Exchange Self-Signed Certificates in a PCCE 12.6 Solution

Contents

Introduction

This document describes how to exchange self-signed certificates in Cisco Packaged Contact Center Enterprise (PCCE) solution.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- PCCE Release 12.6(2)
- Customer Voice Portal (CVP) Release 12.6(2)
- Virtualized Voice Browser (VVB) 12.6(2)
- Admin Workstation / Administration Date Server (AW/ADS) 12.6(2)
- Cisco Unified Intelligence server (CUIC)
- Customer Collaboration Platform (CCP) 12.6(2)
- Enterprise Chat and Email (ECE) 12.6(2)

Components Used

The information in this document is based on these software versions:

- PCCE 12.6(2)
- CVP 12.6(2)

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, ensure that you understand the potential impact of any command.

Background

In PCCE solution from 12.x all devices are controlled via Single Pane of Glass (SPOG) which is hosted in the principal AW server. Due to security-management-compliance (SRC) from PCCE 12.5(1) version all the communication between SPOG and other servers in the solution are strictly done via secure HTTP protocol.

Certificates are used in order to achieve seamless secure communication between SPOG and the other devices. In a self-signed certificate environment, certificate exchange between the servers is a must.

Procedure

These are the the components from which self-signed certificates are exported and components into which self-signed certificates need to be imported.

(i) All AW/ADS Servers**:** These servers requires certificate from:

- Windows platform:
  - ICM: Router and Logger(Rogger){A/B}, Peripheral Gateway (PG){A/B}, all AW/ADS, and ECE servers.

Note: IIS and Diagnostic Framework Portico (DFP) are needed.

  - CVP: CVP servers, CVP Reporting server.

    Note: Web Service Management (WSM) certificate from all the servers are needed. Certificates must be with Fully Qualified Domain Name (FQDN).

- VOS Platform: Cloud Connect, Cisco Virtualized Voice Browser (VVB), Cisco Unified Communication Manager (CUCM), Finesse, Cisco Unified Intelligence Center (CUIC), Live Data (LD), Identity Server (IDS), and other applicable servers.

(ii) Router \ Logger Servers**:** These servers require certificate from:

- Windows platform: All AW/ADS servers IIS certificate.

(iii) PG Servers**:** These servers require certificate from:

- Windows platform: All AW/ADS servers IIS certificate.
- VOS Platform: CUCM publisher (CUCM PG servers only); Cloud Connect and CCP (MR PG Server only).

Note: This is needed to download the JTAPI client from CUCM server.

(iv) CVP Servers**:** These servers require certificate from

- Windows platform: All ADS servers IIS certificate
- VOS Platform: Cloud Connect server, VVB Servers.

(v) CVP Reporting server**:** This server requires certificate from:

- Windows platform: All ADS servers IIS certificate

(vi) VVB Servers**:** This server requires certificate from:

- Windows platform: All ADS servers IIS certificate, VXML certificate from CVP server, and Callserver certificate from CVP server
- VOS Platform: Cloud Connect server.

The steps needed to effectively exchange the self-signed certificates in the solution are divided in three sections.

Section 1: Certificate Exchange Between CVP Servers and ADS Servers.

Section 2**:** Certificate Exchange Between VOS Platform Applications and ADS Server.

Section 3**:** Certificate Exchange Between Roggers, PGs and ADS Server.

Section 1: Certificate Exchange Between CVP and ADS Servers

The steps needed to complete this exchange successfully are:

Step 1. Export CVP Servers WSM Certificates.

Step 2. Import CVP Servers WSM Certificate to ADS Servers.

Step 3. Export ADS Server Certificate.

Step 4. Import ADS Server to CVP Servers and CVP Reporting Server.

Step 1. Export CVP Server Certificates

Before you export the certificates from the CVP servers, you need to regenerate the certificates with the FQDN of the server, otherwise, few features like Smart Licensing, Virtual Agent Voice (VAV), and the CVP synchronization with SPOG can experience problems.

Caution: Before you begin, you must do this:
1. Open a command window as administrator.
2. For 12.6.2, to identify the keystore password, go to the %CVP_HOME%\bin folder and run the DecryptKeystoreUtil.bat file.
3. For 12.6.1, to identify the keystore password, run the command, **more %CVP_HOME%\conf\security.properties.**
4. You need this password when running the keytool commands.
5. From the %CVP_HOME%\conf\security\ directory, run the command, **copy .keystore backup.keystore**.

Note: You can streamline the commands used in this document by the use of the keytool parameter -storepass. For all CVP servers, provide the keytool password you identified. For the ADS servers the default password is: **changeit**

To regenerate the certificate on the CVP servers execute these steps:

(i) List the certificates in the server

```
%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
list
```

Note: The CVP Servers have these self-signed certificates: wsm_certificate, vxml_certificate, callserver_certificate. If you use the parameter -v of the keytool, you are able to see more detailed information of each certificate. In addition, you can add the ">" symbol at the end of the keytool.exe list command to send the output to a text file, for example: > test.txt

(ii) Delete the old self-signed certificates

CVP servers**:** Commands to delete the self-signed certificates:

```
%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
delete -alias wsm_certificate

%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
delete -alias vxml_certificate

%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
delete -alias callserver_certificate
```

CVP Reporting servers: Commands to delete the self-signed certificates:

```
%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
delete -alias wsm_certificate

%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
delete -alias callserver_certificate
```

Note: CVP Reporting servers have these self-signed certificates: wsm_certificate, callserver_certificate.

(iii) Generate the new self-signed certificates with the FQDN of the server

CVP servers

Command to generate the self-signed certificate for WSM:

```
%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
genkeypair -alias wsm_certificate -keysize 2048 -keyalg RSA -validity XXXX
```

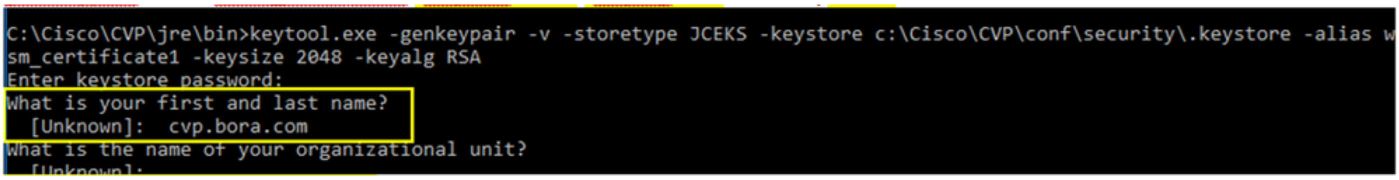
Note: By default, the certificates are generated for two years. Use -validity XXXX to set the expiry date when certificates are regenerated, otherwise certificates are valid for 90 days and need to be signed by a CA before this time. For most of these certificates, 3-5 years must be a reasonable validation time.

Here are some standard validity inputs:

One Year	365
Two Years	730
Three Years	1095
Four Year	1460
Five Years	1895
Ten Years	3650

Caution: From 12.5 certificates must be **SHA 256**, Key Size **2048**, and encryption Algorithm **RSA**, use these parameters to set these values: -keyalg RSA and -keysize 2048. It is important that the CVP keystore commands include the -storetype JCEKS parameter. If this is not done, the certificate, the key, or worse the keystore can become corrupted.

Specify the FQDN of the server, on the question **what is your fist and last name**?



```
C:\Cisco\CVP\jre\bin>keytool.exe -genkeypair -v -storetype JCEKS -keystore c:\Cisco\CVP\conf\security\.keystore -alias w
sm_certificate1 -keysize 2048 -keyalg RSA
Enter keystore password:
What is your first and last name?
  [Unknown]:  cvp.bora.com
What is the name of your organizational unit?
  [Unknown]:
```

Complete these other questions:

What is the name of your organizational unit?

[Unknown]: <specify OU>

What is the name of your organization?

[Unknown]: <specify the name of the org>

What is the name of your City or Locality?

[Unknown]: <specify the name of the city/locality>

What is the name of your State or Province?

[Unknown]: <specify the name of the state/province>

What is the two-letter country code for this unit?

[Unknown]: <specify two-letter Country code>

Specify **yes** for the next two inputs.

Perform the same steps for vxml_certificate and callserver_certificate:

```
%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
genkeypair -alias vxml_certificate -keysize 2048 -keyalg RSA -validity XXXX

%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
genkeypair -alias callserver_certificate -keysize 2048 -keyalg RSA -validity XXXX
```

Reboot the CVP call server.

CVP Reporting servers

Command to generate the self-signed certificates for WSM:

```
%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
genkeypair -alias wsm_certificate -keysize 2048 -keyalg RSA -validity XXXX
```

Specify the FQDN of the server for the query **what is your fist and last name ?** and continue with the same steps as done with CVP servers.

Perform the same steps for callserver_certificate:

```
%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
genkeypair -alias callserver_certificate -keysize 2048 -keyalg RSA -validity XXXX
```

Reboot the Reporting servers.

(iv) Export wsm_Certificate from CVP and Reporting servers

a) Export WSM Certificate from each CVP server to a temporary location, and rename the certificate with a desired name. You can rename it as wsmcsX.crt. Replace "X" with the hostname of the server. For example, wsmcsa.crt, wsmcsb.crt , wsmrepa.crt , wsmrepb.crt.

Command to export the self-signed certificates:

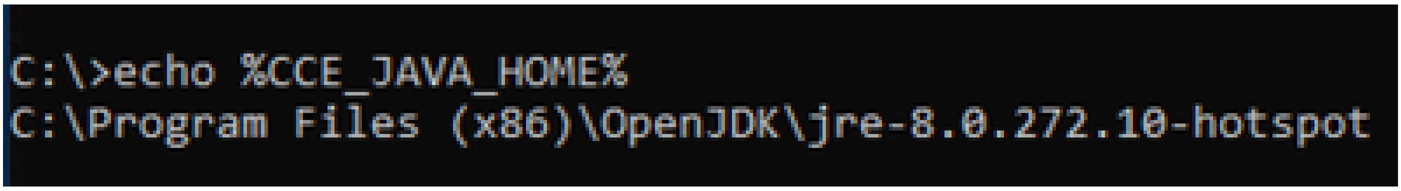
```
%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
export -alias wsm_certificate -file %CVP_HOME%\conf\security\wsm.crt
```

b) Copy the certificate from the path **%CVP_HOME%\conf\security\wsm.crt**, rename it to **wsmcsX.crt** and move it to a temporary folder on the ADS server.

Step 2. Import CVP Servers WSM Certificate to ADS Server

To import the certificate in ADS server you need to use the keytool which is a part of java toolset. There are couple of ways you can find the java home path where this tool is hosted.

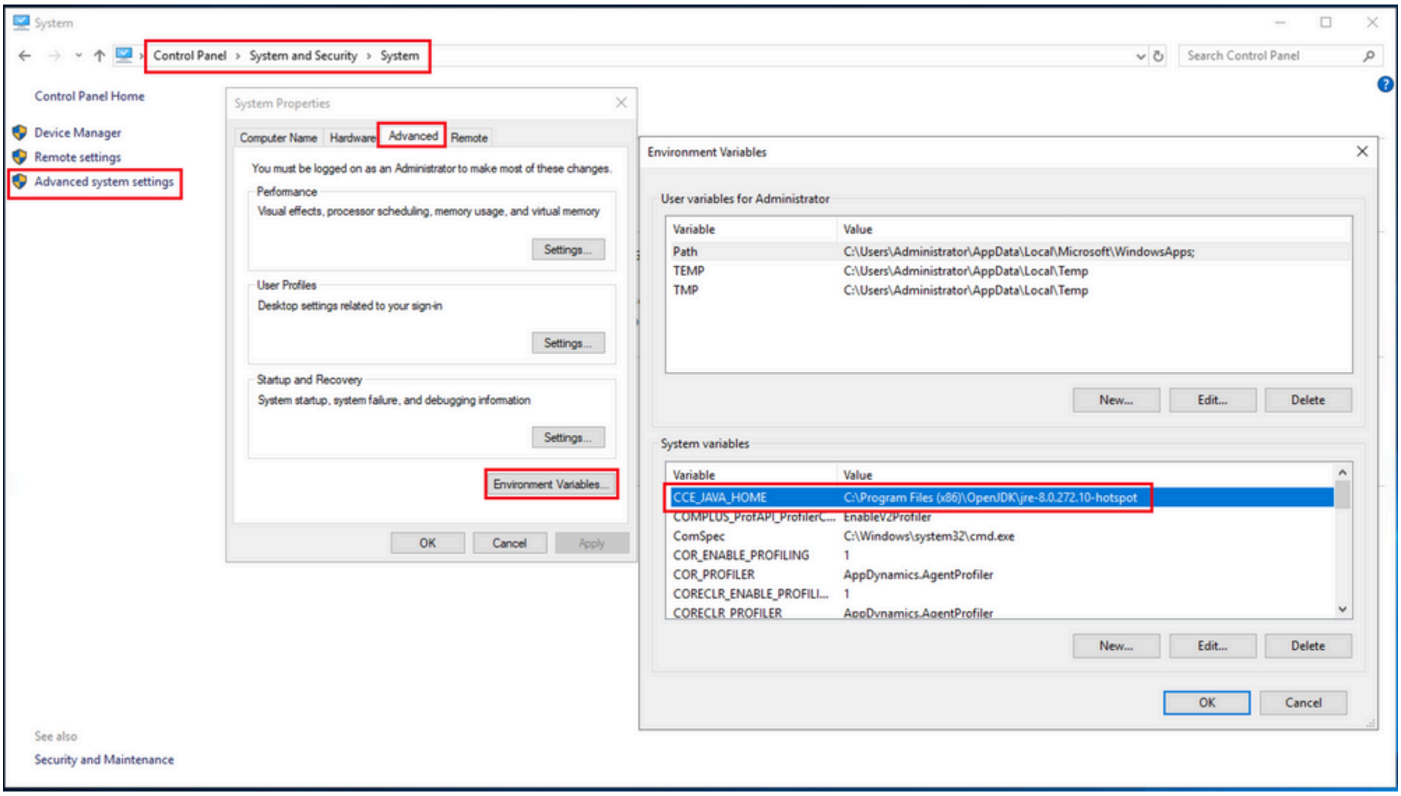
(i) CLI command > **echo %CCE_JAVA_HOME%**



```
C:\>echo %CCE_JAVA_HOME%
C:\Program Files (x86)\OpenJDK\jre-8.0.272.10-hotspot
```

java home path

(ii) Manually via **Advanced system setting,** as shown in the image.



You must be logged on as an Administrator to make most of these changes.

Performance
Visual effects, processor scheduling, memory usage, and virtual memory

User Profiles
Desktop settings related to your sign-in

Startup and Recovery
System startup, system failure, and debugging information

User variables for Administrator

Variable	Value
Path	C:\Users\Administrator\AppData\Local\Microsoft\WindowsApps;
TEMP	C:\Users\Administrator\AppData\Local\Temp
TMP	C:\Users\Administrator\AppData\Local\Temp

System variables

Variable	Value
CCE_JAVA_HOME	C:\Program Files (x86)\OpenJDK\jre-8.0.272.10-hotspot
COMPLUS_ProfAPI_ProfilerC...	EnableV2Profiler
ComSpec	C:\Windows\system32\cmd.exe
COR_ENABLE_PROFILING	1
COR_PROFILER	AppDynamics.AgentProfiler
CORECLR_ENABLE_PROFILI...	1
CORECLR_PROFILER	AppDynamics.AgentProfiler

Environment Variables

On PCCE 12.6 default path of OpenJDK is **C:\Program Files (x86)\OpenJDK\jre-8.0.272.10-hotspot\bin**

Commands to import the self-signed certificates:

```
cd %CCE_JAVA_HOME%\bin
keytool.exe -import -file C:\Temp\certs\wsmcsX.crt -alias {fqdn_of_CVP} -keystore {ICM install
directory}\ssl\cacerts
```

Note: Repeat the commands for each CVP in the deployment and perform the same task on other ADS servers

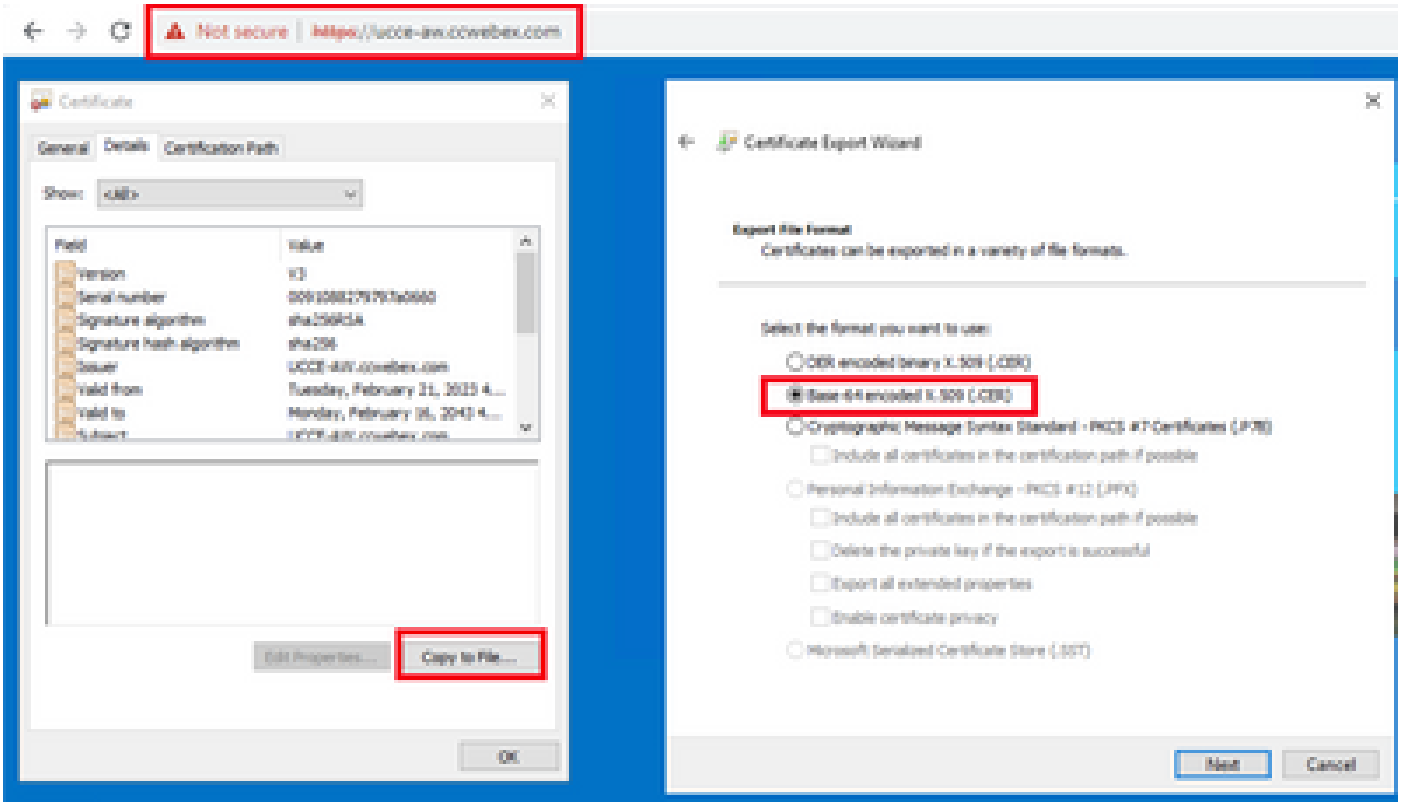
(iii) Restart the Apache Tomcat service on the ADS servers.

Step 3. Export ADS Server Certificate

Here are the steps to export the ADS certificate:

(i) On ADS server from a browser, navigate to the server url : **https://<servername>**.

(ii) Save the certificate to a temporary folder, for example: **c:\temp\certs** and name the certificate as **ADS<svr>[ab].cer**.



Show: <All>

Field	Value
Version	V3
Serial number	0091088279797a0660
Signature algorithm	sha256RSA
Signature hash algorithm	sha256
Issuer	UCCE-AW.ccwebex.com
Valid from	Tuesday, February 21, 2023 4...
Valid to	Monday, February 16, 2043 4...
Subject	UCCE-AW.ccwebex.com

Export File Format
Certificates can be exported in a variety of file formats.

Select the format you want to use:

○ DER encoded binary X.509 (.CER)
● Base-64 encoded X.509 (.CER)
○ Cryptographic Message Syntax Standard - PKCS #7 Certificates (.P7B)
□ Include all certificates in the certification path if possible
○ Personal Information Exchange - PKCS #12 (.PFX)
□ Include all certificates in the certification path if possible
□ Delete the private key if the export is successful
□ Export all extended properties
□ Enable certificate privacy
○ Microsoft Serialized Certificate Store (.SST)

Export ADS certificates

Note: Select the option Base-64 encoded X.509 (.CER).

Step 4. Import ADS Server Certificate to CVP Servers and Reporting Server

(i) Copy the certificate to CVP Servers and CVP Reporting server in the directory

%CVP_HOME%\conf\security.

(ii) Import the certificate to CVP servers and CVP Reporting server.

```
%CVP_HOME%\jre\bin\keytool.exe -storetype JCEKS -keystore %CVP_HOME%\conf\security\.keystore -
import -trustcacerts -alias {fqdn_of_ads} -file %CVP_HOME%\conf\security\ADS{svr}[ab].cer
```

Perform the same steps for other ADS servers certificates.

(iii) Restart the CVP servers and Reporting server

Section 2: Certificate Exchange Between VOS Platform Applications and ADS Server

The steps needed to complete this exchange successfully are:

Step 1. Export VOS Platform Application Server Certificates.

Step 2. Import VOS Platform Application Certificates to ADS Server.

Step 3. Import CUCM Platform Application Certificates to CUCM PG Servers.

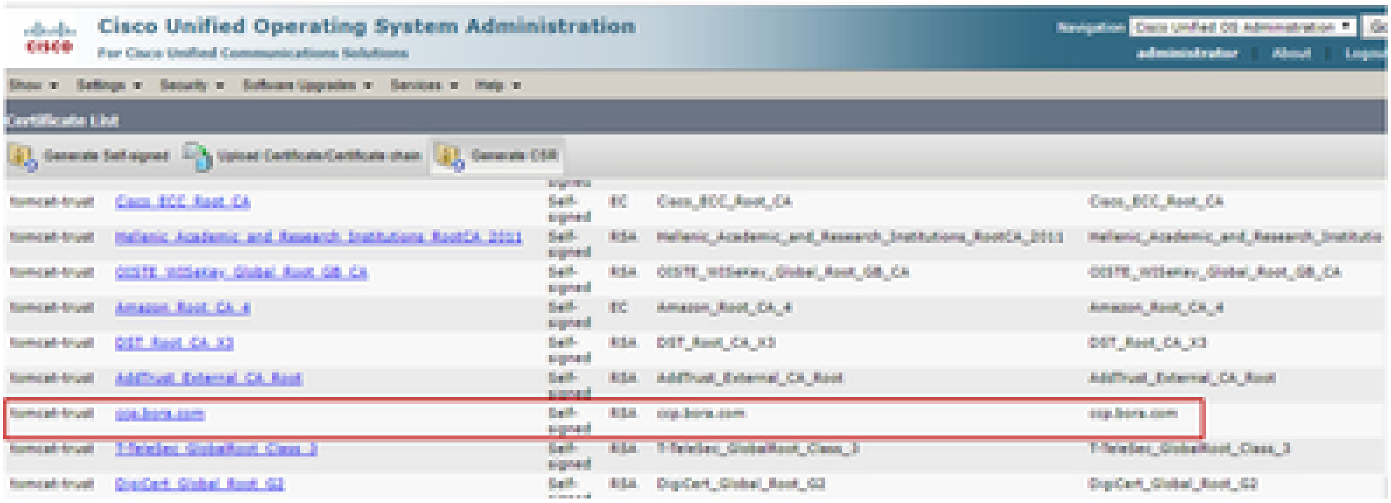
This process is applicable for all VOS applications such as:

- CUCM
- VVB
- Finesse
- CUIC \ LD \ IDS
- Cloud Connect

Step 1. Export VOS Platform Application Server Certificates.

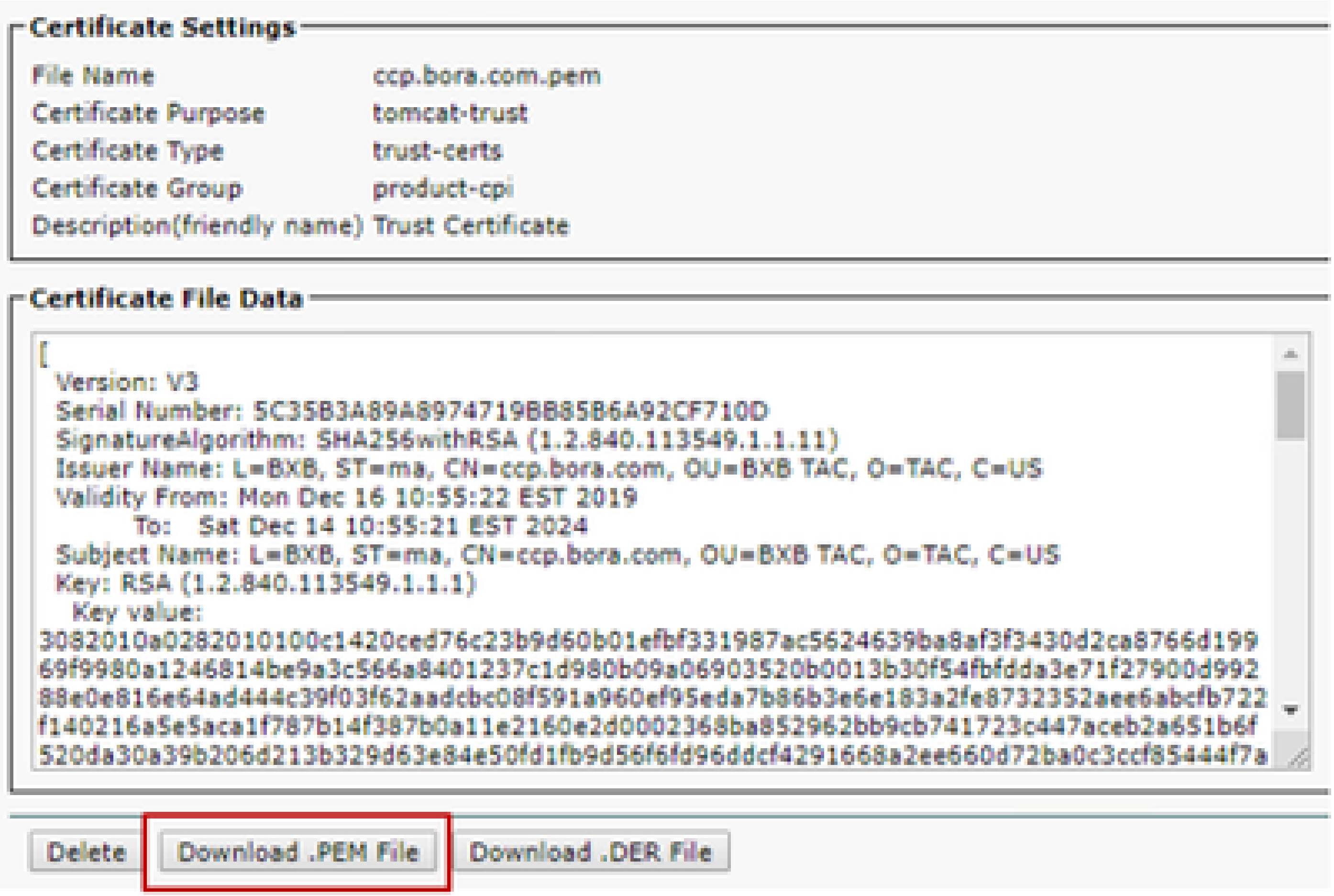
(i) Navigate to Cisco Unified Communications Operating System Administration page: https://FQDN:8443/cmplatform.

(ii) Navigate to **Security** > **Certificate Management** and find the application primary server certificates in **tomcat-trust** folder.


Cisco Unified Operating System Administration
For Cisco Unified Communications Solutions
Navigation Cisco Unified OS Administration
administrator | About | Logout
Show ▾ Settings ▾ Security ▾ Software Upgrades ▾ Services ▾ Help ▾
Certificate List
Generate Self-signed
Upload Certificate/Certificate chain
Generate CSR

tomcat-trust	Cisco_ECC_Root_CA	Self-signed	EC	Cisco_ECC_Root_CA	Cisco_ECC_Root_CA
tomcat-trust	Hellenic_Academic_and_Research_Institutions_RootCA_2011	Self-signed	RSA	Hellenic_Academic_and_Research_Institutions_RootCA_2011	Hellenic_Academic_and_Research_Institutio
tomcat-trust	OISTE_WISeKey_Global_Root_GB_CA	Self-signed	RSA	OISTE_WISeKey_Global_Root_GB_CA	OISTE_WISeKey_Global_Root_GB_CA
tomcat-trust	Amazon_Root_CA_4	Self-signed	EC	Amazon_Root_CA_4	Amazon_Root_CA_4
tomcat-trust	DST_Root_CA_X3	Self-signed	RSA	DST_Root_CA_X3	DST_Root_CA_X3
tomcat-trust	AddTrust_External_CA_Root	Self-signed	RSA	AddTrust_External_CA_Root	AddTrust_External_CA_Root
tomcat-trust	cip.bora.com	Self-signed	RSA	cip.bora.com	cip.bora.com
tomcat-trust	T-TeleSec_GlobalRoot_Class_3	Self-signed	RSA	T-TeleSec_GlobalRoot_Class_3	T-TeleSec_GlobalRoot_Class_3
tomcat-trust	DigiCert_Global_Root_G2	Self-signed	RSA	DigiCert_Global_Root_G2	DigiCert_Global_Root_G2

(iii) Select the certificate and click on download .PEM file to save it in a temporary folder on the ADS server.



Certificate Settings

File Name	ccp.bora.com.pem
Certificate Purpose	tomcat-trust
Certificate Type	trust-certs
Certificate Group	product-cpi
Description(friendly name)	Trust Certificate

Certificate File Data

```
[
  Version: V3
  Serial Number: 5C35B3A89A8974719BB85B6A92CF710D
  SignatureAlgorithm: SHA256withRSA (1.2.840.113549.1.1.11)
  Issuer Name: L=BXB, ST=ma, CN=ccp.bora.com, OU=BXB TAC, O=TAC, C=US
  Validity From: Mon Dec 16 10:55:22 EST 2019
          To:   Sat Dec 14 10:55:21 EST 2024
  Subject Name: L=BXB, ST=ma, CN=ccp.bora.com, OU=BXB TAC, O=TAC, C=US
  Key: RSA (1.2.840.113549.1.1.1)
    Key value:
3082010a0282010100c1420ced76c23b9d60b01efbf331987ac5624639ba8af3f3430d2ca8766d199
69f9980a1246814be9a3c566a8401237c1d980b09a06903520b0013b30f54fbfdda3e71f27900d992
88e0e816e64ad444c39f03f62aadcbc08f591a960ef95eda7b86b3e6e183a2fe8732352aee6abcfb722
f140216a5e5aca1f787b14f387b0a11e2160e2d0002368ba852962bb9cb741723c447aceb2a651b6f
520da30a39b206d213b329d63e84e50fd1fb9d56f6fd96ddcf4291668a2ee660d72ba0c3ccf85444f7a
```

Note: Perform the same steps for the subscriber.

Step 2. Import VOS Platform Application Certificate to ADS Server

Path to run the Key tool: %CCE_JAVA_HOME%\bin

Commands to import the self-signed certificates:

```
%CCE_JAVA_HOME%\bin\keytool.exe -import -file C:\Temp\certs\vosapplicationX.cer -alias
{fqdn_of_VOS>} -keystore {ICM install directory}\ssl\cacerts
```

Restart the Apache Tomcat service on the ADS servers.

Note: Perform the same task on other ADS servers

Step 3. Import CUCM Platform Application Certificate to CUCM PG Server

Path to run the Key tool: %CCE_JAVA_HOME%\bin

Commands to import the self-signed certificates:

```
%CCE_JAVA_HOME%\bin\keytool.exe -import -file C:\Temp\certs\cucmapplicationX.cer -alias
{fqdn_of_cucm>} -keystore {ICM install directory}\ssl\cacerts
```

Restart the Apache Tomcat service on the PG servers.

Note: Perform the same task on other CUCM PG servers

Section 3: Certificate Exchange Between Roggers , PG and ADS Servers

The steps needed to complete this exchange successfully are:

Step 1. Export IIS Certificate from Rogger and PG Servers

Step 2. Export DFP Certificate from Rogger and PG Servers

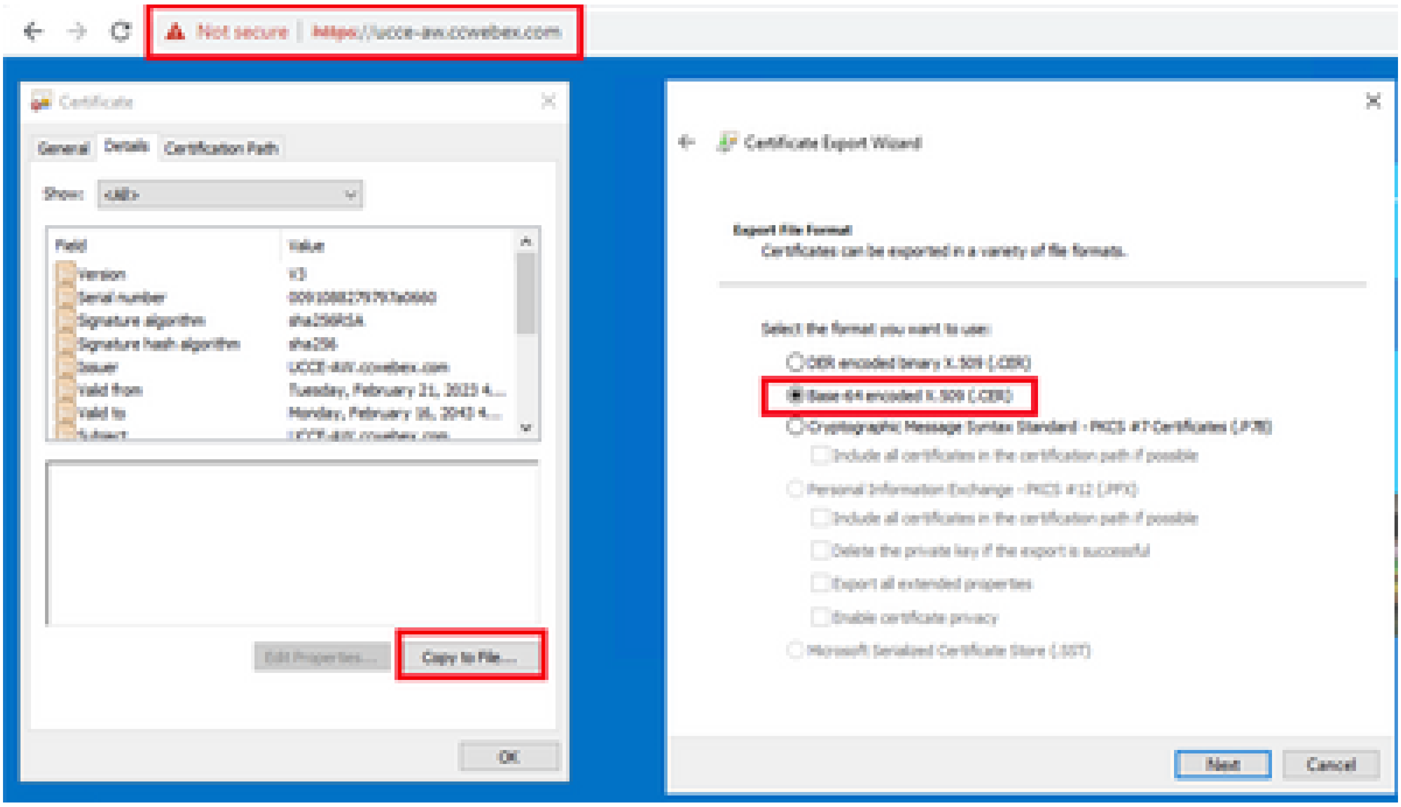
Step 3. Import Certificates into ADS Servers

Step 4. Import ADS Certificate into Rogger and PG Servers

Step 1. Export IIS Certificate from Rogger and PG Servers

(i) On ADS server from a browser, navigate to the servers (Roggers , PG) url: **https://{servername}**

(ii)Save the certificate to a temporary folder, for example **c:\temp\certs** and name the cert as **ICM<svr>[ab].cer**



Not secure | https://ucce-aw.ccwebex.com

Certificate

General | Details | Certification Path

Show: <All>

Field	Value
Version	V3
Serial number	00910882797b7a0660
Signature algorithm	sha256RSA
Signature hash algorithm	sha256
Issuer	UCCE-AW.ccwebex.com
Valid from	Tuesday, February 21, 2023 4...
Valid to	Monday, February 16, 2043 4...
Subject	UCCE-AW.ccwebex.com

Certificate Export Wizard

Export File Format
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Select the format you want to use:

○ DER encoded binary X.509 (.CER)
● Base-64 encoded X.509 (.CER)
○ Cryptographic Message Syntax Standard - PKCS #7 Certificates (.P7B)
□ Include all certificates in the certification path if possible
○ Personal Information Exchange - PKCS #12 (.PFX)
□ Include all certificates in the certification path if possible
□ Delete the private key if the export is successful
□ Export all extended properties
□ Enable certificate privacy
○ Microsoft Serialized Certificate Store (.SST)

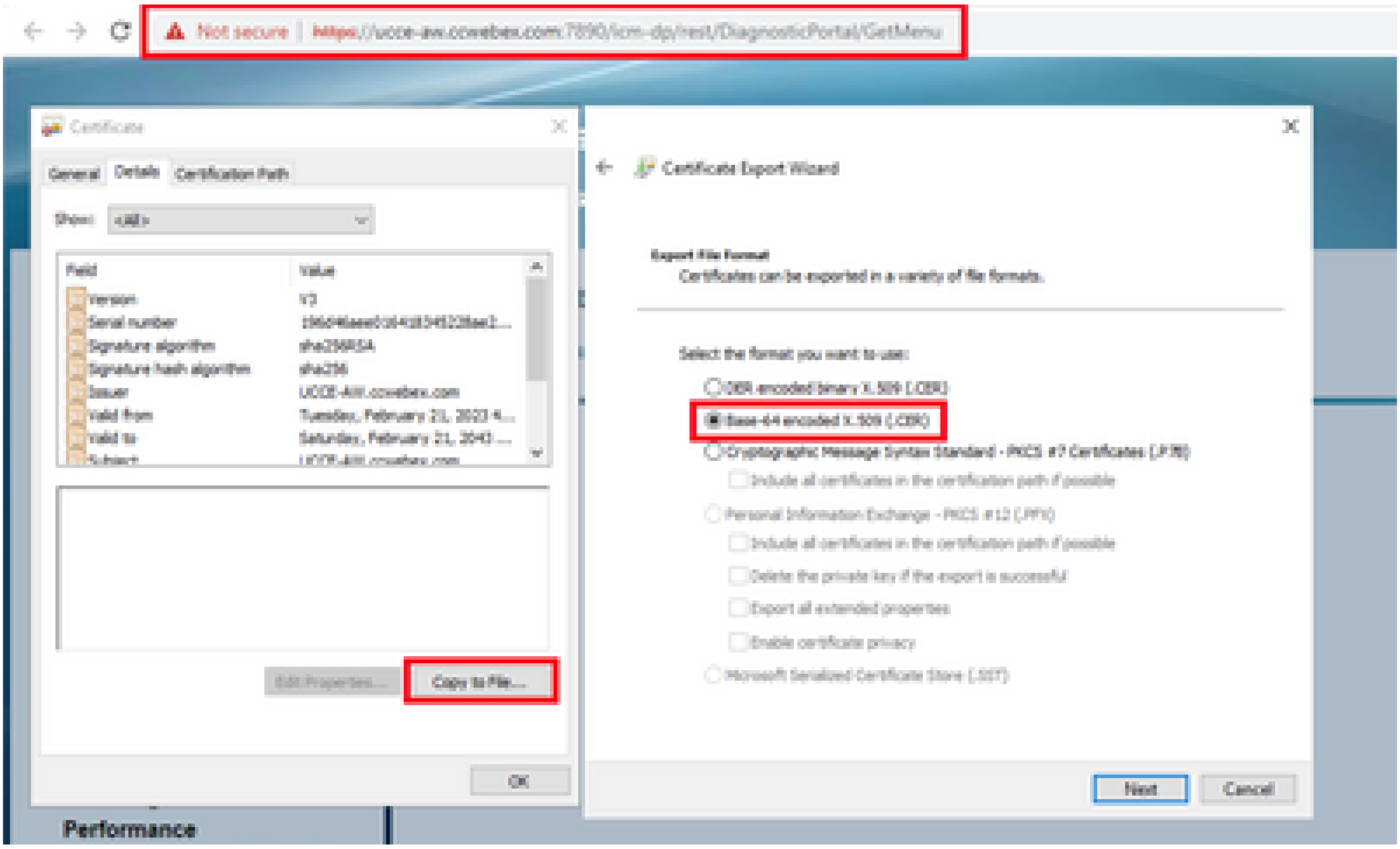
Export IIS Certificate

Note: Select the option Base-64 encoded X.509 (.CER).

Step 2. Export DFP Certificate from Rogger and PG Servers

(i) On ADS server from a browser, navigate to the servers (Roggers, PGs) DFP url : ***https://{servername}:7890/icm-dp/rest/DiagnosticPortal/GetProductVersion***

(ii) Save the certificate to folder example c:\temp\certs and name the cert as dfp{svr}[ab].cer



⚠ Not secure | https://ucce-aw.ccwebex.com:7890/icm-dp/rest/DiagnosticPortal/GetMenu

Certificate

General | Details | Certification Path

Show: <All>

Field	Value
Version	V3
Serial number	[illegible]...
Signature algorithm	sha256RSA
Signature hash algorithm	sha256
Issuer	UCCE-AW.ccwebex.com
Valid from	Tuesday, February 21, 2023 4...
Valid to	Saturday, February 21, 2043 ...
Subject	UCCE-AW.ccwebex.com

Certificate Export Wizard

Export File Format
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○ Cryptographic Message Syntax Standard - PKCS #7 Certificates (.P7B)
□ Include all certificates in the certification path if possible
○ Personal Information Exchange - PKCS #12 (.PFX)
□ Include all certificates in the certification path if possible
□ Delete the private key if the export is successful
□ Export all extended properties
□ Enable certificate privacy
○ Microsoft Serialized Certificate Store (.SST)

Export DFP Certificate

Note: Select the option Base-64 encoded X.509 (.CER).

Step 3. Import Certificates into ADS Server

Command to import the IIS self-signed certificates into ADS server. The path to run the Key tool: %CCE_JAVA_HOME%\bin

```
%CCE_JAVA_HOME%\bin\keytool.exe -import -file C:\temp\certs\ICM<svr>[ab].cer -alias
{fqdn_of_server}_IIS -keystore {ICM install directory}\ssl\cacerts
```

Note: Import all the server certificates exported into all ADS servers.

Command to import the diagnostic self-signed certificates into ADS server

```
%CCE_JAVA_HOME%\bin\keytool.exe -import -file C:\Temp\certs\dfp<svr>[ab].cer -alias
{fqdn_of_server}_DFP -keystore {ICM install directory}\ssl\cacerts
```

Note: Import all the server certificates exported into all ADS servers.

Restart the Apache Tomcat service on the ADS servers.

Step 4. Import ADS Certificate into Rogger and PG Servers

Command to import the IIS self-signed certificates into Rogger and PG servers. The path to run the Key tool: **%CCE_JAVA_HOME%\bin.**

```
%CCE_JAVA_HOME%\bin\keytool -keystore ..\lib\security\cacerts  -import -storepass changeit -
alias {fqdn_of_server}_IIS -file c:\temp\certs\ICM{svr}[ab].cer
```

Note: Import all the ADS server IIS certificates exported into all Rogger and PG servers.

Restart the Apache Tomcat service on the Rogger and PG servers.

Section 4: CVP CallStudio Web Service Integration

For detailed information about how to establish a secure communication for Web Services Element and Rest_Client element

refer to User Guide for Cisco Unified CVP VXML Server and Cisco Unified Call Studio Release 12.6(2) - Web Service Integration [Cisco Unified Customer Voice Portal] - Cisco

Related Information

- **CVP Configuration Guide - Security**
- **UCCE Security Guide**
- **PCCE Admin Guide**
- **Exchange PCCE Self-Signed Certificates - PCCE 12.5**
- **Exchange UCCE Self-Signed Certificates - UCCE 12.5**
- **Exchange UCCE Self-Signed Certificates - UCCE 12.6**
- **Implement CA-Signed Certificates - CCE 12.6**
- **Exchange Certificates with Contact Center Uploader Tool**
- **Technical Support & Documentation - Cisco Systems**