Cisco Hosted Collaboration Mediation Fulfillment Install and Configure Guide, Release 12.5(1) SU1

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What's Changed in Cisco HCM-F Install and Configure, Release 12.5(1) SU1

Change History

Date	Section	Description
November 05, 2019	The following topics were added and updated: • Upgrade Checks, on page 115 • Phone Compatibility Check, on page 133	Added new pre and post-upgrade checks to verify the following: **1.** CTI Route point Status **2.** Syslog Information **3.** SIP Trunk Information **4.** VM Configurations For all the pre and post upgrade checks, added the manual commands to run the check in case the check is not executed. Phone Compatibility Check is enhanced to display the Jabber version.

What's Changed in Cisco HCM-F Install and Configure, Release 12.5(1) SU1

Date	Section	Description
November 05, 2019	The following topics were added and updated: • Generate CSR, on page 105 • Manage Certificate, on page 102 • Upload Trust, on page 107 • Task Flow Post Uploading Certificates for UC Applications, on page 107 • Flex Usage Report, on page 81 • Request or Download Flex Usage Report, on page 84	Certificate Management enables you to upload the trust certificates for the specific certificates. You can upload the root and intermediate CA certificates. The Flex Usage Report has been modified to generate the license order information, true forwarding, and compliance status. The report also provides perpetual license details.
September 23, 2019	• Flex Usage Report, on page 81 • Configure Flex Usage Report, on page 82 • Request or Download Flex Usage Report, on page 84	Updated the guide with the missing topics.
July 8, 2019	Upgrade Overview, on page 154	Updated the HCM-F upgrade paths (CSCvq36049).
July 8, 2019	Installation System Requirements, on page 1	Updated the Release version.
June 25, 2019		Initial version

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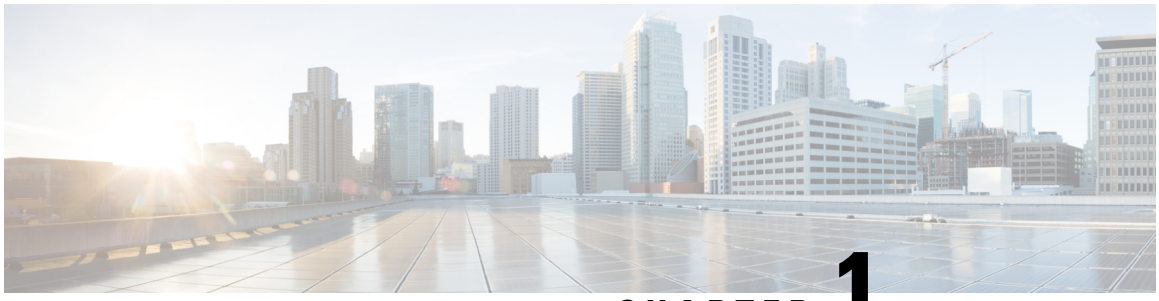


CHAPTER 1

Prepare to Install

Installation System Requirements

The following table lists the server requirements for the Cisco HCM-F application node.

Table 1: Cisco HCM-F application node installation server requirements

Requirement	Notes
Product	Cisco HCS Mediation - Fulfillment
Version	Cisco HCS Release 12.5(1)
Operating System	Red Hat Enterprise Linux RHEL6 (64-bit) **Note** The .iso file includes the Linux OS. A separate installation of Linux is not required for Cisco HCM-F is based on an appliance model.
CPU	4 vCPUs (7.2 GHz), a VMware CPU reservation and the minimum acceptable
Memory	16 GB (RAM) with 16 GB reservation
Hard Drive	80 GB (one)

The following table lists the server requirements for the Cisco HCM-F Web Services (WS) node.

Table 2: Cisco HCM-F WS node installation server requirements

Requirement	Notes
Product	Cisco HCS Mediation - Fulfillment

Requirement	Notes
Version	12.5(1)
Operating System	Red Hat Enterprise Linux RHEL6 (64-bit) **Note** The .iso file includes the linux OS. A separate installation of linux is not required for HCM-F is based on an appliance model.
CPU	4 vCPUs (7.2 GHz), a VMware CPU reservation and the minimum acceptable
Memory	8 GB (RAM) with 8 GB reservation
Hard Drive	80 GB (one)

The following table lists the server requirements for Cisco HCM-F backwards compatibility.

Table 3: Cisco HCM-F backwards compatibility server requirements

Requirement	Notes
Product	Cisco HCS Mediation - Fulfillment
Version	11.5(5)
Operating System	Red Hat Enterprise Linux RHEL6 (64-bit) **Note** The .iso file includes the linux OS. A separate installation of linux is not required for HCM-F is based on an appliance model.
CPU	4 vCPUs (7.2 GHz), a VMware CPU reservation and the minimum acceptable
Memory	16 GB (RAM) with 16 GB reservation
Hard Drive	80 GB (one)

Network Requirements

Network traffic allowance

This section describes the minimum required ports that need to be configured to support Cisco HCM-F server. The following table provides a summary of the ports that need to be configured on a corporate firewall. The port configurations shown in this table are based on default settings. If you change the default settings, you need to update these configurations.

If you have other servers/ports required on your network, you need to allow for that traffic.

Table 4: Corporate Firewall Configuration

Interface	Direction	Source	Destination	Protocol	Port	Description
Inside	Inbound	Internal network or any management workstation	Cisco HCM-F server DMZ IP address	TCP	22	SFTP access to Cisco HCM-F server for uploading licenses/software, upgrade, and CLI access
Inside	Inbound	Internal network or any management workstation	Cisco HCM-F server DMZ IP address	HTTPS	443	HTTPS access to GUI and web APIs

Frequently Asked Questions About Installation

The following section contains commonly asked questions and responses. Review this section carefully before you begin the installation. The section includes the following topics:

How much time does installation require?

The entire installation process, excluding pre- and post-installation tasks, takes 20 to 30 minutes.

Which Usernames and Passwords Do I Need to Specify?

Note The system checks your passwords for strength. For guidelines on creating a strong password, see What is a strong password?, on page 4.

During the installation, specify the following usernames and passwords:

- Administrator account username and password.
- Security password.

Administrator account username and password

You use the Administrator account username and password to log in to the following areas:

- Disaster Recovery System
- Command Line Interface
- RTMT
- Administrative Interface

To specify the Administrator account username and password, follow these guidelines:

- Administrator account username—The Administrator account username must start with an alphabetic character and can contain alphanumeric characters, hyphens, and underscores.
- Administrator account password—The password must have a minimum of 6 and a maximum of 31 characters. It must also contain the following characters:
  - Alphanumeric characters including upper and lower case letters
  - Special characters that are limited to [!@#$%^&*()-_]

You can change the Administrator account password or add a new Administrator account by using the command line interface. For more information, see *Cisco Hosted Collaboration Mediation Fulfillment Command Line Interface Reference Guide*.

Security password

The Security password must be at least six characters long and can contain alphanumeric characters, hyphens, and underscores.

What is a strong password?

The Installation wizard checks to ensure that you enter a strong password. Strong passwords are used to protect your computer from hackers and malicious software.

To create a strong password, follow these recommendations:

- Mix uppercase and lowercase letters.
- Mix letters and numbers.
- Include hyphens and underscores.
- Remember that longer passwords are stronger and more secure than shorter ones.

Avoid the following types of passwords:

- Do not use recognizable words, such as proper names and dictionary words, even when combined with numbers.
- Do not invert recognizable words.
- Do not use word or number patterns, such as aaabbb, qwerty, zyxwvuts, 123321, abc123 and so on.
- Do not use recognizable words from other languages.

- Do not use personal information of any kind, including birthdays, postal codes, names of children or pets, and so on.

What is the Cisco Unified Communications Answer File Generator?

Cisco Unified Communications Answer File Generator, a web application, generates answer files for unattended installations of Cisco HCM-F. Individual answer files get copied to the root directory of a floppy disk and are used in addition to the Cisco HCM-F DVD during the installation process.

The web application provides:

- Syntactical validation of data entries
- Online help and documentation
- Support for fresh installations (but does not support upgrades)

You can access the Cisco Unified Communications Answer File Generator at the following URL:

http://www.cisco.com/web/cuc_afg/index.html

The Cisco Unified Communications Answer File Generator supports Internet Explorer version 6.0 or higher and Mozilla version 1.5 or later.

Cisco requires that you use virtual floppy image (.flp) that is compatible with Linux2.4. Cisco recommends that you use virtual floppy that is preformatted to be compatible with Linux2.4 for the configuration file. These virtual floppies use a W95 FAT32 format.

Which SFTP Servers does Cisco support?

SFTP servers are used for backups and restores, upgrades, service inventory, platform manager, and troubleshooting. Cisco allows you to use any SFTP server product but recommends SFTP products that have been certified with Cisco through the Cisco Technology Developer Partner program (CTDP). CTDP partners, such as GlobalSCAPE, certify their products with specified versions of Cisco HCM-F.

Cisco uses the following servers for internal testing. You may use one of the servers, but you must contact the vendor for support:

- Open SSH (refer to http://sshwindows.sourceforge.net/)
- Cygwin (refer to http://www.cygwin.com/)
- Titan (refer to Titan FTP Server tab athttp://www.webdrive.com/)

Note For issues with third-party products that have not been certified through the CTDP process, contact the third-party vendor for support.

Can I install other software on the server?

You must perform all Cisco HCM-F software installations and upgrades by using the CLI. The system can upload and process only software that Cisco has approved. You cannot install or use unapproved third-party software applications.

Preinstallation Tasks

The following table contains a list of preinstallation tasks that you need to perform to ensure that you can successfully install Cisco HCM-F.

Table 5: Preinstallation Tasks

	Task
Step 1	Read this entire document to familiarize yourself with the installation procedure.
Step 2	If you are using DNS, verify that all servers on which you plan to install Cisco HCM-F are properly registered in DNS.
Step 3	Record the configuration settings for each server that you plan to install.

Create Virtual Machines

The number of Virtual Machines to be created depends on the Cisco HCM-F configuration to be deployed:

- Cisco HCM-F Application node only.
- Cisco HCM-F Application node and Web Services node (for non-redundant API Gateway).
- Cisco HCM-F Application node and two or more Web Services nodes (for redundant API Gateway). This deployment is known as a full deployment.
- Cisco HCM-F Remote Access Portal node.

Cisco provides a VM template for you to download and transfer to your virtual host. Use this template to create the VMs for Cisco HCM-F platform installation.

Before you deploy the template and create VMs, you should have the VM name, VLAN, hostname, and the IP address allocated for each new VM.

Follow these steps to create a VM and to prepare the Cisco HCM-F installation on it:

Procedure

Step 1 Download the VM template for your application. Contact your Cisco account manager for information on obtaining the VM template.

Step 2 Download the template to a location on your PC or at a designated URL.

Step 3 Open the Open Virtualization Format (OVF) or OVA Template from **File** > **Deploy OVF Template...**

Step 4 Use the **Browse** option to find the location of the OVA file.

Note The OVA file can be located on the PC or at an URL address.

Step 5 Follow the wizard to complete the OVA installation process.

Step 6 Deploy the template file using vSphere Client. Enter or select the following information for the new VM:

- VM name and inventory location
- Configuration:
  - HCM-F APP for Application Node
  - HCM-F WS for Web Services Node
  - HCM-F RAP for Remote Access Portal Node
- Host/Cluster
- Storage
- Disk format: select thick provisioning
- Network mapping: target VLAN

Step 7 Make sure that you complete the procedure to create the VM.

At this point a new VM is created with the correct amount of RAM, number of CPUs, size and number of disks for the intended application.

Installation Information Gathering

Use the following table to record the information about Cisco HCM-F. You may not need to obtain all the information; gather only the information that is pertinent to your system and network configuration.

Note Because some of the fields are optional, they may not apply to your configuration.

Caution You cannot change some of the fields after installation without reinstalling the software, so be sure to enter the values that you want.

The last column in the table shows whether you can change a field after installation; if so, the appropriate CLI command is shown.

Table 6: Server Configuration Data

Parameter	Description	Can Entry Be Changed After Installation?
Administrator ID Your entry:	This field specifies the Administrator account user ID that you use for secure shell access to the CLI on Cisco HCM-F.	No, you cannot change the entry after installation. **Note** After installation, you can create additional Administrator accounts, but you cannot change the original Administrator account user ID.
Administrator Password Your entry:	This field specifies the password for the Administrator account, which you use for secure shell access to the CLI. You also use this password with the adminsftp user. Use the adminsftp user to access local backup files, upload server licenses, and so on. Ensure the password is at least six characters long; the password can contain alphanumeric characters, hyphens, and underscores.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set password user admin**
Country Your entry:	From the list, choose the appropriate country for your installation.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set web-security**
DHCP Your entry:	Choose **No** to the DHCP option. After you choose **No**, enter a hostname, IP address, IP mask, and gateway.	No, you should not change the entry after installation.

Parameter	Description	Can Entry Be Changed After Installation?
DNS Enable Your entry:	A DNS server resolves a hostname into an IP address or an IP address into a hostname. If you are using API Gateway Proxy service, we recommend using a DNS to support the operation of the API Gateway proxy. Without a DNS, there is a 10-second delay each time a session is established between the API Gateway Proxy and a southbound component. If using DNS, choose **Yes** to enable DNS. **Note** If using DNS, you must use it on all nodes.	No, you should not change the entry after installation.
DNS Primary Your entry:	Enter the IP address of the DNS server that you want to specify as the primary DNS server. Enter the IP address in dotted decimal format as ddd.ddd.ddd.ddd.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set network dns primary IP_Address_of_primary_DNS_server** To view DNS and network information, use the following CLI command: CLI > **show network eth0 detail**
DNS Secondary (optional) Your entry:	Enter the IP address of the DNS server that you want to specify as the optional secondary DNS server.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set network dns primary IP_Address_of_Secondary_DNS_server**
Gateway Address Your entry:	Enter the IP address of the network gateway. If you do not have a gateway, you must still set this field to 255.255.255.255. Not having a gateway may limit you to being able to communicate only with devices on your subnet.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set network gateway**

Parameter	Description	Can Entry Be Changed After Installation?
Hostname Your entry:	Enter a hostname that is unique to your server. The hostname can comprise up to 64 characters and can contain alphanumeric characters and hyphens. The first character cannot be a hyphen.	Yes, you can change the entry after installation. CLI > **set network hostname** The command prompts the user for the new hostname.
IP Address Your entry:	Enter the IP address of your server.	Yes, you can change the entry after installation. CLI > **set network ip eth0 <ip_addess> <network_mask> <network_gateway>**
IP Mask Your entry:	Enter the IP subnet mask of this machine.	Yes, you can change the entry after installation by using the following CLI command: CLI >**set network ip eth0**
Location Your entry:	Enter the location of the server. You can enter any location that is meaningful within your organization. Examples include the state or the city where the server is located.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set web-security**
MTU Size Your entry:	The maximum transmission unit (MTU) represents the largest packet, in bytes, that this host will transmit on the network. Enter the MTU size in bytes for your network. If you are unsure of the MTU setting for your network, use the default value. Default specifies 1500 bytes.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set network mtu**
NIC Duplex Your entry:	Choose the duplex mode for the network interface card (NIC), either Full or Half. **Note** This parameter appears only when you choose not to use Automatic Negotiation.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set network nic**

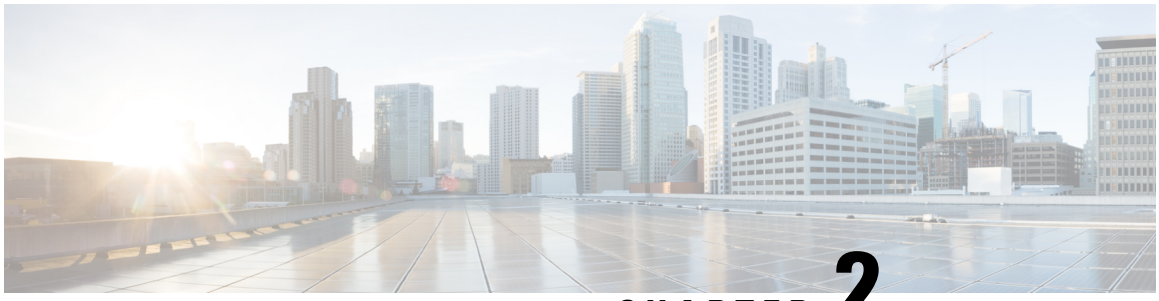
Parameter	Description	Can Entry Be Changed After Installation?
NIC Speed Your entry:	Choose the speed for the NIC, 1 Gigabits per second or higher. **Note** This parameter appears only when you choose not to use Automatic Negotiation.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set network nic**
NTP Server Your entry:	Enter the hostname or IP address of one or more Network Time Protocol (NTP) servers with which you want to synchronize. You can enter up to five NTP servers. **Note** To avoid potential compatibility, accuracy, and network jitter problems, the external NTP servers that you specify for the primary node can be NTP v4 (version 4).	Yes, you can change the entry after installation by using the following CLI command: CLI > **utils ntp server**
Organization Your entry:	Enter the name of your organization. **Tip** You can use this field to enter multiple organizational units. To enter more than one organizational unit name, separate the entries with a comma. For entries that already contain a comma, enter a backslash before the comma in the entry.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set web-security** <*orgname*>
Security Password Your entry:	The password must contain at least six alphanumeric characters. The password can contain hyphens and underscores, but it must start with an alphanumeric character. **Note** Save this password.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set password security**

Parameter	Description	Can Entry Be Changed After Installation?
State Your entry:	Enter the state that the server is located.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set web-security** <*state*>
Time Zone Your entry:	This field specifies the local time zone and offset from Greenwich Mean Time (GMT). Choose the time zone that most closely matches the location of your machine.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set timezone** To view the current time zone configuration, use the following CLI command: CLI > **show timezone config**
Unit Your entry:	Enter your unit.	Yes, you can change the entry after installation by using the following CLI command: CLI > **set web-security** <*orgunit*>

Browser Compatibility for HCM-F

The following web browsers are supported for Cisco HCM-F within Cisco Hosted Collaboration Solution:

- Firefox with Windows 10 (64 bit)—Latest browser version only
- Chrome with Windows 10 (64 bit)—Latest browser version only
- Internet Explorer 11 with Windows 10 (64 bit)
- Internet Explorer 11 with Windows 8.1 (64 bit)
- Microsoft Edge browser with Windows 10 (32 bit/64 bit)



CHAPTER 2

Install HCM-F

Installation Overview for Cisco HCM-F

This section covers the installation of an HCM-F Application Node and one or more HCM-F Web Services Nodes.

Before you proceed with the installation, consider the following requirements and recommendations:

- Cisco HCM-F 11.5(2) and later provides an enhanced autovacuum functionality. The autovacuum frequently runs in background and cleans up the old deleted rows (dead tuples) from the database tables.
- Ensure that you enable Network Time Protocol (NTP) on the Cisco HCM-F server. To verify the NTP status, log in to the Cisco HCM-F command line interface, and enter **utils ntp status**.
- If you are installing multiple HCM-F nodes:
  - Ensurethat all nodes point to the same NTP server.
  - Ensure you are consistent with using either Domain Network Server (DNS) or non-DNS across all nodes.
- Be aware that when you install on an existing server, the hard drive gets formatted and all existing data on the drive gets overwritten.
- Install Cisco HCM-F using static IP addressing to ensure that the Cisco HCM-F obtains a fixed IP address.
- Don't attempt to perform any configuration tasks during the installation.
- Don't install any Cisco-verified applications until you complete the installation.

Navigating the Installation Wizard

Table 7: Installation Wizard Navigation

To Do This	Press This
Move to the next field	**Tab**
Move to the previous field	**Alt-Tab**
Choose an option	Space bar or **Enter**
Scroll up or down in a list	**Up Arrow** or **Down Arrow** key
Go to the previous window	Space bar or **Enter** to choose **Back** (when available)
Get help information for a window	Space bar or **Enter** to choose **Help** (when available)

Install the HCM-F Application Node

Procedure

Step 1 Insert the Cisco HCM-F ISO disk into the DVD drive of the virtual machine.

Step 2 Reboot and start the virtual machine.
The HCM-F installation wizard opens.

Step 3 On the **Media Check** screen, select **OK** to perform a check of the media, or select **Skip** to proceed to the installation.

Step 4 On the **Product Deployment Selection** screen, select **HCS Application Suite** and then select **OK**.

Step 5 On the **Proceed with Install** screen, verify that you are installing the version you want, and select **Yes** to overwrite the hard drive.

Step 6 On the **Platform Installation Wizard** screen, select **Proceed**.

Step 7 On the **Basic Install** screen, select **Continue**.

Step 8 On the **Timezone Configuration** screen, select your time zone from the menu, and then select **OK**.

Step 9 On the **Auto Negotiation Configuration** screen, select **Continue**.

Step 10 On the **MTU Configuration** screen, select **No** to leave the MTU size at the OS default, or select **Yes** and enter new values.

Step 11 On the **DHCP Configuration** screen, select **No** to use a static IP address.

Step 12 On the **Static Network Configuration** screen, specify the **Hostname**, **IP Address**, **IP Mask**, and **GW Address** for the App Node, and select **OK**.

The virtual machine must be able to reach the gateway that is entered for the static configuration, or else the installation will give an error and not proceed.

Step 13 On the **DNS Client Configuration** screen:

- Select **Yes** to use DNS. Enter values for the **Primary DNS**, **Secondary DNS (optional)**, and **Domain**.
- Select **No** to not use DNS.

If the virtual machine cannot reach the DNS server, then the installation gives an error and does not proceed.

Step 14 On the **Administrator Login Configuration** screen, set up the **Administrator ID** and **Password** for the App Node. Then select **OK**.

Step 15 On the **Certificate Information** screen, enter values for **Organization**, **Unit**, **Location**, and **State.** Select **Country** from the menu. Then select **OK**.

Step 16 On the **Network Time Protocol Client Configuration** screen, enter the hostname or IP address for one to five NTP Servers. Then select **OK**.

Step 17 On the **Security Configuration** screen set the system security password for the App Node. Then select **OK**.

Step 18 On the **Platform Configuration Confirmation** screen, select **OK**.

After the application node is installed, the virtual machine is rebooted. The following message appears, and you are prompted to log in to the Application Node: `The installation of HCS Application Suite has completed successfully`.

What to do next

Set the minimum version of the Transport Layer Security (TLS) protocol for the application node from the command line with **set tls min-version <version>**. This command disables all the lower version of TLS than the set version. For example, if you set the minimum version as TLSv1.2, then the TLSv1.1 and the below version is disabled.

Note

- Ensure that your web browser supports the TLS version you have set.
- Ensure that any client application using HCMF NBI APIs also support the minimum TLS version you have set.

Install Web Services Nodes

Note Multiple WS Nodes can be installed in parallel.

Before you begin

The HCM-F Application Node must be installed before installing an HCM-F Web Services Node.

Procedure

Step 1 Add the WS Node to the cluster on the Application Node.

a) Log in to the CLI of the application node as administrator.

b) Enter the **set hcs cluster node** command.
c) Enter the following information about the WS Node you're adding.

Table 8: Node information

Information	What to enter
Node Type	Enter `WS` to indicate a Web Services node.
Server Hostname	Enter the hostname of the WS node.
Server IP Address	Enter the IP address of the WS node.

The following message is displayed:

```
Node successfully added to the cluster
```

Note You can display a list of all the nodes in the cluster by using the **show hcs cluster nodes** command.

Step 2 Insert the Cisco HCM-F ISO disk into the DVD drive of the virtual machine.

Step 3 Reboot and start the virtual machine.
The HCM-F installation wizard opens to start the installation of the Cisco HCM-F.

Step 4 On the **Media Check** screen, select **OK** to perform a check of the media, or select **Skip** to proceed to the installation.

Step 5 On the **Product Deployment Selection** screen, select **HCS Web Suite** and then select **OK**.

Step 6 On the **Proceed with Install** screen, verify that you're installing the version you want, and select **Yes** to overwrite the hard drive.

Step 7 On the **Platform Installation Wizard** screen, select **Proceed**.

Step 8 On the **Basic Install** screen, select **Continue**.

Step 9 On the **Timezone Configuration** screen, select your time zone from the menu, and then select **OK**.

Step 10 On the **Auto Negotiation Configuration** screen, select **Continue**.

Step 11 On the **MTU Configuration** screen, select **No** to leave the MTU size at the OS default, or select **Yes** and enter new values.

Step 12 On the **DHCP Configuration** screen, select **No** to use a static IP address. Select **Yes** to use DHCP to obtain an IP address.

Step 13 On the **Static Network Configuration** screen, specify the **Hostname**, **IP Address**, **IP Mask**, and **GW Address** for the WS Node and select **OK**.

The virtual machine must be able to reach the gateway that is entered for the static configuration, or else the installation gives an error and not proceed.

Step 14 On the **DNS Client Configuration** screen:

- Select **Yes** to use DNS. Enter values for the **Primary DNS**, **Secondary DNS (optional)**, and **Domain**.
- Select **No** to not use DNS.

If the hostname of the Cisco HCM-F server isn't resolvable using the specified DNS server because the virtual machine can't reach the DNS server, then the installation gives an error and doesn't proceed.

Step 15 On the **Application Node Connection** screen, enter the **Hostname**, **IP Address**, **Administrator Password**, and **Security Password** for the App Node that the WS Node will connect to. Then select **OK**.

Step 16 On the **Administrator Login Configuration** screen, set up the **Administrator ID** and **Password** for the WS Node. Then select **OK**.

Step 17 On the **Certificate Information** screen, enter values for **Organization**, **Unit**, **Location**, and **State.** Select **Country** from the menu. Then select **OK**.

Step 18 On the **Network Time Protocol Client Configuration** screen, enter the hostname or IP address for one to five NTP Servers. Then select **OK**.

Note Configure the same NTP Server for the WS Node and the Application Node.

Step 19 On the **Security Configuration** screen set the system security password for the WS Node. Then select **OK**.

Step 20 On the **Platform Configuration Confirmation** screen, select **OK**.

After the WS Node is installed, the virtual machine is rebooted. Then you see the message `The installation of HCS Web Suite has completed successfully` and will be prompted to log in to the WS Node.

What to do next

Log in to the Application Node CLI and run the **show hcs cluster nodes** command. Confirm that the WS Node Version has changed from "Not Installed" to the version of the WS node.

If the WS Node installation appears to have succeeded, but the WS Node Version as shown by the **show hcs cluster nodes** is not updated, refer to Cluster Node Version Mismatch section of this document.

Set the minimum version of the Transport Layer Security (TLS) protocol for the web server from the command line with **set tls min-version <version>**. This command disables all the lower version of TLS than the set version. For example, if you set the minimum version as TLSv1.2, then the TLSv1.1 and the below version is disabled.

Note

- The default security protocol in HCM-F is TLS 1.0.
- Ensure that your web browser supports the TLS version you have set.
- Ensure that any client application using HCMF NBI APIs also support the minimum TLS version you have set.
- When the HCM-F works as a server, set the TLS version to minimum. As a client HCM-F, use lower version if the server does not support.

Install the Remote Access Portal Node

Procedure

Step 1 Insert the Cisco HCM-F ISO disk into the DVD drive of the virtual machine.

Step 2 Reboot and start the virtual machine.
The HCM-F installation wizard opens.

Step 3 On the **Media Check** screen, select **OK** to perform a check of the media, or select **Skip** to proceed to the installation.

Step 4 On the **Product Deployment Selection** screen, select **HCS Remote Access Portal** and then select **OK**.

Step 5 On the **Proceed with Install** screen, verify that you are installing the version you want, and select **Yes** to overwrite the hard drive.

Step 6 On the **Platform Installation Wizard** screen, select **Proceed**.

Step 7 On the **Basic Install** screen, select **Continue**.

Step 8 On the **Timezone Configuration** screen, select your time zone from the menu, and then select **OK**.

Step 9 On the **Auto Negotiation Configuration** screen, select **Continue**.

Step 10 On the **MTU Configuration** screen, select **No** to leave the MTU size at the OS default, or select **Yes** and enter new values.

Step 11 On the **DHCP Configuration** screen, select **No** to use a static IP address. Select **Yes** to use DHCP to obtain an IP address.

Step 12 On the **Static Network Configuration** screen, specify the **Hostname**, **IP Address**, **IP Mask**, and **GW Address** for the Remote Access Portal Node and select **OK**.

The virtual machine must be able to reach the gateway that is entered for the static configuration, or else the installation will give an error and not proceed.

Step 13 On the **DNS Client Configuration** screen:

- Select **Yes** to use DNS. Enter values for the **Primary DNS**, **Secondary DNS (optional)**, and **Domain**.
- Select **No** to not use DNS.

If the virtual machine cannot reach the DNS server, then the installation gives an error and does not proceed.

Step 14 On the **Administrator Login Configuration** screen, set up the **Administrator ID** and **Password** for the Remote Access Portal Node. Then select **OK**.

Step 15 On the **Certificate Information** screen, enter values for **Organization**, **Unit**, **Location**, and **State.** Select **Country** from the menu. Then select **OK**.

Step 16 On the **Network Time Protocol Client Configuration** screen, enter the hostname or IP address for one to five NTP Servers. Then select **OK**.

Step 17 On the **Security Configuration** screen set the system security password for the Remote Access Portal Node. Then select **OK**.

Step 18 On the **Platform Configuration Confirmation** screen, select **OK**.
After the Remote Access Portal Node is installed, the virtual machine is rebooted. The following message appears and you are prompted to log in to the Remove Access Portal Node: `The installation of HCS Remote Access Portal has completed successfully`.

Step 19 Log in to the CLI and run the **utils service activate** <*service_name*> command to activate the following services required by the RAP node:

- Cisco HCS RAP API Service
- Cisco HCS RAP SSO Service
- Cisco HCS RAP WWW Service
- Cisco HCS RAP Help Service

Install HCM-F Real Time Monitoring Tool

This section describes about the HCM-F Real Time Monitoring Tool (RTMT), uninstalling RTMT from Windows, and uninstalling RTMT from Red Hat Linux.

Install HCM-F Real Time Monitoring Tool

The Cisco HCM-F installation consists of one HCM-F application server and may contain one or more HCM-F Web Services (WS) servers. One copy of RTMT installed on your computer lets you monitor one HCM-F server at a time. To monitor HCM-F on a different server, you must log out of the RTMT session on the first server before you can log in to the other HCM-F server.

Before you install RTMT, consider the basics on HCM-F RTMT.

- HCM-F RTMT monitors only HCM-F Servers.
- HCM-F RTMT can be the only version of RTMT run on a client computer.

Procedure

Step 1 From the command line, run the **utils service list** command to verify that the Cisco AMC Service is running.

The Cisco AMC Service allows RTMT to retrieve real-time information from the HCM-F server.

Step 2 Log in to HCM-F on the application server.

Step 3 In HCM-F, click the **Infrastructure Manager** tab.

Step 4 Navigate to **Administration** > **HCM-F RTMT Installers**.

The HCM-F RTMT Installers page opens.

Step 5 Perform one of the following steps:

- To download RTMT for a client computer that is running the Microsoft Windows operating system, click **HCM-F RTMT Windows Installer**.
- To download RTMT for a client computer that is running the Linux operating system, click **HCM-F RTMT Linux Installer**.

Step 6 Save the executable in the preferred location on your computer.

Step 7 Perform one of the following steps to install RTMT:

- To install the Windows version, double-click the RTMT icon that appears on the desktop or locate the directory to which you downloaded the file and run the RTMT installation file. The extraction process begins, and then the RTMT Introduction window appears.

  Note If you are installing RTMT on a Windows Vista computer, the following User Account Control popup message appears: “An unidentified program wants to access your computer.” To continue, click **Allow**.

- To install the Linux version, ensure that the file has execute privileges. For example, enter the following command, which is case sensitive: **chmod +x CcmServRtmtPlugin.bin**. The RTMT Introduction window opens.

Step 8 Click **Next**.

Step 9 To accept the license agreement, click **I accept the terms of the License Agreement** and then click **Next**.

Step 10 Perform one of the following steps:

- Click **Next** to accept the default folder.

  The default installation paths are:

  - Windows: `C:/Program Files/Cisco/HCS/JRtmt`
  - Windows 7 32 bit: `C:/Program Files/Cisco/HCS/JRtmt`
  - Windows 7 64 bit: `C:/Program Files (x86)/Cisco/HCS/JRtmt`
  - Linux: `/opt/Cisco/HCS/JRtmt`

- If you do not want to use the default folder, click **Choose** and navigate to a different folder. Then click **Next**.

The selected folder must be empty. If the selected folder is not empty, a warning dialog appears and you cannot proceed unless you select or create an empty folder.

If the installer detects that RTMT is already installed on the computer, a warning dialog appears. You cannot have more than one copy of RTMT installed on the same computer. Click **Continue**. The uninstaller starts and the Uninstall Real-Time Monitoring Tool window appears. Click **Uninstall**, allow the uninstallation to finish, and then click **Done**. You may be prompted to restart the computer.

Step 11 On the Pre-Installation Summary page, review the information, and then click **Install**.

The installation begins. Do not click **Cancel**.

Step 12 To close the installer, click **Done**.

Uninstall RTMT for Windows

User preferences and the module jar files for RTMT (the cache) are saved locally on the client computer. When you uninstall RTMT, you can delete or save the cache.

Procedure

Select **Start** > **Settings** > **Control Panel** > **Add/Remove Program** and follow the instructions.

Note If you are uninstalling RTMT in Windows Vista, the following User Account Control message appears: `An unidentified program wants to access your computer`. To continue, click **Allow**.

Uninstall RTMT for Red Hat Linux

You can uninstall RTMT on Red Hat Linux with KDE or a Gnome client.

Procedure

Select **Start** > **Accessories** > **Uninstall Real-Time Monitoring Tool** from the task bar and follow the instructions.

Note Alternatively, you can run `/opt/Cisco/HCS/JRtmt/Uninstall_Real-Time Monitoring Tool X.X/Uninstall Real-Time Monitoring Tool X.X`.

Install Security Certificates

This section enables you to install RSA and ECDSA certificates.

Install RSA Certificates

Before you begin

- Use Certificate Authority (CA) signed certificates
- Use CA that supports RSA algorithm
- Follow these recommendation when you obtain a HCMF server certificate from a Certificate Authority (CA). Refer to the table for detailed information on the normative references.

1. Restrict X.509 certificate validity period.
2. Use certificates from qualified CA.
3. Support OCSP revocation and OCSP stapling.
4. Generate and present X.509 certificates properly.

Requirement	Normative References
Restrict X.509 certificate validity periods	Do not request or generate certificates with excessively long lifetimes. Normative references RFC 5280: "Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile"
Use certificates from qualified CA	Cisco Cryptographic Controls Policy.

Requirement	Normative References
Support OCSP revocation and OCSP stapling	Support OCSP for X.509 certificate revocation. Support OCSP stapling in TLS. Apply reasonable caching and validation policies. Control keys can be used to sign OCSP responses. Normative references RFC 6960: "X.509 Internet Public Key Infrastructure Online Certificate Status Protocol - OCSP". RFC 6066: "TLS Extension Definitions" (Section 8: Certificate Status Request). RFC 6961: "Multiple Certificate Status Request Extension". RFC 6818: "Updates to the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile". RFC 6125: "Representation and Verification of Domain-Based Application Service Identity within Internet Public Key Infrastructure Using X.509 (PKIX) Certificates in the Context of Transport Layer Security (TLS)". RFC 6698: "The DNS-Based Authentication of Named Entities (DANE) Transport Layer Security (TLS) Protocol: TLSA".
Generate and present X.509 certificates	When requesting X.509 certificates from CAs or presenting them to relying parties, follow the standard practices, as well as miscellaneous practices not covered in other requirements. This applies to TLS and any other place where X.509 is used. Normative references RFC 5280: "Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile" (aka PKIX). RFC 6818: "Updates to the Internet X.509 Public Key Infrastructure Certificate and Certificate Revocation List (CRL) Profile". RFC 6125: "Representation and Verification of Domain-Based Application Service Identity within Internet Public Key Infrastructure Using X.509 (PKIX) Certificates in the Context of Transport Layer Security (TLS)".

Procedure

Step 1 Log in to the Cisco HCM-F CLI as an administrator.

Step 2 Generate the Certificate Signing Request (CSR).

```
admin:set csr gen tomcat-RSA
```

Step 3 Ensure that the CSR is generated successfully.

```
admin:show csr list tomcat-RSA
```

Step 4 Send the CSR to CA.

```
admin:show csr own tomcat-RSA
```

Step 5 Import the new certificate.

```
admin:set cert import trust tomcat-RSA
```

Step 6 Perform one of the following depending on the type of certificate you need to import.

- Import the Root Certificate to the trust store:

  ```
  set cert import trust tomcat-RSA
  ```

- Import the Server Certificate to the own store:

  ```
  set cert import own tomcat-RSA
  ```

Step 7 Enter the certificate when the CLI prompts.

Step 8 Restart tomcat.

```
utils service restart Cisco Tomcat
```

Install ECDSA Certificates

HCM-F 11.5(1) and above supports ECDSA certificates. Modern browsers prefer newer ECDSA algorithm certificates rather than RSA when negotiating a secure connection to the web interface of HCM-F. If you only upload an RSA certificate, when ECDSA is negotiated, a certificate warning appears because the self signed certificate is still being used. Server presents self-signed ECDSA certificate even though you uploaded the RSA CA trusted certificate.

Before you begin

- Use Certificate Authority (CA) signed certificates
- Use CA that supports EC algorithm, and Subject Alternative Name (SAN)
- Use a browser that requests EC certificates

Note

- Google Chrome and Mozilla firefox prefers ECDSA ciphers over RSA ciphers.
- Internet Explorer, version 11 prefers RSA ciphers over ECDSA ciphers.

Note HCM-F doesn't support enabling/disabling EDCSA certificate. If you can't or doesn't want to generate ECDSA certificates, contact Cisco Technical Assistance Center (TAC) for assistance.

Procedure

Step 1 Log in to the Cisco HCM-F CLI as an administrator.

Step 2 Generate the Certificate Signing Request (CSR).

```
admin:set csr gen tomcat-ECDSA
```

Step 3 Ensure that the CSR is generated successfully.

```
admin:show csr list tomcat-ECDSA
```

The CLI displays the CSR.

Step 4 Send the CSR to CA.

```
admin:show csr own tomcat-ECDSA
```

Note Update CA with server hostnames that must be added to SAN.

Step 5 Import the new certificate.

```
admin:set cert import trust tomcat-ECDSA
```

Step 6 Perform one of the following depending on the type of certificate you need to import.

- Import the Root Certificate to the trust store:

  ```
  set cert import trust tomcat-ECDSA
  ```

- Import the Server Certificate to the own store:

  ```
  set cert import own tomcat-ECDSA
  ```

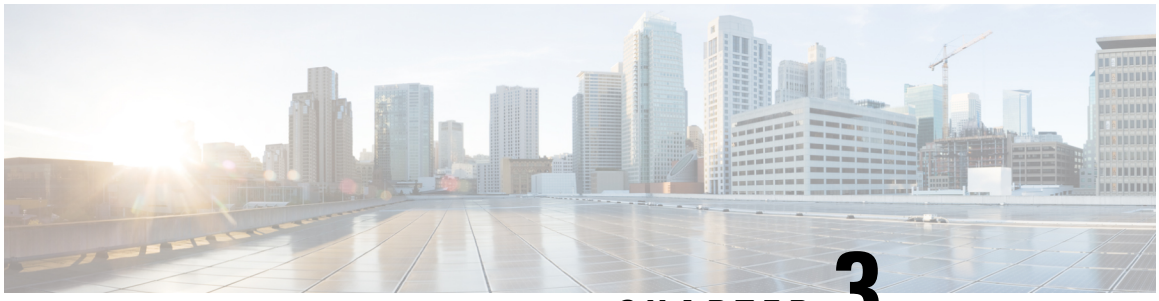
Step 7 Enter the new certificate when the CLI prompts.

Step 8 Restart tomcat.

```
utils service restart Cisco Tomcat
```

What to do next

To verify the successful installation of ECDSA, ensure that the common name of certificate is updated as *Hostname*-EC-*Domain_Name*.



CHAPTER 3

Configure HCM-F

HCM-F Configuration Workflow

Table 9: HCM-F Configuration Workflow

Configuration Steps		Related Procedures and Topics
Step 1	Enable the services required for the features to function.	Services Required by Cisco HCM-F Features, on page 25
Step 2	Configure Infrastructure Manager.	Infrastructure Manager Configuration, on page 44
Step 3	Configure Platform Manager.	Platform Manager Configuration, on page 135
Step 4	Configure Service Inventory.	Service Inventory Configuration, on page 147

Services Required by Cisco HCM-F Features

The following table lists services required for Cisco HCM-F features.

Table 10: Services Required by Cisco HCM-F Features

Feature	Required services
Configure devices and users to Cisco Prime Collaboration Assurance	Cisco HCS DMA-SA Service Cisco HCS Fulfillment Service Cisco HCS Provisioning Adapter Service Cisco CDM Database Cisco HCS SDR Change Notification Service
Data share between domain manager and HCM-F	Cisco HCS NBI REST SDR Web Service Cisco CDM Database Cisco HCS SDR Change Notification Service
License Reports	Cisco HCS License Manager Service Cisco CDM Database
Link service / link devices	Cisco HCS Fulfillment Service Cisco CDM Database
Node Manager	Cisco HCS Admin UI Cisco HCS CSF UI Service Cisco Tomcat
North bound interface	Cisco CDM Database Cisco HCS VCenterSync Service Cisco HCS License Manager Service Cisco HCS Service Inventory Cisco HCS North Bound Interface Web Service
Platform Manager - Platform Admin Web Service	Cisco Platform Manager service
RTMT	Cisco AMC Service Cisco Audit Event Service Cisco RIS Data Collector Cisco RTMT Web Service Cisco Tomcat

Feature	Required services
Service Inventory for billing/reporting	Cisco HCS Service Inventory Cisco CDM Database Cisco Tomcat Cisco HCS SI UI Cisco HCS North Bound Interface Web Service Cisco HCS Fulfillment Service Cisco HCS UCSMSync Service Cisco HCS VCenterSync Service Cisco HCS Provisioning Adapter Service Cisco HCS UCPA Service
Synchronize Cisco Unified Computing System Manager Data	Cisco HCS UCSMSync Service
Synchronize Cisco Unified Communications Domain Manager data	Cisco Tomcat Cisco HCS Admin UI service
Synchronize vCenter data	Cisco HCS VCenterSync Service
User interface applications	Cisco HCS SI UI Cisco HCS North Bound Interface Web Service

Working with Services

To start, stop, activate, or restart services or to configure service parameters for services on the Cisco HCM-F platform, you must use the Command Line Interface (CLI). You can start, stop, activate, or refresh only one service at a time. When a service stops, you cannot start it until the service is stopped. Likewise, when a service starts, you cannot stop it until the service is started.

The following table shows the commands that you need to work with services on the Cisco HCM-F platform:

Table 11: Service CLI Commands

Task	Command
Display a list of services and service status	**utils service list**
Activate a service	**utils service activate** *servicename*
Stop a service	**utils service stop** *servicename*
Start a service	**utils service start** *servicename*
Restart a service	**utils service restart** *servicename*

Task	Command
Show service parameters	**show hcs** *servicetype* ?
Set service parameters	**set hcs** *servicetype serviceparametername***?** Select a value from the displayed values.

HCM-F Credential Types

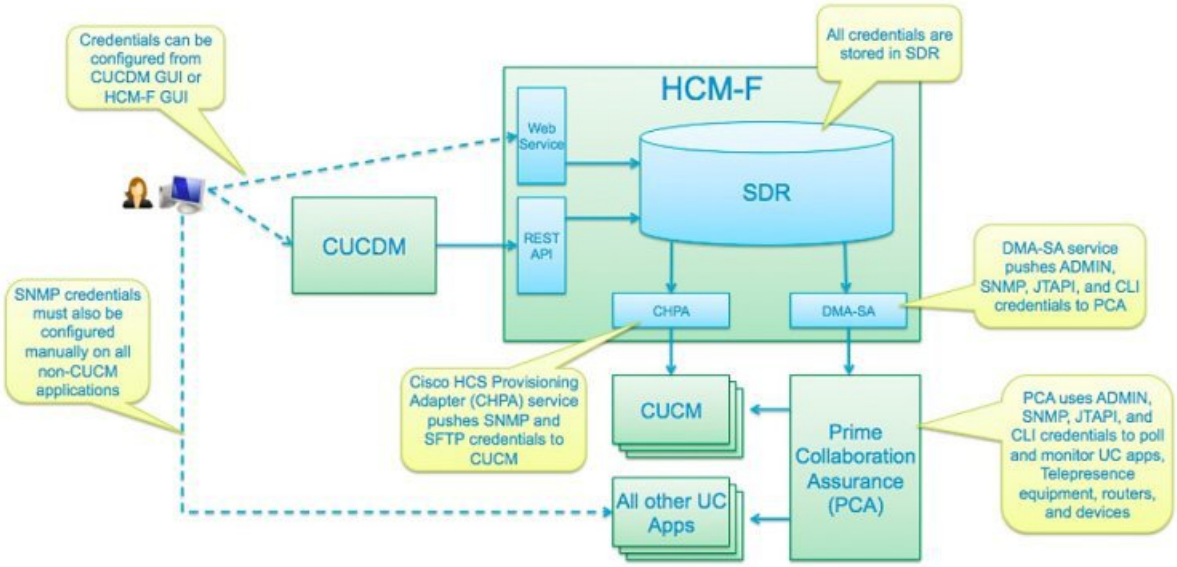
This section details all of the credentials used by the management layer of Hosted Collaboration Solution (HCS). There are a variety of credentials required to perform fulfillment and assurance tasks within HCS because management layer components performing those tasks must be able to access the APIs of various other components within HCS at both the management and UC application layers. The management components include Cisco Unified Communications Domain Manager, Hosted Collaboration Mediation - Fulfillment (HCM-F), and Prime Collaboration Assurance (PCA).

Note Cisco HCM-F will deprecate the support of Cisco Unified Communications Domain Manager in the upcoming releases with limited support for existing integration, Cisco HCS partners and customers are advised to take necessary steps to align their requirements.

All credentials are stored in the Shared Data Repository (SDR) database in HCM-F and are assigned both a Credential Type (e.g. Admin) and an Device Type (e.g. CUCM). The combination of one credential type paired with one equipment type defines the meaning and usage of that credential. Not all credential types are used for each device type. The tables below list which credentials are used for each device type, and how each of those credentials are used.

The following diagram shows a high-level view of the components which use credentials, where they are configured and where they are stored.

Figure 1: Credential Usage



Credential Types for Management Components

This section contains credential requirements for each device type that can be configured in the Shared Data Repository (SDR). The following are "management" device types, which are used to manage the "applications" listed in the next table.

Device Type	SDR Type	Required Credentials	Optional Credentials	Notes
Cisco Unified Contact Center Domain Manager	CCDM	SNMP	-	-
Cisco Unified Communications Domain Manager	CUCDM	ADMIN	-	ADMIN credentials are used by Service Inventory to read provisioning information •
Cisco Unified Service Monitor	CUSM	SNMP	-	-
Cisco Unified Operations Manager	CUOM	SNMP	-	-
Data Center Network Manager_LAN	DCNM_LAN	SNMP	-	-

Device Type	SDR Type	Required Credentials	Optional Credentials	Notes
Data Center Network Manager_SAN	DCNM_SAN	SNMP	-	-
Data Center Network Manager_DB	DCNM_DB	SNMP	-	-
Cisco Prime Central	Prime Central	SNMP	-	-
Prime Collaboration Assurance	PCA	ADMIN	SFTP	• ADMIN credential is the administrator credential used to access the PCA API to push devices into PCA. This is typically "globaladmin" user ID. • SFTP credential is used to upload billing data from CUCM to PCA. This credential is pushed to CUCM's Billing Application Server (BAS) which can be found in **Cisco Unified Serviceability** > **Tools** > **CDR Management**. **Note** The default SFTP credentials in PCA is smuser/smuser.
Prime License Manager	PLM	ADMIN	-	ADMIN credentials are used by the HCS License Manager (HLM) service on HCM-F to retrieve PLM version information and push cluster configuration data.
VCenter	VCenter	ADMIN	-	ADMIN credentials are used by VCenterSync service to read VMWare configuration and configure the SDR database with virtual machine data.
UCS Manager	UCSManager	ADMIN	-	ADMIN credentials are used by the UCS Manager Sync Service on HCM-F to read chassis and blade configuration and configure the SDR database with this data.
Cisco Virtual Packet Data Network Gateway	Virtual Packet Data Network Gateway	SNMP	-	-

Credential Types for Application Components

The following are "application" device types, which are devices providing service to a customer. The following table shows the SDR Type, Required Credentials, and Optional Credentials for device types.

PCA requires SNMP credentials to monitor Cisco Unified Communications Manager. These credentials are pushed to both Cisco Unified Communications Manager and PCA in order to avoid configuration in Cisco Unified Communications Manager first.

Note SNMP credentials refer to SNMPv1, SNMPv2, or SNMPv3.

CUCDM and HCM-F (CHPA service) use ADMIN credentials to access the Cisco Unified Communications Manager AXL interface for provisioning synchronization.

The following HCM-F services use PLATFORM credentials :

- HLM service to set the deployment mode and restart the publisher.
- CHPA service to restart the SNMP Master Agent after updating SNMP credential information.

HCM-F (CHPA service) requires HTTP credentials to configure the Billing Application Server in Cisco Unified Communications Manager.

CLI credentials are used to access the device through CLI to discover media path for troubleshooting.

PCA uses JTAPI credentials to retrieve the session status information from the Cisco Unified CM. These credentials must be manually configured on Cisco Unified Communications Manager.

Refer to Setting up Devices for Cisco Prime Collaboration Assurance to know how to enable different credential types.

Device Type	SDR Type	Required Credentials	Optional Credentials	Notes
Cisco Unified CM	Cisco Unified Communications Manager	SNMP HTTP ADMIN PLATFORM JTAPI	-	Cisco Prime Collaboration supports Cisco Unified CM clusters. Ensure that cluster IDs are unique. To verify a cluster ID, navigate to the **Enterprise Parameters Configuration** page through **System** > **Enterprise Parameters** for every cluster on the Cisco Unified CM publisher. Create same credentials for all devices in the cluster while clustering. JTAPI users need the following roles or accessibility: • Standard AXL API access • Cloud Collaboration Management admin users • Serviceability Administration • CTI enabled • CTI allow call monitoring The session monitoring feature is supported by Cisco Unified CM.
Cisco Unity Connection	CUCXN	SNMP HTTP ADMIN PLATFORM	-	
Cisco Unified Presence	CUP	SNMP HTTP	-	
Cisco Unified Intelligence Center	CUIC	SNMP HTTP	ADMIN	
Cisco Unified Contact Center Management Portal	CCMP	SNMP	-	
Cisco Expressway - Core	Expressway Core	SNMP HTTP	-	

Device Type	SDR Type	Required Credentials	Optional Credentials	Notes
Cisco Expressway - Edge	Expressway Edge	SNMP HTTP	-	
Cisco Unified Contact Center Enterprise	UCCE	SNMP HTTP	-	Enter the HTTP credentials in the following format when you add Unified CCE in the Cisco Prime Collaboration Assurance user interface: *domain*\administrator. For example, hcsdc2\administrator.
Cisco Unified Customer Voice Portal	CVP	SNMP HTTP	-	Enter the HTTP credentials for Cisco Unified Customer Voice Portal (CVP) with the *ServiceabilityAdministrationUserRole* privileges. The default username (wsmadmin) has this privilege.
Cisco Virtual Voice Browser	VoiceBrowser	SNMP	HTTP, ADMIN	
Cisco Finesse	Finesse	SNMP HTTP	-	
Cisco MediaSense	MediaSense	SNMP HTTP	-	
Cisco Unified Email / Web Interaction Manager	EIMorWIM	SNMP	-	
Cisco TelePresence Video Communication Server Control	VCS_C	SNMP HTTP ADMIN	-	HTTP users need administrator privileges.
Cisco TelePresence Video Communication Server Expressway	VCS_E	SNMP HTTP ADMIN	-	HTTP users need administrator privileges.
Cisco Unified Attendant Console (Virtual)	CUxAC_Virtual	SNMP	-	

Device Type	SDR Type	Required Credentials	Optional Credentials	Notes
Cisco Unified Attendant Console (Hardware)	CUxAC_Hardware	SNMP	-	
Cisco Emergency Responder (Virtual)	CER_Virtual	SNMP	-	
Cisco Emergency Responder (Hardware)	CER_Hardware	SNMP	-	
Cisco TelePresence Multipoint Switch	CTMS	SNMP HTTP	-	HTTP user accounts require both *Meeting Manager* and *Diagnostic Technician* roles.
Cisco TelePresence Server (Virtual)	TS_Virtual	HTTP	-	HTTP users need API access privileges.
Cisco TelePresence Server (Hardware)	TS_Hardware	HTTP	-	HTTP users need API access privileges.
Cisco TelePresence MSE Supervisor	TS_Supervisor	SNMP HTTP	-	HTTP users need administrator privileges.
Cisco TelePresence Management Suite	TMS	SNMP HTTP	-	Requires booking API license (TMS software version 13.1 or below). Generate HTTP users for Cisco Prime Collaboration through *Booking API* on the Cisco TMS windows server. Cisco Prime Collaboration supports only the default email template for the *Booking Confirm email* in Cisco TMS. The session import feature does not work if the default email template is not used.

Device Type	SDR Type	Required Credentials	Optional Credentials	Notes
Cisco Hosted Collaboration Mediation Fulfillment	HCM_F	SNMP	-	
Cisco Unified Border Element (Enterprise Edition)	CUBE_ENT	SNMP	-	
Routers, Switches, Gateways	CustomerEquipment	SNMP CLI CDP	-	Enable CDP for the video troubleshooting workflow. The telnet or SSH access is required for Cisco medianet features, which is a part of the video troubleshooting workflow.
Cisco TelePresence Multipoint Control Unit	MCU	SNMP HTTP ADMIN	-	HTTP users need administrator privileges.
Cisco TelePresence Video Endpoint	TP_VideoEndpoint	SNMP HTTP CLI	-	

Configure Account Locking

The account locking feature triggers locking of your account after few consecutive failed sign-in attempts. By default, this feature is disabled. Hence, ensure that you enable the account locking feature for extra security.

Procedure

Step 1 Log in to the Cisco HCM-F CLI as an administrator.

Step 2 Enter the **show accountlocking** command to view the account locking status.

Step 3 If the account locking status is disabled, enter the **set accountlocking enable** command to enable the account locking feature.

Note If account locking is re-enabled, the system automatically reverts to default configuration values.

Step 4 Enter the **set accountlocking count** *attempts* to configure the number of consecutive failed sign-in attempts before the system locks the account.

Note
- *attempts* represents the number of consecutive sign-in attempts before the system locks the account.
- The default value of the account locking count is 3.
- The accepted range of the consecutive failed sign-in attempts is 2-5.

The system displays the following message during the last login attempt:

```
Account will be locked if you try with a wrong password another time.
```

Step 5 Enter the **set accountlocking unlocktime** *seconds* to configure the unlock time.

Note
- *seconds* specifies the unlock time in seconds.
- The default value of the account locking unlock time is 300.
- The accepted range of the unlock time is 30-3600.

The system displays the following message when the account is locked:

```
Account has been locked, Please try after some time.
```

Note The account gets automatically unlocked only after the configured unlock time.

Cluster Node Configuration

The Node Manager application enables you to manage your HCM-F platform by adding, editing, and deleting HCM-F Cluster Nodes.

Add an HCM-F Cluster Node

Use this procedure to add an HCM-F Cluster Node from the Node Manager application.

Procedure

Step 1 From the side menu, select **HCM-F Cluster Nodes**.
The current list of HCM-F Cluster Nodes is displayed.

Step 2 Click **Add New**.
The **Add an HCM-F Cluster Node** window is displayed.

Step 3 Enter the following information about the HCM-F Cluster Node:

Field	Description
Node Type	Select the node type from the pulldown menu. This is a required field.
Host Name	Enter the host name of the HCM-F Cluster Node. This is a required field.
IP Address	Enter the IP address of the HCM-F Cluster Node. This is a required field.

Field	Description
Version	Defaults to "Not Installed" and cannot be modified.
Primary Node	Defaults to false (not checked) and cannot be modified.

Step 4 Click **Save**.

Delete an HCM-F Cluster Node

Use this procedure to delete an HCM-F Cluster Node from the Node Manager application.

Note You cannot delete the App Node.

Procedure

Step 1 From the side menu, select **HCM-F Cluster Nodes**.
The current list of HCM-F Cluster Nodes is displayed.

Step 2 Click the check box next to the node you want to delete and then click **Delete Selected**.

Step 3 In the **Confirmation** window, click **OK**.

Edit/View an HCM-F Cluster Node

Use this procedure to edit or view an HCM-F Cluster Node. Cluster Nodes that have been installed can only be viewed. Cluster Nodes that have not been installed can be edited.

Procedure

Step 1 From the side menu, select **HCM-F Cluster Nodes**.
The current list of HCM-F Cluster Nodes is displayed.

Step 2 Click on the host name of the node you want to edit or view.
For a Cluster Node that is not installed, the **Edit an HCM-F Cluster Node** window is displayed. For a Cluster Node that is installed the **View an HCM-F Cluster Node** window is displayed.

Step 3 For a Cluster Node that is not installed, change the values for the **Node Type**, **Host Name**, and **IP Address** as needed and click **Save**.

Change the Application Node Hostname

Before you begin

Before changing the Application Node hostname, make a DRF backup of your current cluster configuration.

Procedure

Step 1 Login to the Application Node CLI as OS admin.

Step 2 Verify that your current cluster is in a verified state by running the **show hcs cluster verify detailed** command.
Verify that all installed and online WS Nodes show "Configurations VERIFIED".

Step 3 To change the Application Node hostname, run the **set network hostname** command.

Step 4 When prompted to continue, enter **`y`**.

Step 5 When prompted, enter the new hostname.

Step 6 When prompted to change the IP address too, enter **`no`**.

Step 7 When prompted to continue, enter **`yes`**.

Step 8 Exit from the CLI and log back in as OS admin.

Step 9 Wait 5 to 15 minutes to allow the services to restart.
Make sure that the Cisco HCS ConfigMgr service is running before you continue.

Step 10 Run the **show hcs cluster verify detailed** command.
In the output for each installed and online WS Node, you should see "Configuration NOT VERIFIED".

Step 11 Run the **set hcs cluster config** command to propagate the new Application Node hostname to the WS Nodes.

Step 12 Run the **show hcs cluster verify detailed** command.
Verify that all installed and online WS Nodes show "Configurations VERIFIED".

If installed and online WS Nodes do not show "Configurations VERIFIED", refer to the Troubleshooting Hostname and IP Address Changes section in *Cisco Hosted Collaboration Mediation Fulfillment Troubleshooting Guide*.

What to do next

It is recommended to make a fresh DRF backup of your cluster after changing the hostname of the Application Node.

Change the Application Node IP Address

Before you begin

Before changing the Application Node IP address, make a DRF backup of your current cluster configuration.

Procedure

Step 1 Login to the Application Node CLI as OS admin.

Step 2 Verify that your current cluster is in a verified state by running the **show hcs cluster verify detailed** command.
Verify that all installed and online WS Nodes show "Configurations VERIFIED".

Step 3 To change the Application Node IP address, run the **set network ip eth0** <*new_ip_address*> <*subnet_mask*> <*gateway_ip_address*> command.

Step 4 When prompted to continue, enter **y**.

Step 5 When prompted to continue, enter **y**.

Step 6 Exit from the CLI and log back in as OS admin.

Step 7 Wait 5 to 15 minutes to allow the services to restart.
Make sure that the Cisco HCS ConfigMgr service is running before you continue.

Step 8 Run the **show hcs cluster verify detailed** command.
In the output for each installed and online WS Node, you should see "Configuration NOT VERIFIED".

Step 9 Run the **set hcs cluster config** command to propagate the new Application Node IP address to the WS Nodes.

Step 10 When prompted to reboot the system, enter **yes**.
All WS nodes in the cluster will be rebooted.

Step 11 Wait for the WS Nodes to finish rebooting.
Make sure that the Cisco HCS ConfigMgr service is running on all nodes before you continue.

Step 12 Run the **show hcs cluster verify detailed** command.
Verify that all installed and online WS Nodes show "Configurations VERIFIED".

If installed and online WS Nodes do not show "Configurations VERIFIED", refer to the Troubleshooting Hostname and IP Address Changes section in *Cisco Hosted Collaboration Mediation Fulfillment Troubleshooting Guide*.

What to do next

It is recommended to make a fresh DRF backup of your cluster after changing the IP address of the Application Node.

Change the Application Node Hostname and IP Address

Before you begin

Before changing the Application Node hostname and IP address, make a DRF backup of your current cluster configuration.

Procedure

Step 1 Login to the Application Node CLI as OS admin.

Step 2 Verify that your current cluster is in a verified state by running the **show hcs cluster verify detailed** command.
Verify that all installed and online WS Nodes show "Configurations VERIFIED".

Step 3 To change the Application Node hostname and IP address, run the **set network hostname** command.

Step 4 When prompted to continue, enter **y**.

Step 5 When prompted, enter the new hostname.

Step 6 When prompted to change the IP address too, enter **yes**.

Step 7 When prompted, enter the new IP address, subnet mask, and gateway IP address.

Step 8 When prompted to continue, enter **yes**.

Step 9 Exit from the CLI and log back in as OS admin.

Step 10 Wait 5 to 15 minutes to allow the services to restart.
Make sure that the Cisco HCS ConfigMgr service is running before you continue.

Step 11 Run the **show hcs cluster verify detailed** command.
In the output for each installed and online WS Node, you should see "Configuration NOT VERIFIED".

Step 12 Run the **set hcs cluster config** command to propagate the new Application Node hostname and IP address to the WS Nodes.

Step 13 When prompted to reboot the system, enter **yes**.
All WS nodes in the cluster will be rebooted.

Step 14 Wait for the WS Nodes to finish rebooting.
Make sure that the Cisco HCS ConfigMgr service is running on all nodes before you continue.

Step 15 Run the **show hcs cluster verify detailed** command.
Verify that all installed and online WS Nodes show "Configurations VERIFIED".

If installed and online WS Nodes do not show "Configurations VERIFIED", refer to the Troubleshooting Hostname and IP Address Changes section in *Cisco Hosted Collaboration Mediation Fulfillment Troubleshooting Guide*.

What to do next

It is recommended to make a fresh DRF backup of your cluster after changing the hostname and IP address of the Application Node.

Change the Web Services Node Hostname

Before you begin

Before changing the Web Services (WS) Node hostname, make a DRF backup of your current cluster configuration.

Procedure

Step 1 Login to the WS Node CLI as OS admin.

Step 2 Verify that your current cluster is in a verified state by running the **show hcs cluster verify detailed** command.
Verify that the WS Node you are about to change shows "Configurations VERIFIED".

Step 3 To change the WS Node hostname, run the **set network hostname** command.

Step 4 When prompted to continue, enter **y**.

Step 5 When prompted, enter the new hostname.

Step 6 When prompted to change the IP address too, enter **no**.

Step 7 When prompted to continue, enter **yes**.

Step 8 Exit from the CLI and log back in as OS admin.

Step 9 Wait 5 to 15 minutes to allow the services to restart.
Make sure that the Cisco HCS ConfigMgr service is running before you continue.

Step 10 Run the **show hcs cluster verify detailed** command.
In the output for the changed WS Node, you should see "Configurations VERIFIED". If you do, the procedure is complete.

Step 11 If the output for the changed WS Node is not "Configurations VERIFIED", run the **set hcs cluster config** command.

Step 12 When prompted, enter the IP address of the Application Node.

Step 13 Run the **show hcs cluster verify detailed** command.
Verify that the changed WS Node shows "Configurations VERIFIED".

If the changed WS Node does not show "Configurations VERIFIED", refer to the Troubleshooting Hostname and IP Address Changes section in *Cisco Hosted Collaboration Mediation Fulfillment Troubleshooting Guide*.

What to do next

It is recommended to make a fresh DRF backup of your cluster after changing the hostname of the WS Node.

Change the Web Services Node IP Address

Before you begin

Before changing the Web Services (WS) Node IP address, make a DRF backup of your current cluster configuration.

Procedure

Step 1 Login to the WS Node CLI as OS admin.

Step 2 Verify that your current cluster is in a verified state by running the **show hcs cluster verify detailed** command.
Verify that the WS Node you are about to change shows "Configurations VERIFIED".

Step 3 To change the WS Node IP address, run the **set network ip eth0** <*new_ip_address*> <*subnet_mask*> <*gateway_ip_address*> command.

Step 4 When prompted to continue, enter **y**.

Step 5 When prompted to continue, enter **y**.

Step 6 Exit from the CLI and log back in as OS admin.

Step 7 Wait 5 to 15 minutes to allow the services to restart.

Make sure that the Cisco HCS ConfigMgr service is running before you continue.

Step 8 Run the **show hcs cluster verify detailed** command.

In the output for the changed WS Node, you should see "Configuration VERIFIED". If you do, the procedure is complete.

Step 9 If the output for the changed WS Node is not "Configuration VERIFIED", run the **set hcs cluster config** command.

Step 10 When prompted, enter the IP address of the Application Node.

Step 11 When prompted to reboot the system, enter **yes**.

All WS nodes in the cluster will be rebooted.

Step 12 Wait for the WS Nodes to finish rebooting.

Ensure that the `Cisco HCS ConfigMgr` service is running on all nodes before you continue.

Step 13 Run the **show hcs cluster verify detailed** command.

Verify that the changed WS Node shows "Configurations VERIFIED".

If the changed WS Node does not show "Configurations VERIFIED", refer to the Troubleshooting Hostname and IP Address Changes section in *Cisco Hosted Collaboration Mediation Fulfillment Troubleshooting Guide*.

What to do next

It is recommended to make a fresh DRF backup of your cluster after changing the IP address of the WS Node.

Change the Web Services Node Hostname and IP Address

Before you begin

Before changing the Web Services (WS) Node hostname and IP address, make a DRF backup of your current cluster configuration.

Procedure

Step 1 Login to the WS Node CLI as OS admin.

Step 2 Verify that your current cluster is in a verified state by running the **show hcs cluster verify detailed** command.

Verify that the WS Node you are about to change shows "Configurations VERIFIED".

Step 3 To change the WS Node hostname and IP address, run the **set network hostname** command.

Step 4 When prompted to continue, enter **y**.

Step 5 When prompted, enter the new hostname.

Step 6 When prompted to change the IP address too, enter **yes**.

Step 7 When prompted, enter the new IP address, subnet mask, and gateway IP address.

Step 8 When prompted to continue, enter **yes**.

Step 9 Exit from the CLI and log back in as OS admin.

Step 10 Wait 5 to 15 minutes to allow the services to restart.

Make sure that the Cisco HCS ConfigMgr service is running before you continue.

Step 11 Run the **show hcs cluster verify detailed** command.

In the output for the changed WS Node, you should see "Configuration VERIFIED".

Step 12 If the output for the changed WS Node is not "Configuration VERIFIED", run the **set hcs cluster config** command.

Step 13 When prompted, enter the IP address of the Application Node.

Step 14 When prompted to reboot the system, enter **`yes`**.

All WS nodes in the cluster will be rebooted.

Step 15 Wait for the WS Nodes to finish rebooting.

Make sure that the Cisco HCS ConfigMgr service is running on all nodes before you continue.

Step 16 Run the **show hcs cluster verify detailed** command.

Verify that the changed WS Node shows "Configurations VERIFIED".

If the changed WS Node does not show "Configurations VERIFIED", refer to the Troubleshooting Hostname and IP Address Changes section in *chcs_tk_c5ffad4f_00_change-the-web-services-node-hostname-ip.xml*.

What to do next

It is recommended to make a fresh DRF backup of your cluster after changing the hostname and IP address of the Application Node.

Change the Application Node OS admin Password

Use this procedure the change the OS admin password on the Application Node and restore the cluster connectivity after the password change.

Procedure

Step 1 Login to the Application Node CLI as OS admin.

Step 2 Run the **set password user admin** command.

When prompted enter the current OS admin password, then the new OS admin password twice.

Step 3 Run the **show hcs cluster verify detailed** command.

For each installed and online WS node, the output should show "Configuration NOT VERIFIED".

Step 4 Run the **set hcs cluster config** command.

Step 5 Run the **show hcs cluster verify detailed** command.

For each installed and online WS node, the output should show "Configurations VERIFIED".

Infrastructure Manager Configuration

Table 12: Infrastructure Manager Configuration Workflow

Step	Task	For More Information	Restrictions
1.	Import the vSphere certificate to Cisco HCS server.	See *Import the vSphere certificate to Cisco HCS server*.	Do this only if vCenterSync is enabled and your vCenter server has only HTTPS enabled.
2.	Configure HTTPS on HCM-F for the Cisco UCS Manager Sync service.	See *Configure HTTPS for UCS Manager Sync*.	Do this only if UCSMSync is enabled and your UCS Manager has only HTTPS enabled.
Data Center Management			
3.	Update VMWare tools.	See *Update VMWare Tools*	Configure and use the Automatic Tools Upgrade option to check the tools version.
4.	Upgrade VM hardware	See *Upgrade VM hardware*	Upgrade the VM hardware required for ESXi 7.0 version.
5.	Add Data Centers.	See *Add Data Center*.	
6.	Add UCS Managers.	See *Add UCS Manager*.	
7.	Add blades.	See *Add Blade*.	Do this only if UCSMSync is not enabled.
8.	Add chassis.	See *Add Chassis*.	Do this only if UCSMSync is not enabled.
9.	Add vCenters.	See *Add vCenter*.	
10.	Add VMware data centers.	See *Add VMware Data Center*.	Do this only if vCenterSync is not enabled.
11.	Add VMware clusters.	See *Add VMware Cluster*.	Do this only if vCenterSync is not enabled.
12.	Add virtual machines.	See *Add Virtual Machine*.	Do this only if vCenterSync is not enabled.

Step	Task	For More Information	Restrictions
13.	Add ESXi hosts.	See *Add ESXi Host*.	Do this only if vCenterSync is not enabled.
14.	Associate ESXi host to blade.	See *Associate ESXi Hosts to Blades*.	Do this only if vCenterSync is not enabled.
Aggregation			
15.	(Optional) Add Session Border Controller		**Note** Aggregation configuration is necessary only if there is an external client that requires access to this information.
Customer Management			
16.	Add customers.	See *Add Customer*.	
17.	Add customer locations.	Add Customer Location, on page 61	
18.	Add customer equipment.	See *Add Customer Equipment*.	
Cluster Management			
19.	Add clusters.	Add Cluster, on page 63	
20.	Add cluster applications.	See *Add Cluster Application*.	
21.	Add SIP trunks.	See *Add SIP Trunk*.	
Application Management			
22.	Add Management Applications.	Add Management Application, on page 71	
23.	Configure Other Applications.	See *Add Other Application*.	
Administration			
24.	Add default credentials.	See *Add Default Credentials*.	
Device Management			
25.	Add cluster hardware device.	See *Add Cluster Device*.	
26.	Add non-clustered device.	See *Add a Non-Clustered Device*.	
License Management			
27.	Set the deployment mode.	See *Set Default Deployment Mode*.	

Step	Task	For More Information	Restrictions
28.	Manually install the HCS License into the License Manager.	See the Cisco Prime License Manager User Guide.	
29.	Add License Managers.	See Add a License Manager, on page 79.	
30.	Assign clusters to License Managers.	See *Assign a Cluster to a License Manager*.	
Synchronization			
31.	Perform a manual sync.	Perform Manual Sync, on page 85	
Certificate Monitoring and Management			
32.	Monitor certificates and configure email ID for receiving certificate summary (scheduled or on-demand collection).	• Collect Certificates OnDemand, on page 99 • Schedule Configuration, on page 93 • Configure Email Address, on page 94 • View Certificate Status at Service Provider Level, on page 98	
Upgrade Checks			
33.	Perform upgrade checks on the supported UC applications before and after upgrade.	See *Perform Upgrade Checks*.	
Upgrade Comparison			
34.	Perform upgrade comparison for validating the check results obtained before and after upgrade.	See *Post Upgrade Comparison*.	
Phone Compatibility Check			
35.	Understand the phones that are supported and deprecated in Cisco Unified Communications Manager before upgrading.	See *Phone Compatibility Check*.	

Update VMWare Tools

You must update the VMWare Tools after you complete and upgrade. There are two options for updating the VMWare Tools:

- configure the tool to use the Automatic Tools Upgrade option

- configure the tool to automatically check the tools version during a VM power-on and upgrade the tools

For information about how to configure these options, see the VMWare documentation.

Upgrade VM Hardware

When you upgrade virtual hardware, no downtime is required for vCenter Server or ESXi/ESX hosts. For virtual machines, the only significant downtime is the time to shut down and restart the guest operating systems.

Note For ESXi 7.0 version, you must upgrade the VM hardware version. To see supported versions, see https://kb.vmware.com/s/article/1010675 for details.

For information about upgrading Virtual Machine Hardware (VMHW), see knowledge base article 1010675, *Upgrading a virtual machine to the latest hardware version (multiple versions)*: http://kb.vmware.com/selfservice/microsites/microsite.do.

Import the vSphere Certificate to Cisco HCS Server

Import the certificate trust store if certificate validation is enabled.

Note Use this procedure only if your vCenter server has only HTTPS enabled. If HTTP, or both HTTP and HTTPS, are enabled, this procedure is unnecessary.

Procedure

Step 1 Using Firefox, browse to the vSphere server at `https://<your-vsphere-server>:8443`. Select **Firefox** > **Tools** > **Options**.

Step 2 Click **Advanced**.

Step 3 Click the **Encryption** tab.

Step 4 Click **View Certificates**.

Step 5 Select the server.

Step 6 Click **Export**. Save the PEM file to a file.

Step 7 Import the vSphere certificate to the Cisco HCM-F platform:

a) From the CLI on the Cisco HCM-F platform, enter the command **set cert import** with the following parameters:

- type: mandatory cert type, which is normally set to trust.
- name: mandatory unit name, which is set to tomcat.
- caCert: optional name of the caCert, which is set to the certificate name.

For example, you may enter **set cert import trust tomcat** <*name of your certificate*>.

b) After you run the command, the CLI prompts you to paste in the certificate. Using any text editor, open the .crt file you saved. Copy and paste the entire contents of the file at the CLI prompt.
c) After you upload the certificate, restart the Cisco HCS VCenterSync Service through the CLI.

Configure HTTPS for UCS Manager Sync

Configure HTTPS on Cisco HCM-F for the Cisco UCS Manager Sync service.

Note Use this procedure only if your UCS Manager server has only HTTPS enabled. If HTTP, or both HTTP and HTTPS, are enabled, this procedure is unnecessary.

Before you begin

Include the IP address for the UCS Manager in the Subject Alternative Name field of the UCS Manager security certificate.

Procedure

Step 1 Using Firefox, browse to the UCS Manager server at `https://<your-ucs_manager-server>`. Select **Firefox** > **Tools** > **Options**.

Step 2 Click **Advanced**.

Step 3 Click the **Encryption** tab.

Step 4 Click **View Certificates**.

Step 5 Select the server.

Step 6 Click **Export**. Save the PEM file to a file.

The extension for the PEM file is .crt.

Step 7 Import the UCS Manager certificate to the Cisco HCM-F platform:

a) From the CLI on the Cisco HCM-F platform, enter the command **set cert import** with the following parameters:

- type: mandatory cert type, which is normally set to trust.
- name: mandatory unit name, which is set to tomcat.
- caCert: optional name of the caCert, which is set to the certificate name.

For example, enter **set cert import trust tomcat** *<name of your certificate>*.

b) After you run the command, the CLI prompts you to paste in the certificate. Use any text editor to open the .crt file that you saved. Copy and paste the entire contents of the file at the CLI prompt.

Step 8 Enable secure authentication to the UCS Manager. From the CLI on the Cisco HCM-F platform, enter **set hcs ucsmsync require-ucsm-certificate enable**.

Step 9 Restart the **Cisco HCS UCSMSync** Service.

Add Data Center

Follow this procedure to add a Data Center.

Procedure

Step 1 From the side menu, select **Data Center Management** > **Data Center**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Name	Enter the name of the Data Center. This is a mandatory field.
Service Provider	This is a pre-populated field with the service provider name. This is a mandatory field.
Customer	Enter the customer name. This is an optional field.

Step 4 Click **Save**.

Step 5 Click **Data Center Address**.

Step 6 Enter the optional information for the **Address 1**, **Address 2**, **City**, **State**, **Country**, and **Zip Code** fields.

Step 7 Click **DCNM Monitoring** only if using DCNM in your deployment.

Step 8 Select the appropriate DCNM monitoring. This is an optional step.

Step 9 Click **Save**.

Add UCS Manager

Follow this procedure to add a UCS Manager to Infrastructure Manager.

Procedure

Step 1 From the side menu, select **Data Center Management** > **Data Center** > **UCS Manager**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Option	Description
Name	Enter the name of the UCS Manager. The name must match the certificate name (CN) in the security certificate for the UCS Manager. This is a mandatory field.

Option	Description
Data Center	Select a Data Center. This is a mandatory field.
IPv4 Address	Enter the IPv4 address of the UCS Manager.
Port Number	Enter the port number of the UCS Manager. This is an optional field. The port number is required if access to the UCS Manager is through a NAT that requires a port number.
Sync Enabled	Check to enable UCS Manager sync.
Sync Interval (Minutes)	Enter the time in minutes that you want the system to perform a UCS Manager sync. The default is 15.

Step 4 Click **Fabric Interconnects**.

Step 5 Enter the optional information for the fields Interconnect A IPv4 Address and Interconnect B IPv4 Address.

Step 6 Click **Save**.

Step 7 Click **Credentials**.

Step 8 Click **Add New**.

Step 9 Enter the following information:

Field	Description
Credential Type	Select the Admin credential type. This is a mandatory field.
User ID	Enter the user ID. This is a mandatory field.
Password	Enter the password for the user ID. This is a mandatory field.
Re-enter Password	Enter the password for the user ID. This is a mandatory field.

Step 10 Click **Save**.

Add Blade

Follow this procedure to add a Blade to Infrastructure Manager.

Note If UCS Manager sync is enabled and successful, Blades are added, edited, and deleted through UCS Manager sync. You should make any configuration changes through UCS Manager.

Procedure

Step 1 From the side menu, select **Data Center Management** > **Data Center** > **UCS Manager** > **Blade**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Option	Description
Name	Enter the name, which must be the same as the **Associated Server** field in UCS Manager. This is a mandatory field.
Product Name	Enter the product name. This is an optional field.
Chassis ID	Select the chassis ID. You can have multiple blades associated with a chassis. This is a mandatory field.
Slot	Select the slot number from the available slots numbers. The slot number must be the same as the **Slot ID** field in UCS Manager. This is a mandatory field.

Step 4 Click **Save**.

Add Chassis

Follow this procedure to add a chassis to Infrastructure Manager.

Note If UCS Manager sync is enabled and successful, Chassis are added, edited, and deleted through UCS Manager sync. You should make any configuration changes through UCS Manager.

Procedure

Step 1 From the side menu, select **Data Center Management** > **Data Center** > **UCS Manager** > **Chassis**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Chassis ID	Enter the chassis ID, which must be the same as the **Chassis ID** field in UCS Manager. This is a mandatory field.
Distinguished Name	Enter the distinguished name, which must be the same as the Associated Server field in UCS Manager. This is an optional field.
UCS Manager	Select the UCS Manager. You can have multiple chassis associated with a UCS Manager. This is a mandatory field.
Product Name	Enter the product name. This is an optional field.

Step 4 Click **Save**.

Add vCenter

You should configure a vCenter for each vCenter server deployed in the Data Center. If the vCenter is managing VMware infrastructure that spans multiple Data Centers, configure the vCenter in the Data Center in which the vCenter server itself is deployed.

Note Data Center configuration is optional. It is required only if an external client accesses the information from the Shared Data Repository.

Note For vCenter Sync to function, you must add at least one vCenter, vCenter credentials, and vCenter network address information.

Procedure

Step 1 From the side menu, select **Data Center Management** > **Data Center** > **vCenter**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Name	Enter the name of the vCenter. This is a mandatory field.
Description	Enter a description for the vCenter. This is an optional field.
Data Center	Select a Data Center. This is a mandatory field.
Virtual Machine	Select a virtual machine. This is an optional field.
Sync Enabled	Select to enable vCenter Sync.

Step 4 Click **Save**.

Step 5 Click **Credentials**.

Step 6 Click **Add New**.

Step 7 Enter the following information:

Field	Description
Credential Type	Select the Admin credential type. This is a mandatory field.
User ID	Enter the user ID. This is a mandatory field.
Password	Enter the password for the user ID. This is a mandatory field.
Re-enter Password	Enter the password for the user ID. This is a mandatory field.

Step 8 Click **Save**.

Step 9 Click **Network Address**.

Step 10 Click **Add New**.

Step 11 Enter the following information:

Field	Description
Network Space	Select the network space. This is a mandatory field. APPLICATION_SPACE indicates the address is in application space. SERVICE_PROVIDER_SPACE indicates the address is in the management network. CUSTOMER_SPACE indicates a double NAT is deployed.
IPV4 Address	Enter the IP address if applicable.
IPV6 Address	IPV6 is not supported by HCMF.
Hostname	Enter the hostname. This is an optional field.
Domain	Enter the domain address. This is an optional field that is normally configured when there is no hostname or IP address.
SRV Address	Select if the address is a SRV.

Step 12 Click **Save**.

Add VMware Data Center

Follow this procedure to add a VMware Data Center to Infrastructure Manager.

Note If vCenter sync is enabled, and successful, VMware Data Centers are added, edited, and deleted through the vCenter sync. You should make any configuration changes to VMware Data Centers from the vCenter user interface.

Procedure

Step 1 From the side menu, select **Data Center Management** > **Data Center** > **vCenter** > **VMware Data Center**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Name	Enter the name of the VMware Data Center. This is a mandatory field.
vCenter	Select the vCenter associated with the VMware Data Center. This is a mandatory field.

Step 4 Click **Save**.

Add VMware Cluster

Follow this procedure to add a VMware cluster.

Configure one Data Center for each physical Data Center that hosts equipment in the Cisco HCS deployment. The Data Center may be owned by the service provider or by a customer.

Note Data Center configuration is optional. It is required only if an external client accesses the information from the Shared Data Repository.

Note If vCenter sync is enabled, and successful, VMware Data Centers are added, edited, and deleted through the vCenter sync. You should make any configuration changes to VMware Data Centers from the vCenter user interface.

Procedure

Step 1 From the side menu, select **Data Center Management** > **Data Center** > **vCenter** > **VMware Cluster**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Name	Enter the name of the VMware cluster. This is a mandatory field.
VMware Data Center	Select the VMware Data Center associated with the VMware cluster. This is a mandatory field.

Step 4 Click **Save**.

Add Virtual Machine

Follow this procedure to add a Virtual Machine.

Note If vCenter sync is enabled and successful, Virtual Machines are added, edited, and deleted through the vCenter sync. You should make any configuration changes to Virtual Machines from the vCenter user interface.

Procedure

Step 1 From the side menu, select **Data Center Management** > **Data Center** > **vCenter** > **Virtual Machine**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Name	Enter the name of the Virtual Machine. This is a mandatory field.
VMware cluster	Select the VMware cluster associated with the Virtual Machine. This is a mandatory field.
Hostname	Enter the hostname of the Virtual Machine. This is an optional field.
Domain Name	Enter the domain name of the Virtual Machine. This is an optional field.
ESXi Host	Select the related ESXi host.

Step 4 Click **Save**.

Step 5 Click **Network Interfaces**.

Step 6 Click **Add New**.

Step 7 Enter the following information:

Field	Description
MAC Address	Enter the MAC address of the network interface. This is a mandatory field. Examples of acceptable formats include: `01-23-45-67-89-ab or 01:23:45:67:89:ab.`
Hostname	Enter the hostname. This is an optional field.
Domain	Enter the domain address. This is an optional field that is normally configured when there is no hostname or IP address.
IP Type	Select the IP type.
IP Address	Enter the IP address. Click the > to address. Repeat for each IP address required.

Step 8 Click **Save**.

Add ESXi Host

Follow this procedure to add an ESXi Host.

Note If vCenter sync is enabled and successful, ESXi Hosts are added, edited, and deleted through the vCenter sync. With the exception of the Blade linkage, you should make any configuration changes to ESXi Hosts from the vCenter user interface. After the ESXi Host information is automatically synced, you must manually configure the Blade association.

Procedure

Step 1 From the side menu, select **Data Center Management** > **Data Center** > **vCenter** > **ESXi Host**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Name	Enter the name of the ESXi Host. This is a mandatory field.
IPV4/IPV6 Address	Enter the appropriate IP address. This is an optional field. **Note** IPV6 is not supported by HCMF
VMware Cluster	Select the associated VMware cluster. This is a mandatory field.
Auto Link to Blade	Check this field to have the Cisco HCS Fulfillment Service make the association between the ESXi Host and Blade.
Blade	Select the associated Blade. This is an optional field.

Step 4 Click **Save**.

Associate ESXi Hosts to Blades

Follow this procedure to associate an ESXi host to a blade in Infrastructure Manager.

Note Data Center configuration is optional. It is required only if an external client accesses the information from the Shared Data Repository.

Note If vCenter sync is enabled and successful, ESXi Hosts are added, edited, and deleted through the vCenter sync. With the exception of the Blade linkage, you should make any configuration changes to ESXi Hosts from the vCenter user interface. After the ESXi Host information is automatically synced, you must manually configure the Blade association.

Procedure

Step 1 From the side menu, select **Data Center Management** > **Data Center** > **vCenter** > **ESXi Host**
Step 2 Click the name of the ESXi host you want to associate to a blade.
Step 3 Select the blade.
Step 4 Click **Save**.

Add Session Border Controller

Follow this procedure to add a Session Border Controller.

Note If the correct Session Border Controller is selected in the General Information first, you can also add Northbound Adjacencies and Southbound Adjacencies on the Session Border Controller edit page.

Procedure

Step 1 From the side menu, select **Aggregation** > **Session Border Controller**.
Step 2 Click **Add New**.
Step 3 Enter the following information:

Field	Description
Name	Enter the name of the Session Border Controller. This is a mandatory field.
Description	Enter a description for the Session Border Controller. This is an optional field.

Step 4 Click **Save**.
Step 5 Click **Northbound Adjacencies**.
Step 6 Click **Add New**.
Step 7 Enter the following information:

Field	Description
Name	Enter the name of the Northbound Adjacency. This is a mandatory field.
Description	Enter a description for the Northbound Adjacency. This is an optional field.
Local IPV4 Address	Enter the local IPV4 address. This is an optional field.
Peer IPV4 Address	Enter the peer IPV4 address. This is an optional field.

Step 8 Check the **Assign customers after save** box.
Step 9 Click **Save**.

Step 10 Select a customer from the list and click **Assign**.

Step 11 Click **Save**.

Step 12 Click **Southbound Adjacencies**.

Step 13 Click **Add New**.

Step 14 Enter the following information:

Field	Description
Name	Enter the name of the Southbound Adjacency. This is a mandatory field.
Description	Enter a description for the Southbound Adjacency. This is an optional field
Local IPV4 Address	Enter the local IPV4 address. This is an optional field
Peer IP4V Address	Enter the peer IPV4 address. This is an optional field
SIP Trunk	Select the associated SIP Trunk.

Step 15 Click **Save**.

Prime Collaboration Deployment for UC Applications

Cisco Prime Collaboration Deployment helps you to manage Unified Communications (UC) applications. Its functions are to:

- Migrate a cluster of UC servers to a new cluster (such as MCS to virtual, or virtual to virtual).

  Tip Cisco Prime Collaboration Deployment does not delete the source cluster VMs after migration is complete. You can fail over to the source VMs if there is a problem with the new VMs. When you are satisfied with the migration, you can manually delete the source VMs.

- Perform operations on clusters, such as:
  - Upgrade
  - Switch version
  - Restart
- Fresh install a new release UC cluster
- Change IP addresses or hostnames in clusters (for a network migration).

  Cisco Prime Collaboration Deployment supports simple migration and network migration. Changing IP addresses or hostnames is not required for a simple migration. For more information, see the Prime Collaboration Deployment Guide.

The functions that are supported by the Cisco Prime Collaboration Deployment can be found in the Prime Collaboration Deployment Administration Guide.

Use the **Cluster Discovery** feature to find application clusters on which to perform fresh installs, migration, and upgrade functions. Perform this discovery on a blade-by-blade basis.

For more information about features, installation, configuration and administration, best practices, and troubleshooting, see the following documents:

- Prime Collaboration Deployment Administration Guide
- Release Notes for Cisco Prime Collaboration Deployment

Add Customer

Procedure

Step 1 From the side menu, select **Customer Management** > **Customer**.

Step 2 Click **Add New**.

Field	Description
Name	Enter the name of the customer. This is a mandatory field.
Extended Customer Name	Enter an extended customer name if desired. This field is optional for dedicated customers, and mandatory for shared and partitioned customers.
External Customer ID	Enter the external customer ID. This is an optional field.
Application Monitoring this Customer	Select the application that is monitoring this customer. This is an optional field, but customer devices aren't monitored unless a monitoring application is assigned at the customer or cluster level.
Export Control	Select this option for customers with a smart account from the cluster level settings, where Export Restrictions apply. This feature allows the user to request a regulatory Export License that is granted in the Cisco Smart Software Manager or the satellite On-prem and enable the export restricted feature. The hierarchy of export control is in this order: **a.** Cluster **b.** Customer **c.** Service Provider The available options under each hierarchy are: • Enabled- export control enabled • Disabled- export control disabled • None- export control is enabled from the hierarchy below the current level.

Field	Description
Customer CUCDM	Unified CDM name from where the customer is synced to HCM-F. This field is disabled if you create customers directly in HCM-F.

Step 3 Click **License Models**, and select customer license from the **License Model** dropdown.

The available license models are: Enterprise Agreement, Named User, Named User + Perpetual, and Perpetual.

Note We recommend using Subscription Mapper to select Subscription ID and License Models. For Perpetual, select the license models from the **Add Customer** page.

Step 4 Click **Contact Information**.

Enter the contact information. This is optional information.

Step 5 Click **Deal Information**.

Enter the Subscription ID orDeal ID for this customer. This is optional information.

You can select the Subscription ID from the **Subscription Mapper** window. Navigate to **Infrastructure Manager** > **Smart Licensing** > **Subscription Mapper**, and select the Subscription ID and map it with a customer. Once the mapping is complete, the **Deal Information** in the **Edit Customer** window is updated with the Subscription ID.

For more information about Subscription IDs, see *Subscription Mapper* section in *Hosted Collaboration Solution Smart Licensing Guide*.

If you mentioned the Subscription ID for a customer, the generated Flex license usage report for the customer displays the Subscription ID details.

Step 6 Click **Proxy Settings** to set the proxy parameters of a customer.

Set the proxy parameters to register the clusters to Cisco Smart Software Manager (CSSM).

Field	Description
Proxy Hostname	Enter the proxy FQDN value.
Proxy Port	Enter the proxy port.

Select the **Enable Proxy Authentication** option, if the UC applications uses a proxy with authentication to register to CSSM.

Field	Description
Proxy Username	Enter the proxy username.
Proxy Password	Enter the proxy password.

Note

- The proxy with authentication is available for UC applications with versions 14 and 12.5 SU4 and later.
- If the proxy with authentication is enabled at a customer level, ensure that the cluster level configuration is configured to override the proxy settings for UC applications below 12.5 SU4 version.
- Updating the proxy will not update the proxy settings for the UC applications, if it is already registered. To update the proxy settings for UC applications that are configured with proxy information, you must assign the cluster and then reassign the cluster to have the updated configuration. See Assign/Unassign a cluster to a Virtual Account for details. If the cluster is shared among multiple customers proxy, set the proxy authentication from the cluster level.

Step 7 Click **Northbound Adjacencies** to view the Session Border Controller element settings. For more information, see Add Session Border Controller topic.

Step 8 Click **Save**.

Add Customer Location

Follow this procedure to add a customer location.

Procedure

Step 1 From the side menu, select **Customer Management** > **Customer** > **Customer Location**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Name	Enter the name of the customer location. This is a mandatory field.
Customer	Select the customer associated with the customer location or add a new customer. This is a mandatory field.
Description	Enter a description for the customer location. This is an optional field. **Note** The length of the description must not exceed 128 characters.
External ID	Enter the account number to use in external accounting systems. This is an optional field.
Extended Name	Enter a more detailed and descriptive location name. This is an optional field. **Note** The length of the extended name must not exceed 128 characters.
Site Location Code	Enter the dial prefix to use before internal direct dialed numbers. This is an optional field.

Step 4 Click **Contact Information**.

Step 5 Enter the customer contact information.

Step 6 Click **Save**.

Add Customer Equipment

Procedure

Step 1 From the side menu, select **Customer Management** > **Customer** > **Customer Location** > **Customer Equipment**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Name	Enter the name of the customer equipment. This is a mandatory field
Customer	Select the customer associated with the customer equipment or add a new customer. This is a mandatory field.
Location	Select the location associated with the customer equipment. This is a mandatory field. The GUI displays only the locations assigned to the selected customer.
Equipment Roles	Select the customer equipment role. This is an optional field.
Application Monitoring this Customer Equipment	Select the application that is monitoring this equipment. This is an optional field.

Step 4 Click **Save**.

Step 5 Click **Credentials**.

Step 6 Click **Add New**.

Step 7 Enter the following information:

Field	Description
Credential Type	Select the credential type. This is a mandatory field.
User ID	Enter the user ID. Depending on the credential type selected, this may be a mandatory field.
Password	Enter the password for the user ID. Depending on the credential type selected, this may be a mandatory field.
Re-enter Password	Enter the password for the user ID. Depending on the credential type selected, this may be a mandatory field.
Community String	Enter the community string. Depending on the credential type selected, this may be a mandatory field.

Field	Description
Re-enter Community String	Re-enter the community string. Depending on the credential type selected, this may be a mandatory field.
Access Type	Select the access type. This is the access type a HCM-F service should have when using the credential to access the UC application.

Step 8 Click **Save**.

Step 9 Click **Network Address**.

Step 10 Click **Add New**.

Step 11 Enter the following information:

Field	Description
Network Space	Select the network space. This is a mandatory field. APPLICATION_SPACE indicates that the address is in application space. SERVICE PROVIDER_SPACE indicates that the address is in the management network. CUSTOMER_SPACE indicates that a double NAT is deployed.
IPV4 Address	Enter the IP address if applicable.
IPV6 Address	IPV6 is not supported by HCMF
Hostname	Enter the hostname. This is an optional field.
Domain	Enter the domain address. This is an optional field that is normally configured when there is no hostname or IP address.
SRV Address	Select if the address is a SRV.

Step 12 Click **Save**.

Add Cluster

Procedure

Step 1 From the side menu, select **Cluster Management** > **Cluster**.

Step 2 Click **Add New**.

Field	Description
Name	Enter the name of the cluster. This is a mandatory field.
Customer	Select the customer.
Description	Enter a description for the cluster.

Field	Description
CPID	Enter the Call Processing ID.
Cluster Type	Select the cluster type. This is a mandatory field.
Cluster Application Version	
Manual Mode	Check to indicate that the cluster is not managed by Cisco Unified Communications Domain Manager. **Note** This field applies to clusters that are synced from Cisco Unified Communications Domain Manager.
Application Monitoring this Cluster	Select the Cisco application that is monitoring this cluster. This is an optional field, but customer devices is not monitored unless a monitoring application is assigned at the customer or cluster level.
License Type	Select the license type that applies to the cluster. For Unified Communication Application clusters Version 12.5 and later, by default it is Smart Licensing. For Expressway clusters version X12.6 and later, you must manually select the license mode. The available options for Expressway clusters are: • PAK • Smart Licensing NOTE: HCM-F supports registration to CSSM only for Expressway clusters that are in Smart Licensing mode. **Caution** When you change the license mode for an Expressway cluster from Smart licensing to PAK mode, use the box and this change requires a factory reset.

Step 3 Click **Contact Information**.

Field	Description
Email	Enter the email address for the cluster.
Country Code	Enter the country code for the cluster.

Step 4 Click **Proxy Settings** to set the proxy parameters of a cluster.

Select the **Enable Proxy Authentication** option, if the UC applications uses a proxy with authentication to register to CSSM.

Field	Description
Proxy Username	Enter the proxy username.
Proxy Password	Enter the proxy password.

Note
- The proxy with authentication is available for UC applications with versions 14 and 12.5 SU4 and later.
- If the proxy with authentication is enabled at a customer level, ensure that the cluster level configuration is configured to override the proxy settings for UC applications below 12.5 SU4 version.
- Updating the proxy will not update the proxy settings for the UC applications, if it is already registered. To update the proxy settings for UC applications that are configured with proxy information, you must assign the cluster and then reassign the cluster to have the updated configuration. See Assign/Unassign a cluster to a Virtual Account for details. If the cluster is shared among multiple customers proxy, set the proxy authentication from the cluster level.

Step 5 Click **Save**.

Test Cluster Connection

The test cluster connectivity feature allows testing the connectivity of Cisco Unity Connection, and Cisco Unified CM clusters from Cisco HCM-F. It tries to connect the publisher application node associated with the cluster, and validates the following entities:

- Network connectivity between the Cisco HCM-F and the corresponding cluster
- ADMIN credentials of the publisher node of the cluster
- Verifies that the respective Cisco HCS Provisioning Adapter (CHPA) and Cisco Unity Connection Provisioning Adapter (UCPA) services are active and running

Follow this procedure for testing the connectivity of Cisco Unity Connection, and Cisco Unified CM clusters with Cisco HCM-F.

Procedure

Step 1 From the side menu, select **Cluster Management** > **Cluster**.

Step 2 Under the **Connectivity** column, select the clusters required for testing connectivity.

Step 3 Click **Test Connection**.

- The system displays the status of cluster connectivity under the corresponding **Connectivity** column as either **In-Progress**, **PASS**, or **FAIL**.
- The system displays the cluster version under the **Cluster Version** column.
- Hover your cursor on the information icon under the **Connectivity** column to view the following information in the popped up **Connection Status** window:

- Cluster version
- Last success date, and time
- Last execution date, and time
- Status

  If a cluster connectivity failed, the **Status** field displays the cause of connectivity failure.

Add Cluster Application

Follow this procedure to configure a cluster application through Infrastructure Manager.

Note Cisco recommends that you do not configure Cisco Unity Connection, Cisco Unified Communications Manager, and Cisco Emergency Responder cluster applications manually in Cisco HCM-F. You must manually add Cisco Unified Presence to Cisco HCM-F.

Procedure

Step 1 From the side menu, select **Application Management** > **Cluster Application**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Application Type	Select the application type. This is a mandatory field.
Server Type	Select the server type for the cluster application. This field is present only when Cisco Unified Communications Manager is selected as the Application Type, and is mandatory when present.
Name	Enter the name of the cluster application. This is a mandatory field.
Description	Enter a description for the cluster application. This is an optional field.
Node Type	Select the node type, either Publisher or Subscriber. This field is present only when one of the following is selected as the Application Type: • Cisco Unified Communications Manager • Cisco Unity Connection • Cisco Unified Communications Manager IM and Presence Service • Cisco Emergency Responder

Field	Description
	This field is mandatory when present.
Cluster	Select the cluster for the cluster application. This is a mandatory field.
Auto Link to Virtual Machine	Check to automate the link to the Virtual Machine.
Virtual Machine	Select the Virtual Machine. This is an optional field.
Routing ID	Enter a unique identifier based on information already within your provisioning system instead of the default hierarchical name-based routing based on the infrastructure configuration in SDR. This field is present only when one of the following is selected as the Application Type: • Cisco Unified Communications Manager IM and Presence Service • Cisco Unity Connection • Cisco Unified Communications Manager This field is optional when present.

a) If you select CUCM as the application type, click **CUCM Service Activation**.
b) Check the services to be activated. To deactivate unselect.

Step 4 Click **Save**.

Step 5 Click **Credentials**.

Step 6 Click **Add New**.

Step 7 Enter the following information:

Field	Description
Credential Type	Select the credential type. This is a mandatory field.
User ID	Enter the user ID for the cluster application. Depending on the credential type selected, this may be a mandatory field.
Password	Enter the password for the user ID. Depending on the credential type selected, this may be a mandatory field.
Re-enter Password	Enter the password for the user ID. Depending on the credential type selected, this may be a mandatory field.
Community String	Enter the community string for the cluster application. Depending on the credential type selected, this may be a mandatory field.
Re-enter Community String	Re-enter the community string for the cluster application. Depending on the credential type selected, this may be a mandatory field.
Access Type	Select the credential type. This is the credential type a Cisco HCM-F service must have when using the credential to access the UC application.

Field	Description
	Note **ADMIN** is required for Service Inventory to generate reports for UC applications. **PLATFORM and SNMP VERSIONS** are required for Cisco Prime Collaboration Assurance monitoring. **HTTP** is required for Cisco Unified Communications Manager.

Step 8 Click **Save**.

Step 9 Click **Network Address**.

Step 10 Click **Add New**.

Step 11 Enter the following information:

Field	Description
Network Space	Select the network space. This is a mandatory field. APPLICATION_SPACE indicates that the address is in application space. SERVICE PROVIDER_SPACE indicates that the address is in the management network. CUSTOMER_SPACE indicates that a double NAT is deployed. **Note** SERVICE_PROVIDER_SPACE is required for Service Inventory to generate reports for Cisco Unified Communications Manager and Cisco Unity Connection cluster applications.
IPv4 Address	Enter the IP address if applicable. **Note** IPv4 address is required for Service Inventory to generate reports for Cisco Unified Communications Manager and Cisco Unity Connection cluster applications.
IPv6 Address	HCM-F does not support IPv6.
Hostname	Enter the hostname. This is an optional field.
Domain	Enter the domain address. This is an optional field that is normally configured when there is no hostname or IP address.
SRV Address	Select if the address is an SRV.

Step 12 Click **Save**.

Cluster Field Descriptions

Field	Description
Name	Displays the cluster name.
Customer	Displays the number of related customers.

Field	Description
Monitoring Application	Displays the name of the monitoring application that is monitoring this cluster.
Applications	Displays the number of related applications.
Devices	Displays the number of related devices.
Version	Displays the version of corresponding clusters.
Connectivity	Allows selecting Cisco Unity Connection, and Cisco Unified CM clusters. It also displays the status of clusters connectivity with HCM-F, and test information with the reason for failure.

Add SIP Trunk

Note SIP Trunk configuration is optional. It is only required if an external client accesses this information from the Shared Data Repository.

Procedure

Step 1 From the side menu, select **Cluster Management** > **Cluster** > **SIP Trunk**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Name	Enter the name of the SIP trunk. This is a mandatory field.
Description	Enter a description of the SIP trunk. This is an optional field.
CUCM Cluster	Select the associated Cisco Unified Communications Manager cluster. This is a mandatory field.
Southbound Adjacency	Select the associated Southbound Adjacency. This is an optional field.

Step 4 Click **Save**.

Step 5 Click **Assign CUCM Applications**.

Step 6 Check the appropriate Cisco Unified Communications Manager application to associate it with the SIP Trunk.

Step 7 Click **Save**.

Management Application

The Management Application Summary page displays a list of the management applications in your Cisco HCS as well as basic details about each one.

The following Management Applications are supported:

- Cisco Unfiled Operations Manager
- Cisco Unified Service Monitor
- DCNM_LAN
- DCNM_SAN
- DCNM_DB
- Cisco Communications Domain Manager
- Prime Central
- Prime Collaboration
- Cisco TelePresence Exchange
- Cisco TelePresence Multipoint Switch
- Virtual Packet Data Network Gateway

Management Application Field Descriptions

Field	Description
Name	Displays the management application name.
Type	Displays the management application type.
Usage	Displays the usage, in percent, of the management application. Usage applies to Cisco Prime Unified Operations Manager applications.
Virtual Machine	Displays the related Virtual Machine hosting the management application.
Billing Server	Displays the related billing server. Billing server applies to Cisco Prime Unified Operations Manager applications.
Launch Application	Displays the link to the related Contact Center Domain Manager, if applicable.
Connectivity	Displays the connectivity status of Cisco Hosted Mediation and Fulfillment (HCM-F) with Cisco Unified CDM, Prime License Manager (PLM), and Prime Collaboration Assurance (PCA).

Test Management Application Connection

Procedure

Step 1 From the side menu, select **Application Management** > **Management Application**.

Step 2 Under the **Connectivity** column, select the management application required for testing connectivity.

Step 3 Click the **Test Connection** button.

The system displays the following information:

- The status of management application connectivity under the corresponding **Connectivity** column as either **In-Progress**, **PASS**, or **FAIL**
- The management application version under the **Version** column
- Hover your cursor on the information icon under the **Connectivity** column to view the following information in the popped up **Connection Status** window:
  - Last success date, and time

    This field displays the timestamp of the last successful connection between the management application, and Cisco HCM-F.
  - Last execution date, and time

    This field displays the timestamp of the last connectivity test between the management application, and Cisco HCM-F.
  - Status

    If a management application connectivity failed, the **Status** field displays the cause of connectivity failure.

Add Management Application

The following configurations needs to be done in Insfrastructure Manager.

Procedure

Step 1 From the side menu, select **Application Management** > **Management Application**.

Step 2 Click **Add New**.

Step 3 Enter the applicable information, referenced below.

Field	Description
Application Type	Select the type of application manager. This is a mandatory field and applies to all application types.
Name	Enter the hostname of the applicable management application. This is a mandatory field and applies to all application types.

Field	Description
CTX Type	Select the CTX type, the options are Admin, Engine, or DB. This is a mandatory field and applies to the Cisco TelePresence Exchange application type. Only one Cisco Telepresence Exchange application is allowed .
API Version	Select the API version of Cisco Unified Communications Domain Manager.
Port	Enter the port number for the Cisco Unified Communications Domain Manager.
Description	Enter a description for the application. This is an optional field and applies to all application types.
Auto Link to Virtual Machine	Check to automate linking to the virtual machine. This is an optional field and applies to all application types.
Virtual Machine	Select the virtual machine for the application. This is an optional field and applies to all application types.
Host ID	Enter the Host ID for the Cisco Unified Communications Domain Manager.
Routing ID	Enter a unique routing ID for the application type.
Billing Server	Select the billing server related to the application. This is an optional field and applies only to the Prime Collaboration application type.
Customer	Enter the customer name associated with the application. This is an optional field and applies to the application types Cisco TelePresence Exchange, Cisco TelePresence Multipoint Switch, and Virtual Packet Data Network Gateway.
Application Monitoring this Application	Select the application monitoring this application. This is an optional field and applies to the application types Cisco TelePresence Exchange, Cisco TelePresence Multipoint Switch, and Virtual Packet Data Network Gateway.

Step 4 Click **Save**.

Step 5 Click **Credentials**.

Step 6 Click **Add New**.

Step 7 Enter the following information:

Field	Description
Credential Type	Select the credential type ADMIN. This is a mandatory field.
User ID	Enter the user ID. This is a mandatory field.
Password	Enter the password for the user ID. This is a mandatory field.
Re-enter Password	Enter the password for the user ID. This is a mandatory field.

Step 8 Click **Save**.

Step 9 Click **Network Address**.

Step 10 Click **Add New**.

Step 11 Enter the following information:

Field	Description
Network Space	Select Service Provider Space. This is a mandatory field.
IPV4 Address	Enter the IP address if applicable.
Hostname	Enter the hostname. This is an optional field.
Domain	Enter the domain address. This is an optional field that is normally configured when there is no hostname or IP address.
SRV Address	Select if the address is a SRV.

Step 12 Click **Save**.

Add Other Application

Use this procedure to configure other applications, such as Telepresence Management Suite.

Procedure

Step 1 From the side menu, select **Application Management** > **Other Application**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Application Type	Select the application type. This is a mandatory field.
Name	Enter the hostname of the application. This is a mandatory field.
Description	Enter a description for the application. This is an optional field.
Auto Link to Virtual Machine	Check to automate linking to the virtual machine.
Virtual Machine	Select the virtual machine for the application. This is an optional field.
Customer	Select the customer for the application. This is an optional field.
Application Monitoring this Application	Select the application that is monitoring the application. This is an optional field.

Step 4 Click **Save**.

Step 5 Click **Credentials**.

Step 6 Click **Add New**.

Step 7 Enter the following information:

Field	Description
Credential Type	Select the credential type ADMIN. This is a mandatory field.
User ID	Enter the user ID. This is a mandatory field.

Field	Description
Password	Enter the password for the user ID. This is a mandatory field.
Re-enter Password	Enter the password for the user ID. This is a mandatory field.

Step 8 Click **Save**.

Step 9 Click **Network Address**.

Step 10 Click **Add New**.

Step 11 Enter the following information:

Field	Description
Network Space	Select Application Space. This is a mandatory field.
IPV4 Address	Enter the IP address if applicable.
IPV6 Address	IPV6 is not supported by HCMF.
Hostname	Enter the hostname. This is an optional field.
Domain	Enter the domain address. This is an optional field that is normally configured when there is no hostname or IP address.
SRV Address	Select if the address is a SRV.

Step 12 Click **Save**.

Add Default Credentials

Use default credentials for accessing applications through the WEB, CLI, or SNMP. The appropriate credentials are assigned to each equipment type manually or by syncing with a domain manager.

Configure default credentials for each User ID or community string common across all equipment of a certain type.

Procedure

Step 1 From the side menu, select **Administration** > **Default Credentials**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Owner is Service Provider	Click to indicate that the owner of the equipment type is the Service Provider. This is the default.
Owner	Indicate the owner of the equipment type. If "Owner is Service Provider" is not checked, click the magnifying glass icon to select a customer. This is a mandatory field.

Field	Description
Equipment Type	Select the equipment type for the credential. This is a mandatory field.
Credential Type	Select the credential type. This is a mandatory field.
Access Type	Select the access type. This is the access type a HCM-F service should have when using the credential to access the UC application.
User ID	Enter the user ID. Depending on the credential type selected, this may be a mandatory field.
Password	Enter the password for the user ID. Depending on the credential type selected, this may be a mandatory field.
Re-enter Password	Enter the password for the user ID. Depending on the credential type selected, this may be a mandatory field.
Community String	Enter the community string. Depending on the credential type selected, this may be a mandatory field.
Re-enter Community String	Re-enter the community string. Depending on the credential type selected, this may be a mandatory field.

Step 4 Click **Save**.

Add Cluster Device

Procedure

Step 1 From the side menu, select **Device Management** > **Cluster Device**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Device Type	Select the device type. This is a mandatory field.
Name	Enter a name for the cluster device. This is a mandatory field.
Node Type	Select the node type, either Publisher or Subscriber. The Node Type field does not appear for all Device Types. If it does appear, it is a mandatory field.
Cluster	Select the associated cluster. This is a mandatory field.

Step 4 Click **Save**.

Step 5 Click **Credentials**.

Step 6 Click **Add New**.

Step 7 Enter the following information:

Field	Description
Credential Type	Select the credential type. This is a mandatory field.
User ID	Enter the user ID for the cluster application. Depending on the credential type selected, this may be a mandatory field.
Password	Enter the password for the user ID. Depending on the credential type selected, this may be a mandatory field.
Re-enter Password	Enter the password for the user ID. Depending on the credential type selected, this may be a mandatory field.
Community String	Enter the community string for the cluster application. Depending on the credential type selected, this may be a mandatory field.
Re-enter Community String	Re-enter the community string for the cluster application. Depending on the credential type selected, this may be a mandatory field.
Access Type	Select the access type. This is the access type a Cisco HCM-F service should have when using the credential to access the UC application. **Note** **PLATFORM** and **ADMIN** are required for Service Inventory to generate reports for UC applications.

Step 8 Click **Save**.

Step 9 Click **Network Address**.

Step 10 Click **Add New**.

Step 11 Enter the following information:

Field	Description
Network Space	Select the network space. This is a mandatory field. APPLICATION_SPACE indicates the address is in application space. SERVICE PROVIDER_SPACE indicates the address is in the management network. CUSTOMER_SPACE indicates a double NAT is deployed. **Note** SERVICE_PROVIDER_SPACE is required for Service Inventory to generate reports for Cisco Unified Communications Manager and Cisco Unity Connection cluster applications.
IPV4 Address	Enter the IP address if applicable. **Note** IPV4 address is require for Service Inventory to generate reports for Cisco Unified Communications Manager and Cisco Unity Connection cluster applications.
IPV6 Address	IPV6 is not supported by HCMF
Hostname	Enter the hostname. This is an optional field.
Domain	Enter the domain address. This is an optional field that is normally configured when there is no hostname or IP address.

Field	Description
SRV Address	Select if the address is a SRV.

Step 12 Click **Save**.

Add a Non-Clustered Device

Procedure

Step 1 From the side menu, select **Device Management** > **Non-Clustered Device**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Device Type	Select the device type. This is a mandatory field.
Name	Enter a name for the cluster device. This is a mandatory field.
Customer	Select the associated customer. This is an optional field.
Application Monitoring this Device	Select the application to monitor this device. This is an optional field.

Step 4 Click **Save**.

Step 5 Click **Credentials**.

Step 6 Click **Add New**.

Step 7 Enter the following information:

Field	Description
Credential Type	Select the credential type. This is a mandatory field.
User ID	Enter the user ID for the cluster application. Depending on the credential type selected, this may be a mandatory field.
Password	Enter the password for the user ID. Depending on the credential type selected, this may be a mandatory field.
Re-enter Password	Enter the password for the user ID. Depending on the credential type selected, this may be a mandatory field.
Community String	Enter the community string for the cluster application. Depending on the credential type selected, this may be a mandatory field.
Re-enter Community String	Re-enter the community string for the cluster application. Depending on the credential type selected, this may be a mandatory field.

Field	Description
Access Type	Select the access type. This is the access type a Cisco HCM-F service should have when using the credential to access the UC application. **Note** **PLATFORM** and **ADMIN** are required for Service Inventory to generate reports for UC applications.

Step 8 Click **Save**.

Step 9 Click **Network Address**.

Step 10 Click **Add New**.

Step 11 Enter the following information:

Field	Description
Network Space	Select the network space. This is a mandatory field. APPLICATION_SPACE indicates the address is in application space. SERVICE PROVIDER_SPACE indicates the address is in the management network. CUSTOMER_SPACE indicates a double NAT is deployed. **Note** SERVICE_PROVIDER_SPACE is required for Service Inventory to generate reports for Cisco Unified Communications Manager and Cisco Unity Connection cluster applications.
IPV4 Address	Enter the IP address if applicable. **Note** IPV4 address is require for Service Inventory to generate reports for Cisco Unified Communications Manager and Cisco Unity Connection cluster applications.
Hostname	Enter the hostname. This is an optional field.
Domain	Enter the domain address. This is an optional field that is normally configured when there is no hostname or IP address.
SRV Address	Select if the address is a SRV.

Step 12 Click **Save**.

Set Default Deployment Mode

With Hosted Collaboration Management Fulfillment, Global Deployment Mode is renamed to Default Deployment Mode. License Managers can have other modes than the Default Deployment Mode. With Global Deployment Mode, a License Manager cannot have different deployment modes.

Follow this procedure to enforce the Default Deployment Mode for Cisco Hosted Collaboration Solution License Management.

Procedure

Step 1 From the side menu, select **License Management** > **Settings**.

Step 2 Select the deployment mode from the **Default Deployment Mode** drop-down list.

This field is required before you add any License Manager instance.

Step 3 Click **Save**.

Add a License Manager

Procedure

Step 1 From the side menu, select **License Management** > **License Manager Summary**.

Step 2 Click **Add New**.

Step 3 Enter the following information:

Field	Description
Name	The name of the License Manager instance.
Hostname	The hostname/IP Address of the License Manager instance. If hostname is specified, then it must be a fully qualified domain name. If IP address is specified, then ensure that the IP address specified is the NAT IP Address of License Manager. **Note** If the License Manager is in Application Space, ensure that the **Hostname** field has the NAT IP Address of License Manager specified.
License Manager Cluster Capacity	The License Manager Cluster Capacity is set at 1000 and cannot be edited.
User ID	The OS administrator user ID associated with the License Manager.
Password	The password associated with the user ID.
Re-enter Password	Re-enter the password associated with the user ID.
Deployment Mode	Select the required Deployment Mode from the drop-down list. **Note** Licenses of Cisco Collaboration Flex Plan work only in HCS mode.
Network Space	In the drop-down list, select the Network Space in which your Prime License Manager is located: Service Provider Space, or Application Space. • If Standalone PLM located in Service Provider space, use **Service Provider Space**. • If Coresident PLM is located in Application space, use **Application Space**.

Field	Description
	A Prime License Manager located in the application space can either be a stand-alone Prime License Manager or a coresident Prime License Manager with CUCM. When Prime License Manager is located in application space, it can only serve applications located in the same application space. If the Prime License Manager is coresident with Cisco Unified CM, then make sure to start the following services: • Cisco Prime LM Resource API • Cisco Prime LM Resource Legacy API For assistance on verifying the status of services, see Working with Services, on page 27.

Step 4 Click **Save**.

Note For detailed assistance on HCS Collaboration Flex Plan licensing, see *Cisco Hosted Collaboration Solution License Management*.

Assign a Cluster to a License Manager

Procedure

Step 1 From the side menu, select **License Manager** > **License Manager Summary** .

Step 2 Click a license manager from the table.

Step 3 Click the **Clusters Managed By** menu to see a list of Clusters currently assigned to this License Manager.

Note
- Each Cluster can only be assigned to one License Manager.
- Ensure that whatever the Network Space, you have specified while adding license manager, that network space information must have provided while creating the cluster applications. If not the cluster assignment fails. For example, If a Prime License Manager has 'Application space" as the value for network space then ensure CUCM assigned to this cluster has "Application space" IP address is configured.
- If a License Manager is in Application space, only the clusters belonging to the same Application Space must added to that License Manager. Since, given each customer has different Application Space, a License Manager belong to Application Space can serve only one customer.

Step 4 Click **Assign** to show a list of all eligible Clusters available to the License Manager.

Step 5 Check the box for the Cluster you want to add and click **Assign**.

Cluster assignment takes some time as it involves the change of deployment mode and a restart of the cluster application. Once complete it shows the list of cluster applications assigned in the cluster table.

Flex Usage Report

The Flex Usage Reports feature generates a monthly and quarterly aggregated license consumption report of all customers in csv format using HCM-F at a partner level. The Flex license is managed at the partner level even though the flex subscription is at the customer level. The report provides the Flex license usage data. Based on the report the partner is supposed to keep their subscriptions up to date on quarterly basis. It sends a report to Cisco and Partner to identify the license usage details for all the customers. The Flex Usage Report generates the summary of license usage data in terms of Knowledge workers, Common area, TelePresence device, Access, Professional, Enhanced, Voice Mail and CER definition in Flex Hosted Calling. HCM-F collects order info, true forwarding and compliance status from the report. The report also provides perpetual license details, such as, order details, consumption, and compliance for the partner.The report is generated based on flex definition. It fetches data from Unified CM, Unity Connection, and Emergency Responder.

HCS License Manager (HLM) service manages the Flex Usage Report generation in HCM-F.

The Flex Usage Reports generates monthly reports for the Dedicated and Shared Architecture customers. The reports are used for easy CCW update and Flex license usage audit.

Note The Flex Usage quarterly report is only for the Cisco audit purpose. HCM-F automatically generates a report on 15th of every quarter (March 15, June 15, Sep 15, and Dec 15), and sends it to Cisco via email.

Note Devices are either computing or communication devices that are capable of running the software or browser plug-ins associated with the software. For examples, Desk phone, Mobile phone, Laptop/Desktop, Tablet, and Video device (EX/DX/MX/WebEx Board/WebEx Room or competitor systems)

The following points summarize the Flex license usage report in HCS:

1. Partner orders X flex licenses for a customer through CCW.
2. Cisco provides Operational licenses to the partner’s Smart Account/Virtual Account through CSSM/PLM. Operational license count can be more than the number of flex licenses partner orders. For example, it's up to Cisco to decide whether to give 2X operational licenses or 1.5X.
3. Using HCM-F UI, partners agree the EURA (End User Reporting Agreement) with Cisco to share/audit usage report periodically. Post agreement, the Flex Usage Reports page shows the EURA date. If the EURA is not signed, partners cannot generate or view the usage report.

Note An email notification about EURA acceptance by partners is sent to Cisco Audit, Cisco HCS Licensing team, and Partner's procurement team after partners configure the email notification in the **Flex Usage Configurations** page.

Note Apart from the EURA email notification, there is other scenarios when email notification is sent to Cisco and partner:

- When the summary report is generated successfully.
- When the summary report generation fails.
- When the on-demand report is generated.
- When the on-demand report generation fails.
- When there are any issues in any of the clusters (for example, CHPA/UCPA(for HCM-F 12.5SU1) and CUCMCAA/UCXNCAA(for HCM-F 12.5SU2 and above) service is down, IP address is incorrect, credentials are invalid).

4. Partner generates scheduled or On-demand report periodically and shares it with Cisco through mail.
5. Cisco audits the Flex license usage report. If any additional license consumption is found, then partner orders additional licenses through CCW.

Configure Flex Usage Report

Before you begin

Configure your customers for License Model (**Infrastructure Manager** > **Customer Management**) if you need the license model information in the Flex Usage Report. The license models are:

- Flex 2.0 Enterprise Agreement
- Flex 2.0 Named User
- Flex 2.0 Named User + Perpetual
- Perpetual

Enter the Subscription ID or Deal ID for the customer from **Infrastructure Manager** > **Customer Management** > **Customer**.

You have to map the Subscription ID with the customer, once the smart accounts are configured in HCM-F. Navigate to **Infrastructure Manager** > **Smart Licensing** > **Subscription Mapper**. Once the Subscription ID is mapped with the customer, the **Deal ID** in the **Edit Customer** window is automatically updated with the Subscription ID.

Procedure

Step 1 In HCM-F UI, navigate to **Infrastructure Manager** > **License Management** > **Flex Usage Reports** > **Flex Usage Configurations**. The Flex Usage Configurations page appears.

The **System Time** field shows the time in Pacific Daylight Time (PDT) time zone. Click **Refresh** to the view the current time.

Step 2 Complete the following fields in the General Configuration task pane:

Field	Description
Provider Name	Display the provider name which is taken from the Service Provider page. Ensure that the provider name is accurate as Cisco uses this field to identify the HCS partner. To update the provider name, click **Change**. You are navigated to the **Edit Service Provider** page (**Administration** > **Service Provider**). This field is mandatory.
HCMF Instance name	HCM-F instance name used to generate the flex usage report. Specify a unique name if you have deployed more than one HCMF instance. This field accepts alphanumeric values.
HCMF UUID	Universally unique identifier of HCM-F. Each HCM-F application has a UUID. It's a non-editable field and is autogenerated.
Retention Period (Days)	Retention period (in days) of the report. Value must be between 31 to 180 days. This field is mandatory.

Step 3 Complete the following fields in the Schedule Configuration task pane:

Field	Description
Frequency Of Reports	By default, it's monthly. This field is mandatory.
Reporting Date	Date when the report will be generated. This field is mandatory.
Reporting Time	Time to start the report generation. This field is mandatory.
Quarterly Report Dates	Specifies the date when the quarterly reports are sent to CISCO for audit. The Quarterly Report Dates are 15-MAR, 15-JUN, 15-SEP, and 15-DEC. This is a non-editable field.

Step 4 Complete the following fields in the Email Notification task pane:

Field	Description
SMTP Hostname	Hostname of SMTP server
SMTP Port	Port number of SMTP server

Field	Description
Email Address (From)	Email address of the Partner This field is mandatory.
Email Address (To)	Email address of the Partner's procurement team
Cisco Email Address (To)	Email address of Cisco Audit team and HCS Licensing team This field is non-editable.
Additional Email Address (To)	Additional Email address if any

Step 5 Configure the SFTP server for the report backup. Complete the following fields in the SFTP Configuration task pane:

Note
- All fields are mandatory.
- You can only upload Flex Usage Summary report to SFTP. The Flex Usage Summary reports are saved for one year if the SFTP server is not configured. The SFTP server configuration does not have any backup retention period.

Field	Description
Enable SFTP configuration	Check the checkbox to allow SFTP configuration.
SFTP Host	Hostname of SFTP server
SFTP Port	Port number of SFTP server
Upload Path	Enter the directory path for report backup.
Username	Enter username.
Password	Email password.

Step 6 Click **Save**.

What to do next

In the Unified Communication application, enter these configuration:

Request or Download Flex Usage Report

Procedure

Step 1 In HCM-F UI, navigate to **Infrastructure Manager** > **License Management** > **Flex Usage Reports**. Flex Usage Reports page appears with the End-User Reporting Agreement (EURA).

Step 2 To use the functionality of Flex Usage Report, click **Agree**.

The (End-User Reporting Agreement) page shows the EURA accept date and time after partners agree with EURA. Once you accept the EURA, it is not displayed in the HCM-F user interface.

Step 3 Navigate to **Flex Usage Reports**.

Step 4 To download a Flex Usage report, check the check box against a report, and then click **Download CSV Format**.

Note Use **Filters** to narrow down your search from the report list.

Step 5 To request a new Flex usage report, click **Request New Usage Report**. This action creates an on-demand report. A job with the Job Entity License Usage Report for creating a new usage report is generated (**Administration** > **Jobs**). You can view the job details by hovering over the information icon.

- Generates report with the status SUCCESSFUL_NOT_REPORT_DAY but displays the report on the Report day which is configured in Schedule Configuration task on the Flex Usage Configuration page.
- Generates report with the status SUCCESSFUL for an on-demand report with the license consumption details for the last 30 days. In this case, it also shows the generated report name in `CSV` format.
- A sample Flex Usage License report in csv format is available in the following location:

  https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/hcs/11_5/HCMF_11_5_5/XYZ_HCMF-26_Flex_Calling_Usage_20190404-1.csv

Perform Manual Sync

Follow this procedure to perform a manual sync.

Procedure

Step 1 From the side menu, select **Administration** > **Sync Request**.

Step 2 Select the Job Entity.

- Service Provider: All Data Centers and customers in the system are synced.
- Customer: Only the selected customers are synced.
- Data Center: All vCenters in the Data Center are synced.
- vCenter: Only the selected vCenters are synced.
- UCS Manager: Only the selected UCS Managers are synced.
- Smart Account: Only the selected Smart Accounts, and local accounts are synced to CSSM and Satellite.

Note The Smart Account sync should sync all the smart accounts, local accounts, and virtual accounts to smart account mappings from HCM-F to CSSM and Satellite.

When a cluster is reassigned from one Virtual Account to another, run the Smart Account sync (auto or onDemand) to complete the reassignment of the cluster to the new Virtual Account.

Step 3 Check the check box next to the name of the element you want to sync.

Step 4 Click **Sync Request** > **Sync**.

Certificate Monitoring and Management

Service Providers can monitor certificates for the UC applications and take timely action if there are any certificates that are about to expire or already expired. Consolidated status of all certificates is sent to the configured email ID or IDs when certificate collection is scheduled on a weekly basis, or collected on-demand.

For Certificate Monitoring, email notification is sent to the configured email IDs as per the status of the certificates:

- Daily: Certificates that are about to expire in less than 14 days
- Alternate days: Certificates that are about to expire in less than 30 days
- Weekly: Certificates that are about to expire in less than 60 days

The following table provides information about the supported applications and certificates that can be monitored using the Certificate Monitoring dashboard:

Table 13: Supported Applications and Certificates

Unified Communication Applications	Unified Communication Applications Versions	Supported Certificates (Self Signed and CA Signed certificate)	Supported From Release in HCM-F
Cisco Unified Communications Manager (CUCM)	10.5	• Tomcat • Call Manager • Certificate Authority Proxy Function (CAPF) • IPSec • Trust Verification Service (TVS) • ITL Recovery	11.5(4)
	11.5 and 12.5	• Tomcat • Call Manager • Call Manager - ECDSA • Certificate Authority Proxy Function (CAPF) • IPSec • Trust Verification Service (TVS) • Tomcat-ECDSA • Authz • ITL Recovery	

Unified Communication Applications	Unified Communication Applications Versions	Supported Certificates (Self Signed and CA Signed certificate)	Supported From Release in HCM-F
Cisco Unified IM and Presence Service (CUP)	10.5	• Tomcat • CUP • CUP-XMPP • CUP-XMPP-S2S • IPSec	11.5(4)
	11.5 and 12.5	• Tomcat • CUP • CUP - ECDSA • CUP-XMPP-ECDSA • CUP-XMPP • CUP-XMPP-S2S • CUP-XMPP-S2S-ECDSA • ITL Recovery • IPSec • Tomcat-ECDSA	
Cisco Unity Connection (CUC)	10.5	• Tomcat • IPSec	11.5(4)
	11.5	• Tomcat • IPSec • Tomcat-ECDSA	
	12.5	• Tomcat • IPSec • Tomcat-ECDSA • ITL Recovery • Authz	

Unified Communication Applications	Unified Communication Applications Versions	Supported Certificates (Self Signed and CA Signed certificate)	Supported From Release in HCM-F
Cisco Emergency Repsonder (CER)	10.5	• Tomcat • IPSec	11.5(4) SU1
	11.5	• Tomcat • IPSec • Tomcat-ECDSA	
	12.5	• Tomcat • IPSec • Tomcat-ECDSA • ITL Recovery • Authz	
Expressway-C	8.10, 8.11, and 12.5	Server certificate	11.5(4)
Expressway-E			

For information about API, see *Cisco Hosted Collaboration Mediation Fulfillment Developer Guide*.

Limitations

Following are the limitations:

- Trust certificates are not included in the certificate collection.
- Only one certificate collection job can be completed at a time. If any other certificate collection is initiated, the job fails and an email notification is sent to the configured email IDs.

Certificate Monitoring Prerequisites

Ensure to configure the following for monitoring and collecting the certificate information for the first time:

	Configuration	Details
1	Activate the required services to start the certificate monitoring. To verify if the required services are started, do any one of the following: • In HCM-F, select **Infrastructure Manager** > **Service Provider Toolkit** > **Certificate Management**. • Enter the following command in CLI: **utils service list**	
	UC Monitor	**utils service activate Cisco HCS UC Monitor Service**
	Cisco HCS Provisioning Adapter (CHPA)	**utils service activate Cisco HCS Provisioning Adapter**
	Cisco HCS Unity Connection Provisioning Adapter (UCPA)	**utils service activate Cisco HCS Unity Connection Provisioning Adapter**
2	Schedule collection	Scheduled collection must be enabled for collecting the certificate status on a weekly basis during the set day and time. For configuration, see Schedule Configuration, on page 93.
3	Email	Email ID or IDs must be configured for receiving consolidated certificate status when the certificate collection is triggered through scheduled or on-demand collection. For configuration, see Configure Email Address, on page 94.

After the scheduled certificate collection is enabled and if any of the following scenarios occur, ensure to check configuration tasks:

Scenario	Configuration Tasks
New customer or cluster is added	• To get the latest report and sync the certificate collection, perform the on-demand certificate collection. For information, see Collect Certificates OnDemand, on page 99.
New certificates are added or existing certificates are deleted in the UC application	
New cluster is added	Do the following while adding new clusters for the following applications: • Cisco Unified Communications Manager, Cisco Unity Connection, IM and P: Select the **Access Type** as **Platform** and **Admin**. • Expressway: Select the **Access Type** as **Admin** Path for selecting **Access Type**: **Infrastructure Management > Application Management > Cluster Application > Add New > Credentials**. For configuration, see Add Cluster, on page 63.

Scenario	Configuration Tasks
Job failure	At a time, only one certificate collection job can be completed. If any other certificate collection is initiated, it will fail and email notification is sent to the configured email IDs.
Job Status: **In Progress** for more than 6 hours	If a job is **In Progress** for a long time, restart the **Cisco HCS UC Monitor** Service.

Configuring Certificate Monitoring

Complete the following tasks to monitor and collect certificates for the supported applications:

Before you begin

See Certificate Monitoring Prerequisites, on page 89.

Procedure

Step 1 (Optional) General Configuration, on page 92

Enable certificate collection for Expressway-E.

Step 2 Schedule Configuration, on page 93

Schedule weekly certificate collection.

Step 3 Configure Email Address, on page 94

Configure email ID or email IDs for sending emails during:

- Collection: Scheduled or on-demand.
- Notification: Job failure.

Note Option is available to send email at the customer level.

Step 4 Collect Certificates OnDemand, on page 99

Collect certificate information for all customers or selected customers and receive their consolidated status to the configured email IDs.

Note Use this option when a new customer or cluster is added.

Step 5 View the certificate details:

- View Certificate Status at Service Provider Level, on page 98

  View aggregated certificate status of all customers.

- View Certificate Status of Customers , on page 100

  View certificate status of all clusters for a selected customer.

- View Status of All the Certificates, on page 101

View individual certificate status.

Step 6 Verify the job status in the HCM-F interface, **Infrastructure Manager** > **Administration** > **Jobs** and see the **Certificate Management** in the **Job Entity** column.

Note At a time only one certificate collection job can be executed. If certificate collection (scheduled or on-demand) is in progress and if another certificate collection job is initiated, it fails. If the certificate collection fails, notification is sent to the configured email with the failure details.

Step 7 (Optional) Add Cluster, on page 63

Note Perform this activity only while adding new clusters.

For collecting Expressway clusters in HCM-F UI, select **Access Type** as **Platform**.

For other UC Applications, select **Access Type** as **Platform** and **Admin**.

Certificate Configuration

The service provider must configure the scheduler and email settings. To collect Expressway-E certificates, certificate collection for Expressway-E must be enabled.

Note This is one time configuration and can be modified when required.

Before you begin

Certificate Monitoring Prerequisites, on page 89

Procedure

Step 1 From the Infrastructure Manager, choose **Service Provider Toolkit** > **Certificate Management** > **Configuration**.
The **Certificate Management Configuration** window appears.

Step 2 Check the system time that is displayed in the **System Time** field.

Step 3 If there is a difference in system time, click the **Refresh** button to refresh the system time.

Step 4 Do all or any of the following:

- General Configuration, on page 92
- Schedule Configuration, on page 93
- Configure Email Address, on page 94

General Configuration

Collects certificates for Expressway-E. By default, the collection is disabled.

Before you begin

Ensure to check the following for collecting Expressway-E certificates.

- All the Expressway-E are reachable from HCM-F.
- Enable port number 443.

Procedure

Step 1 From the General Configuration section, select **Enable Expressway E Collection** check-box to collect certificates from Expressway-E or deselect the check-box to disable the certificate collection from Expressway-E.

If the certificate collection from Expressway-E is disabled, then the following information is not collected:

- Certificate details are not collected in NBI and HCM-F.
- Certificate details are not included in dashboard, certificate collection and notifications.
- Certificate details collected earlier are not shown.

Step 2 Click **Save** to save the configuration.

Step 3 Do any one of the following:

- Collect Certificates OnDemand, on page 99

  Perform on-demand sync to collect the Expressway-E certificates.
- Wait for the next scheduled collection.

Step 4 Verify the job status in the HCM-F interface, **Infrastructure Manager** > **Administration** > **Jobs** and see the **Certificate Management** in the **Job Entity** column.

Note At a time only one certificate collection job can be executed. When a certificate collection is in progress and if another certificate collection is initiated, it will fail and the failure notification is sent to the configured email. Notification is sent for scheduled and on-demand certificate collection failure.

Schedule Configuration

When the scheduled collection is enabled, the certificate status summary of all customers is collected at the scheduled time and stored locally. It is recommended to choose off peak time for scheduling the certificate collection.

Note For OPA mode, you can add or delete clusters directly from HCM-F.

If Unified CDM is the source of information, when a cluster is deleted and scheduled polling is configured, the information about the cluster will be available only after the next Unified CDM sync. It is suggested to collect certificate status from the following path to get an up-to-date report when a cluster is deleted or added to Unified CDM:

Service Provider Toolkit > **Certificate Management** > **UC Applications** and then, click **Collect Certificates**.

Procedure

Step 1 From the Schedule Configuration section, select the **Enable Scheduled Collection (weekly)** check box to enable weekly certificate collection.

Step 2 From the **Select Week Day** drop-down list, choose the day.

By default, it is Sunday.

Step 3 From the **Begin Execution Time** drop-down list, choose the time.

By default, it is 3:00:00.

Step 4 Click **Save** to save the configuration.

Configure Email Address

Before you begin

To send customer-level notification, ensure to configure email address in the **Contact Information** of the customer. Select **Infrastructure Manager** > **Customer Management** > **Customer** for configuring email ID for a customer.

Note When customer-level Emails are sent, service provider is copied (CC) on the Email. The Email address configured in To address is used.

Procedure

Step 1 (Optional) To configure Email notification, select **Infrastructure Manager** > **Service Provider Toolkit** > **Certificate Management** > **Configuration**. In the **Email Notification** section of the **Certificate Management Configuration** window, select **Enable Customer level Email Notification** check-box, to send emails at customer-level.

Note Email is sent to the email ID(s) as configured in the **Contact Information** of the customer (**Infrastructure Manager** > **Customer Management** > **Customer**).

Step 2 In the **Email Address (From)** field, enter a valid email address.

The maximum length of email address is 255. This email address appears in the notification mail as From address. For example, email address format is username@domain-name.

Step 3 In the **Email Address (To)** field, enter valid email address or addresses separated with commas.

The maximum length of email address is 255 or 10 email IDs. For example, email address format is username@domain-name.

Step 4 Click **Save** to save the configuration.

Email Notification for Certificate Monitoring

Configure the email ID or IDs for receiving the consolidated certificate status for scheduled (weekly basis) or on-demand collection at customer or service provider level or both.

Note Emails to service provider contain consolidated details of all the customers (depending on the collection) and the customer level email contains details related only to that customer.

The Email is marked important and the format is HTML. Following is the Email content:

Table 14: Email Content sent to Service Provider or Customer Level

Email Content	Supported on:	
	Service Provider	Customer level
Email Subject	Y HCM-F ALERT! HCS Certificate Status Notification	Y HCS ALERT [Certificate Monitoring] :: Customer Name
Execution Time	Y	Y
HCM-F Details	Y	N
Certificate Collection Summary Summary of: Certificates About to Expire, Invalid Certificates, and Failed Collection.	Y	N
Certificates About to Expire(60 Days) Contains the following information: Cluster Name, Type, HostName, Certificate Name, Expiry Date, and No of Days.	Y Contains certificate details of all the customers.	Y Contains certificate details for that customer.
Certificate Invalid Details (expired certificates) Contains the following information: Cluster Name, Type, HostName, Certificate Name, Expiry Date, No of Days, and Failure Details.	Y	Y

Email Content	Supported on:	
	Service Provider	Customer level
Certificate Failed Collection Cluster Name, Type, Hostname, and Failure Details.	Y	N

Email Notification for Certificate Status

For Certificate Monitoring, email notification is sent to the customer and service provider as per the status of the certificates. The notification email is scheduled as follows:

- Daily: Certificates that are expired and about to expire in less than 14 days
- Alternate days: Certificates that are about to expire in less than 30 days
- Weekly: Certificates that are about to expire in less than 60 days

Following is the email content:

Table 15: Email Content sent to Service Provider or Customer Level

Email Content	Supported on:	
	Service Provider	Customer level
Email Subject (Daily)	Y HCS ALERT[Daily] HCS Certificate Status Notification	Y HCS ALERT [Certificate Monitoring:Daily] :: Customer Name
Email Subject (Alternate Days)	HCS ALERT [Alternate Day] HCS Certificate Status Notification	HCS ALERT [Certificate Monitoring:Alternate Day] :: Customer Name
Email Subject (Weekly)	HCS ALERT [Weekly] HCS Certificate Status Notification	HCS ALERT [Certificate Monitoring:Weekly] :: Customer Name
Certificates About to Expire (14 Days) Summary of: Certificates About to Expire, and Invalid Certificates	Y	Y
Certificates About to Expire (30 Days) Summary of: Certificates About to Expire in 30 days, and Invalid Certificates	Y	Y

Email Content	Supported on:	
	Service Provider	Customer level
Certificates About to Expire (60 Days) Summary of: Certificates About to Expire in 60 days, and Invalid Certificates	Y	N

Email Notification for Certificate Management

For Certificate Management, email notification is sent to the customer and service provider when you select the different actions to manage a certificate.

Email Content for Certificate Management

Email notification is supported for all actions, except Download CSR.

Subject

Email Subject for the following actions is:

- Certificate Regenerate
- Generate CSR
- Email CSR
- Upload Trust
- Upload Certificate

If	Then
Successful	HCS ALERT [Certificate Management] :: <*Action performed*> Successful
Failed	HCS ALERT [Certificate Management] ::<*Action performed*> Failed

Job Status

The following is the job status details for the different actions performed:

- Regenerate Certificate: contains Job Status, Certificate Regeneration, Services Restarted, and Certificate Rediscovery.
- Generate CSR: contains Job Status, Generate CSR Status, and Get CSR Status (For attachment)
- Upload Trust: contains Job Status, and Trust Certificate Upload status.
- Upload Certificate: contains Job Status, Certificate Upload, Services Restarted, and Certificate Rediscovery.

Certificate Details

The following is the certificate details for the different actions performed:

- Regenerate Certificate: contains Customer Name, Cluster Name, Cluster Type, Hostname, Certificate, and issued By.

- Upload Trust: contains Customer Name, Cluster Name, Cluster Type, Hostname, Certificate, File Name, Common Name, and issued By.
- Upload Certificate: contains Customer Name, Cluster Name, Cluster Type, Hostname, Certificate, and Issued By.

CSR Deatils

The following is the CSR details for the actions performed:

- Generate CSR: contains Customer Name, Cluster Name, Cluster Type, and Hostname.
- Email CSR: For Failed action, contains Customer Name, Cluster Name, Cluster Type, Hostname, and Certificate.

View Certificate Status at Service Provider Level

Displays certificate status summary of all customers and allows you to collect their individual certificate status any time (on-demand).

You can also view the following information:

- Certificate status summary of all clusters for a selected customer.
- Individual status of all the certificates for the selected cluster.
- Certificate collection of all customers or selected customers on-demand (manual sync). See Collect Certificates OnDemand, on page 99.

Before you begin

Certificate Monitoring Prerequisites, on page 89

Procedure

Step 1 From the side menu, choose **Service Provider Toolkit** > **Certificate Management** > **UC Applications**. The aggregated status of the certificates owned by all the customers appear.

Column Name	Description
Name	Specifies the customer name.

Column Name	Description
Certificate Status	Specifies the consolidated status of all the certificates for a customer. The certificates status are as follows: • If the certificates are valid, then a tick mark appears. • If the certificates are about to expire, then a warning sign appears. • If there is one expired certificate, then a cross-mark appears. **Note** The consolidated status of the certificate appears with cross-mark during the following scenarios: • Existing Expressway cluster is deleted or powered-off. • No application clusters. • New customer or cluster is added and is not synced. • Cluster is not reachable or unavailable. Check the certificate status of cluster to understand the error and take appropriate action. See View Certificate Status of Customers , on page 100.

Step 2 Click **Refresh** to refresh the details.

Note This option does not perform manual or auto sync. It retrieves data from local storage.

Collect Certificates OnDemand

Collect certificate information:

- For all customers or clusters, or a particular customer or a cluster.
- When a new cluster or customer is added or deleted.
- When Expressway-E collection is enabled.

The certificate details are sent to the configured email. This task can be performed any time because it manually syncs applications and clusters to get up-to-date information.

Before you begin

Certificate Monitoring Prerequisites, on page 89

Procedure

Step 1 From the side menu, choose **Service Provider Toolkit** > **Certificate Managment** > **UC Applications**.

Step 2 Select the customer or cluster, or customers or clusters using the check box on the **Customers** or the **Clusters** window.

Step 3 Click the **Collect Certificates** button to collect certificates of all customers or selected customers, or all clusters or selected clusters.

The certificate status is sent to the configured email ID or IDs depending on the Email Notification configuration (service provider or customer level notification).

Step 4 Verify the job status in the HCM-F interface, **Infrastructure Manager** > **Administration** > **Jobs** and see the **Certificate Management** in the **Job Entity** column.

Note At a time only one certificate collection job can be executed. If certificate collection (scheduled or on-demand) is in progress and if another certificate collection job is initiated, it fails. If the certificate collection fails, notification is sent to the configured email with the failure details.

Note From HCM-F 12.5(x), if the collection of certificates fail for the clusters or the customers, the job status shows the list of the customers or the clusters that failed. The job status can show a maximum of 1000 characters. You can see email notification for more details on the job failure.

View Certificate Status of Customers

Displays the status of certificates in a cluster for the selected customer.

Procedure

Step 1 From the side menu, choose **Service Provider Toolkit** > **Certificate Management** > **UC Applications** and then, from the **Name** column, click on the customer name.
The clusters for the selected customer appear.

Column Name	Description
Name	Specifies the cluster name.
Type	Specifies the certificate type.
No.Of Certs	Specifies the number of certificates available in a cluster.

Column Name	Description
Certificate Status	Specifies the consolidated certificate status. The certificates status are as follows: • If the certificates are valid, then a tick mark appears. • If the certificates are about to expire, then a warning sign appears. • If there is one expired certificate, then a cross-mark appears. To view the certificate status details, click on **i** (information) button. The following status appear: • Status: Displays the status of the certificate details collection. Following status are displayed: • Valid: Indicates if all the certificates are valid. • Invalid: Indicates if there are any invalid certificates. • Unavailable: Indicates there are no application clusters. • Last Success Date/Time: Displays time and date when the certificate detail was collected successfully. • Last Execution Date/Time: Displays time and date when the certificate detail was collected.

Step 2 Click on the cluster name to view the available certificates.

What to do next

View Status of All the Certificates, on page 101

View Status of All the Certificates

Displays the cluster level certificate status of the selected customer.

Procedure

Step 1 From the left navigation menu, choose **Service Provider Toolkit** > **Certificate Management** > **UC Applications**. Then, from the **Name** column, click the customer name.

Step 2 From the clusters, click the cluster name to view the available certificates.
The certificates for the selected cluster appear.

Column Name	Description
Name	Specifies the collected certificate names from the cluster.
Host Name	Specifies the HCS hostname.
Valid From	Specifies the date from when the certificate is valid.

Column Name	Description
Valid Till	Specifies the date until when the certificate is valid.
Expires in (days)	Specifies the number of days that is left for the certificate to expire.
Issued By	Specifies the certificate signing authority.
Status	Specifies if a certificate is valid, invalid, or about to expire. Click **Manage** to manage the certificate of a particular cluster. **Note** Among valid, about to expire, and invalid certificates, invalid certificates take the priority. Similarly, for valid, and about to expire certificates, about to expire certificates are preceded over valid certificates, and so on.

Manage Certificate

Certificate Management manages the workflow for CA signed and self-signed certificates.The Manage Certificate page displays the certificate summary and certificate regeneration of a node.

Note Certificate Management does not support Expressway X8.9 and below releases.

The following table provides information about the supported applications and certificates that can be managed using the Certificate Management dashboard:

Unified Communication Applications	Unified Communication Applications Versions	Supported Certificates (Self Signed and CA Signed certificate)	Supported Trust Certificate
Cisco Unified Communications Manager (CUCM)	11.5 and 12.5	tomcat	tomcat
		tomcat-ECDSA	
		Call Manager	Call Manager
		CallManager-ECDSA	
		Certificate Authority Proxy Function (CAPF)	CAPF
		ipsec	ipsec
		Trust Verification Service (TVS)	TVS
		Authz (only Self Signed)	NA
		ITL Recovery (only Self Signed)	NA
tomcat-ECSDA			

Unified Communication Applications	Unified Communication Applications Versions	Supported Certificates (Self Signed and CA Signed certificate)	Supported Trust Certificate
ipsec	ipsec		
cup	cup		
cup-ECDSA			
cup-xmpp	cup-xmpp		
cup-xmpp-ECDSA			
cup-xmpp-s2s			
cup-xmpp-s2s-ECDSA			
ITL Recovery (only Self Signed)	NA		
Cisco Unity Connection (CUC)	11.5	tomcat	tomcat
		tomcat-ECDSA	
		ipsec	ipsec
	12.5	tomcat	tomcat
		tomcat-ECDSA	
		ipsec	ipsec
		ITL Recovery (only Self Signed)	NA
		Authz (only Self Signed)	NA
tomcat-ECDSA			
ipsec	ipsec		
12.5	tomcat	tomcat	
	tomcat-ECDSA		
	ipsec	ipsec	
	ITL Recovery (only Self Signed)	NA	
	Authz (only Self Signed)	NA	
Expressway-C	8.10, 8.11, and 12.5	Server certificate	Trust Certificate
Expressway-E			

Procedure

Step 1 From the left navigation menu, choose **Service Provider Toolkit** > **Certificate Management** > **UC Applications**. Then, from the **Name** column, click the customer name.

Step 2 From the clusters, click the cluster name to view the available certificates.
The certificates for the selected cluster appear.

Step 3 Click **Manage** to manage the certificates of a particular cluster.
The **Manage Certificate** window appears.

The **Certificate Summary** displays the certificate details.

Name	Description
Customer Name	Specifies the customer name.
Cluster Name	Specifies the cluster name of the particular customer.
Cluster Type	Specifies the type of the cluster.
Host name	Specifies the application hostname.
Certificate	Specifies the certificate name.
Issued By	Specifies the certificate signing authority.
Status	Specifies the status of the certificate. For example, valid, expired, or about to expire.

The **Certificate Regeneration** allows you to regenerate the certificate either through Self-Signed or CA Signed.

Regenerate Self-Signed Certificate
This option enables the user to generate a self-signed certificate.

Note A message is displayed to confirm the regeneration of the certificate, restart dependent services, and rediscover the certificate status. This option is available only for UC applications.

Regenerate CA Signed Certificate
This option enables the user to generate a CA signed certificate.

Note For ITL Recovery and Authz certificates, CA signed certificate regeneration is not supported.

Click **Reset** to switch between the Self-Signed Certificate and CA Signed Certificate regeneration option.

A table appears that displays the different actions that can be performed while generating a CA signed certificate.

Name	Description
Action	Specifies the actions that the user can perform while generating a CA signed certificate. Perform the following actions: • Generate CSR: Generate CSR, on page 105 • Email CSR: Email CSR, on page 106 • Download CSR: Download CSR, on page 106 • Trust Certficate Applied: Upload Trust • Certificate Applied: Upload Certificate **Refresh** Click **Refresh** to refresh the table after performing the actions.
Description	Specifies the details about each action once it is completed. For example, if a CSR is generated, a message is displayed as `CSR generation successful.`
Time Stamp	Specifies the specific time when the action is performed.
Status	Specifies the status of each action. If Successful, then a check mark appears, and if Fails, then a cross mark appears. The information icon displays a message with recommended action and the status of the certificate generation process.

Click **Back** to go back to the Certificates page that displays the list of certificates for a cluster.

What to do next

For each action a job is generated. You can verify the job status in the HCM-F interface, **Infrastructure Manager** > **Administration** > **Jobs** and see the **Certificate Management** in the **Job Entity** column.

You can see if the job is In Progress, Succeeded, or Failed in the **Status** column. Click the *i* icon to view more details about the job. The **Job Details** window provides details about the action performed, Certificate Type, and Hostname. It provides details about the status information, for example, if the job is In Progress, it shows the different actions that are running to make the job Successful. If the job fails, see **Recommended Action** for more details. For more information on Email notification, see Email Notification for Certificate Management, on page 97

Generate CSR

Use **Generate CSR** to generate a Certificate Signing Request (CSR).

When you click **Generate CSR**, the **Generate CSR** window appears. The fields are auto-populated from existing certificate content.

Note For UC applications, the **Generate CSR** button is disabled. You cannot generate the CSR from HCM-F. To generate the CSR, go to the specific UC App link provided in the UI.

For Expressway, you can edit the following fields and Generate CSR.

Customer Information

Provide the customer information to regenerate a certificate.

Country
Select the organization country.
Province or State
Enter the name of the state or province.
Locality (Town Name)
Enter the name of the organization location.
Organization
Enter the name of the organization. For example, Cisco.
Organizational Unit
Enter the organizational unit for the organization. For Expressway, only one Organizational Unit is allowed.
Email Address
Specifies the email address to be included in the certificate.

Key Length
Select the number of bits to use for public and private key encryption.
Digest Algorithm
Select the Digest algorithm to use for the signature.
Additional FQDNS
Enter additional hostnames in the form of a list that has to be included in the certificate.

You can enter multiple values in separate lines for Expressway.

If you want to overwrite an existing CSR and create a new CSR, click the check-box **Delete CSR if already exists**.

If the check-box is unchecked and a CSR already exists, CSR generation fails on Expressway.

Note When you are upgrading HCM-F to 12.5 SU1, perform collection ondemand or scheduled collection to view the fields in **Generate CSR** window.

Email CSR

Click **Email CSR** to get the CSR as an attachment. The email notification is sent to the configured email address(s) that are already populated in the **Email ID(s)** field. You can also add muliple email addresses, separated by comma.

Note It is mandatory to provide Email ID(s) before performing **Email CSR** operation.

Download CSR

Click **Download CSR** to download the CSR. Once the download completes, the CSR is saved in the local machine. The **Download CSR** button is disabled when the download is in progress.

For some browsers, a pop-up window displays to save the downloaded CSR in your local system.

Upload Trust

Trust certificates allow to upload the root and intermediate CA certificates so that the application node knows it can trust any certificate signed by the root CA or intermediate CA server.

When you click **Upload Trust** button, the **Upload Trust Certificate** window appears. Browse the trust certificate in your local system and click **Upload** to upload the trust certificate.

Note The system accepts certificates in Privacy Enhanced Mail (PEM) encoding formats. The supported file types are `.pem, .crt, and .cer`. The file type `.ca-bundle` is supported only for Expressway.

Upload Trust does not perform any additional operations other than uploading the trust certificates, Upload Certificate performs the other recommended operations. For more information on the operations performed by Upload Certificate, see Upload Certificate, on page 107.

The trust certificate is common for some certificates. For example, the **Upload Trust** button is disabled for tomcat-ECDSA. To upload the trust certificate for tomcat-ECDSA, you have to upload the trust certificate from tomcat certificate. For more information on the common trust certificates, see Manage Certificate.

Upload Certificate

When you click the **Upload Certificate** button, **Upload CA Signed Certificate** window is displayed. Browse the certificate in your local system and click **Upload** to upload the CA signed certificate.

When you click **Upload Certificate**, the following actions are performed:

- Certificate Upload
- Restart Services for the corresponding certificate type

Note For more information on the services that are restarted, see Manage Certificate.

Re-discover certificate status

Note The supported file types are `.pem, .crt, .cer`.

Task Flow Post Uploading Certificates for UC Applications

Certificates Uploaded for Cisco Unified Communications Manager Versions 10.5/11.5/12.5

Once the certificate is uploaded, you have to perform certain operations. Few operations are automatically performed by HCM-F, and few of them have to be executed manually by the user. The following table provides information about the actions that are performed after a certificate is uploaded.

Note HCM-F certificate management does not support MultiSan certificate in UC applications and Expressway.

Supported Certificates	Supported Version	Post Upload Actions performed by HCM-F	Post Upload Actions to be performed Manually
tomcat	10.5, 11.5, and 12.5 11.5, 12.5, and 14.0	The following services are restarted: • Cisco Tomcat • Cisco Tftp	No action required.
tomcat-ECDSA	11.5, and 12.5	The following services are restarted: • Cisco Tomcat • Cisco Tftp	No action required.
CallManager	10.5, 11.5, and 12.5	The following services are restarted: • Cisco CallManager • Cisco Tftp • Cisco CTIManager	1. If CUCM is in mixed-mode, then manually update the CTL file and restart CallManager and Tftp service in all nodes. 2. Restart all phones For more information about CAPF certificate regenration, see *Install/Update LSC on Phone* in CUCM Certificate Regeneration/Renewal Process.
CallManager-ECDSA	11.5, and 12.5	The following services are restarted: • Cisco CallManager • Cisco Tftp • Cisco CTIManager	
Certificate Authority Proxy Function (CAPF)	10.5, 11.5, and 12.5	The following service is restarted: • Cisco Certificate Authority Proxy Function	1. Install/Update LSC on Phone thorugh CUCM 2. If CUCM is in mixed-mode, then manually update the CTL file 3. Restart all phones
ipsec	10.5, 11.5, and 12.5	The following services are restarted: • Cisco DRF Master • Cisco DRF Local	No action required

Supported Certificates	Supported Version	Post Upload Actions performed by HCM-F	Post Upload Actions to be performed Manually
Trust Verification Service (TVS)	10.5, 11.5, and 12.5	The following service is restarted: • Cisco Trust Verification Service	No action required

Certificates Uploaded for Cisco Unified IM and Presence Service Versions 10.5/11.5/12.5

Once the certificate is uploaded, you have to perform certain operations. Few operations are automatically performed by HCM-F, and few of them have to be executed manually by the user. The following table provides information about the actions that are performed after a certificate is uploaded.

Supported Certificates	Supported Version	Post Upload Actions performed by HCM-F	Post Upload Actions to be performed Manually
tomcat	10.5, 11.5, and 12.5	The following service is restarted: • Cisco Tomcat	Accept the certificate on Jabber endpoint
tomcat-ECDSA	11.5, and 12.5	The following service is restarted: • Cisco Tomcat	Accept the certificate on Jabber endpoint
ipsec	10.5, 11.5, and 12.5	The following service is restarted: • Cisco DRF Local	No action required.
cup	10.5, 11.5, and 12.5	The following services are restarted: • Cisco SIP Proxy • Cisco Presence Engine	Accept the certificate on Jabber endpoint
cup-ECDSA	11.5, and 12.5	The following services are restarted: • Cisco SIP Proxy • Cisco Presence Engine	Accept the certificate on Jabber endpoint
cup-xmpp	10.5, 11.5, and 12.5	The following service is restarted: • Cisco XCP Router	Accept the certificate on Jabber endpoint

Supported Certificates	Supported Version	Post Upload Actions performed by HCM-F	Post Upload Actions to be performed Manually
cup-xmpp-ECDSA	11.5, and 12.5	The following service is restarted: • Cisco XCP Router	Accept the certificate on Jabber endpoint
cup-xmpp-s2s	10.5, 11.5, and 12.5	The following service is restarted: • Cisco XCP Router	Accept the certificate on Jabber endpoint
cup-xmpp-s2s-ECDSA	11.5, and 12.5	The following service is restarted: • Cisco XCP Router	Accept the certificate on Jabber endpoint

Certificates Uploaded for Cisco Unity Connection Versions 10.5/11.5/12.5

Once the certificate is uploaded, you have to perform certain operations. Few operations are automatically performed by HCM-F, and few of them have to be executed manually by the user. The following table provides information about the actions that are performed after a certificate is uploaded.

Supported Certificates	Supported Version	Post Upload Actions performed by HCM-F	Post Upload Actions to be performed Manually
tomcat	10.5, 11.5, and 12.5	The following service is restarted: • Cisco Tomcat	No action required.
tomcat-ECDSA	11.5, and 12.5	The following service is restarted: • Cisco Tomcat	No action required.
ipsec	10.5, 11.5, and 12.5	The following services are restarted: • Cisco DRF Master • Cisco DRF Local	No action required.

Certificates Uploaded for Cisco Emergency Repsonder Versions 10.5/11.5/12.5

Once the certificate is uploaded, you have to perform certain operations. Few operations are automatically performed by HCM-F, and few of them have to be executed manually by the user. The following table provides information about the actions that are performed after a certificate is uploaded.

Supported Certificates	Supported Version	Post Upload Actions performed by HCM-F	Post Upload Actions to be performed Manually
tomcat	10.5, 11.5, and 12.5	The following service is restarted: • Cisco Tomcat	No action required.
tomcat-ECDSA	11.5, and 12.5	The following service is restarted: • Cisco Tomcat	No action required.
ipsec	10.5, 11.5, and 12.5	The following services are restarted: • Cisco DRF Master • Cisco DRF Local	No action required.

Upgrade Toolkit Overview

The Upgrade Checks for UC applications using HCM-F 11.5(4) SU1 and later enables partners to perform a quick and hassle free:

- Checks before and after upgrade.
- Use the results obtained from upgrade checks (before and after) to validate upgrade.
- Understand the deprecated phones in the network.

HCM-F has information of the UC applications and various other devices in partner network. This information is used along with the information available from compatibility matrices to build a rich source of data useful for partners.

For information about API, see *Cisco Hosted Collaboration Mediation Fulfillment Developer Guide*.

Limitations

There are limitations for the following scenarios:

Scenario	Tasks or Error Message
Upgrading Cisco Unified IM and Presence from Release 11.5(x) to 12.5(x)	While upgrading from 11.5(x), keep the Cisco Unified Communications Manager IM and P and Cisco Unified Communications Manager clusters separate until the **Upgrade Comparison** is complete. After completing and verifying the comparison results, delete the Unified CM I and P cluster and add it to Cisco Unified Communications Manager.
Upgrade Check - Cluster Version Information	When Cisco Unified Communications Manager IM and P is a separate cluster in Release 11.5(x)/12.5(x), node count fails with node count as 0.

Scenario	Tasks or Error Message
Upgrade Check - Phone Count and CTI Device Count	Phone count does not appear for phones with status **None**.

Upgrade Toolkit Prerequisites

The following prerequisites are required to perform upgrade checks, upgrade comparison and phone compatibility check:

Note Ensure to upgrade HCM-F version to 11.5(4)SU1 or later to use the upgrade checks.

S.No	Checks	Path/Reference
1	Activate the following services to perform upgrade checks and comparison post upgrade: To verify if the services are started, do any one of the following: • In HCM-F, select **Infrastructure Manager** > **Service Provider Toolkit**. • Enter the following command in CLI: **utils service list**	
	UC Monitor	**utils service activate Cisco HCS UC Monitor Service**
	Cisco HCS Provisioning Adapter (CHPA)	**utils service activate Cisco HCS Provisioning Adapter**
	Data Access Manager (DAM) **Note** This service is active by default.	**utils service activate Cisco HCS Data Access Manager Service**
	Cisco HCS UC Provisioning Adapter (UCPA)	**utils service activate Cisco HCS UCPA Service**
	Cisco HCS UCSM Sync Service	**utils service activate Cisco HCS UCSMSync Service**
	Cisco HCS VCenter Sync	**utils service activate Cisco HCS VCenterSync Service**
2	Certificate scheduling and email notification must be configured or collect the certificates on-demand.	For configuration, see Certificate Configuration in *Cisco Hosted Collaboration Solution Upgrade and Migration Guide*.
3	Check if all customers and their clusters for the UC applications are added. Supported UC applications: Cisco Unified CM, Cisco Unity Connection and Cisco UCM IM and P.	To test the cluster connection, see Test Cluster Connection procedure in Cisco Hosted Collaboration Mediation Fulfillment Install and Configure Guide.

S.No	Checks	Path/Reference
4	While adding new clusters for the UC applications, ensure to select the **Access Type** as **Platform** and **Admin**	Path: **Infrastructure Management** > **Application Management** > **Cluster Application** > **Add New** > **Credentials**
5	Check if vCenter is configured for each vCenter server deployed in the Data Center and VCenter sync is enabled.	Path: **Infrastructure Management** > **Data Center Management** > **Data Center** > **vCenter**. For configuration information, see Add vCenter procedure in Cisco Hosted Collaboration Mediation Fulfillment Install and Configure Guide.

Upgrade Toolkit Workflow

Complete the following tasks to perform the upgrade.

Before you begin

Upgrade Toolkit Prerequisites, on page 112

Procedure

Step 1 Perform Upgrade Checks, on page 114

Perform upgrade checks on the UC application clusters before the upgrade. Ensure all checks pass.

Step 2 Verify the job status in the HCM-F interface.

Check the **Status** column for the **Job Entity**, **UC Monitor** in the path: **Infrastructure Manager** > **Administration** > **Jobs**.

Note If the job fails, go to **Upgrade Checks** and check the **Status** column for failures and Recommended Action.

Step 3 Click **Save for Compare** to save the check result after executing all the checks before upgrade.

Step 4 Perform the Phone Compatibility Check to understand the deprecated phone models.

Step 5 Remove the deprecated phone models.

To remove the deprecated phone models, see Delete Phones procedure in *Cisco Hosted Collaboration Solution End-User Provisioning Guide*.

Step 6 Perform the steps mentioned in Prepare-Pre Upgrade Actions, Upgrade UC Applications, and Restore-Post Upgrade Actions procdures to upgrade the UC Applications.

To understand end-to-end UC upgrade workflow, see *Cisco Hosted Collaboration Solution Upgrade and Migration Guide*.

Step 7 Perform Upgrade Checks, on page 114

Perform upgrade check on the UC application clusters after the upgrade.

Step 8 Click **Submit** after executing the checks post upgrade.

Step 9 Post Upgrade Comparison, on page 132

Compares and displays the check results obtained before and after upgrade.

Perform Upgrade Checks

Perform upgrade checks on the UC application clusters and vCenter.

Before you begin

Upgrade Toolkit Prerequisites, on page 112

Procedure

Step 1 From the side menu, choose **Service Provider Toolkit** > **Upgrade Toolkit** > **Upgrade Checks**.

Step 2 From **Select a Customer** drop down, select the customer name for performing the checks.

Step 3 From **Select a Cluster** drop down, select the UC application cluster. On selecting a shared cluster, it displays the name of customers associated with the selected shared cluster.

Note If upgrade checks are performed for the first time, **Not Executed** appears in the **Status** column. If a check is already performed, then the status of the check appears (tick or cross-mark).

Step 4 By default, all the checks are selected. To perform a particular check, uncheck the check box from the table header and select the individual checks using the check box.

Note Ensure to perform all the checks.

Step 5 Click **Submit** to perform the selected checks.

Step 6 (Optional) Check the job status.

Select **Infrastructure Manager** > **Administration** > **Jobs**. Check for Job Entity, UC Monitor Checks.

Note You can run the upgrade check on different clusters for the same customer at the same time. But, if another upgrade check for the same cluster associated with the same customer is initiated, then the initiation fails. Also, a message appears that the job is in progress.

Step 7 In the **Status** column, the tick-mark appears if the check is successful and cross-mark appears if the check fails. Click the cross-mark in the **Status** column to understand the recommended action for the entire check as well as the individual check result:

- **Status**: Indicates the check failed.
- **Last Execution Date/Time**: Indicates the time when the check was last executed.
- **Recommended Action**: Indicates the recommended action for the check failure.

To understand the details of the check, click the arrow button to expand the check in the **Check** column. The tick-mark appears if the collection is successful. Cross-mark appears if the HCM-F is unable to collect the details from all the clusters during the check. It can be due to any of the following reasons:

- Node not reachable

- Check was not complete.

Note On the table header, click **Checks** to sort the table alphabetically or click **Status** to sort the table based on the execution status.

Manually perform and verify the skipped checks.

Step 8 Complete these steps to save the check result and use it for comparison depending on when the Upgrade Check is performed:

a. **Before Upgrade**: Click **Save for Compare**.

b. **After Upgrade**: Click **Submit**.

Note Use **Save for Compare** only to save the *Check Result* before upgrade. If it is selected after upgrade, the check result saved before the upgrade is overwritten.

Perform this step only after performing all the checks before upgrade.

a) (Optional) Click **Download** to download (present) check results.

The *Check Result* are saved to `UpgradeChecksReport_<clustername>_<timestamp in yyyymmdd_hhmmss>.csv`.

b) (Optional) Click **Download Saved Reports** to download the last saved results.

The *Check Result* are saved to `UpgradeSavedChecksReport_<clustername>_<timestamp in yyyymmdd_hhmmss>.csv`.

c) (Optional) Select **Open File** to view the spreadsheet without saving or select **Save File** to save it to a location and click **OK**.

Upgrade Checks

The following checks involve checking all or some nodes (Subscriber and Publisher) in the UC application cluster for the selected customer.

Even if one node fails while executing a check, the entire check fails and cross-mark appears in the **Status** column. See the **Recommended Action** and perform the recommended action if there is a failure and execute the check again.

Table 16: Upgrade Checks

Upgrade Checks	Is Upgrade Check Supported on UC Application?				Nodes of the Cluster Supported by Check
	Unified CM	Unity Connection	IM and Presence	Emergency Responder	
Available Common Partition Space, on page 117	Y	N	Y	Y	Publisher and Subscriber
CLI Diagnostics, on page 117	Y	Y	Y	N	Publisher and Subscriber

Upgrade Checks	Is Upgrade Check Supported on UC Application?				Nodes of the Cluster Supported by Check
	Unified CM	Unity Connection	IM and Presence	Emergency Responder	
CTI Device Count, on page 118	Y	N	N	N	Publisher
CTI Route Point Status, on page 119	Y	N	N	N	Publisher
Certificate Status Information, on page 119	Y	Y	Y	Y	Publisher and Subscriber
Check Cluster Status, on page 120	N	Y	N	N	Publisher
Cluster Version Information, on page 120	Y	Y	Y	Y	Publisher and Subscriber
DB Consistency State	N	Y	N	N	All nodes
Disaster Recovery System Backup, on page 122	Y	N	Y	Y	Publisher and Subscriber
Enterprise Service Parameters, on page 123	Y	N	Y	N	Publisher
Health of Network Within the Cluster, on page 123	Y	N	Y	N	Publisher and Subscriber
Installed COP Files, on page 124	Y	Y	Y	Y	Publisher and Subscriber
LDAP Details, on page 124	Y	N	N	N	Publisher and Subscriber
List of Services, on page 125	Y	N	Y	Y	Publisher and Subscriber
Network Connectivity (DNS, SMTP, and NTP), on page 126	Y	Y	Y	Y	Publisher and Subscriber
Phone Count, on page 126	Y	N	N	N	Publisher
Port Information, on page 127	N	Y	N	N	All nodes
Run Pre-Upgrade Test, on page 128	N	Y	N	N	Publisher and Subscriber
State of Database Replication, on page 128	Y	N	Y	N	Publisher and Subscriber
SIP Trunk Information	Y	N	N	N	Publisher
Syslog Information	Y	N	N	N	Publisher

Upgrade Checks	Is Upgrade Check Supported on UC Application?				Nodes of the Cluster Supported by Check
	Unified CM	Unity Connection	IM and Presence	Emergency Responder	
VCenter and ESXi and UCS Details, on page 131	Y	Y	Y	Y	Publisher and Subscriber
VM Configurations	Y	Y	Y	Y	Publisher and Subscriber

Available Common Partition Space

Checks for the availability of minimum 25 GB of common partition space.

Check	Displays the available space in the cluster.

Check Result	These are the results for the check:
	• Application Name: Specifies the node name.
	• Available Space: Specifies the available space in the common partition.
	• Used Space: Specifies the used space in the common partition.
	• Status:
	  • Pass: Indicates that the available common partition space is atleast 25 GB.
	  • Fail: Indicates that the available common partition space is less than 25 GB.

Status and Recommended Action	If the check fails, clear the space so that the minimum available partition space is 25 GB. Run the **show diskusage common** command to check the amount of used space.

CLI Diagnostics

Runs multiple tests to verify the disk status, Tomcat process status, and NTP status and so on. Log into HCM-F interface and run the **utils diagnose test** command on all nodes within the cluster with the admin credentials.

Check	Displays result of the tests run by the **utils diagnose test** command.

Check Result	The results of the check are:
	• Application Name: Specifies the node name.
	• Test Name: Specifies the test run by **utils diagnose test** command.
	• Result: Indicates if the test passed or failed.
	• Status:
	  • Pass: Indicates that the tests run as part of **utils diagnose test** command passed or skipped in the cluster.
	  • Fail: Indicates that the test executed as part of **utils diagnose test** command failed in the cluster.

Status and Recommended Action	If the check fails, check the node connectivity.

CTI Device Count

Records the total number of CTI devices, which includes CTI ports and Route Points.

Use this information for comparison post upgrade.

Check	Displays the CTI device count.

Check Result	The results of the check are:
	• Application Name: Specifies the node name.
	• CTI Device Status: Collects CTI device count for the following status:
	  • Registered
	  • Partially Registered
	  • Unregistered
	  • Rejected
	• CTI Device Count: Specifies the CTI device count for the preceding status.
	• Status:
	  • Pass: Indicates that the collection of CTI device count was successful.
	  • Fail: Indicates one of the following:
	  • HCM-F is unable to fetch the device count data from Cisco Unified Communications Manager.
	  • Using Invalid network configurations for the nodes.
	  • Using Invalid credentials in HCM-F.

Status and Recommended Action	If the status fails, check cluster reachability and the credentials using the Cisco Unified CM user interface.

CTI Route Point Status

Displays the CTI route point status and the IP address of the third-party application to which the route point is registered.

Use this information for comparison post upgrade.

Check	Displays the CTI Route point name, Route point status and IP address of the application to which the route point is registered.

Check Result	The results of the check are:
	• Application Name: Specifies the route point name.
	• CTI Route Status: Displays the CTI route point status:
	  • Pass: Indicates that the collection of CTI route point status was successful.
	  • Fail: Indicates that the collection of CTI route point status was unsuccessful.
	• IP Address: Specifies the IP address of the third-party application that is registered.

Status and Recommended Action	If the status fails, check cluster reachability and the credentials using the Cisco Unified CM user interface.

Certificate Status Information

Displays the Certificate information that is collected from the Certificate Monitor, and verifies the certificate status information. Certificates are sorted based on the number of days to expire.

Check	Displays the certificate status.

Check Result	• Certificate Name: Specifies the certificate name.
	• Expiry Date: Specifies the certificate expiry date. The table is sorted based on the certificate expiry date.
	• Status:
	  • Pass: Indicates that all the certificates are valid.
	  • Fail: Indicates that one or more certificates on any of the cluster's node is not valid.

Status and Recommended Action	If the certificates that are collected by certificate monitor is older than seven days, then the overall status fails. Check the certificate validity and **Recommended Actions**. • Run the **show cert list own** command to get the list of all the certificates on all nodes. • Run the **show cert own <cert_name>** command to check the status of a certificate.

Check Cluster Status

Checks if the publisher server has Primary status and subscriber server has Secondary status. This check is applicable only for Cisco Unity Connection.

Check	Displays the publisher and subscriber server name and status.

Result	Following are the result details:
	• Application Name: Specifies the node name. It is applicable only for publisher.
	• Server Name: Specifies the publisher and subscriber server name.
	• Server State: Specifies that one server node has publisher (Primary status) and the other has subscriber (Secondary status).
	• Internal State: Specifies if the server is active or inactive.
	• Status:
	  • Pass: Indicates that one node of the cluster is in Primary role and the other node is in secondary role. Also, both the nodes are online.
	  • Fail: Indicates failure for the following server states:
	  • Both nodes are in Primary.
	  • Both nodes are in Secondary.

Status and Recommended Action	Check the Recommended Action for failure. Run the **show cuc cluster status** command, to view the cluster status.

Cluster Version Information

Checks if all the applications for the selected cluster are available.

Check	Displays the application version and cluster node count.

Check Result	Following are the result details:
	• Application Name: Specifies the node name.
	• Application Version: Specifies the UC application version installed on the node.
	• Cluster Nodes Count: Specifies the number of nodes in the cluster. This entry is available only for publisher node.
	• Status:
	  • Pass: Indicates that these conditions passed:
	  • All the nodes of the cluster are reachable.
	  • All nodes of the cluster have same software version (including the build number) installed.
	  • Configuration in HCM-F aligns with the cluster configuration.
	  • Fail: Indicates that one or all of these conditions failed:
	  • Cannot retrieve version data due to invalid network configuration or credentials.
	  • Versions installed on all the nodes of the cluster do not match.
	  • Version configured in the HCM-F for the cluster does not match the actual active versions available on the cluster nodes.
	  • The number of nodes configured in the HCM-F does not match with the actual number of cluster nodes.

Status and Recommended Action	If the check fails, check node connectivity and credentials. Add the missing applications for the cluster. Run the **show version active** command, to view the version information and run the **show network cluster** command to get details of the cluster.

DB Consistency State

Checks the consistency of tables and validates indexes for the unitydirdb, unitydyndb, unitymbxdb1, and unityrptdb database in Unity Connection. This check runs on all nodes in the cluster.

Use this information from the check for comparison post upgrade.

Check	Checks the consistency of tables and validates indexes for the database in Unity Connection. Run the **show cuc dbconsistency <dbname>** command on each database using the HCM-F admin credentials.

Check Result	These are result for the check:
	• Database name: Specifies the names of the Unity Connection database.
	• Result:
	  • Checks for the table consistency.
	  • Index validation.

Status and Recommended Action	If the check fails, check the table for inconsistencies, disabled indexes or invalid index entries. Run these commands to check for inconsistencies: • **show cuc dbconsistency unitydirdb** • **show cuc dbconsistency unitydyndb** • **show cuc dbconsistency unityrptdb** • **show cuc dbconsistency unitymbxdb1**

Disaster Recovery System Backup

Checks if Disaster Recovery System (DRS) is configured and backup is complete.

Check	Displays the feature considered for backup with their status.

Check Result	These are the results for the check:
	• Application name: Specifies the node name.
	• Backup Filename: Specifies the backup filename with file extension as .tar.
	• Features: Lists the backup features separated by comma.
	• Backup Status: Specifies backup status with the percentage completed. Displays the percentage of backup completed, if the backup is in progress.
	• Status:
	  • Pass: Indicates that the backup is complete.
	  • Fail: Indicates one of these reasons for failure:
	  • The last backup has failed.
	  • Backup is still in progress.
	  • Cancelled the last backup.
	  • No backup status is available.

Status and Recommended Action	If the status fails, check if DRS is configured and run the scheduled or manual backup on all features. Run the **utils disaster_recovery status backup** command to check the backup status.

Enterprise Service Parameters

Displays all the enterprise service parameters for Unified Communications Manager and IM and P.

Check	Collects the service parameter values.

Check Result	These are the results for the check:
	• Application Name: Specifies the node name.
	• Service Parameter: Specifies the service parameter name and the service name separated by PIPE (|||). Format of the output is `<Service Parameter Name>||| <Service Name>`.
	• Value: Specifies present value of the service parameter.
	• Status:
	  • Pass: Indicates that the service parameter collection was successful from all nodes in the cluster.
	  • Fail: Indicates one of these reasons:
	  • The service parameter collection was unsuccessful
	  • Invalid network configurations are used for the nodes.
	  • Invalid credentials are used in HCM-F.

Status and Recommended Action	If the status fails, then check if the nodes in the selected cluster are reachable from HCM-F. Run the **show tech params enterprise** command, to view the service parameters that are configured for each of the services.

Health of Network Within the Cluster

Checks the network reachability among nodes in the selected cluster.

Check	Displays the node name and its reachability status.

Check Result	These are the results for the check:
	• Application Name: Specifies the node name.
	• Network Connectivity: Specifies if all the nodes are reachable or not.
	• Status:
	  • Pass: Indicates that all the cluster nodes are reachable to each other.
	  • Fail: Indicates that some or all the nodes are not reachable.

Status and Recommended Action	If the check fails, check the node connectivity and credentials. Log into each cluster node and run the **utils network ping <node-host-name>** command to check the network connectivity with the other nodes.

Installed COP Files

Checks if the required COP files are available for the upgrade.

The required COP file while upgrading from Cisco Unity Connection Release 10(x)/11(x) to 12.5(x) is `ciscocm.cuc_upgrade_12_0_v1.2.k3.cop`.

Check	Displays the COP files available in the cluster.

Check Result	These are the results for the check:
	• Application Name: Specifies the node name.
	• Installed COP Files: Specifies the list of COP files installed.
	• Status:
	  • Pass: Indicates the required COP files are available for the upgrade.
	  • Fail: Indicates the required COP files are not available for the upgrade.

Status and Recommended Action	If the check fails, install the required COP files for upgrading Cisco Unified Communications Manager. Run the **show version active** command to check the version of the COP file.

LDAP Details

Checks the last sync status of all LDAPs and their network connectivity.

Check	Displays LDAPs network connectivity and last sync status.

Check Result	These are the results for the check: • Application Name: Specifies the node name. • LDAP Server: Specifies the LDAP server name. • LDAP Status: Specifies the sync status and connectivity of all the LDAPs. • Status: • Pass: Indicates that the LDAP sync and connectivity are available. **Note** The status appears as Pass even if LDAP is not configured. • Fail: Indicates that the LDAP is not synchronized or the LDAP server is not reachable.
Status and Recommended Action	If LDAP sync fails, update the LDAP credentials and rerun the sync. If LDAP is not in network, add LDAP to the network. Log into Cisco Unified CM Admin page and check the LDAP configuration and its network connectivity.

List of Services

Checks and displays the status all the services.

Check	Displays the status all the services.
Check Result	These are the results for the check: • Application Name: Specifies the node name. • Service Name: Lists the services available in the cluster. • Service Status: Specifies if the service is started or if it is stopped. • Status: • Pass: Indicates the cluster was reachable for the collection. • Fail: Indicates one of these reasons: • Clusters were not reachable for the collection. • Invalid network configuration for the nodes. • Invalid credentials are used in HCMF.
Status and Recommended Action	If the check fails, check the cluster credentials and its reachability. For Cisco Emergency Responder, check if the SNMP master Agent is running else the check fails. Run the **utils service list** command to display the status of all the services present on cluster nodes.

Network Connectivity (DNS, SMTP, and NTP)

Checks if SMTP and DNS (Primary and Secondary) are configured and reachable. The DNS reachability and SMTP reachability fields display the server address along with the reachability status. The NTP status shows whether the UC application is synchronized with the configured NTP servers.

Note The check ignores the status, if DNS, SMTP or NTP protocols are not configured.

Check	Displays the DNS (Primary and Secondary), SMTP reachability status along with the NTP synchronization status.

Check Result	Following are the result details for the check:
	• Application Name: Specifies the node name.
	• DNS Reachability: Specifies the DNS configuration and reachability status. Only if DNS is configured, Primary and Secondary DNS reachability status are displayed.
	• SMTP Reachability: Specifies the SMTP configuration and reachability status.
	• NTP Status: Specifies the UC application synchronization with the NTP server.
	• Status:
	  • Pass: DNS or SMTP configured on the nodes are reachable and UC application is synchronized with the NTP server.
	  • Fail: Indicates one of these reasons
	  • DNS, NTP or SMTP configured on the nodes are not reachable
	  • UC application is not synchronized with the NTP server.

Status and Recommended Action	If the check fails, check the network connectivity with the configured DNS and SMTP. Diagnose NTP server configuration using the diagnostic modules. • Run the **show network eth0** command to view details on the configured DNS server and run the **utils network host <node-host-name>** command to check the connectivity with the DNS. • Run the **show smtp** command to view details of the configured SMTP server. • Run the **utils ntp status** command to view details of the configured NTP server.

Phone Count

Displays the phone count with status.

Use this information for comparison post upgrade.

Check	Displays the phone count with status.

Check Result	Following are the result details for the check:
	• Application Name: Specifies the node name.
	• Phone Status: Collects phone count for the following phone status:
	  • Registered
	  • Partially Registered
	  • Rejected
	  • UnRegistered
	• Phone Count: Specifies the phone count for the preceding status.
	• Status
	  • Pass: Indicates that clusters were reachable for collecting the phone count.
	  • Fail: Indicates one of the following:
	  • Clusters are not reachable for collecting the phone count.
	  • Invalid network configuration is used for the nodes.
	  • Invalid credentials are used in HCM-F.

Status and Recommended Action	If the status fails, check if the node is reachable from HCM-F and run the check again.

Port Information

Displays the active ports and the total ports that are configured on the nodes. This check runs on all nodes in the cluster and is applicable only to Cisco Unity Connection.

Use this information for comparison post upgrade.

Check	Displays the active ports and the total ports that are configured on the nodes.

Check Result	Following are the result details for the check:
	• Total Ports: Displays the total ports configured for the node.
	• Ports in Service: Specifies the number of ports in service.
	• Status
	  • Pass: Indicates that the number of ports in service are less than the total number of ports configured.
	  • Fail: Indicates that the number of ports in service are more than the total number of ports configured.

Status and Recommended Action	If the check fails, check the connectivity to Cisco Unity Connection, administrator credentials, node version, and test the multiple network address.

Run Pre-Upgrade Test

Performs the pre-upgrade checks and displays the result. This check is applicable only for Cisco Unity Connection.

Check	Performs the pre-upgrade checks and displays the result.

Result	• Application Name: Specifies the node name.
	• Test name: Lists the executed tests:
	  • Locales Installation Test
	  • Connection DB Test
	  • DRS Backup History Test
	  • Cluster State Test
	  • Critical Services Test
	  • COP File Installation Test
	• Result: Specifies the status of the tests that is listed in the Test Name.
	• Status:
	  • Pass: Indicates that all the tests passed.
	  • Fail: Indicates that one or more pre-upgrade test has failed.

Status and Recommended Action	Check the Recommended Actions to understand the failure reason. Run the **run cuc preupgrade test** command to execute the pre-upgrade check.

State of Database Replication

Checks the status of the database replication between publisher and subscriber nodes for Cisco Unified Communications Manager and IM and Presence.

Check	Displays the status of the database replication between publisher and subscriber nodes for Cisco Unified Communications Manager and IM and P.

Check Result	These are the details of the check:
	• Application Name: Specifies the node name.
	• Database Replication Status: Specifies the node replication status.
	• Status:
	  • Pass: Indicates that cluster nodes are reachable and data replication values are collected successfully.
	  • Fail: Indicates that the cluster nodes are not reachable or the data replication failed for the cluster nodes.

Status and Recommended Action	If the status fails, check the connectivity between publisher and subscriber nodes in the cluster. Also, check the reachability of cluster from HCM-F. • To trigger the database replication, run the **utils dbreplication status** command. • To check the status of the triggered database replication, run the **utils dbreplication runtimestate** command. Ensure that the output displays "(2) Setup Completed" status for all the cluster nodes.

SIP Trunk Information

Checks if the configured SIP Trunks are in service, and the destination is reachable.

Use this information for comparison post upgrade.

Check	Records the total number of SIP trunks that are configured in the network.

Check Result	These are the result of the check: • Trunk Name: Specifies the trunk name. • Destination Detail: Specifies the IPV6/IPV4 address of the destination, if it is configured. **Note** The Destination Detail displays the SIP Trunk Service type name for these trunk types: Call Control Discovery, Extension Mobility Cross Cluster, and Cisco Intercompany Media Engine instead of the destination address. • Trunk Status: • Pass: Indicates one of these reasons for success: • OPTIONS ping enabled SIP Trunks are in Full Service. • Destination address is reachable. • Fail: Indicates one of these reasons for failure: • Trunk is out of service. • Destination is not reachable.
Status and Recommended Action	If the check fails, see the Verify & Troubleshoot section in these guides: • Verifying and Troubleshooting SIP Features document in CUCM • Calls through Session Initiation Protocol (SIP) Trunk Failure • Configure Options Ping Between CUCM and CUBE

Note The report contains SIP Security Profile Properties, SIP Profile Properties, and Recording enabled information along with the SIP Trunk Name, Status, and Destination details.

Syslog Information

Checks if the Syslog Configuration parameters are configured, and the remote servers are reachable.

Use this information for comparison post upgrade.

Check	Displays the Syslog parameters that are configured in the Cisco Unified CM Administrator user interface for message logging.

Check Result	The results of the check are:
	• Application Name: Specifies the publisher name of the Cisco Unified CM application.
	• Syslog Configuration: Specifies these parameter configurations:
	  • Servers: Specifies the IP address of the configured servers.
	  • Severity Level: You can limit messages that are displayed for the selected device by specifying the severity level of the message.
	  • Unreachable Servers: Displays the IP address of the servers that could not be reached.
	  • Status: Specifies if the check passed or failed.
	  • Service Status: Specifies the status for the Cisco Syslog Agent service for the Cisco Unified CM.

Status and Recommended Action	If the status fails, run these commands from the Cisco Unified CM CLI interface: • **utlis service list** command to check if syslog service is started • **utils network ping <server address>** command to check if the servers are reachable.

VCenter and ESXi and UCS Details

Collects the information about ESXi (host configuration) for understanding the supported and unsupported versions of vCenter, ESXi and VM hardware.

Check	Use this information to understand the supported and unsupported versions.

Check Result	Following are the result details:
	• Application Name: Specifies the node name.
	• ESXi/Host Configuration: Displays the following information:
	  • VCenter version
	  • ESXi version
	  • VM hardware version
	  • Blade model
	  • VM Tools running
	• Pass: Indicates that the node was reachable for collection.
	• Fail: Indicates that the node was not reachable for collection.

Status and Recommended Action	If the check fails, check the node connectivity and credentials.

VM Configurations

Checks the VM configuration and verifies if the OVA is compatible with the target upgrade version for each of the UC applications.

Check	Use this information to understand if the VM configuration meets the target upgrade requirements.

Check Result	Following are the result details:
	• Application Name: Specifies the node name.
	• VM Configuration: Displays the following information:
	  • Users—Displays the number of licensed users and the maximum number of supported users for the VM configurations when the publisher node is Unified CM. For all other nodes, it displays the maximum number of supported users related to the VM configuration.
	  • Actual—Displays the current VM configuration information such as Number of CPU, Memory in GB, Hard Disk Size in GB.
	  • Required—Displays the required VM configuration information such as Number of CPU, Memory in GB, Hard Disk Size in GB.
	• Pass: Indicates that the node meets the requirements.
	• Fail: Indicates that the node does not meet the requirement and must be re-configured before you trigger an upgrade.
	Note The OVA check compares the current ova type (small,medium,large) in the HCS environment with the corresponding ova type in the targeted upgrade version.

Status and Recommended Action	If the check fails, check the VM requirement for each UC application using these links: • Cisco Unified CM • Cisco Unity Connection • Cisco IM and Presence • Cisco Emergency Responder

Post Upgrade Comparison

Perform upgrade comparison to validate the results obtained before and after upgrade.

Before you begin

Ensure to do the following:

- See Upgrade Toolkit Prerequisites, on page 112

- Ensure to perform Perform Upgrade Checks, on page 114 on the UC application clusters before and after upgrade.

Procedure

Step 1 From the side menu, choose **Service Provider Toolkit** > **Upgrade Toolkit** > **Upgrade Comparison**.

Step 2 From **Select a Customer** drop down, select the same customer name on which you performed Upgrade Checks before and after upgrade.

Step 3 From **Select a Cluster** drop down, select the the same UC application cluster on which you performed Upgrade Checks before and after upgrade..

The comparison check results (tick or cross-mark) for the selected UC application cluster appear in the Status column.

Step 4 Click the tick or cross-mark in the **Status** column to understand the result details.

Upgrade Comparison

The checks in **Upgrade Comparison** use the results obtained from the **Upgrade Checks** before and after upgrade for comparison. The following table lists the checks that are supported on different UC applications.

Table 17: Upgrade Comparison

Upgrade Comparison	Is Upgrade Comparison Supported on UC Application?		
	Unified CM	Unity Connection	IM and P
Installed COP Files	Y	N	Y
LDAP Details	Y	N	N
CTI Device Count	Y	N	N
List of Services	Y	N	Y
Phone Count	Y	N	N
CLI Diagnostics	Y	N	Y
Enterprise Service Parameters	Y	N	Y
Cluster Version Information	Y	Y	Y
Check Cluster Status	N	Y	N

Phone Compatibility Check

Perform this check to know the phone details with the list of supported and unsupported phones along with the Jabber devices.

Before you begin

Upgrade Toolkit Prerequisites, on page 112

Note Ensure CHPA services is active by using the **utils service activate Cisco HCS Provisioning Adapter** command, and Cisco HCS UC Monitor Service is active by using the **utils service activate Cisco HCS UC Monitor Service** command, before you perform the phone compatibility check.

Procedure

Step 1 From the side menu, choose **Service Provider Toolkit** > **Upgrade Toolkit** > **Phone Compatibility Check**.

Step 2 From **Select a Customer** drop-down, select the customer name for performing the checks.

Step 3 From **Select a Cluster** drop-down choose a UC application cluster, or choose **All** to perform the compatibility check on all clusters of a customer.

Date and time when the last phone compatibility check for the cluster was performed appears, if the compatibility check for the same customer and the same UC application cluster is initiated. The compatibility check result is downloaded using **Download**.

Step 4 From **Target Version** drop-down choose a UC application version.

Step 5 Select the option **Include Jabber Devices** to include the Jabber device details in the report.

Step 6 Click **Submit** to perform the compatibility check.

The job initiation status appears.

Step 7 Check the job status.

Select **Infrastructure Manager** > **Administration** > **Jobs**. Check for Job Entity, UC Monitor Checks.

Note You can run the check on different clusters for the same customer at the same time. But, if a check for a customer cluster is in progress and if another check is initiated for the same cluster, the initiation fails.

Step 8 Click **Download** to download the .csv file.

The .csv file contains Customer Name, Cluster Name, User Name, Phone Model, Device Name, Directory number, Phone IP address, Hardware Support Status, and Version. The report specifies the following:

- Supported or unsupported status for the phone models in the Hardware Support Status column.
- Displays the associated software version for the Jabber endpoints and the Phone firmware version for phones in the Version column.

Note Jabber—The Version column for Jabber users does not display information, if the soft-phone is not registered since the last restart of the Cisco Unified CM application. The Jabber versions of all the soft phones are displayed in the version column irrespective of whether the version is supported or not supported in the targeted upgrade version.

Hard phones—The Hardware Support Status column applies only for the hard phones. The firmware version of all the hard phones are displayed in the version column irrespective of whether the phone model is supported or not supported in the targeted upgrade version.

Platform Manager Configuration

Platform Manager is a web-based application in Cisco HCM-F administrative interface that serves as a UC application platform management client for Cisco Unified Communications Manager, Cisco Unified Communications Manager IM and Presence Service, and Cisco Unity Connection. It allows users to configure the system server inventory as well as select, schedule, and monitor upgrade, switch-version or restart tasks of one or more servers across one or more clusters. You can also create groups of servers to help manage multiple clients and applications as well as create backup tasks to perform DRS backups on groups of servers.

Step	Task	For More Information
1.	Add, sync, or import servers.	Add Server, on page 135, Sync Servers from SDR, on page 136, and Import the Servers, on page 137
2.	Add server groups.	Add Server Group, on page 137
3.	Add file servers.	Add File Server, on page 137
4.	Add tasks.	Tasks, on page 138

Add Server

To add a server, complete the following steps.

Procedure

Step 1 From the Platform Manager menu, select **Inventory** > **Servers**.

Step 2 Click the **Add Server** button.

Step 3 In the **Add Server**, window complete the following fields:

a) In the **Hostname/IP Address** field, enter a valid hostname or IP address for the server that you want to add.

b) Enter the current OS Admin username defined on the server in the **OS Admin Username** field.

Note The username must be no more than 50 characters and begin with an alphanumeric character.

c) Enter the current OS Admin password defined on the server in the **OS Admin Password** field.

Note The password must be between 4 and 32 characters.

d) Click **Next**.
e) Enter a description of the customer for the server in the **Customer** field.
f) If a publisher field appears, choose the FQDN of the first node for this server. If your Cisco Unified Communications Manager is version 8.6(2)ES1 or higher, this field is auto-populated.
g) Check the role that will be associated with the server from the **Server Roles** checklist.

Note Server roles are labels to help users identify a server. Setting a server role does not activate any services. Mislabeling a server will not cause any service outages.

Step 4 Click **Save**.

Sync Servers from SDR

Servers can be synchronized into Platform Manager from the Cisco Hosted Collaboration Solution Shared Data Repository (SDR).

Procedure

Step 1 From the Platform Manager interface, select **Administration** > **SDR Synchronization**.

Step 2 To schedule a synchronization, set the Start Time and Frequency and click **Save**. To synchronize right now, click **Sync Now**.

Server Import

Use the Import Servers feature located at **Administration** > **Import Servers** to import multiple servers from a .csv file. Each line of an import file defines a single Unified Communications server with six comma-separated values: IP address, OS Administrator username, OS Administrator password, Customer name, server roles and FQDN of the first node. For servers with 8.6(2)ES1 or later, you do not need to add FQDN of the first node.

Upload the .csv Import File

Procedure

Step 1 SFTP to the Platform Manager server using the adminsftp account and the OS Administration password with any SFTP client.

Step 2 Change directories to the import directory, and upload the import file.

Import the Servers

Before you begin

Follow the steps in the Upload the .csv Import File, on page 136.

Procedure

Step 1 From the Platform Manager menu, select **Administration** > **Import Servers**.

Step 2 Select the import file that you uploaded from the **Import File** drop-down list.

Step 3 Check the **Overwrite a server if it already exists** check box if you want to overwrite existing server information that is in the import file.

Step 4 Click **Start Import**.

Note Import files must be uploaded to the `/common/adminsftp/import` directory using SFTP before they can be imported. An import file will be removed automatically after it has been imported.

Add Server Group

To add a server group, complete the following steps.

Procedure

Step 1 From the Platform Manager menu, select **Inventory** > **Server Groups**.

Step 2 Click the **Add Server Group** button.

Step 3 In the **Add Server Group** window complete the following fields:

a) In the **Server Group Details** section, enter a name for the group and select a product type from the drop-down list. When you select a product type, only servers with the specified type are available to be added to the group.

b) In the **Add Servers to the Group** section, check the check box next to the available servers that you want to include in the group and click the right arrow to select the servers.

Step 4 Click **Save**.

Add File Server

To add a file server, complete the following steps.

Procedure

Step 1 From the Platform Manager menu, select **Inventory** > **File Servers**.

Step 2 Click **Add File Server** button.

Step 3 Enter the following information in the **Add File Server** window:

a) Enter the file server name in the **File Server** field.

Note The file server ID must contain no special characters. It may contain spaces, hyphens and underscores.

b) Enter the hostname (only) of the new file server in the **Hostname/IP Address** field.

c) On the DNS server, add the file server into the host file to map it to its NAT IP. Also, make sure on the DNS server in the service provider space, that the file server is mapped to its normal IP. Steps b. and c. ensure success for either a single NAT or double NAT configuration.

d) Enter the path to the files on the file server in the **Directory** field.

e) Enter the **Username** and **Password** required to access the file server.

f) Select either **SFTP** or **FTP** server type.

Note You can use the **Show Files** button to view all of the files in the specified directory.

Step 4 Click **Save**.

Tasks

Tasks are used to upgrade, switch versions, or restart groups of servers. You can create various tasks to perform on server groups in your Platform Manager.

Create an Install/Upgrade Task

Use the Upgrade Install Wizard to create and manage installation and upgrade tasks.

Tip Server groups containing both publisher and subscriber servers cannot be used for upgrade tasks.

Create a new installation or upgrade task to automatically run on one or more server groups at scheduled times.

Note Disk space on the app server should be less than 70%, so check the disk usage of the app server before creating the upgrade task.

Procedure

Step 1 From the Platform Manager menu, select **Tasks** > **Create an Install/Upgrade Task**.

Step 2 Enter a task name and click **Next**.

Step 3 Select one or more of server groups from the list of available groups in the left pane and click the arrow buttons to move them to the **Selected Server Groups** list.

Step 4 Click **Next**.

Step 5 Select a file server from the drop-down list and click the **Show Files** button. **Hostname**, **Directory**, **Type** and **User Name** populate automatically.

Note The upgrade wizard only shows files that are valid for every server added to the task.

Step 6 Click the **Show Files** button to retrieve a list of patches or COP files that can be used to upgrade.

Step 7 Select the valid file that you want to apply to your server group upgrade and click **Next**.

Step 8 Check the **Automatically switch to the new version after a successful upgrade** check box if you want to automatically switch to the upgraded partition.

Step 9 Use the **Sequence the Server Groups** section to set the date, time and sequence for the upgrade tasks to be executed on the servers. Each server group can start at a specific time or after another server group.

Step 10 Click **Next**.

Note If you are performing a refresh upgrade, do not select the **Automatically switch to the new version** option.

Step 11 Use the **Review and Schedule the Task** section to verify the details of the task you created.

Step 12 Click **Finish** to schedule the task.

Note If you are performing a refresh upgrade, do not click the **Reboot** button while the task is running.

Create a Switch Version Task

Use the Switch Version Task Wizard to create and manage switch version tasks.

Create a switch version task to automatically switch one or more server groups to the upgraded version at scheduled times.

Procedure

Step 1 From the Platform Manager menu, select **Tasks** > **Create a Switch-Version Task**.

Step 2 Enter a name for the task in the **Task Name** box and click **Next**.

Step 3 Select one or more of server groups from the list of available groups in the left pane and click the arrow buttons to move them to the **Selected Server Groups** list.

Step 4 Click **Next**.

Step 5 Select the installed version that you want to switch to by selecting the radio button for either **Inactive Version** or **Specific Version**. If you select **Specific Version**, you must specify a build number. If the inactive version installed does not match the build number specified, the switch will not occur.

Step 6 Click **Next**.

Step 7 Use the **Sequence the Server Groups** section to set the date, time and sequence for the switch version tasks to be executed on the servers. Each server group can start at a specific time or after another server group.

Step 8 Click **Next**.

Step 9 Use the **Review and Schedule the Task** section to verify the details of the task you created.

Step 10 Click **Finish** to schedule the task.

Create a Restart System Task

Use the Restart System Task Wizard to create and manage restart system tasks.

Create a restart system task to automatically restart one or more server groups at scheduled times.

Procedure

Step 1 From the Platform Manager menu, select **Tasks** > **Create a Restart System Task**.

Step 2 Enter a name for the task in the **Task Name** box and click **Next**.

Step 3 Select one or more of server groups from the list of available groups in the left pane and click the arrow buttons to move them to the **Selected Server Groups** list.

Step 4 Click **Next**.

Step 5 Use the **Sequence the Server Groups** section to set the date, time and sequence for the switch version tasks to be executed on the servers. Each server group can start at a specific time or after another server group.

Step 6 Click **Next**.

Step 7 Use the **Review and Schedule the Task** section to verify the details of the task you created.

Step 8 Click **Finish** to schedule the task.

Create a Backup Schedule Task

Create a new backup schedule task to automatically run DRS backups on one or more server groups. You can have different backup schedule tasks for different server groups. You can also set specific dates and times for the backups as well as define the length of time you want to run the backups.

Note

- To restore a system, you must use DRS directly on the system that you want to restore. You must perform a full installation, and then use DRS to restore the system settings.

Platform Manager allows you to choose from a range of options for a backup schedule task. See the following table for more details.

Table 18: Backup Schedule Task Options

Schedule Type	Detail
Weekly	Select the day of the week to run the recurring backup.
Monthly	Enter the day of the month to run the recurring backup.

Last day of every month	Select the check box to run the recurring backup on the last day of every month. **Note** You cannot choose multiple days of the month and the last day of the month options for the same task. Create two separate backup tasks if you want to run a backup on multiple days of the month as well as the last day of the month.
One Time	Enter the day and time you want the backup for a one-time-only future date.
On multiple days in one week	Check the days of the week to run the recurring backup. **Note** To run a backup every day, select all days of the week.
On multiple days in one month	Enter the days of the month, separated by commas, that you want to run the recurring backup.

Note You can choose a specific time on these days for the backup to run. These options are available to you when you create a backup schedule task.

Follow this procedure to create a backup schedule task.

Procedure

Step 1 From the Platform Manager menu, select **Tasks** > **Create a Backup Task**

Step 2 Enter a backup schedule name and click **Next**.

Step 3 Select one or more of the server groups from the list of available groups in the left pane and click the arrow buttons to move them to the Selected Server Groups list. Click **Next**.

Note DRS backups run on the first node of the cluster, which backs up all the subscriber nodes for that cluster. You need to include only the first node in the cluster in the server group. If a backup task includes a server group that has a publisher and subscribers, the DRS backup runs on the publisher node, which backs up the subscriber nodes for its cluster.

Step 4 Select the **Schedule Type - Weekly**, **Monthly** or **One Time**.

To set a weekly schedule:

a) Select **Weekly.**
b) Choose the day or days you want the backups to run.

Note The start date is valid only for one-time backups. The next backup is on the next specified day of the week.

To set a monthly schedule:

a) Select **Monthly**
b) Enter the days of the month, separated by commas, you want the backups to run.

Note The start date is valid only for one-time backups. The next run time of the backup is the next specified day or days of the month.

To run one-time backup:

a) Select **One Time**
b) Enter the start time and date now or in the future for the backup to run.

Note A server group can include one or more servers. In these groups, the system performs and completes a backup on the first server in the group, and then proceeds to the next server in the group and performs a backup on that server. This continues, sequentially, for each server until all the servers in the group are backed up. Each time a new backup is initiated, the system first checks to be sure the current time is within the Backup Duration. If time is outside the Backup Duration, no more backups are run for this task.

Step 5 Enter the **Timeout** time, if applicable.

Note Timeout defines the length of time it should take to back up a single server. For example, you have five servers in a server group and want the backup to take five hours. You want to control the length of time each server has to perform the backup. Set the Timeout to "1" and each server is backed up only for a maximum of one hour. The default value is one hour. If the timeout value is reached, the system marks the backup task as Failed and schedules the backup of the next server in the server group. Be aware that even though the backup task is marked as Failed on the Backup Task page, the full backup task does not stop running. The timeout allows the system to move to the next server without having to wait for the backup on one server to complete. To determine the actual backup status, connect to DRS directly and verify whether the backup really failed or succeeded.

Step 6 Enter the **Start Time**.

Note The backup task always runs at this time.

Step 7 Enter the **Backup Duration** time, if applicable.

Note Backup Duration time defines the length of time backups are run. For example, if you want to run a backup at 7:00 a.m. (0700) Monday morning but want to stop this activity before users need the system again at 9:00 a.m. (0900), you can set the backup duration time to 120 minutes so no backups on clusters are started after 120 minutes. Backups are still run on any servers within a cluster that start before the end of the Backup Duration.

Step 8 Click **Next.**

Step 9 Use the **Review and Schedule The Task** section to verify the details of the task you created.

Step 10 Click **Finish** to schedule the backup and review the Backup Task List page.

Set up a Disabled DRS Backup Schedule on the Cisco Unified Communications Manager

The backup schedule task in Cisco HCM-F uses the Disaster Recovery System (DRS) capabilities of the application server to indicate what components are backed up, and on which device. For the backup feature

to successfully complete a backup task on Cisco Unified Communications Manager, Cisco Unified Communications Manager IM and Presence Service, or Unity Connection servers, you must first configure DRS on the GUI of the first node of each cluster. To create a backup for Unified Communications Manager servers, you need to take a few extra steps.

Procedure

Step 1 Navigate to the DRS GUI page for the first node of the server.

Step 2 Go to **Backup** > **Scheduler** and **Add a New Schedule**. Name this schedule **all-maint-activities**.

Step 3 Select the backup device.

Step 4 Select all components that should be backed up in the schedule.

Step 5 Disable the schedule.

Note The DRS does not need to run the schedule because it is run by the Platform Manager Backup scheduler.

Version Report

The Version Report feature provides details on number of UC applications and Expressway clusters, their types and versions at provider, customer, and cluster level as **Summary** and **Detailed** reports that service providers can use for their reporting, upgrade planning, and inventory. Service providers can use this feature to see the UC applications and Expressway cluster information in various ways based on:

- The number of UC applications that are deployed under each customer and their versions
- Whether the Publishers and Subscribers are in different version
- The Application Version information, which can be filtered by, the customer name, the cluster name, and the application version; and grouped by, the customer, the cluster, and so on.
- The supported applications, namely Cisco Unified Communications Manager (CUCM), Cisco Unity Connection (CUCxN), Cisco IM and Presence, Cisco Emergency Responder (CER), and Cisco Expressway Series, Expressway-E and Expressway-C.
- The version information categorized as pre-9.x, 9.x, 10.x, 11.x, and 12.x.

Note

- The supported versions UC Appications clusters are 9.x and later; all other cluster versions are grouped under pre-9.x column.
- The supported Expressway cluster versions are x8.7 and later versions.

Provider admin can download the version summary reports. The Summary Report provides list of UC and Expressway clusters with the version information that is pulled from the applications of each cluster. The Detailed Report provides the list of customer, cluster type, cluster name, node type, application name, host name, version, and IP address.

Note

- The Version Sync does not have scheduling option. It can only be triggered manually.
- The details displayed in Version Report or the downloded file is based on last synced data.
- The resources used to collect the data from CUCM, CUCxN, CER and Expressway are shared across different HCMF services. Therefore, we recommend not to run Version Sync, Service Inventory, or Certificate Monitoring jobs simultaneously. Also, ensure that these jobs do not overlap each other.

For details on APIs to fetch the reports at various levels, refer *Cisco Hosted Collaboration Mediation Fulfillment Developer Guide*.

Summary Report

The Summary Report page provides the version details at the cluster level by using the publisher or the primary peer version of the cluster. The Summary Report page enables you to:

- Sync the cluster version.
- View the last sync time of all the cluster versions.
- View the number of available UC Applications and Expressway cluster types with their version.

Note If a cluster is counted under a specific version, it means the publisher or the primary peer of that cluster is under one of the minor versions. For example:

- If a UC application cluster is counted under **11.X**, the publisher would be under one of the minor versions of 11, such as 11.1, or 11.2.
- If an Expressway cluster is counted under **X12.x**, the primary peer of the cluster is under one of the minor versions of X12.

- Download the version report that consists of the summary and detailed information.

The supported UC Applications and Expressway cluster types are Unified Communiations Manager, Unity Connection, IM and Presence, Cisco Emergency Responder, Expressway-C, and Expressway-E.

- The supported UC Applications cluster versions are 9.x and later versions. Other cluster versions are grouped under **pre-9.X** column.
- The supported Expressway cluster versions are x8.7 and later versions.

Before you begin

- Ensure that the following services are up and running:
  - Cisco HCS UC Monitor Service
  - Cisco HCS Provisioning Adapter Service
  - Cisco HCS UCPA Service

- Cisco HCS Data Access Manager Service

- Check the **Last Sync** time for UC Applications and Expressway clusters in the Summary Report page. It provides details on how long ago the data was collected.

Procedure

Step 1 In HCM-F UI, do the following:

a. Navigate to **Infrastructure Manager** > **Service Provider Toolkit** > **Version Report** > **Summary Report**. Summary Report page displays **UCApp cluster** and **Expressway cluster count** tables.

Note
- The Summary Report shows the cluster count in **Unknown** column for any UC application that is configured as a subscriber. In this scenario, the cluster count for that UC application in Summary Report and Detailed Report differs.
- The **Cluster Type** is listed under the **Unknown** column in one of the following cases:
  - The sync operation failed or version sync did not run for the cluster.
  - The publisher or primary peer is not added for the cluster .
  - The expressway clusters are added by configuring subordinate peers without their primary peers.
  - The added applications in the cluster are unreachable.
  - If the publisher applications are not added to HCMF.

b. To get the detailed report of the cluster types, from the **Summary Report** page, click on any of the values in the table columns. The Detailed Report page with the filter that is set is displayed.

c. To sync the cluster version, click **Version Sync**.

Note
- Version Sync collects version information of UC and Expressway apps from all the customers and clusters.
- Check the job status in the Jobs (**Administration** > **Jobs**) page with the VersionSync as Job Entity.

Step 2 To download the Version Summary Report (.xlsx), click **Download**. The Version Summary Report sheet provides:

- Summary Report with the number of clusters installed under each version
- Detailed Report with details of the cluster applications and their installed version

Note The sample of UC applications and Expressway clusters summary report in xlsx format are located at https://www.cisco.com/c/dam/en/us/td/docs/voice_ip_comm/hcs/12_5/HCMF_12_5_1/VersionSummaryReport.xlsx.

The report consists of two sheets: the Summary sheet and the Detailed sheet.

The Summary sheet provides the following information:

Entity	Description
UC Clusters With Version Info	Provide list of UC cluster with its version present in the HCM-F
Expressway Clusters With Version Info	Provide list of Expressway cluster with its version present in the HCM-F

The Detailed sheet provides the following information:

Entity	Description
Customer	The name of the customer the cluster belongs to
Cluster Type	Type of clusters, for example, Unified CM, Unity Connection, Expressway Edge, and Expressway Core.
Cluster Name	Cluster name provided while adding a cluster in HCM-F
Node Type	Publisher or subscriber (for UC clusters), and Primary or Subordinate peer (for Expressway clusters).
Application Name	Application name provided while adding a cluster application in HCM-F
Host Name	DNS name of the application.
Application Version	Installed version of the application
IP Address	IP address of the application

Detailed Report

The Detailed Report page allows you to view the UC applications and Expressway cluster information in detail. The detailed information is grouped customer-wise in the Version Detailed Report sheet.

Procedure

In HCM-F UI, navigate to **Infrastructure Manager** > **Service Provider Toolkit** > **Version Report** > **Detailed Report**. Detailed Report page appears with the following information on UC apps and Expressway clusters:

Field	Description
Customer Name	Customer name that a cluster belongs to
Cluster Type	Type of cluster, for example, Unified CM, Unity Connection, Expressway Edge, and Expressway Core.
Cluster Name	Cluster name provided while adding a cluster in HCM-F
Node Type	The node types differs based on the selected cluster type: • For CUCM, Unity Connection, CER: Publisher and Subscriber • For CUCM (IM and Presence): Publisher (IM and Presence) • ForExpressway: Primary Peer and Subordinate Peer
Application Name	Application name provided while adding a cluster application in HCM-F
Host Name	DNS name of the application.
Application Version	Installed version of the application
IP Address	IP address of the cluster

Note Each column header has an associated filter text box. For exact match, search by selecting the value from the search drop-down list. For a partial match, perform a content-based search and enter a value or keyword (content) in the textbox within the drop-down list. The entries in the drop-down list are limited to 20 entries. To load more entries, click **More Choices**.

Service Inventory Configuration

This section provides information about the configuration checklist for Service Inventory, and how to update the configuration settings for Service Inventory.

Configuration Checklist for Service Inventory

The following table lists the steps that you must perform to get Service Inventory up and running. Service Inventory uses configuration data from Cisco Unified Communications Domain Manager, so this section assumes that you have configured the data in Cisco Unified Communications Domain Manager.

If you want, you can use the Cisco HCM-F NBI to configure Service Inventory, instead of the Service Inventory administrative interface.

For UC Application Service Inventory reports, make sure you configure your UC Application before you complete the tasks in this checklist. Also make sure to provision Customers, Cluster and UC Application Servers prior to scheduling the report.

Note If Cisco Unified Communications Domain Manager 10.x is configured, the customers are directly added to Cisco Hosted Configuration Mediation Fulfillment as and when added in Cisco Unified Communications Domain Manager.

Table 19: Configuration Checklist for Service Inventory

	Task
Step 1	If you have not already done so, install or upgrade the Cisco HCM-F platform, which installs Service Inventory.
Step 2	Verify that you have added a Cisco Unified Communications Domain Manager application instance in the Infrastructure Manager administrative interface (**Management Network** > **Management Application**). **Important Points** Select **CUCDM** for configuring Cisco Unified Communications Domain Manager. If you are deploying a multi-node Cisco Unified Communications Domain manager, add **Web-Proxy** node under Network Addresses, and select the network space as **Service Provider Space**. While adding credentials, select **hcsadmin**and select **ADMIN** as the credential type. **Note** Ensure the username is **`hcsadmin`** and not **`hcsadmin@sys.hcs`**.
Step 3	If you have not already done so, enter **utils service activate** Cisco HCS Inventory Service through the CLI on the Cisco HCM-F platform. If you have not already done so, enter **utils service list** through the CLI on the Cisco HCM-F platform to verify that the following services are running: • Cisco CDM Database • Cisco Tomcat • Cisco HCS SI UI —Use this service if you plan on configuring Service Inventory through the Service Inventory administrative interface. • Cisco HCS North Bound Interface Web Service—Use this service if you plan on configuring Service Inventory through the Cisco HCM-F NBI. • Cisco HCS Provisioning Adapter Service—The Cisco HCS Provisioning Adapter Service provisions credentials and SNMP information, as well as provisions remote Syslog data on Cisco Unified Communications Manager devices.
Step 4	Configure general settings for Service Inventory. In the Service Inventory administrative interface, click **Configuration**.
Step 5	Set up the schedule to generate daily reports. In the Service Inventory administrative interface, click **Reporting** > **Scheduled Reports**.
Step 6	If you want to do so, transfer a backup report to the remote SFTP server. In the Service Inventory administrative interface, click **Backup**.

	Task
Step 7	Interpret the data in the report.

Update Service Inventory Configuration Settings

Procedure

Step 1 From the Service Inventory interface, click **Configuration**.

Step 2 Configure the settings shown in the following table:

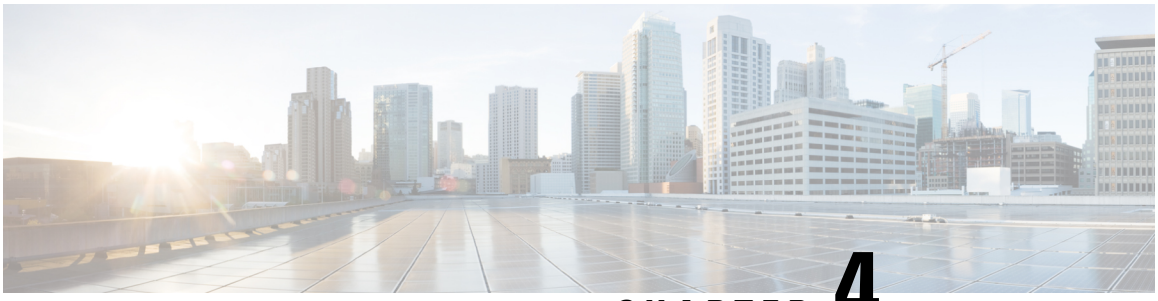
Table 20: Settings for Configuration Page in Service Inventory

Field	Description
Service Inventory Settings Use this section to configure a Service Inventory server.	
Hostname	Enter the hostname of the Service Inventory server. The Service Inventory hostname must be entered as an IP address or a fully qualified domain name. **Note** If the Service Inventory server is not configured with DNS enabled, enter an IP address in the Hostname field.
Port	Enter the SFTP port number that is used by the domain manager server to send the requested SI billing data to this Service Inventory server. The default is 22.
Username	Cisco Unified Communications Domain Manager uses the username, adminsftp, to transfer data to the Service Inventory application. You cannot update this field.
Password	Enter the password for the adminsftp user account. This step is required as an identity confirmation for security purposes. **Note** This password is the same as the Cisco Hosted Collaboration Solution administrator password that you set up during the Cisco HCM-F installation (or changed after installation).

Field	Description
Service Provider SFTP and Remote Backup SFTP Settings Use this section to configure and enable transfer of Service Inventory reports to remote SFTP servers. Remote SFTP servers configured on this page also serve as the destination of files when you initiate a transfer from the Backup page. You must configure a primary remote SFTP server. If you want to do so, you may configure a secondary remote SFTP server. If you configure the secondary remote SFTP server, the generated report files get sent to the location for the secondary remote SFTP server in addition to the primary remote SFTP location. **Note** The Backup page sends selected files to both primary and secondary SFTP servers.	
Hostname	Enter the hostname or IP address of the primary remote SFTP server.
Port	Enter a port number for the primary remote SFTP server or use the default, which is 22.
Username	Enter a valid username to access the remote SFTP server.
Password	Enter the password to access the remote SFTP server.
Destination Path	Enter a path on the SFTP server where the billing files will be stored.
Retry Count	Set the number of times the Service Inventory service will attempt to transfer billing reports if the SFTP transfer does not succeed on the first try. **Tip** The Retry Count and Maximum File Size that you specified under the Remote SFTP Server settings also apply to the Remote Backup SFTP Server settings.
Maximum File Size (MB)	Enter the maximum individual file size (in MB) for Service Inventory reports that are transferred to remote SFTP servers. The Service Inventory application will split and rename files to meet this size requirement before transfer. The maximum value you can enter is 2047 MB.
Local Settings Use this section to configure the local settings for report backup retention, for log trace levels, to enable report customization and to set up the status notification email feature.	
Local Backup Retention period (days)	Set the number of days that you want to retain backup copies of generated Service Inventory reports. Enter between 30 and 60, with 60 being the default.
Log Trace Level	Set the log trace level. Available trace levels are Fatal, Error, Warning, Informational, and Detailed.

Field	Description
Enable Report Customization	Check to enable additional customization of Service Inventory reports. Verify that an appropriate Cisco Advanced Services application plug-in is installed. Service Inventory application executes the plug-in to provide additional report customization after basic processing if this option is enabled and the plug-in is installed.
Status Notification Service Inventory mails the status of report generation to the configured email address. This notification service is optional, but is used if configured. **Tip** For email notification to work, you must use DNS.	
SMTP Hostname	Enter the outbound SMTP hostname or use the default of local host.
SMTP Port	Enter the SMTP port number or use the default, which is 25.
Email Address (From)	Enter the outbound email address.
Email Address (To)	Enter the inbound email address.

Step 3 Click **Save**.



CHAPTER 4

Upgrade HCM-F

Before You Upgrade

Consider these pointers before you upgrade the Hosted Collaboration Media Fulfillment to the latest version:

- Ensure that you have a valid DRF backup of your HCM-F Cluster.

  Note Cisco does not support and cannot guarantee that a VMware snapshot can be used to successfully restore Cisco Hosted Collaboration Media Fulfillment application. If you cannot restore the application from a snapshot, your only recourse is to reinstall older version of the Hosted Collaboration Media Fulfillment application and restore using the DRF backup.

- Check the network connectivity.
- Ensure to stop all the sync services.
- Ensure that there are no expired certificates including the trust certificates for the services.

  To list all certificates, run the **show cert list own** and run the **show cert list trust** commands.

  To verify if the own certificates are valid, run the **show cert own <cert name>** command through the CLI on the Cisco HCM-F platform. Check the validity field for the certificate validity information. For example: **show cert own tomcat/tomcat.pem**.

  To check if the trust certificates are valid, run the **show cert trust <filename>** command.

  Based on the certificate issuer, you can regenerate the certificates. To regenerate the self-signed certificate, use the **set cert regen <name>** command. For CA signed certificate, generate CSR using the **set csr gen**

<name> command, get it signed by a CA and upload the certificates using the **set cert import <name>** command.

The following are examples of the system security certificates that you can regenerate.

Own Certificates

- tomcat
- ipsec
- tomcat-ECDSA
- ITLRecovery
- authz

Upgrade Overview

The following Cisco HCM-F upgrade paths are supported:

- 11.5(x) to 12.5(1) and later Service Update releases
- 10.6(x) to 12.5(1) and later Service Update releases

Before you begin to upgrade from 11.5(1) release to 11.5(4)SU1, it is mandatory to install the `hcs.CSCvb86072-1-1151patch.cop` file on HCMF.

Note After you upgrade to 12.5 release, you can revert to an older software version using the switch version option. However, you cannot upgrade to any pre-12.5 release. Use PCD migration or cluster rebuild, if it is necessary to upgrade to any pre-12.5 version.

Upgrade the Cisco HCM-F Application Node before upgrading any Cisco HCM-F Web Services Nodes.

Before you begin the upgrade process, obtain the appropriate upgrade file using one of the following methods:

- Use the Product Upgrade Tool (PUT). To use the PUT, navigate to https://tools.cisco.com/gct/Upgrade/jsp/index.jsp. Enter your Cisco contract number (Smartnet, SASU or ESW) and request the DVD set.
- Purchase the upgrade from Cisco Sales if you don't have a contract for Cisco HCS.

In general, perform the following tasks to upgrade Cisco HCM-F:

- Upgrade Cisco HCM-F
- Validate the Cisco HCM-F Upgrade
- Update the HCM-F Version in Cisco Unified CDM
- Update the Guest operating System

Upgrade Cisco HCM-F

Before upgrading an HCM-F cluster containing an Application Node and Web Services (WS) Nodes, perform the following tasks:

1. Ensure that you have a valid DRF backup of your HCM-F Cluster.
2. On the Application Node CLI, run **show hcs cluster nodes**. Verify that the versions of the Application Node and WS Nodes are correct.
3. On the Application Node CLI, run **show hcs cluster verify detailed**. Verify that all WS Nodes in the cluster are reachable and show `Configurations VERIFIED`.
4. If you use Prime Collaboration Assurance, review and perform the task (Enabling HCM-F and Prime Collaboration Assurance to Communicate) in the *Cisco Hosted Collaboration Solution Install Guide* if necessary. The *Cisco Hosted Collaboration Solution Install Guide* is available at https://www.cisco.com/c/en/us/support/unified-communications/hosted-collaboration-solution-hcs/tsd-products-support-series-home.html.

Note

- If Cisco HCM-F 10.6(3) SU1 was previously installed, skip to Upgrade a Multinode Environment.

Note

- Upgrade the Application Node and let the upgrade complete before upgrading any WS Nodes attached to it. If you do not switch versions during the upgrade, run the **utils system switch-version** command on the Application Node before running it on the WS Nodes.
- If you are running RTMT and monitoring performance counters during a Cisco HCM-F upgrade, the performance counters are not updated during and after the upgrade. To continue accurate monitoring of performance counters after the upgrade is finished, either reload the RTMT configuration profile or restart RTMT.

Use this procedure to upgrade a Cisco HCM-F Application Node or a Cisco HCM-F Web Services Node.

Procedure

Step 1 Obtain the upgrade media to upgrade the Cisco HCM-F platform.

If you downloaded the software executable from Cisco.com, do one of the following:

- Prepare to upgrade from a local folder:
  a. Copy the Cisco HCM-F upgrade file to a temporary folder on your local hard drive.
  b. Open an SFTP client and connect to the Cisco HCM-F server using the adminsftp user ID and password that you set up during installation.
  c. Navigate to the upgrade folder by entering **cd upgrade**.
  d. Type **put** <*upgrade filename*> to transfer the file.

- Prepare to load an ISO file:
  a. Copy the Cisco HCM-F upgrade ISO to a data store accessible by the virtual machine.
  b. Attach the ISO image to the virtual machine's DVD drive.
- Put the upgrade file on an FTP or SFTP server that the server that you are upgrading can access. Copy the contents of the upgrade disk or downloaded upgrade files to the remote server. Make sure that the Cisco HCM-F upgrade file filename begins with HCS.

Step 2 On the virtual machine that you are upgrading, log in to the Cisco HCM-F CLI and enter **utils system upgrade initiate**.

Step 3 Choose the source from which you want to upgrade:

- 1—Remote Filesystem using SFTP
- 2—Remote Filesystem using FTP
- 3—Local DVD
- 4—Local Upload Directory

Step 4 Follow the system prompts for the upgrade option that you chose.

Step 5 The system prompts you when the upgrade process is complete. If you did not choose to automatically switch versions, enter **utils system switch-version**. Then enter **`yes`** to confirm that you want to reboot the server and switch to the new software version.

Step 6 After the upgrade completes, log in to the Cisco HCM-F CLI.

- Enter **show version active** to verify that the current version is the upgraded version.
- Post HCM-F upgrade, change the users password for the GUI access.

Step 7 Perform this step if you used the **utils system switch-version** command in Step 5, on page 156. After the Application node and all WS Nodes have switched versions, log in to the Application Node CLI and run the **set hcs cluster config** command.

Step 8 From the HCM-F CLI, run the **utils service list** command to view the services. Run the **utils service start** *service_name* command to restart any services that were stopped before the upgrade.

Validate the Cisco HCM-F Upgrade

Procedure

Step 1 Verify that no error logs were created during or after the upgrade.

Step 2 Verify that the active version shows the correct upgraded version by running the **show version active** CLI command.

Step 3 Verify that all services are running as they were before the upgrade by running the **utils service list** CLI command.

Step 4 Verify that the administration GUI is accessible and displays the correct upgraded version by clicking the **About** link after logging in.

Step 5 Verify that all the syncs (for example, Service Provider, Data Center, vCenter, Customer, UCS Manager) were successful.

Step 6 Verify that Hosted License Manager does not contain any post-upgrade errors and that licenses are assigned to the proper customer.

Step 7 Verify that Platform Manager or Prime Collaboration Deployment is running (whichever you used for the upgrade).

Step 8 Verify that Cisco HCS North Bound Interface Web Service is running.

Step 9 Verify that Service Inventory is running.

Step 10 After upgrading the Application and Web Services nodes, log in to the CLI on the Application node. Verify that the Application and Web Services nodes are at the correct version. Run the following command: **show hcs cluster nodes**.

You can troubleshoot a situation in which a node upgrade appears to have completed successfully at the console, but the output of **show hcs cluster nodes** does not indicate the upgrade version. For more information, see Cluster Node Version Mismatch, on page 162 .

Update the HCM-F Version in Cisco Unified CDM

After you upgrade Cisco HCM-F, update the version of HCM-F in Cisco Unified Communications Domain Manager (Unified CDM). Updating the version involves the Unified CDM user interface and the Unified CDM command-line interface.

Note Cisco HCM-F will deprecate the support of Cisco Unified Communications Domain Manager in the upcoming releases with limited support for existing integration, Cisco HCS partners and customers are advised to take necessary steps to align their requirements.

1. Take the following steps in the Unified CDM interface.
   a. Log in to Unified CDM as hcsadmin.
   b. Navigate to **Device Management** > **HCM-F**.
   c. Select the HCM-F device.
   d. In the **HCM-F Version** field, select the release version.
   e. Click **Save**.
2. In the Unified CDM command-line interface, run the following command: **app start voss-deviceapi**.

Important The command enables the **Server Type** field on the Base tab. The field is required when you add a UC application, such as Cisco Unified Communications Manager, or when you upgrade a UC application. The command also displays the **Version** field on the Publisher tab. If you do not run the command after you upgrade HCM-F, you cannot then add or update UC applications.

Update the Guest Operating System

After completing the upgrade and verifying that the cluster has upgraded, update the Guest Operating System on the VMs. Perform the following procedure for each node in the cluster.

Procedure

Step 1 From the CLI, run the **utils system shutdown** command.

Step 2 Access the vSphere client and verify that the VM is powered off.

Step 3 Select the VM and click **Edit virtual machine settings**.

Step 4 In the Virtual Machine Properties window, click the **Options** tab.

Step 5 For Guest Operating System Version, select **Red Hat Enterprise Linux 6 (64-bit)**.

Step 6 Click **OK**.

Step 7 Power on the VM.

Migrating from Cisco Unified Operations Manager to Cisco Prime Collaboration Assurance

You can migrate the monitoring application from Cisco Unified Operations Manager to Cisco Prime Collaboration Assurance. Use the Migration Utility Tool from the CLI, or use the Infrastructure Manager user interface within Cisco HCM-F.

Migrate Using the Migration Utility Tool

Use this procedure to migrate one instance of Cisco Unified Operations Manager to one instance of Cisco Prime Collaboration Assurance.

Procedure

Step 1 Enable the Cisco HCS DMA-SA Service. From the CLI, run the **utils service activate Cisco HCS DMA-SA Service** command.

Step 2 Define the Cisco Prime Collaboration Assurance application in Cisco HCM-F.

a) From the Infrastructure Manager interface, select **Application Management** > **Management Application**.
b) Click **Add New**.
c) In the Application Type field, select **Prime Collaboration**.
d) Enter a name in the Name field.
e) (Optional). Provide a description and select the virtual machine.
f) Click **Save**.
g) Open **Credentials** and click **Add New**. Specify credentials for **ADMIN** and **SFTP** Credential Types.

h) Open **Network Addresses** and click **Add New**. Select **Service Provider Space** as the Network Space and specify the IP address, hostname, and domain of the HCM-F server.
i) Click **Save**.

Step 3 From the CLI, run the **utils migrate cuom_to_primecollab** command.

Step 4 Provide the names of the Cisco Unified Operations Manager and Cisco Prime Collaboration Assurance when prompted.

Migrate Using the Infrastructure Manager User Interface

Use the Infrastructure Manager user interface to change the monitoring application from Cisco Unified Operations Manager to Cisco Prime Collaboration Assurance.

Note The Cisco Prime Collaboration Assurance specified for a Customer monitors the Customer's clusters and equipment, unless overridden by a different Cisco Prime Collaboration Assurance specified at the cluster or equipment level. Cisco recommends that you have one instance of Cisco Prime Collaboration Assurance manage all devices and clusters belonging to a Customer. Therefore, steps 3 and 4 of the following procedure are not typically required.

Procedure

Step 1 Enable the Cisco HCS DMA-SA Service. From the CLI, run the **utils service activate Cisco HCS DMA-SA Service** command.

Step 2 Define the Cisco Prime Collaboration Assurance application in Cisco HCM-F.

a) From the Infrastructure Manager interface, select **Application Management** > **Management Application**.
b) Click **Add New**.
c) In the Application Type field, select **Prime Collaboration**.
d) Enter a name in the Name field.
e) Optionally provide a description and select the virtual machine.
f) Click **Save**.
g) Open **Credentials** and click **Add New**. Specify credentials for ADMIN and SFTP credential types.
h) Open **Network Addresses** and click **Add New**. Select **Service Provider Space** as the Network Space and specify the IP address, hostname, and domain of the HCM-F server.
i) Click **Save**.

Step 3 To update the Monitoring Application for a Customer:

Note To migrate all customers automatically, run the **set hcs link auto-primecollab-linkage enable** command from the CLI before performing steps a through e.

a) From the Infrastructure Manager interface, select **Customer Management** > **Customer**.
b) Click the customer you want to update.
c) In the Application Monitoring this Customer field, select your Cisco Prime Collaboration Assurance application.
d) Click **Save**.

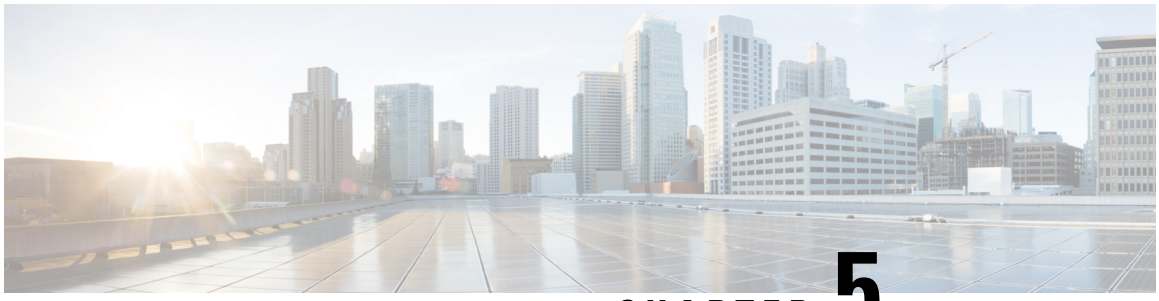
e) To monitor data migration job status, select **Administration** > **Jobs**.

Step 4 To update the Monitoring Application for Customer Equipment:

a) From the Infrastructure Manager interface, select **Customer Management** > **Customer** > **Customer Location** > **Customer Equipment**.
b) Click the customer equipment you want to update.
c) In the Application Monitoring this Customer Equipment field, select your Cisco Prime Collaboration Assurance application.
d) Click **Save**.

Step 5 To update the Monitoring Application for a Cluster:

a) From the Infrastructure Manager interface, select **Cluster Management** > **Cluster**.
b) Click the cluster you want to update.
c) In the Application Monitoring this Cluster field, select your Cisco Prime Collaboration Assurance application.
d) Click **Save**.



CHAPTER 5

Troubleshoot HCM-F

Network Errors During Installation

During the installation process, the installation program verifies that the server can successfully connect to the network by using the network configuration that you enter. If the server cannot connect, a message appears; you are prompted to select one of the following options:

- **RETRY**—The installation program tries to validate networking again. If validation fails again, the error dialog box appears again.
- **REVIEW (Check Install)**—This option allows you to review and modify the network configuration. When this option is detected, the installation program returns to the network configuration windows.

  The network configuration is validated after you complete each networking window, so the message may appear multiple times.
- **HALT**—The installation stops. You can copy the installation log files to a USB disk to aid troubleshooting of your network configuration.
- **IGNORE**—The installation continues and the networking error is logged. In some cases, the installation program validates the network configuration multiple times, so this error dialog box may appear multiple times. If you choose to ignore network errors, the installation may fail.

Log File Examination

If you encounter problems with the installation, you may be able to examine the installation log files by running the following commands in the command line interface.

To obtain a list of install log files from the command line, enter

CLI > file list install *

To view the log file from the command line, enter

CLI > **file view install** *log_file*

where:

`log_file` specifies a log file name having the format: `install_log_YYYY-MM-DD.HH.MM.SS.log` in which the date and time of the log file is the time at which the install or the upgrade was initiated on the system.

You can get more information about installation events by viewing or downloading the System History log. For more information, see System History Log, page 10-1.

WS Node Installation Failure

- A common cause of WS node installation failure is forgetting to add the WS Node to the cluster on the Application Node.

  To confirm that this is the source of the failure, check the install log for the message `IPM|Capture: Node not in cluster: Install will halt | LVL::Debug`.

  To correct the problem, log in to the CLI on the Application Node, and add the WS node to the cluster using the **set hcs cluster node** command. After adding the WS node to the cluster, repeat the WS node installation.

- A WS node installation can fail if the admin password for the Application node contains a '$' character.

  The install log will contain the error: `"Critical Error" "The installation has encountered a unrecoverable internal error."`

  To correct the error, change the password on the Application node to a password that contains only alphanumeric, hyphens, and underscores, then reinstall the WS node.

Cluster Node Version Mismatch

Sometimes, a Web Services (WS) Node installation or upgrade may complete, but the WS Node version is not correctly updated in the cluster information on the Application Node.

For an installation, the output of the **show hcs cluster node** command shows the WS Node version as `Not_Installed`.

For an upgrade, the output of the **show hcs cluster node** command shows the WS Node version as a back-level version.

A cluster node mismatch is a valid condition when you are installing or upgrading multiple WS Nodes and some have completed and others have not completed. The nodes that have not been installed or upgraded have the results shown above.

You can correct the error situation in which a WS Node has been installed or upgraded, but continues to show Not_Installed or a back-level version.

1. Verify that the installation or upgrade of the WS Node is complete. Check the WS Node VM console to see that it is waiting for a login, and the version is correct.
2. Log in to the WS Node as OS admin.

3. Run the **set hcs version** command.
4. Log in to the Application Node as OS admin.
5. Run the **show hcs cluster node** command to verify that the WS Node version is correct.

Synchronization Failure Between HCMF and UCS Manager

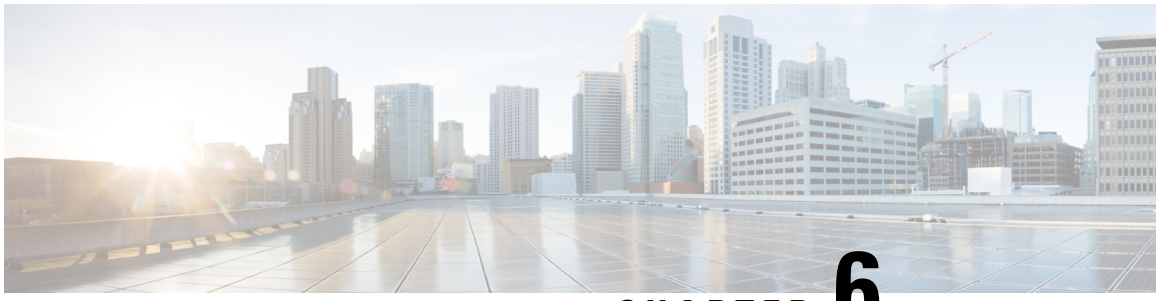
There can be following reasons for encountering issues during HCMF and UCS manager sync failure:

- UCS Manager Certificate expiration.
- UCS Manager Certificate is not added in the trust store of HCMF.

In either case, execute the following steps:

1. Check whether the UCSM sync is successful by disabling the certificate authentication.
2. Get the output for the following commands:
   - **show cert list own**
   - **show cert list trust**
3. In the output at step 2, check whether the UCSM server's cert is added to the trust store list.
4. Check if there are any expired certificates.

   See View Certificate Status at Service Provider Level, on page 98 to check the certificate status of all customers.



CHAPTER 6

Country Codes

Country Codes

The following table describes the available country codes in Cisco HCM-F.

Table 21: Country Codes

Country	Code
Aaland Islands	AX
Afghanistan	AF
Albania	AL
Algeria	DZ
Andorra	AD
Angola	AO
Anguilla	AI
Antarctica	AQ
Antigua and Barbuda	AG
Argentina	AR
Armenia	AM
Aruba	AW
Australia	AU
Austria	AT
Azerbaijan	AZ
Bahamas	BS
Bahrain	BH
Bangladesh	BD

Country	Code
Barbados	BB
Belarus	BY
Belgium	BE
Belize	BZ
Benin	BJ
Bermuda	BM
Bhutan	BT
Bolivia	BO
Bosnia and Herzegovina	BA
Botswana	BW
Bouvet Island	BV
Brazil	BR
British Indian Ocean Territory	IO
Brunei	BN
Bulgaria	BG
Burkina Faso	BF
Burundi	BI
Cambodia	KH
Cameroon	CM
Canada	CA
Cape Verde	CV
Cayman Islands	KY
Central African Rep.	CF
Chad	TD
Chile	CL
China	CN
Christmas Island	CX
Cocos (Keeling) Islands	CC
Colombia	CO
Comoros	KM
Congo (Dem. Rep.)	CD
Congo (Rep.)	CG

Country	Code
Cook Islands	CK
Costa Rica	CR
Cote d'Ivoire	CI
Croatia	HR
Cuba	CU
Cyprus	CY
Czech Republic	CZ
Denmark	DK
Djibouti	DJ
Dominica	DM
Dominican Republic	DO
East Timor	TL
Ecuador	EC
Egypt	EG
El Salvador	SV
Equatorial Guinea	GQ
Eritrea	ER
Estonia	EE
Ethiopia	ET
Faeroe Islands	FO
Falkland Islands	FK
Fiji	FJ
Finland	FI
France	FR
French Guiana	GF
French Polynesia	PF
French Southern and Antarctic Lands	TF
Gabon	GA
Gambia	GM
Georgia	GE
Germany	DE
Ghana	GH

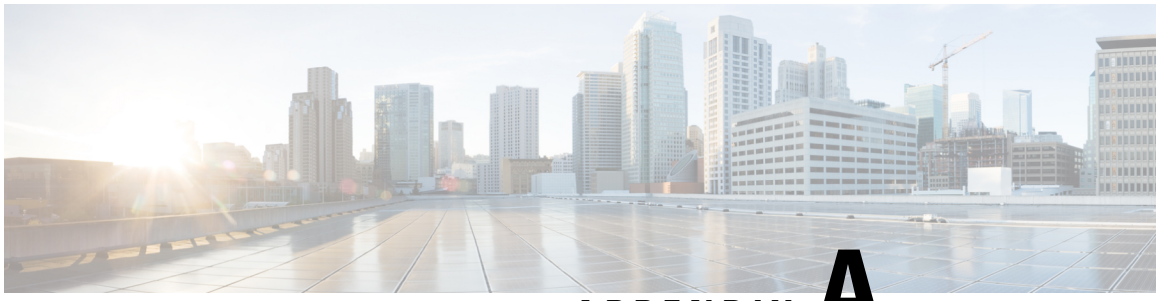
Country	Code
Gibraltar	GI
Greece	GR
Greenland	GL
Grenada	GD
Guadeloupe	GP
Guam	GU
Guatemala	GT
Guinea-Bissau	GW
Guineav	GN
Guyana	GY
Haiti	HT
Heard Island and McDonald Islands	HM
Honduras	HN
Hong Kong	HK
Hungary	HU
Iceland	IS
India	IN
Indonesia	ID
Iran	IR
Iraq	IQ
Ireland	IE
Israel	IL
Italy	IT
Jamaica	JM
Japan	JP
Jordan	JO
Kazakhstan	KZ
Kenya	KE
Kiribati	KI
Korea (North)	KP
Korea (South)	KR
Kuwait	KW

Country	Code
Kyrgyzstan	KG
Laos	LA
Latvia	LV
Lebanon	LB
Lesotho	LS
Liberia	LR
Libya	LY
Liechtenstein	LI
Lithuania	LT
Luxembourg	LU
Macau	MO
Macedonia	MK
Madagascar	MG
Malawi	MW
Malaysia	MY
Maldives	MV
Mali	ML
Malta	MT
Marshall Islands	MH
Martinique	MQ
Mauritania	MR
Mauritius	MU
Mayotte	YT
Mexico	MX
Micronesia	FM
Moldova	MD
Monaco	MC
Mongolia	MN
Montserrat	MS
Morocco	MA
Mozambique	MZ
Myanmar (Burma)	MM

Country	Code
Namibia	NA
Nauru	NR
Nepal	NP
Netherlands	NL
Netherlands Antilles	AN
New Caledonia	NC
New Zealand	NZ
Nicaragua	NI
Niger	NE
Nigeria	NG
Niue	NU
Norfolk Island	NF
Northern Mariana Islands	MP
Norway	NO
Oman	OM
Pakistan	PK
Palau	PW
Palestine	PS
Panama	PA
Papua New Guinea	PG
Paraguay	PY
Peru	PE
Philippines	PH
Pitcairn	PN
Poland	PL
Portugal	PT
Puerto Rico	PR
Qatar	QA
Reunion	RE
Romania	RO
Russia	RU
Rwanda	RW

Country	Code
Samoa (American)	AS
Samoa (Western)	WS
San Marino	SM
Sao Tome and Principe	ST
Saudi Arabia	SA
Senegal	SN
Serbia and Montenegro	CS
Seychelles	SC
Sierra Leone	SL
Singapore	SG
Slovakia	SK
Slovenia	SI
Solomon Islands	SB
Somalia	SO
South Africa	ZA
South Georgia and the South Sandwich Islands	GS
Spain	ES
Sri Lanka	LK
St Helena	SH
St Kitts and Nevis	KN
St Lucia	LC
St Pierre and Miquelon	PM
St Vincent	VC
Sudan	SD
Suriname	SR
Svalbard and Jan Mayen	SJ
Swaziland	SZ
Sweden	SE
Switzerland	CH
Syria	SY
Taiwan	TW
Tajikistan	TJ

Country	Code
Tanzania	TZ
Thailand	TH
Togo	TG
Tokelau	TK
Tonga	TO
Trinidad and Tobago	TT
Tunisia	TN
Turkey	TR
Turkmenistan	TM
Turks and Caicos Is	TC
Tuvalu	TV
Uganda	UG
Ukraine	UA
United Arab Emirates	AE
United Kingdom	GB
United States of America	US
Uruguay	UY
US minor outlying islands	UM
Uzbekistan	UZ
Vanuatu	VU
Vatican City	VA
Venezuela	VE
Vietnam	VN
Virgin Islands (UK)	VG
Virgin Islands (US)	VI
Wallis and Futuna	WF
Western Sahara	EH
Yemen	YE
Zambia	ZM
Zimbabwe	ZW



APPENDIX A

Time Zones

Africa Region

The following lists the available time zones in the Africa region.

Africa

Africa/Abidjan

Africa/Accra

Africa/Addis_Ababa

Africa/Algiers

Africa/Asmara

Africa/Asmera

Africa/Bamako

Africa/Bangui

Africa/Banjul

Africa/Bissau

Africa/Blantyre

Africa/Brazzaville
Africa/Bujumbura
Africa/Cairo
Africa/Casablanca
Africa/Ceuta
Africa/Conakry
Africa/Dakar
Africa/Dar_es_Salaam
Africa/Djibouti
Africa/Douala
Africa/El_Aaiun
Africa/Freetown
Africa/Gaborone
Africa/Harare
Africa/Johannesburg
Africa/Juba
Africa/Kampala
Africa/Khartoum
Africa/Kigali
Africa/Kinshasa
Africa/Lagos
Africa/Libreville
Africa/Lome
Africa/Luanda
Africa/Lubumbashi
Africa/Lusaka
Africa/Malabo
Africa/Maputo
Africa/Maseru
Africa/Mbabane
Africa/Mogadishu
Africa/Monrovia
Africa/Nairobi
Africa/Ndjamena

Africa/Niamey

Africa/Nouakchott

Africa/Ouagadougou

Africa/Porto-Novo

Africa/Sao_Tome

Africa/Timbuktu

Africa/Tripoli

Africa/Tunis

Africa/Windhoek

America Region

The following lists the available time zones in the America region.

America/Adak

America/Anchorage

America/Anguilla

America/Antigua

America/Araguaina

America/Argentina/Buenos_Aires

America/Argentina/Catamarca

America/Argentina/ComodRivadavia

America/Argentina/Cordoba

America/Argentina/Jujuy

America/Argentina/La_Rioja

America/Argentina/Mendoza

America/Argentina/Rio_Gallegos

America/Argentina/Salta

America/Argentina/San_Juan

America/Argentina/San_Luis

America/Argentina/Tucuman

America/Argentina/Ushuaia

America/Aruba

America/Asuncion

America/Atikokan

America/Atka

America/Bahia
America/Bahia_Banderas
America/Barbados
America/Belem
America/Belize
America/Blanc-Sablon
America/Boa_Vista
America/Bogota
America/Boise
America/Buenos_Aires
America/Cambridge_Bay
America/Campo_Grande
America/Cancun
America/Caracas
America/Catamarca
America/Cayenne
America/Cayman
America/Chicago
America/Chihuahua
America/Coral_Harbour
America/Cordoba
America/Costa_Rica
America/Creston
America/Cuiaba
America/Curacao
America/Danmarkshavn
America/Dawson
America/Dawson_Creek
America/Denver
America/Detroit
America/Dominica
America/Edmonton
America/Eirunepe
America/El_Salvador

America/Ensenada
America/Fort_Wayne
America/Fortaleza
America/Glace_Bay
America/Godthab
America/Goose_Bay
America/Grand_Turk
America/Grenada
America/Guadeloupe
America/Guatemala
America/Guayaquil
America/Guyana
America/Halifax
America/Havana
America/Hermosillo
America/Indiana/Indianapolis
America/Indiana/Knox
America/Indiana/Marengo
America/Indiana/Petersburg
America/Indiana/Tell_City
America/Indiana/Vevay
America/Indiana/Vincennes
America/Indiana/Winamac
America/Indianapolis
America/Inuvik
America/Iqaluit
America/Jamaica
America/Jujuy
America/Juneau
America/Kentucky/Louisville
America/Kentucky/Monticello
America/Knox_IN
America/Kralendijk
America/La_Paz

America/Lima
America/Los_Angeles
America/Louisville
America/Lower_Princes
America/Maceio
America/Managua
America/Manaus
America/Marigot
America/Martinique
America/Matamoros
America/Mazatlan
America/Mendoza
America/Menominee
America/Merida
America/Metlakatla
America/Mexico_City
America/Miquelon
America/Moncton
America/Monterrey
America/Montevideo
America/Montreal
America/Montserrat
America/Nassau
America/New_York
America/Nipigon
America/Nome
America/Noronha
America/North_Dakota/Beulah
America/North_Dakota/Center
America/North_Dakota/New_Salem
America/Ojinaga
America/Panama
America/Pangnirtung
America/Paramaribo

America/Phoenix
America/Port_of_Spain
America/Port-au-Prince
America/Porto_Acre
America/Porto_Velho
America/Puerto_Rico
America/Rainy_River
America/Rankin_Inlet
America/Recife
America/Regina
America/Resolute
America/Rio_Branco
America/Rosario
America/Santa_Isabel
America/Santarem
America/Santiago
America/Santo_Domingo
America/Sao_Paulo
America/Scoresbysund
America/Shiprock
America/Sitka
America/St_Barthelemy
America/St_Johns
America/St_Kitts
America/St_Lucia
America/St_Thomas
America/St_Vincent
America/Swift_Current
America/Tegucigalpa
America/Thule
America/Thunder_Bay
America/Tijuana
America/Toronto
America/Tortola

America/Vancouver

America/Virgin

America/Whitehorse

America/Winnipeg

America/Yakutat

America/Yellowknife

Antarctica Region

The following lists the available time zones in the Antarctica region.

Antarctica/Palmer

Antarctica/Casey

Antarctica/Davis

Antarctica/DumontDUrville

Antarctica/Macquarie

Antarctica/Mawson

Antarctica/McMurdo

Antarctica/Rothera

Antarctica/South_Pole

Antarctica/Syowa

Antarctica/Vostok

Arctic Region

The following lists the available time zones in the Arctic region.

Arctic/Longyearbyen

Asia Region

The following lists the available time zones in the Asia region.

Asia/Amman

Asia/Aden

Asia/Aden

Asia/Almaty

Asia/Almaty

Asia/Amman
Asia/Anadyr
Asia/Aqtau
Asia/Aqtau
Asia/Aqtobe
Asia/Aqtobe
Asia/Ashgabat
Asia/Ashgabat
Asia/Ashkhabad
Asia/Ashkhabad
Asia/Baghdad
Asia/Baghdad
Asia/Bahrain
Asia/Bahrain
Asia/Baku
Asia/Baku
Asia/Bangkok
Asia/Bangkok
Asia/Beirut
Asia/Beirut
Asia/Bishkek
Asia/Bishkek
Asia/Brunei
Asia/Brunei
Asia/Calcutta
Asia/Calcutta
Asia/Choibalsan
Asia/Choibalsan
Asia/Chongqing
Asia/Chongqing
Asia/Chungking
Asia/Colombo
Asia/Colombo
Asia/Dacca

Asia/Dacca
Asia/Damascus
Asia/Damascus
Asia/Dhaka
Asia/Dhaka
Asia/Dili
Asia/Dubai
Asia/Dubai
Asia/Dushanbe
Asia/Dushanbe
Asia/Gaza
Asia/Gaza
Asia/Harbin
Asia/Hebron
Asia/Hebron
Asia/Ho_Chi_Minh
Asia/Ho_Chi_Minh
Asia/Hong_Kong
Asia/Hovd
Asia/Hovd
Asia/Irkutsk
Asia/Istanbul
Asia/Istanbul
Asia/Jakarta
Asia/Jakarta
Asia/Jayapura
Asia/Jerusalem
Asia/Jerusalem
Asia/Kabul
Asia/Kabul
Asia/Kamchatka
Asia/Karachi
Asia/Karachi
Asia/Kashgar

Asia/Kathmandu
Asia/Kathmandu
Asia/Katmandu
Asia/Katmandu
Asia/Kolkata
Asia/Kolkata
Asia/Krasnoyarsk
Asia/Kuala_Lumpur
Asia/Kuching
Asia/Kuwait
Asia/Kuwait
Asia/Macao
Asia/Macau
Asia/Magadan
Asia/Makassar
Asia/Manila
Asia/Muscat
Asia/Muscat
Asia/Nicosia
Asia/Nicosia
Asia/Novokuznetsk
Asia/Novokuznetsk
Asia/Novosibirsk
Asia/Novosibirsk
Asia/Omsk
Asia/Omsk
Asia/Oral
Asia/Oral
Asia/Phnom_Penh
Asia/Phnom_Penh
Asia/Pontianak
Asia/Pontianak
Asia/Pyongyang
Asia/Qatar

Asia/Qatar
Asia/Qyzylorda
Asia/Qyzylorda
Asia/Rangoon
Asia/Rangoon
Asia/Riyadh
Asia/Riyadh
Asia/Riyadh87
Asia/Riyadh87
Asia/Riyadh88
Asia/Riyadh88
Asia/Riyadh89
Asia/Riyadh89
Asia/Saigon
Asia/Saigon
Asia/Sakhalin
Asia/Samarkand
Asia/Samarkand
Asia/Seoul
Asia/Shanghai
Asia/Singapore
Asia/Taipei
Asia/Tashkent
Asia/Tashkent
Asia/Tbilisi
Asia/Tbilisi
Asia/Tehran
Asia/Tehran
Asia/Tel_Aviv
Asia/Tel_Aviv
Asia/Thimbu
Asia/Thimbu
Asia/Thimphu
Asia/Thimphu

Asia/Tokyo

Asia/Ujung_Pandang

Asia/Ulaanbaatar

Asia/Ulan_Bator

Asia/Urumqi

Asia/Vientiane

Asia/Vientiane

Asia/Vladivostok

Asia/Yakutsk

Asia/Yekaterinburg

Asia/Yekaterinburg

Asia/Yerevan

Asia/Yerevan

Atlantic Region

The following lists the available time zones in the Atlantic region.

Atlantic/Bermuda

Atlantic/Azores

Atlantic/Canary

Atlantic/Cape_Verde

Atlantic/Faeroe

Atlantic/Faroe

Atlantic/Jan_Mayen

Atlantic/Madeira

Atlantic/Reykjavik

Atlantic/South_Georgia

Atlantic/St_Helena

Atlantic/Stanley

Australia Region

The following lists the available time zones in the Australia region.

Australia/Perth

Australia/ACT

Australia/Adelaide
Australia/Brisbane
Australia/Broken_Hill
Australia/Canberra
Australia/Currie
Australia/Darwin
Australia/Eucla
Australia/Hobart
Australia/LHI
Australia/Lindeman
Australia/Lord_Howe
Australia/Melbourne
Australia/North
Australia/NSW
Australia/Queensland
Australia/South
Australia/Sydney
Australia/Tasmania
Australia/Victoria
Australia/West
Australia/Yancowinna

Europe Region

The following lists the available time zones in the Europe region.

Europe/Belfast
Europe/Amsterdam
Europe/Andorra
Europe/Athens
Europe/Belgrade
Europe/Berlin
Europe/Bratislava
Europe/Brussels
Europe/Bucharest
Europe/Budapest

Europe/Chisinau
Europe/Copenhagen
Europe/Dublin
Europe/Gibraltar
Europe/Guernsey
Europe/Helsinki
Europe/Isle_of_Man
Europe/Istanbul
Europe/Jersey
Europe/Kaliningrad
Europe/Kiev
Europe/Lisbon
Europe/Ljubljana
Europe/London
Europe/Luxembourg
Europe/Madrid
Europe/Malta
Europe/Mariehamn
Europe/Minsk
Europe/Monaco
Europe/Moscow
Europe/Nicosia
Europe/Oslo
Europe/Paris
Europe/Podgorica
Europe/Prague
Europe/Riga
Europe/Rome
Europe/Samara
Europe/San_Marino
Europe/Sarajevo
Europe/Simferopol
Europe/Skopje
Europe/Sofia

Europe/Stockholm

Europe/Tallinn

Europe/Tirane

Europe/Tiraspol

Europe/Uzhgorod

Europe/Vaduz

Europe/Vatican

Europe/Vienna

Europe/Vilnius

Europe/Volgograd

Europe/Warsaw

Europe/Zagreb

Europe/Zaporozhye

Europe/Zurich

Indian Region

The following lists the available time zones in the Indian region.

Indian/Antananarivo

Indian/Chagos

Indian/Christmas

Indian/Cocos

Indian/Comoro

Indian/Kerguelen

Indian/Mahe

Indian/Maldives

Indian/Mauritius

Indian/Mayotte

Indian/Reunion

Mideast Region

The following lists the available time zones in the Mideast region.

Mideast/Riyadh87

Mideast/Riyadh88

Mideast/Riyadh89

Pacific Region

The following lists the available time zones in the Pacific region.

Pacific/Midway

Pacific/Apia

Pacific/Auckland

Pacific/Chatham

Pacific/Chuuk

Pacific/Easter

Pacific/Efate

Pacific/Enderbury

Pacific/Fakaofo

Pacific/Fiji

Pacific/Funafuti

Pacific/Galapagos

Pacific/Gambier

Pacific/Guadalcanal

Pacific/Guam

Pacific/Honolulu

Pacific/Johnston

Pacific/Kiritimati

Pacific/Kosrae

Pacific/Kwajalein

Pacific/Majuro

Pacific/Marquesas

Pacific/Nauru

Pacific/Niue

Pacific/Norfolk

Pacific/Noumea

Pacific/Pago_Pago

Pacific/Palau

Pacific/Pitcairn

Pacific/Pohnpei

Pacific/Ponape

Pacific/Port_Moresby

Pacific/Rarotonga

Pacific/Saipan

Pacific/Samoa

Pacific/Tahiti

Pacific/Tarawa

Pacific/Tongatapu

Pacific/Truk

Pacific/Wake

Pacific/Wallis

Pacific/Yap

Other Regions

The following lists the available time zones in the other regions.

US/Samoa

ACT

AET

AGT

ART

AST

aZ-CHAT

BET

Brazil/Acre

Brazil/DeNoronha

Brazil/East

Brazil/West

BST

Canada/Atlantic

Canada/Central

Canada/Eastern

Canada/East-Saskatchewan

Canada/Mountain

Canada/Newfoundland

Canada/Pacific

Canada/Saskatchewan

Canada/Yukon

CAT

CET

Chile/Continental

Chile/EasterIsland

CNT

CST

CST6CDT

CTT

Cuba

EAT

ECT

EET

Egypt

Eire

EST

EST5EDT

GB

GB-Eire

GMT

GMT0

Greenwich

Hongkong

HST

Iceland

IET

Iran

Israel

IST

Jamaica

Japan

JST

Kwajalein

Libya

MET

Mexico/BajaNorte

Mexico/BajaSur

Mexico/General

MIT

MST

MST7MDT

Navajo

NET

NST

NZ

PLT

PNT

Poland

Portugal

PRC

PRT

PST

PST8PDT

ROK

Singapore

SST

SystemV/AST4

SystemV/AST4ADT

SystemV/CST6

SystemV/CST6CDT

SystemV/EST5

SystemV/EST5EDT

SystemV/HST10

SystemV/MST7

SystemV/MST7MDT

SystemV/PST8

SystemV/PST8PDT

SystemV/YST9

SystemV/YST9YDT

Turkey

UCT

Universal

US/Alaska

US/Aleutian

US/Arizona

US/Central

US/Eastern

US/East-Indiana

US/Hawaii

US/Indiana-Starke

US/Michigan

US/Mountain

US/Pacific

US/Pacific-New

UTC

VST

WET

W-SU

Zulu

Time Zones