CUCM Third−Party CA−Signed LSCs Generation and Import Configuration Example

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Introduction

Certificate Authority Proxy Function (CAPF) Locally Significant Certificates (LSCs) are locally−signed. However, you might require phones to use third−party Certificate Authority (CA)−signed LSCs. This document describes a procedure that helps you achieve this.

Prerequisites

Requirements

Cisco recommends that you have knowledge of Cisco Unified Communication Manager (CUCM).

Components Used

The information in this document is based on CUCM Version 10.5(2); however, this feature works from Version 10.0 and later.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Configure

Here are the steps involved in this procedure, each of which is detailed in its own section:

1. Upload the CA−Root Certificate
2. Set Offline CA for Certificate Issue to Endpoint
3. Generate a Certificate Signing Request (CSR) for the Phones
4. Get the Generated CSR from Cisco Unified Communications Manager (CUCM) to the FTP Server
5. Get the Phone Certificate from CA
6. Convert .cer to .der Format
7. Compress the Certificates (.der) to .tgz Format
8. Transfer the .tgz file to the Secure Shell FTP (SFTP) Server
9. Import the .tgz File to the CUCM Server
10. Sign the CSR With Microsoft Windows 2003 Certificate Authority
11. Get the Root Certificate from the CA

Upload the CA−Root Certificate

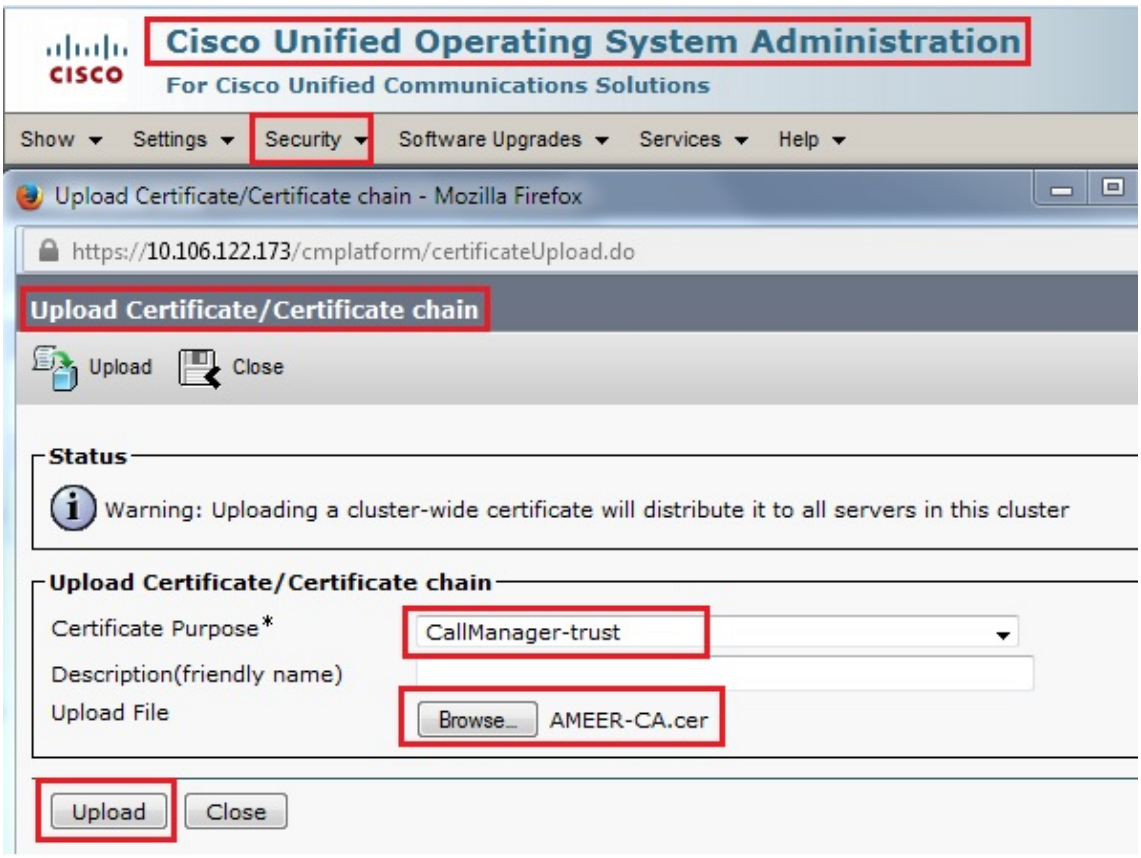
1. Log into the Cisco Unified Operating System (OS) Administration web GUI.

2. Navigate to ***Security Certificate Management***.

3. Click ***Upload Certificate/Certificate chain***.

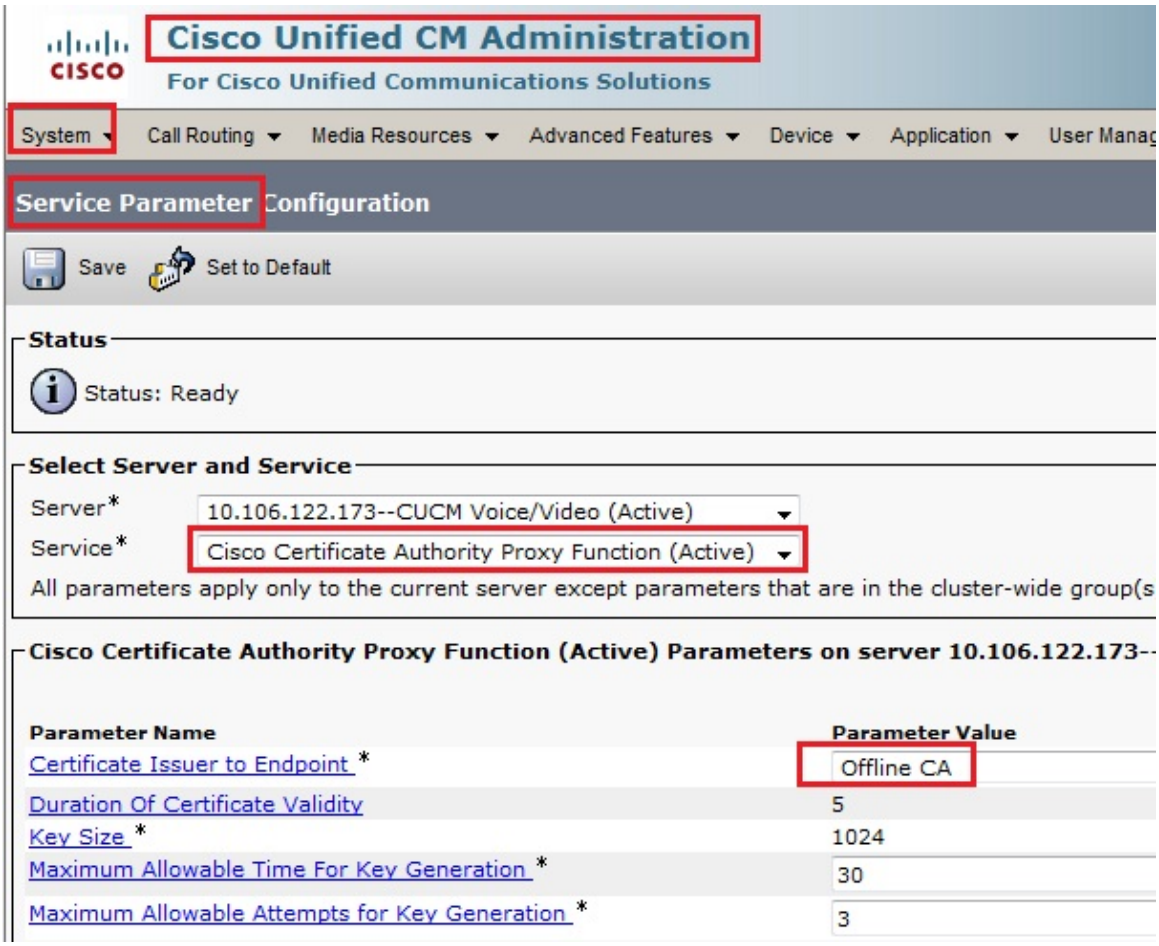
4. Choose ***CallManager−trust*** under Certificate Purpose.

5. Browse to the CA's root certificate and click ***Upload***.



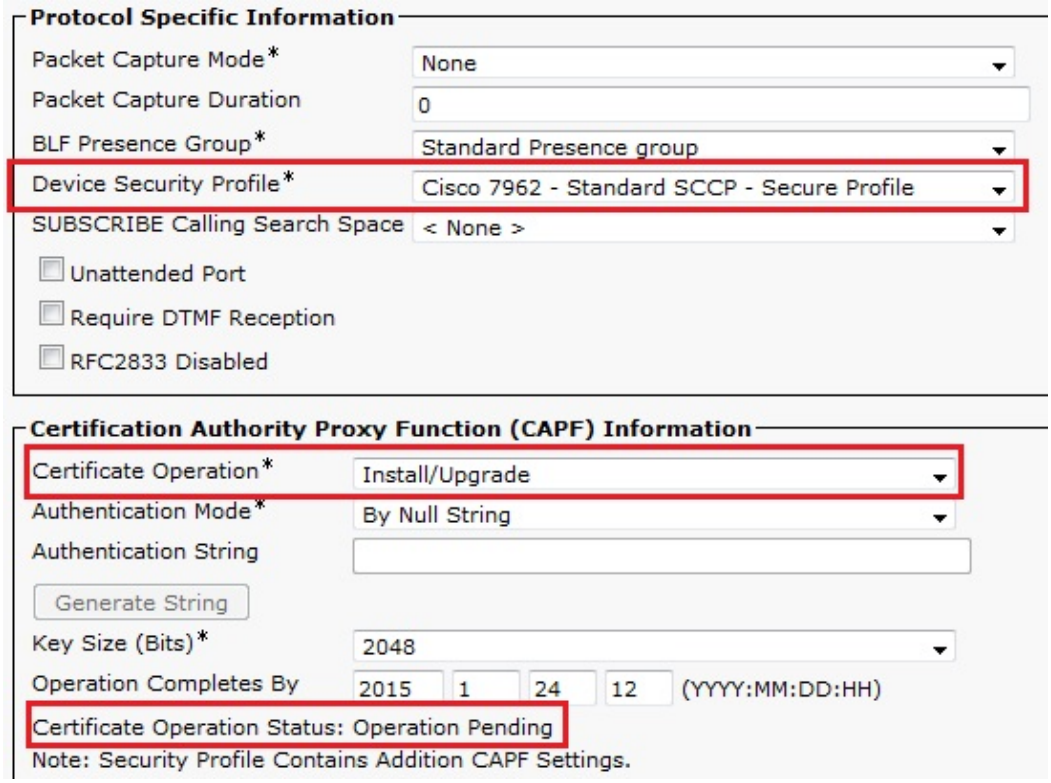
Set Offline CA for Certificate Issue to Endpoint

1. Log into the CUCM Administration web GUI.
2. Navigate to ***System*** > ***Service Parameter***.
3. Choose the CUCM Server and select ***Cisco Certificate Authority Proxy Function*** for the Service.
4. Select ***Offline CA*** for Certificate Issue to Endpoint.

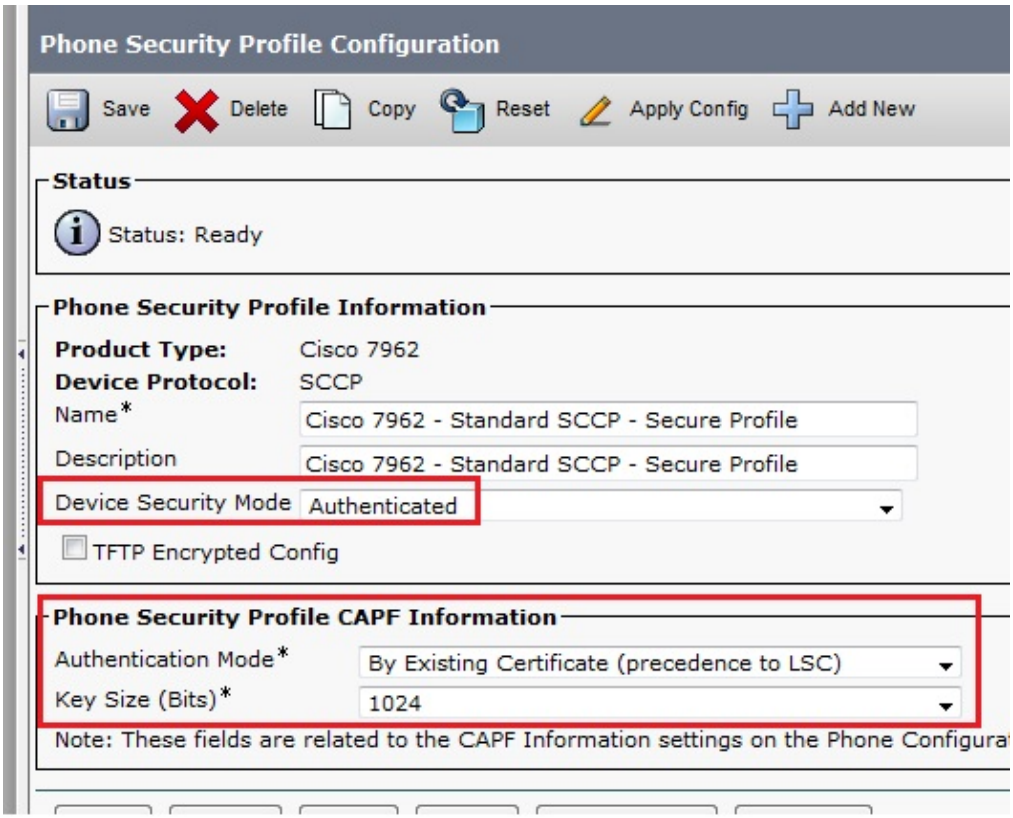


Generate a Certificate Signing Request (CSR) for the Phones

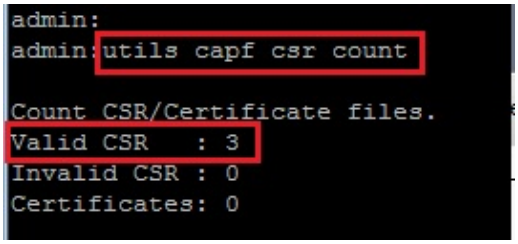
1. Log into the CUCM Administration web GUI.
2. Navigate to ***Device Phones***.
3. Choose the phone whose LSC must be signed by the external CA.
4. Change the Device security profile to a secured one (if not present, add one system on the Security Phone Security profile).
5. On the phone configuration page, under the CAPF section, choose ***Install/Upgrade*** for the Certification Operation. Complete this step for all of the phones whose LSC must be signed by the external CA. You should see ***Operation Pending*** for the Certificate Operation Status.



Phone Security profile (7962 model).



Enter the ***utils capf csr count*** command in the Secure Shell (SSH) session in order to confirm whether a CSR is generated. (This screen shot shows that a CSR was generated for three phones.)

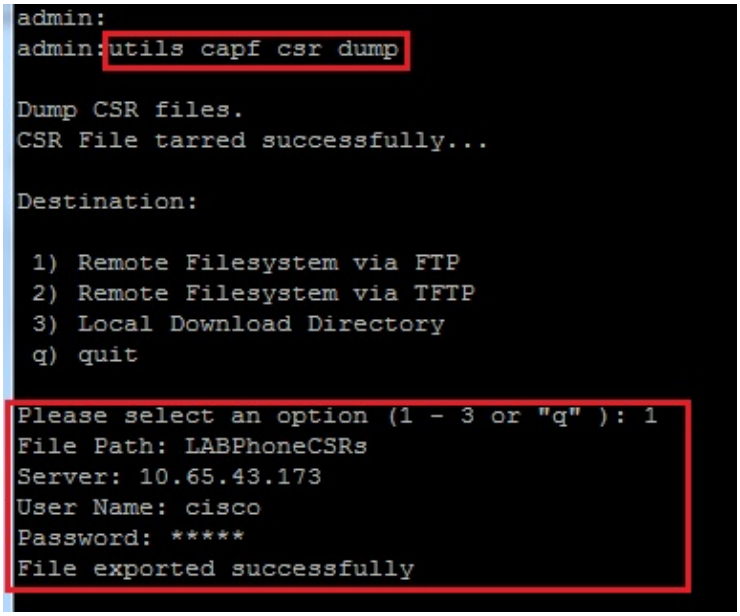


Note: The Certificate Operation Status under the phone's CAPF section remains in the ***Operation Pending*** state.

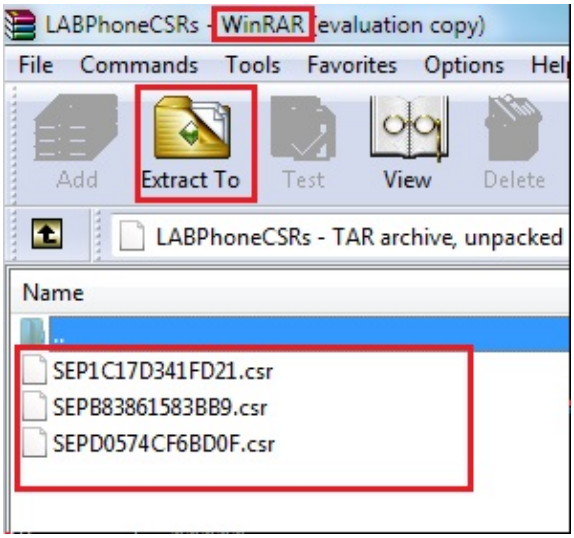
Get the Generated CSR from the CUCM to the FTP (or TFTP) Server

1. SSH into the CUCM server.

2. Execute the ***utils capf csr dump*** command. This screen shot shows the dump being transferred to the FTP.



3. Open the dump file with WinRAR and extract the CSR to your local machine.



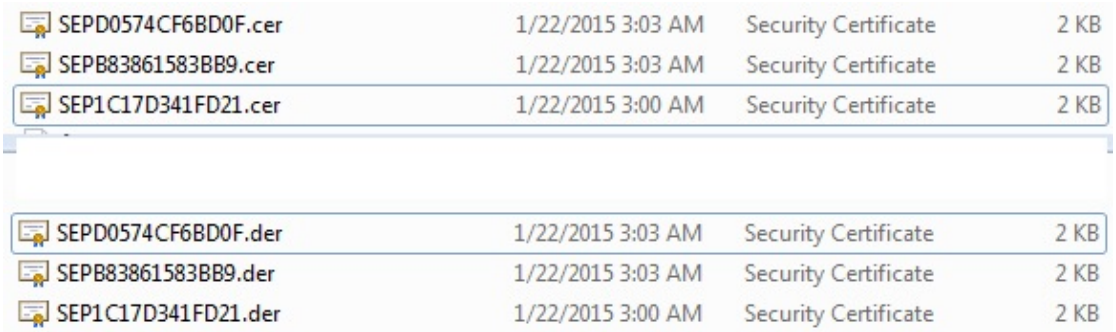
Get the Phone Certificate

1. Send the phone's CSRs to the CA.
2. The CA provides you with a signed certificate.

> ***Note***: You can use a Microsoft Windows 2003 server as the CA. The procedure to sign the CSR with a Microsft Windows 2003 CA is explained later in this document.

Convert .cer to .der Format

If the received certificates are in .cer format, then rename them to .der.



Compress the Certificates (.der) to .tgz Format

You can use CUCM server's root (Linux) in order to compress the certificate format. You can also do this in a normal Linux system.

1. Transfer all of the signed certificates to the Linux system with the SFTP server.

```
[root@cm1052 download]#
[root@cm1052 download]# sftp cisco@10.65.43.173
Connecting to 10.65.43.173...
cisco@10.65.43.173's password:
Hello, I'm freeFTPd 1.0sftp>
sftp> get *.der
Fetching /SEP1C17D341FD21.der to SEP1C17D341FD21.der
/SEP1C17D341FD21.der                                          100% 1087
Fetching /SEPB83861583BB9.der to SEPB83861583BB9.der
/SEPB83861583BB9.der                                          100% 1095
Fetching /SEPD0574CF6BD0F.der to SEPD0574CF6BD0F.der
/SEPD0574CF6BD0F.der                                          100% 1087
sftp>
sftp>
sftp> exit
[root@cm1052 download]# ls
cm-locale-de_DE-10.5.2.1000-1.cop.sgn.md5  copstart.sh  SEP1C17D341FD21.der  SEPD0574CF6BD0F.der
cm-locale-de_DE-10.5.2.1000-1.tar          phonecert     SEPB83861583BB9.der
[root@cm1052 download]#
```

2. Enter this command in order to compress all the .der certificates into a .tgz file.

tar -zcvf <file_name>.tgz   *.der

```
[root@cm1052 download]#
[root@cm1052 download]# tar -zcvf phoneDER.tgz *.der
SEP1C17D341FD21.der
SEPB83861583BB9.der
SEPD0574CF6BD0F.der
[root@cm1052 download]# ls
cm-locale-de_DE-10.5.2.1000-1.cop.sgn.md5  copstart.sh  phoneDER.tgz          SEPB83861583BB9.der
cm-locale-de_DE-10.5.2.1000-1.tar          phonecert     SEP1C17D341FD21.der  SEPD0574CF6BD0F.der
[root@cm1052 download]#
```

Transfer the .tgz File to the SFTP Server

Complete the steps shown in the screen shot in order to transfer the .tgz file to the SFTP server.

```
[root@cm1052 download]# sftp cisco@10.65.43.173
Connecting to 10.65.43.173...
cisco@10.65.43.173's password:
Hello, I'm freeFTPd 1.0sftp>
sftp>
sftp> put phoneDER.tgz
Uploading phoneDER.tgz to /phoneDER.tgz
phoneDER.tgz
sftp>
```

Import the .tgz File to the CUCM Server

1. SSH into the CUCM server.
2. Execute the ***utils capf cert import*** command.

```
admin:
admin utils capf cert import

Importing files.

Source:

 1) Remote Filesystem via FTP
 2) Remote Filesystem via TFTP
 q) quit

Please select an option (1 - 2 or "q" ): 1
File Path: phoneDER.tgz
Server: 10.65.43.173
User Name: cisco
Password: *****
Certificate file imported successfully
Certificate files extracted successfully.
Please wait. Processing 3 files
```

Once the certificates are imported successfully, then you can see the CSR count become zero.

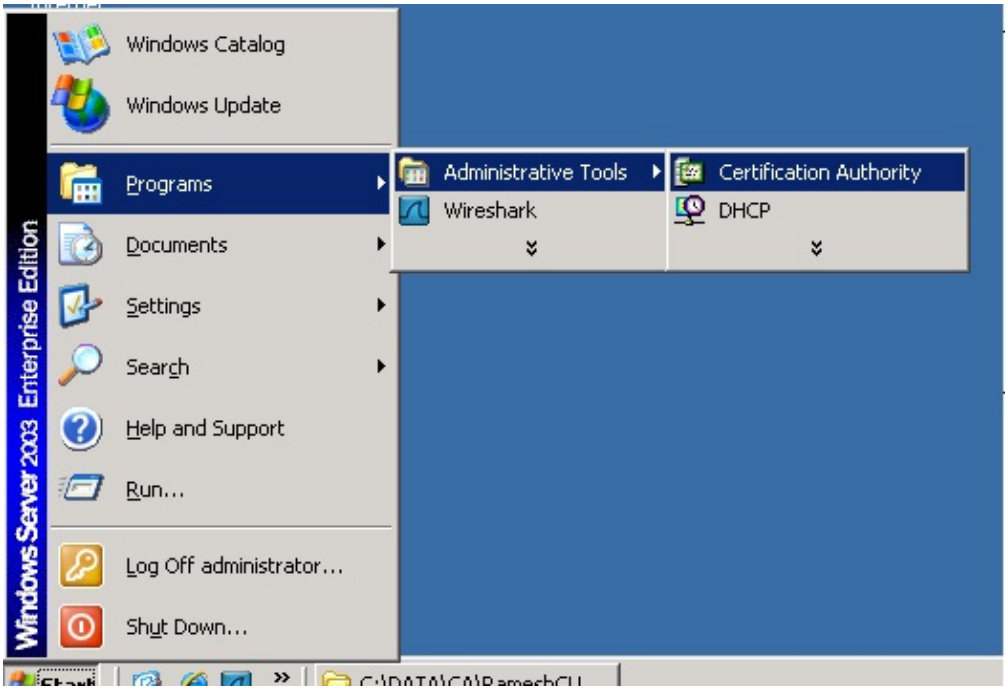
```
admin:
admin:utils capf csr count

Count CSR/Certificate files.
Valid CSR   : 0
Invalid CSR : 0
Certificates: 0
```

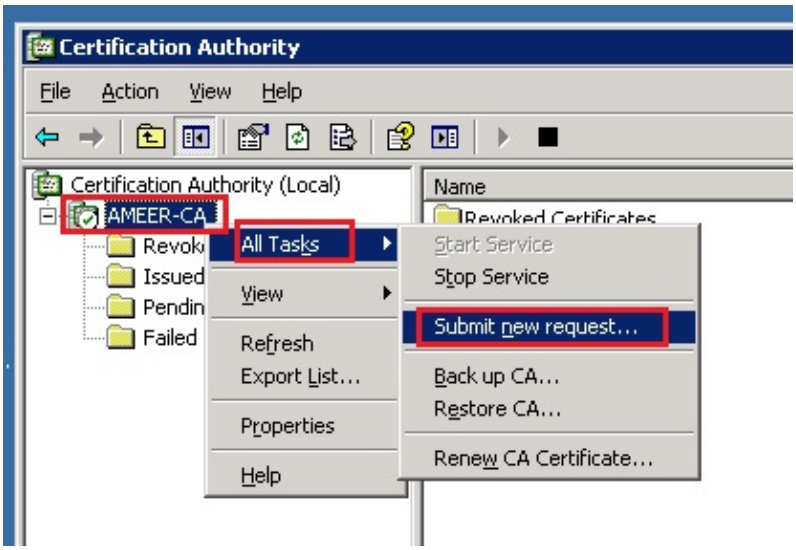
Sign the CSR With Microsoft Windows 2003 Certificate Authority

This is optional information for Microsoft Windows 2003 − CA.

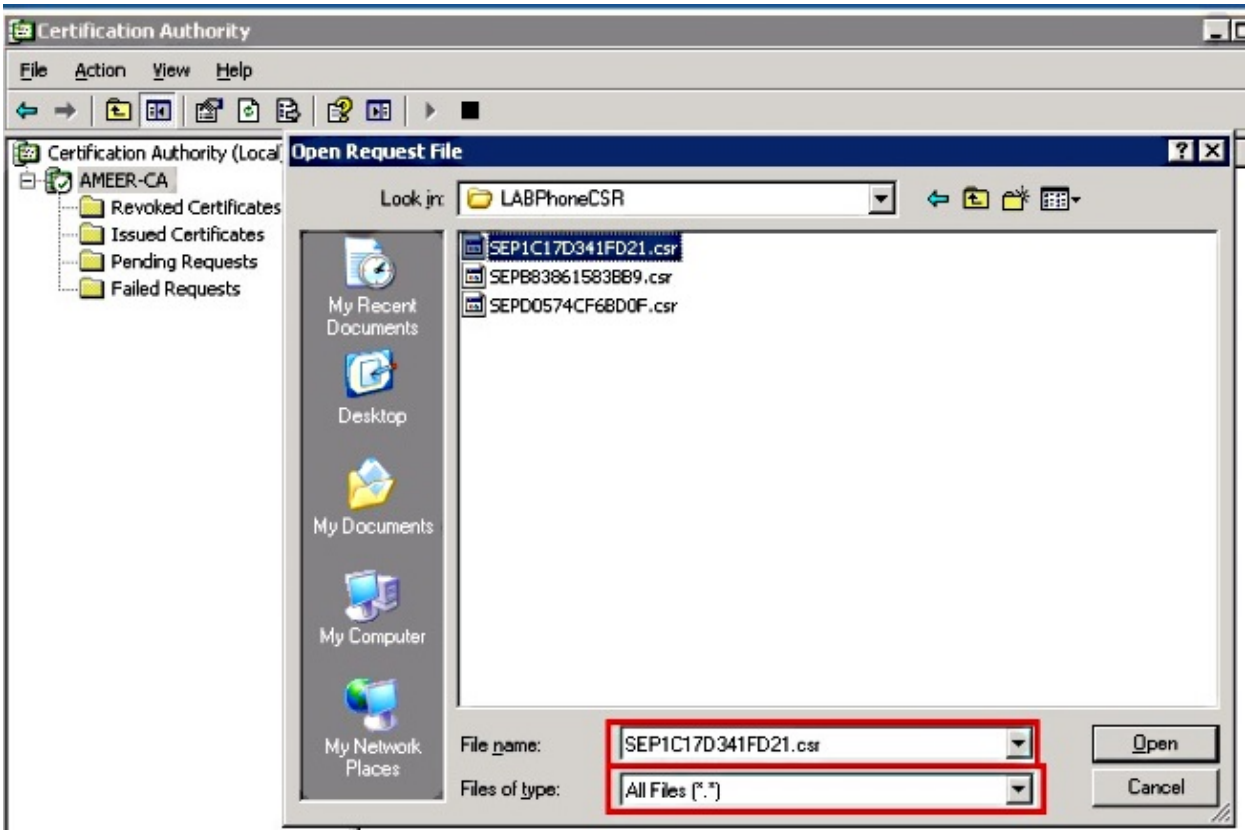
1. Open Certification Authority.



2. Right−click the CA and navigate to ***All Tasks > Submit new request...***

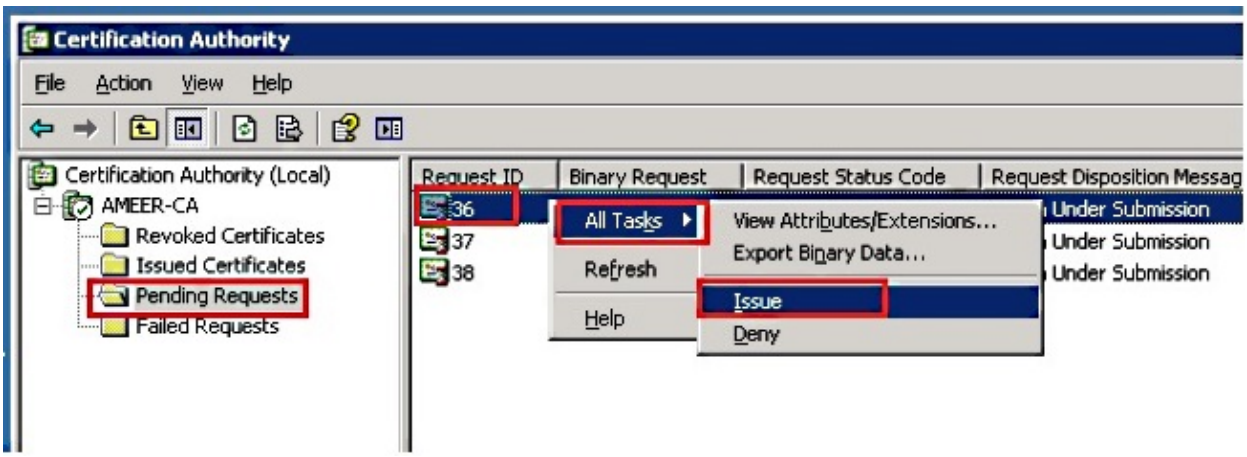


3. Select the CSR and click ***Open***. Do this for all the CSRs.



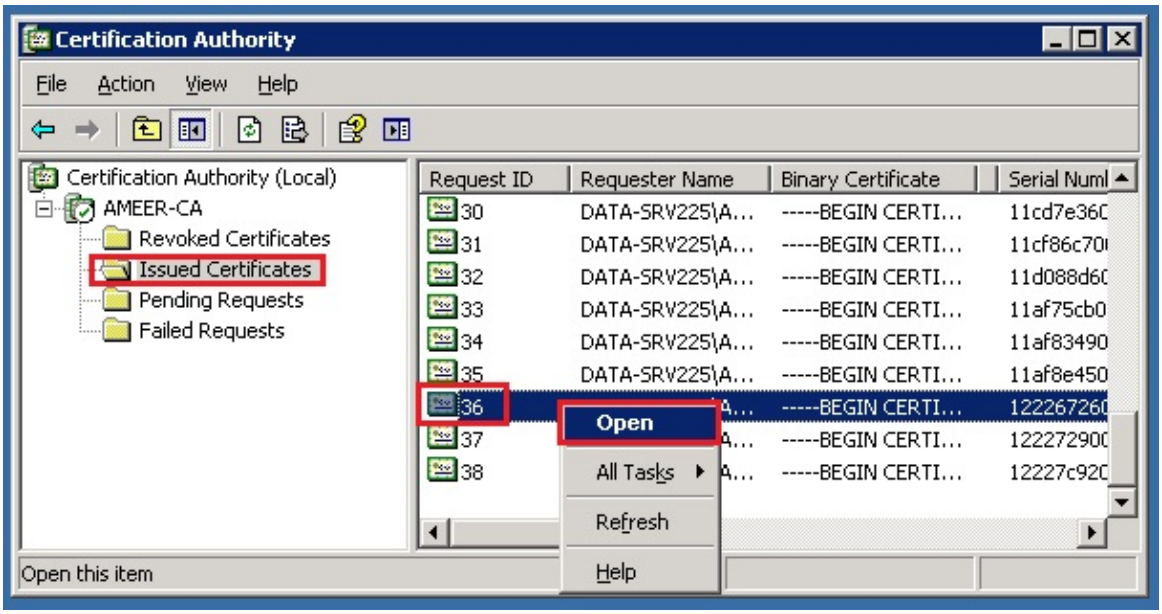
All of the opened CSR display in the Pending Requests folder.

4. Right−click each and navigate to ***All Tasks*** **>** ***Issue*** in order to issue certificates. Do this for all pending requests.

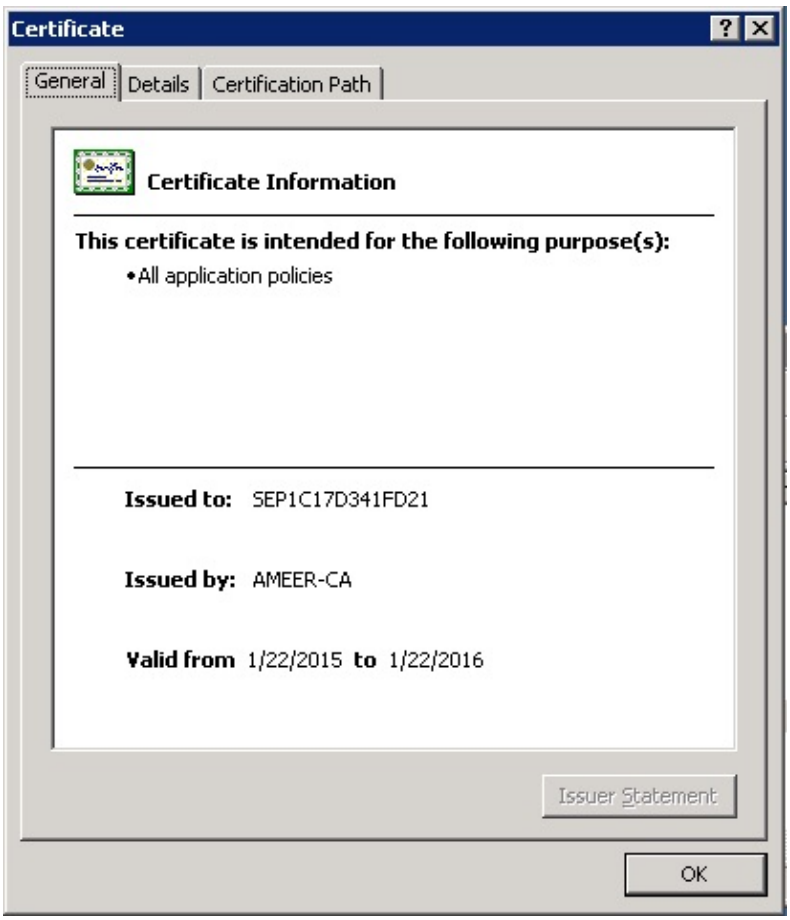


5. In order to download the certificate, choose ***Issued Certificate***.

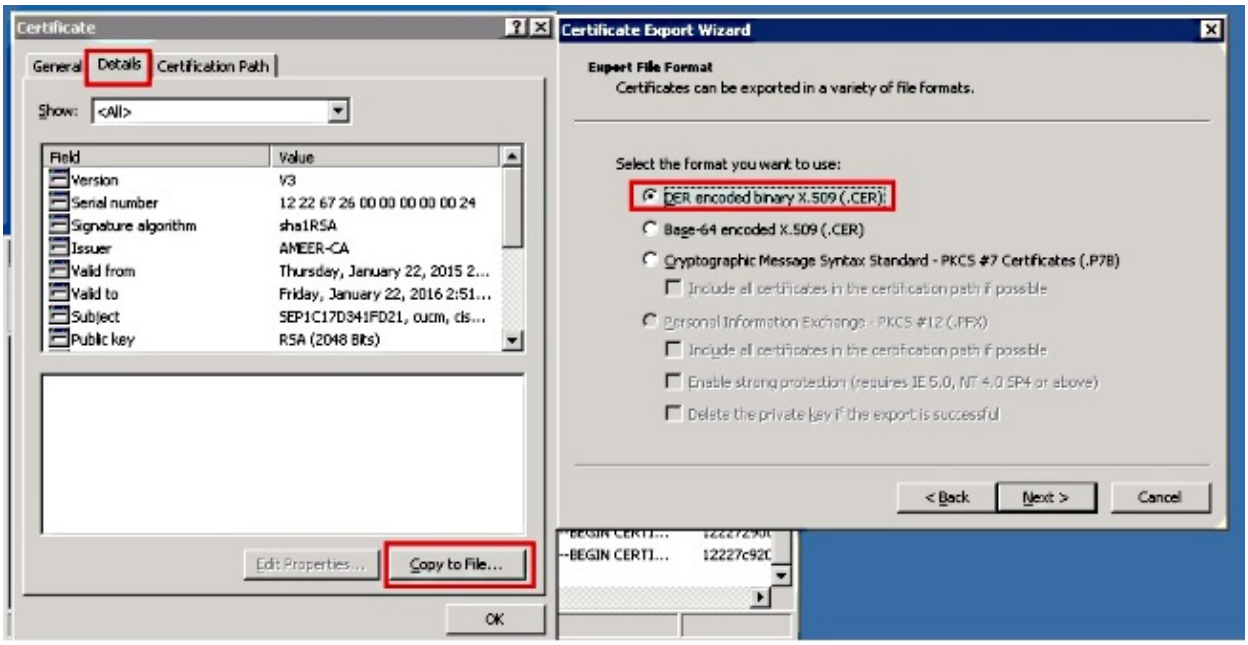
6. Right−click the certificate and click ***Open***.



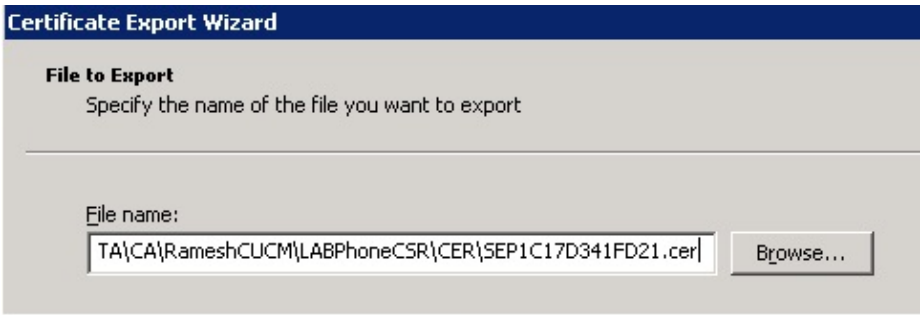
7. You can see the certificate details. In order to download the certificate, select the Details tab and choose ***Copy to File...***



8. In the Certificate Export Wizard, choose ***DER encoded binary X.509 (.CER)***.



9. Name the file something appropriate. This example uses <MAC>.cer format.

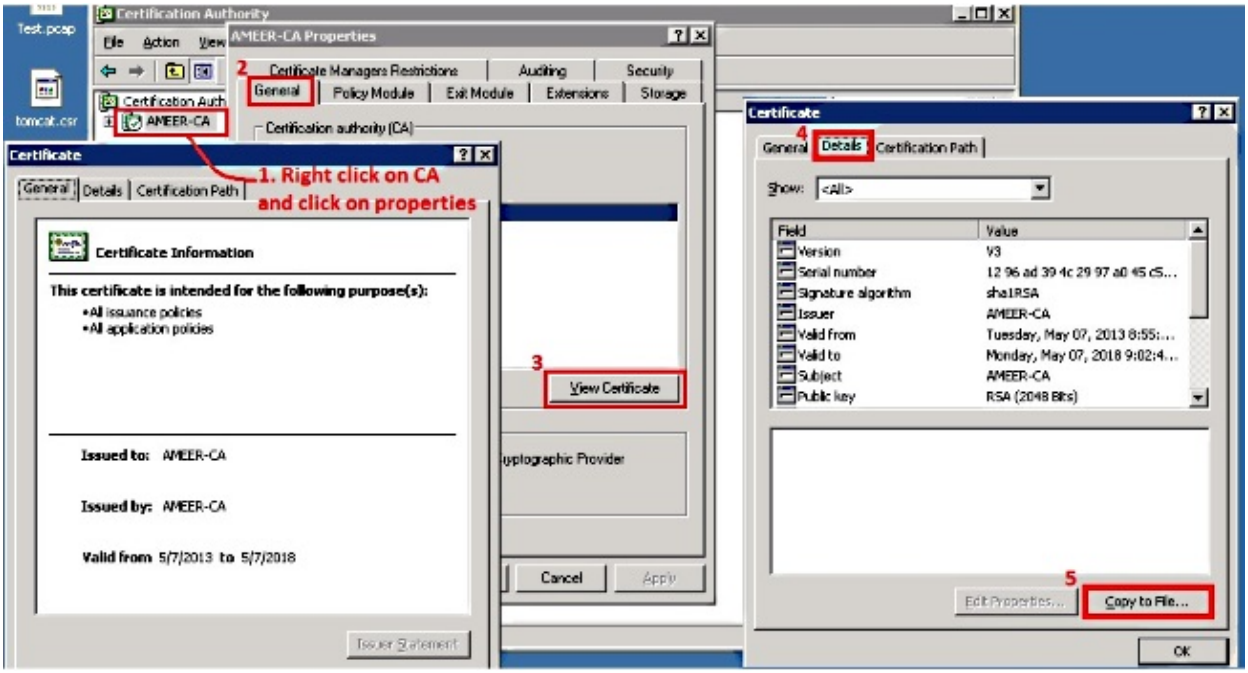


10. Get the certificates for other phones under the Issued Certificate section with this procedure.

Get the Root Certificate from the CA

1. Open ***Certification Authority***.

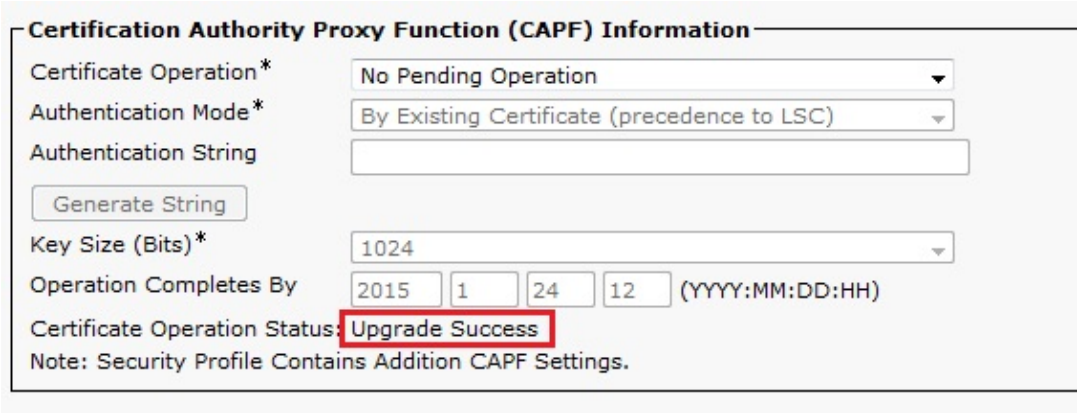
2. Complete the steps shown in this screen shot in order to download the root−CA.



Verify

Use this section in order to confirm that your configuration works properly.

1. Go to the phone configuration page.
2. Under the CAPF section, the Certificate Operation Status should display as ***Upgrade Success***.



Note: Refer to Generate and Import Third Party CA−Signed LSCs for more information.

Troubleshoot

There is currently no specific troubleshooting information available for this configuration.

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