-08-04 15:21:25,773 INFO [main] - IN -- CertUtil.java - parseCNfromDN(DN, sSearchStr) -
2014-08-04 15:21:25,773 DEBUG [main] - parseCNfromDN( certSubjDN:
'L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL')
2014-08-04 15:21:25,774 DEBUG [main] - Truncating CN 'CUCM9X,OU=TAC,O=Cisco Systems,C=PL' ->
'CUCM9X'
2014-08-04 15:21:25,774 INFO [main] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-04 15:21:25,774 DEBUG [main] - Parsed CN 'CUCM9X' from DN
'L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL'
```

cert will be stored in filesystem with below filename (which is CN retrieved from certificate)

```
2014-08-04 15:21:25,774 DEBUG [main] - target filename for imported cert: 'CUCM9X.pem'
2014-08-04 15:21:25,774 DEBUG [main] - existing certificate with same filename not found.
2014-08-04 15:21:25,774 DEBUG [main] - Saving PEM encoded cert
'/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.pem'
2014-08-04 15:21:25,776 INFO [main] - IN -- CryptoUtil.java - saveAsPEM(..) - File :
/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.pem
2014-08-04 15:21:25,796 INFO [main] - OUT -- CryptoUtil.java - saveAsPEM -
2014-08-04 15:21:25,796 DEBUG [main] - Saving DER encoded cert
'/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.der'
2014-08-04 15:21:25,797 INFO [main] - OUT -- DefaultCertMgr.java - saveTrustCert -
```

saving it to key store

```
2014-08-04 15:21:25,797 INFO [main] - IN -- TomcatCertMgr.java - saveToKeyStore(..) -
2014-08-04 15:21:25,797 INFO [main] - IN -- RSACryptoEngine.java - saveToKeyStore(keystoreFile,
keystorePass, x509Certificate, alias) -
2014-08-04 15:21:25,797 INFO [main] - IN -- RSACryptoEngine.java - loadKeyStore(keystoreFile,
keystorePass) -
2014-08-04 15:21:25,981 INFO [main] - OUT -- RSACryptoEngine.java - loadKeyStore -
```

```
2014-08-04 15:21:25,981 INFO [main] - Size of the keystore before import is : 3
2014-08-04 15:21:25,982 INFO [main] - Importing certificate : CUCM9X
2014-08-04 15:21:26,023 INFO [main] - Size of the keystore after import is : 4
2014-08-04 15:21:26,023 INFO [main] - OUT -- RSACryptoEngine.java - saveToKeyStore -
2014-08-04 15:21:26,023 INFO [main] - OUT -- TomcatCertMgr.java - saveToKeyStore -
2014-08-04 15:21:26,023 DEBUG [main] - TrustCert description filename : 'CUCM9X.description'
2014-08-04 15:21:26,024 INFO [main] - IN -- DefaultCertMgr.java - createDescriptionFile(name,
description) -
2014-08-04 15:21:26,024 INFO [main] - description is :Signed Certificate
2014-08-04 15:21:26,024 INFO [main] - OUT -- DefaultCertMgr.java - createDescriptionFile -
2014-08-04 15:21:26,024 INFO [main] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-04 15:21:26,024 DEBUG [main] - setOwnershipAndPermissions : CUCM9X.description
2014-08-04 15:21:26,025 DEBUG [main] - Changing ownership of file
'/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description'
2014-08-04 15:21:26,025 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:26,025 DEBUG [main] - Executing command from Util.sysExec : /bin/chown
certbase /usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description
2014-08-04 15:21:26,049 INFO [main] - OUT -- Util.java - sysExec -
2014-08-04 15:21:26,049 DEBUG [main] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description'
2014-08-04 15:21:26,049 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:26,049 DEBUG [main] - Executing command from Util.sysExec : /bin/chgrp ccmbase
/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description
2014-08-04 15:21:26,064 INFO [main] - OUT -- Util.java - sysExec -
2014-08-04 15:21:26,065 DEBUG [main] - Changing mode of file
'/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description'
2014-08-04 15:21:26,065 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:26,065 DEBUG [main] - Executing command from Util.sysExec : /bin/chmod 755
/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description
2014-08-04 15:21:26,068 INFO [main] - OUT -- Util.java - sysExec -
2014-08-04 15:21:26,068 INFO [main] - OUT -- DefaultCertMgr.java - setOwnershipAndPermissions -
2014-08-04 15:21:26,068 INFO [main] - OUT -- DefaultCertMgr.java - saveToTrustStore -
```

certificate will be stored in trust-certs directory

```
2014-08-04 15:21:26,069 INFO [main] - trustdir ::/usr/local/platform/.security/tomcat/trust-
certs
2014-08-04 15:21:26,069 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:26,069 DEBUG [main] - Executing command from Util.sysExec : python
/usr/local/platform/bin/c_rehash.py /usr/local/platform/.security/tomcat/trust-certs
2014-08-04 15:21:26,449 INFO [main] - OUT -- Util.java - sysExec -
```

setting necessary permissions

```
2014-08-04 15:21:26,449 INFO [main] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-04 15:21:26,449 DEBUG [main] - setOwnershipAndPermissions : trust-certs
2014-08-04 15:21:26,449 DEBUG [main] - Changing ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-04 15:21:26,449 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:26,449 DEBUG [main] - Executing command from Util.sysExec : /bin/chown -R
certbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-04 15:21:26,460 INFO [main] - OUT -- Util.java - sysExec -
2014-08-04 15:21:26,460 DEBUG [main] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-04 15:21:26,460 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:26,460 DEBUG [main] - Executing command from Util.sysExec : /bin/chgrp -R
ccmbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-04 15:21:26,471 INFO [main] - OUT -- Util.java - sysExec -
2014-08-04 15:21:26,472 DEBUG [main] - Changing mode of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-04 15:21:26,472 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:26,472 DEBUG [main] - Executing command from Util.sysExec : /bin/chmod -R 755
/usr/local/platform/.security/tomcat/trust-certs
2014-08-04 15:21:26,478 INFO [main] - OUT -- Util.java - sysExec -
```

```
2014-08-04 15:21:26,478 INFO [main] - OUT -- DefaultCertMgr.java - setOwnershipAndPermissions -
2014-08-04 15:21:26,478 INFO [main] - IN -- CertUtil.java - populateCertInfo(cert, opInfo,
certFilePemLocation) -
2014-08-04 15:21:26,480 INFO [main] - IN -- CertUtil.java - getHostName(..) -
2014-08-04 15:21:26,480 INFO [main] - OUT -- CertUtil.java - getHostName - CUCM861
2014-08-04 15:21:26,480 INFO [main] - IN -- CryptoUtil.java - saveAsPEM(..) -
2014-08-04 15:21:26,482 INFO [main] - OUT -- CryptoUtil.java - saveAsPEM -
2014-08-04 15:21:26,483 INFO [main] - OUT -- CertUtil.java - populateCertInfo -
```

c. 인증서가 파일 시스템에 저장되었으므로 이제 DB에 삽입해야 합니다.이 작업은 CM API에서도 수행됩니다.

```
2014-08-04 15:21:26,484 INFO [main] - IN -- CertDBAction.java -
insertCertificateInDB(certFiletoStore, info) -
2014-08-04 15:21:26,485 INFO [main] -
```

certificate has been identified as tomcat-trust one

```
DBParameters ...
PKID :null
CN :L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL
serialNo :7a40f8743a793b44fe802b5f3e1e6f36
hostName :CUCM861
issuerName :L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL
Certificate :Not Printing huge Certificate String..
IPV4Address :10.48.46.29
IPV6Address :
TimeToLive :NULL
UNIT :tomcat-trust
TYPE :trust-certs
ROLE :null
RoleMoniker :null
RoleEnum :null
SERVICE :null
ServiceMoniker :null
ServiceEnum :0
```

```
2014-08-04 15:21:26,485 INFO [main] - DB - Certifciate Store Plugin Handler is
:com.cisco.ccm.certmgmt.db.CertDBImpl
2014-08-04 15:21:26,697 DEBUG [main] - Connection Initialized to localnode. Connection
HashCode:896033 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:26,697 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-04 15:21:26,712 DEBUG [main] - Try to get a connection from pool
2014-08-04 15:21:26,712 DEBUG [main] - getting local connection from Pool
2014-08-04 15:21:26,714 DEBUG [main] - Getting connection from connection pool entry
<database,jdbcurl2>
2014-08-04 15:21:26,715 DEBUG [main] - There are currently 0 connection pool entries
2014-08-04 15:21:26,719 DEBUG [main] - Checking if connection limit has been reached for
database
2014-08-04 15:21:26,720 DEBUG [main] - Connecting to publisher so max number of connections
allowed is 100
2014-08-04 15:21:26,720 DEBUG [main] - Number of connections in use is 0
2014-08-04 15:21:26,720 DEBUG [main] - There is currently 1 connection pool entry
2014-08-04 15:21:26,720 DEBUG [main] - Number of available connections in pool: 0
2014-08-04 15:21:27,411 DEBUG [main] - Adding connection
<com.informix.jdbc.IfxSqlConnect@135da43> to connection list
2014-08-04 15:21:27,411 DEBUG [main] - Marking connection
<com.informix.jdbc.IfxSqlConnect@135da43> as used
2014-08-04 15:21:27,411 DEBUG [main] - Got connection from pool
2014-08-04 15:21:27,418 DEBUG [main] - getConn:
```

```

usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-04 15:21:27,422 DEBUG [main] - Closing the resultset.
2014-08-04 15:21:27,423 DEBUG [main] - Closing the connection. Connection HashCode:896033 --
Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:27,423 DEBUG [main] - Attempting to close connection
2014-08-04 15:21:27,423 DEBUG [main] - Removing connection <database, jdbcurl2> from
ConnectionManager list
2014-08-04 15:21:27,423 DEBUG [main] - removeConnectionFromConnectionList()
2014-08-04 15:21:27,447 DEBUG [main] - Removing connection
<com.informix.jdbc.IfxSqlConnect@135da43> from connection list
2014-08-04 15:21:27,452 DEBUG [main] - Connection <com.informix.jdbc.IfxSqlConnect@135da43> is
not closed, adding it back to the pool entry <database,jdbcurl2>
2014-08-04 15:21:27,453 INFO [main] - Connection/Statement/Resultset is closed properly.

## service is checking current enums for TYPETRUSTROLEMAP (for tomcat-trust it is
## ROLE_APPLICATION_SERVER=7) and TYPESERVICEROLEMAP (for tomcat-trust it will be
## tomcat-trust=6)
2014-08-04 15:21:27,453 INFO [main] - TYPETRUSTROLEMAP ::{TRUST_ROLE_DATA_SERVICE=24,
TRUST_ROLE_PROVISIONING_SERVICE=23, TRUST_ROLE_SERVICEABILITY=27,
TRUST_ROLES_CALLMANAGER_TFTP=2, PHONE_TRUST_ROLES_FIREWALL=6, ROLE_APPLICATION_SERVER=7,
TRUST_ROLES_SAST=0, ROLE_SIGNALING_CALL_CONTROL=22, TRUST_ROLES_CALLMANAGER=1,
TRUST_ROLES_UNKNOWN=255, TRUST_ROLE_NETWORK_ELEMENT=25, TRUST_ROLES_SRST=5,
ROLE_CERTIFICATE_AUTHORITY=20, TRUST_ROLE_VPN=26, TRUST_ROLES_CAPF=4, TRUST_ROLES_TFTP=3,
ROLE_AUTHENTICATION_AUTHORIZATION=21}
2014-08-04 15:21:27,453 INFO [main] - TYPESERVICEROLEMAP ::{Phone-VPN-trust=2, CallManager=3,
Phone-CTL-trust=15, tomcat-trust=6, TVS=11, ipsec-trust=8, Phone-trust=1, Phone-SAST-trust=14,
tomcat=5, userlicensing-trust=16, CAPF=9, ipsec=7, CAPF-trust=10, CallManager-trust=4, TVS-
trust=12, directory-trust=13}
2014-08-04 15:21:27,453 INFO [main] - unitRoleMap ::{Phone-VPN-trust=[TRUST_ROLE_VPN],
CallManager=[TRUST_ROLES_CALLMANAGER_TFTP, TRUST_ROLES_SAST], Phone-CTL-
trust=[ROLE_APPLICATION_SERVER], tomcat-trust=[ROLE_APPLICATION_SERVER],
TVS=[ROLE_AUTHENTICATION_AUTHORIZATION], ipsec-trust=[], Phone-trust=[ROLE_APPLICATION_SERVER],
Phone-SAST-trust=[TRUST_ROLES_SAST, TRUST_ROLES_TFTP], tomcat=[ROLE_APPLICATION_SERVER],
userlicensing-trust=[], CAPF=[TRUST_ROLES_CAPF], ipsec=[ROLE_APPLICATION_SERVER], CAPF-trust=[],
CallManager-trust=[], TVS-trust=[], directory-trust=[]}
2014-08-04 15:21:27,453 INFO [main] - commonTrustStoreMap ::{}
2014-08-04 15:21:27,456 DEBUG [main] - Connection Initialized to Publisher. Connection
HashCode:7962652 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:27,456 INFO [main] - IN -- CertDBImpl.java - insertCertificate(certInfo, con) -
2014-08-04 15:21:27,456 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]
2014-08-04 15:21:27,456 DEBUG [main] - Try to get a connection from pool
2014-08-04 15:21:27,456 DEBUG [main] - Getting connection from connection pool entry
<database,jdbcurl2>
2014-08-04 15:21:27,456 DEBUG [main] - There is currently 1 connection pool entry
2014-08-04 15:21:27,456 DEBUG [main] - Adding connection
<com.informix.jdbc.IfxSqlConnect@135da43> to connection list
2014-08-04 15:21:27,456 DEBUG [main] - Marking connection
<com.informix.jdbc.IfxSqlConnect@135da43> as used
2014-08-04 15:21:27,457 DEBUG [main] - Got connection from pool
2014-08-04 15:21:27,459 INFO [main] - IN -- CertDBImpl.java -
populateRoleEnumServiceEnum(certInfo) -
2014-08-04 15:21:27,459 INFO [main] - UNIT :: tomcat-trust
2014-08-04 15:21:27,459 INFO [main] - role :: [ROLE_APPLICATION_SERVER]
2014-08-04 15:21:27,459 INFO [main] - roleEnum :: [7]
2014-08-04 15:21:27,459 INFO [main] - service :: null
2014-08-04 15:21:27,459 INFO [main] - serviceEnum :: 6
2014-08-04 15:21:27,459 INFO [main] - OUT -- CertDBImpl.java - populateRoleEnumServiceEnum -
2014-08-04 15:21:27,489 INFO [main] - IN -- CertDBUtil.java - getProcessNodeId(con, hostName,
ipAddress, fqdn) -
2014-08-04 15:21:27,489 INFO [main] - getProcessNodeId Query :SELECT PKID,NAME FROM PROCESSNODE
WHERE UPPER(NAME)=UPPER("CUCM861") OR UPPER(NAME)=UPPER("10.48.46.29") OR
UPPER(NAME)=UPPER("CUCM861")
2014-08-04 15:21:27,489 DEBUG [main] - getConn:

```


con) -
2014-08-04 15:21:27,771 INFO [main] - IN -- CertDBImpl.java -
checkExistingCertificateServiceMapping(certInfo, serviceEnum, con) -

checked here

2014-08-04 15:21:27,771 DEBUG [main] - checkExistingTrustCertificateForService Query :SELECT
PKID,FKCERTIFICATE, TKCERTIFICATESERVICE FROM CERTIFICATESERVICECERTIFICATEMAP WHERE
FKCERTIFICATE = "4152b36b-002e-68ac-711d-c373fa940779" AND TKCERTIFICATESERVICE= "6"
2014-08-04 15:21:27,771 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-04 15:21:27,774 DEBUG [main] - Closing the resultset.
2014-08-04 15:21:27,774 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-04 15:21:27,774 INFO [main] - OUT -- CertDBImpl.java -
checkExistingCertificateServiceMapping -

inserted here

2014-08-04 15:21:27,774 DEBUG [main] - Certificate to be inserted in
CERTIFICATESERVICECERTIFICATEMAP table :tomcat-trust ::PKID :4152b36b-002e-68ac-711d-
c373fa940779 ::toInsertInCertSrvMap:true
2014-08-04 15:21:27,774 DEBUG [main] - Insert query of CERTIFICATESERVICECERTIFICATEMAP :INSERT
INTO CERTIFICATESERVICECERTIFICATEMAP VALUES (newid(),"4152b36b-002e-68ac-711d-c373fa940779",6)
2014-08-04 15:21:27,775 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-04 15:21:27,778 DEBUG [main] - CertService mapping entry already exists..
2014-08-04 15:21:27,778 INFO [main] - OUT -- CertDBImpl.java - insertCertSrvCertMap -
2014-08-04 15:21:27,778 INFO [main] - IN -- CertDBImpl.java - insertCertTrustRoleMap(certInfo,
log, con) -
2014-08-04 15:21:27,779 INFO [main] - IN -- CertDBImpl.java -
checkExistingCertificateRoleMapping(certInfo, roleEnum, con) -

checked here

2014-08-04 15:21:27,779 DEBUG [main] - checkExistingTrustCertificateForRole Query :SELECT
PKID,FKCERTIFICATE, TKTRUSTROLE FROM CERTIFICATETRUSTROLEMAP WHERE FKCERTIFICATE = "4152b36b-
002e-68ac-711d-c373fa940779" AND TKTRUSTROLE= "7"
2014-08-04 15:21:27,779 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-04 15:21:27,781 DEBUG [main] - Closing the resultset.
2014-08-04 15:21:27,781 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-04 15:21:27,781 INFO [main] - OUT -- CertDBImpl.java -
checkExistingCertificateRoleMapping -

inserted here

2014-08-04 15:21:27,781 DEBUG [main] - Certificate to be inserted in CERTIFICATETRUSTROLEMAP
table :tomcat-trust ::PKID :4152b36b-002e-68ac-711d-c373fa940779 ::toInsertInCertSrvMap:true
2014-08-04 15:21:27,781 DEBUG [main] - Insert query of CERTIFICATETRUSTROLEMAP :INSERT INTO
CERTIFICATETRUSTROLEMAP VALUES (newid(),"4152b36b-002e-68ac-711d-c373fa940779",7)
2014-08-04 15:21:27,782 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-04 15:21:27,868 INFO [main] - OUT -- CertDBImpl.java - insertCertTrustRoleMap -
2014-08-04 15:21:27,868 INFO [main] - IN -- CertDBImpl.java - insertCertProcessNodeMap(certInfo,
con) -
2014-08-04 15:21:27,868 INFO [main] - IN -- CertDBImpl.java -
checkExistingCertProcessNodeMapping(certInfo, con) -

finally checked here

2014-08-04 15:21:27,868 DEBUG [main] - checkExistingCertProcessNodeMapping Query :SELECT
PKID,FKCERTIFICATE, FKPROCESSNODE, SERVERNAME FROM CERTIFICATEPROCESSNODEMAP WHERE
FKCERTIFICATE="4152b36b-002e-68ac-711d-c373fa940779" AND FKPROCESSNODE="13f4b0d9-0bae-429a-a86e-
625336a35bb6" AND SERVERNAME="CUCM861"
2014-08-04 15:21:27,869 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-04 15:21:27,872 DEBUG [main] - Closing the resultset.
2014-08-04 15:21:27,872 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-04 15:21:27,872 INFO [main] - OUT -- CertDBImpl.java -

checkExistingCertProcessNodeMapping -

and inserted here

```
2014-08-04 15:21:27,872 DEBUG [main] - Insert query of CERTIFICATEPROCESSNODEMAP :INSERT INTO
CERTIFICATEPROCESSNODEMAP VALUES (newId(),"4152b36b-002e-68ac-711d-c373fa940779", "13f4b0d9-
0bae-429a-a86e-625336a35bb6" , "CUCM861", "10.48.46.29" , "")
2014-08-04 15:21:27,872 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-04 15:21:27,879 INFO [main] - OUT -- CertDBImpl.java - insertCertProcessNodeMap -
2014-08-04 15:21:27,930 DEBUG [main] - Connection committed for insertCertificate..
2014-08-04 15:21:27,930 DEBUG [main] - Insertion of Certificate in DB is Successful.
2014-08-04 15:21:27,930 INFO [main] - OUT -- CertDBImpl.java - insertCertificate -
2014-08-04 15:21:27,930 DEBUG [main] - Closing the connection. Connection HashCode:7962652 --
Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:27,930 DEBUG [main] - Attempting to close connection
2014-08-04 15:21:27,930 DEBUG [main] - Removing connection <database, jdbcurl2> from
ConnectionManager list
2014-08-04 15:21:27,930 DEBUG [main] - removeConnectionFromConnectionList()
2014-08-04 15:21:27,930 DEBUG [main] - Removing connection
<com.informix.jdbc.IfxSqlConnect@135da43> from connection list
2014-08-04 15:21:27,931 DEBUG [main] - Connection <com.informix.jdbc.IfxSqlConnect@135da43> is
not closed, adding it back to the pool entry <database,jdbcurl2>
2014-08-04 15:21:27,931 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-04 15:21:27,931 INFO [main] - DB - Generate Certificate operation in DB is successful
2014-08-04 15:21:27,931 INFO [main] - OUT -- CertDBAction.java - insertCertificateInDB -
2014-08-04 15:21:27,931 INFO [main] - IN -- CryptoUtil.java - isOCSPEnabled(..) -
2014-08-04 15:21:27,931 INFO [main] - IN -- CryptoUtil.java - getCertMonitorXmlParser(..) -
2014-08-04 15:21:27,989 INFO [main] - OUT -- CryptoUtil.java - getCertMonitorXmlParser -
2014-08-04 15:21:27,989 INFO [main] - OUT -- CryptoUtil.java - isOCSPEnabled - false
2014-08-04 15:21:27,990 DEBUG [main] - OCSP is not enabled.
```

process of importing the cert to this node is finishing here.

```
2014-08-04 15:21:27,990 INFO [main] - Successfully imported trusted certificate with Subject
DN:L#61;Krakow,ST#61;Malopolska,CN#61;CUCM9X,OU#61;TAC,O#61;Cisco Systems,C#61;PL
2014-08-04 15:21:27,990 INFO [main] - OUT -- DefaultCertMgr.java - importTrustCert -
Successfully imported trusted certificate with Subject
DN:L#61;Krakow,ST#61;Malopolska,CN#61;CUCM9X,OU#61;TAC,O#61;Cisco Systems,C#61;PL
2014-08-04 15:21:27,990 INFO [main] - result of import operations is ::Import of trust
certificate is successful
2014-08-04 15:21:27,990 INFO [main] - OUT -- DefaultCertMgr.java - importCert -
2014-08-04 15:21:27,990 INFO [main] - IN -- CertMgr.java - logResult(result, desc, resultFile) -
2014-08-04 15:21:27,990 INFO [main] - CertMgmt Operation Result : null
2014-08-04 15:21:27,991 INFO [main] - OUT -- CertMgr.java - logResult -
2014-08-04 15:21:27,991 INFO [main] - OUT -- CertMgr.java - doOp -
2014-08-04 15:21:27,992 INFO [main] - OUT -- CertMgr.java - mainIntenal -
```

d. 인증서가 복제되면 두 노드의 CertCN 서비스에 DB의 변경 사항이 통지됩니다. 이는 로그에서 볼 수 있습니다. 다음은 게시자의 로그입니다.

notification about the change comes, service is notified about change in CERTIFICATE and CERTIFICATESERVICECERTIFICATEMAP tables

```
2014-08-04 15:21:28,003 INFO [Thread-5] - IN - process. changeData &colon;
2014-08-04 15:21:28,016 INFO [Thread-5] - Inside CERTIFICATE - I/U option..
2014-08-04 15:21:28,016 DEBUG [Thread-5] - Updated Data in CERTIFICATE
::<msg><type>DBL</type><table>certificate</table><tableid>41</tableid><action>I</action><time>14
07158487</time><new><cdrserver>2</cdrserver><cdrtime>1407158486</cdrtime><pkid>4152b36b-002e-
68ac-711d-
c373fa940779</pkid><servername>CUCM861</servername><subjectname>L=Krakow,ST=Malopolska,CN=CUCM9X
,OU=TAC,O=Cisco
Systems,C=PL</subjectname><issuename>L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco
Systems,C=PL</issuename><serialnumber>7a40f8743a793b44fe802b5f3e1e6f36</serialnumber><certifica
te></certificate><ipv4address>10.48.46.29</ipv4address><ipv6address></ipv6address><timetolive>NU
LL</timetolive><ifx_replcheck>6043699677659004930</ifx_replcheck></new></msg>
```

2014-08-04 15:21:28,016 DEBUG [Thread-5] - Certificate PKID : 4152b36b-002e-68ac-711d-c373fa940779 , ipAddress : 10.48.46.29 , OldSerialNo : , NewSerialNo : 7a40f8743a793b44fe802b5f3e1e6f36
2014-08-04 15:21:28,017 INFO [Thread-5] - OUT - process.
2014-08-04 15:21:28,018 INFO [Thread-5] - IN - process. changeData :
2014-08-04 15:21:28,018 INFO [Thread-5] - Inside CERTIFICATESEVICECERTIFICATEMAP - I option..
2014-08-04 15:21:28,019 DEBUG [Thread-5] - Updated Data in CERTIFICATESEVICECERTIFICATEMAP
::<msg><type>DBL</type><table>certificateservicecertificatemap</table><tableid>44</tableid><action>I</action><time>1407158487</time><new><cdrserver>2</cdrserver><cdrtime>1407158487</cdrtime><pkid>798ff6e1-e1d6-42e5-a4e6-30d9d7360d6d</pkid><fkcertificate>4152b36b-002e-68ac-711d-c373fa940779</fkcertificate><tkcertificateservice>6</tkcertificateservice><ifx_replcheck>6043699681953972226</ifx_replcheck></new></msg>
2014-08-04 15:21:28,019 INFO [InsertThread --- 8] - IN -- CertKeystoreHandler.java - run() -
2014-08-04 15:21:28,021 DEBUG [InsertThread --- 8] - InsertThread --- 8 -- START --

change is related to the PKID that has been assigned for the new certificate

2014-08-04 15:21:28,021 DEBUG [InsertThread --- 8] - DB Value UPDATE: 4152b36b-002e-68ac-711d-c373fa940779
2014-08-04 15:21:28,021 INFO [InsertThread --- 8] - IN -- CertKeystoreHandler.java - updateIntoKeystore() -
2014-08-04 15:21:28,021 INFO [InsertThread --- 8] - IN -- CertDBImpl.java - getCertificate(certBash64SHA1:null --pkid:4152b36b-002e-68ac-711d-c373fa940779
2014-08-04 15:21:28,022 DEBUG [InsertThread --- 8] - Connection Initialized to localnode. Connection HashCode:14186201 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:28,022 DEBUG [InsertThread --- 8] - Select Query to getCertificate :SELECT A.*,B.HASH FROM CERTIFICATE A, CERTIFICATEHASHMAP B WHERE A.PKID=B.FKCERTIFICATE AND A.PKID = "4152b36b-002e-68ac-711d-c373fa940779"
2014-08-04 15:21:28,022 DEBUG [InsertThread --- 8] - getConn:
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-04 15:21:28,022 DEBUG [InsertThread --- 8] - Try to get a connection from pool
2014-08-04 15:21:28,022 DEBUG [InsertThread --- 8] - getting local connection from Pool
2014-08-04 15:21:28,022 DEBUG [InsertThread --- 8] - Getting connection from connection pool entry <database,jdbcurl2>
2014-08-04 15:21:28,022 DEBUG [InsertThread --- 8] - There are currently 2 connection pool entries
2014-08-04 15:21:28,023 DEBUG [InsertThread --- 8] - Checking if connection limit has been reached for database
2014-08-04 15:21:28,023 DEBUG [InsertThread --- 8] - Connecting to publisher so max number of connections allowed is 100
2014-08-04 15:21:28,023 DEBUG [InsertThread --- 8] - Number of connections in use is 0
2014-08-04 15:21:28,023 DEBUG [InsertThread --- 8] - There are currently 2 connection pool entries
2014-08-04 15:21:28,023 DEBUG [InsertThread --- 8] - Number of available connections in pool: 0
2014-08-04 15:21:28,079 DEBUG [InsertThread --- 8] - Adding connection <com.informix.jdbc.IfxSqlConnect@162db76> to connection list
2014-08-04 15:21:28,079 DEBUG [InsertThread --- 8] - Marking connection <com.informix.jdbc.IfxSqlConnect@162db76> as used
2014-08-04 15:21:28,079 DEBUG [InsertThread --- 8] - Got connection from pool
2014-08-04 15:21:28,081 DEBUG [InsertThread --- 8] - Closing the resultset.
2014-08-04 15:21:28,081 DEBUG [InsertThread --- 8] - Closing the connection. Connection HashCode:14186201 --Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:28,081 DEBUG [InsertThread --- 8] - Attempting to close connection
2014-08-04 15:21:28,081 DEBUG [InsertThread --- 8] - Removing connection <database,jdbcurl2> from ConnectionManager list
2014-08-04 15:21:28,081 DEBUG [InsertThread --- 8] - removeConnectionFromConnectionList()
2014-08-04 15:21:28,081 DEBUG [InsertThread --- 8] - Removing connection <com.informix.jdbc.IfxSqlConnect@162db76> from connection list
2014-08-04 15:21:28,081 DEBUG [InsertThread --- 8] - Connection <com.informix.jdbc.IfxSqlConnect@162db76> is not closed, adding it back to the pool entry <database,jdbcurl2>
2014-08-04 15:21:28,082 INFO [InsertThread --- 8] - Connection/Statement/Resultset is closed properly.
2014-08-04 15:21:28,082 DEBUG [InsertThread --- 8] - Connection released from


```

CertDBImpl.getCertificate method.
2014-08-04 15:21:28,082 INFO [InsertThread --- 8] - OUT -- CertDBImpl.java - getCertificate -
2014-08-04 15:21:28,082 INFO [InsertThread --- 8] - IN -- CertDBImpl.java -
getCertUnitByPkid(pkid) -
2014-08-04 15:21:28,083 DEBUG [InsertThread --- 8] - Connection Initialized to localnode.
Connection HashCode:20337133 --Details:Connector(NOT CONNECTED:
Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:28,083 DEBUG [InsertThread --- 8] - Select Query to getCertUnitByPkid :SELECT
A.PKID, A.FKCERTIFICATE, A.TKCERTIFICATESERVICE, B.NAME UNIT FROM
CERTIFICATESESERVICECERTIFICATEMAP A, TYPECERTIFICATESESERVICE B WHERE A.FKCERTIFICATE="4152b36b-
002e-68ac-711d-c373fa940779" AND A.TKCERTIFICATESERVICE = B.ENUM
2014-08-04 15:21:28,083 DEBUG [InsertThread --- 8] - getConn:
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-04 15:21:28,083 DEBUG [InsertThread --- 8] - Try to get a connection from pool
2014-08-04 15:21:28,083 DEBUG [InsertThread --- 8] - getting local connection from Pool
2014-08-04 15:21:28,083 DEBUG [InsertThread --- 8] - Getting connection from connection pool
entry <database,jdbcurl2>
2014-08-04 15:21:28,083 DEBUG [InsertThread --- 8] - There are currently 2 connection pool
entries
2014-08-04 15:21:28,083 DEBUG [InsertThread --- 8] - Adding connection
<com.informix.jdbc.IfxSqlConnect@162db76> to connection list
2014-08-04 15:21:28,083 DEBUG [InsertThread --- 8] - Marking connection
<com.informix.jdbc.IfxSqlConnect@162db76> as used
2014-08-04 15:21:28,083 DEBUG [InsertThread --- 8] - Got connection from pool
2014-08-04 15:21:28,085 DEBUG [InsertThread --- 8] - Closing the resultset.
2014-08-04 15:21:28,085 DEBUG [InsertThread --- 8] - Closing the connection. Connection
HashCode:20337133 --Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:28,085 DEBUG [InsertThread --- 8] - Attempting to close connection
2014-08-04 15:21:28,085 DEBUG [InsertThread --- 8] - Removing connection <database, jdbcurl2>
from ConnectionManager list
2014-08-04 15:21:28,085 DEBUG [InsertThread --- 8] - removeConnectionFromConnectionList()
2014-08-04 15:21:28,085 DEBUG [InsertThread --- 8] - Removing connection
<com.informix.jdbc.IfxSqlConnect@162db76> from connection list
2014-08-04 15:21:28,085 DEBUG [InsertThread --- 8] - Connection
<com.informix.jdbc.IfxSqlConnect@162db76> is not closed, adding it back to the pool entry
<database,jdbcurl2>
2014-08-04 15:21:28,085 INFO [InsertThread --- 8] - Connection/Statement/Resultset is closed
properly.
2014-08-04 15:21:28,085 DEBUG [InsertThread --- 8] - Resultset released from
CertDBImpl.getCertUnitByPkid method.
2014-08-04 15:21:28,085 INFO [InsertThread --- 8] - OUT -- CertDBImpl.java - getCertUnitByPkid -
2014-08-04 15:21:28,086 INFO [InsertThread --- 8] - UNIT : tomcat-trust
2014-08-04 15:21:28,086 INFO [InsertThread --- 8] - CurrentIPAddress : 10.48.46.29
2014-08-04 15:21:28,086 INFO [InsertThread --- 8] - RemoteIPAddress : 10.48.46.29
2014-08-04 15:21:28,086 INFO [InsertThread --- 8] - OldSerialNo :
2014-08-04 15:21:28,086 INFO [InsertThread --- 8] - NewSerialNo
:7a40f8743a793b44fe802b5f3e1e6f36
2014-08-04 15:21:28,086 INFO [InsertThread --- 8] - IN -- CertUtil.java -
getListFromComaSeperatedStr(..) -
2014-08-04 15:21:28,086 INFO [InsertThread --- 8] - OUT -- CertUtil.java -
getListFromComaSeperatedStr -

## tomcat-trust is in scope of certCN for import but since it is already on the file
## system the service will nothing with that one.
2014-08-04 15:21:28,086 INFO [InsertThread --- 8] - tomcat-trust --- is included unit for CN
2014-08-04 15:21:28,086 DEBUG [InsertThread --- 8] - Change notification not require on same
node except tomcat cert.
2014-08-04 15:21:28,086 INFO [InsertThread --- 8] - tomcat-trust Certificate successfully
updated in trust-store by Change Notification..
2014-08-04 15:21:28,086 INFO [InsertThread --- 8] - OUT -- CertKeystoreHandler.java -
updateIntoKeystore -
2014-08-04 15:21:28,086 DEBUG [InsertThread --- 8] - InsertThread --- 8 -- END --
2014-08-04 15:21:28,086 INFO [InsertThread --- 8] - OUT -- CertKeystoreHandler.java - run -

```

예. 가입자에서도 동일한 상황이 발생하면 certCN이 변경 사항을 알리고, 그 다음 인증서를 파일 시스템으로 가져오고, 심볼 링크 등을 생성합니다.이 내용은 아래 로그에서 확인할 수 있습니다.

service is notified about the change in DB. Notifications are related to two tables:

```
2014-08-04 15:21:29,298 INFO [Thread-5] - IN - process. changeData &colon;
2014-08-04 15:21:29,299 INFO [Thread-5] - Inside CERTIFICATE - I/U option..
```

CERTIFICATE one ...

```
2014-08-04 15:21:29,299 DEBUG [Thread-5] - Updated Data in CERTIFICATE
::<msg><type>DBL</type><table>certificate</table><tableid>41</tableid><action>I</action><time>14
07158488</time><new><cdrserver>2</cdrserver><cdrtime>1407158487</cdrtime><pkid>4152b36b-002e-
68ac-711d-
c373fa940779</pkid><servername>CUCM861</servername><subjectname>L=Krakow,ST=Malopolska,CN=CUCM9X
,OU=TAC,O=Cisco
Systems,C=PL</subjectname><issuename>L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco
Systems,C=PL</issuename><serialnumber>7a40f8743a793b44fe802b5f3e1e6f36</serialnumber><certifica
te></certificate><ipv4address>10.48.46.29</ipv4address><ipv6address></ipv6address><timetolive>NU
LL</timetolive><ifx_replcheck>6043699677659004930</ifx_replcheck></new></msg>
```

```
2014-08-04 15:21:29,299 DEBUG [Thread-5] - Certificate PKID : 4152b36b-002e-68ac-711d-
c373fa940779 , ipAddress : 10.48.46.29 , OldSerialNo : , NewSerialNo :
7a40f8743a793b44fe802b5f3e1e6f36
```

```
2014-08-04 15:21:29,299 INFO [Thread-5] - OUT - process.
```

```
2014-08-04 15:21:29,299 INFO [InsertThread --- 35] - IN -- CertKeystoreHandler.java - run() -
```

```
2014-08-04 15:21:29,300 DEBUG [InsertThread --- 35] - InsertThread --- 35 -- START --
```

```
2014-08-04 15:21:29,300 DEBUG [InsertThread --- 35] - DB Value UPDATE: 4152b36b-002e-68ac-711d-
c373fa940779
```

```
2014-08-04 15:21:29,300 INFO [InsertThread --- 35] - IN -- CertKeystoreHandler.java -
updateIntoKeystore() -
```

```
2014-08-04 15:21:29,300 INFO [InsertThread --- 35] - IN -- CertDBImpl.java -
getCertificate(certBash64SHA1:null --pkid:4152b36b-002e-68ac-711d-c373fa940779
```

```
2014-08-04 15:21:29,301 DEBUG [InsertThread --- 35] - Connection Initialized to localnode.
Connection HashCode:30607587 --Details:Connector(NOT CONNECTED:
Driver=com.informix.jdbc.IfxDriver;)
```

```
2014-08-04 15:21:29,301 DEBUG [InsertThread --- 35] - Select Query to getCertificate :SELECT
A.*,B.HASH FROM CERTIFICATE A, CERTIFICATEHASHMAP B WHERE A.PKID=B.FKCERTIFICATE AND A.PKID =
"4152b36b-002e-68ac-711d-c373fa940779"
```

```
2014-08-04 15:21:29,301 DEBUG [InsertThread --- 35] - getConn:
```

```
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
```

```
2014-08-04 15:21:29,301 DEBUG [InsertThread --- 35] - Try to get a connection from pool
```

```
2014-08-04 15:21:29,301 DEBUG [InsertThread --- 35] - getting local connection from Pool
```

```
2014-08-04 15:21:29,301 DEBUG [InsertThread --- 35] - Getting connection from connection pool
entry <database,jdbcurl2>
```

```
2014-08-04 15:21:29,301 DEBUG [InsertThread --- 35] - There are currently 2 connection pool
entries
```

```
2014-08-04 15:21:29,301 DEBUG [InsertThread --- 35] - Checking if connection limit has been
reached for database
```

```
2014-08-04 15:21:29,302 DEBUG [InsertThread --- 35] - Connecting to subscriber so max number of
connections allowed is 100
```

```
2014-08-04 15:21:29,302 DEBUG [InsertThread --- 35] - Number of connections in use is 0
```

```
2014-08-04 15:21:29,302 DEBUG [InsertThread --- 35] - There are currently 2 connection pool
entries
```

```
2014-08-04 15:21:29,302 DEBUG [InsertThread --- 35] - Number of available connections in pool: 0
```

```
2014-08-04 15:21:29,315 INFO [Thread-5] - IN - process. changeData &colon;
```

```
2014-08-04 15:21:29,316 INFO [Thread-5] - Inside CERTIFICATESERVICECERTIFICATEMAP - I option..
```

... and CERTIFICATESERVICECERTIFICATEMAP

```
2014-08-04 15:21:29,316 DEBUG [Thread-5] - Updated Data in CERTIFICATESERVICECERTIFICATEMAP
::<msg><type>DBL</type><table>certificateservicecertificatemap</table><tableid>44</tableid><acti
on>I</action><time>1407158489</time><new><cdrserver>2</cdrserver><cdrtime>1407158487</cdrtime><pk
id>798ff6e1-e1d6-42e5-a4e6-30d9d7360d6d</pkid><fkcertificate>4152b36b-002e-68ac-711d-
c373fa940779</fkcertificate><tkcertificateservice>6</tkcertificateservice><ifx_replcheck>6043699
681953972226</ifx_replcheck></new></msg>
```

```
2014-08-04 15:21:29,354 DEBUG [InsertThread --- 35] - Adding connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> to connection list
2014-08-04 15:21:29,355 DEBUG [InsertThread --- 35] - Marking connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> as used
2014-08-04 15:21:29,355 DEBUG [InsertThread --- 35] - Got connection from pool
2014-08-04 15:21:29,363 DEBUG [InsertThread --- 35] - Closing the resultset.
2014-08-04 15:21:29,363 DEBUG [InsertThread --- 35] - Closing the connection. Connection
HashCode:30607587 --Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:29,363 DEBUG [InsertThread --- 35] - Attempting to close connection
2014-08-04 15:21:29,363 DEBUG [InsertThread --- 35] - Removing connection <database, jdbcurl2>
from ConnectionManager list
2014-08-04 15:21:29,363 DEBUG [InsertThread --- 35] - removeConnectionFromConnectionList()
2014-08-04 15:21:29,363 DEBUG [InsertThread --- 35] - Removing connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> from connection list
2014-08-04 15:21:29,363 DEBUG [InsertThread --- 35] - Connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> is not closed, adding it back to the pool entry
<database, jdbcurl2>
2014-08-04 15:21:29,363 INFO [InsertThread --- 35] - Connection/Statement/Resultset is closed
properly.
2014-08-04 15:21:29,363 DEBUG [InsertThread --- 35] - Connection released from
CertDBImpl.getCertificate method.
2014-08-04 15:21:29,363 INFO [InsertThread --- 35] - OUT -- CertDBImpl.java - getCertificate -
2014-08-04 15:21:29,363 INFO [InsertThread --- 35] - IN -- CertDBImpl.java -
getCertUnitByPkid(pkid) -
2014-08-04 15:21:29,364 DEBUG [InsertThread --- 35] - Connection Initialized to localnode.
Connection HashCode:29897942 --Details:Connector(NOT CONNECTED:
Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:29,364 DEBUG [InsertThread --- 35] - Select Query to getCertUnitByPkid :SELECT
A.PKID, A.FKCERTIFICATE, A.TKCERTIFICATESESERVICE, B.NAME UNIT FROM
CERTIFICATESESERVICECERTIFICATEMAP A, TYPECERTIFICATESESERVICE B WHERE A.FKCERTIFICATE="4152b36b-
002e-68ac-711d-c373fa940779" AND A.TKCERTIFICATESESERVICE = B.ENUM
2014-08-04 15:21:29,364 DEBUG [InsertThread --- 35] - getConn:
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-04 15:21:29,364 DEBUG [InsertThread --- 35] - Try to get a connection from pool
2014-08-04 15:21:29,364 DEBUG [InsertThread --- 35] - getting local connection from Pool
2014-08-04 15:21:29,364 DEBUG [InsertThread --- 35] - Getting connection from connection pool
entry <database, jdbcurl2>
2014-08-04 15:21:29,364 DEBUG [InsertThread --- 35] - There are currently 2 connection pool
entries
2014-08-04 15:21:29,364 DEBUG [InsertThread --- 35] - Adding connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> to connection list
2014-08-04 15:21:29,364 DEBUG [InsertThread --- 35] - Marking connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> as used
2014-08-04 15:21:29,364 DEBUG [InsertThread --- 35] - Got connection from pool
2014-08-04 15:21:29,369 DEBUG [InsertThread --- 35] - Closing the resultset.
2014-08-04 15:21:29,369 DEBUG [InsertThread --- 35] - Closing the connection. Connection
HashCode:29897942 --Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:29,369 DEBUG [InsertThread --- 35] - Attempting to close connection
2014-08-04 15:21:29,369 DEBUG [InsertThread --- 35] - Removing connection <database, jdbcurl2>
from ConnectionManager list
2014-08-04 15:21:29,369 DEBUG [InsertThread --- 35] - removeConnectionFromConnectionList()
2014-08-04 15:21:29,369 DEBUG [InsertThread --- 35] - Removing connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> from connection list
2014-08-04 15:21:29,369 DEBUG [InsertThread --- 35] - Connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> is not closed, adding it back to the pool entry
<database, jdbcurl2>
2014-08-04 15:21:29,369 INFO [InsertThread --- 35] - Connection/Statement/Resultset is closed
properly.
2014-08-04 15:21:29,369 DEBUG [InsertThread --- 35] - Resultset released from
CertDBImpl.getCertUnitByPkid method.
2014-08-04 15:21:29,370 INFO [InsertThread --- 35] - OUT -- CertDBImpl.java - getCertUnitByPkid
-
2014-08-04 15:21:29,370 INFO [InsertThread --- 35] - UNIT : tomcat-trust
2014-08-04 15:21:29,370 INFO [InsertThread --- 35] - CurrentIPAddress : 10.48.46.30
```

2014-08-04 15:21:29,370 INFO [InsertThread --- 35] - RemoteIPAddress : 10.48.46.29
2014-08-04 15:21:29,370 INFO [InsertThread --- 35] - OldSerialNo :
2014-08-04 15:21:29,370 INFO [InsertThread --- 35] - NewSerialNo
:7a40f8743a793b44fe802b5f3e1e6f36
2014-08-04 15:21:29,370 INFO [InsertThread --- 35] - IN -- CertUtil.java -
getListFromComaSeperatedStr(..) -
2014-08-04 15:21:29,370 INFO [InsertThread --- 35] - OUT -- CertUtil.java -
getListFromComaSeperatedStr -
2014-08-04 15:21:29,370 INFO [InsertThread --- 35] - tomcat-trust --- is included unit for CN
2014-08-04 15:21:29,370 INFO [InsertThread --- 35] - IN -- CertUtil.java -
loadCertFromString(cert) -
2014-08-04 15:21:29,370 INFO [InsertThread --- 35] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-04 15:21:29,373 INFO [InsertThread --- 35] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-04 15:21:29,373 INFO [InsertThread --- 35] - OUT -- CertUtil.java - loadCertFromString -

**## Info about the certificate has been received. CertCN will try to delete old
tomcat-trust for this node (if any) and import it**

2014-08-04 15:21:29,373 INFO [InsertThread --- 35] - IN -- CertDBUtil.java -
checkDeleteAndImport(unit, dbCert) -
2014-08-04 15:21:29,373 INFO [InsertThread --- 35] - DB CertInfo.--
SN:162503161730851213217569888696899890998--
SubjectDN:L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL--GetNotBefore:Mon Aug 04
15:19:07 CEST 2014--GetNotAfter:Sat Aug 03 15:19:06 CEST 2019
2014-08-04 15:21:29,373 INFO [InsertThread --- 35] - loading certificate element named [tomcat-
trust]
2014-08-04 15:21:29,373 INFO [InsertThread --- 35] - determining certificates in group [product-
cpi] with type [trust-certs]
2014-08-04 15:21:29,373 INFO [InsertThread --- 35] - loading the config file
[/usr/local/platform/conf/cert-conf.xml]
2014-08-04 15:21:29,374 INFO [InsertThread --- 35] - looking for first [trust-certs] in
[product-cpi]
2014-08-04 15:21:29,374 INFO [InsertThread --- 35] - loaded element [tomcat-trust]
2014-08-04 15:21:29,374 INFO [InsertThread --- 35] - determining cert dir for [tomcat-trust]
2014-08-04 15:21:29,374 INFO [InsertThread --- 35] - looking for first [dir] in [tomcat-trust]
2014-08-04 15:21:29,374 INFO [InsertThread --- 35] - getting the value of [dir]
2014-08-04 15:21:29,374 INFO [InsertThread --- 35] - value is
[/usr/local/platform/.security/tomcat/trust-certs]
2014-08-04 15:21:29,374 INFO [InsertThread --- 35] - cert dir is
[/usr/local/platform/.security/tomcat/trust-certs]
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/VeriSign_Class_3_Secure_Server_CA_-
_G3.description] match is false
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861s.description] match is false
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/VeriSign_Class_3_Secure_Server_CA_-
_G3.pem] match is true
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/VeriSign_Class_3_Secure_Server_CA_-
_G3.der] match is true
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore] match is false
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861s.der] match is true
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861.der] match is true
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861.description] match is false
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/7e0370f0.0] match is false
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/d0aacffb.0] match is false

```
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/101f99a6.0] match is false
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem] match is true
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861s.pem] match is true
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-04 15:21:29,375 INFO [InsertThread --- 35] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-04 15:21:29,376 INFO [InsertThread --- 35] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-04 15:21:29,376 INFO [InsertThread --- 35] - IN -- CertDBUtil.java -
importTrustCertInFileSystem.. unit : tomcat-trust
2014-08-04 15:21:29,376 INFO [InsertThread --- 35] - IN -- CertDBUtil.java -
populateOpInfo(operation, unit, type, fileLocation, x509Cert, isDBInsert) -
2014-08-04 15:21:29,376 INFO [InsertThread --- 35] - loading certificate element named [tomcat-
trust]
2014-08-04 15:21:29,376 INFO [InsertThread --- 35] - determining certificates in group [product-
cpi] with type[trust-certs]
2014-08-04 15:21:29,376 INFO [InsertThread --- 35] - loading the config file
[/usr/local/platform/conf/cert-conf.xml]
2014-08-04 15:21:29,377 INFO [InsertThread --- 35] - looking for first [trust-certs] in
[product-cpi]
2014-08-04 15:21:29,377 INFO [InsertThread --- 35] - loaded element [tomcat-trust]
2014-08-04 15:21:29,377 INFO [InsertThread --- 35] - determining key dir for [tomcat-trust]
2014-08-04 15:21:29,377 INFO [InsertThread --- 35] - looking for first [key-dir] in [tomcat-
trust]
2014-08-04 15:21:29,377 INFO [InsertThread --- 35] - getting the value of [key-dir]
2014-08-04 15:21:29,377 INFO [InsertThread --- 35] - value is
[/usr/local/platform/.security/tomcat/keys]
2014-08-04 15:21:29,377 INFO [InsertThread --- 35] - key dir is
[/usr/local/platform/.security/tomcat/keys]
2014-08-04 15:21:29,377 INFO [InsertThread --- 35] - loading certificate element named [tomcat-
trust]
2014-08-04 15:21:29,377 INFO [InsertThread --- 35] - determining certificates in group [product-
cpi] with type [trust-certs]
2014-08-04 15:21:29,377 INFO [InsertThread --- 35] - loading the config file
[/usr/local/platform/conf/cert-conf.xml]
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - looking for first [trust-certs] in
[product-cpi]
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - loaded element [tomcat-trust]
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - determining cert dir for [tomcat-trust]
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - looking for first [dir] in [tomcat-trust]
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - getting the value of [dir]
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - value is
[/usr/local/platform/.security/tomcat/trust-certs]
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - cert dir is
[/usr/local/platform/.security/tomcat/trust-certs]
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - OUT -- CertDBUtil.java - populateOpInfo -
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - IN -- CertMgr.java - getCertMgrObj(unit) -
tomcat-trust
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - OUT -- CertMgr.java - getCertMgrObj -
com.cisco.cpi.certMgmt.manager.TomcatCertMgr@104f57f
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - IN -- DefaultCertMgr.java -
importCert(info) -
decode:      true
op:         import
```

unit: tomcat-trust
keystoreUnit:tomcat-trust
logFile: /var/log/active/platform/log/cert-mgmt.log
resultFile: /var/log/active/platform/log/certde-info.xml
keyDir: /usr/local/platform/.security/tomcat/keys
certDir: /usr/local/platform/.security/tomcat/trust-certs
srcCert: null
type: trust-certs
rootCACert: null
trustDir: null
DNAME: null
description:null
isDBInsert:false

2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - Checking validity of cert
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - Verifying certificate
L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - IN -- CertUtil.java - parseCNfromDN(DN,
sSearchStr) -
2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - parseCNfromDN(certSubjDN:
'L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL')
2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - Truncating CN 'CUCM9X,OU=TAC,O=Cisco
Systems,C=PL' -> 'CUCM9X'
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - Parsed CN 'CUCM9X' from DN
'L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL'
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - trying to load cert from trust store
::/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.pem
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - cert not available in trust store
::L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - IN -- DefaultCertMgr.java -
importTrustCert(info, cert) -
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - IN -- DefaultCertMgr.java -
saveToTrustStore(info, cert) -
2014-08-04 15:21:29,379 ERROR [InsertThread --- 35] - trust directory parameter is null
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - IN -- DefaultCertMgr.java -
saveTrustCert(cert, targetDir, certType) -
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - IN -- CertUtil.java - parseCNfromDN(DN,
sSearchStr) -
2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - parseCNfromDN(certSubjDN:
'L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL')
2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - Truncating CN 'CUCM9X,OU=TAC,O=Cisco
Systems,C=PL' -> 'CUCM9X'
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - Parsed CN 'CUCM9X' from DN
'L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL'
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - IN -- CertUtil.java - parseCNfromDN(DN,
sSearchStr) -
2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - parseCNfromDN(certSubjDN:
'L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL')
2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - Truncating CN 'CUCM9X,OU=TAC,O=Cisco
Systems,C=PL' -> 'CUCM9X'
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - Parsed CN 'CUCM9X' from DN
'L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL'

certificate will be stored in filesystem with below name (CN from cert). Old

certificate for CUCM9X has not been found

2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - target filename for imported cert:
'CUCM9X.pem'

2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - existing certificate with same filename
not found.

saving certificate as *.pem and *.der

```
2014-08-04 15:21:29,379 DEBUG [InsertThread --- 35] - Saving PEM encoded cert
'/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.pem'
2014-08-04 15:21:29,379 INFO [InsertThread --- 35] - IN -- CryptoUtil.java - saveAsPEM(..) -
File : /usr/local/platform/.security/tomcat/trust-certs/CUCM9X.pem
2014-08-04 15:21:29,403 INFO [InsertThread --- 35] - OUT -- CryptoUtil.java - saveAsPEM -
2014-08-04 15:21:29,403 DEBUG [InsertThread --- 35] - Saving DER encoded cert
'/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.der'
2014-08-04 15:21:29,406 INFO [InsertThread --- 35] - OUT -- DefaultCertMgr.java - saveTrustCert
-
2014-08-04 15:21:29,406 INFO [InsertThread --- 35] - IN -- TomcatCertMgr.java -
saveToKeyStore(..) -
2014-08-04 15:21:29,406 INFO [InsertThread --- 35] - IN -- RSACryptoEngine.java -
saveToKeyStore(keystoreFile, keystorePass, x509Certificate, alias) -
2014-08-04 15:21:29,406 INFO [InsertThread --- 35] - IN -- RSACryptoEngine.java -
loadKeyStore(keystoreFile, keystorePass) -
2014-08-04 15:21:29,421 INFO [InsertThread --- 35] - OUT -- RSACryptoEngine.java - loadKeyStore
-
2014-08-04 15:21:29,421 INFO [InsertThread --- 35] - Size of the keystore before import is : 3
2014-08-04 15:21:29,421 INFO [InsertThread --- 35] - Importing certificate : CUCM9X
2014-08-04 15:21:29,428 INFO [InsertThread --- 35] - Size of the keystore after import is : 4
2014-08-04 15:21:29,428 INFO [InsertThread --- 35] - OUT -- RSACryptoEngine.java -
saveToKeyStore -
2014-08-04 15:21:29,428 INFO [InsertThread --- 35] - OUT -- TomcatCertMgr.java - saveToKeyStore
-
2014-08-04 15:21:29,428 DEBUG [InsertThread --- 35] - TrustCert description filename :
'CUCM9X.description'
2014-08-04 15:21:29,439 INFO [InsertThread --- 35] - IN -- DefaultCertMgr.java -
createDescriptionFile(name, description) -
2014-08-04 15:21:29,439 INFO [InsertThread --- 35] - description is :Trust Certificate
2014-08-04 15:21:29,446 INFO [InsertThread --- 35] - OUT -- DefaultCertMgr.java -
createDescriptionFile -
2014-08-04 15:21:29,446 INFO [InsertThread --- 35] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
```

setting necessary permissions for the new created files (correcting access, owner and group)

```
2014-08-04 15:21:29,446 DEBUG [InsertThread --- 35] - setOwnershipAndPermissions :
CUCM9X.description
2014-08-04 15:21:29,446 DEBUG [InsertThread --- 35] - Changing ownership of file
'/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description'
2014-08-04 15:21:29,446 INFO [InsertThread --- 35] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:29,446 DEBUG [InsertThread --- 35] - Executing command from Util.sysExec :
/bin/chown certbase /usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description
2014-08-04 15:21:29,471 INFO [InsertThread --- 35] - OUT -- Util.java - sysExec -
2014-08-04 15:21:29,471 DEBUG [InsertThread --- 35] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description'
2014-08-04 15:21:29,472 INFO [InsertThread --- 35] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:29,472 DEBUG [InsertThread --- 35] - Executing command from Util.sysExec :
/bin/chgrp ccmbase /usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description
2014-08-04 15:21:29,474 INFO [InsertThread --- 35] - OUT -- Util.java - sysExec -
2014-08-04 15:21:29,475 DEBUG [InsertThread --- 35] - Changing mode of file
'/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description'
2014-08-04 15:21:29,475 INFO [InsertThread --- 35] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:29,475 DEBUG [InsertThread --- 35] - Executing command from Util.sysExec :
/bin/chmod 755 /usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description
2014-08-04 15:21:29,484 INFO [InsertThread --- 35] - OUT -- Util.java - sysExec -
2014-08-04 15:21:29,484 INFO [InsertThread --- 35] - OUT -- DefaultCertMgr.java -
setOwnershipAndPermissions -
2014-08-04 15:21:29,484 INFO [InsertThread --- 35] - OUT -- DefaultCertMgr.java -
saveToTrustStore -
2014-08-04 15:21:29,485 INFO [InsertThread --- 35] - trustdir
:./usr/local/platform/.security/tomcat/trust-certs
2014-08-04 15:21:29,485 INFO [InsertThread --- 35] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:29,485 DEBUG [InsertThread --- 35] - Executing command from Util.sysExec :
```

```
python /usr/local/platform/bin/c_rehash.py /usr/local/platform/.security/tomcat/trust-certs
2014-08-04 15:21:29,668 INFO [InsertThread --- 35] - OUT -- Util.java - sysExec -
2014-08-04 15:21:29,668 INFO [InsertThread --- 35] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-04 15:21:29,668 DEBUG [InsertThread --- 35] - setOwnershipAndPermissions : trust-certs
2014-08-04 15:21:29,668 DEBUG [InsertThread --- 35] - Changing ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-04 15:21:29,668 INFO [InsertThread --- 35] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:29,669 DEBUG [InsertThread --- 35] - Executing command from Util.sysExec :
/bin/chown -R certbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-04 15:21:29,675 INFO [InsertThread --- 35] - OUT -- Util.java - sysExec -
2014-08-04 15:21:29,675 DEBUG [InsertThread --- 35] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-04 15:21:29,675 INFO [InsertThread --- 35] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:29,675 DEBUG [InsertThread --- 35] - Executing command from Util.sysExec :
/bin/chgrp -R ccmbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-04 15:21:29,680 INFO [InsertThread --- 35] - OUT -- Util.java - sysExec -
2014-08-04 15:21:29,680 DEBUG [InsertThread --- 35] - Changing mode of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-04 15:21:29,680 INFO [InsertThread --- 35] - IN -- Util.java - sysExec(exe, args) -
2014-08-04 15:21:29,680 DEBUG [InsertThread --- 35] - Executing command from Util.sysExec :
/bin/chmod -R 755 /usr/local/platform/.security/tomcat/trust-certs
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - OUT -- Util.java - sysExec -
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - OUT -- DefaultCertMgr.java -
setOwnershipAndPermissions -
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - No plugins registered for DB Store
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - IN -- CryptoUtil.java - isOCSPEnabled(..) -
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - IN -- CryptoUtil.java -
getCertMonitorXmlParser(..) -
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - OUT -- CryptoUtil.java -
getCertMonitorXmlParser -
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - OUT -- CryptoUtil.java - isOCSPEnabled -
false
2014-08-04 15:21:29,683 DEBUG [InsertThread --- 35] - OCSP is not enabled.
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - Successfully imported trusted certificate
with Subject DN:L&#61;Krakow,ST&#61;Malopolska,CN&#61;CUCM9X,OU&#61;TAC,O&#61;Cisco
Systems,C&#61;PL
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - OUT -- DefaultCertMgr.java -
importTrustCert - Successfully imported trusted certificate with Subject
DN:L&#61;Krakow,ST&#61;Malopolska,CN&#61;CUCM9X,OU&#61;TAC,O&#61;Cisco Systems,C&#61;PL

## inserting certificate ends with success
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - result of import operations is ::Import of
trust certificate is successful
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - OUT -- DefaultCertMgr.java - importCert -
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - OUT -- CertDBUtil.java -
importTrustCertInFileSystem -
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - OUT -- CertDBUtil.java -
checkDeleteAndImport -
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - tomcat-trust Certificate successfully
updated in trust-store by Change Notification..
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - OUT -- CertKeystoreHandler.java -
updateIntoKeystore -
2014-08-04 15:21:29,683 DEBUG [InsertThread --- 35] - InsertThread --- 35 -- END --
2014-08-04 15:21:29,683 INFO [InsertThread --- 35] - OUT -- CertKeystoreHandler.java - run -
2014-08-04 15:21:29,786 DEBUG [ConnectionCleaner] - Cleaning connection list
```

**## above process was the result for row inserted into CERTIFICATE table. Similar check
will be done for the row inserted into CERTIFICATESERVICECERTIFICATEMAP**

```
2014-08-04 15:21:34,322 INFO [Thread-5] - Inside CERTIFICATESERVICECERTIFICATEMAP - I option..
2014-08-04 15:21:34,322 DEBUG [Thread-5] - Insert Data in CERTIFICATESERVICECERTIFICATEMAP
::<msg><type>DBL</type><table>certificateservicecertificatemap</table><tableid>44</tableid><acti
on>I</action><time>1407158489</time><new><cdrserver>2</cdrserver><cdftime>1407158487</cdftime><p
kid>798ff6e1-e1d6-42e5-a4e6-30d9d7360d6d</pkid><fkcertificate>4152b36b-002e-68ac-711d-
```



```
c373fa940779</fkcertificate><tkcertificateservice>6</tkcertificateservice><ifx_replcheck>6043699
681953972226</ifx_replcheck></new></msg>
2014-08-04 15:21:34,322 INFO [Thread-5] - IN -- CertDBImpl.java -
getCertificate(certBash64SHA1:null --pkid:4152b36b-002e-68ac-711d-c373fa940779
2014-08-04 15:21:34,323 DEBUG [Thread-5] - Connection Initialized to localnode. Connection
HashCode:32140521 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:34,323 DEBUG [Thread-5] - Select Query to getCertificate :SELECT A.*,B.HASH
FROM CERTIFICATE A, CERTIFICATEHASHMAP B WHERE A.PKID=B.FKCERTIFICATE AND A.PKID = "4152b36b-
002e-68ac-711d-c373fa940779"
2014-08-04 15:21:34,323 DEBUG [Thread-5] - getConn:
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-04 15:21:34,323 DEBUG [Thread-5] - Try to get a connection from pool
2014-08-04 15:21:34,323 DEBUG [Thread-5] - getting local connection from Pool
2014-08-04 15:21:34,324 DEBUG [Thread-5] - Getting connection from connection pool entry
<database,jdbcurl2>
2014-08-04 15:21:34,324 DEBUG [Thread-5] - There are currently 2 connection pool entries
2014-08-04 15:21:34,324 DEBUG [Thread-5] - Adding connection
<com.informix.jdbc.IfxDriver@1ec9f34> to connection list
2014-08-04 15:21:34,324 DEBUG [Thread-5] - Marking connection
<com.informix.jdbc.IfxDriver@1ec9f34> as used
2014-08-04 15:21:34,324 DEBUG [Thread-5] - Got connection from pool
2014-08-04 15:21:34,328 DEBUG [Thread-5] - Closing the resultset.
2014-08-04 15:21:34,329 DEBUG [Thread-5] - Closing the connection. Connection HashCode:32140521
--Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:34,329 DEBUG [Thread-5] - Attempting to close connection
2014-08-04 15:21:34,329 DEBUG [Thread-5] - Removing connection <database, jdbcurl2> from
ConnectionManager list
2014-08-04 15:21:34,329 DEBUG [Thread-5] - removeConnectionFromConnectionList()
2014-08-04 15:21:34,329 DEBUG [Thread-5] - Removing connection
<com.informix.jdbc.IfxDriver@1ec9f34> from connection list
2014-08-04 15:21:34,329 DEBUG [Thread-5] - Connection <com.informix.jdbc.IfxDriver@1ec9f34>
is not closed, adding it back to the pool entry <database,jdbcurl2>
2014-08-04 15:21:34,329 INFO [Thread-5] - Connection/Statement/Resultset is closed properly.
2014-08-04 15:21:34,329 DEBUG [Thread-5] - Connection released from CertDBImpl.getCertificate
method.
2014-08-04 15:21:34,329 INFO [Thread-5] - OUT -- CertDBImpl.java - getCertificate -
2014-08-04 15:21:34,329 DEBUG [Thread-5] - Certificate PKID : 4152b36b-002e-68ac-711d-
c373fa940779 , ipAddress : 10.48.46.29 , OldSerialNo : 7a40f8743a793b44fe802b5f3e1e6f36 ,
NewSerialNo : 7a40f8743a793b44fe802b5f3e1e6f36
2014-08-04 15:21:34,329 INFO [Thread-5] - OUT - process.
2014-08-04 15:21:34,330 INFO [InsertThread --- 36] - IN -- CertKeystoreHandler.java - run() -
2014-08-04 15:21:34,330 DEBUG [InsertThread --- 36] - InsertThread --- 36 -- START --
2014-08-04 15:21:34,330 DEBUG [InsertThread --- 36] - DB Value UPDATE: 4152b36b-002e-68ac-711d-
c373fa940779
2014-08-04 15:21:34,330 INFO [InsertThread --- 36] - IN -- CertKeystoreHandler.java -
updateIntoKeystore() -
2014-08-04 15:21:34,330 INFO [InsertThread --- 36] - IN -- CertDBImpl.java -
getCertificate(certBash64SHA1:null --pkid:4152b36b-002e-68ac-711d-c373fa940779
2014-08-04 15:21:34,330 DEBUG [InsertThread --- 36] - Connection Initialized to localnode.
Connection HashCode:14972385 --Details:Connector(NOT CONNECTED:
Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:34,330 DEBUG [InsertThread --- 36] - Select Query to getCertificate :SELECT
A.*,B.HASH FROM CERTIFICATE A, CERTIFICATEHASHMAP B WHERE A.PKID=B.FKCERTIFICATE AND A.PKID =
"4152b36b-002e-68ac-711d-c373fa940779"
2014-08-04 15:21:34,330 DEBUG [InsertThread --- 36] - getConn:
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-04 15:21:34,330 DEBUG [InsertThread --- 36] - Try to get a connection from pool
2014-08-04 15:21:34,330 DEBUG [InsertThread --- 36] - getting local connection from Pool
2014-08-04 15:21:34,330 DEBUG [InsertThread --- 36] - Getting connection from connection pool
entry <database,jdbcurl2>
2014-08-04 15:21:34,330 DEBUG [InsertThread --- 36] - There are currently 2 connection pool
entries
2014-08-04 15:21:34,330 DEBUG [InsertThread --- 36] - Adding connection
<com.informix.jdbc.IfxDriver@1ec9f34> to connection list
```

2014-08-04 15:21:34,330 DEBUG [InsertThread --- 36] - Marking connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> as used
2014-08-04 15:21:34,331 DEBUG [InsertThread --- 36] - Got connection from pool
2014-08-04 15:21:34,333 DEBUG [InsertThread --- 36] - Closing the resultset.
2014-08-04 15:21:34,333 DEBUG [InsertThread --- 36] - Closing the connection. Connection
HashCode:14972385 --Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:34,333 DEBUG [InsertThread --- 36] - Attempting to close connection
2014-08-04 15:21:34,333 DEBUG [InsertThread --- 36] - Removing connection <database, jdbcurl2>
from ConnectionManager list
2014-08-04 15:21:34,333 DEBUG [InsertThread --- 36] - removeConnectionFromConnectionList()
2014-08-04 15:21:34,333 DEBUG [InsertThread --- 36] - Removing connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> from connection list
2014-08-04 15:21:34,334 DEBUG [InsertThread --- 36] - Connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> is not closed, adding it back to the pool entry
<database, jdbcurl2>
2014-08-04 15:21:34,334 INFO [InsertThread --- 36] - Connection/Statement/Resultset is closed
properly.
2014-08-04 15:21:34,334 DEBUG [InsertThread --- 36] - Connection released from
CertDBImpl.getCertificate method.
2014-08-04 15:21:34,334 INFO [InsertThread --- 36] - OUT -- CertDBImpl.java - getCertificate -
2014-08-04 15:21:34,334 INFO [InsertThread --- 36] - IN -- CertDBImpl.java -
getCertUnitByPkid(pkid) -
2014-08-04 15:21:34,334 DEBUG [InsertThread --- 36] - Connection Initialized to localnode.
Connection HashCode:16196072 --Details:Connector(NOT CONNECTED:
Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:34,334 DEBUG [InsertThread --- 36] - Select Query to getCertUnitByPkid :SELECT
A.PKID, A.FKCERTIFICATE, A.TKCERTIFICATESERVICE, B.NAME UNIT FROM
CERTIFICATESERVICECERTIFICATEMAP A, TYPECERTIFICATESERVICE B WHERE A.FKCERTIFICATE="4152b36b-
002e-68ac-711d-c373fa940779" AND A.TKCERTIFICATESERVICE = B.ENUM
2014-08-04 15:21:34,334 DEBUG [InsertThread --- 36] - getConn:
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-04 15:21:34,334 DEBUG [InsertThread --- 36] - Try to get a connection from pool
2014-08-04 15:21:34,334 DEBUG [InsertThread --- 36] - getting local connection from Pool
2014-08-04 15:21:34,334 DEBUG [InsertThread --- 36] - Getting connection from connection pool
entry <database, jdbcurl2>
2014-08-04 15:21:34,334 DEBUG [InsertThread --- 36] - There are currently 2 connection pool
entries
2014-08-04 15:21:34,334 DEBUG [InsertThread --- 36] - Adding connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> to connection list
2014-08-04 15:21:34,334 DEBUG [InsertThread --- 36] - Marking connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> as used
2014-08-04 15:21:34,334 DEBUG [InsertThread --- 36] - Got connection from pool
2014-08-04 15:21:34,337 DEBUG [InsertThread --- 36] - Closing the resultset.
2014-08-04 15:21:34,337 DEBUG [InsertThread --- 36] - Closing the connection. Connection
HashCode:16196072 --Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-04 15:21:34,337 DEBUG [InsertThread --- 36] - Attempting to close connection
2014-08-04 15:21:34,337 DEBUG [InsertThread --- 36] - Removing connection <database, jdbcurl2>
from ConnectionManager list
2014-08-04 15:21:34,337 DEBUG [InsertThread --- 36] - removeConnectionFromConnectionList()
2014-08-04 15:21:34,337 DEBUG [InsertThread --- 36] - Removing connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> from connection list
2014-08-04 15:21:34,351 DEBUG [InsertThread --- 36] - Connection
<com.informix.jdbc.IfxSqlConnect@1ec9f34> is not closed, adding it back to the pool entry
<database, jdbcurl2>
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - Connection/Statement/Resultset is closed
properly.
2014-08-04 15:21:34,351 DEBUG [InsertThread --- 36] - Resultset released from
CertDBImpl.getCertUnitByPkid method.
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - OUT -- CertDBImpl.java - getCertUnitByPkid
-
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - UNIT : tomcat-trust
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - CurrentIPAddress : 10.48.46.30
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - RemoteIPAddress : 10.48.46.29
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - OldSerialNo

:7a40f8743a793b44fe802b5f3e1e6f36
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - NewSerialNo
:7a40f8743a793b44fe802b5f3e1e6f36
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - IN -- CertUtil.java -
getListFromComaSeperatedStr(..) -
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - OUT -- CertUtil.java -
getListFromComaSeperatedStr -
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - tomcat-trust --- is included unit for CN
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - IN -- CertUtil.java -
loadCertFromString(cert) -
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - OUT -- CertUtil.java - loadCertFromString -
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - IN -- CertDBUtil.java -
checkDeleteAndImport(unit, dbCert) -
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - DB CertInfo.--
SN:162503161730851213217569888696899890998--
SubjectDN:L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL--GetNotBefore:Mon Aug 04
15:19:07 CEST 2014--GetNotAfter:Sat Aug 03 15:19:06 CEST 2019
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - loading certificate element named [tomcat-
trust]
2014-08-04 15:21:34,351 INFO [InsertThread --- 36] - determining certificates in group [product-
cpi] with type [trust-certs]
2014-08-04 15:21:34,352 INFO [InsertThread --- 36] - loading the config file
[/usr/local/platform/conf/cert-conf.xml]
2014-08-04 15:21:34,353 INFO [InsertThread --- 36] - looking for first [trust-certs] in
[product-cpi]
2014-08-04 15:21:34,353 INFO [InsertThread --- 36] - loaded element [tomcat-trust]
2014-08-04 15:21:34,353 INFO [InsertThread --- 36] - determining cert dir for [tomcat-trust]
2014-08-04 15:21:34,353 INFO [InsertThread --- 36] - looking for first [dir] in [tomcat-trust]
2014-08-04 15:21:34,353 INFO [InsertThread --- 36] - getting the value of [dir]
2014-08-04 15:21:34,353 INFO [InsertThread --- 36] - value is
[/usr/local/platform/.security/tomcat/trust-certs]
2014-08-04 15:21:34,353 INFO [InsertThread --- 36] - cert dir is
[/usr/local/platform/.security/tomcat/trust-certs]
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/VeriSign_Class_3_Secure_Server_CA_-
_G3.description] match is false
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861s.description] match is false
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.description] match is false
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/VeriSign_Class_3_Secure_Server_CA_-
_G3.pem] match is true
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/VeriSign_Class_3_Secure_Server_CA_-
_G3.der] match is true
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore] match is false
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861s.der] match is true
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/25ffab9b.0] match is false
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861.der] match is true
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861.description] match is false
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/7e0370f0.0] match is false
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/d0aacffb.0] match is false

```

2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.der] match is true
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/101f99a6.0] match is false
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM9X.pem] match is true
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem] match is true
2014-08-04 15:21:34,354 INFO [InsertThread --- 36] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861s.pem] match is true
2014-08-04 15:21:34,355 INFO [InsertThread --- 36] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-04 15:21:34,355 INFO [InsertThread --- 36] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-04 15:21:34,355 INFO [InsertThread --- 36] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-04 15:21:34,355 INFO [InsertThread --- 36] - OUT -- RSACryptoEngine.java -
loadCertificate -
## but since it has been checked that the certificate is already in the filesystem,
## nothing will be added.
2014-08-04 15:21:34,355 DEBUG [InsertThread --- 36] - SUBJECTDN of DBCert and FileSystemCert
compared correctly..
2014-08-04 15:21:34,355 DEBUG [InsertThread --- 36] - Certificate already exists in FileSystem..
2014-08-04 15:21:34,355 INFO [InsertThread --- 36] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-04 15:21:34,355 INFO [InsertThread --- 36] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-04 15:21:34,355 INFO [InsertThread --- 36] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-04 15:21:34,356 INFO [InsertThread --- 36] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-04 15:21:34,356 INFO [InsertThread --- 36] - OUT -- CertDBUtil.java -
checkDeleteAndImport -
2014-08-04 15:21:34,356 INFO [InsertThread --- 36] - tomcat-trust Certificate successfully
updated in trust-store by Change Notification..
2014-08-04 15:21:34,356 INFO [InsertThread --- 36] - OUT -- CertKeystoreHandler.java -
updateIntoKeystore -
2014-08-04 15:21:34,356 DEBUG [InsertThread --- 36] - InsertThread --- 36 -- END --
2014-08-04 15:21:34,356 INFO [InsertThread --- 36] - OUT -- CertKeystoreHandler.java - run -

```

f. 파일 시스템 레벨에서 인증서를 보면 md5 체크섬(md5sum)을 확인할 수 있으며 게시자 노드와 동일한 것으로 표시됩니다.

GUI에서 일련 번호를 비교하여 동일한 것을 확인할 수 있습니다.

```



[root@CUCM861s tomcat]# pwd
/usr/local/platform/.security/tomcat
[root@CUCM861s tomcat]# ls -la
total 40
drwxr-xr-x 5 root    root    4096 Apr  4 14:33 .
drwxr-xr-x 5 root    root    4096 Apr  4 14:33 ..
drwxr-xr-x 2 certbase ccmbase 4096 Aug  2 22:51 certs
drwxr-xr-x 2 certbase ccmbase 4096 Aug  2 22:51 keys
drwxr-xr-x 2 certbase ccmbase 4096 Aug  4 15:21 trust-certs
[root@CUCM861s tomcat]# ls -la certs
total 48
drwxr-xr-x 2 certbase ccmbase 4096 Aug  2 22:51 .
drwxr-xr-x 5 root    root    4096 Apr  4 14:33 ..
-rwxr-xr-x 1 certbase ccmbase  941 Aug  2 22:51 tomcat.der
-rwxr-xr-x 1 certbase ccmbase   64 Aug  2 22:51 tomcat.description
-rwxr-xr-x 1 certbase ccmbase 2598 Aug  2 22:51 tomcat.keystore

```


```
-rwxr-xr-x 1 certbase ccmbase 1330 Aug  2 22:51 tomcat.pem
[root@CUCM861s tomcat]# ls -la trust-certs
total 140
drwxr-xr-x 2 certbase ccmbase 4096 Aug  4 15:21 .
drwxr-xr-x 5 root      root    4096 Apr  4 14:33 ..
lrwxrwxrwx 1 certbase ccmbase  11 Aug  4 15:21 101f99a6.0 -> CUCM861.pem
lrwxrwxrwx 1 certbase ccmbase  10 Aug  4 15:21 15:21 25ffab9b.0 -> CUCM9X.pem
lrwxrwxrwx 1 certbase ccmbase  42 Aug  4 15:21 7e0370f0.0 ->
VeriSign_Class_3_Secure_Server_CA_-_G3.pem
-rwxr-xr-x 1 certbase ccmbase  939 Aug  2 23:36 CUCM861.der
-rwxr-xr-x 1 certbase ccmbase   44 Aug  2 23:36 CUCM861.description
-rwxr-xr-x 1 certbase ccmbase 1326 Aug  2 23:36 CUCM861.pem
-rwxr-xr-x 1 certbase ccmbase  941 Aug  2 22:51 CUCM861s.der
-rwxr-xr-x 1 certbase ccmbase   44 Aug  2 22:51 CUCM861s.description
-rwxr-xr-x 1 certbase ccmbase 1330 Aug  2 22:51 CUCM861s.pem
-rwxr-xr-x 1 certbase ccmbase  953 Aug  4 15:21 CUCM9X.der
-rwxr-xr-x 1 certbase ccmbase   44 Aug  4 15:21 CUCM9X.description
-rwxr-xr-x 1 certbase ccmbase 1346 Aug  4 15:21 CUCM9X.pem
lrwxrwxrwx 1 certbase ccmbase  12 Aug  4 15:21 d0aacffb.0 -> CUCM861s.pem
-rwxr-xr-x 1 certbase ccmbase 4939 Aug  4 15:21 tomcat-trust.keystore
-rwxr-xr-x 1 certbase ccmbase 1520 Apr  4 14:33 VeriSign_Class_3_Secure_Server_CA_-_G3.der
-rwxr-xr-x 1 certbase ccmbase   44 Apr  4 14:33 VeriSign_Class_3_Secure_Server_CA_-_
_G3.description
-rwxr-xr-x 1 certbase ccmbase 2114 Apr  4 14:33 VeriSign_Class_3_Secure_Server_CA_-_G3.pem
[root@CUCM861s tomcat]# md5sum trust-certs/CUCM9X.pem
a0a2e12a42e4bbbf10655c9b299839d9 trust-certs/CUCM9X.pem
```

Show ▾ Settings ▾ Security ▾ Software Upgrades ▾ Services ▾ Help ▾

Certificate Configuration

 Delete  Download

Status

 Status: Ready

Certificate Settings

File Name CUCM9X.pem
 Certificate Name tomcat-trust
 Certificate Type trust-certs
 Certificate Group product-cpi
 Description Trust Certificate

Certificate File Data

```
[
  Version: V3
  Serial Number: 162503161730851213217569888696899890998
  Signature Algorithm: SHA256withRSA (1.2.840.113549.1.1.11)
  Issuer Name: L=Krakow, ST=Malopolska, CN=CUCM9X, OU=TAC, O=Cisco Systems, C=PL
  Validity From: Mon Aug 04 15:19:07 CEST 2014
                To: Sat Aug 03 15:19:06 CEST 2019
  Subject Name: L=Krakow, ST=Malopolska, CN=CUCM9X, OU=TAC, O=Cisco Systems, C=PL
  Key: RSA (1.2.840.113549.1.1.1)
  Key value:
  3082010a0282010100cb42282338f20e9682fe018c4f0b0951aa32bc0771c1184052fb2ba3b96aafceace37e1d002964115d4f0f6a
  2f452ff9c02f09329f5ec978409225eafc5c31606ac05e92d4e230004f43ca1636664b9188b5f43b6e1e4677f7d0578f1fd8e5e5e55
  553097808a6954b7c5af72abac9a61ae28ecf13a432a4af520c82a6d881d0ea3d475f6e995cb28b2499878452b972715ba3eed45
  3376d884bb7f97050b674d0b12fdb33ba156dcb32a98b9a41d76b4f966bce8f50123c7806e33adbdbd8e611c82623f390e4ee2c
  692f9d123c7dbbe83dae6acdbaf674a60b6c1c75372228de3d90a72a6e49138a220b5a88db35304de72f91893e3126745de5f237
  65ab910203010001
  Extensions: 3 present
  [
    Extension: KeyUsage (OID.2.5.29.15)
    Critical: false
    Usages: digitalSignature, keyEncipherment, dataEncipherment, keyAgreement, keyCertSign,
  ]
  [
    Extension: ExtKeyUsageSyntax (OID.2.5.29.37)
    Critical: false
    Usage oids: 1.3.6.1.5.5.7.3.1, 1.3.6.1.5.5.7.3.2, 1.3.6.1.5.5.7.3.5,
  ]
]
```

42억tomcat-trust 인증서 삭제

두 번째 시나리오에서는 4.A 섹션에 업로드된 tomcat-trust 인증서를 제거합니다.

이 예제를 분석할 때 아래의 설계 문에 대해 기억해야 할 사항은 다음과 같습니다.

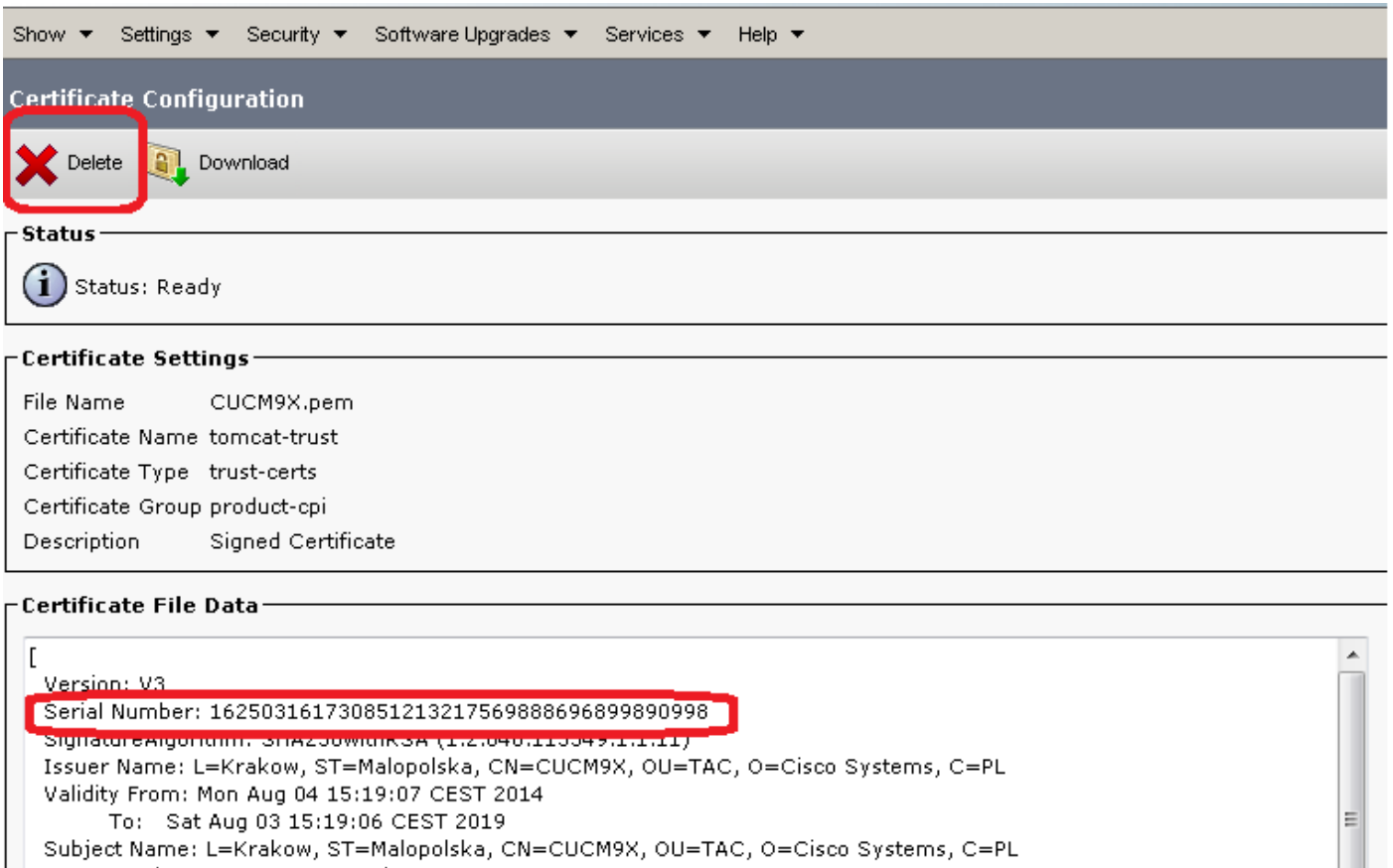
"변경 알림 서비스는 노드의 tomcat 트러스트 저장소에서 다른 노드로 인증서 삭제를 전파하지 않습니다. 이는 한 노드에서 tomcat 신뢰에서 인증서를 삭제해도 다른 노드에서 동일한 인증서가 자동으로 삭제되지 않는다는 것을 의미합니다. 이 동작은 관리자가 보안 고려 사항으로 인해 다른 노드의 응용 프로그램을 신뢰하는 특정 노드를 제거할 수 있도록 구현됩니다."

위는 tomcat 트러스트 인증서 유형에 대해서만 유효합니다.

삭제 작업은 다음 단계로 구성됩니다.

- a. CM 페이지에서 인증서를 삭제합니다.
- b. 인증서 파일은 파일 시스템에서 삭제됩니다.
- c. certCN이 게시자와 구독자에서 시작됩니다. 둘 다 작업을 수행할 필요가 없습니다.
- d. 가입자 노드에서 동일한 tomcat-trust 인증서 삭제

a. CM 페이지에서 시작된 삭제 작업



인증서가 파일 시스템에서 삭제되고 데이터베이스의 해당 행도 삭제됩니다. 인증서 자체는 CERTIFICATE 테이블에서 제거되지 않습니다. CM 로그에서 다음 내용을 살펴보겠습니다(코멘트 인라인).

```

2014-08-19 23:25:10,714 INFO [main] - log4j configuration successful.
2014-08-19 23:25:10,720 INFO [main] - IN -- CertMgr.java - mainInternal(args) -
2014-08-19 23:25:10,721 INFO [main] - decode

## delete operation is invoked here
2014-08-19 23:25:10,722 INFO [main] - op:delete
2014-08-19 23:25:10,722 INFO [main] - unit:tomcat-trust
2014-08-19 23:25:10,722 INFO [main] - cert-
dir:%2Fusr%2Flocal%2Fplatform%2F.security%2Ftomcat%2Ftrust-certs%2FCUCM9X.pem
2014-08-19 23:25:10,722 INFO [main] - key-
dir:%2Fusr%2Flocal%2Fplatform%2F.security%2Ftomcat%2Fkeys
2014-08-19 23:25:10,722 INFO [main] - logfile:%2Fvar%2Flog%2Factive%2Fplatform%2Flog%2Fcert-
mgmt.log
2014-08-19 23:25:10,722 INFO [main] -
resultfile:%2Fvar%2Flog%2Factive%2Fplatform%2Flog%2Fcertde-info.xml
2014-08-19 23:25:10,722 INFO [main] - type:trust-certs
2014-08-19 23:25:10,749 INFO [main] - Parsed information
2014-08-19 23:25:10,749 INFO [main] - OrgName: CISCO
2014-08-19 23:25:10,749 INFO [main] - OrgUnit: TAC
2014-08-19 23:25:10,749 INFO [main] - Location: KRAKOW
2014-08-19 23:25:10,749 INFO [main] - Country: PL

```

```
2014-08-19 23:25:10,749 INFO [main] - State: MALOPOLSKA
2014-08-19 23:25:10,749 INFO [main] - Hostname: CUCM861
2014-08-19 23:25:10,750 INFO [main] - AlternateHostname: null
2014-08-19 23:25:10,750 INFO [main] - Domain Name:
2014-08-19 23:25:10,750 INFO [main] - IPAddress: 10.48.46.29
2014-08-19 23:25:10,751 INFO [main] - In parseXML()
2014-08-19 23:25:10,761 INFO [main] - FQDN Name retrived by InetAddress : CUCM861
2014-08-19 23:25:10,761 INFO [main] - CN: CUCM861
2014-08-19 23:25:10,761 INFO [main] - Temp before mod is
2014-08-19 23:25:10,761 INFO [main] - Temp afer mod is TAC
2014-08-19 23:25:10,761 INFO [main] - Temp in else is TAC
2014-08-19 23:25:10,761 INFO [main] - Temp before mod is
2014-08-19 23:25:10,761 INFO [main] - Temp afer mod is TAC
2014-08-19 23:25:10,761 INFO [main] - Temp in else is TAC
2014-08-19 23:25:10,762 INFO [main] - OuFields are TAC
2014-08-19 23:25:10,762 DEBUG [main] - Field after encoding: TAC
2014-08-19 23:25:10,762 DEBUG [main] - Field after encoding: CISCO
2014-08-19 23:25:10,762 DEBUG [main] - Field after encoding: KRAKOW
2014-08-19 23:25:10,762 DEBUG [main] - Field after encoding: MALOPOLSKA
2014-08-19 23:25:10,762 DEBUG [main] - Field after encoding: PL
2014-08-19 23:25:10,765 INFO [main] - OU field is :TAC
2014-08-19 23:25:10,765 INFO [main] - SubjectDN ::
CN=CUCM861,OU=TAC,O=CISCO,L=KRAKOW,ST=MALOPOLSKA,C=PL
2014-08-19 23:25:10,765 INFO [main] - IN -- CertMgr.java - getCertMgrObj(unit) - tomcat-trust
2014-08-19 23:25:10,774 INFO [main] - OUT -- CertMgr.java - getCertMgrObj -
com.cisco.cpi.certMgmt.manager.TomcatCertMgr@92bbba
2014-08-19 23:25:10,774 INFO [main] - Dummy loadProperties
2014-08-19 23:25:10,774 INFO [main] - IN -- CertMgr.java - doOp(info) -
```

details about the certificate that will be deleted

```
2014-08-19 23:25:10,774 INFO [main] - IN -- DefaultCertMgr.java - deleteCert(info) -
decode:      true
op:         delete
unit:       tomcat-trust
keystoreUnit:tomcat-trust
logFile:    /var/log/active/platform/log/cert-mgmt.log
resultFile: /var/log/active/platform/log/certde-info.xml
keyDir:     /usr/local/platform/.security/tomcat/keys
certDir:    /usr/local/platform/.security/tomcat/trust-certs/CUCM9X.pem
srcCert:    null
type:       trust-certs
rootCACert: null
trustDir:   null
DNAME:      CN=CUCM861,OU=TAC,O=CISCO,L=KRAKOW,ST=MALOPOLSKA,C=PL
description:null
isDBInsert:true
```

certificate file name

```
2014-08-19 23:25:10,775 INFO [main] - parsed filename: 'CUCM9X.pem'
2014-08-19 23:25:10,775 DEBUG [main] - filename: 'CUCM9X.pem'
2014-08-19 23:25:10,775 DEBUG [main] - fileRoot: 'CUCM9X'
2014-08-19 23:25:10,775 INFO [main] - IN -- DefaultCertMgr.java - deleteDERandPEM(filenameRoot,
parentDir, info) -
```

it will remove two files: CUCM9X.DER and CUCM9X.PEM

```
2014-08-19 23:25:10,775 DEBUG [main] - ParentDir:/usr/local/platform/.security/tomcat/trust-
certsFileName. (DER/PEM):CUCM9X
2014-08-19 23:25:11,100 DEBUG [main] - Loading RSA providers explicitly...
2014-08-19 23:25:12,486 DEBUG [main] - RSA providers are loaded explicitly...
2014-08-19 23:25:12,487 DEBUG [main] - New security.provider.1=JsafeJCE
2014-08-19 23:25:12,487 DEBUG [main] - New security.provider.2=RsaJsse
2014-08-19 23:25:12,487 DEBUG [main] - New security.provider.3=BC
2014-08-19 23:25:12,487 DEBUG [main] - New security.provider.4=SUN
2014-08-19 23:25:12,487 DEBUG [main] - New security.provider.5=SunRsaSign
```



```

2014-08-19 23:25:12,487 DEBUG [main] - New security.provider.6=SunJSSE
2014-08-19 23:25:12,487 DEBUG [main] - New security.provider.7=SunJCE
2014-08-19 23:25:12,487 DEBUG [main] - New security.provider.8=SunJGSS
2014-08-19 23:25:12,487 DEBUG [main] - New security.provider.9=SunSASL
2014-08-19 23:25:12,487 DEBUG [main] - New security.provider.10=XMLDSig
2014-08-19 23:25:12,487 DEBUG [main] - New security.provider.11=SunPCSC
2014-08-19 23:25:12,487 INFO [main] - IN -- RSACryptoEngine.java - loadCertificate(..) -
2014-08-19 23:25:12,802 INFO [main] - OUT -- RSACryptoEngine.java - loadCertificate -
2014-08-19 23:25:12,826 INFO [main] - IN -- CertUtil.java - populateCertInfo(cert, opInfo,
certFilePemLocation) -
2014-08-19 23:25:12,827 INFO [main] - IN -- CertUtil.java - getHostName(..) -
2014-08-19 23:25:12,827 INFO [main] - OUT -- CertUtil.java - getHostName - CUCM861
2014-08-19 23:25:12,830 INFO [main] - IN -- CryptoUtil.java - saveAsPEM(..) -
2014-08-19 23:25:12,834 INFO [main] - OUT -- CryptoUtil.java - saveAsPEM -
2014-08-19 23:25:12,834 INFO [main] - OUT -- CertUtil.java - populateCertInfo -

## certificate on the filesystem level has been deleted. Now the same must be done on the
## DB level
2014-08-19 23:25:12,835 INFO [main] - IN -- CertDBAction.java - deleteCertificateInDB(certInfo)
-
2014-08-19 23:25:12,835 INFO [main] -

DBParameters ...
PKID :null
CN :L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL
serialNo :7a40f8743a793b44fe802b5f3e1e6f36
hostName :CUCM861
issuerName :L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL
Certificate :Not Printing huge Certificate String..
IPV4Address :10.48.46.29
IPV6Address :
TimeToLive :NULL
UNIT :tomcat-trust
TYPE :trust-certs
ROLE :null
RoleMoniker :null
RoleEnum :null
SERVICE :null
ServiceMoniker :null
ServiceEnum :0

2014-08-19 23:25:12,835 INFO [main] - DB - Certifciate Store Plugin Handler is
:com.cisco.ccm.certmgmt.db.CertDBImpl
2014-08-19 23:25:12,859 INFO [main] - IN -- CertDBImpl.java - deleteCertificate(certInfo) -
2014-08-19 23:25:13,024 DEBUG [main] - Connection Initialized to localnode. Connection
HashCode:14098944 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-19 23:25:13,024 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-19 23:25:13,026 DEBUG [main] - Try to get a connection from pool
2014-08-19 23:25:13,026 DEBUG [main] - getting local connection from Pool
2014-08-19 23:25:13,029 DEBUG [main] - Getting connection from connection pool entry
<database,jdbcurl2>
2014-08-19 23:25:13,029 DEBUG [main] - There are currently 0 connection pool entries
2014-08-19 23:25:13,034 DEBUG [main] - Checking if connection limit has been reached for
database
2014-08-19 23:25:13,035 DEBUG [main] - Connecting to publisher so max number of connections
allowed is 100
2014-08-19 23:25:13,035 DEBUG [main] - Number of connections in use is 0
2014-08-19 23:25:13,035 DEBUG [main] - There is currently 1 connection pool entry
2014-08-19 23:25:13,035 DEBUG [main] - Number of available connections in pool: 0
2014-08-19 23:25:13,406 DEBUG [main] - Adding connection
<com.informix.jdbc.IfxSqlConnect@196e136> to connection list
2014-08-19 23:25:13,407 DEBUG [main] - Marking connection
<com.informix.jdbc.IfxSqlConnect@196e136> as used

```

```
2014-08-19 23:25:13,407 DEBUG [main] - Got connection from pool
2014-08-19 23:25:13,412 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-19 23:25:13,418 DEBUG [main] - Closing the resultset.
2014-08-19 23:25:13,419 DEBUG [main] - Closing the connection. Connection HashCode:14098944 --
Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-19 23:25:13,419 DEBUG [main] - Attempting to close connection
2014-08-19 23:25:13,419 DEBUG [main] - Removing connection <database, jdbcurl2> from
ConnectionManager list
2014-08-19 23:25:13,419 DEBUG [main] - removeConnectionFromConnectionList()
2014-08-19 23:25:13,431 DEBUG [main] - Removing connection
<com.informix.jdbc.IfxSqlConnect@196e136> from connection list
2014-08-19 23:25:13,442 DEBUG [main] - Connection <com.informix.jdbc.IfxSqlConnect@196e136> is
not closed, adding it back to the pool entry <database,jdbcurl2>
2014-08-19 23:25:13,442 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-19 23:25:13,443 INFO [main] - TYPETRUSTROLEMAP ::{TRUST_ROLE_DATA_SERVICE=24,
TRUST_ROLE_PROVISIONING_SERVICE=23, TRUST_ROLE_SERVICEABILITY=27,
TRUST_ROLES_CALLMANAGER_TFTP=2, PHONE_TRUST_ROLES_FIREWALL=6, ROLE_APPLICATION_SERVER=7,
TRUST_ROLES_SAST=0, ROLE_SIGNALING_CALL_CONTROL=22, TRUST_ROLES_CALLMANAGER=1,
TRUST_ROLES_UNKNOWN=255, TRUST_ROLE_NETWORK_ELEMENT=25, TRUST_ROLES_SRST=5,
ROLE_CERTIFICATE_AUTHORITY=20, TRUST_ROLE_VPN=26, TRUST_ROLES_CAPF=4, TRUST_ROLES_TFTP=3,
ROLE_AUTHENTICATION_AUTHORIZATION=21}
2014-08-19 23:25:13,443 INFO [main] - TYPESERVICEROLEMAP ::{Phone-VPN-trust=2, CallManager=3,
Phone-CTL-trust=15, tomcat-trust=6, TVS=11, ipsec-trust=8, Phone-trust=1, Phone-SAST-trust=14,
tomcat=5, userlicensing-trust=16, CAPF=9, ipsec=7, CAPF-trust=10, CallManager-trust=4, TVS-
trust=12, directory-trust=13}
2014-08-19 23:25:13,443 INFO [main] - unitRoleMap ::{Phone-VPN-trust=[TRUST_ROLE_VPN],
CallManager=[TRUST_ROLES_CALLMANAGER_TFTP, TRUST_ROLES_SAST], Phone-CTL-
trust=[ROLE_APPLICATION_SERVER], tomcat-trust=[ROLE_APPLICATION_SERVER],
TVS=[ROLE_AUTHENTICATION_AUTHORIZATION], ipsec-trust=[], Phone-trust=[ROLE_APPLICATION_SERVER],
Phone-SAST-trust=[TRUST_ROLES_SAST, TRUST_ROLES_TFTP], tomcat=[ROLE_APPLICATION_SERVER],
userlicensing-trust=[], CAPF=[TRUST_ROLES_CAPF], ipsec=[ROLE_APPLICATION_SERVER], CAPF-trust=[],
CallManager-trust=[], TVS-trust=[], directory-trust=[]}
2014-08-19 23:25:13,443 INFO [main] - commonTrustStoreMap ::{}
2014-08-19 23:25:13,446 DEBUG [main] - Connection Initialized to Publisher. Connection
HashCode:24762452 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-19 23:25:13,446 INFO [main] - IN -- CertDBImpl.java - getPkidOfCertificate(hash,
serverName, con) -
```

**## looking for PKID of the certificate that should be deleted. This is done basing on the
certificate hash**

```
2014-08-19 23:25:13,447 DEBUG [main] - GetPKID Query :SELECT A.PKID FROM CERTIFICATE A,
CERTIFICATEHASHMAP B WHERE A.PKID=B.FKCERTIFICATE AND B.HASH = "a9Ww/WeDmBnnHHncUCqOGCz409g="
2014-08-19 23:25:13,447 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]
2014-08-19 23:25:13,447 DEBUG [main] - Try to get a connection from pool
2014-08-19 23:25:13,447 DEBUG [main] - Getting connection from connection pool entry
<database,jdbcurl2>
2014-08-19 23:25:13,447 DEBUG [main] - There is currently 1 connection pool entry
2014-08-19 23:25:13,447 DEBUG [main] - Adding connection
<com.informix.jdbc.IfxSqlConnect@196e136> to connection list
2014-08-19 23:25:13,447 DEBUG [main] - Marking connection
<com.informix.jdbc.IfxSqlConnect@196e136> as used
2014-08-19 23:25:13,447 DEBUG [main] - Got connection from pool
2014-08-19 23:25:13,462 DEBUG [main] - Closing the resultset.
2014-08-19 23:25:13,463 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-19 23:25:13,463 INFO [main] - OUT -- CertDBImpl.java - getPkidOfCertificate -
2014-08-19 23:25:13,463 DEBUG [main] - Closing the connection. Connection HashCode:24762452 --
Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-19 23:25:13,463 DEBUG [main] - Attempting to close connection
2014-08-19 23:25:13,463 DEBUG [main] - Removing connection <database, jdbcurl2> from
ConnectionManager list
2014-08-19 23:25:13,463 DEBUG [main] - removeConnectionFromConnectionList()
2014-08-19 23:25:13,463 DEBUG [main] - Removing connection
```

```
<com.informix.jdbc.IfxSqlConnect@196e136> from connection list
2014-08-19 23:25:13,463 DEBUG [main] - Connection <com.informix.jdbc.IfxSqlConnect@196e136> is
not closed, adding it back to the pool entry <database,jdbcurl2>
2014-08-19 23:25:13,464 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-19 23:25:13,465 DEBUG [main] - Connection Initialized to Publisher. Connection
HashCode:12085572 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-19 23:25:13,465 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]
2014-08-19 23:25:13,465 DEBUG [main] - Try to get a connection from pool
2014-08-19 23:25:13,465 DEBUG [main] - Getting connection from connection pool entry
<database,jdbcurl2>
2014-08-19 23:25:13,466 DEBUG [main] - There is currently 1 connection pool entry
2014-08-19 23:25:13,466 DEBUG [main] - Adding connection
<com.informix.jdbc.IfxSqlConnect@196e136> to connection list
2014-08-19 23:25:13,466 DEBUG [main] - Marking connection
<com.informix.jdbc.IfxSqlConnect@196e136> as used
2014-08-19 23:25:13,466 DEBUG [main] - Got connection from pool
2014-08-19 23:25:13,467 INFO [main] - IN -- CertDBImpl.java - deleteCertFromCertSrvCertMap(con,
serialNo, subjectName, serviceEnum) -
```

removing association for our certificate from CERTIFICATESSERVICECERTIFICATEMAP table
first

```
2014-08-19 23:25:13,467 DEBUG [main] - Delete query of CERTIFICATESSERVICECERTIFICATEMAP :DELETE
FROM CERTIFICATESSERVICECERTIFICATEMAP WHERE TKCERTIFICATESSERVICE = "6" AND FKCERTIFICATE =
"4152b36b-002e-68ac-711d-c373fa940779"
2014-08-19 23:25:13,467 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]
2014-08-19 23:25:13,561 INFO [main] - OUT -- CertDBImpl.java - deleteCertFromCertSrvCertMap -
2014-08-19 23:25:13,561 INFO [main] - IN -- CertDBImpl.java -
deleteCertFromCertProcessNodeMap(con, certInfo) -
```

corresponding entry is being deleted from CERTIFICATEPROCESSNODEMAP table

```
2014-08-19 23:25:13,562 DEBUG [main] - Delete query of CERTIFICATEPROCESSNODEMAP :DELETE FROM
CERTIFICATEPROCESSNODEMAP WHERE FKCERTIFICATE="4152b36b-002e-68ac-711d-c373fa940779" AND
SERVERNAME = "CUCM861"
2014-08-19 23:25:13,562 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-19 23:25:13,608 INFO [main] - OUT -- CertDBImpl.java - deleteCertFromCertProcessNodeMap
-
2014-08-19 23:25:13,609 DEBUG [main] - Certificate to be deleted UNIT: tomcat-trust ::
RoleMoniker :ROLE_APPLICATION_SERVER :: RoleEnum :7 :: ServiceEnum :6
2014-08-19 23:25:13,609 INFO [main] - IN -- CertDBImpl.java - checkMultipleUnitForSameRole(con,
roleMoniker, unit, certInfo) -
2014-08-19 23:25:13,609 DEBUG [main] - checkMultipleUnitForSameRole : SELECT PKID,FKCERTIFICATE,
TKCERTIFICATESSERVICE,NAME UNIT FROM CERTIFICATESSERVICECERTIFICATEMAP,TYPECERTIFICATESSERVICE
WHERE ENUM=TKCERTIFICATESSERVICE AND FKCERTIFICATE ="4152b36b-002e-68ac-711d-c373fa940779" AND
NAME != "tomcat-trust"
2014-08-19 23:25:13,609 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-19 23:25:13,646 DEBUG [main] - Closing the resultset.
2014-08-19 23:25:13,654 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-19 23:25:13,654 INFO [main] - OUT -- CertDBImpl.java - checkMultipleUnitForSameRole -
2014-08-19 23:25:13,654 INFO [main] - IN -- CertDBImpl.java - deleteCertFromTypeTrustRole(con,
certInfo, roleEnum) -
```

and the same for CERTIFICATESTRUSTROLEMAP map

```
2014-08-19 23:25:13,654 DEBUG [main] - Delete query of CERTIFICATESTRUSTROLEMAP :DELETE FROM
CERTIFICATESTRUSTROLEMAP WHERE TKTRUSTROLE = "7" AND FKCERTIFICATE = "4152b36b-002e-68ac-711d-
c373fa940779"
2014-08-19 23:25:13,654 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-19 23:25:13,680 INFO [main] - OUT -- CertDBImpl.java - deleteCertFromTypeTrustRole -
2014-08-19 23:25:13,680 INFO [main] - IN -- CertDBImpl.java - checkMultipleCertForSrv(pkid, con)
-
```

```

2014-08-19 23:25:13,680 DEBUG [main] - checkMultipleCertForSrv : SELECT PKID,FKCERTIFICATE,
TKCERTIFICATESERVICE FROM CERTIFICATESERVICECERTIFICATEMAP WHERE FKCERTIFICATE = "4152b36b-002e-
68ac-711d-c373fa940779"
2014-08-19 23:25:13,680 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-19 23:25:13,682 DEBUG [main] - Closing the resultset.
2014-08-19 23:25:13,682 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-19 23:25:13,682 INFO [main] - OUT -- CertDBImpl.java - checkMultipleCertForSrv -
2014-08-19 23:25:13,682 INFO [main] - IN -- CertDBImpl.java - checkMultipleCertForRole(certInfo,
con) -
2014-08-19 23:25:13,682 DEBUG [main] - checkMultipleCertForRole : SELECT PKID,FKCERTIFICATE,
TKTRUSTROLE FROM CERTIFICATETRUSTROLEMAP WHERE FKCERTIFICATE = "4152b36b-002e-68ac-711d-
c373fa940779"
2014-08-19 23:25:13,683 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-19 23:25:13,684 DEBUG [main] - Closing the resultset.
2014-08-19 23:25:13,684 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-19 23:25:13,684 INFO [main] - OUT -- CertDBImpl.java - checkMultipleCertForRole -
2014-08-19 23:25:13,684 INFO [main] - IN -- CertDBImpl.java -
checkMultipleCertForProcessnode(certInfo, con) -
2014-08-19 23:25:13,684 DEBUG [main] - checkMultipleCertForProcessnode : SELECT
PKID,FKCERTIFICATE,FKPROCESSNODE,SERVERNAME FROM CERTIFICATEPROCESSNODEMAP WHERE
FKCERTIFICATE='4152b36b-002e-68ac-711d-c373fa940779'
2014-08-19 23:25:13,684 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-19 23:25:13,687 DEBUG [main] - Closing the resultset.
2014-08-19 23:25:13,687 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-19 23:25:13,687 INFO [main] - OUT -- CertDBImpl.java - checkMultipleCertForProcessnode -

```

```

## normally you would expect that the certificate would be removed from CERTIFICATE table.
## This will not happen since it is possible that some of the nodes in the cluster will
## have specific tomcat-trust certificate in the trust store but some not. This is in
## compliance with the design. Since you remove the certificate only from publisher
## (by removing coresponding entries from 3 tables above) node it still be used
## by subscriber node. That is why the certificate will not be removed from CERTIFICATE
## TABLE

```

```

2014-08-19 23:25:13,687 DEBUG [main] - DELETE FLAG :: isSrvMap=false :: isRoleMap=false ::
isProcessnodeMap=true
2014-08-19 23:25:13,687 DEBUG [main] - The certificate is being used by either different role or
unit or other node. So no need to delte from certificate table.
2014-08-19 23:25:13,690 DEBUG [main] - Connection committed for deleteCertificate..
2014-08-19 23:25:13,690 DEBUG [main] - Closing the connection. Connection HashCode:12085572 --
Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-19 23:25:13,690 DEBUG [main] - Attempting to close connection
2014-08-19 23:25:13,690 DEBUG [main] - Removing connection <database, jdbcurl2> from
ConnectionManager list
2014-08-19 23:25:13,690 DEBUG [main] - removeConnectionFromConnectionList()
2014-08-19 23:25:13,690 DEBUG [main] - Removing connection
<com.informix.jdbc.IfxSqlConnect@196e136> from connection list
2014-08-19 23:25:13,690 DEBUG [main] - Connection <com.informix.jdbc.IfxSqlConnect@196e136> is
not closed, adding it back to the pool entry <database,jdbcurl2>
2014-08-19 23:25:13,691 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-19 23:25:13,691 DEBUG [main] - Connection released from CertDBImpl.deleteCertificate
method.
2014-08-19 23:25:13,691 INFO [main] - OUT -- CertDBImpl.java - deleteCertificate -
2014-08-19 23:25:13,691 INFO [main] - OUT -- CertDBAction.java - deleteCertificateInDB -
2014-08-19 23:25:13,691 INFO [main] - OUT -- DefaultCertMgr.java - deleteDERandPEM -
2014-08-19 23:25:13,691 DEBUG [main] - deleteDERandPEM: sCertDir =
/usr/local/platform/.security/tomcat/trust-certs --- sAlias = CUCM9X

```

```

## removing the certificate from keystore on this node

```

```

2014-08-19 23:25:13,691 INFO [main] - IN -- TomcatCertMgr.java - removeFromKeyStore(..) -
2014-08-19 23:25:13,691 INFO [main] - IN -- RSACryptoEngine.java -
removeFromKeyStore(keystoreFile, keystorePass, alias) -

```

```

2014-08-19 23:25:13,691 INFO [main] - IN -- RSACryptoEngine.java - loadKeyStore(keystoreFile,
keystorePass) -
2014-08-19 23:25:13,895 INFO [main] - OUT -- RSACryptoEngine.java - loadKeyStore -
2014-08-19 23:25:13,922 DEBUG [main] - Removing certificate from keystore : CUCM9X
2014-08-19 23:25:13,923 DEBUG [main] - Size of the keystore after delete is : 3
2014-08-19 23:25:13,923 INFO [main] - OUT -- RSACryptoEngine.java - removeFromKeyStore -
2014-08-19 23:25:13,923 INFO [main] - OUT -- TomcatCertMgr.java - removeFromKeyStore -
2014-08-19 23:25:13,924 INFO [main] - trustdir ::/usr/local/platform/.security/tomcat/trust-
certs
2014-08-19 23:25:13,924 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-19 23:25:13,924 DEBUG [main] - Executing command from Util.sysExec : python
/usr/local/platform/bin/c_rehash.py /usr/local/platform/.security/tomcat/trust-certs
2014-08-19 23:25:13,940 DEBUG [Finalizer] - Attempting to close connection
2014-08-19 23:25:13,940 DEBUG [Finalizer] - Connection already closed or never open
2014-08-19 23:25:13,940 DEBUG [Finalizer] - Attempting to close connection
2014-08-19 23:25:13,940 DEBUG [Finalizer] - Connection already closed or never open
2014-08-19 23:25:13,962 DEBUG [Finalizer] - Attempting to close connection
2014-08-19 23:25:13,962 DEBUG [Finalizer] - Connection already closed or never open
2014-08-19 23:25:14,203 INFO [main] - OUT -- Util.java - sysExec -

## setting/updating the rights and the ownership of the files in trust store (nothing will
## be changed since you just removed two cert files + description file, this is just
## standard procedure)
2014-08-19 23:25:14,203 INFO [main] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-19 23:25:14,203 DEBUG [main] - setOwnershipAndPermissions : trust-certs
2014-08-19 23:25:14,203 DEBUG [main] - Changing ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-19 23:25:14,204 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-19 23:25:14,204 DEBUG [main] - Executing command from Util.sysExec : /bin/chown -R
certbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-19 23:25:14,224 INFO [main] - OUT -- Util.java - sysExec -
2014-08-19 23:25:14,224 DEBUG [main] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-19 23:25:14,224 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-19 23:25:14,224 DEBUG [main] - Executing command from Util.sysExec : /bin/chgrp -R
ccmbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-19 23:25:14,236 INFO [main] - OUT -- Util.java - sysExec -
2014-08-19 23:25:14,237 DEBUG [main] - Changing mode of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-19 23:25:14,237 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-19 23:25:14,237 DEBUG [main] - Executing command from Util.sysExec : /bin/chmod -R 755
/usr/local/platform/.security/tomcat/trust-certs
2014-08-19 23:25:14,239 INFO [main] - OUT -- Util.java - sysExec -
2014-08-19 23:25:14,240 INFO [main] - OUT -- DefaultCertMgr.java - setOwnershipAndPermissions -
2014-08-19 23:25:14,240 INFO [main] - OUT -- DefaultCertMgr.java - deleteCert -
2014-08-19 23:25:14,240 INFO [main] - IN -- CertMgr.java - logResult(result, desc, resultFile) -
2014-08-19 23:25:14,240 INFO [main] - CertMgmt Operation Result : null
2014-08-19 23:25:14,241 INFO [main] - OUT -- CertMgr.java - logResult -
2014-08-19 23:25:14,241 INFO [main] - OUT -- CertMgr.java - doOp -
2014-08-19 23:25:14,241 INFO [main] - OUT -- CertMgr.java - mainIntenal -

```

b.파일 시스템 레벨에서 작업이 성공적으로 수행되었는지 확인하려면 tomcat trust 디렉토리를 확인합니다.

```

[root@CUCM861 trust-certs]# ls -la
total 108
drwxr-xr-x 2 certbase ccmbase 4096 Aug 19 23:25 .
drwxr-xr-x 5 root      root    4096 Apr  4 12:47 ..
lrwxrwxrwx 1 certbase ccmbase   11 Aug 19 23:25 101f99a6.0 -> CUCM861.pem
lrwxrwxrwx 1 certbase ccmbase   42 Aug 19 23:25 7e0370f0.0 ->
VeriSign_Class_3_Secure_Server_CA_-_G3.pem
-rwxr-xr-x 1 certbase ccmbase  939 Aug  2 23:36 CUCM861.der

```

```

-rwxr-xr-x 1 certbase ccmbase 44 Aug 2 23:36 CUCM861.description
-rwxr-xr-x 1 certbase ccmbase 1326 Aug 2 23:36 CUCM861.pem
-rwxr-xr-x 1 certbase ccmbase 941 Aug 2 22:51 CUCM861s.der
-rwxr-xr-x 1 certbase ccmbase 44 Aug 2 22:51 CUCM861s.description
-rwxr-xr-x 1 certbase ccmbase 1330 Aug 2 22:51 CUCM861s.pem
lrwxrwxrwx 1 certbase ccmbase 12 Aug 19 23:25 d0aacffb.0 -> CUCM861s.pem
-rwxr-xr-x 1 certbase ccmbase 3907 Aug 19 23:25 tomcat-trust.keystore
-rwxr-xr-x 1 certbase ccmbase 1520 Apr 4 12:47 VeriSign_Class_3_Secure_Server_CA_-_G3.der
-rwxr-xr-x 1 certbase ccmbase 44 Apr 4 12:47 VeriSign_Class_3_Secure_Server_CA_-_G3.description
-rwxr-xr-x 1 certbase ccmbase 2114 Apr 4 12:47 VeriSign_Class_3_Secure_Server_CA_-_G3.pem

```

보시다시피 3개의 파일(CUCM9X.pem, CUCM9X.der, CUCM9X.description)과 심볼 링크가 제거되었습니다.

c. 게시자 및 구독자의 CertCN 서비스는 DB 변경 알림 메커니즘에 의해 테이블 CERTIFICATEServicecertificatemap의 변경에 대해 알림을 받습니다.

게시자 노드에서 다음을 수행합니다.

```

2014-08-19 23:25:13,811 INFO [Thread-5] - IN - process. changeData &colon;
2014-08-19 23:25:13,812 INFO [Thread-5] - Inside CERTIFICATESERVICECERTIFICATEMAP - I option..
2014-08-19 23:25:13,812 DEBUG [Thread-5] - Updated Data in CERTIFICATESERVICECERTIFICATEMAP
::<msg><type>DBL</type><table>certificateservicecertificatemap</table><tableid>44</tableid><action>D</action><time>1408483513</time><old><cdrserver>2</cdrserver><cdftime>1407158487</cdftime><pkid>798ff6e1-e1d6-42e5-a4e6-30d9d7360d6d</pkid><fkcertificate>4152b36b-002e-68ac-711d-c373fa940779</fkcertificate><tkcertificateservice>6</tkcertificateservice><ifx_replcheck>6043699681953972226</ifx_replcheck></old></msg>
2014-08-19 23:25:18,818 INFO [Thread-5] - OUT - process.

```

모든 작업이 CM API에서 수행되었으므로 게시자 노드에서 아무 작업도 수행할 필요가 없습니다. 가입자의 certCN 로그에서 확인할 수 있는 것과 같습니다.

d. 가입자 노드에서 동일한 tomcat-trust 인증서를 삭제하면 게시자 노드에서 관찰된 것과 거의 동일한 작업을 수행합니다. 유일한 차이점은 CERTIFICATE 테이블에서 항목을 제거하는 마지막 단계입니다. CM의 로그에서(변경 사항이 포함된 부분만):

```

2014-08-21 11:59:35,383 INFO [main] - OUT -- CertDBImpl.java - checkMultipleCertForProcessnode -
2014-08-21 11:59:35,383 DEBUG [main] - DELETE FLAG :: isSrvMap=false :: isRoleMap=false :: isProcessnodeMap=false
2014-08-21 11:59:35,383 INFO [main] - IN -- CertDBImpl.java - deleteCertificateBySerialNo(con, certInfo) -

```

certificate is removed from CERTIFICATE table

```

2014-08-21 11:59:35,383 DEBUG [main] - Delete query of CERTIFICATE :DELETE FROM CERTIFICATE WHERE PKID = "4152b36b-002e-68ac-711d-c373fa940779"
2014-08-21 11:59:35,383 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]
2014-08-21 11:59:35,596 INFO [main] - OUT -- CertDBImpl.java - deleteCertificateBySerialNo -
2014-08-21 11:59:35,598 DEBUG [main] - Connection committed for deleteCertificate..
2014-08-21 11:59:35,598 DEBUG [main] - Closing the connection. Connection HashCode:6923467 -- Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)

```

다시 한 번 certCN은 두 노드의 CERTIFICATESERVICECERTIFICATEMAP 테이블의 변경에 대해 알림을 받습니다. 모든 작업이 CM에서 수행되었으므로 certCN에서 아무 작업도 수행되지 않습니다.

4.C. 게시자 노드에서 tomcat 인증서 다시 생성

세 번째 시나리오에서는 tomcat.pem 재생성 프로세스를 살펴봅니다.

게시자 노드에서 다시 생성하고 이 변경 내용이 두 번째 노드로 전파되는 방법을 확인할 수 있습니다.

이 작업은 다음 단계로 구성됩니다.

- a. CM 페이지에서 시작된 재생성 작업
- b. 위의 트리거는 새 tomcat 인증서를 생성하여 파일 시스템에 넣습니다.
- c. 새 tomcat 인증서가 CM에서 DB에 삽입됩니다(이전 인증서가 덮어쓰기됨). 이 정보는 DB 복제를 통해 복제됩니다.
- d. 오래된 tomcat-trust 인증서가 파일 시스템에서 삭제됩니다(+keystore에서 제거).
- e. tomcat-trust는 파일 시스템으로 가져오기됩니다. (+ 해당 DB 항목이 확인됨)
- f. 하위 노드의 certCN은 파일 시스템 및 키 저장소에서 tomcat-trust를 시작하고 제거합니다.
- g. 마지막으로, 새 파일을 파일 시스템으로 다시 가져와 키 저장소로 읽습니다.

a. 다시 생성을 누르면 출력 아래에 표시됩니다(타임스탬프 23:36).

The screenshot shows the 'Certificate Configuration' interface. At the top, there are navigation menus for Show, Settings, Security, Software Upgrades, Services, and Help. Below these are buttons for Regenerate, Download, and Generate CSR. The 'Status' section contains a red-bordered box with an information icon and the text: 'Success: certificate regenerated. Perform a Disaster Recovery backup so the latest backup contains the regenerated certificate.' The 'Certificate Settings' section lists: File Name: tomcat.pem, Certificate Name: tomcat, Certificate Type: certs, Certificate Group: product-cpi, and Description: Self-signed certificate generated by system. The 'Certificate File Data' section shows a scrollable area with the following details: Version: V3, Serial Number: 88769680872451706773275250466208361017, SignatureAlgorithm: SHA1withRSA (1.2.840.113549.1.1.5), Issuer Name: L=KRAKOW, ST=MALOPOLSKA, CN=CUCM861, OU=TAC, O=CISCO, C=PL, Validity From: Sat Aug 02 23:36:44 CEST 2014, To: Thu Aug 01 23:36:43 CEST 2019, Subject Name: L=KRAKOW, ST=MALOPOLSKA, CN=CUCM861, OU=TAC, O=CISCO, C=PL, Key: RSA (1.2.840.113549.1.1.1). At the bottom, there are buttons for Regenerate, Download, and Generate CSR.

새 인증서의 일련 번호:

12월:88769680872451706773275250466208361017

16진수:42C86B2CF293630FE27BBDDC7FD02A39

파일 시스템에 저장된 인증서(루트에서):

```
[root@CUCM861 tomcat]# pwd
/usr/local/platform/.security/tomcat
[root@CUCM861 tomcat]# ls -la certs
total 48
drwxr-xr-x 2 certbase ccmbase 4096 Aug  2 23:36 .
drwxr-xr-x 5 root      root    4096 Apr  4 12:47 ..
-rwxr-xr-x 1 certbase ccmbase  939 Aug  2 23:36 tomcat.der
-rwxr-xr-x 1 certbase ccmbase   64 Aug  2 23:36 tomcat.description
-rwxr-xr-x 1 certbase ccmbase 2598 Aug  2 23:36 tomcat.keystore
-rwxr-xr-x 1 certbase ccmbase 1326 Aug  2 23:36 tomcat.pem
[root@CUCM861 tomcat]# ls -la trust-certs
total 108
drwxr-xr-x 2 certbase ccmbase 4096 Aug  2 23:36 .
drwxr-xr-x 5 root      root    4096 Apr  4 12:47 ..
lrwxrwxrwx 1 certbase ccmbase  11 Aug  2 23:36 101f99a6.0 -> CUCM861.pem
lrwxrwxrwx 1 certbase ccmbase  42 Aug  2 23:36 7e0370f0.0 ->
VeriSign_Class_3_Secure_Server_CA_-_G3.pem
-rwxr-xr-x 1 certbase ccmbase  939 Aug  2 23:36 CUCM861.der
-rwxr-xr-x 1 certbase ccmbase   44 Aug  2 23:36 CUCM861.description
-rwxr-xr-x 1 certbase ccmbase 1326 Aug  2 23:36 CUCM861.pem
-rwxr-xr-x 1 certbase ccmbase  941 Aug  2 22:51 CUCM861s.der
-rwxr-xr-x 1 certbase ccmbase   44 Aug  2 22:51 CUCM861s.description
-rwxr-xr-x 1 certbase ccmbase 1330 Aug  2 22:51 CUCM861s.pem
lrwxrwxrwx 1 certbase ccmbase  12 Aug  2 23:36 d0aacffb.0 -> CUCM861s.pem
-rwxr-xr-x 1 certbase ccmbase 3907 Aug  2 23:36 tomcat-trust.keystore
-rwxr-xr-x 1 certbase ccmbase 1520 Apr  4 12:47 VeriSign_Class_3_Secure_Server_CA_-_G3.der
-rwxr-xr-x 1 certbase ccmbase   44 Apr  4 12:47 VeriSign_Class_3_Secure_Server_CA_-_
_G3.description
-rwxr-xr-x 1 certbase ccmbase 2114 Apr  4 12:47 VeriSign_Class_3_Secure_Server_CA_-_G3.pem
[root@CUCM861 tomcat]# md5sum certs/tomcat.der
a0dd8031bcd3c269844df8a3fafd476c  certs/tomcat.der
[root@CUCM861 tomcat]# md5sum trust-certs/CUCM861.der
a0dd8031bcd3c269844df8a3fafd476c  trust-certs/CUCM861.der
```

보시다시피(수정 시간 기준) 새 인증서는 certs 디렉토리(tomcat.der) 및 trust-certs(CUCM861.der)에 저장됩니다.MD5 체크섬(md5sum)은 동일한 인증서이며 두 번 저장되었음을 나타냅니다.심볼 링크(101f99a6.0 -> CUCM861.pem)도 업데이트됩니다.

b.재생성 자체는 CM에 의해 수행됩니다.재생성 프로세스를 자세히 살펴보겠습니다.

```
2014-08-02 23:36:40,962 INFO [main] - log4j configuration successful.
2014-08-02 23:36:40,977 INFO [main] - IN -- CertMgr.java - mainInternal(args) -
2014-08-02 23:36:40,979 INFO [main] - decode

## operation invoked is "regenerate", if you would like to display the cert in OS
## Administration -> Security -> Certificate Management you would see "display" operation
## type.
2014-08-02 23:36:40,979 INFO [main] - op:regenerate

## you are going to regenerate tomcat cert, below the details of the cert are being listed
2014-08-02 23:36:40,979 INFO [main] - unit:tomcat
2014-08-02 23:36:40,979 INFO [main] - cert-
dir:%2Fusr%2Flocal%2Fplatform%2F.security%2Ftomcat%2Fcerts%2Ftomcat
2014-08-02 23:36:40,979 INFO [main] - key-
dir:%2Fusr%2Flocal%2Fplatform%2F.security%2Ftomcat%2Fkeys
```


2014-08-02 23:36:40,979 INFO [main] - logfile:%2Fvar%2Flog%2Factive%2Fplatform%2Flog%2Fcert-
mgmt.log
2014-08-02 23:36:40,979 INFO [main] -
resultfile:%2Fvar%2Flog%2Factive%2Fplatform%2Flog%2Fcertde-info.xml
2014-08-02 23:36:40,979 INFO [main] - type:certs
2014-08-02 23:36:41,006 INFO [main] - Parsed information
2014-08-02 23:36:41,006 INFO [main] - OrgName: CISCO
2014-08-02 23:36:41,006 INFO [main] - OrgUnit: TAC
2014-08-02 23:36:41,007 INFO [main] - Location: KRAKOW
2014-08-02 23:36:41,007 INFO [main] - Country: PL
2014-08-02 23:36:41,007 INFO [main] - State: MALOPOLSKA
2014-08-02 23:36:41,007 INFO [main] - Hostname: CUCM861
2014-08-02 23:36:41,007 INFO [main] - AlternateHostname: null
2014-08-02 23:36:41,007 INFO [main] - Domain Name:
2014-08-02 23:36:41,007 INFO [main] - IPAddress: 10.48.46.29
2014-08-02 23:36:41,008 INFO [main] - In parseXML()
2014-08-02 23:36:41,021 INFO [main] - FQDN Name retrived by InetAddress : CUCM861
2014-08-02 23:36:41,021 INFO [main] - CN: CUCM861
2014-08-02 23:36:41,022 INFO [main] - Temp before mod is
2014-08-02 23:36:41,022 INFO [main] - Temp afer mod is TAC
2014-08-02 23:36:41,022 INFO [main] - Temp in else is TAC
2014-08-02 23:36:41,022 INFO [main] - Temp before mod is
2014-08-02 23:36:41,022 INFO [main] - Temp afer mod is TAC
2014-08-02 23:36:41,022 INFO [main] - Temp in else is TAC
2014-08-02 23:36:41,022 INFO [main] - OuFields are TAC
2014-08-02 23:36:41,022 DEBUG [main] - Field after encoding: TAC
2014-08-02 23:36:41,022 DEBUG [main] - Field after encoding: CISCO
2014-08-02 23:36:41,023 DEBUG [main] - Field after encoding: KRAKOW
2014-08-02 23:36:41,023 DEBUG [main] - Field after encoding: MALOPOLSKA
2014-08-02 23:36:41,023 DEBUG [main] - Field after encoding: PL
2014-08-02 23:36:41,026 INFO [main] - OU field is :TAC
2014-08-02 23:36:41,027 INFO [main] - SubjectDN ::
CN=CUCM861,OU=TAC,O=CISCO,L=KRAKOW,ST=MALOPOLSKA,C=PL
2014-08-02 23:36:41,027 INFO [main] - IN -- CertMgr.java - getCertMgrObj(unit) - tomcat
2014-08-02 23:36:41,036 INFO [main] - OUT -- CertMgr.java - getCertMgrObj -
com.cisco.cpi.certMgmt.manager.TomcatCertMgr@123b25c
2014-08-02 23:36:41,036 INFO [main] - Dummy loadProperties
2014-08-02 23:36:41,036 INFO [main] - IN -- CertMgr.java - doOp(info) -
2014-08-02 23:36:41,037 DEBUG [main] - cert filename root: 'tomcat'
2014-08-02 23:36:41,037 DEBUG [main] - cert file parent directory:
'/usr/local/platform/.security/tomcat/certs'
2014-08-02 23:36:41,037 DEBUG [main] - File created with certParentDir
2014-08-02 23:36:41,037 DEBUG [main] - DirCheck for certParentDir succeeded
2014-08-02 23:36:41,038 DEBUG [main] - File created with keyDir
2014-08-02 23:36:41,038 DEBUG [main] - DirCheck for keyDir succeeded

API function for generating certificate is invoked

2014-08-02 23:36:41,039 DEBUG [main] - Calling genCertAPI() from regenCert()
2014-08-02 23:36:41,039 INFO [main] - IN -- DefaultCertMgr.java - genCertAPI(info) -
2014-08-02 23:36:41,039 INFO [main] - parsed root path:
'/usr/local/platform/.security/tomcat/certs'
2014-08-02 23:36:41,039 DEBUG [main] - cert file parent directory:
'/usr/local/platform/.security/tomcat/certs'
2014-08-02 23:36:41,040 DEBUG [main] - tomcat Certificate keysize : 2048
2014-08-02 23:36:41,041 INFO [main] - parsed root path:
'/usr/local/platform/.security/tomcat/certs'
2014-08-02 23:36:41,042 DEBUG [main] - SubjectAltName : null
2014-08-02 23:36:41,385 DEBUG [main] - Loading RSA providers explicitly...
2014-08-02 23:36:42,989 DEBUG [main] - RSA providers are loaded explicitly...
2014-08-02 23:36:42,989 DEBUG [main] - New security.provider.1=JsafeJCE
2014-08-02 23:36:42,989 DEBUG [main] - New security.provider.2=RsaJsse
2014-08-02 23:36:42,989 DEBUG [main] - New security.provider.3=BC
2014-08-02 23:36:42,989 DEBUG [main] - New security.provider.4=SUN
2014-08-02 23:36:42,989 DEBUG [main] - New security.provider.5=SunRsaSign

```
2014-08-02 23:36:42,989 DEBUG [main] - New security.provider.6=SunJSSE
2014-08-02 23:36:42,989 DEBUG [main] - New security.provider.7=SunJCE
2014-08-02 23:36:42,989 DEBUG [main] - New security.provider.8=SunJGSS
2014-08-02 23:36:42,989 DEBUG [main] - New security.provider.9=SunSASL
2014-08-02 23:36:42,989 DEBUG [main] - New security.provider.10=XMLDSig
2014-08-02 23:36:42,990 DEBUG [main] - New security.provider.11=SunPCSC
```

at this moment generateCertificate() function is invoked which actually returns a new certificate as a result

```
2014-08-02 23:36:42,990 INFO [main] - IN -- RSACryptoEngine.java - generateCertificate(..) -
2014-08-02 23:36:43,003 INFO [main] - passphrase is ::LA20PvI2sezuPqph
2014-08-02 23:36:44,657 INFO [main] - OUT -- RSACryptoEngine.java - generateCertificate -
2014-08-02 23:36:44,658 INFO [main] - IN -- RSACryptoEngine.java - loadCertificate(..) -
```

certificate is written into filesystem and the owner (user:group) and rights are being ## adjusted

```
2014-08-02 23:36:45,009 INFO [main] - OUT -- RSACryptoEngine.java - loadCertificate -
2014-08-02 23:36:45,009 INFO [main] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-02 23:36:45,009 DEBUG [main] - setOwnershipAndPermissions : certs
2014-08-02 23:36:45,009 DEBUG [main] - Changing ownership of file
'/usr/local/platform/.security/tomcat/certs'
2014-08-02 23:36:45,010 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:45,010 DEBUG [main] - Executing command from Util.sysExec : /bin/chown -R
certbase /usr/local/platform/.security/tomcat/certs
2014-08-02 23:36:45,017 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:45,017 DEBUG [main] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/certs'
2014-08-02 23:36:45,018 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:45,018 DEBUG [main] - Executing command from Util.sysExec : /bin/chgrp -R
ccmbase /usr/local/platform/.security/tomcat/certs
2014-08-02 23:36:45,021 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:45,021 DEBUG [main] - Changing mode of file
'/usr/local/platform/.security/tomcat/certs'
2014-08-02 23:36:45,021 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:45,021 DEBUG [main] - Executing command from Util.sysExec : /bin/chmod -R 755
/usr/local/platform/.security/tomcat/certs
2014-08-02 23:36:45,046 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:45,046 INFO [main] - OUT -- DefaultCertMgr.java - setOwnershipAndPermissions -
2014-08-02 23:36:45,046 INFO [main] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-02 23:36:45,046 DEBUG [main] - setOwnershipAndPermissions : keys
2014-08-02 23:36:45,046 DEBUG [main] - Changing ownership of file
'/usr/local/platform/.security/tomcat/keys'
2014-08-02 23:36:45,046 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:45,046 DEBUG [main] - Executing command from Util.sysExec : /bin/chown -R
certbase /usr/local/platform/.security/tomcat/keys
2014-08-02 23:36:45,051 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:45,051 DEBUG [main] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/keys'
2014-08-02 23:36:45,052 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:45,052 DEBUG [main] - Executing command from Util.sysExec : /bin/chgrp -R
ccmbase /usr/local/platform/.security/tomcat/keys
2014-08-02 23:36:45,055 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:45,055 DEBUG [main] - Changing mode of file
'/usr/local/platform/.security/tomcat/keys'
2014-08-02 23:36:45,055 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:45,055 DEBUG [main] - Executing command from Util.sysExec : /bin/chmod -R 755
/usr/local/platform/.security/tomcat/keys
2014-08-02 23:36:45,061 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:45,061 INFO [main] - OUT -- DefaultCertMgr.java - setOwnershipAndPermissions -
```

description is generated and put into the description file

```
2014-08-02 23:36:45,061 INFO [main] - IN -- DefaultCertMgr.java - createDescriptionFile(name,
```

```

description) -
2014-08-02 23:36:45,063 INFO [main] - description is :Self-signed certificate generated by
system
2014-08-02 23:36:45,063 INFO [main] - OUT -- DefaultCertMgr.java - createDescriptionFile -
2014-08-02 23:36:45,064 INFO [main] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-02 23:36:45,064 DEBUG [main] - setOwnershipAndPermissions : tomcat.description
2014-08-02 23:36:45,064 DEBUG [main] - Changing ownership of file
'/usr/local/platform/.security/tomcat/certs/tomcat.description'
2014-08-02 23:36:45,064 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:45,064 DEBUG [main] - Executing command from Util.sysExec : /bin/chown
certbase /usr/local/platform/.security/tomcat/certs/tomcat.description
2014-08-02 23:36:45,074 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:45,074 DEBUG [main] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/certs/tomcat.description'
2014-08-02 23:36:45,074 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:45,075 DEBUG [main] - Executing command from Util.sysExec : /bin/chgrp ccmbase
/usr/local/platform/.security/tomcat/certs/tomcat.description
2014-08-02 23:36:45,077 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:45,077 DEBUG [main] - Changing mode of file
'/usr/local/platform/.security/tomcat/certs/tomcat.description'
2014-08-02 23:36:45,077 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:45,077 DEBUG [main] - Executing command from Util.sysExec : /bin/chmod 755
/usr/local/platform/.security/tomcat/certs/tomcat.description
2014-08-02 23:36:45,083 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:45,083 INFO [main] - OUT -- DefaultCertMgr.java - setOwnershipAndPermissions -
2014-08-02 23:36:45,084 INFO [main] - IN -- CertUtil.java - populateCertInfo(cert, opInfo,
certFilePemLocation) -
2014-08-02 23:36:45,086 INFO [main] - IN -- CertUtil.java - getHostName(..) -
2014-08-02 23:36:45,089 INFO [main] - OUT -- CertUtil.java - getHostName - CUCM861
2014-08-02 23:36:45,092 INFO [main] - IN -- CryptoUtil.java - saveAsPEM(..) -
2014-08-02 23:36:45,098 INFO [main] - OUT -- CryptoUtil.java - saveAsPEM -
2014-08-02 23:36:45,098 INFO [main] - OUT -- CertUtil.java - populateCertInfo -

```

c. 현재 파일 시스템 수준(certs의 tomcat.pem)에서 새로운 인증서가 준비되었습니다. trust-certs의 CUCM861.pem도 여기에 있지만 이 단계에서 추가되지 않았습니다. 이것은 나중에 커버입니다. 이제 DB에서 tomcat 인증서를 업데이트하여 변경 사항을 다른 노드와 공유할 때입니다.

재생성 전에 DB에서 tomcat 인증서를 볼 수 있습니다.

```

admin:run sql select c.pkid, c.serialnumber from certificate c, certificateservicecertificatemap
m WHERE m.fkcertificate = c.pkid AND m.tkcertificatestype = '5'
pkid serialnumber =====
533dbbfc-78ce-b46f-7d64-cd2b7c536f6d 6cf5bc855b681f658f9e7506d3ec6ea5
a6b18f66-bf72-261d-8ecd-bfcea02add4e 68052e2e9cd6c979079e6449ff873031

```

DB에 두 개의 tomcat 인증서가 있습니다(PUB 및 SUB용). 이전 tomcat 인증서에는 일련 번호 = '6cf5bc855b681f658f9e7506d3ec6ea5'가 있습니다.tomcat 인증서의 PKID는 '533dbbfc-78ce-b46f-7d64-cd2b7c536f6d'이며 인증서 재생성 시 변경되지 않습니다.

추가 CM 로그 파일 확인(코드 조각에 있는 설명):

```

2014-08-02 23:36:45,099 INFO [main] - IN -- CertDBAction.java -
insertCertificateInDB(certFiletoStore, info) -
2014-08-02 23:36:45,099 INFO [main] -

```

```

DBParameters ...
PKID :null
CN :L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
serialNo :42c86b2cf293630fe27bbddc7fd02a39
hostName :CUCM861

```

issuerName :L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
Certificate :Not Printing huge Certificate String..
IPV4Address :10.48.46.29
IPV6Address :
TimeToLive :NULL
UNIT :tomcat
TYPE :certs
ROLE :null
RoleMoniker :null
RoleEnum :null
SERVICE :null
ServiceMoniker :null
ServiceEnum :0

```
2014-08-02 23:36:45,099 INFO [main] - DB - Certifciate Store Plugin Handler is
:com.cisco.ccm.certmgmt.db.CertDBImpl
2014-08-02 23:36:45,159 DEBUG [main] - Connection Initialized to localnode. Connection
HashCode:17241377 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:45,159 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-02 23:36:45,160 DEBUG [main] - Try to get a connection from pool
2014-08-02 23:36:45,160 DEBUG [main] - getting local connection from Pool
2014-08-02 23:36:45,162 DEBUG [main] - Getting connection from connection pool entry
<database,jdbcurl2>
2014-08-02 23:36:45,162 DEBUG [main] - There are currently 0 connection pool entries
2014-08-02 23:36:45,166 DEBUG [main] - Checking if connection limit has been reached for
database
2014-08-02 23:36:45,167 DEBUG [main] - Connecting to publisher so max number of connections
allowed is 100
2014-08-02 23:36:45,167 DEBUG [main] - Number of connections in use is 0
2014-08-02 23:36:45,167 DEBUG [main] - There is currently 1 connection pool entry
2014-08-02 23:36:45,168 DEBUG [main] - Number of available connections in pool: 0
2014-08-02 23:36:45,381 DEBUG [main] - Adding connection
<com.informix.jdbc.IfxSqlConnect@1a7789c> to connection list
2014-08-02 23:36:45,382 DEBUG [main] - Marking connection
<com.informix.jdbc.IfxSqlConnect@1a7789c> as used
2014-08-02 23:36:45,382 DEBUG [main] - Got connection from pool
2014-08-02 23:36:45,389 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-02 23:36:45,395 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:45,396 DEBUG [main] - Closing the connection. Connection HashCode:17241377 --
Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:45,396 DEBUG [main] - Attempting to close connection
2014-08-02 23:36:45,396 DEBUG [main] - Removing connection <database, jdbcurl2> from
ConnectionManager list
2014-08-02 23:36:45,396 DEBUG [main] - removeConnectionFromConnectionList()
2014-08-02 23:36:45,397 DEBUG [main] - Removing connection
<com.informix.jdbc.IfxSqlConnect@1a7789c> from connection list
2014-08-02 23:36:45,399 DEBUG [main] - Connection <com.informix.jdbc.IfxSqlConnect@1a7789c> is
not closed, adding it back to the pool entry <database,jdbcurl2>
2014-08-02 23:36:45,399 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,399 INFO [main] - TYPETRUSTROLEMAP ::{TRUST_ROLE_DATA_SERVICE=24,
TRUST_ROLE_PROVISIONING_SERVICE=23, TRUST_ROLE_SERVICEABILITY=27,
TRUST_ROLES_CALLMANAGER_TFTP=2, PHONE_TRUST_ROLES_FIREWALL=6, ROLE_APPLICATION_SERVER=7,
TRUST_ROLES_SAST=0, ROLE_SIGNALING_CALL_CONTROL=22, TRUST_ROLES_CALLMANAGER=1,
TRUST_ROLES_UNKNOWN=255, TRUST_ROLE_NETWORK_ELEMENT=25, TRUST_ROLES_SRST=5,
ROLE_CERTIFICATE_AUTHORITY=20, TRUST_ROLE_VPN=26, TRUST_ROLES_CAPF=4, TRUST_ROLES_TFTP=3,
ROLE_AUTHENTICATION_AUTHORIZATION=21}
2014-08-02 23:36:45,399 INFO [main] - TYPESERVICEROLEMAP ::{Phone-VPN-trust=2, CallManager=3,
Phone-CTL-trust=15, tomcat-trust=6, TVS=11, ipsec-trust=8, Phone-trust=1, Phone-SAST-trust=14,
tomcat=5, userlicensing-trust=16, CAPF=9, ipsec=7, CAPF-trust=10, CallManager-trust=4, TVS-
trust=12, directory-trust=13}
2014-08-02 23:36:45,399 INFO [main] - unitRoleMap ::{Phone-VPN-trust=[TRUST_ROLE_VPN],
CallManager=[TRUST_ROLES_CALLMANAGER_TFTP, TRUST_ROLES_SAST], Phone-CTL-
```

```
trust=[ROLE_APPLICATION_SERVER], tomcat-trust=[ROLE_APPLICATION_SERVER],
TVS=[ROLE_AUTHENTICATION_AUTHORIZATION], ipsec-trust=[], Phone-trust=[ROLE_APPLICATION_SERVER],
Phone-SAST-trust=[TRUST_ROLES_SAST, TRUST_ROLES_TFTP], tomcat=[ROLE_APPLICATION_SERVER],
userlicensing-trust=[], CAPF=[TRUST_ROLES_CAPF], ipsec=[ROLE_APPLICATION_SERVER], CAPF-trust=[],
CallManager-trust=[], TVS-trust=[], directory-trust=[]}
2014-08-02 23:36:45,400 INFO [main] - commonTrustStoreMap ::{}
2014-08-02 23:36:45,403 DEBUG [main] - Connection Initialized to Publisher. Connection
HashCode:5823789 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:45,403 INFO [main] - IN -- CertDBImpl.java - insertCertificate(certInfo, con) -
2014-08-02 23:36:45,404 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]
2014-08-02 23:36:45,404 DEBUG [main] - Try to get a connection from pool
2014-08-02 23:36:45,404 DEBUG [main] - Getting connection from connection pool entry
<database,jdbcurl2>
2014-08-02 23:36:45,404 DEBUG [main] - There is currently 1 connection pool entry
2014-08-02 23:36:45,404 DEBUG [main] - Adding connection
<com.informix.jdbc.IfxSqlConnect@1a7789c> to connection list
2014-08-02 23:36:45,404 DEBUG [main] - Marking connection
<com.informix.jdbc.IfxSqlConnect@1a7789c> as used
2014-08-02 23:36:45,404 DEBUG [main] - Got connection from pool
2014-08-02 23:36:45,406 INFO [main] - IN -- CertDBImpl.java -
populateRoleEnumServiceEnum(certInfo) -
```

cert type is tomcat, you can see serviceEnum = 5

```
2014-08-02 23:36:45,407 INFO [main] - UNIT :: tomcat
2014-08-02 23:36:45,407 INFO [main] - role :: [ROLE_APPLICATION_SERVER]
2014-08-02 23:36:45,407 INFO [main] - roleEnum :: [7]
2014-08-02 23:36:45,407 INFO [main] - service :: null
2014-08-02 23:36:45,407 INFO [main] - serviceEnum :: 5
2014-08-02 23:36:45,407 INFO [main] - OUT -- CertDBImpl.java - populateRoleEnumServiceEnum -
2014-08-02 23:36:45,409 INFO [main] - IN -- CertDBUtil.java - getProcessNodeId(con, hostName,
ipAddress, fqdn) -
2014-08-02 23:36:45,409 INFO [main] - getProcessNodeId Query :SELECT PKID,NAME FROM PROCESSNODE
WHERE UPPER(NAME)=UPPER("CUCM861") OR UPPER(NAME)=UPPER("10.48.46.29") OR
UPPER(NAME)=UPPER("CUCM861")
2014-08-02 23:36:45,409 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]
2014-08-02 23:36:45,418 INFO [main] - ProcessNodeId:13f4b0d9-0bae-429a-a86e-625336a35bb6
2014-08-02 23:36:45,418 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:45,418 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,418 INFO [main] - OUT -- CertDBUtil.java - getProcessNodeId -
2014-08-02 23:36:45,418 INFO [main] - IN -- CertDBImpl.java - getSelfSignedCertificate(certInfo,
con) -
2014-08-02 23:36:45,418 DEBUG [main] - getSelfSignedCertificate Query :SELECT
A.PKID,SERVERNAME,SUBJECTNAME,ISSUENAME,SERIALNUMBER,IPV4ADDRESS,IPV6ADDRESS,TIMETOLIVE, B.HASH
FROM CERTIFICATE A, CERTIFICATEHASHMAP B, CERTIFICATESERVICECERTIFICATEMAP C WHERE
A.PKID=B.FKCERTIFICATE AND A.PKID = C.FKCERTIFICATE AND C.TKCERTIFICATESERVICE = "5" AND
A.SERVERNAME = "CUCM861"
2014-08-02 23:36:45,418 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]
2014-08-02 23:36:45,424 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:45,424 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,425 INFO [main] - OUT -- CertDBImpl.java - getSelfSignedCertificate -
2014-08-02 23:36:45,425 INFO [main] - IN -- CertDBImpl.java - getPkidOfCertificate(hash,
serverName, con) -
```

looking for PKID of our cert

```
2014-08-02 23:36:45,425 DEBUG [main] - GetPKID Query :SELECT A.PKID FROM CERTIFICATE A,
CERTIFICATEHASHMAP B WHERE A.PKID=B.FKCERTIFICATE AND B.HASH = "/hSVsEZT+yZeaxE+K0EM02n1Pgk="
2014-08-02 23:36:45,425 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]
2014-08-02 23:36:45,431 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:45,435 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,435 INFO [main] - OUT -- CertDBImpl.java - getPkidOfCertificate -
```

2014-08-02 23:36:45,436 DEBUG [main] - Own certificate is regenerated. newCert is not available in DB.

2014-08-02 23:36:45,436 DEBUG [main] - INSERT FLAG :: isCertUpdate=true :: doNothing=false

**## finally certificate is inserted. In fact this is an update since The same is used
PKID of the tomcat cert as it was prior regeneration**

2014-08-02 23:36:45,436 DEBUG [main] - INSERT/UPDATE Query of CERTIFICATE : UPDATE CERTIFICATE SET SERVERNAME="CUCM861", SUBJECTNAME="L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL", ISSUENAME="L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL", SERIALNUMBER="42c86b2cf293630fe27bbddc7fd02a39", CERTIFICATE="-----BEGIN CERTIFICATE-----
MIIDpzCCAo+gAwIBAgIQQshrLPKTYw/ie73cf9AqOTANBgkqhkiG9w0BAQUFADBJ
MQswCQYDVQQGEWJTEDEOMAwGA1UEChMFQ01TQ08xDDAKBgNVBAsTA1RBQzEQMA4G
A1UEAxMHQ01VDTTg2MTETMBEGA1UECBMTUUFMT1BPTFNLQTEPMA0GA1UEBxMGS1JB
S09XMB4XDTE0MDgwMjIxMzY0NfoXDTE5MDgwMTIxMzY0M1owYzELMAkGA1UEBhMC
UEWxDjAMBgNVBAoTBUNJUN0NPMQwwCgYDVQQLEWNUQUxMxEDAOBgNVBAMTB0NVQ004
NjExEzARBgNVBAGTck1BTE9QT0xTS0ExDzANBgNVBAcTBktSQUtPVzCCASlwDQYJ
KoZIHvNAQEBBQADgEPADCCAQoCggEBALRs5cFzI5Yrq/eXoDHs2gc+AhY+OPeW
AHZsQ5+x3TXXiRQ5/SuIyd6VFLbwD6QtsFEeynF6m3mWVYttXH1d9r17M4/I81JM
eMUS1JXxmlbNDZUn/M4BhhEuZyTmJpfpkgrHbNjF67Lzjg8Moc7S34f43X83yPF1
Yfx6YdZKafIY62oj5WYv6RdHKZYctY5FEvN3eAKP0mACnMXe8AN2iWnAlrOYgOZ3
oqAI63UXN5cXtdRftM6LlIaSHviCi1jsg0iytBw0QgQBtKKOTuMrTHbcjVkJJNZ3
SsaPGk71Sg1sJ3Un7E3AIj6hRXsVK9iMEXiwztqpxRhRLT+SuuItQysCAwEAAANX
MFUwCwYDVR0PBAQDAGK8MCcGA1UdJQQGMB4GCCsGAQUFBwMBBggrBgEFBQcDAgYI
KwYBBQUHAWUWHQYDVR0OBByEFPoxKMSHC4gnQQqIgLAgxQjIH0srMA0GCSqGSIb3
DQEBBQUAA4IBAQBvSfWzSC1nLTYKuOPs4RtOUQXfuUMHLhI74QoBJS98A8a8w1Kg
M8ilXukBg6VZ37xgYm2uaLTCunXeG/EiNx9nkC+kgJ9y78Q4jmRh2//wqdvAkI+R
R9745RRntD4xS3sv3uGSljEGd1eCC76NUWpQAWezz0A1AEAE/EW07h1yZVRghuD
hq5vLVNrh0gQkjqve56/K7E9E83PqV09JTAGRvjL9/uRpeooucACJYI9WPyXMYa6w
sIpCqFRLocYIUGCy9ufrof1vptaw0JQGZ9Z9kW2SpanRD2LJungqY8Vbveq/7Z2x
ndm8j36Lyn4IrESrk7Umpr27fn8KktYvMaD
-----END CERTIFICATE-----

", IPV4ADDRESS="10.48.46.29", IPV6ADDRESS="", TIMETOLIVE=NULL WHERE PKID = "533dbbfc-78ce-b46f-7d64-cd2b7c536f6d"

2014-08-02 23:36:45,436 DEBUG [main] - getConn:

usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]

2014-08-02 23:36:45,447 INFO [main] - IN -- CertDBImpl.java - updateCertificateHashMap(certInfo, con) -

2014-08-02 23:36:45,448 DEBUG [main] - Update query of CERTIFICATEHASHMAP :UPDATE CERTIFICATEHASHMAP SET HASH = "/hSVsEZT+yZeae+K0EM02n1Pgk=" WHERE FKCERTIFICATE = "533dbbfc-78ce-b46f-7d64-cd2b7c536f6d"

2014-08-02 23:36:45,448 DEBUG [main] - getConn:

usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]

2014-08-02 23:36:45,452 INFO [main] - OUT -- CertDBImpl.java - updateCertificateHashMap -

2014-08-02 23:36:45,452 INFO [main] - IN -- CertDBImpl.java - insertCertSrvCertMap(certInfo, con) -

2014-08-02 23:36:45,452 INFO [main] - IN -- CertDBImpl.java - checkExistingCertificateServiceMapping(certInfo, serviceEnum, con) -

2014-08-02 23:36:45,452 DEBUG [main] - checkExistingTrustCertificateForService Query :SELECT PKID,FKCERTIFICATE, TKCERTIFICATESERVICE FROM CERTIFICATESERVICECERTIFICATEMAP WHERE FKCERTIFICATE = "533dbbfc-78ce-b46f-7d64-cd2b7c536f6d" AND TKCERTIFICATESERVICE= "5"

2014-08-02 23:36:45,453 DEBUG [main] - getConn:

usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]

2014-08-02 23:36:45,455 DEBUG [main] - Closing the resultset.

2014-08-02 23:36:45,456 INFO [main] - Connection/Statement/Resultset is closed properly.

**## CM verifies if there is a proper mapping for the new cert in the
CERTIFICATESERVICECERTIFICATEMAP table. There is so no need for update**

2014-08-02 23:36:45,456 INFO [main] - OUT -- CertDBImpl.java - checkExistingCertificateServiceMapping -

2014-08-02 23:36:45,456 DEBUG [main] - Certificate to be inserted in

CERTIFICATESERVICECERTIFICATEMAP table :tomcat ::PKID :533dbbfc-78ce-b46f-7d64-cd2b7c536f6d ::toInsertInCertSrvMap:false

2014-08-02 23:36:45,456 DEBUG [main] - CertService mapping entry already exists..

2014-08-02 23:36:45,456 INFO [main] - OUT -- CertDBImpl.java - insertCertSrvCertMap -

```

2014-08-02 23:36:45,456 INFO [main] - IN -- CertDBImpl.java - insertCertTrustRoleMap(certInfo,
log, con) -
2014-08-02 23:36:45,456 INFO [main] - IN -- CertDBImpl.java -
checkExistingCertificateRoleMapping(certInfo, roleEnum, con) -

## the same check for CERTIFICATETRUSTROLEMAP table. It is there, nothing to update.
2014-08-02 23:36:45,456 DEBUG [main] - checkExistingTrustCertificateForRole Query :SELECT
PKID,FKCERTIFICATE, TKTRUSTROLE FROM CERTIFICATETRUSTROLEMAP WHERE FKCERTIFICATE = "533dbbfc-
78ce-b46f-7d64-cd2b7c536f6d" AND TKTRUSTROLE= "7"
2014-08-02 23:36:45,456 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]
2014-08-02 23:36:45,459 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:45,459 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,459 INFO [main] - OUT -- CertDBImpl.java -
checkExistingCertificateRoleMapping -
2014-08-02 23:36:45,459 DEBUG [main] - Certificate to be inserted in CERTIFICATETRUSTROLEMAP
table :tomcat ::PKID :533dbbfc-78ce-b46f-7d64-cd2b7c536f6d ::toInsertInCertSrvMap:false
2014-08-02 23:36:45,459 DEBUG [main] - CertRole mapping entry already exists..
2014-08-02 23:36:45,459 INFO [main] - OUT -- CertDBImpl.java - insertCertTrustRoleMap -
2014-08-02 23:36:45,459 INFO [main] - IN -- CertDBImpl.java - insertCertProcessNodeMap(certInfo,
con) -
2014-08-02 23:36:45,459 INFO [main] - IN -- CertDBImpl.java -
checkExistingCertProcessNodeMapping(certInfo, con) -
2014-08-02 23:36:45,459 DEBUG [main] - checkExistingCertProcessNodeMapping Query :SELECT
PKID,FKCERTIFICATE, FKPROCESSNODE, SERVERNAME FROM CERTIFICATEPROCESSNODEMAP WHERE
FKCERTIFICATE="533dbbfc-78ce-b46f-7d64-cd2b7c536f6d" AND FKPROCESSNODE="13f4b0d9-0bae-429a-a86e-
625336a35bb6" AND SERVERNAME="CUCM861"
2014-08-02 23:36:45,460 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[1]connectToPubByDefault[true]
2014-08-02 23:36:45,462 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:45,463 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,463 INFO [main] - OUT -- CertDBImpl.java -
checkExistingCertProcessNodeMapping -
2014-08-02 23:36:45,463 DEBUG [main] - CertProcessNode mapping entry already exists..
2014-08-02 23:36:45,463 INFO [main] - OUT -- CertDBImpl.java - insertCertProcessNodeMap -
2014-08-02 23:36:45,467 DEBUG [main] - Connection committed for insertCertificate..
2014-08-02 23:36:45,467 DEBUG [main] - Insertion of Certificate in DB is Successful.
2014-08-02 23:36:45,467 INFO [main] - OUT -- CertDBImpl.java - insertCertificate -
2014-08-02 23:36:45,467 DEBUG [main] - Closing the connection. Connection HashCode:5823789 --
Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:45,468 DEBUG [main] - Attempting to close connection
2014-08-02 23:36:45,468 DEBUG [main] - Removing connection <database, jdbcurl2> from
ConnectionManager list
2014-08-02 23:36:45,468 DEBUG [main] - removeConnectionFromConnectionList()
2014-08-02 23:36:45,468 DEBUG [main] - Removing connection
<com.informix.jdbc.IfxSqlConnect@1a7789c> from connection list
2014-08-02 23:36:45,468 DEBUG [main] - Connection <com.informix.jdbc.IfxSqlConnect@1a7789c> is
not closed, adding it back to the pool entry <database,jdbcurl2>
2014-08-02 23:36:45,468 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,468 INFO [main] - DB - Generate Certificate operation in DB is successful
2014-08-02 23:36:45,468 INFO [main] - OUT -- CertDBAction.java - insertCertificateInDB -
2014-08-02 23:36:45,468 INFO [main] - OUT -- DefaultCertMgr.java - genCertAPI - Self-signed
certificate generated by system.
2014-08-02 23:36:45,469 INFO [main] - IN -- CertUtil.java - sendAlarm(alarmName, alarmParamName,
alarmParamValue) -
2014-08-02 23:36:45,469 DEBUG [main] - Sending alarm for :: TomcatCertRegen :: Message :: The
tomcat certificate is regenerated
2014-08-02 23:36:45,471 DEBUG [main] - AlarmSender: getInstance

```

d.기억하듯이 파일 시스템에서 tomcat 및 tomcat-trust와 동일한 인증서를 볼 수 있습니다.지금까지 tomcat만 파일 시스템에서 제대로 업데이트되었습니다.다음 CM 로그를 따라 이 노드에서 tomcat-trust가 어떻게 업데이트되는지 살펴보겠습니다.

```
2014-08-02 23:36:45,518 INFO [main] - OUT -- CertUtil.java - sendAlarm -
2014-08-02 23:36:45,518 INFO [main] - IN -- TomcatCertMgr.java - copyToTomcatTrustStore(info) -
2014-08-02 23:36:45,518 INFO [main] - IN -- TomcatCertMgr.java -
deleteCertFromTomcatTrustStore(info) -
2014-08-02 23:36:45,519 INFO [main] - IN -- RSACryptoEngine.java - loadCertificate(..) -
2014-08-02 23:36:45,520 INFO [main] - OUT -- RSACryptoEngine.java - loadCertificate -
2014-08-02 23:36:45,520 INFO [main] - IN -- CertUtil.java - parseCNfromDN(DN, sSearchStr) -
2014-08-02 23:36:45,520 DEBUG [main] - parseCNfromDN( certSubjDN:
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL')
2014-08-02 23:36:45,520 DEBUG [main] - Truncating CN 'CUCM861,OU=TAC,O=CISCO,C=PL' -> 'CUCM861'
2014-08-02 23:36:45,520 INFO [main] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-02 23:36:45,520 DEBUG [main] - Parsed CN 'CUCM861' from DN
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL'
```

first you need to delete old tomcat-trust certificate on the filesystem

```
2014-08-02 23:36:45,521 DEBUG [main] - Old Cert to be deleted during import :
/usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem
2014-08-02 23:36:45,521 INFO [main] - IN -- DefaultCertMgr.java - deleteCert(info) -
decode:      true
op:          delete
unit:        tomcat-trust
keystoreUnit:tomcat-trust
logFile:     /var/log/active/platform/log/cert-mgmt.log
resultFile:  /var/log/active/platform/log/certde-info.xml
keyDir:      /usr/local/platform/.security/tomcat/keys
certDir:     /usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem
srcCert:     null
type:        trust-certs
rootCACert:  null
trustDir:    null
DNAME:       CN=CUCM861,OU=TAC,O=CISCO,L=KRAKOW,ST=MALOPOLSKA,C=PL
description:null
isDBInsert:true
```

```
2014-08-02 23:36:45,521 INFO [main] - parsed filename: 'CUCM861.pem'
2014-08-02 23:36:45,521 DEBUG [main] - filename: 'CUCM861.pem'
2014-08-02 23:36:45,521 DEBUG [main] - fileRoot: 'CUCM861'
2014-08-02 23:36:45,521 INFO [main] - IN -- DefaultCertMgr.java - deleteDERandPEM(filenameRoot,
parentDir, info) -
2014-08-02 23:36:45,521 DEBUG [main] - ParentDir:/usr/local/platform/.security/tomcat/trust-
certsFileName.(DER/PEM):CUCM861
2014-08-02 23:36:45,521 INFO [main] - IN -- RSACryptoEngine.java - loadCertificate(..) -
2014-08-02 23:36:45,538 INFO [main] - OUT -- RSACryptoEngine.java - loadCertificate -
2014-08-02 23:36:45,539 INFO [main] - IN -- CertUtil.java - populateCertInfo(cert, opInfo,
certFilePemLocation) -
2014-08-02 23:36:45,539 INFO [main] - IN -- CertUtil.java - getHostName(..) -
2014-08-02 23:36:45,539 INFO [main] - OUT -- CertUtil.java - getHostName - CUCM861
2014-08-02 23:36:45,540 INFO [main] - IN -- CryptoUtil.java - saveAsPEM(..) -
2014-08-02 23:36:45,540 INFO [main] - OUT -- CryptoUtil.java - saveAsPEM -
2014-08-02 23:36:45,540 INFO [main] - OUT -- CertUtil.java - populateCertInfo -
```

**## the same should be done on the DB level. CM consider deleting the the association
for this tomcat-trust cert from corresponding tables: CERTIFICATESERVICECERTIFICATEMAP,
CERTIFICATEPROCESSNODEMAP and CERTIFICATESTRUSTROLEMAP. As you see this does not
happen since the certificate itself has not been deleted so FKCERTIFICATE in those
tables become "null for this certificate" (cert still exists, has been
updated only)**

```
2014-08-02 23:36:45,540 INFO [main] - IN -- CertDBAction.java - deleteCertificateInDB(certInfo)
-
2014-08-02 23:36:45,540 INFO [main] -
```

```
DBParameters ...
PKID :null
CN :L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
```


serialNo :6cf5bc855b681f658f9e7506d3ec6ea5
hostName :CUCM861
issuerName :L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
Certificate :Not Printing huge Certificate String..
IPV4Address :10.48.46.29
IPV6Address :
TimeToLive :NULL
UNIT :tomcat-trust
TYPE :trust-certs
ROLE :null
RoleMoniker :null
RoleEnum :null
SERVICE :null
ServiceMoniker :null
ServiceEnum :0

```
2014-08-02 23:36:45,540 INFO [main] - DB - Certifciate Store Plugin Handler is
:com.cisco.ccm.certmgmt.db.CertDBImpl
2014-08-02 23:36:45,541 INFO [main] - IN -- CertDBImpl.java - deleteCertificate(certInfo) -
2014-08-02 23:36:45,542 DEBUG [main] - Connection Initialized to Publisher. Connection
HashCode:12578138 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:45,542 INFO [main] - IN -- CertDBImpl.java - getPkidOfCertificate(hash,
serverName, con) -
2014-08-02 23:36:45,542 DEBUG [main] - GetPKID Query :SELECT A.PKID FROM CERTIFICATE A,
CERTIFICATEHASHMAP B WHERE A.PKID=B.FKCERTIFICATE AND B.HASH = "/XB5QwYXgqrUTFZ2CDgT7BkSxNs="
2014-08-02 23:36:45,542 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:45,542 DEBUG [main] - Try to get a connection from pool
2014-08-02 23:36:45,542 DEBUG [main] - Getting connection from connection pool entry
<database,jdbcurl>
2014-08-02 23:36:45,542 DEBUG [main] - There is currently 1 connection pool entry
2014-08-02 23:36:45,543 DEBUG [main] - Checking if connection limit has been reached for
database
2014-08-02 23:36:45,543 DEBUG [main] - Connecting to publisher so max number of connections
allowed is 100
2014-08-02 23:36:45,543 DEBUG [main] - Number of connections in use is 0
2014-08-02 23:36:45,543 DEBUG [main] - There are currently 2 connection pool entries
2014-08-02 23:36:45,544 DEBUG [main] - Number of available connections in pool: 0
2014-08-02 23:36:45,590 DEBUG [main] - Adding connection
<com.informix.jdbc.IfxSqlConnect@77eb97> to connection list
2014-08-02 23:36:45,590 DEBUG [main] - Marking connection
<com.informix.jdbc.IfxSqlConnect@77eb97> as used
2014-08-02 23:36:45,590 DEBUG [main] - Got connection from pool
2014-08-02 23:36:45,596 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:45,599 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,599 INFO [main] - OUT -- CertDBImpl.java - getPkidOfCertificate -
2014-08-02 23:36:45,599 DEBUG [main] - Closing the connection. Connection HashCode:12578138 --
Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:45,600 DEBUG [main] - Attempting to close connection
2014-08-02 23:36:45,600 DEBUG [main] - Removing connection <database, jdbcurl> from
ConnectionManager list
2014-08-02 23:36:45,600 DEBUG [main] - removeConnectionFromConnectionList()
2014-08-02 23:36:45,600 DEBUG [main] - Removing connection
<com.informix.jdbc.IfxSqlConnect@77eb97> from connection list
2014-08-02 23:36:45,600 DEBUG [main] - Connection <com.informix.jdbc.IfxSqlConnect@77eb97> is
not closed, adding it back to the pool entry <database,jdbcurl>
2014-08-02 23:36:45,600 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,602 DEBUG [main] - Connection Initialized to Publisher. Connection
HashCode:17578504 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:45,602 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:45,602 DEBUG [main] - Try to get a connection from pool
2014-08-02 23:36:45,602 DEBUG [main] - Getting connection from connection pool entry
<database,jdbcurl>
```

```

2014-08-02 23:36:45,602 DEBUG [main] - There are currently 2 connection pool entries
2014-08-02 23:36:45,602 DEBUG [main] - Adding connection
<com.informix.jdbc.IfxSqlConnect@77eb97> to connection list
2014-08-02 23:36:45,603 DEBUG [main] - Marking connection
<com.informix.jdbc.IfxSqlConnect@77eb97> as used
2014-08-02 23:36:45,603 DEBUG [main] - Got connection from pool
2014-08-02 23:36:45,604 INFO [main] - IN -- CertDBImpl.java - deleteCertFromCertSrvCertMap(con,
serialNo, subjectName, serviceEnum) -

## you can see it here ...
2014-08-02 23:36:45,605 DEBUG [main] - Delete query of CERTIFICATESEVICECERTIFICATEMAP :DELETE
FROM CERTIFICATESEVICECERTIFICATEMAP WHERE TKCERTIFICATESEVICE = "6" AND FKCERTIFICATE =
>null"
2014-08-02 23:36:45,605 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:45,618 INFO [main] - OUT -- CertDBImpl.java - deleteCertFromCertSrvCertMap -
2014-08-02 23:36:45,618 INFO [main] - IN -- CertDBImpl.java -
deleteCertFromCertProcessNodeMap(con, certInfo) -

## here ...
2014-08-02 23:36:45,619 DEBUG [main] - Delete query of CERTIFICATEPROCESSNODEMAP :DELETE FROM
CERTIFICATEPROCESSNODEMAP WHERE FKCERTIFICATE="null" AND SERVERNAME = "CUCM861"
2014-08-02 23:36:45,619 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:45,624 INFO [main] - OUT -- CertDBImpl.java - deleteCertFromCertProcessNodeMap
-
2014-08-02 23:36:45,624 DEBUG [main] - Certificate to be deleted UNIT: tomcat-trust ::
RoleMoniker :ROLE_APPLICATION_SERVER :: RoleEnum :7 :: ServiceEnum :6
2014-08-02 23:36:45,624 INFO [main] - IN -- CertDBImpl.java - checkMultipleUnitForSameRole(con,
roleMoniker, unit, certInfo) -
2014-08-02 23:36:45,624 DEBUG [main] - checkMultipleUnitForSameRole : SELECT PKID,FKCERTIFICATE,
TKCERTIFICATESEVICE,NAME UNIT FROM CERTIFICATESEVICECERTIFICATEMAP,TYPECERTIFICATESEVICE
WHERE ENUM=TKCERTIFICATESEVICE AND FKCERTIFICATE ="null" AND NAME != "tomcat-trust"
2014-08-02 23:36:45,624 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:45,649 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:45,649 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,649 INFO [main] - OUT -- CertDBImpl.java - checkMultipleUnitForSameRole -
2014-08-02 23:36:45,649 INFO [main] - IN -- CertDBImpl.java - deleteCertFromTypeTrustRole(con,
certInfo, roleEnum) -

## and here
2014-08-02 23:36:45,649 DEBUG [main] - Delete query of CERTIFICATESTRUSTROLEMAP :DELETE FROM
CERTIFICATESTRUSTROLEMAP WHERE TKTRUSTROLE = "7" AND FKCERTIFICATE = "null"
2014-08-02 23:36:45,649 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:45,652 INFO [main] - OUT -- CertDBImpl.java - deleteCertFromTypeTrustRole -
2014-08-02 23:36:45,653 INFO [main] - IN -- CertDBImpl.java - checkMultipleCertForSrv(pkid, con)
-
2014-08-02 23:36:45,653 DEBUG [main] - checkMultipleCertForSrv : SELECT PKID,FKCERTIFICATE,
TKCERTIFICATESEVICE FROM CERTIFICATESEVICECERTIFICATEMAP WHERE FKCERTIFICATE = "null"
2014-08-02 23:36:45,653 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:45,655 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:45,655 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,655 INFO [main] - OUT -- CertDBImpl.java - checkMultipleCertForSrv -
2014-08-02 23:36:45,655 INFO [main] - IN -- CertDBImpl.java - checkMultipleCertForRole(certInfo,
con) -
2014-08-02 23:36:45,655 DEBUG [main] - checkMultipleCertForRole : SELECT PKID,FKCERTIFICATE,
TKTRUSTROLE FROM CERTIFICATESTRUSTROLEMAP WHERE FKCERTIFICATE = "null"
2014-08-02 23:36:45,655 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:45,657 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:45,657 INFO [main] - Connection/Statement/Resultset is closed properly.

```

```
2014-08-02 23:36:45,657 INFO [main] - OUT -- CertDBImpl.java - checkMultipleCertForRole -
2014-08-02 23:36:45,657 INFO [main] - IN -- CertDBImpl.java -
checkMultipleCertForProcessnode(certInfo, con) -
2014-08-02 23:36:45,657 DEBUG [main] - checkMultipleCertForProcessnode : SELECT
PKID,FKCERTIFICATE,FKPROCESSNODE,SERVERNAME FROM CERTIFICATEPROCESSNODEMAP WHERE
FKCERTIFICATE='null'
2014-08-02 23:36:45,658 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:45,660 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:45,661 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,661 INFO [main] - OUT -- CertDBImpl.java - checkMultipleCertForProcessnode -
2014-08-02 23:36:45,661 DEBUG [main] - DELETE FLAG :: isSrvMap=false :: isRoleMap=false ::
isProcessnodeMap=false
2014-08-02 23:36:45,661 INFO [main] - IN -- CertDBImpl.java - deleteCertificateBySerialNo(con,
certInfo) -
```

finally it tries to remove all certificates from CERTIFICATE table with null PKID.

Nothing will be deleted of course.

```
2014-08-02 23:36:45,661 DEBUG [main] - Delete query of CERTIFICATE :DELETE FROM CERTIFICATE
WHERE PKID = "null"
2014-08-02 23:36:45,661 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:45,664 INFO [main] - OUT -- CertDBImpl.java - deleteCertificateBySerialNo -
2014-08-02 23:36:45,664 DEBUG [main] - Connection committed for deleteCertificate..
2014-08-02 23:36:45,664 DEBUG [main] - Closing the connection. Connection HashCode:17578504 --
Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:45,664 DEBUG [main] - Attempting to close connection
2014-08-02 23:36:45,665 DEBUG [main] - Removing connection <database, jdbcurl> from
ConnectionManager list
2014-08-02 23:36:45,665 DEBUG [main] - removeConnectionFromConnectionList()
2014-08-02 23:36:45,665 DEBUG [main] - Removing connection
<com.informix.jdbc.IfxSqlConnect@77eb97> from connection list
2014-08-02 23:36:45,665 DEBUG [main] - Connection <com.informix.jdbc.IfxSqlConnect@77eb97> is
not closed, adding it back to the pool entry <database,jdbcurl>
2014-08-02 23:36:45,665 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,665 DEBUG [main] - Connection released from CertDBImpl.deleteCertificate
method.
2014-08-02 23:36:45,665 INFO [main] - OUT -- CertDBImpl.java - deleteCertificate -
2014-08-02 23:36:45,665 INFO [main] - OUT -- CertDBAction.java - deleteCertificateInDB -
2014-08-02 23:36:45,665 INFO [main] - OUT -- DefaultCertMgr.java - deleteDERandPEM -
2014-08-02 23:36:45,665 DEBUG [main] - deleteDERandPEM: sCertDir =
/usr/local/platform/.security/tomcat/trust-certs --- sAlias = CUCM861
2014-08-02 23:36:45,665 INFO [main] - IN -- TomcatCertMgr.java - removeFromKeyStore(..) -
2014-08-02 23:36:45,666 INFO [main] - IN -- RSACryptoEngine.java -
removeFromKeyStore(keystoreFile, keystorePass, alias) -
2014-08-02 23:36:45,666 INFO [main] - IN -- RSACryptoEngine.java - loadKeyStore(keystoreFile,
keystorePass) -
2014-08-02 23:36:45,846 INFO [main] - OUT -- RSACryptoEngine.java - loadKeyStore -
```

old tomcat-trust certificate is being removed from key store

```
2014-08-02 23:36:45,880 DEBUG [main] - Removing certificate from keystore : CUCM861
2014-08-02 23:36:45,880 DEBUG [main] - Size of the keystore after delete is : 2
2014-08-02 23:36:45,880 INFO [main] - OUT -- RSACryptoEngine.java - removeFromKeyStore -
2014-08-02 23:36:45,880 INFO [main] - OUT -- TomcatCertMgr.java - removeFromKeyStore -
2014-08-02 23:36:45,882 INFO [main] - trustdir ::/usr/local/platform/.security/tomcat/trust-
certs
2014-08-02 23:36:45,883 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:45,883 DEBUG [main] - Executing command from Util.sysExec : python
/usr/local/platform/bin/c_rehash.py /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:45,993 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:45,995 INFO [main] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-02 23:36:45,995 DEBUG [main] - setOwnershipAndPermissions : trust-certs
2014-08-02 23:36:45,995 DEBUG [main] - Changing ownership of file
```

```

'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-02 23:36:45,995 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:45,996 DEBUG [main] - Executing command from Util.sysExec : /bin/chown -R
certbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,005 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,010 DEBUG [main] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-02 23:36:46,010 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,010 DEBUG [main] - Executing command from Util.sysExec : /bin/chgrp -R
ccmbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,020 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,020 DEBUG [main] - Changing mode of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-02 23:36:46,020 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,020 DEBUG [main] - Executing command from Util.sysExec : /bin/chmod -R 755
/usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,027 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,027 INFO [main] - OUT -- DefaultCertMgr.java - setOwnershipAndPermissions -
2014-08-02 23:36:46,027 INFO [main] - OUT -- DefaultCertMgr.java - deleteCert -
2014-08-02 23:36:46,027 INFO [main] - OUT -- TomcatCertMgr.java - deleteCertFromTomcatTrustStore
-

```

e. 현재 파일 시스템에 tomcat-trust 인증서가 없습니다. CM에서 이를 생성하고 트러스트 저장소로 다시 가져옵니다.

```

2014-08-02 23:36:46,027 INFO [main] - IN -- TomcatCertMgr.java -
importCertToTomcatTrustStore(info) -
2014-08-02 23:36:46,028 INFO [main] - IN -- DefaultCertMgr.java - importCert(info) -
decode:      true
op:          import
unit:        tomcat-trust
keystoreUnit:tomcat-trust
logFile:     /var/log/active/platform/log/cert-mgmt.log
resultFile:  /var/log/active/platform/log/certde-info.xml
keyDir:      /usr/local/platform/.security/tomcat/keys
certDir:     /usr/local/platform/.security/tomcat/trust-certs
srcCert:     /usr/local/platform/.security/tomcat/certs/tomcat.pem
type:        trust-certs
rootCACert:  null
trustDir:    null
DNAME:       CN=CUCM861,OU=TAC,O=CISCO,L=KRAKOW,ST=MALOPOLSKA,C=PL
description:Trust Certificate
isDBInsert:true

2014-08-02 23:36:46,028 INFO [main] - IN -- DefaultCertMgr.java - loadInputCert(info) -
2014-08-02 23:36:46,028 INFO [main] - IN -- RSACryptoEngine.java - loadCertificates(..) -
2014-08-02 23:36:46,028 INFO [main] - IN -- RSACryptoEngine.java - loadCertificate(..) -
2014-08-02 23:36:46,029 INFO [main] - OUT -- RSACryptoEngine.java - loadCertificate -
2014-08-02 23:36:46,030 INFO [main] - OUT -- RSACryptoEngine.java - loadCertificates -
2014-08-02 23:36:46,030 INFO [main] - OUT -- DefaultCertMgr.java - loadInputCert - Successfully
loaded input cert
2014-08-02 23:36:46,030 DEBUG [main] - Checking validity of cert
2014-08-02 23:36:46,030 INFO [main] - Verifying certificate
L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
2014-08-02 23:36:46,030 INFO [main] - IN -- CertUtil.java - parseCNfromDN(DN, sSearchStr) -
2014-08-02 23:36:46,030 DEBUG [main] - parseCNfromDN( certSubjDN:
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL')
2014-08-02 23:36:46,030 DEBUG [main] - Truncating CN 'CUCM861,OU=TAC,O=CISCO,C=PL' -> 'CUCM861'
2014-08-02 23:36:46,030 INFO [main] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-02 23:36:46,030 DEBUG [main] - Parsed CN 'CUCM861' from DN
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL'

```

certificate is being created on the filesystem

```
2014-08-02 23:36:46,030 INFO [main] - trying to load cert from trust store
::/usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem
2014-08-02 23:36:46,030 INFO [main] - cert not available in trust store
::L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
2014-08-02 23:36:46,031 INFO [main] - IN -- DefaultCertMgr.java - importTrustCert(info, cert) -
2014-08-02 23:36:46,031 INFO [main] - IN -- DefaultCertMgr.java - saveToTrustStore(info, cert) -
2014-08-02 23:36:46,031 ERROR [main] - trust directory parameter is null
2014-08-02 23:36:46,031 INFO [main] - IN -- DefaultCertMgr.java - saveTrustCert(cert, targetDir,
certType) -
2014-08-02 23:36:46,031 INFO [main] - IN -- CertUtil.java - parseCNfromDN(DN, sSearchStr) -
2014-08-02 23:36:46,031 DEBUG [main] - parseCNfromDN( certSubjDN:
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL')
2014-08-02 23:36:46,031 DEBUG [main] - Truncating CN 'CUCM861,OU=TAC,O=CISCO,C=PL' -> 'CUCM861'
2014-08-02 23:36:46,031 INFO [main] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-02 23:36:46,031 DEBUG [main] - Parsed CN 'CUCM861' from DN
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL'
2014-08-02 23:36:46,031 INFO [main] - IN -- CertUtil.java - parseCNfromDN(DN, sSearchStr) -
2014-08-02 23:36:46,031 DEBUG [main] - parseCNfromDN( certSubjDN:
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL')
2014-08-02 23:36:46,031 DEBUG [main] - Truncating CN 'CUCM861,OU=TAC,O=CISCO,C=PL' -> 'CUCM861'
2014-08-02 23:36:46,031 INFO [main] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-02 23:36:46,031 DEBUG [main] - Parsed CN 'CUCM861' from DN
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL'
2014-08-02 23:36:46,031 DEBUG [main] - target filename for imported cert: 'CUCM861.pem'
2014-08-02 23:36:46,032 DEBUG [main] - existing certificate with same filename not found.
2014-08-02 23:36:46,032 DEBUG [main] - Saving PEM encoded cert
'/usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem'
2014-08-02 23:36:46,032 INFO [main] - IN -- CryptoUtil.java - saveAsPEM(..) - File :
/usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem
2014-08-02 23:36:46,032 INFO [main] - OUT -- CryptoUtil.java - saveAsPEM -
2014-08-02 23:36:46,033 DEBUG [main] - Saving DER encoded cert
'/usr/local/platform/.security/tomcat/trust-certs/CUCM861.der'
2014-08-02 23:36:46,033 INFO [main] - OUT -- DefaultCertMgr.java - saveTrustCert -
2014-08-02 23:36:46,033 INFO [main] - IN -- TomcatCertMgr.java - saveToKeyStore(..) -
2014-08-02 23:36:46,033 INFO [main] - IN -- RSACryptoEngine.java - saveToKeyStore(keystoreFile,
keystorePass, x509Certificate, alias) -
2014-08-02 23:36:46,033 INFO [main] - IN -- RSACryptoEngine.java - loadKeyStore(keystoreFile,
keystorePass) -
2014-08-02 23:36:46,050 INFO [main] - OUT -- RSACryptoEngine.java - loadKeyStore -
2014-08-02 23:36:46,050 INFO [main] - Size of the keystore before import is : 2
2014-08-02 23:36:46,050 INFO [main] - Importing certificate : CUCM861
2014-08-02 23:36:46,061 INFO [main] - Size of the keystore after import is : 3
2014-08-02 23:36:46,061 INFO [main] - OUT -- RSACryptoEngine.java - saveToKeyStore -
2014-08-02 23:36:46,061 INFO [main] - OUT -- TomcatCertMgr.java - saveToKeyStore -
2014-08-02 23:36:46,062 DEBUG [main] - TrustCert description filename : 'CUCM861.description'
2014-08-02 23:36:46,062 INFO [main] - IN -- DefaultCertMgr.java - createDescriptionFile(name,
description) -
2014-08-02 23:36:46,062 INFO [main] - description is :Trust Certificate
2014-08-02 23:36:46,062 INFO [main] - OUT -- DefaultCertMgr.java - createDescriptionFile -
2014-08-02 23:36:46,062 INFO [main] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-02 23:36:46,062 DEBUG [main] - setOwnershipAndPermissions : CUCM861.description
2014-08-02 23:36:46,063 DEBUG [main] - Changing ownership of file
'/usr/local/platform/.security/tomcat/trust-certs/CUCM861.description'
2014-08-02 23:36:46,063 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,063 DEBUG [main] - Executing command from Util.sysExec : /bin/chown
certbase /usr/local/platform/.security/tomcat/trust-certs/CUCM861.description
2014-08-02 23:36:46,066 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,066 DEBUG [main] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/trust-certs/CUCM861.description'
2014-08-02 23:36:46,067 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,067 DEBUG [main] - Executing command from Util.sysExec : /bin/chgrp cibase
/usr/local/platform/.security/tomcat/trust-certs/CUCM861.description
2014-08-02 23:36:46,069 INFO [main] - OUT -- Util.java - sysExec -
```

```
2014-08-02 23:36:46,069 DEBUG [main] - Changing mode of file
'/usr/local/platform/.security/tomcat/trust-certs/CUCM861.description'
2014-08-02 23:36:46,069 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,069 DEBUG [main] - Executing command from Util.sysExec : /bin/chmod 755
/usr/local/platform/.security/tomcat/trust-certs/CUCM861.description
2014-08-02 23:36:46,073 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,073 INFO [main] - OUT -- DefaultCertMgr.java - setOwnershipAndPermissions -
2014-08-02 23:36:46,073 INFO [main] - OUT -- DefaultCertMgr.java - saveToTrustStore -
2014-08-02 23:36:46,074 INFO [main] - trustdir ::/usr/local/platform/.security/tomcat/trust-
certs
2014-08-02 23:36:46,074 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,074 DEBUG [main] - Executing command from Util.sysExec : python
/usr/local/platform/bin/c_rehash.py /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,140 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,140 INFO [main] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-02 23:36:46,140 DEBUG [main] - setOwnershipAndPermissions : trust-certs
2014-08-02 23:36:46,141 DEBUG [main] - Changing ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-02 23:36:46,141 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,141 DEBUG [main] - Executing command from Util.sysExec : /bin/chown -R
certbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,144 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,144 DEBUG [main] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-02 23:36:46,144 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,144 DEBUG [main] - Executing command from Util.sysExec : /bin/chgrp -R
ccmbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,147 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,147 DEBUG [main] - Changing mode of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-02 23:36:46,148 INFO [main] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,148 DEBUG [main] - Executing command from Util.sysExec : /bin/chmod -R 755
/usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,152 INFO [main] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,152 INFO [main] - OUT -- DefaultCertMgr.java - setOwnershipAndPermissions -
2014-08-02 23:36:46,152 INFO [main] - IN -- CertUtil.java - populateCertInfo(cert, opInfo,
certFilePemLocation) -
2014-08-02 23:36:46,156 INFO [main] - IN -- CertUtil.java - getHostName(..) -
2014-08-02 23:36:46,156 INFO [main] - OUT -- CertUtil.java - getHostName - CUCM861
2014-08-02 23:36:46,156 INFO [main] - IN -- CryptoUtil.java - saveAsPEM(..) -
2014-08-02 23:36:46,157 INFO [main] - OUT -- CryptoUtil.java - saveAsPEM -
2014-08-02 23:36:46,157 INFO [main] - OUT -- CertUtil.java - populateCertInfo -
```

이제 새로운 tomcat-trust 가 파일 시스템에 다시 추가되었습니다.DB에 있는지 확인하고 누락된 경
우 해당 항목을 추가합니다.

```
2014-08-02 23:36:46,157 INFO [main] - IN -- CertDBAction.java -
insertCertificateInDB(certFiletoStore, info) -
2014-08-02 23:36:46,157 INFO [main] -
```

DBParameters ...

PKID :null

CN :L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL

serialNo :42c86b2cf293630fe27bbddc7fd02a39

hostName :CUCM861

issuerName :L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL

Certificate :Not Printing huge Certificate String..

IPV4Address :10.48.46.29

IPV6Address :

TimeToLive :NULL

UNIT :tomcat-trust

TYPE :trust-certs

ROLE :null
RoleMoniker :null
RoleEnum :null
SERVICE :null
ServiceMoniker :null
ServiceEnum :0

```
2014-08-02 23:36:46,157 INFO [main] - DB - Certifciate Store Plugin Handler is
:com.cisco.ccm.certmgmt.db.CertDBImpl
2014-08-02 23:36:46,159 DEBUG [main] - Connection Initialized to Publisher. Connection
HashCode:23817301 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:46,159 INFO [main] - IN -- CertDBImpl.java - insertCertificate(certInfo, con) -
2014-08-02 23:36:46,159 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:46,159 DEBUG [main] - Try to get a connection from pool
2014-08-02 23:36:46,159 DEBUG [main] - Getting connection from connection pool entry
<database,jdbcurl>
2014-08-02 23:36:46,159 DEBUG [main] - There are currently 2 connection pool entries
2014-08-02 23:36:46,159 DEBUG [main] - Adding connection
<com.informix.jdbc.IfxSqlConnect@77eb97> to connection list
2014-08-02 23:36:46,159 DEBUG [main] - Marking connection
<com.informix.jdbc.IfxSqlConnect@77eb97> as used
2014-08-02 23:36:46,159 DEBUG [main] - Got connection from pool
2014-08-02 23:36:46,166 INFO [main] - IN -- CertDBImpl.java -
populateRoleEnumServiceEnum(certInfo) -
2014-08-02 23:36:46,166 INFO [main] - UNIT :: tomcat-trust
2014-08-02 23:36:46,166 INFO [main] - role :: [ROLE_APPLICATION_SERVER]
2014-08-02 23:36:46,166 INFO [main] - roleEnum :: [7]
2014-08-02 23:36:46,166 INFO [main] - service :: null
2014-08-02 23:36:46,166 INFO [main] - serviceEnum :: 6
2014-08-02 23:36:46,166 INFO [main] - OUT -- CertDBImpl.java - populateRoleEnumServiceEnum -
2014-08-02 23:36:46,166 INFO [main] - IN -- CertDBUtil.java - getProcessNodeId(con, hostName,
ipAddress, fqdn) -
2014-08-02 23:36:46,166 INFO [main] - getProcessNodeId Query :SELECT PKID,NAME FROM PROCESSNODE
WHERE UPPER(NAME)=UPPER("CUCM861") OR UPPER(NAME)=UPPER("10.48.46.29") OR
UPPER(NAME)=UPPER("CUCM861")
2014-08-02 23:36:46,166 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:46,172 INFO [main] - ProcessNodeId:13f4b0d9-0bae-429a-a86e-625336a35bb6
2014-08-02 23:36:46,172 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:46,173 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:46,173 INFO [main] - OUT -- CertDBUtil.java - getProcessNodeId -
2014-08-02 23:36:46,173 INFO [main] - IN -- CertDBImpl.java - getPkidOfCertificate(hash,
serverName, con) -
2014-08-02 23:36:46,173 DEBUG [main] - GetPKID Query :SELECT A.PKID FROM CERTIFICATE A,
CERTIFICATEHASHMAP B WHERE A.PKID=B.FKCERTIFICATE AND B.HASH = "/hSVsEZT+yZeaxE+K0EM02n1Pgk="
2014-08-02 23:36:46,173 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:46,177 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:46,177 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:46,177 INFO [main] - OUT -- CertDBImpl.java - getPkidOfCertificate -
2014-08-02 23:36:46,177 DEBUG [main] - INSERT FLAG :: isCertUpdate=false :: doNothing=false
2014-08-02 23:36:46,177 DEBUG [main] - INSERT/UPDATE Query of CERTIFICATE : null
2014-08-02 23:36:46,177 INFO [main] - IN -- CertDBImpl.java - insertCertSrvCertMap(certInfo,
con) -
2014-08-02 23:36:46,177 INFO [main] - IN -- CertDBImpl.java -
checkExistingCertificateServiceMapping(certInfo, serviceEnum, con) -
```

CM checks CERTIFICATESERVICECERTIFICATEMAP table if the mapping for our cert exist.

```
2014-08-02 23:36:46,178 DEBUG [main] - checkExistingTrustCertificateForService Query :SELECT
PKID,FKCERTIFICATE, TKCERTIFICATESERVICE FROM CERTIFICATESERVICECERTIFICATEMAP WHERE
FKCERTIFICATE = "533dbbfc-78ce-b46f-7d64-cd2b7c536f6d" AND TKCERTIFICATESERVICE= "6"
2014-08-02 23:36:46,178 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
```

2014-08-02 23:36:46,184 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:46,184 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:46,184 INFO [main] - OUT -- CertDBImpl.java -
checkExistingCertificateServiceMapping -
2014-08-02 23:36:46,184 DEBUG [main] - Certificate to be inserted in
CERTIFICATESERVICECERTIFICATEMAP table :tomcat-trust ::PKID :533dbbfc-78ce-b46f-7d64-
cd2b7c536f6d ::toInsertInCertSrvMap:false

Since it has not been previousy removed it is there

2014-08-02 23:36:46,185 DEBUG [main] - CertService mapping entry already exists..
2014-08-02 23:36:46,185 INFO [main] - OUT -- CertDBImpl.java - insertCertSrvCertMap -
2014-08-02 23:36:46,185 INFO [main] - IN -- CertDBImpl.java - insertCertTrustRoleMap(certInfo,
log, con) -
2014-08-02 23:36:46,185 INFO [main] - IN -- CertDBImpl.java -
checkExistingCertificateRoleMapping(certInfo, roleEnum, con) -

the same is being checked for CERTIFICATESTRUSTROLEMAP table ...

2014-08-02 23:36:46,185 DEBUG [main] - checkExistingTrustCertificateForRole Query :SELECT
PKID,FKCERTIFICATE, TKTRUSTROLE FROM CERTIFICATESTRUSTROLEMAP WHERE FKCERTIFICATE = "533dbbfc-
78ce-b46f-7d64-cd2b7c536f6d" AND TKTRUSTROLE= "7"
2014-08-02 23:36:46,185 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:46,187 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:46,188 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:46,188 INFO [main] - OUT -- CertDBImpl.java -
checkExistingCertificateRoleMapping -
2014-08-02 23:36:46,188 DEBUG [main] - Certificate to be inserted in CERTIFICATESTRUSTROLEMAP
table :tomcat-trust ::PKID :533dbbfc-78ce-b46f-7d64-cd2b7c536f6d ::toInsertInCertSrvMap:false

it exists also here

2014-08-02 23:36:46,188 DEBUG [main] - CertRole mapping entry already exists..
2014-08-02 23:36:46,188 INFO [main] - OUT -- CertDBImpl.java - insertCertTrustRoleMap -
2014-08-02 23:36:46,188 INFO [main] - IN -- CertDBImpl.java - insertCertProcessNodeMap(certInfo,
con) -
2014-08-02 23:36:46,188 INFO [main] - IN -- CertDBImpl.java -
checkExistingCertProcessNodeMapping(certInfo, con) -
2014-08-02 23:36:46,188 DEBUG [main] - checkExistingCertProcessNodeMapping Query :SELECT
PKID,FKCERTIFICATE, FKPROCESSNODE, SERVERNAME FROM CERTIFICATEPROCESSNODEMAP WHERE
FKCERTIFICATE="533dbbfc-78ce-b46f-7d64-cd2b7c536f6d" AND FKPROCESSNODE="13f4b0d9-0bae-429a-a86e-
625336a35bb6" AND SERVERNAME="CUCM861"
2014-08-02 23:36:46,188 DEBUG [main] - getConn:
usePooling[true]connectToLocalDB[false]_target[0]connectToPubByDefault[true]
2014-08-02 23:36:46,190 DEBUG [main] - Closing the resultset.
2014-08-02 23:36:46,191 INFO [main] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:46,191 INFO [main] - OUT -- CertDBImpl.java -
checkExistingCertProcessNodeMapping -
2014-08-02 23:36:46,191 DEBUG [main] - CertProcessNode mapping entry already exists..
2014-08-02 23:36:46,191 INFO [main] - OUT -- CertDBImpl.java - insertCertProcessNodeMap -
2014-08-02 23:36:46,191 DEBUG [main] - Connection committed for insertCertificate..

since no entries in DB were missing Insertion finishes.

2014-08-02 23:36:46,191 DEBUG [main] - Insertion of Certificate in DB is Successful.
2014-08-02 23:36:46,191 INFO [main] - OUT -- CertDBImpl.java - insertCertificate -
2014-08-02 23:36:46,192 DEBUG [main] - Closing the connection. Connection HashCode:23817301 --
Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:46,192 DEBUG [main] - Attempting to close connection
2014-08-02 23:36:46,192 DEBUG [main] - Removing connection <database, jdbcurl> from
ConnectionManager list
2014-08-02 23:36:46,192 DEBUG [main] - removeConnectionFromConnectionList()
2014-08-02 23:36:46,192 DEBUG [main] - Removing connection
<com.informix.jdbc.IfxSqlConnect@77eb97> from connection list
2014-08-02 23:36:46,192 DEBUG [main] - Connection <com.informix.jdbc.IfxSqlConnect@77eb97> is
not closed, adding it back to the pool entry <database,jdbcurl>
2014-08-02 23:36:46,192 INFO [main] - Connection/Statement/Resultset is closed properly.


```
2014-08-02 23:36:46,192 INFO [main] - DB - Generate Certificate operation in DB is successful
2014-08-02 23:36:46,192 INFO [main] - OUT -- CertDBAction.java - insertCertificateInDB -
2014-08-02 23:36:46,192 INFO [main] - IN -- CryptoUtil.java - isOCSPEnabled(..) -
2014-08-02 23:36:46,192 INFO [main] - IN -- CryptoUtil.java - getCertMonitorXmlParser(..) -
2014-08-02 23:36:46,203 INFO [main] - OUT -- CryptoUtil.java - getCertMonitorXmlParser -
2014-08-02 23:36:46,203 INFO [main] - OUT -- CryptoUtil.java - isOCSPEnabled - false
2014-08-02 23:36:46,203 DEBUG [main] - OCSP is not enabled.
2014-08-02 23:36:46,204 INFO [main] - Successfully imported trusted certificate with Subject
DN:L&#61;KRAKOW,ST&#61;MALOPOLSKA,CN&#61;CUCM861,OU&#61;TAC,O&#61;CISCO,C&#61;PL
2014-08-02 23:36:46,204 INFO [main] - OUT -- DefaultCertMgr.java - importTrustCert -
Successfully imported trusted certificate with Subject
DN:L&#61;KRAKOW,ST&#61;MALOPOLSKA,CN&#61;CUCM861,OU&#61;TAC,O&#61;CISCO,C&#61;PL
```

at this moment importing the tomcat-trust ends. CM finishes adding tomcat-trust to the trust store and removes CSR file if any.

```
2014-08-02 23:36:46,204 INFO [main] - result of import operations is ::Import of trust
certificate is successful
2014-08-02 23:36:46,204 INFO [main] - OUT -- DefaultCertMgr.java - importCert -
2014-08-02 23:36:46,204 INFO [main] - OUT -- TomcatCertMgr.java - importCertToTomcatTrustStore -
2014-08-02 23:36:46,204 INFO [main] - Tomcat Self-signed certificate copied in Tomcat trust-
store successfully
2014-08-02 23:36:46,204 INFO [main] - OUT -- TomcatCertMgr.java - copyToTomcatTrustStore -
2014-08-02 23:36:46,204 DEBUG [main] - GenCert returned
2014-08-02 23:36:46,204 DEBUG [main] - CSR FileName is tomcat-trust.csr
2014-08-02 23:36:46,204 DEBUG [main] - CSR File Deleted:
/usr/local/platform/.security/tomcat/keys/tomcat-trust.csr
2014-08-02 23:36:46,204 INFO [main] - Delete CSR File:
/usr/local/platform/.security/tomcat/keys/tomcat-trust.csr
2014-08-02 23:36:46,204 DEBUG [main] - Private Key in DER Form is: tomcat-trust_priv_csr.der
2014-08-02 23:36:46,204 DEBUG [main] - PEM Key in PEM form is:tomcat-trust_priv_csr.pem
2014-08-02 23:36:46,206 INFO [main] - OUT -- DefaultCertMgr.java - regenCert -
2014-08-02 23:36:46,206 INFO [main] - IN -- CertMgr.java - logResult(result, desc, resultFile) -
2014-08-02 23:36:46,206 INFO [main] - CertMgmt Operation Result : null
2014-08-02 23:36:46,207 INFO [main] - OUT -- CertMgr.java - logResult -
2014-08-02 23:36:46,207 INFO [main] - OUT -- CertMgr.java - doOp -
2014-08-02 23:36:46,207 INFO [main] - OUT -- CertMgr.java - mainIntenal -
```

CM 역할은 여기서 끝납니다.게시자 노트에서 certCN 로그를 살펴보겠습니다.DB 변경 알림에 가입되어 있으므로 CERTIFICATE 테이블의 인증서 변경 사항에 대해 알림을 받게 됩니다.

```
2014-08-02 23:36:45,605 INFO [Thread-5] - IN - process. changeData &colon;
2014-08-02 23:36:45,607 INFO [Thread-5] - Inside CERTIFICATE - I/U option..
2014-08-02 23:36:45,607 DEBUG [Thread-5] - Updated Data in CERTIFICATE
::<msg><type>DBL</type><table>certificate</table><tableid>41</tableid><action>U</action><time>14
07015405</time><old><cdrserver>2</cdrserver><cdrtime>1407012599</cdrtime><pkid>533dbbfc-78ce-
b46f-7d64-
cd2b7c536f6d</pkid><servername>CUCM861</servername><subjectname>L=KRAKOW,ST=MALOPOLSKA,CN=CUCM86
1,OU=TAC,O=CISCO,C=PL</subjectname><issuename>L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,
C=PL</issuename><serialnumber>6cf5bc855b681f658f9e7506d3ec6ea5</serialnumber><certificate></cer
tificate><ipv4address>10.48.46.29</ipv4address><ipv6address></ipv6address><timetolive>NULL</time
tolive><ifx_replcheck>6043073097765093380</ifx_replcheck></old><new><servername>CUCM861</servern
ame><subjectname>L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL</subjectname><issuename>
L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL</issuename><serialnumber>42c86b2cf293630f
e27bbddc7fd02a39</serialnumber><certificate>changed</certificate><ipv4address>10.48.46.29</ipv4a
ddress><ipv6address></ipv6address><timetolive>NULL</timetolive></new></msg>
2014-08-02 23:36:45,607 DEBUG [Thread-5] - Certificate PKID : 533dbbfc-78ce-b46f-7d64-
cd2b7c536f6d , ipAddress : 10.48.46.29 , OldSerialNo : 6cf5bc855b681f658f9e7506d3ec6ea5 ,
NewSerialNo : 42c86b2cf293630fe27bbddc7fd02a39
2014-08-02 23:36:45,607 INFO [Thread-5] - OUT - process.
2014-08-02 23:36:45,608 INFO [InsertThread --- 7] - IN -- CertKeystoreHandler.java - run() -
2014-08-02 23:36:45,609 DEBUG [InsertThread --- 7] - InsertThread --- 7 -- START --
```

getting PKID for which the change occurred

```
2014-08-02 23:36:45,609 DEBUG [InsertThread --- 7] - DB Value UPDATE: 533dbbfc-78ce-b46f-7d64-cd2b7c536f6d
2014-08-02 23:36:45,609 INFO [InsertThread --- 7] - IN -- CertKeystoreHandler.java - updateIntoKeystore() -
2014-08-02 23:36:45,610 INFO [InsertThread --- 7] - IN -- CertDBImpl.java - getCertificate(certBash64SHA1:null --pkid:533dbbfc-78ce-b46f-7d64-cd2b7c536f6d
2014-08-02 23:36:45,611 DEBUG [InsertThread --- 7] - Connection Initialized to localnode. Connection HashCode:22502526 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:45,611 DEBUG [InsertThread --- 7] - Select Query to getCertificate :SELECT A.*,B.HASH FROM CERTIFICATE A, CERTIFICATEHASHMAP B WHERE A.PKID=B.FKCERTIFICATE AND A.PKID = "533dbbfc-78ce-b46f-7d64-cd2b7c536f6d"
2014-08-02 23:36:45,611 DEBUG [InsertThread --- 7] - getConn: usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-02 23:36:45,611 DEBUG [InsertThread --- 7] - Got connection from pool
2014-08-02 23:36:45,681 DEBUG [InsertThread --- 7] - Closing the resultset.
2014-08-02 23:36:45,681 DEBUG [InsertThread --- 7] - Closing the connection. Connection HashCode:22502526 --Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:45,681 DEBUG [InsertThread --- 7] - Attempting to close connection
2014-08-02 23:36:45,681 DEBUG [InsertThread --- 7] - Removing connection <database, jdbcurl2> from ConnectionManager list
2014-08-02 23:36:45,681 DEBUG [InsertThread --- 7] - removeConnectionFromConnectionList()
2014-08-02 23:36:45,681 DEBUG [InsertThread --- 7] - Removing connection <com.informix.jdbc.IfxSqlConnect@1ccblae> from connection list
2014-08-02 23:36:45,682 DEBUG [InsertThread --- 7] - Connection <com.informix.jdbc.IfxSqlConnect@1ccblae> is not closed, adding it back to the pool entry <database, jdbcurl2>
2014-08-02 23:36:45,682 INFO [InsertThread --- 7] - Connection/Statement/Resultset is closed properly.
2014-08-02 23:36:45,682 DEBUG [InsertThread --- 7] - Connection released from CertDBImpl.getCertificate method.
2014-08-02 23:36:45,682 INFO [InsertThread --- 7] - OUT -- CertDBImpl.java - getCertificate -
2014-08-02 23:36:45,682 INFO [InsertThread --- 7] - IN -- CertDBImpl.java - getCertUnitByPkid(pkid) -
2014-08-02 23:36:45,683 DEBUG [InsertThread --- 7] - Connection Initialized to localnode. Connection HashCode:25877029 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
```

getting info about changed certificate

```
2014-08-02 23:36:45,684 DEBUG [InsertThread --- 7] - Select Query to getCertUnitByPkid :SELECT A.PKID, A.FKCERTIFICATE, A.TKCERTIFICATESERVICE, B.NAME UNIT FROM CERTIFICATESERVICECERTIFICATEMAP A, TYPECERTIFICATESERVICE B WHERE A.FKCERTIFICATE="533dbbfc-78ce-b46f-7d64-cd2b7c536f6d" AND A.TKCERTIFICATESERVICE = B.ENUM
2014-08-02 23:36:45,684 DEBUG [InsertThread --- 7] - getConn: usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-02 23:36:45,684 DEBUG [InsertThread --- 7] - Try to get a connection from pool
2014-08-02 23:36:45,684 DEBUG [InsertThread --- 7] - getting local connection from Pool
2014-08-02 23:36:45,684 DEBUG [InsertThread --- 7] - Getting connection from connection pool entry <database, jdbcurl2>
2014-08-02 23:36:45,684 DEBUG [InsertThread --- 7] - There are currently 2 connection pool entries
2014-08-02 23:36:45,684 DEBUG [InsertThread --- 7] - Adding connection <com.informix.jdbc.IfxSqlConnect@1ccblae> to connection list
2014-08-02 23:36:45,684 DEBUG [InsertThread --- 7] - Marking connection <com.informix.jdbc.IfxSqlConnect@1ccblae> as used
2014-08-02 23:36:45,684 DEBUG [InsertThread --- 7] - Got connection from pool
2014-08-02 23:36:45,687 DEBUG [InsertThread --- 7] - Closing the resultset.
2014-08-02 23:36:45,688 DEBUG [InsertThread --- 7] - Closing the connection. Connection HashCode:25877029 --Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:45,688 DEBUG [InsertThread --- 7] - Attempting to close connection
2014-08-02 23:36:45,688 DEBUG [InsertThread --- 7] - Removing connection <database, jdbcurl2> from ConnectionManager list
2014-08-02 23:36:45,688 DEBUG [InsertThread --- 7] - removeConnectionFromConnectionList()
2014-08-02 23:36:45,688 DEBUG [InsertThread --- 7] - Removing connection
```

```
<com.informix.jdbc.IfxSqlConnect@1ccblae> from connection list
2014-08-02 23:36:45,688 DEBUG [InsertThread --- 7] - Connection
<com.informix.jdbc.IfxSqlConnect@1ccblae> is not closed, adding it back to the pool entry
<database,jdbcurl2>
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - Connection/Statement/Resultset is closed
properly.
2014-08-02 23:36:45,688 DEBUG [InsertThread --- 7] - Resultset released from
CertDBImpl.getCertUnitByPkid method.
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - OUT -- CertDBImpl.java - getCertUnitByPkid -
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - UNIT : tomcat
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - CurrentIPAddress : 10.48.46.29
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - RemoteIPAddress : 10.48.46.29
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - OldSerialNo
:6cf5bc855b681f658f9e7506d3ec6ea5
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - NewSerialNo
:42c86b2cf293630fe27bbddc7fd02a39
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - IN -- CertUtil.java -
getListFromComaSeperatedStr(..) -
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - OUT -- CertUtil.java -
getListFromComaSeperatedStr -
```

**## as you know tomcat and tomcat-trust certificates are covered by change notification.
Since both ones has been properly updated by CM service there is nothing to do for the ##
certCN service here.**

```
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - tomcat --- is included unit for CN
2014-08-02 23:36:45,688 DEBUG [InsertThread --- 7] - Change notification not require on same
node except tomcat cert.
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - UNIT : tomcat-trust
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - CurrentIPAddress : 10.48.46.29
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - RemoteIPAddress : 10.48.46.29
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - OldSerialNo
:6cf5bc855b681f658f9e7506d3ec6ea5
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - NewSerialNo
:42c86b2cf293630fe27bbddc7fd02a39
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - IN -- CertUtil.java -
getListFromComaSeperatedStr(..) -
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - OUT -- CertUtil.java -
getListFromComaSeperatedStr -
2014-08-02 23:36:45,688 INFO [InsertThread --- 7] - tomcat-trust --- is included unit for CN
2014-08-02 23:36:45,688 DEBUG [InsertThread --- 7] - Change notification not require on same
node except tomcat cert.
2014-08-02 23:36:45,689 INFO [InsertThread --- 7] - tomcat-trust Certificate successfully
updated in trust-store by Change Notification..
2014-08-02 23:36:45,689 INFO [InsertThread --- 7] - OUT -- CertKeystoreHandler.java -
updateIntoKeystore -
2014-08-02 23:36:45,689 DEBUG [InsertThread --- 7] - InsertThread --- 7 -- END --
2014-08-02 23:36:45,689 INFO [InsertThread --- 7] - OUT -- CertKeystoreHandler.java - run -
```

따라서 게시자 노드의 certCN 서비스에서 인증서를 변경하지 않았습니다.

f.이제 가입자 노드의 모양을 살펴보겠습니다.새 인증서가 DB에 삽입되고 가입자 노드에 복제되었
습니다.certCN이 DB의 변경 사항에 대해 알림을 받았습니다.

아래 하위 항목에 대한 전체 작업(줄 설명):

certCN on sub is notified about the change in the DB

```
2014-08-02 23:36:46,147 INFO [Thread-5] - IN - process. changeData &colon;
2014-08-02 23:36:46,149 INFO [Thread-5] - Inside CERTIFICATE - I/U option..
```

details about the change are in from DBL (PKID, old serial, new serial, etc.)

```
2014-08-02 23:36:46,149 DEBUG [Thread-5] - Updated Data in CERTIFICATE
::<msg><type>DBL</type><table>certificate</table><tableid>41</tableid><action>U</action><time>14
07015406</time><old><cdrserver>2</cdrserver><cdrtime>1407012599</cdrtime><pkid>533dbbfc-78ce-
```

```
b46f-7d64-
cd2b7c536f6d</pkid><servername>CUCM861</servername><subjectname>L=KRAKOW,ST=MALOPOLSKA,CN=CUCM86
1,OU=TAC,O=CISCO,C=PL</subjectname><issuename>L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,
C=PL</issuename><serialnumber>6cf5bc855b681f658f9e7506d3ec6ea5</serialnumber><certificate></cer
tificate><ipv4address>10.48.46.29</ipv4address><ipv6address></ipv6address><timetolive>NULL</time
tolive><ifx_replcheck>6043073097765093380</ifx_replcheck></old><new><pkid>533dbbfc-78ce-b46f-
7d64-
cd2b7c536f6d</pkid><servername>CUCM861</servername><subjectname>L=KRAKOW,ST=MALOPOLSKA,CN=CUCM86
1,OU=TAC,O=CISCO,C=PL</subjectname><issuename>L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,
C=PL</issuename><serialnumber>42c86b2cf293630fe27bbddc7fd02a39</serialnumber><certificate>chang
ed</certificate><ipv4address>10.48.46.29</ipv4address><ipv6address></ipv6address><timetolive>NUL
L</timetolive></new></msg>
2014-08-02 23:36:46,149 DEBUG [Thread-5] - Certificate PKID : 533dbbfc-78ce-b46f-7d64-
cd2b7c536f6d , ipAddress : 10.48.46.29 , OldSerialNo : 6cf5bc855b681f658f9e7506d3ec6ea5 ,
NewSerialNo : 42c86b2cf293630fe27bbddc7fd02a39
2014-08-02 23:36:46,150 INFO [Thread-5] - OUT - process.
2014-08-02 23:36:46,151 INFO [InsertThread --- 34] - IN -- CertKeystoreHandler.java - run() -
2014-08-02 23:36:46,152 DEBUG [InsertThread --- 34] - InsertThread --- 34 -- START --
2014-08-02 23:36:46,152 DEBUG [InsertThread --- 34] - DB Value UPDATE: 533dbbfc-78ce-b46f-7d64-
cd2b7c536f6d
2014-08-02 23:36:46,152 INFO [InsertThread --- 34] - IN -- CertKeystoreHandler.java -
updateIntoKeystore() -
2014-08-02 23:36:46,153 INFO [InsertThread --- 34] - IN -- CertDBImpl.java -
getCertificate(certBash64SHA1:null --pkid:533dbbfc-78ce-b46f-7d64-cd2b7c536f6d
2014-08-02 23:36:46,153 DEBUG [InsertThread --- 34] - Connection Initialized to localnode.
Connection HashCode:30330150 --Details:Connector(NOT CONNECTED:
Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:46,153 DEBUG [InsertThread --- 34] - Select Query to getCertificate :SELECT
A.*,B.HASH FROM CERTIFICATE A, CERTIFICATEHASHMAP B WHERE A.PKID=B.FKCERTIFICATE AND A.PKID =
"533dbbfc-78ce-b46f-7d64-cd2b7c536f6d"
2014-08-02 23:36:46,153 DEBUG [InsertThread --- 34] - getConn:
usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]
2014-08-02 23:36:46,154 DEBUG [InsertThread --- 34] - Try to get a connection from pool
2014-08-02 23:36:46,154 DEBUG [InsertThread --- 34] - getting local connection from Pool
2014-08-02 23:36:46,154 DEBUG [InsertThread --- 34] - Getting connection from connection pool
entry <database,jdbcurl2>
2014-08-02 23:36:46,154 DEBUG [InsertThread --- 34] - There are currently 2 connection pool
entries
2014-08-02 23:36:46,154 DEBUG [InsertThread --- 34] - Checking if connection limit has been
reached for database
2014-08-02 23:36:46,154 DEBUG [InsertThread --- 34] - Connecting to subscriber so max number of
connections allowed is 100
2014-08-02 23:36:46,154 DEBUG [InsertThread --- 34] - Number of connections in use is 0
2014-08-02 23:36:46,154 DEBUG [InsertThread --- 34] - There are currently 2 connection pool
entries
2014-08-02 23:36:46,154 DEBUG [InsertThread --- 34] - Number of available connections in pool: 0
2014-08-02 23:36:46,193 DEBUG [InsertThread --- 34] - Adding connection
<com.informix.jdbc.IfxSqlConnect@1feba51> to connection list
2014-08-02 23:36:46,194 DEBUG [InsertThread --- 34] - Marking connection
<com.informix.jdbc.IfxSqlConnect@1feba51> as used
2014-08-02 23:36:46,194 DEBUG [InsertThread --- 34] - Got connection from pool
2014-08-02 23:36:46,197 DEBUG [InsertThread --- 34] - Closing the resultset.
2014-08-02 23:36:46,198 DEBUG [InsertThread --- 34] - Closing the connection. Connection
HashCode:30330150 --Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)
2014-08-02 23:36:46,198 DEBUG [InsertThread --- 34] - Attempting to close connection
2014-08-02 23:36:46,198 DEBUG [InsertThread --- 34] - Removing connection <database,jdbcurl2>
from ConnectionManager list
2014-08-02 23:36:46,198 DEBUG [InsertThread --- 34] - removeConnectionFromConnectionList()
2014-08-02 23:36:46,198 DEBUG [InsertThread --- 34] - Removing connection
<com.informix.jdbc.IfxSqlConnect@1feba51> from connection list
2014-08-02 23:36:46,198 DEBUG [InsertThread --- 34] - Connection
<com.informix.jdbc.IfxSqlConnect@1feba51> is not closed, adding it back to the pool entry
<database,jdbcurl2>
2014-08-02 23:36:46,198 INFO [InsertThread --- 34] - Connection/Statement/Resultset is closed
```

properly.

2014-08-02 23:36:46,198 DEBUG [InsertThread --- 34] - Connection released from CertDBImpl.getCertificate method.

2014-08-02 23:36:46,198 INFO [InsertThread --- 34] - OUT -- CertDBImpl.java - getCertificate -

2014-08-02 23:36:46,198 INFO [InsertThread --- 34] - IN -- CertDBImpl.java - getCertUnitByPkid(pkid) -

2014-08-02 23:36:46,199 DEBUG [InsertThread --- 34] - Connection Initialized to localnode. Connection HashCode:8005144 --Details:Connector(NOT CONNECTED: Driver=com.informix.jdbc.IfxDriver;)

quering DB for the changed certificate and getting details of it

2014-08-02 23:36:46,199 DEBUG [InsertThread --- 34] - Select Query to getCertUnitByPkid :SELECT A.PKID, A.FKCERTIFICATE, A.TKCERTIFICATESERVICE, B.NAME UNIT FROM CERTIFICATESEVICECERTIFICATEMAP A, TYPECERTIFICATESEVICE B WHERE A.FKCERTIFICATE="533dbbfc-78ce-b46f-7d64-cd2b7c536f6d" AND A.TKCERTIFICATESERVICE = B.ENUM

2014-08-02 23:36:46,199 DEBUG [InsertThread --- 34] - getConn: usePooling[true]connectToLocalDB[true]_target[0]connectToPubByDefault[false]

2014-08-02 23:36:46,199 DEBUG [InsertThread --- 34] - Try to get a connection from pool

2014-08-02 23:36:46,199 DEBUG [InsertThread --- 34] - getting local connection from Pool

2014-08-02 23:36:46,199 DEBUG [InsertThread --- 34] - Getting connection from connection pool entry <database,jdbcurl2>

2014-08-02 23:36:46,199 DEBUG [InsertThread --- 34] - There are currently 2 connection pool entries

2014-08-02 23:36:46,199 DEBUG [InsertThread --- 34] - Adding connection <com.informix.jdbc.IfxSqlConnect@1feba51> to connection list

2014-08-02 23:36:46,199 DEBUG [InsertThread --- 34] - Marking connection <com.informix.jdbc.IfxSqlConnect@1feba51> as used

2014-08-02 23:36:46,199 DEBUG [InsertThread --- 34] - Got connection from pool

2014-08-02 23:36:46,203 DEBUG [InsertThread --- 34] - Closing the resultset.

2014-08-02 23:36:46,204 DEBUG [InsertThread --- 34] - Closing the connection. Connection HashCode:8005144 --Details:Connector(CONNECTED: Driver=com.informix.jdbc.IfxDriver;)

2014-08-02 23:36:46,204 DEBUG [InsertThread --- 34] - Attempting to close connection

2014-08-02 23:36:46,204 DEBUG [InsertThread --- 34] - Removing connection <database, jdbcurl2> from ConnectionManager list

2014-08-02 23:36:46,204 DEBUG [InsertThread --- 34] - removeConnectionFromConnectionList()

2014-08-02 23:36:46,204 DEBUG [InsertThread --- 34] - Removing connection

<com.informix.jdbc.IfxSqlConnect@1feba51> from connection list

2014-08-02 23:36:46,204 DEBUG [InsertThread --- 34] - Connection

<com.informix.jdbc.IfxSqlConnect@1feba51> is not closed, adding it back to the pool entry <database, jdbcurl2>

2014-08-02 23:36:46,204 INFO [InsertThread --- 34] - Connection/Statement/Resultset is closed properly.

2014-08-02 23:36:46,204 DEBUG [InsertThread --- 34] - Resultset released from CertDBImpl.getCertUnitByPkid method.

2014-08-02 23:36:46,204 INFO [InsertThread --- 34] - OUT -- CertDBImpl.java - getCertUnitByPkid -

2014-08-02 23:36:46,204 INFO [InsertThread --- 34] - UNIT : tomcat

2014-08-02 23:36:46,204 INFO [InsertThread --- 34] - CurrentIPAddress : 10.48.46.30

2014-08-02 23:36:46,204 INFO [InsertThread --- 34] - RemoteIPAddress : 10.48.46.29

2014-08-02 23:36:46,204 INFO [InsertThread --- 34] - OldSerialNo

:6cf5bc855b681f658f9e7506d3ec6ea5

2014-08-02 23:36:46,204 INFO [InsertThread --- 34] - NewSerialNo

:42c86b2cf293630fe27bbddc7fd02a39

2014-08-02 23:36:46,204 INFO [InsertThread --- 34] - IN -- CertUtil.java -

getListFromComaSeperatedStr(..) -

2014-08-02 23:36:46,204 INFO [InsertThread --- 34] - OUT -- CertUtil.java -

getListFromComaSeperatedStr -

2014-08-02 23:36:46,204 INFO [InsertThread --- 34] - tomcat --- is included unit for CN

2014-08-02 23:36:46,204 INFO [InsertThread --- 34] - IN -- CertUtil.java -

loadCertFromString(cert) -

2014-08-02 23:36:46,204 INFO [InsertThread --- 34] - IN -- RSACryptoEngine.java -

loadCertificate(..) -

2014-08-02 23:36:46,209 INFO [InsertThread --- 34] - OUT -- RSACryptoEngine.java -

loadCertificate -

```
2014-08-02 23:36:46,209 INFO [InsertThread --- 34] - OUT -- CertUtil.java - loadCertFromString -
2014-08-02 23:36:46,209 INFO [InsertThread --- 34] - IN -- CertDBUtil.java -
checkDeleteAndImport(unit, dbCert) -
2014-08-02 23:36:46,209 INFO [InsertThread --- 34] - DB CertInfo.--
SN:88769680872451706773275250466208361017--
SubjectDN:L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL--GetNotBefore:Sat Aug 02
23:36:44 CEST 2014--GetNotAfter:Thu Aug 01 23:36:43 CEST 2019
```

verifying that you have this certificate in trust store

```
2014-08-02 23:36:46,209 INFO [InsertThread --- 34] - loading certificate element named [tomcat-
trust]
2014-08-02 23:36:46,210 INFO [InsertThread --- 34] - determining certificates in group [product-
cpi] with type [trust-certs]
2014-08-02 23:36:46,210 INFO [InsertThread --- 34] - loading the config file
[/usr/local/platform/conf/cert-conf.xml]
2014-08-02 23:36:46,212 INFO [InsertThread --- 34] - looking for first [trust-certs] in
[product-cpi]
2014-08-02 23:36:46,212 INFO [InsertThread --- 34] - loaded element [tomcat-trust]
2014-08-02 23:36:46,212 INFO [InsertThread --- 34] - determining cert dir for [tomcat-trust]
2014-08-02 23:36:46,212 INFO [InsertThread --- 34] - looking for first [dir] in [tomcat-trust]
2014-08-02 23:36:46,212 INFO [InsertThread --- 34] - getting the value of [dir]
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] - value is
[/usr/local/platform/.security/tomcat/trust-certs]
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] - cert dir is
[/usr/local/platform/.security/tomcat/trust-certs]
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/VeriSign_Class_3_Secure_Server_CA_-
_G3.description] match is false
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861s.description] match is false
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/VeriSign_Class_3_Secure_Server_CA_-_G3.pem]
match is true
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/VeriSign_Class_3_Secure_Server_CA_-_G3.der]
match is true
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore] match is false
```

this is the one you are looking for

```
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861s.der] match is true
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861.der] match is true
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861.description] match is false
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/7e0370f0.0] match is false
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/d0aacffb.0] match is false
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/101f99a6.0] match is false
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem] match is true
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861s.pem] match is true
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-02 23:36:46,213 INFO [InsertThread --- 34] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-02 23:36:46,214 INFO [InsertThread --- 34] - OUT -- RSACryptoEngine.java -
loadCertificate -
```

certificate file is being deleted from the filesystem

```
2014-08-02 23:36:46,214 DEBUG [InsertThread --- 34] - SUBJECTDN of DBCert and FileSystemCert
compared correctly..
2014-08-02 23:36:46,214 DEBUG [InsertThread --- 34] - FILE SYSTEM CERT TO DELETE AND RE-IMPORT..
2014-08-02 23:36:46,214 INFO [InsertThread --- 34] - IN -- CertDBUtil.java -
deleteTrustCertInFileSystem.. unit : tomcat :: FileName ::
/usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem
2014-08-02 23:36:46,214 INFO [InsertThread --- 34] - IN -- CertDBUtil.java -
populateOpInfo(operation, unit, type, fileLocation, x509Cert, isDBInsert) -
2014-08-02 23:36:46,214 INFO [InsertThread --- 34] - loading certificate element named [tomcat-
trust]
2014-08-02 23:36:46,214 INFO [InsertThread --- 34] - determining certificates in group [product-
cpi] with type [trust-certs]
2014-08-02 23:36:46,214 INFO [InsertThread --- 34] - loading the config file
[/usr/local/platform/conf/cert-conf.xml]
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - looking for first [trust-certs] in
[product-cpi]
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - loaded element [tomcat-trust]
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - determining key dir for [tomcat-trust]
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - looking for first [key-dir] in [tomcat-
trust]
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - getting the value of [key-dir]
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - value is
[/usr/local/platform/.security/tomcat/keys]
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - key dir is
[/usr/local/platform/.security/tomcat/keys]
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - OUT -- CertDBUtil.java - populateOpInfo -
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - IN -- CertMgr.java - getCertMgrObj(unit) -
tomcat-trust
```

**## certCN will call CM api to perform this task. But nothing will land in CM logs. All
details can be found below**

```
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - OUT -- CertMgr.java - getCertMgrObj -
com.cisco.cpi.certMgmt.manager.TomcatCertMgr@15b0e9f
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - IN -- DefaultCertMgr.java -
deleteCert(info) -
decode:      true
op:         delete
unit:       tomcat-trust
keystoreUnit:tomcat-trust
logFile:    /var/log/active/platform/log/cert-mgmt.log
resultFile: /var/log/active/platform/log/certde-info.xml
keyDir:     /usr/local/platform/.security/tomcat/keys
certDir:    /usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem
srcCert:    null
type:       trust-certs
rootCACert: null
trustDir:   null
DNAME:      null
description:null
isDBInsert:false

2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - parsed filename: 'CUCM861.pem'
2014-08-02 23:36:46,215 DEBUG [InsertThread --- 34] - filename: 'CUCM861.pem'
2014-08-02 23:36:46,215 DEBUG [InsertThread --- 34] - fileRoot: 'CUCM861'
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - IN -- DefaultCertMgr.java -
deleteDERandPEM(filenameRoot, parentDir, info) -
2014-08-02 23:36:46,215 DEBUG [InsertThread --- 34] -
ParentDir:/usr/local/platform/.security/tomcat/trust-certsFileName.(DER/PEM):CUCM861
2014-08-02 23:36:46,215 INFO [InsertThread --- 34] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-02 23:36:46,224 INFO [InsertThread --- 34] - OUT -- RSACryptoEngine.java -
loadCertificate -
```

```
2014-08-02 23:36:46,224 INFO [InsertThread --- 34] - No plugins registered for DB Store
2014-08-02 23:36:46,224 INFO [InsertThread --- 34] - OUT -- DefaultCertMgr.java -
deleteDERandPEM -
2014-08-02 23:36:46,224 DEBUG [InsertThread --- 34] - deleteDERandPEM: sCertDir =
/usr/local/platform/.security/tomcat/trust-certs --- sAlias = CUCM861
```

cert file deleted. you need to remove it from key store

```
2014-08-02 23:36:46,225 INFO [InsertThread --- 34] - IN -- TomcatCertMgr.java -
removeFromKeyStore(..) -
2014-08-02 23:36:46,225 INFO [InsertThread --- 34] - IN -- RSACryptoEngine.java -
removeFromKeyStore(keystoreFile, keystorePass, alias) -
2014-08-02 23:36:46,225 INFO [InsertThread --- 34] - IN -- RSACryptoEngine.java -
loadKeyStore(keystoreFile, keystorePass) -
2014-08-02 23:36:46,232 INFO [InsertThread --- 34] - OUT -- RSACryptoEngine.java - loadKeyStore
-
2014-08-02 23:36:46,238 DEBUG [InsertThread --- 34] - Removing certificate from keystore :
CUCM861
2014-08-02 23:36:46,238 DEBUG [InsertThread --- 34] - Size of the keystore after delete is : 2
2014-08-02 23:36:46,238 INFO [InsertThread --- 34] - OUT -- RSACryptoEngine.java -
removeFromKeyStore -
2014-08-02 23:36:46,238 INFO [InsertThread --- 34] - OUT -- TomcatCertMgr.java -
removeFromKeyStore -
2014-08-02 23:36:46,239 INFO [InsertThread --- 34] - trustdir
:./usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,239 INFO [InsertThread --- 34] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,239 DEBUG [InsertThread --- 34] - Executing command from Util.sysExec :
python /usr/local/platform/bin/c_rehash.py /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,295 INFO [InsertThread --- 34] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,295 INFO [InsertThread --- 34] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-02 23:36:46,295 DEBUG [InsertThread --- 34] - setOwnershipAndPermissions : trust-certs
2014-08-02 23:36:46,296 DEBUG [InsertThread --- 34] - Changing ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-02 23:36:46,296 INFO [InsertThread --- 34] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,296 DEBUG [InsertThread --- 34] - Executing command from Util.sysExec :
/bin/chown -R certbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,299 INFO [InsertThread --- 34] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,299 DEBUG [InsertThread --- 34] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-02 23:36:46,299 INFO [InsertThread --- 34] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,299 DEBUG [InsertThread --- 34] - Executing command from Util.sysExec :
/bin/chgrp -R cmbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,302 INFO [InsertThread --- 34] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,302 DEBUG [InsertThread --- 34] - Changing mode of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-02 23:36:46,302 INFO [InsertThread --- 34] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,302 DEBUG [InsertThread --- 34] - Executing command from Util.sysExec :
/bin/chmod -R 755 /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,306 INFO [InsertThread --- 34] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,306 INFO [InsertThread --- 34] - OUT -- DefaultCertMgr.java -
setOwnershipAndPermissions -
2014-08-02 23:36:46,306 INFO [InsertThread --- 34] - OUT -- DefaultCertMgr.java - deleteCert -
2014-08-02 23:36:46,306 INFO [InsertThread --- 34] - OUT -- CertDBUtil.java -
deleteTrustCertInFileSystem -
```

certificate will be reimported to the filesystem now into

```
/usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,306 INFO [InsertThread --- 34] - IN -- CertDBUtil.java -
importTrustCertInFileSystem.. unit : tomcat
2014-08-02 23:36:46,306 INFO [InsertThread --- 34] - IN -- CertDBUtil.java -
populateOpInfo(operation, unit, type, fileLocation, x509Cert, isDBInsert) -
2014-08-02 23:36:46,306 INFO [InsertThread --- 34] - loading certificate element named [tomcat-
trust]
2014-08-02 23:36:46,306 INFO [InsertThread --- 34] - determining certificates in group [product-
```



```
cpi] with type [trust-certs]
2014-08-02 23:36:46,306 INFO [InsertThread --- 34] - loading the config file
[/usr/local/platform/conf/cert-conf.xml]
2014-08-02 23:36:46,308 INFO [InsertThread --- 34] - looking for first [trust-certs] in
[product-cpi]
2014-08-02 23:36:46,308 INFO [InsertThread --- 34] - loaded element [tomcat-trust]
2014-08-02 23:36:46,308 INFO [InsertThread --- 34] - determining key dir for [tomcat-trust]
2014-08-02 23:36:46,308 INFO [InsertThread --- 34] - looking for first [key-dir] in [tomcat-
trust]
2014-08-02 23:36:46,308 INFO [InsertThread --- 34] - getting the value of [key-dir]
2014-08-02 23:36:46,308 INFO [InsertThread --- 34] - value is
[/usr/local/platform/.security/tomcat/keys]
2014-08-02 23:36:46,308 INFO [InsertThread --- 34] - key dir is
[/usr/local/platform/.security/tomcat/keys]
2014-08-02 23:36:46,308 INFO [InsertThread --- 34] - loading certificate element named [tomcat-
trust]
2014-08-02 23:36:46,308 INFO [InsertThread --- 34] - determining certificates in group [product-
cpi] with type [trust-certs]
2014-08-02 23:36:46,308 INFO [InsertThread --- 34] - loading the config file
[/usr/local/platform/conf/cert-conf.xml]
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - looking for first [trust-certs] in
[product-cpi]
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - loaded element [tomcat-trust]
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - determining cert dir for [tomcat-trust]
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - looking for first [dir] in [tomcat-trust]
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - getting the value of [dir]
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - value is
[/usr/local/platform/.security/tomcat/trust-certs]
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - cert dir is
[/usr/local/platform/.security/tomcat/trust-certs]
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - OUT -- CertDBUtil.java - populateOpInfo -
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - IN -- CertMgr.java - getCertMgrObj(unit) -
tomcat-trust
```

again CM API is called to perform this task

```
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - OUT -- CertMgr.java - getCertMgrObj -
com.cisco.cpi.certMgmt.manager.TomcatCertMgr@1b8e9f
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - IN -- DefaultCertMgr.java -
importCert(info) -
decode:      true
op:         import
unit:       tomcat-trust
keystoreUnit:tomcat-trust
logFile:    /var/log/active/platform/log/cert-mgmt.log
resultFile: /var/log/active/platform/log/certde-info.xml
keyDir:     /usr/local/platform/.security/tomcat/keys
certDir:    /usr/local/platform/.security/tomcat/trust-certs
srcCert:    null
type:       trust-certs
rootCACert: null
trustDir:   null
DNAME:     null
description:null
isDBInsert:false
```

```
2014-08-02 23:36:46,310 DEBUG [InsertThread --- 34] - Checking validity of cert
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - Verifying certificate
L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - IN -- CertUtil.java - parseCNfromDN(DN,
sSearchStr) -
2014-08-02 23:36:46,310 DEBUG [InsertThread --- 34] - parseCNfromDN( certSubjDN:
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL')
2014-08-02 23:36:46,310 DEBUG [InsertThread --- 34] - Truncating CN
'CUCM861,OU=TAC,O=CISCO,C=PL' -> 'CUCM861'
```

```
2014-08-02 23:36:46,310 INFO [InsertThread --- 34] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-02 23:36:46,310 DEBUG [InsertThread --- 34] - Parsed CN 'CUCM861' from DN
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL'
2014-08-02 23:36:46,311 INFO [InsertThread --- 34] - trying to load cert from trust store
:/usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem
2014-08-02 23:36:46,311 INFO [InsertThread --- 34] - cert not available in trust store
:L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
2014-08-02 23:36:46,311 INFO [InsertThread --- 34] - IN -- DefaultCertMgr.java -
importTrustCert(info, cert) -
2014-08-02 23:36:46,311 INFO [InsertThread --- 34] - IN -- DefaultCertMgr.java -
saveToTrustStore(info, cert) -
2014-08-02 23:36:46,311 ERROR [InsertThread --- 34] - trust directory parameter is null
2014-08-02 23:36:46,311 INFO [InsertThread --- 34] - IN -- DefaultCertMgr.java -
saveTrustCert(cert, targetDir, certType) -
2014-08-02 23:36:46,311 INFO [InsertThread --- 34] - IN -- CertUtil.java - parseCNfromDN(DN,
sSearchStr) -
2014-08-02 23:36:46,311 DEBUG [InsertThread --- 34] - parseCNfromDN( certSubjDN:
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL')
2014-08-02 23:36:46,311 DEBUG [InsertThread --- 34] - Truncating CN
'CUCM861,OU=TAC,O=CISCO,C=PL' -> 'CUCM861'
2014-08-02 23:36:46,311 INFO [InsertThread --- 34] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-02 23:36:46,311 DEBUG [InsertThread --- 34] - Parsed CN 'CUCM861' from DN
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL'
2014-08-02 23:36:46,311 INFO [InsertThread --- 34] - IN -- CertUtil.java - parseCNfromDN(DN,
sSearchStr) -
2014-08-02 23:36:46,312 DEBUG [InsertThread --- 34] - parseCNfromDN( certSubjDN:
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL')
2014-08-02 23:36:46,312 DEBUG [InsertThread --- 34] - Truncating CN
'CUCM861,OU=TAC,O=CISCO,C=PL' -> 'CUCM861'
2014-08-02 23:36:46,312 INFO [InsertThread --- 34] - OUT -- CertUtil.java - parseCNfromDN -
2014-08-02 23:36:46,312 DEBUG [InsertThread --- 34] - Parsed CN 'CUCM861' from DN
'L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL'
2014-08-02 23:36:46,312 DEBUG [InsertThread --- 34] - target filename for imported cert:
'CUCM861.pem'
2014-08-02 23:36:46,312 DEBUG [InsertThread --- 34] - existing certificate with same filename
not found.
```

saving cert as PEM and DER formats

```
2014-08-02 23:36:46,312 DEBUG [InsertThread --- 34] - Saving PEM encoded cert
'/usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem'
2014-08-02 23:36:46,312 INFO [InsertThread --- 34] - IN -- CryptoUtil.java - saveAsPEM(..) -
File : /usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem
2014-08-02 23:36:46,313 INFO [InsertThread --- 34] - OUT -- CryptoUtil.java - saveAsPEM -
2014-08-02 23:36:46,313 DEBUG [InsertThread --- 34] - Saving DER encoded cert
'/usr/local/platform/.security/tomcat/trust-certs/CUCM861.der'
2014-08-02 23:36:46,314 INFO [InsertThread --- 34] - OUT -- DefaultCertMgr.java - saveTrustCert
-
```

saving new certificate into keystore

```
2014-08-02 23:36:46,314 INFO [InsertThread --- 34] - IN -- TomcatCertMgr.java -
saveToKeyStore(..) -
2014-08-02 23:36:46,314 INFO [InsertThread --- 34] - IN -- RSACryptoEngine.java -
saveToKeyStore(keystoreFile, keystorePass, x509Certificate, alias) -
2014-08-02 23:36:46,314 INFO [InsertThread --- 34] - IN -- RSACryptoEngine.java -
loadKeyStore(keystoreFile, keystorePass) -
2014-08-02 23:36:46,323 INFO [InsertThread --- 34] - OUT -- RSACryptoEngine.java - loadKeyStore
-
2014-08-02 23:36:46,323 INFO [InsertThread --- 34] - Size of the keystore before import is : 2
2014-08-02 23:36:46,323 INFO [InsertThread --- 34] - Importing certificate : CUCM861
2014-08-02 23:36:46,330 INFO [InsertThread --- 34] - Size of the keystore after import is : 3
2014-08-02 23:36:46,330 INFO [InsertThread --- 34] - OUT -- RSACryptoEngine.java -
saveToKeyStore -
2014-08-02 23:36:46,330 INFO [InsertThread --- 34] - OUT -- TomcatCertMgr.java - saveToKeyStore
-
```

```
2014-08-02 23:36:46,330 DEBUG [InsertThread --- 34] - TrustCert description filename :
'CUCM861.description'
2014-08-02 23:36:46,330 INFO [InsertThread --- 34] - IN -- DefaultCertMgr.java -
createDescriptionFile(name, description) -
2014-08-02 23:36:46,330 INFO [InsertThread --- 34] - description is :Trust Certificate
2014-08-02 23:36:46,331 INFO [InsertThread --- 34] - OUT -- DefaultCertMgr.java -
createDescriptionFile -
2014-08-02 23:36:46,331 INFO [InsertThread --- 34] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-02 23:36:46,331 DEBUG [InsertThread --- 34] - setOwnershipAndPermissions :
CUCM861.description
2014-08-02 23:36:46,331 DEBUG [InsertThread --- 34] - Changing ownership of file
'/usr/local/platform/.security/tomcat/trust-certs/CUCM861.description'
2014-08-02 23:36:46,331 INFO [InsertThread --- 34] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,331 DEBUG [InsertThread --- 34] - Executing command from Util.sysExec :
/bin/chown certbase /usr/local/platform/.security/tomcat/trust-certs/CUCM861.description
2014-08-02 23:36:46,334 INFO [InsertThread --- 34] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,334 DEBUG [InsertThread --- 34] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/trust-certs/CUCM861.description'
2014-08-02 23:36:46,334 INFO [InsertThread --- 34] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,334 DEBUG [InsertThread --- 34] - Executing command from Util.sysExec :
/bin/chgrp ccmbase /usr/local/platform/.security/tomcat/trust-certs/CUCM861.description
2014-08-02 23:36:46,337 INFO [InsertThread --- 34] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,337 DEBUG [InsertThread --- 34] - Changing mode of file
'/usr/local/platform/.security/tomcat/trust-certs/CUCM861.description'
2014-08-02 23:36:46,337 INFO [InsertThread --- 34] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,337 DEBUG [InsertThread --- 34] - Executing command from Util.sysExec :
/bin/chmod 755 /usr/local/platform/.security/tomcat/trust-certs/CUCM861.description
2014-08-02 23:36:46,339 INFO [InsertThread --- 34] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,339 INFO [InsertThread --- 34] - OUT -- DefaultCertMgr.java -
setOwnershipAndPermissions -
2014-08-02 23:36:46,339 INFO [InsertThread --- 34] - OUT -- DefaultCertMgr.java -
saveToTrustStore -
2014-08-02 23:36:46,340 INFO [InsertThread --- 34] - trustdir
:./usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,340 INFO [InsertThread --- 34] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,340 DEBUG [InsertThread --- 34] - Executing command from Util.sysExec :
python /usr/local/platform/bin/c_rehash.py /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,425 INFO [InsertThread --- 34] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,425 INFO [InsertThread --- 34] - IN -- DefaultCertMgr.java -
setOwnershipAndPermissions(file) -
2014-08-02 23:36:46,425 DEBUG [InsertThread --- 34] - setOwnershipAndPermissions : trust-certs
2014-08-02 23:36:46,426 DEBUG [InsertThread --- 34] - Changing ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-02 23:36:46,426 INFO [InsertThread --- 34] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,426 DEBUG [InsertThread --- 34] - Executing command from Util.sysExec :
/bin/chown -R certbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,429 INFO [InsertThread --- 34] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,429 DEBUG [InsertThread --- 34] - Changing group ownership of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-02 23:36:46,429 INFO [InsertThread --- 34] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,430 DEBUG [InsertThread --- 34] - Executing command from Util.sysExec :
/bin/chgrp -R ccmbase /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,433 INFO [InsertThread --- 34] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,433 DEBUG [InsertThread --- 34] - Changing mode of file
'/usr/local/platform/.security/tomcat/trust-certs'
2014-08-02 23:36:46,433 INFO [InsertThread --- 34] - IN -- Util.java - sysExec(exe, args) -
2014-08-02 23:36:46,433 DEBUG [InsertThread --- 34] - Executing command from Util.sysExec :
/bin/chmod -R 755 /usr/local/platform/.security/tomcat/trust-certs
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - OUT -- Util.java - sysExec -
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - OUT -- DefaultCertMgr.java -
setOwnershipAndPermissions -
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - No plugins registered for DB Store
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - IN -- CryptoUtil.java - isOCSPEnabled(..) -
```

```
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - IN -- CryptoUtil.java -
getCertMonitorXmlParser(..) -
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - OUT -- CryptoUtil.java -
getCertMonitorXmlParser -
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - OUT -- CryptoUtil.java - isOCSPEnabled -
false
2014-08-02 23:36:46,437 DEBUG [InsertThread --- 34] - OCSP is not enabled.
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - Successfully imported trusted certificate
with Subject DN:L&#61;KRAKOW,ST&#61;MALOPOLSKA,CN&#61;CUCM861,OU&#61;TAC,O&#61;CISCO,C&#61;PL
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - OUT -- DefaultCertMgr.java -
importTrustCert - Successfully imported trusted certificate with Subject
DN:L&#61;KRAKOW,ST&#61;MALOPOLSKA,CN&#61;CUCM861,OU&#61;TAC,O&#61;CISCO,C&#61;PL

## import ends with success, some additional checks are performed below
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - result of import operations is ::Import of
trust certificate is successful
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - OUT -- DefaultCertMgr.java - importCert -
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - OUT -- CertDBUtil.java -
importTrustCertInFileSystem -
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - OUT -- CertDBUtil.java -
checkDeleteAndImport -
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - UNIT : tomcat-trust
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - CurrentIPAddress : 10.48.46.30
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - RemoteIPAddress : 10.48.46.29
2014-08-02 23:36:46,437 INFO [InsertThread --- 34] - OldSerialNo
:6cf5bc855b681f658f9e7506d3ec6ea5
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - NewSerialNo
:42c86b2cf293630fe27bbddc7fd02a39
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - IN -- CertUtil.java -
getListFromComaSeperatedStr(..) -
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - OUT -- CertUtil.java -
getListFromComaSeperatedStr -
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - tomcat-trust --- is included unit for CN
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - IN -- CertUtil.java -
loadCertFromString(cert) -
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - OUT -- CertUtil.java - loadCertFromString -
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - IN -- CertDBUtil.java -
checkDeleteAndImport(unit, dbCert) -
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - DB CertInfo.--
SN:88769680872451706773275250466208361017--
SubjectDN:L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL--GetNotBefore:Sat Aug 02
23:36:44 CEST 2014--GetNotAfter:Thu Aug 01 23:36:43 CEST 2019
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - loading certificate element named [tomcat-
trust]
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - determining certificates in group [product-
cpi] with type [trust-certs]
2014-08-02 23:36:46,438 INFO [InsertThread --- 34] - loading the config file
[/usr/local/platform/conf/cert-conf.xml]
2014-08-02 23:36:46,441 INFO [InsertThread --- 34] - looking for first [trust-certs] in
[product-cpi]
2014-08-02 23:36:46,441 INFO [InsertThread --- 34] - loaded element [tomcat-trust]
2014-08-02 23:36:46,441 INFO [InsertThread --- 34] - determining cert dir for [tomcat-trust]
2014-08-02 23:36:46,441 INFO [InsertThread --- 34] - looking for first [dir] in [tomcat-trust]
2014-08-02 23:36:46,441 INFO [InsertThread --- 34] - getting the value of [dir]
2014-08-02 23:36:46,441 INFO [InsertThread --- 34] - value is
[/usr/local/platform/.security/tomcat/trust-certs]
2014-08-02 23:36:46,441 INFO [InsertThread --- 34] - cert dir is
[/usr/local/platform/.security/tomcat/trust-certs]
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/VeriSign_Class_3_Secure_Server_CA_-
```

```

_G3.description] match is false
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861s.description] match is false
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/VeriSign_Class_3_Secure_Server_CA_-_G3.pem]
match is true
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/VeriSign_Class_3_Secure_Server_CA_-_G3.der]
match is true
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore] match is false
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861s.der] match is true
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861.der] match is true
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861.description] match is false
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/7e0370f0.0] match is false
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/d0aacffb.0] match is false
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/101f99a6.0] match is false
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861.pem] match is true
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] -
[/usr/local/platform/.security/tomcat/trust-certs/CUCM861s.pem] match is true
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-02 23:36:46,442 INFO [InsertThread --- 34] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-02 23:36:46,443 INFO [InsertThread --- 34] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-02 23:36:46,443 DEBUG [InsertThread --- 34] - SUBJECTDN of DBCert and FileSystemCert
compared correctly..
2014-08-02 23:36:46,443 DEBUG [InsertThread --- 34] - Certificate already exists in FileSystem..
2014-08-02 23:36:46,443 INFO [InsertThread --- 34] - IN -- RSACryptoEngine.java -
loadCertificate(..) -
2014-08-02 23:36:46,443 INFO [InsertThread --- 34] - OUT -- RSACryptoEngine.java -
loadCertificate -
2014-08-02 23:36:46,443 INFO [InsertThread --- 34] - OUT -- CertDBUtil.java -
checkDeleteAndImport -
2014-08-02 23:36:46,443 INFO [InsertThread --- 34] - tomcat-trust Certificate successfully
updated in trust-store by Change Notification..
2014-08-02 23:36:46,443 INFO [InsertThread --- 34] - OUT -- CertKeystoreHandler.java -
updateIntoKeystore -
2014-08-02 23:36:46,443 DEBUG [InsertThread --- 34] - InsertThread --- 34 -- END --
2014-08-02 23:36:46,443 INFO [InsertThread --- 34] - OUT -- CertKeystoreHandler.java - run -
가입자의 파일 시스템에서 위에서 재확인할 수 있습니다.tomcat-trust for pub이 trust-certs(수정 날
짜 확인)에서 업데이트되었습니다.

```

```

[root@CUCM861s tomcat]# pwd
/usr/local/platform/.security/tomcat
[root@CUCM861s tomcat]# ls -la certs
total 48
drwxr-xr-x 2 certbase ccmbase 4096 Aug  2 22:51 .
drwxr-xr-x 5 root      root    4096 Apr  4 14:33 ..
-rwxr-xr-x 1 certbase ccmbase  941 Aug  2 22:51 tomcat.der
-rwxr-xr-x 1 certbase ccmbase   64 Aug  2 22:51 tomcat.description
-rwxr-xr-x 1 certbase ccmbase 2598 Aug  2 22:51 tomcat.keystore

```

```



-rwxr-xr-x 1 certbase ccmbase 1330 Aug  2 22:51 tomcat.pem
[root@CUCM861s tomcat]# ls -la trust-certs
total 108
drwxr-xr-x 2 certbase ccmbase 4096 Aug  2 23:36 .
drwxr-xr-x 5 root      root    4096 Apr  4 14:33 ..
lrwxrwxrwx 1 certbase ccmbase  11 Aug  2 23:36 101f99a6.0 -> CUCM861.pem
lrwxrwxrwx 1 certbase ccmbase  42 Aug  2 23:36 7e0370f0.0 ->
VeriSign_Class_3_Secure_Server_CA_-_G3.pem
-rwxr-xr-x 1 certbase ccmbase  939 Aug  2 23:36 CUCM861.der
-rwxr-xr-x 1 certbase ccmbase   44 Aug  2 23:36 CUCM861.description
-rwxr-xr-x 1 certbase ccmbase 1326 Aug  2 23:36 CUCM861.pem
-rwxr-xr-x 1 certbase ccmbase  941 Aug  2 22:51 CUCM861s.der
-rwxr-xr-x 1 certbase ccmbase   44 Aug  2 22:51 CUCM861s.description
-rwxr-xr-x 1 certbase ccmbase 1330 Aug  2 22:51 CUCM861s.pem
lrwxrwxrwx 1 certbase ccmbase  12 Aug  2 23:36 d0aacffb.0 -> CUCM861s.pem
-rwxr-xr-x 1 certbase ccmbase 3907 Aug  2 23:36 tomcat-trust.keystore
-rwxr-xr-x 1 certbase ccmbase 1520 Apr  4 14:33 VeriSign_Class_3_Secure_Server_CA_-_G3.der
-rwxr-xr-x 1 certbase ccmbase   44 Apr  4 14:33 VeriSign_Class_3_Secure_Server_CA_-_
_G3.description
-rwxr-xr-x 1 certbase ccmbase 2114 Apr  4 14:33 VeriSign_Class_3_Secure_Server_CA_-_G3.pem
[root@CUCM861s tomcat]# md5sum trust-certs/CUCM861.der
a0dd8031bcd3c269844df8a3fafd476c trust-certs/CUCM861.der

```


마지막으로 GUI에서 펍의 tomcat-trust 인증서를 확인할 수 있습니다. GUI는 데이터베이스가 아닌 파일 시스템에서 읽은 인증서를 표시합니다.

Show ▾ Settings ▾ Security ▾ Software Upgrades ▾ Services ▾ Help ▾

Certificate Configuration

 Delete  Download

Status


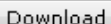
 Status: Ready

Certificate Settings

File Name	CUCM861.pem
Certificate Name	tomcat-trust
Certificate Type	trust-certs
Certificate Group	product-cpi
Description	Trust Certificate

Certificate File Data

```
[
  Version: V3
  Serial Number: 88769680872451706773275250466208361017
  Signature Algorithm: SHA1withRSA (1.2.840.113549.1.1.5)
  Issuer Name: L=KRAKOW, ST=MALOPOLSKA, CN=CUCM861, OU=TAC, O=CISCO, C=PL
  Validity From: Sat Aug 02 23:36:44 CEST 2014
  To: Thu Aug 01 23:36:43 CEST 2019
  Subject Name: L=KRAKOW, ST=MALOPOLSKA, CN=CUCM861, OU=TAC, O=CISCO, C=PL
  Key: RSA (1.2.840.113549.1.1.1)
  Key value:
  3082010a0282010100b46ce5c17323962babf797a031ecda073e02163e38f79600766c439fb1dd35d7891439fd2b88c9de9514b6
  f00fa42db0511eca717a9b7996558b6d5c7d5df6b97b338fc8f3524c78c5129495f19a56dd3436549ff338061844b99c93989a5f92
  0ac76cd245ebb2f38e0f0ca1ced2df87f8dd7f37c8f16561fc7a61d64a01f218eb6a23e56c95e91747299602b58e4512f37778028fd
  260029cc5def003768969c096b39880e677a2a008eb7517379717b5d45fb4ce8b9486921ef8828b58ec8348b2b41c34420401b4a
  28e4ee32b4c76dc8d590324d6774ac68f1a4ef54a0d6c277527ec4dc0223ea1457b152bd88c1178b0cedaa9c518512d3f92bae22
  d432b0203010001
  Extensions: 3 present
  [
    Extension: KeyUsage (OID.2.5.29.15)
    Critical: false
    Usages: digitalSignature, keyEncipherment, dataEncipherment, keyAgreement, keyCertSign,
  ]
  [
    Extension: ExtKeyUsageSyntax (OID.2.5.29.37)
    Critical: false
    Usage oids: 1.3.6.1.5.5.7.3.1, 1.3.6.1.5.5.7.3.2, 1.3.6.1.5.5.7.3.5,
  ]
]
```

 Delete  Download

이렇게 하면 게시자 노드에서 tomcat 인증서를 재생성하는 프로세스가 종료되고 클러스터 전체에 이 변경 내용이 전파됩니다.

5. 문제 해결

5.A알려진 주의 사항 - 분류

아래에는 인증서 및 CM과 관련된 일반적인 결함 목록이 있습니다.

A. 인증서 변경 사항의 잘못된 전파와 관련된 경우:

- [CSCu178787](#) - CertCN 서비스를 중지한 후에도 CM 9.1에서 신뢰 인증서를 삭제할 수 없음
- [CSCto86463](#) - 삭제된 인증서가 다시 나타납니다. CUCM에서 인증서를 제거할 수 없습니다.
- [CSCth79451](#) - 호스트 이름/IP를 변경하는 동안 인증서 DB 항목을 업데이트해야 합니다.

[CSCup28852](#) - 다중 서버 인증서 사용 시 인증서 업데이트 때문에 7분마다 전화 재설정

B. DRS 작업 중 발견:

[CSCtn50405](#) - CUCM DRF 백업이 인증서를 백업하지 않음

[CSCtt95983](#) - CAPF 인증서가 DRF로 백업/복원되지 않음

[CSCup71297](#) - DRS 복구 후 잘못된 인증서 업데이트

C. 기타 및 문서:

[CSCup54818](#) - [DOC] CA가 서명한 인증서(키 크기 >=4096)는 혼합 모드에서 지원되지 않습니다.

[CSCud49047](#) - 인증서 변경 알림 서비스 로그를 다운로드하는 RTMT 옵션

[CSCup88555](#) - 새 인증서를 업로드하는 동안 일련 번호 길이를 확인해야 함

5.B. 팁 및 요령

a. 데이터베이스에 해당 인증서 유형과 일치하는 테이블이 하나 있습니다. 이러한 열거는 인증서 관련 DB 쿼리(CM/certCN 로그, 테이블 CERTIFICATEPROCESSNODEMAP)에서 자주 볼 수 있습니다. 이러한 매핑을 얻으려면 TYPECERTIFICATESERVICE를 살펴봐야 합니다.

```
admin:run sql select * from TYPECERTIFICATESERVICE
enum name                moniker                                usestruststore
====  =====
1    Phone-trust          CERTIFICATE_SERVICE_PHONE_TRUST       t
2    Phone-VPN-trust      CERTIFICATE_SERVICE_PHONE_VPN_TRUST   t
3    CallManager          CERTIFICATE_SERVICE_CALLMANAGER       f
4    CallManager-trust    CERTIFICATE_SERVICE_CALLMANAGER_TRUST t
5    tomcat                CERTIFICATE_SERVICE_TOMCAT            f
6    tomcat-trust         CERTIFICATE_SERVICE_TOMCAT_TRUST      t
7    ipsec                 CERTIFICATE_SERVICE_IPSEC             f
8    ipsec-trust          CERTIFICATE_SERVICE_IPSEC_TRUST       t
9    CAPF                 CERTIFICATE_SERVICE_CAPF              f
10   CAPF-trust            CERTIFICATE_SERVICE_CAPF_TRUST        t
11   TVS                  CERTIFICATE_SERVICE_TV                 f
12   TVS-trust            CERTIFICATE_SERVICE_TV                 t
13   directory-trust      CERTIFICATE_SERVICE_DIRECTORY_TRUST   t
14   Phone-SAST-trust     CERTIFICATE_SERVICE_PHONE_SAST_TRUST  t
15   Phone-CTL-trust     CERTIFICATE_SERVICE_PHONE_CTL_TRUST   t
16   userlicensing-trust  CERTIFICATE_SERVICE_USERLICENSING_TRUST t
```

b. DB를 쿼리하고 모든 인증서를 나열해야 한다고 가정합니다. 쿼리는 인증서의 pkid 및 일련 번호, IP 및 노드 이름, 인증서의 유형 및 주체 이름을 반환해야 합니다. 아래 항목을 확인하십시오.

```
sql select CERTIFICATE.pkid, CERTIFICATE.serialnumber,
CERTIFICATE.processnodemap.ipv4address, CERTIFICATEPROCESSNODEMAP.servername,
TYPECERTIFICATESERVICE.NAME, CERTIFICATEPROCESSNODEMAP inner join
CERTIFICATE ON CERTIFICATEPROCESSNODEMAP.fkcertificate=PKID INNER
CERTIFICATEPARTICEPARTICERVICECATECERTIFICATE CERTIERCERTIFICATE ON
FICATEMAP.fkcertificate=CERTIFICATE.pkid JOIN TYPECERTIFICATESERVICE ON
TYPECERTIFICATESERVICE.enum=CERTIFICATECERVICECERTIFICATEMAP.tkcertificatesC
ERTIFICATEPROCESSNODEMAP.servername에 의한 서비스 주문
```

아래 코드 조각에서 찾을 수 있는 샘플 결과입니다.

```
admin:run sql select CERTIFICATE.pkid, CERTIFICATE.serialnumber,
```


https://www.verisign.com/rpa (c)10,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
a6b18f66-bf72-261d-8ecd-bfcea02add4e 68052e2e9cd6c979079e6449ff873031 10.48.46.29 CUCM861
tomcat-trust L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861s,OU=TAC,O=CISCO,C=PL
3c241de1-2eec-e63a-667c-c07147e298d5 5ff87b282b54dc8d42a315b568c9adff 10.48.46.29 CUCM861
CallManager-trust CN=Cisco Root CA 2048,O=Cisco Systems
6fe4bd7d-76fe-1d19-4e5e-9cfa4f073487 692c45e5f81da30a779e73907e17ef7f 10.48.46.29 CUCM861
CAPF L=KRAKOW,ST=MALOPOLSKA,CN=CAPF-8480bdc7,OU=TAC,O=CISCO,C=PL
3c241de1-2eec-e63a-667c-c07147e298d5 5ff87b282b54dc8d42a315b568c9adff 10.48.46.29 CUCM861
CAPF-trust CN=Cisco Root CA 2048,O=Cisco Systems
6fe4bd7d-76fe-1d19-4e5e-9cfa4f073487 692c45e5f81da30a779e73907e17ef7f 10.48.46.29 CUCM861
CallManager-trust L=KRAKOW,ST=MALOPOLSKA,CN=CAPF-8480bdc7,OU=TAC,O=CISCO,C=PL
5a4e9685-e9c4-dc52-586d-a36c927208b5 7612f960153d6f9f4e42202032b72356 10.48.46.29 CUCM861
CallManager-trust CN=CAP-RTP-001,O=Cisco Systems
3cf492fa-e88e-e751-040e-c31827870353 4a5d72eb7de2768c9d70260c8e3b4096 10.48.46.29 CUCM861
CallManager L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861s,OU=TAC,O=CISCO,C=PL
5a4e9685-e9c4-dc52-586d-a36c927208b5 7612f960153d6f9f4e42202032b72356 10.48.46.29 CUCM861
CAPF-trust CN=CAP-RTP-001,O=Cisco Systems
3cf492fa-e88e-e751-040e-c31827870353 4a5d72eb7de2768c9d70260c8e3b4096 10.48.46.29 CUCM861
Phone-SAST-trust L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861s,OU=TAC,O=CISCO,C=PL
e380b725-19b1-e3ec-71bf-1bb106d3d454 6a6967b3000000000003 10.48.46.29 CUCM861
CallManager-trust CN=Cisco Manufacturing CA,O=Cisco Systems
3cf492fa-e88e-e751-040e-c31827870353 4a5d72eb7de2768c9d70260c8e3b4096 10.48.46.29 CUCM861
CallManager-trust L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861s,OU=TAC,O=CISCO,C=PL
cc7b18b3-3a50-3dcb-578a-1ca50e076198 17226b84000000000012 10.48.46.29 CUCM861
CallManager
CN=CUCM861,OU=TAC,O=CISCO,L=KRAKOW,ST=MALOPOLSKA,C=PL,2.5.4.5=#134034346262356539376665336362306
239323739666339333332636639373830303863623132316337356532316231623263663234616537656237363963323
935
cc7b18b3-3a50-3dcb-578a-1ca50e076198 17226b84000000000012 10.48.46.30 CUCM861s
CallManager-trust
CN=CUCM861,OU=TAC,O=CISCO,L=KRAKOW,ST=MALOPOLSKA,C=PL,2.5.4.5=#134034346262356539376665336362306
239323739666339333332636639373830303863623132316337356532316231623263663234616537656237363963323
935
cc7b18b3-3a50-3dcb-578a-1ca50e076198 17226b84000000000012 10.48.46.30 CUCM861s
Phone-SAST-trust
CN=CUCM861,OU=TAC,O=CISCO,L=KRAKOW,ST=MALOPOLSKA,C=PL,2.5.4.5=#134034346262356539376665336362306
239323739666339333332636639373830303863623132316337356532316231623263663234616537656237363963323
935
a2735f97-cbc0-81f6-dadf-c145b657b22e 59dacc01be1dbe84541bc8193a09267e 10.48.46.30 CUCM861s
CallManager-trust L=KRAKOW,ST=MALOPOLSKA,CN=CAPF-91e6eb10,OU=TAC,O=CISCO,C=PL
a2735f97-cbc0-81f6-dadf-c145b657b22e 59dacc01be1dbe84541bc8193a09267e 10.48.46.30 CUCM861s
CAPF L=KRAKOW,ST=MALOPOLSKA,CN=CAPF-91e6eb10,OU=TAC,O=CISCO,C=PL
a2735f97-cbc0-81f6-dadf-c145b657b22e 59dacc01be1dbe84541bc8193a09267e 10.48.46.30 CUCM861s
CAPF-trust L=KRAKOW,ST=MALOPOLSKA,CN=CAPF-91e6eb10,OU=TAC,O=CISCO,C=PL
9cbcb782-c37d-6f63-7608-2f51a683ceb6 609bf431ad462fe12b4c571866458dee 10.48.46.30 CUCM861s
ipsec L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
9cbcb782-c37d-6f63-7608-2f51a683ceb6 609bf431ad462fe12b4c571866458dee 10.48.46.30 CUCM861s
ipsec-trust L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
533dbbfc-78ce-b46f-7d64-cd2b7c536f6d 42c86b2cf293630fe27bbddc7fd02a39 10.48.46.30 CUCM861s
tomcat L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
533dbbfc-78ce-b46f-7d64-cd2b7c536f6d 42c86b2cf293630fe27bbddc7fd02a39 10.48.46.30 CUCM861s
tomcat-trust L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
839d761f-f8e8-695b-bf1d-d08ce93b621e 6ecc7aa5a7032009b8cebcf4e952d491 10.48.46.30 CUCM861s
tomcat-trust CN=VeriSign Class 3 Secure Server CA - G3,OU=Terms of use at
https://www.verisign.com/rpa (c)10,OU=VeriSign Trust Network,O=VeriSign\, Inc.,C=US
3c241de1-2eec-e63a-667c-c07147e298d5 5ff87b282b54dc8d42a315b568c9adff 10.48.46.30 CUCM861s
CallManager-trust CN=Cisco Root CA 2048,O=Cisco Systems
3c241de1-2eec-e63a-667c-c07147e298d5 5ff87b282b54dc8d42a315b568c9adff 10.48.46.30 CUCM861s
CAPF-trust CN=Cisco Root CA 2048,O=Cisco Systems
5a4e9685-e9c4-dc52-586d-a36c927208b5 7612f960153d6f9f4e42202032b72356 10.48.46.30 CUCM861s
CallManager-trust CN=CAP-RTP-001,O=Cisco Systems
5a4e9685-e9c4-dc52-586d-a36c927208b5 7612f960153d6f9f4e42202032b72356 10.48.46.30 CUCM861s
CAPF-trust CN=CAP-RTP-001,O=Cisco Systems
e380b725-19b1-e3ec-71bf-1bb106d3d454 6a6967b3000000000003 10.48.46.30 CUCM861s

```

CallManager-trust CN=Cisco Manufacturing CA,O=Cisco Systems
cc7b18b3-3a50-3dcb-578a-1ca50e076198 17226b8400000000012 10.48.46.30 CUCM861s
CallManager
CN=CUCM861,OU=TAC,O=CISCO,L=KRAKOW,ST=MALOPOLSKA,C=PL,2.5.4.5=#134034346262356539376665336362306
23932373966633933332636639373830303863623132316337356532316231623263663234616537656237363963323
935
3cf492fa-e88e-e751-040e-c31827870353 4a5d72eb7de2768c9d70260c8e3b4096 10.48.46.30 CUCM861s
Phone-SAST-trust L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861s,OU=TAC,O=CISCO,C=PL
664b66c9-485c-aedf-9848-ed34616b8fe7 1461af2a00000000000a 10.48.46.30 CUCM861s
CallManager-trust
CN=TVGRTHC501,1.2.840.113549.1.9.2=#130a54564752544843353031,1.2.840.113549.1.9.8=#130d31302e313
0362e36352e323130,2.5.4.5=#130b46474c3137343732353241
6fe4bd7d-76fe-1d19-4e5e-9cfa4f073487 692c45e5f81da30a779e73907e17ef7f 10.48.46.30 CUCM861s
CallManager-trust L=KRAKOW,ST=MALOPOLSKA,CN=CAPF-8480bdc7,OU=TAC,O=CISCO,C=PL
3cf492fa-e88e-e751-040e-c31827870353 4a5d72eb7de2768c9d70260c8e3b4096 10.48.46.30 CUCM861s
CallManager-trust L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861s,OU=TAC,O=CISCO,C=PL
6fe4bd7d-76fe-1d19-4e5e-9cfa4f073487 692c45e5f81da30a779e73907e17ef7f 10.48.46.30 CUCM861s
CAPF L=KRAKOW,ST=MALOPOLSKA,CN=CAPF-8480bdc7,OU=TAC,O=CISCO,C=PL
3cf492fa-e88e-e751-040e-c31827870353 4a5d72eb7de2768c9d70260c8e3b4096 10.48.46.30 CUCM861s
CallManager L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861s,OU=TAC,O=CISCO,C=PL
6fe4bd7d-76fe-1d19-4e5e-9cfa4f073487 692c45e5f81da30a779e73907e17ef7f 10.48.46.30 CUCM861s
CAPF-trust L=KRAKOW,ST=MALOPOLSKA,CN=CAPF-8480bdc7,OU=TAC,O=CISCO,C=PL
648651b6-f175-8307-7d19-810061b27eed 7da8a70fe1b3a9bebe2f85000498d935 10.48.46.30 CUCM861s
ipsec L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861s,OU=TAC,O=CISCO,C=PL
0c27516c-bb4e-dc88-0bb9-f672394b265f 5de78d9912f1d88be14b2472c6eb1865 10.48.46.30 CUCM861s TVS
L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861s,OU=TAC,O=CISCO,C=PL
b98fc2a9-ffc1-31b2-f793-701a4b4b59c4 6cdbac937a099bf9eaf8324de5440ff4 10.48.46.30 CUCM861s
CallManager-trust L=KRAKOW,ST=MALOPOLSKA,CN=CAPF-0087c0a5,OU=TAC,O=CISCO,C=PL
a6b18f66-bf72-261d-8ecd-bfcea02add4e 68052e2e9cd6c979079e6449ff873031 10.48.46.30 CUCM861s
tomcat-trust L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861s,OU=TAC,O=CISCO,C=PL
a6b18f66-bf72-261d-8ecd-bfcea02add4e 68052e2e9cd6c979079e6449ff873031 10.48.46.30 CUCM861s
tomcat L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861s,OU=TAC,O=CISCO,C=PL
33a86281-4f7e-2833-0c4e-12a9259b5fea 484c2e9b1996a63e45e57dc067d68ec2 10.48.46.30 CUCM861s
Phone-SAST-trust L=Krakow,ST=Malopolska,CN=CUCM9X,OU=TAC,O=Cisco Systems,C=PL
311830a0-8b8d-2216-7037-f60940976dcd 353fb24bd70f14a346c1f3a9ac725675 10.48.46.30 CUCM861s
CAPF-trust CN=CAP-RTP-002,O=Cisco Systems
3fb48b23-84e7-cecf-dd24-e38cbd32c20f 6249ccbdf4df00155ddcd482dac43e6 10.48.46.30 CUCM861s
Phone-SAST-trust L=KRAKOW,ST=MALOPOLSKA,CN=CUCM861,OU=TAC,O=CISCO,C=PL
311830a0-8b8d-2216-7037-f60940976dcd 353fb24bd70f14a346c1f3a9ac725675 10.48.46.30 CUCM861s
CallManager-trust CN=CAP-RTP-002,O=Cisco Systems
0c879119-476e-c608-049c-03710c47cdd2 5a82be1ec30346af4c295fb8fc41a7f7 10.48.46.30 CUCM861s
CallManager-trust CN=ciscolab-AD-CA,DC=cisco,DC=lab
e380b725-19b1-e3ec-71bf-1bb106d3d454 6a6967b3000000000003 10.48.46.30 CUCM861s
CAPF-trust CN=Cisco Manufacturing CA,O=Cisco Systems

```

위의 기능은 DB와 파일 시스템 간의 인증서 동기화 문제를 해결할 때 매우 유용합니다.

c. 인증서 만료 날짜를 확인하려면 OpenSSL 명령을 사용할 수 있습니다(루트 필요).

출력 예:

```

[root@CUCM861 certs]# openssl x509 -noout -dates -in tomcat.pem
notBefore=Aug 2 21:36:44 2014 GMT
notAfter=Aug 1 21:36:43 2019 GMT
[root@CUCM861 certs]#

```

d. 데이터베이스에 있는 인증서에 대해 위와 동일하게 확인하려는 인증서의 일련 번호 또는 PKID를 알아야 합니다.작업을 수행하려면 두 개의 bash 명령을 실행해야 합니다(이 작업을 수행하기 전에 "su - informix"를 수행해야 합니다).

```
echo "unload to 'cert_dumped_to_file' delimiter " " serialnumber = '6a6967b3000000000003'"|dbaccess -e ccm9_1_2_10000_28
```

위에서 SQL 명령 출력이 저장되는 **cert_dumped_to_file** 파일을 생성합니다. 중요한 것은 데이터베이스의 올바른 이름을 사용하는 것입니다. DB 연결을 선택하는 동안 dbaccess 도구에서 찾을 수 있습니다.

두 번째 명령은 날짜를 표시하는 데 사용됩니다.

```
sed 's/\\/g' cert_dump_to_file | openssl x509 -noout -dates
```

출력 예:

```
[root@CUCM861 certs]# su - informix
-bash-3.2$ echo "unload to 'cert_dumped_to_file' delimiter " " select certificate from certificate where serialnumber = '6a6967b3000000000003'"|dbaccess -e ccm9_1_2_10000_28
```

Database selected.

```
unload to 'cert_dumped_to_file' delimiter      select certificate from certificate where
serialnumber = '6a6967b3000000000003'
```

1 row(s) unloaded.

Database closed.

```
-bash-3.2$ sed 's/\\/g' cert_dumped_to_file | openssl x509 -noout -dates
notBefore=Jun 10 22:16:01 2005 GMT
notAfter=May 14 20:25:42 2029 GMT
```

5.C.CCM 서비스 인증서 확인

서비스인 CallManager는 전화 또는 게이트웨이와 성공적인 TLS/SSL 핸드셰이크에 대한 클라이언트 인증서를 확인해야 합니다.

오류는 OpenSSL 라이브러리를 참조하는 오류 코드와 함께 SDL/SDI 추적에서 찾을 수 있습니다.

```
00370874.000 |09:50:27.713 |AppInfo |sdlSSLTCPLListener::verify_cb pre-verified=0,cert
verification erno=20,depth=0
00370875.000 |09:50:27.713 |AppInfo |HandleSSLSError - 인증서 검증 실패: (확인 오류:20)-
192.168.255.95:52089에 대한 로컬 발급자 인증서를 가져올 수 없습니다.
```

OpenSSL 오류 코드 목록:

<https://www.openssl.org/docs/apps/verify.html#DIAGNOSTICS>

CA 서명 인증서를 생성할 때 CSR에서 요청한 대로 올바른 키 사용을 통해 인증서가 생성되었는지 확인합니다. 그렇지 않으면 올바르게 확인되지 않을 수 있습니다.

http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/cucos/8_6_1/cucos/osg_861_cm/iptpc_h6.html#wp1055278

CUCM은 인증서 작업에 openssl 라이브러리를 사용하므로 루트 아래에서 인증서를 수동으로 확인할 수 있습니다. 외부 CA에서 서명한 Tomcat 인증서의 예는 다음과 같습니다.

```
[root@cucmpub trust-certs]# ls -l e87b20d3.0
lrwxrwxrwx 1 certbase ccmbase 31 Jul 8 00:01
e87b20d3.0 -> molszowy-WIN-V8HGEMMBHOU-CA.pem
```

```
[root@cucmpub trust-certs]# cd /usr/local/platform/.security/tomcat/certs
[root@cucmpub certs]# openssl verify -CApath /usr/local/platform/.security/tomcat/trust-certs
tomcat.pem
```

tomcat.pem: OK

5.D. Tomcat 트러스트 저장소 및 키 저장소 확인

Tomcat은 두 가지 SSL 구현을 사용할 수 있습니다.

- Java 런타임의 일부로 제공되는 JSSE 구현(1.4 이후)
- 기본적으로 OpenSSL 엔진을 사용하는 APR 구현입니다.

HTTPS 커넥터 컨피그레이션 아래에 있는 **server.xml**(/usr/local/thirdparty/jakarta-tomcat/conf) 컨피그레이션 파일에서 Tomcat에서 사용할 수 있는 SSL 구현을 체크 할 수 있습니다. 키 저장소는 JSSE 구현에서 사용되며, pem/der-form의 인증서는 APR 구현에서 사용됩니다.

```
<커넥터 SSLEnabled="true" URIEncoding="UTF-8" acceptCount="100" 암호
="TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384,TLS_ECDHE_RSA_WITH_AES_128_SHA_
256,TLS_RSA_WITH_AES_256_CBC_SHA,TLS_DHE_DSS_WITH_AES_256_CBC_SHA,TLS_RS
A_WITH_AES_128_CBC_SHA,TLS_DHE_RSA_WITH_RSA_RSA_WITH
_128_CBC_SHA,SSL_RSA_WITH_3DES_EDE_CBC_SHA,SSL_DHE_RSA_WITH_3DES_EDE_C
BC_SHA" clientAuth="false" disableUploadTimeout="true" enableKeystoreFile/local/platform"
/.security/tomcat/certs/tomcat.keystore" keystorePass="pPSTJpLa8QLuEpVp"
keystoreType="PKCS12" maxHttpHeaderSize="8192" maxSpareThreads="150"
maxThreads="150" minSpareThreads="45" 포트="44" 3" protocol="HTTP/1.1" scheme="https"
secure="true" server=" " sessionTimeout="3600" sslProtocol="TLSv1.2"
sessionCacheSize="1000"/>
```

Tomcat에서 호스팅하는 웹 응용 프로그램 중 하나에 연결을 시작할 때 표시되는 인증서는 암호로 보호된 키 저장소에 있습니다.

```
/usr/local/platform/.security/tomcat/certs/tomcat.keystore
```

이 키 저장소는 OpenSSL utilite를 사용하여 액세스할 수 있으므로 내용을 확인할 수 있습니다.

```
openssl pkcs12 -in /usr/local/platform/.security/tomcat/certs/tomcat.keystore -info -password
file:/usr/local/platform/.security/tomcat/keys/tomcat.passphrase
```

위에서 제공된 명령의 출력에는 Tomcat 서비스의 pem 인코딩 인증서가 표시되며, keystorePass 이후 개인 키가 프롬프트에 입력됩니다.

아웃바운드 SSL 연결(예: IMS에서 LDAP에 대한 보안 연결)에 대한 인증서 검증이 필요한 Tomcat-hosted 서비스는 SSL 핸드셰이크 중에 서버에서 제공하는 인증서를 검증하기 위해 tomcat-trust.keystore를 신뢰 스토리지로 사용합니다.

신뢰 저장소 위치:

```
/usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore
```

신뢰 저장소에서 인증서 목록 가져오기:

```
openssl pkcs12 -in /usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore -info -  
password file:/usr/local/platform/.security/tomcat/keys/tomcat-trust.passphrase
```

신뢰 저장소에서 임시 파일로 인증서를 언로드하고 한꺼번에 모두 봅니다.

```
openssl pkcs12 -in /usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore -info -  
password file:/usr/local/platform/.security/tomcat/keys/tomcat-trust.passphrase 2>dev/null  
1>/root/tomcat-trust.pem
```

```
openssl crl2pkcs7 -nocrl -certfile /root/tomcat-trust.pem | openssl pkcs7 -print_certs -noout -text
```

신뢰 저장소에 있어야 하는 인증서가 없는 경우 키 저장소로 가져올 수 있습니다.

```
keytool -importcert -file somecert.pem -storetype pkcs12 -keystore  
/usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore -storepass $(cat  
/usr/local/platform/.security/tomcat/keys/tomcat-trust.passphrase)
```

전체 신뢰 저장소가 손상된 경우 다음 스크립트를 사용하여 복원할 수 있습니다.

```
#!/bin/bash
```

```
mv /usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore{,.bak}
```

```
passphrase=$(cat /usr/local/platform/.security/tomcat/keys/tomcat-trust.passphrase)
```

```
/usr/local/platform/.security/tomcat/trust-certs/*.pem에서 f
```

작업

```
echo "처리 $f"
```

```
/usr/local/thirdparty/java/j2sdk/bin/keytool -importcert -keystore
```

```
/usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore -alias "$(basename
```

```
`${f%*.pem}`)" -noprompt -storepass $storetype pkcs12 -providername JsafeJCE -providerclass
```

```
com.rsa.jsafe.provider.jsafeJCE -providerpath /usr/local/thirdparty/java/cryptojFIPS.jar -file "$f"
```

완료

```
cown cerbase:ccmbase /usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore
```

```
chmod 755 /usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore
```

```
- 참조=/usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore.bak
```

```
/usr/local/platform/.security/tomcat/trust-certs/tomcat-trust.keystore
```

스크립트 텍스트를 파일에 저장하고 다음과 같은 방법으로 실행할 수 있습니다.

```
bash /root/truststore_repair.sh
```