Upgrade Procedures

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Upgrade Overview

Use the procedures in this chapter to perform an upgrade using the Unified CM OS Administration interface.

Publisher Nodes and Subscriber Nodes

Within a cluster, there is a database publisher for each type of node that you install.

When you install Unified Communications Manager, the installation wizard prompts you to specify whether the node you are installing is the first node in the cluster. The first Unified Communications Manager node that you install becomes the publisher node, because it publishes the voice and video database to the other Unified Communications Manager nodes in the cluster. All subsequent nodes in the cluster are called subscriber nodes. Each subscriber node must be associated with the publisher node. You must set up all subscriber nodes in the system topology on the publisher node before you install the software on the subscriber nodes.

When you install IM and Presence nodes, the first node that you install functions as the server for the IM and Presence database. Because this node publishes the database for all of the IM and Presence nodes in the cluster, it is referred to as the IM and Presence database publisher; however, you must install this and all other IM and Presence nodes as subscribers of the Unified Communications Manager publisher node. As with other subscriber nodes, you must add these in the system topology before you install the software.

Understanding Version Switching

When you upgrade a node, the new software is installed as an inactive version. To activate the new software, you must switch the node to the new software version. There are two ways to switch to the new software version:

- automatic switching—the system switches the version automatically as part of the upgrade process
- manual switching—you switch the version using the OS Administration interface after the upgrade process is complete

The method that you choose depends on the type of upgrade that you are doing. During the upgrade process, the wizard prompts you to choose whether to switch the software version automatically by rebooting to the upgraded partition, or whether to switch the version manually at a later time. The table below lists the switching method to use for each type of upgrade.

Upgrade type	Switching type	When prompted, choose . . .	Result
Standard upgrade	Automatic	Reboot to upgraded partition	When you choose this option, the system reboots to the new software version.
	Manual	Do not reboot after upgrade	When you choose this option, the system continues to run the old software version when the upgrade is complete. You can manually switch to the new software at a later time.

Upgrade type	Switching type	When prompted, choose . . .	Result
Refresh upgrade	Manual	Do not switch to new version after upgrade	Use this option only if you are performing a refresh upgrade in stages. When you choose this option the system reboots to the old software version when the upgrade is complete and you manually switch to the new software at a later time. When you use this upgrade method, you must switch your publisher node to the new software version before you upgrade your subscriber nodes.
	Automatic	Switch to new version after upgrade	Choose this option to use the new software version immediately following the upgrade. When you use this upgrade method, you must switch your publisher node to the new software version before you upgrade your subscriber nodes.

When you switch versions, your configuration information migrates automatically to the upgraded version on the active partition.

If for any reason you decide to back out of the upgrade, you can restart the system to the inactive partition that contains the older version of the software. However, any configuration changes that you made since you upgraded the software will be lost.

For a short period of time after you install Cisco Unified Communications Manager or switch over after upgrading to a different product version, any changes made by phone users may be lost. Examples of phone user settings include call forwarding and message waiting indication light settings. This can occur because Cisco Unified Communications Manager synchronizes the database after an installation or upgrade, which can overwrite phone user settings changes.

Before You Begin

Caution Stop all configuration tasks. Do not make any configuration changes during an upgrade. For example, do not change passwords, perform LDAP synchronizations, or run any automated jobs. Do not remove, re-add, or re-install any nodes in the cluster during the upgrade process. You can make configuration changes only when you have completed the upgrade on all nodes and performed the post-upgrade tasks. Any configuration changes that you make during an upgrade will be lost, and some configuration changes can cause the upgrade to fail.

We recommend that you suspend user synchronization with LDAP and do not resume synchronization until you have completed the upgrade on all Cisco Unified Communications Manager nodes and all IM and Presence Service nodes.

- Review the pre-installation tasks and ensure that you have performed all the steps.
- Do not rename the upgrade file before you install it because the system will not recognize it as a valid file.
- Do not decompress the file. If you do, the system may not be able to read the upgrade file.
- For upgrades to the IM and Presence Service software, check that the contact list size for users has not reached the maximum value. The System Troubleshooter in Cisco Unified CM IM and Presence Administration indicates if there are users who have reached the contact list limit.

Caution During a refresh upgrade, traffic is no longer processed and several reboots are required, therefore, you must perform a refresh upgrade during a maintenance window.

Upgrade Task Flow

Procedure

	Command or Action	Purpose
Step 1	Upgrade the application using one of the following procedures: • Upgrade From a Local Source, on page 5 • Upgrade From a Remote Source, on page 7	Use these procedures when you upgrade Cisco Unified Communications Manager or the IM and Presence Service using the Unified CM OS Administration interface.
Step 2	Switch the Software Version, on page 8	Use this procedure to activate the new software.

	Command or Action	Purpose
Step 3	Switch to Previous Version, on page 9	Use the procedures in this section if you need to revert to the software version that was running before the upgrade.
Step 4	Verify that Database Replication is Functioning, on page 12	
Step 5	Verify that Database Replication is Complete, on page 12	

Upgrade the Applications

You can access the upgrade file during the installation process from either a local CD or DVD or from a remote FTP or SFTP server. Be aware that directory names and filenames that you enter to access the upgrade file are case-sensitive.

Note If you cancel an upgrade at any stage, or if an upgrade fails, you must reboot the server before you attempt another upgrade.

Upgrade From a Local Source

Follow this procedure to upgrade to a new release of Unified Communications Manager or the IM and Presence Service from a local source.

Before You Begin

Ensure that you have the correct ISO file for the upgrade. Upgrade files use the following naming convention:

- UCSInstall_CUP_<XXXXXXXX>.sgn.iso
- Export unrestricted software has a XU license SKU.
- Export restricted software has a K9 licence SKU.

Procedure

Step 1 Ensure that you can access the upgrade file. Choose one of the following options:

- Insert the CD or DVD into the disc drive on the local server that is to be upgraded.
- Create a data store ISO file on the local ESXi host.

- Create a data store ISO file on a storage area network (SAN) that is connected to the ESXi host.

Step 2 Log in to the management software for the node that you are upgrading:

- If you are upgrading an IM and Presence node, log in to Cisco Unified IM and Presence Operating System Administration.
- If you are upgrading a Cisco Unified Communications Manager node, log in to Cisco Unified Communications Operating System Administration.

Step 3 If you are performing a refresh upgrade that requires a COP file, install the required COP file.
If you are unsure whether you need to install a COP file, review the information about supported upgrade paths. See the Related Topics section below for more information.

Step 4 Select **Software Upgrades** > **Install/Upgrade**.

Step 5 Select **DVD/CD** from the **Source** list, or edit the virtual machine to map to the ISO file.

Step 6 In the **Directory** field, enter the path to the location of the patch file. If the file is in the root directory, enter a slash (/).

Step 7 Enter your email address and IP address in the **Email Notification** and **SMTP Server** fields. This will enable you to receive an email notification upon successful completion of the upgrade.

Note These fields are only visible for refresh upgrades.

Step 8 Select **Next** to continue the upgrade process.

Step 9 Select the upgrade version that you want to install and select **Next**.

Step 10 Monitor the progress of the download, which includes the filename and the number of megabytes that are being transferred.

Step 11 When the download completes, verify the checksum value against the checksum for the file that you downloaded from Cisco.com.

Step 12 Perform one of the following actions:
For standard upgrades:

- If this is a single-node deployment and you want to install the upgrade and automatically reboot to the upgraded software, select **Reboot to upgraded partition.**
- If this is a multinode deployment, select **Do not reboot after upgrade**. This allows you to install the upgrade and then manually reboot to the upgraded software at a later time. For more information about how to manually reboot the system and activate the upgrade, see the Related Topics section below.

For refresh upgrades:

- Select **Do not switch to new version after upgrade** only if you are performing a staged upgrade.
- Select **Switch to new version after upgrade** to remain on the new active software version.

Note See the the Related Topics section below for more information about the rules for switching during an upgrade.

Step 13 Select **Next** and select **Finish** when the installation completes.

Upgrade From a Remote Source

Follow this procedure to upgrade to a new release of Cisco Cisco Unified Communications Manager or the IM and Presence Service using software from a network drive or remote node. The network drive or remote node must be running an SFTP/FTP server that can be accessed by each node that you want to upgrade.

Before You Begin

Ensure that you have the correct ISO file for the upgrade. Upgrade files use the following naming convention:

- UCSInstall_CUP_<XXXXXXXX>.sgn.iso
- Export unrestricted software has a XU license SKU.
- Export restricted software has a K9 licence SKU.

Procedure

Step 1 Ensure that you can access the FTP/SFTP server where you stored the upgrade file.

Step 2 Log in to the management software for the node that you are upgrading:

- If you are upgrading an IM and Presence node, log in to Cisco Unified IM and Presence Operating System Administration.
- If you are upgrading a Cisco Unified Communications Manager node, log in to Cisco Unified Communications Operating System Administration.

Step 3 If you are performing a refresh upgrade that requires a COP file, install the required COP file.
If you are unsure whether you need to install a COP file, review the information about supported upgrade paths. See the Related Topics section below for more information.

Step 4 Select **Software Upgrades** > **Install/Upgrade**.

Step 5 Select **Remote Filesystem** from the **Source** list.

Step 6 In the **Directory** field, enter the path to the patch file on the remote system.

Step 7 In the **Server** field, enter the FTP or SFTP server name.

Step 8 In the **User Name** field, enter the user name for the remote node.

Step 9 In the **User Password** field, enter the password for the remote node.

Step 10 Enter your email address and IP address in the **Email Notification** and **SMTP Server** fields. This will enable you to receive an email notification upon successful completion of the upgrade.

Note These fields are only visible for refresh upgrades.

Step 11 From the **Transfer Protocol** field, select the transfer protocol, for example, SFTP.

Step 12 Select **Next** to continue the upgrade process.

Step 13 Select the upgrade version that you want to install and select **Next**.

Step 14 Monitor the progress of the download, which includes the filename and the number of megabytes that are being transferred.

Step 15 When the download completes, verify the checksum value against the checksum for the file that you downloaded from Cisco.com.

Step 16 Perform one of the following actions:
For standard upgrades:

- If this is a single-node deployment and you want to install the upgrade and automatically reboot to the upgraded software, select **Reboot to upgraded partition.**
- If this is a multinode deployment, select **Do not reboot after upgrade.**This allows you to install the upgrade and then manually reboot to the upgraded software at a later time. For more information about how to manually reboot the system and activate the upgrade, see the Related Topics section below.

For refresh upgrades:

- Select **Do not switch to new version after upgrade** only if you are performing a staged upgrade.
- Select **Switch to new version after upgrade** to remain on the new active software version.

Note See the topic called *Version switching during upgrade rules* for more information about the rules for switching during an upgrade.

Step 17 Select **Next** and select **Finish** when the installation completes.

Version Switching

Note You cannot switch the version of any node if doing so violates the version matching requirements. This rule applies whether you are switching forward to a new software version, or switching back to a previous software version.

Switch the Software Version

When you perform a standard upgrade, the new software is installed as an inactive version. You can reboot to the new software during the upgrade process or you can switch to the new version later.

If you did not switch versions immediately after completing the upgrade, do so now. You must switch versions so that the upgrade is complete and all nodes in the cluster are updated. Do not perform a backup until you have switched to the new software version.

When you switch versions, the system restarts, and the inactive software becomes active. The system restart may take up to 15 minutes. When you perform this procedure both the active and inactive software versions are indicated.

Caution This procedure causes the system to restart and become temporarily out of service.

Before You Begin

The software versions on Cisco Unified Communications Manager and IM and Presence nodes must match according to the manual switching rules. Therefore, you must switch Unified Communications Manager before you switch IM and Presence.

Review the information in Understanding Version Switching, on page 2

Procedure

Step 1 If you switch versions in a multinode deployment, you must switch the publisher node first.

Step 2 Log in to the management software for the node that you are upgrading:

- If you are upgrading an IM and Presence node, log in to Cisco Unified IM and Presence Operating System Administration.
- If you are upgrading a Unified Communications Manager node, log in to Cisco Unified Communications Operating System Administration.

Step 3 Select **Settings** > **Version**.

Step 4 Verify the version of the active software and the inactive software.

Step 5 Select **Switch Versions** to switch versions and restart the system.

After you perform a switch version when you upgrade Unified Communications Manager, IP phones request a new configuration file. This request results in an automatic upgrade to the device firmware.

Switch to Previous Version

If you need to revert to the software version that was running before the upgrade, you can do so by using the Switch Version option to switch the system to the software version on the inactive partition.

Switch Cluster to Previous Version

To switch a cluster back to a previous version, complete these high-level tasks:

Procedure

Step 1 Switch back the publisher node.

Step 2 Switch back all backup subscriber nodes.

Step 3 Switch back all primary subscriber nodes.

Step 4 If you are reverting to an older product release, reset database replication within the cluster.

Switch Node to Previous Version

Procedure

Step 1 Log in to the management software for the node that you are upgrading:

- If you are upgrading an IM and Presence node, log in to Cisco Unified IM and Presence Operating System Administration.
- If you are upgrading a Cisco Unified Communications Manager node, log in to Cisco Unified Communications Operating System Administration.

Step 2 Choose **Settings** > **Version**.
The Version Settings window displays.

Step 3 Click the **Switch Versions** button.
After you verify that you want to restart the system, the system restarts, which might take up to 15 minutes.

Step 4 To verify that the version switch was successful, follow these steps:

a) Log in again to the management software for the node that you are upgrading.
b) Choose **Settings** > **Version**.
The Version Settings window displays.
c) Verify that the correct product version is now running on the active partition.
d) Verify that all activated services are running.
e) For the publisher node, log in to Cisco Unified CM Administration.
f) Verify that you can log in and that your configuration data exists.

Reset Database Replication

If you switch back the servers in a cluster to run an older product release, you must manually reset database replication within the cluster. To reset database replication after you revert all the cluster servers to the older product release, enter the CLI command **utils dbreplication reset all** on the publisher server.

When you switch versions by using Cisco Unified Communications Operating System Administration or the CLI, you get a message that reminds you about the requirement to reset database replication if you are reverting to an older product release.

Switch version back to Cisco Unified Presence 8.6(3) or earlier

Cisco Unified Presence releases 8.6(4) and later do not support the Cisco Presence Engine database. If you upgrade from Release 8.6(3) or earlier and you subsequently want to revert to the previous release, you must

install a COP file that will reinstall the Cisco Presence Engine database. The COP filename is `ciscocm.cup.pe_db_install.cop` and you can download it from Cisco.com.

Note In a multinode environment, you must install the COP file on every node in the cluster after you switch versions from Cisco Unified Presence Release 8.6(4) or later.

In this release, you cannot downgrade to a version earlier than Release 8.6(3).

Note You must restart the system after you install the COP file.

Before you begin

Switch versions on Cisco Unified Communications Manager.

Procedure

Step 1 Download the following COP file from Cisco.com: `ciscocm.cup.pe_db_install.cop`.

Step 2 Sign in to Cisco Unified IM and Presence Operating System Administration.

Step 3 Select **Settings** > **Version**.

Step 4 Verify the version of the active and inactive software.

Note This procedure only applies if you want to switch from Release 9.0 or later back to a release earlier than 8.6(4).

Step 5 Select **Switch Versions** to switch back to the earlier release and restart the system.

Step 6 After the system has restarted, install the COP file.

Note In a multinode environment, you must install the COP file on every node in the cluster.

Step 7 After you have installed the COP file, manually restart the system. To do this, select **Settings** > **Version** and select **Restart**.

Step 8 Run the following CLI command (on the publisher or subscriber node) to check if the database replication is active on the node: `utils dbreplication runtimestate`
If database replication is active on all nodes, the output lists all the nodes and the replication setup value for each node is 2. If database replication is not complete (a value other than 2 is returned), core services will not start on the subscriber node until replication is complete.

Step 9 Select **Cisco Unified CM IM and Presence Administration** > **System** > **Notifications** to determine whether database replication is complete.

Step 10 If database replication cannot be established, use the following CLI command on the publisher node to reset replication: `utils dbreplication reset all`

Verify that Database Replication is Functioning

Use Cisco Unified Reporting to generate Database Status reports for Cisco Unified Communications Manager and IM and Presence Service nodes. You can use the reports to confirm that you have a database replication with no errors.

Before You Begin

Ensure that the Cisco Tomcat service is running.

Procedure

Step 1 Log in to the reporting interface for the node:

- For Unified Communications Manager nodes, log in to the Cisco Unified Reporting interface.
- For IM and Presence Service nodes, log in to the Cisco Unified IM and Presence Reporting interface.

Step 2 Select **System Reports**.

Step 3 Select the report for the node:

- To check database replication on a Unified Communications Manager node, select **Unified CM Database Status**.
- To check database replication on an IM and Presence Service node, select **IM and Presence Database Status**.

Step 4 Click the **Generate Report** (bar chart) icon in the **Reports** window.

Step 5 Click the **View Details** link to expose details for a section that does not automatically appear.

Step 6 If the report indicates that there are errors, select the **Report Descriptions** report and review the troubleshooting information and possible remedies.

Verify that Database Replication is Complete

Use this procedure to verify that the database replication has completed successfully. Replication takes 30 minutes on average, but it may take longer depending on the size of the database.

Procedure

Step 1 Start a CLI session using one of the following methods:

- From a remote system, use SSH to connect securely to the Cisco Unified Operating System. In your SSH client, enter your ssh *adminname@hostname* and enter your password.

- From a direct connection to the serial port, enter your credentials at the prompt that displays automatically.

Step 2 Execute the **utils dbreplication runtimestate** command to monitor whether the database replication is active on the node and to view the progress of the database setup.
If database replication is active on all nodes, the output lists all the nodes and the **replication setup** value for each node is **2**.

If database replication is not complete (a value other than 2 is returned), core services will not start on the subscriber nodes until replication is complete.