Cisco Unified Communications Manager Operational Guide for Upgrades from Release 6.1 to 8.6 Physical Servers to Release 9.x Virtual Machines

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Introduction

Upgrading Cisco Unified Communications Manager requires careful planning and an understanding of the impact on call processing during the upgrade. When an upgrade includes virtualization, a number of problems can occur if you do not follow the correct procedure.

This document outlines procedures to upgrade Cisco Unified Communications Manager to Release 9.1(1) or later, while at the same time migrating the server to a virtual machine. The procedures described in this document are designed to ensure that you successfully migrate all server functionality and licensing to Release 9.x.

Choose the procedure below that best fits your scenario and follow it.

Choosing an upgrade path

The first task in moving to a virtual deployment of Cisco Unified Communications Manager is to determine the appropriate upgrade path and steps to follow. Typically, the older the release that you start from, the more steps or caveats you may find along the way. This document is designed to inform the persons who are performing the upgrade of the most efficient upgrade method.

While this document covers most upgrade scenarios, there will inevitably be some that are not covered. Even though this document explains the steps and why they are recommended, there may be exceptions to certain steps or potential alternatives.

The document *Supported Servers for Releases of Cisco Unified Communications Manager* on Cisco.com contains a complete hardware compatibility list.

The table in *Appendix A* lists all known server types and the recommended upgrade paths to follow. Read the comments section in the table for information about special considerations.

Note: The "Related documentation" section at the end of this document contains the external links to all the documents that are referred to in this document.

Important Release 9.x licensing differences

- Cisco Unified Communications Manager Release 9.x licenses and license enforcement is completely user-based, matching how licenses are ordered. Customers no longer order user-based licenses and receive DLU-based licenses to upload to the customer Cisco Unified Communications Manager publisher.
- There is no mechanism to upload DLU-based licenses to a Cisco Unified Communications Manager Release 9.x publisher. Cisco Unified Communications Manager Release 9.x licenses must be applied to an Enterprise License Manager server, which only accepts the new user-based licenses.

- Cisco Unified Communications Manager Release 9.X licensing no longer includes or requires any node or software release licenses.
- Cisco Unified Communications Manager 9.X clusters can operate in a full featured demo mode for 60 days without a license. After 60 days, Cisco Unified Communications Manager clusters continue to operate and route calls, but the functionality to add or remove devices and users is disabled until valid licenses are supplied by an associated Enterprise License Manager.
- Cisco Unified Communications Manager Release 9.X licenses are tied to the identity of the Enterprise License Manager server, rather than to the publisher MAC address or licensing MAC.

For information on licensing updates between Release 9.0(1) and 9.1(1), see the "Licensing" section in *Release Notes for Cisco Unified Communications Manager, Release 9.1(1)*.

Five keys to a successful upgrade

When you upgrade from any release of Cisco Unified Communications Manager to Release 9.1 while virtualizing at the same time, there are five keys to making the upgrade successful. Following these important principles (while following the appropriate upgrade path) results in an efficient upgrade path:

1. Apply all Product Authorization Key (PAK) codes before upgrading to Release 9.1 or later.
2. Rehost licenses where indicated.
3. Ensure that bootable Release 8.0(x) and/or Release 9.1(x) installation media are available.
4. Upgrade all nodes of the cluster on the production network. (**Note***:* Do not install subscribers as new.)
5. Install Release 8.0(x) or Release 9.1(x) VM nodes using the same IP address, hostname, and security passwords.

Upgrade and migration guidelines

This section sets general upgrade guidelines that apply to all of the following upgrade paths.

Linux to Linux (L2) upgrade

There is very little server downtime during an L2 upgrade. An L@ upgrade is accomplished by installing the new software release in the inactive partition while the node continues to run and operate on the existing software in the active partition. The software releases are switched on reboot. The reboot can be either automatic, after the new software release is installed, or initiated manually at a later time through an administrator command. Some examples of an L2 upgrade are upgrades from Release 6.1(3) to 7.1(5), from 7.1(2) to 8.0(3), or from 8.6(1) to 9.1(1).

Because an L2 upgrade can install the new release in the inactive partition while the existing release is still running, the actual downtime for an L2 upgrade is only the reboot time for the node after the upgrade finishes and while switching releases.

Refresh upgrade

A Refresh Upgrade is required in situations where incompatibilities exist between the old and new software releases. The new software installation is disallowed in the inactive partition while the node continues to run on the software in the active partition. This upgrade requires the node to reboot much earlier in the upgrade process, and the node will be off line while the new software release is installed. The only defined Refresh Upgrade path for Cisco Unified Communications Manager is from Release 8.5(x) and earlier releases to 8.6(1) or later. Some examples of Refresh Upgrades are upgrades from Release 8.0(3) to 8.6(1), from 8.5(1) to 8.6(2), from 7.1(5) to 8.6(1), or from 8.5(1) to 9.1(1).

When you perform a Refresh Upgrade, the downtime of the node is much longer than that of an L2 upgrade. A typical Refresh Upgrade takes between 1 and 4 hours, depending on the size of the database. During the upgrade, the Cisco Unified Communications Manager node is off line — plan accordingly.

Baseline release requirements for upgrades directly to Release 9.x

The release of Cisco Unified Communications Manager that you are running may influence your choice of upgrade path as much as the Cisco Media Convergence Server (MCS) hardware that Cisco Unified Communications Manager is running on. The "Direct to Release 9.1 Upgrade Path" is supported only from Release 6.1(4) to 6.1(5)SU3 and 7.1(3) and later. If you are running a release that is not listed here, such as Release 6.1(3) or 7.1(2), use the "Virtualize at Release 8.0 Upgrade Path." If your Cisco Unified Communications Manager release is not on the list of supported releases that are upgradable to Release 8.0(3), the first step is to upgrade to a release that is compatible with either Release 8.0(3) or Release 9.1(1), depending on the MCS hardware support in either Release 8.0(3) or Release 9.1(1).

Consideration for Refresh Upgrades on 7825H3 and 7828H3 servers

During a Refresh Upgrade, the installation process reconfigures RAID on the MCS 7825H3 and 7828H3 server. All data is exported to an external USB drive during the upgrade. After the RAID is reconfigured and the operating system is installed, the installation process uses the data on the USB drive to upgrade the server to the new release.

Important: During the reconfiguration of the RAID, all data is erased from the hard drives.

In case of a failure during the Refresh Upgrade on these systems, there is no way to switch back to the previous release (as seen in upgrades on other server models). You must restore these servers from a DRS backup.

No other models require RAID reconfiguration.

Because of the risk of failure, Cisco recommends that you avoid refresh upgrades on the MCS 7825H3 and 7828H3 servers. While these platforms support Release 9.1(1), Cisco

recommends that you virtualize at Release 8.0(3), rather than Release 9.1(1), to avoid a Refresh Upgrade on the MCS 7825H3 and 7828H3 servers.

DRS backup requirements

Cisco strongly recommends that you perform a DRS backup up of the entire cluster before and at key stages of the upgrade process. Upgrading without a current backup can result in lost data, lost node configuration, or disruption in services if there are complications during the upgrade process.

Upgrade of all nodes in the cluster

Important*:* Do not install subscribers as new.

Cisco recommends that you upgrade ALL servers in a cluster at the same time (with respect to the proper upgrade order within the cluster). Upgrading just the publisher node and then rebuilding the subscriber/utility nodes will result in a loss of node-specific data on the subscriber or utility node when that node is brought online. A brief list of features or data that is missing from nodes installed as new includes, but is not limited to:

- Service activations
- TFTP files
- Nonstandard or Cisco Options Package (COP) – installed phone firmware
- Music on hold (MOH) files
- Server certificates
- SNMP configuration
- Trace and Log Central Scheduling jobs

Upgrade on a production network

You must upgrade a Cisco Unified Communications Manager cluster on the production network. Cisco does not support installation of Cisco Unified Communications products in a lab or deadnet environment. When you install Cisco Unified Communications servers, the server must access network resources that may not be available in the lab network.

Network services such as DNS, LDAP, NTP and default gateways are critical to the successful deployment of a Cisco Unified Communications Manager server. Although the deployment may succeed in the lab, latent installation issues may arise later in the production environment that can adversely affect call processing. For this reason, Cisco does not support installation of a Cisco Unified Communications Manager in a lab or deadnet environment.

Bridge Mode

Some legacy MCS servers support only newer releases of Cisco Unified Communications Manager in Bridge Mode. Bridge Mode means that the server has not been certified to run that release but can be used to migrate from MCS hardware to a virtual deployment. While

in Bridge Mode, the Cisco Unified Communications Manager services will not start and moves, adds, changes, or deletes are not allowed.

A cluster cannot operate in Bridge Mode for an extended period of time. A server in Bridge Mode allows only a DRS backup that is used to restore the server node onto a new virtual machine installation.

Enterprise License Manager

Enterprise License Manager provides simplified, enterprise-wide management of user-based licensing, including license fulfillment. Enterprise License Manager handles licensing fulfillment, supports allocation and reconciliation of licenses across supported products, and provides enterprise-level reporting of usage and entitlement.

The Enterprise License Manager application is installed coresident, by default, on any Cisco Unified Communications Manager or Cisco Unity Connection nodes that are upgraded (or fresh installed) to Release 9.x.

You can also install Enterprise License Manager as a standalone application on a separate MCS server or virtual machine. **This document applies exclusively to the co-resident deployment.**

For additional details on Enterprise License Manager and deployment options, refer to the *Cisco Unified Communications System 9.x SRND*. For additional information about using Enterprise License Manager, refer to the *Enterprise License Manager User Guide* on Cisco.com.

Important: Before you begin any of the following upgrade paths, see *Appendix A*, which enables you to determine whether you require the "Direct-to-Release 9.x" or "Virtualize at Release 8.0" upgrade path.

Direct-to-Release 9.x upgrade path

1) Apply phone firmware that corresponds with Release 9.x

You can apply new firmware files to the cluster in a controlled manner prior to the upgrade to minimize phone downtime after an upgrade. Applying firmware ahead of the upgrade prevents phones from upgrading their firmware at the same time following completion of the upgrade. This step is not required because the phones download their new firmware after an upgrade. However, an administrator using this step may apply new firmware to phones in groups to eliminate the load on the TFTP server after the upgrade to accelerate the upgrade of the individual devices.

The document *System Installation and Upgrade Manual for IP Telephony, Cisco Unified Communications System Release 9.1(1)* summarizes the phone firmware version that ships with Cisco Unified Communications Manager Release 9.1(1).

2) Verify all licenses and all unapplied PAKs

Important: Apply *all* unclaimed or uninstalled license files now.

Following an upgrade to Release 9.x, only the valid installed licenses are migrated into the Enterprise License Manager. If you have unclaimed PAK codes, you cannot upload or automatically migrate those licenses into Release 9.x after the upgrade is complete. You must contact the Cisco licensing team for assistance (licensing@cisco.com).

Also, ensure that all installed licenses are valid and that the system is not operating on "demo" licenses, as this could affect your ability to upgrade.

Check the licensing status in the Cisco Unified Communications Manager Administration interface by selecting **System>Licensing> License Usage Report**. If any of the following are listed as "invalid" or "demo," they must be fixed prior to upgrading:
- Phone Licensing Feature
- CCM Node Licensing Feature
- Software Licensing Version

3) Perform a DRS backup of the entire cluster

Cisco strongly recommends that you back up the current cluster immediately prior to upgrading. Although the steps that are detailed in this document will ensure a successful upgrade, a backup allows you to restore the entire cluster to the last known good configuration in the event the upgrade fails as a result of a network or power failure.

Follow the "Starting a Manual Backup" procedure of the appropriate release of the *Disaster Recovery System Administration Guide*. Include all nodes in the cluster and

all features in the backup. Do not proceed until the manual backup process is complete on all the nodes in the cluster.

4) Install refresh upgrade Cisco Options Package (COP) file

NOTE: This step does not apply if you are upgrading from an Release 8.6(x) release.

Before you upgrade from a compatible release of Cisco Unified Communications Manager, install the COP file named ciscocm.refresh_upgrade_v1.1.cop.sgn that you can find in the Download Software Center for Cisco Unified Communications Manager Utilities and COP Files section on Cisco.com (login required).

You must install the COP file on every node in the cluster prior to upgrading to Release 9.1(1) or later.

5) Upgrade to Release 9.1(1)

Follow the upgrade steps in the Upgrade tasks section of *Upgrade Guide for Cisco Unified Communications Manager Release 9.1(1)* to complete the software upgrade. The publisher must be upgraded to completion first, followed by the subscribers.

If the installation occurs during a maintenance window, Cisco recommends that you disable I/O throttling to accelerate the upgrade process. For information on how to disable I/O throttling, follow the instructions located in the "Reference" section of the Release 9.1(1) upgrade guide (see the "Related documents" section for the release-specific document). This option is not available in all releases; check your server CLI to verify. If it is not available, you can still continue the upgrade procedure.

6) Perform a DRS backup of the entire cluster

Follow the steps in the "Starting a Manual Backup" procedure in the appropriate release of the *Disaster Recovery System Administration Guide.* Back up all nodes in the cluster and all features. Do not proceed until the manual backup process is complete on all the nodes in the cluster.

After the DRS backup is complete, shut down the existing cluster to avoid any conflict with the virtual installation of the cluster.

7) Create new virtual machines with Release 9.0 OVAs

Choose the appropriate OVA for the deployment from the following docwiki page:

http://docwiki.cisco.com/wiki/OVA_Template_Details_for_Unified_CM_Release_9.0

While it is not required, Cisco recommends that you deploy the same OVA throughout your entire cluster.

There are two different releases of OVA files available on Cisco.com. Version 7 OVAs (vm7) are for installing in an ESXi 4.X environment, while version 8 OVAs (vm8) are for installing in ESXi 5.X environments. Choose the correct OVA release based on the vCenter environment in which the virtualized UC applications will be deployed.

8) Install Release 9.1(1) using the same hostnames and IP addresses as the physical cluster

When installing Cisco Unified Communications Manager Release 9.1(1) into the virtual machines, you must ensure that the IP address, hostname, and security password are exactly the same as the cluster you are replacing. Additionally, the virtual installation of Cisco Unified Communications Manager must be the exact same release as that of the cluster that you are replacing. If any of these components differ from the existing cluster, you will not be able to restore the cluster.

The Release 9.1(1) cluster is installed as a new cluster with all subscriber nodes completing installation prior to restoring the data. After you install the publisher, add each subscriber to the server list to allow the subscriber servers to install correctly. Add the subscriber servers under **System > Server** on the publisher server

9) Restore DRS backup on the entire cluster

After you install the publisher and all subscriber/utility nodes with the exact same release, hostnames, IP addresses, and DNS configuration as the physical servers, you can restore the cluster.

Before you restore the cluster, re-create the Backup Device. You must use the same Backup Device settings that were used to back up the physical servers.
After you add the Backup Device, follow the "Restore Entire Cluster" procedure in the *Cisco Unified Communications Manager Disaster Recovery System*.

NOTE: Pay close attention to the reboot order of the servers after the restore completes. All subscribers must be rebooted *before* the publisher is rebooted.

10) Verify database replication and consistency

Although the DRS restore process reestablishes database replication, the administrator should, following a reboot of the cluster, verify that replication has indeed been restored.

Use one of the procedures in the *Database Replication Error in Cisco Unified Communications Manager* to verify replication status. Using RTMT, CLI, or Cisco Unified Reporting tools provides the same cluster-wide database replication status. If a problem is detected, follow the CLI instructions in the "Solution" section of the same document.

11) Migrate previous licenses into Enterprise License Manager

After you verify the DRS restore process and database replication, the previously installed licenses are ready for migration.

a) Log in to the Enterprise License Manager web interface.

b) Add all product instances that need to have licensing migrated. Refer to "Add product instance" in the *Enterprise License Manager User Guide*.
Note: For the purpose of this procedure, the first Cisco Unified Communications Manager cluster upgraded to Release 9.0 will be migrated. Additional clusters can be migrated in a similar fashion, but that is not covered here.

c) After you add all products, follow the "Migrate licenses using Upgrade Licenses Wizard" procedure the *Enterprise License Manager User Guide* to create the licensing request string that is used in the License Migration Portal on Cisco.com.

d) Browse to the license migration portal at:
http://www.cisco.com/go/license/migration

e) Expand Voice Products and select **Cisco Unified Communications Release 9.0**.

f) Either use copy and paste or upload files to populate the content for the license migration.

g) Check the **Terms of the License** box and fill in an email address to send the license.

h) After you receive the license, follow the "Install license" procedure to complete the migration of DLU-based licenses into Enterprise License Manager.

Virtualize at Release 8.0 upgrade path

1) Verify all licenses and all unapplied PAKs

Important: Apply *all* unclaimed/uninstalled license files now.

After an upgrade to Release 9.0, only the valid installed licenses are migrated into the Enterprise License Manager. If you have unclaimed PAK codes, you cannot upload or automatically migrate those licenses into Release 9.0 after the upgrade is complete. Contact the Cisco licensing team for assistance (licensing@cisco.com).

Also, make sure that all installed licenses are valid and that the system is not operating on "demo" licenses, as this could affect your ability to upgrade.

Check the licensing status in the Cisco Unified Communications Manager Administration interface by selecting **System>Licensing> License Usage Report**. If any of the following are listed as "invalid" or "demo," they must be fixed prior to upgrading:
- Phone Licensing Feature
- CCM Node Licensing Feature
- Software Licensing Version

2) Perform a DRS backup of the entire cluster

Cisco strongly recommends that you back up the current cluster immediately prior to upgrading. Although the steps detailed in this document will ensure a successful upgrade, in the event of a failed upgrade due to a network or power failure, a backup enables you to restore the entire cluster to the last known good configuration.

Follow the "Starting a Manual Backup" procedure in the appropriate release of the *Disaster Recovery System Administration Guide*. Include all nodes in the cluster and all features in the backup. Do not proceed until the manual backup process is complete on all the nodes in the cluster.

3) Upgrade the cluster to Release 8.0(3a)

Note: MCS servers running Release 7.1(4) or 7.1(5) cannot upgrade to Release 8.0(3) because both releases were released after Release 8.0(3). If the current installed release matches either of these releases, use Release 8.5(1)SU5 as the intermediate upgrade step. The rest of the instructions are still applicable, but a different release will be referenced.

For all releases of Cisco Unified Communications Manager, perform the upgrade steps found in the "Upgrading to Cisco Unified Communications Manager 8.0(3)" (8.0(3a)SU3) section in the *Release Notes for Cisco Unified Communications Manager 8.0(3)*.

For Cisco Unified Communications Manager 7.1(4) and 7.1(5), perform the upgrade steps found in the "Upgrading to Cisco Unified Communications Manager 8.5(1)" (8.5(1)SU5) section in the *Release Notes for Cisco Unified Communications Manager Release 8.5(1).*

4) Perform a cluster-wide DRS

Cisco strongly recommends that you back up the current cluster immediately prior to upgrading. Although the steps that are detailed in this document will result in a successful upgrade, in case of a failed upgrade due to a network or power failure, a backup allows you to restore the cluster back to the last known good configuration.

Follow the "Starting a Manual Backup" procedure in the appropriate release of the *Disaster Recovery System Administration Guide*. Back up all nodes in the cluster and all features. Do not proceed until the manual backup process is complete on all the nodes in the cluster.

5) Power off all servers in the cluster

Now that there is a backup of the existing cluster in Release 8.X, shut it down to avoid any conflict with the new cluster that will be created. This will involve downtime.

6) Create new Virtual Machines with Release 9.0 OVAs

Even though the Cisco Unified Communications Manager that you will install in the next step is Release 8.0 or Release 8.5, you must use the OVA for the final Cisco Unified Communications Manager release. In this case, the target release is Cisco Unified Communications Manager is Release 9.0, so you must use the Release 9.0 OVA for the Release 8.0 or Release 8.5 virtual installation.

Choose the appropriate OVA for the deployment from the following docwiki page:

http://docwiki.cisco.com/wiki/OVA_Template_Details_for_Unified_CM_Release_9.0

There are two different releases of OVA files available on Cisco.com. Version 7 OVAs are for installing in an ESXi 4.X environment, while version 8 OVAs are for installing in ESXi 5.X environments. Choose the correct OVA release based on the environment in which you are deploying your virtualized UC applications.

While it is not required, Cisco recommends that you deploy the same OVA throughout your entire cluster. Also, do not attempt to update the VMtools on the VMs after installing Release 8.0 or 8.5.

7) Install Release 8.X Using the same hostnames and IP addresses as the physical cluster

When installing Cisco Unified Communications Manager Release 8.0(3a) or 8.5(1) into the Virtual Machines, you must ensure that the IP address, hostname, and

security password are exactly the same as the cluster that you are replacing. Additionally, the virtual installation of Cisco Unified Communications Manager must be the exact same release as that of the cluster that you are replacing. If any of these components differ from the existing cluster, you will not be able to restore the cluster.

Install the Release 8.0 or 8.5 cluster as a new cluster and ensure that all subscriber nodes complete the installation prior to restoring the data. After you install the publisher, add each subscriber to the server list to allow the server to correctly install. Add the subscriber servers under **System >Server** on the publisher server.

You can find more detailed installation instructions in the release-specific *Installing Cisco Unified Communications Manager* document.

8) Restore DRS backup on the entire cluster

After you install the publisher and all subscriber nodes with the exact same release, hostnames, IP addresses, and DNS configuration as the physical servers, you can restore the cluster.

After the installation is complete, re-create the Backup Device. Use the same Backup Device settings that were used on the physical servers.

After you add the Backup Device, follow the "Restore Entire Cluster" section of the *Cisco Unified Communications Manager Disaster Recovery System* document.

NOTE: Pay close attention to the reboot order of the servers after the restore completes. All subscribers must be rebooted *before* the publisher is rebooted.

9) Verify database replication and consistency

Although the DRS restore process reestablishes database replication, after rebooting the cluster, the administrator should verify that replication has indeed been restored.

Use one of the procedures in the *Database Replication Error in Cisco Unified Communications Manager* document to verify replication status. Using RTMT, CLI, or Cisco Unified Reporting tools provides the same cluster-wide database replication status. If a problem is detected, follow the CLI instructions in the "Solution" section of the same document.

10) Rehost the license files for the new licensing MAC on the VM and verify licensing

After you restore the cluster, you must rehost the existing license files to the current virtual deployment. The Cisco Unified Communications Manager licenses rehosting process is on the Cisco Software Licensing Portal:

https://tools.cisco.com/SWIFT/LicensingUI/Home

For step-by-step instructions on how to rehost license files for Cisco UC products, see the "Rehost and RMA" section of the *Cisco Software Licensing Portal Changes Quick Reference Guide*.

11) Perform a cluster-wide DRS backup

Cisco strongly recommends that you back up the current cluster immediately prior to upgrading. Although the steps that are detailed in this document will ensure a successful upgrade, a backup allows you to restore the cluster to the last known configuration in the event of a failed upgrade due to a network or power failure.

Follow the "Starting a Manual Backup" procedure in the appropriate release of the *Disaster Recovery System Administration Guide*. Back up all nodes in the cluster and all features. Do not proceed until the manual backup process is complete on all the nodes in the cluster.

12) Install Refresh Upgrade COP file

Before you upgrade from a compatible release of Cisco Unified Communications Manager, install the COP file named ciscocm.refresh_upgrade_v1.1.cop.sgn found in the Download Software Center for Cisco Unified Communications Manager Utilities and COP Files section on Cisco.com (login required).

You must install the COP file on every node in the cluster prior to upgrading to Release 9.1(1) or later.

13) Upgrade to Release 9.1(1)

Follow the upgrade steps in the "Upgrade tasks" section of the "Software Upgrades" chapter in *Upgrade Guide for Cisco Unified Communications Manager Release 9.1(1)* to complete the software upgrade. First upgrade the publisher to completion, followed by the subscribers.

If the installation occurs during a maintenance window, Cisco recommends disabling I/O throttling to accelerate the upgrade process.

For information on how to disable I/O throttling, follow the instructions in the "Reference" section of the *Upgrade Guide for Cisco Unified Communications Manager Release 9.1(1)*. This option is not available in all releases; check your server CLI to verify. If it is not available, you can still continue the upgrade procedure.

14) Verify database replication and consistency

Although the DRS restore process reestablishes database replication, the administrator should verify that replication has indeed been restored following a reboot of the cluster.

To verify replication status, use one of the procedures in the *Database Replication Error in Cisco Unified Communications Manager*. Using RTMT, CLI, or Cisco Unified Reporting tools provides the same cluster-wide database replication status. If a

problem is detected, follow the CLI instructions in the "Solution" section of the same document.

15) Migrate previous licenses into Enterprise License Manager

After you verify the DRS restore process and database replication, the previously installed licenses are ready for migration.

1) Log in to the Enterprise License Manager web interface.
2) Add all product instances that need to have licensing migrated. Refer to "Add product instance" in the *Enterprise License Manager User Guide*.
   Note: For the purpose of this procedure, the first Cisco Unified Communications Manager cluster upgraded to Release 9.0 will be migrated. Additional clusters can be migrated in a similar fashion, but that is not covered here.
3) After you add all products, follow the "Migrate licenses using Upgrade Licenses Wizard" procedure the *Enterprise License Manager User Guide* to create the licensing request string that is used in the License Migration Portal on Cisco.com.
4) Browse to the license migration portal at:
   http://www.cisco.com/go/license/migration
5) Expand Voice Products and select **Cisco Unified Communications Release 9.0**.
6) Either use copy and paste or upload files to populate the content for the license migration.
7) Check the **Terms of the License** box and fill in an email address to send the license to.
8) After you receive the license, follow the "Install license" direction to complete the migration of DLU-based licenses into Enterprise License Manager.

Migrating from Release 8.0 to 8.5 MCS to Release 9.1(1) virtual

If the MCS servers are running a Cisco Unified Communications Manager release from 8.0(2) to 8.5(1), the cluster can continue to run the current release while migrating to a virtual environment on the same release. This migration path follows the "Virtualize at Release 8.0 Upgrade Path," but instead of migrating all physical servers to virtual servers at one time, this path migrates one server at a time from physical to virtual. By migrating one server at a time, the cluster can provide call processing services during the migration process.

1) Follow the instructions for "Replacing a Single Server or Cluster" in the *Replacing a Single Server or Cluster for Cisco Unified Communications Manager Release 8.0(2)* document to replace each node of the existing cluster. Replace one server at a time.
2) After you migrate all physical servers to virtual servers, apply the correct firmware for the Release 9.x release as described in Step 1 of the "Direct to Release 9.0 Upgrade Path" section.
3) After the firmware has been deployed, follow Steps 11 to 15 of the "Virtualize at Release 8.0 Upgrade Path" section.

Appendix A

Server support for direct to Release 9.0 upgrade path	
Hardware platform	**Upgrade path and comments**
MCS-7816-H3 / IPC1 MCS7816-H3-K9 / MA2 / CMB1 / CMB2 / CMC1 MCS-7816-I3 / IPC1 MCS7816-I3-K9 / CMA2 / CMB1 / CMB2 / CMC1 IBM x3250 MCS-7816-I4 / IPC1 MCS7816-I4-K9 / CMA2 / CMB1 / CMB2 / CMC2 / CMD1 MCS-7816-I5 / IPC1 MCS-7816-I5-K9-CMD2 MCS-7825-H4 / IPC1 MCS7825H4-K9 / CMA2 / CMB1 / CMB2 / CMC2 HP DL320-G5p MCS-7825-I3 / IPC1 MCS7825I3-K9 / CMA2 / CMB2 / CMC1 IBM x3250 MCS-7825-I4 / IPC1 MCS7825I4-K9 / CMA2 / CMB1 / CMB2 / CMC2 / CMD1 / IMED1 IBM x3250-M2 MCS-7825-I5 / IPC1 MCS7825I5-K9 / CMD2 / IMD2 MCS-7828-I3 MCS7828I3-SS1 MCS7828I3-K9 / BE / BE7 MCS-7828-I4 MCS7828I4-SS1 MCS7828I4-K9-BE / BE7 MCS-7828-I5 / SS1 MCS7828I5-K9 / WL* / BE8 MCS-7835-H2 / V02 / IPC2 MCS7835H2-K9 / CMA2D / CMB1D / CMB2D / CMC1 / CMC2 HP DL380-G5 (146-GB HDD) HP DL380G6 (single E5504, (HP AX692A) MCS-7835-I2 / V02 / IPC2 MCS-7835-I2-IPC2 MCS7835I2-K9 / CMA2D / CMB1D / CMB2D / CMC1 / CMC2 IBM x3650 (146-GB HDD)	Upgrade Path: Direct to Release 9.0 This hardware is fully supported in Release 9.0. The "Direct to Release 9.0" upgrade path is the most efficient upgrade to Release 9.0.

Hardware platform	Upgrade path and comments
MCS-7835-I3 V01 / V02 / V03 / V04 / IPC1 MCS7835I3-K9 / CMB2 / CMC2 / CMD1 / CMD2 IBM x3650-M2 (single E5504, 146GB HDD) MCS-7835-I3 / V05 / IPC2 MCS7835I3-K9 / CMD2B / CMD3B / CME1 IBM x3650-M2 (single E5504, 300GB HDD) MCS-7845-H2 / V02 / IPC2 MCS7845H2-K9 / CMA1D / CMA2D / CMB1D / CMB2D / CMC1 / CMC2 HP DL380G5 (dual CPU; 146-GB HDD) HP DL380G6 (single E5540,146GB HDD, HP AX691A or single E5540, 300GB HDD, HP AX691B) MCS-7845-I2 / V02 / IPC2 MCS7845I2-K9 / CMA1D / CMA2D / CMC1 / CMC2 / SMC2 IBM x3650 (dual CPU, 146-GB HDD) MCS7835I2-K9 / CMB1D / CMB2D MCS-7845-I3 V01 / V02 / V03 / V04 / IPC1 MCS7845I3-K9 / CMB2 / CMC2 / CMD1 / CMD2 / IMED1 / IMD2 / SMD1 / SMD2 IBM x3650-M2 (single E5540 or E5630) MCS-7845-I3 / V05 / IPC2 MCS7845I3-K9-CMD2B / CMD3B / SMD2B / SMD3B / IMD2B / IMD3B / CME1 / IMEE1 / SME1 IBM x3650-M2 (single E5540 or E5630 CPU, 300 GB HDD)	
MCS-7835-I2 / IPC1 MCS7835I2-K9 / CMA1 / CMB1 / CMB2 IBM x3650 (72GB HDD) MCS-7845-H2 / IPC1 MCS7845H2-K9 / CMA1 / CMA2 / CMB1 / CMB2 HP DL380G5 (dual CPU; 72-GB HDD) MCS-7845-I2 / IPC1 MCS7845I2-K9 / CMA1 / CMA2 / CMB1 / CMB2 IBM x3650 (dual CPU; 72-GB HDD) MCS-7835-H2-IPC1 MCS7835H2-K9 / CMA1 / CMA2 / CMB1 / CMB2 HP DL380-G5 (72-GB HDD)	Upgrade Path: Direct to Release 9.0 This hardware is supported in Release 9.0 Bridge Mode. This allows you to complete a migration to Release 9.0 prior to migrating to a virtual environment. **Note:** Servers enter Bridge Mode upon an upgrade to Release 9.0. See the "Bridge Mode" section for more details.

Server support for Virtualize at Release 8.0 upgrade path

Hardware platform	Upgrade path and comments
MCS-7825-H3 / IPC1 / CMA2	Upgrade Path: Virtualize at Release 8.0

MCS7825H3-K9 / CMA2 / CMB1 / CMB2 / CMC1 HP DL320-G5 MCS-7828-H3 MCS7828H3-SS1 MCS7828H3-K9 / BE / BE7	This hardware is fully supported in Release 9.0. However, since a Refresh Upgrade is required and these systems use a software-based RAID configuration, use the "Virtualize at Release 8.0" Upgrade Path. See "Consideration for Refresh Upgrades on 7825H3 and 7828H3 systems" for more details.
MCS-7825-H1-IPC1 MCS7825H1-K9-CM50 HP DL320-G3	Upgrade Path: Virtualize at Release 8.0 This hardware is supported in Release 8.0 Bridge Mode only. Follow the "Virtualize at Release 8.0" Upgrade Path. *Note:* Servers enter Bridge Mode upon an upgrade to Release 8.0. See the "Bridge Mode" section for more details.
MCS-7825-H2-IPC1 MCS7825H2-K9-CMA1(2.8GHz CPU) HP DL320-G4 (2.8GHz CPU) MCS-7825-H2-IPC2 MCS7825H2-K9 / CMA1 (3.4-GHz CPU) / CMA2 HP DL320-G4 (3.4-GHz CPU) MCS-7825-I1-IPC1 MCS7825I1-K9-CM50 IBM x306 (3.4-GHz CPU) MCS-7825-I2-IPC1 MCS7825I2-K9 / CMA1 (2.8GHz CPU) / CMA2 (2.8GHz CPU) IBM x306m (2.8GHz CPU) MCS-7825-I2-IPC2 MCS7825I2-K9 / CMA1 (3.4GHz CPU) / CMA2 (3.4GHz CPU) IBM x306m (3.4-GHz CPU)	Upgrade Path: Virtualize at Release 8.0 This hardware is fully supported in Release 8.0 but not in Release 9.0. Follow the "Virtualize at Release 8.0" Upgrade Path.
MCS-7815I-3.0 / IPC1 / IPC2 MCS-7815-I1 / IPC1 / IPC2 / IPC3 / IPC4 MCS7815I1-K9-CM50 MCS-7815-I2 / IPC1 / IPCP MCS7815I2-K9-CMA1 MCS-7825H-3.0 / IPC1 / IPC2 HP DL320-G2 (3-GHz CPU) MCS-7825I-3.0-IPC1 IBM x306 (3GHz CPU) MCS-7835H-3.0-IPC1	Upgrade Path: Virtualize at Release 8.0 This hardware is supported in Release 8.0 Bridge Mode. It is also supported in Release 9.0 Bridge Mode with an upgrade to a Dual-Layer (DL) DVD drive. If the server has been upgraded to a DL-DVD drive or a remote upgrade (FTP/SFTP) will be used, these servers can also use the "Direct to Release 9.0" Upgrade Path.

HP DL380-G3 (3-GHz CPU)	*Note:* Servers will enter Bridge Mode upon
MCS-7835-H1	an upgrade to Release 8.0 or Release 9.0.
MCS-7835-H1-IPC1	See the "Bridge Mode" section for more
MCS7835H1-K9-CM50	details.
HP DL380-G4	
MCS-7835I-3.0-IPC1	
IBM x345 (3GHz CPU)	
MCS-7835-I1	
MCS-7835-I1-IPC1	
MCS7835I1-K9-CM50	
IBM x346	
MCS-7845H-3.0-IPC1	
HP DL380-G3 (dual 3-GHz CPU)	
MCS-7845-H1	
MCS-7845-H1-IPC1	
MCS7845H1-K9-CM50	
HP DL380-G4 (dual-CPU)	
MCS-7845I-3.0 / IPC1	
IBM x345 (dual-3GHz CPU)	
MCS-7845-I1-IPC1	
MCS7845I1-K9-CM50	
IBM x346 (dual-CPU)	
IBM x346r (dual-CPU)	

Servers not covered by this document

Hardware platform	Upgrade path and comments
MCS-7825H-2.2 / EVV1 HP DL320-G2 (2.2-GHz CPU) MCS-7835H-2.4 / EVV1 HP DL380-G3 (2.4-GHz CPU) MCS-7835I-2.4 / EVV1 IBM x345 (2.4-GHz CPU) MCS-7845H-2.4 / EVV1 HP DL380-G3 (dual 2.4-GHz CPU)	**Note:** Path is not supported by this document This hardware is not supported in Release 8.0 or later, which means that the transition to a virtual environment will require additional hardware that is supported in Release 8.0 or later. An alternative to adding hardware is to perform a fresh install on a virtual environment and manually migrate the cluster and data to the new virtualized UC environment.

Related documentation

For additional upgrade information, refer to the following documents:

- *Supported Servers for Releases of Cisco Unified Communications Manager (Including Business Edition 3000/5000/6000 and Session Manager Edition) and Cisco Intercompany Media Engine*

  http://www.cisco.com/en/US/partner/prod/collateral/voicesw/ps6790/ps5748/ps378/prod_brochure0900aecd8062a4f9.html

- *Cisco Unified Communications System 9.x SRND*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/srnd/9x/callpros.html

- *Enterprise License Manager User Guide*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/elmuserguide/9_1_1/CUCM_BK_EDEFFAEB_00_enterprise-license-manager-user-91.html

- *System Installation and Upgrade Manual for IP Telephony, Cisco Unified Communications System Release 9.0(1)*

  http://www.cisco.com/en/US/docs/voice_ip_comm/uc_system/UC9.0.1/ipt_system_inst_upg/VTGS_BK_S3E53B1F_00_system-installation-and-upgrade-manual.pdf

- *Upgrade Guide for Cisco Unified Communications Manager, Release 9.1(1)*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/upgrade/9_1_1/CUCM_BK_UAEC4331_00_upgrade-guide-cucm-91.html

- *Disaster Recovery System Administration Guide for Release 6.1(2)*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/drs/6_1_2/DRS_CUCM/drsag612.html

- *Disaster Recovery System Administration Guide for Cisco Unified Communications Manager Release 7.0(1)*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/drs/7_0_1/DRS_CUCM/drsag701.html

- *Disaster Recovery System Administration Guide for Release 7.1(2)*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/drs/7_1_2/drsag712.html

- *Disaster Recovery System Administration Guide for Release 8.0(2)*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/drs/8_0_2/drsag802.html

- *Disaster Recovery System Administration Guide for Release 8.0(2) - Business Edition*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucmbe/drs/8_0_2/drsagbe802.html

- *Disaster Recovery System Administration Guide for Release 8.5(1)*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/drs/8_5_1/drsag851.html

- *Download Software Center for Cisco Unified Communications Manager Utilities and COP Files*

  http://software.cisco.com/download/release.html?mdfid=284329957&flowid=33682&softwareid=282204704&release=COP-Files&relind=AVAILABLE&rellifecycle=&reltype=latest

- *Database Replication Error in Cisco Unified Communications Manager*

  http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_tech_note09186a00809643e8.shtml

- *Release Notes for Cisco Unified Communications Manager 8.0(3)*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/rel_notes/8_0_3/cucm-rel_notes-803.html

- *Release Notes for Cisco Unified Communications Manager Release 8.5(1)*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/rel_notes/8_5_1/cucm-rel_notes-851.html

- *Installing Cisco Unified Communications Manager Release 8.0(2)*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/install/8_0_2/install/cmins802.html

- *Installing Cisco Unified Communications Manager Release 8.5(1)*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/install/8_5_1/install/cmins851.html

- *Cisco Software Licensing Portal Changes Quick Reference Guide*

  https://www.cisco.com/web/fw/tools/swift/ui/PDF/CiscoLicensingPortalChanges.pdf

- *Release Notes for Cisco Unified Communications Manager, Release 9.1(1)*

  http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/rel_notes/9_1_1/CUCM_BK_R6F8DBD4_00_release-notes-for-cucm-91.html

Trademarks and Notices

Disclaimer

Per Cisco's EOL policy, available at http://www.cisco.com/en/US/products/products_end-of-life_policy.html, the Recovery CD has not been tested against any Application that is beyond the End of SW Maintenance date. The user assumes all risk if the upgrades contained in the FWUCD are installed on a server that is running Applications that are beyond the End of SW Maintenance date.