



Direct Upgrade Procedure for Virtualized Cisco Unified Communications Manager Release 8.0(2)–9.0(1) to 9.1(x)

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Introduction

This document provides procedures for performing a direct upgrade to Cisco Unified Communications Manager (Unified Communications Manager) Release 9.1(x) from virtualized Releases 8.0(2) through 9.0(1).

- [About direct upgrades, page 1](#)

About direct upgrades

Unified Communications Manager Releases 8.0(2) and higher support virtualization.

This document is applicable to Unified Communications Manager clusters with the following environment:

- Any of the following Unified Communications Manager Releases are installed: 8.0(2) through 9.0(1).
- Your current Unified Communications Manager release is running in a virtualized environment.
- No changes are required to the IP addresses or hostnames for the Unified Communications Manager upgrade. If you need to change IP addresses or hostnames, you must do so in a separate maintenance window, prior to the upgrade. For more information, see [Changing the IP Address and Hostname for Cisco Unified Communications Manager, Release 9.1\(1\)](#).



Upgrade preparation checklist

Review the following information and ensure that you have met all of the requirements for the upgrade to Release 9.1(x) before you begin:

- [Licensing, page 3](#)
- [Compatibility verification, page 4](#)
- [Virtualization requirements, page 4](#)
- [Software downloads, page 4](#)
- [Configuration and login information, page 5](#)
- [Cluster registration, page 6](#)
- [Security tokens, page 6](#)
- [Test plan, page 6](#)
- [Create a backup, page 6](#)

Licensing

This upgrade procedure requires licensing for Unified Communications Manager 9.1(x). Licensing for Release 8.0(3) is required when you virtualize your current cluster. The licenses required for this upgrade are:

- Unified Communications Manager Release 8.0(3) Node, Software Feature License and device license based on the License MAC for the virtual server
- Unified Communications Manager Release 9.1(x)

To support high availability, Unified Communications Manager Release 9.x clusters operate in a full-featured demo mode for 60 days without a license. After 60 days, the clusters continue to operate and route calls, but the functionality to add or remove devices and users is disabled until valid licenses are available on the associated Enterprise License Manager (ELM).

Refer to the license documentation posted at the Upgrade Central for additional information:

<https://communities.cisco.com/community/partner/collaboration/migration/blog/2013/04/15/license-migration>

Refer to the following link to obtain the proper licenses:

[Licensing User Interface](#)

Compatibility verification

To determine if the versions of the devices and applications in use in your organization—such as endpoints, gateways, voicemail, presence, or other applications—are supported by Unified Communications Manager Release 9.1(x), review the following information:

[Cisco Unified Communications System Release Summary Matrix for IP Telephony](#)

[Cisco Unified Communications Manager Software Compatibility Matrix](#)

Cisco recommends that you consider the compatibility of applications such as Attendant console for upgrades.

For third-party applications, review the application catalog at the following link to verify that the application is supported by Unified Communications Manager Release 9.1(x). If your application is not listed in the catalog, confirm with your vendor that the application is compatible with Unified Communications Manager Release 9.1(x).

[Developer Network Marketplace Solutions Catalog](#)

Cisco highly recommends that you review the list of open caveats for your intermediate and targeted Unified Communications Manager releases that may impact functionality or integration with other applications. You can find the list of open caveats in the Release Notes at the following location:

[Cisco Unified Communications Manager Release Notes](#)

Virtualization requirements

You must design your Unified Computing Servers (UCS) system for virtualization. Most deployments require high availability and therefore you need to plan for the type and number of UCS servers. In addition, you must plan for storage, server connectivity, and the ESXi version. You can find details about designing a virtualized environment at the following link:

[Before You Buy or Deploy—Considerations for Design and Procurement](#)

UCS servers do not support external music-on-hold (MOH) sources; consider the impact on similar services when using the virtualized Unified Communications Manager cluster on UCS servers.

Additionally, Cisco recommends that you review the documentation on virtualization support for Unified Communications Manager Release 8.0(2) and higher in the following locations:

[Unified Communications in a Virtualized Environment](#)

[Unified Communications VMware Requirements](#)

Software downloads

To prepare for the upgrade, download all of the software listed in the following table:

Software	Download location
Cisco Unified Communications Manager Release 9.1(x) upgrade image	http://software.cisco.com/download/navigator.html?mdfid=268439621&flowid=37562
Phone firmware for Cisco Unified Communications Manager Release 9.1(x)	
(Optional) Cisco Unified Communications Release 9.1(x) Locale Installer for your local language	
Cisco Unified Communications Manager Release 9.1(x) device package	
Cisco Unified Communications Manager Release 8.5(1) or later device package	
Refresh Upgrade COP file for upgrading from Cisco Unified Communications Manager Release 8.0(3) through 8.5(1) to Cisco Unified Communications Manager Release 9.1(x)	
Cisco Unified Communications Manager Recovery software for your current release	

Configuration and login information

Record the current configuration and login information for your Unified Communications Manager nodes in case any issues are encountered during the upgrade process. Before you gather the configuration information, review the Unified Communications Manager Real-Time Monitoring Tool (RTMT) and syslogs and address any errors.

You need to record the following information:

- IP addresses, hostnames, gateways, domain names, DNS servers, NTP servers, and SMTP information
- administrator, cluster security, and Certificate Trust List (CTL) security token passwords
- server versions and time zones
- all services running on each server and the associated activation status
- Call Detail Record server configuration and any additional information
- LDAP information and access details
- SNMP information

In addition, you must determine the registration counts by using the RTMT or the Unified Communications Manager device count summary. For each node, record the number of each device type that is displayed. For example, record the number of each type of registered IP phone, gateway, and each FXS, FXO, T1CAS, PRI, MOH, MTP, CFB, or XCODE device resource.

Cluster registration

This document assumes that the Unified Communications Manager cluster will have a publisher node and a TFTP node that will not have any registrations of IP phones or devices. All registrations will be to the primary Unified Communications Manager subscriber nodes in the cluster. The backup Communications Manager subscriber nodes will be used for full registration redundancy.

**Note**

In a two node cluster deployment, the publisher node can also be the TFTP server and the backup subscriber.

Security tokens

If your cluster is a mixed-mode cluster, locate your existing security certificate tokens and record the token information.

To verify if you are running a secure cluster, use the steps in the [Cisco Unified Communications Manager Security Guide](#) for your current release.

Test plan

Create a test plan that you can execute prior to the upgrade and again directly afterwards. Your plan can include a set of tests that cover different use cases. Run the same tests before and after the upgrade. This approach provides a way to verify the expected functionality of Unified Communications Manager prior to and after the upgrade.

Create a backup

Cisco strongly recommends that you perform a Disaster Recovery System (DRS) backup up of your entire cluster before each upgrade. Upgrading without a current backup can result in lost data, lost node configuration, or disruption to services if there are complications during the upgrade process. For more information, see the [Disaster Recovery System Administration Guide](#).



CHAPTER 3

Preupgrade procedures

This section provides the following information:

- [Preupgrade procedures, page 7](#)

Preupgrade procedures

Cisco recommends that you perform all upgrade and migration tasks during a maintenance window.

Procedure

- Step 1** To shorten the upgrade time, delete or purge Call Detail Records (CDRs) or log files that you no longer need.
- Step 2** If you are a partner, Cisco recommends that you contact the PDI help desk during the upgrade planning phase. The PDI team can review the upgrade plan, provide necessary support, and file a proactive TAC case on your behalf. To contact the PDI team, see <http://www.cisco.com/go/pdihelpdesk>. If you choose to contact TAC directly, you must provide the following information for a proactive TAC case:
- complete output from the Unified Communications Manager upgrade readiness application (web or iPad version)
 - information about contact persons and the maintenance window
 - the upgrade plan
- For more information, see <http://tools.cisco.com/ServiceRequestTool/create/launch.do>.
- Step 3** Use the Cisco Unified Communications Manager License Count Utility to generate a license report and save it in CSV format. To download the utility and its documentation, see [Download Cisco Unified Communications Manager License Count Utility](#).
- Step 4** Extend the database replication timeout value so that subscriber servers have sufficient time to request replication. For more information, see the *Pre-Upgrade Tasks* section in the [Upgrade Guide for Cisco Unified Communications Manager, Release 9.1\(1\)](#).
- Step 5** Apply phone firmware that corresponds to Unified Communications Manager Release 9.1(x).

The phones download their new firmware after an upgrade. However, you can apply new firmware files to the endpoints in a controlled manner prior to the upgrade to minimize phone downtime after an upgrade. Applying new firmware to phones in groups eliminates the load on the TFTP server after the upgrade and accelerates the upgrade of the individual devices. Afterwards, restart the TFTP service on the Unified Communications Manager servers, and restart the IP Phones in a controlled order to minimize downtime. Because the phones cannot be used for calls when their firmware is being upgraded, Cisco recommends that you use a maintenance window outside of your Unified Communications Manager upgrade window to upgrade phone firmware.

Note You may need to upgrade some phones to an interim firmware release before you upgrade to the phone firmware corresponding to Release 9.1(x). Please refer to the Release Notes for additional information.

The [Cisco Unified Communications System Release Summary Matrix for IP Telephony](#) summarizes the phone firmware version recommended with all Cisco Unified Communications Manager releases.



Upgrade process

Use the following procedure to complete the upgrade process:

- [Upgrade your current release to Release 9.1\(x\), page 9](#)

Upgrade your current release to Release 9.1(x)

Use the following procedure to upgrade your current virtualized cluster to Release 9.1(x).

The upgrade from Release 6.1(4) through Release 8.5(1) is a refresh upgrade. A refresh upgrade is required in situations where incompatibilities exist between the old and new software releases. Refresh upgrades require the node to reboot early in the upgrade process, and also require the node to be offline while the new software is installed. When you perform a refresh upgrade, plan your downtime accordingly. The node is offline much longer than in a standard upgrade. A typical refresh upgrade takes between 1 and 4 hours per server, depending on the size of the database.

Before You Begin

Before you begin, ensure that you have completed the [Preupgrade procedures, on page 7](#)

Procedure

- Step 1** Stop all configuration tasks. Do not perform any configuration tasks during the upgrade.
- Step 2** Disable extension mobility for the cluster.
- Step 3** Perform a DRS backup of the current cluster.
- Step 4** If you are upgrading from Release 8.0(2) through Release 8.5(1), complete the following steps:
 - a) Install the refresh upgrade COP files on all nodes.
 - b) Upgrade the publisher node from the current release to Release 9.1(x); choose **run new version** at the completion of the upgrade.
 - c) When the publisher node upgrade is complete, upgrade the dedicated TFTP nodes, followed by the backup subscriber nodes. Choose **run new version** at the completion of the upgrade. For more information, see the *Upgrade Tasks* section in the [Upgrade Guide for Cisco Unified Communications Manager Release 9.1\(1\)](#)

- d) Verify that the database replication for the cluster completed without errors. Use the Cisco Unified Reporting or Cisco Real Time Monitoring Tool (RTMT); for more information, see the *Upgrade Tasks* section of the [Upgrade Guide for Cisco Unified Communications Manager, Release 9.1\(1\)](#).
- e) For each node, shut down the virtual machine and change the Guest OS version to **Red Hat Enterprise Linux 5 (32-bit)**. For more information, see [Release Notes for Unified Communications Manager, Release 9.1\(1\)](#).
- f) Configure the phones and devices in the cluster to use the backup subscriber nodes for registration by changing the order in the Unified Communications Manager group.
- g) Restart the CCM service on the primary subscriber nodes and upgrade them from your current release to Release 9.1(x). Choose **run new version** at the completion of the upgrade. For more information, see the *Upgrade Tasks* section in the [Upgrade Guide for Cisco Unified Communications Manager Release 9.1\(1\)](#)
- h) Proceed to step 6.

Step 5 If you are upgrading from Release 8.6(1) through Release 9.0(1), complete the following steps:

- a) Upgrade the publisher node from your current release to Unified Communications Manager Release 9.1(1) and choose **No** for automatic reboot.
- b) When the publisher node upgrade is complete, upgrade the dedicated TFTP nodes, followed by the backup subscriber nodes and the primary subscriber nodes. Choose **No** for automatic reboot.
- c) Switch the publisher node to the upgraded partition.
- d) Switch the dedicated TFTP node to the upgraded partition.
- e) Switch the backup subscriber nodes to the upgraded partition.
- f) Configure the phones and devices in the cluster to use the backup subscriber nodes for registration by changing the order in the Unified Communications Manager group.
- g) Switch all of the primary subscriber nodes to the upgraded partition.
- h) Verify that the primary subscriber nodes are upgraded and that database replication completed without errors.

Step 6 Verify that database replication is complete between the publisher node and the primary subscriber nodes in the cluster after the upgrade to Release 9.1(x).

Step 7 For each primary subscriber node, shut down the virtual machine and change the Guest OS version to **Red Hat Enterprise Linux 5 (32-bit)**. For more information, see [Release Notes for Unified Communications Manager, Release 9.1\(1\)](#).

Step 8 Configure the phones in the cluster to use the primary subscriber nodes for registration by changing the order in the Unified Communications Manager group. Reset the devices using the device pool in an ordered manner or restart the Unified Communications Manager service on the backup subscriber nodes to allow devices to register with primary subscriber nodes.

At this point, all the IP phones and devices will register with the primary subscriber nodes and continue operation for calls.

Step 9 Install the Release 9.1(x) dial plans and locales as recommended in the [Upgrade Guide for Cisco Unified Communications Manager Release 9.1\(1\)](#).

Step 10 If you changed any database replication timeout values as recommended in the pre-upgrade procedures, restore the timeout to the default value.

Step 11 Enable the extension mobility that you disabled at the beginning of this procedure.

Step 12 Migrate your current licenses to the Release 9.1(x) license. You have 60 days to complete this licensing step. For information about obtaining 9.1(x) licenses, see <https://tools.cisco.com/SWIFT/LicensingUI/Home>.

Step 13 Run your post-upgrade test plan.

Once your test plan is executed successfully, your upgrade is complete.



Rollback procedures

- [Rollback process, page 13](#)

Rollback process

If you encounter an issue during your upgrade and need to rollback to the pre-upgrade version, see [Upgrade Guide for Cisco Unified Communications Manager, Release 9.1\(1\)](#).

If you are reverting your cluster to a release prior to 8.0(x), review the following documents, which explain important security-related changes:

[Migrating IP Phones Between Clusters with CUCM 8 and ITL Files](#)

[Rolling Back the Cluster to a Pre-8.0 Release](#)

When the rollback is completed, execute your test plan again to make sure all services and features are functioning as expected.



Related information

- [Links and references, page 15](#)

Links and references

For additional information, refer to the following documents:

Installation, upgrade, and migration

[Installing Cisco Unified Communications Manager Release 8.0\(2\)](#)

[Installing Cisco Unified Communications Manager Release 8.5\(1\)](#)

[System Installation and Upgrade Manual for IP Telephony, Cisco Unified Communications System Release 9.0\(1\)](#)

[Cisco Unified Communication Manager Release 9.1 Migration and Upgrade Guide](#)

[Upgrade Guide for Cisco Unified Communications Manager, Release 9.1\(1\)](#)

[Cisco Unified Communications Manager on Virtualized Servers](#)

Compatibility

[Supported Servers for Releases of Cisco Unified Communications Manager \(Including Business Edition 3000/5000/6000 and Session Manager Edition\) and Cisco Intercompany Media Engine](#)

Network design and deployment

[Cisco Unified Communications System 9.x SRND](#)

Software downloads

[Download Software Center for Cisco Unified Communications Manager Utilities and COP Files](#)

Licensing

[Enterprise License Manager User Guide 9.1\(1\)](#)

[Cisco Software Licencing Portal Changes Quick Reference Guide](#)

Release information

[Release Notes for Cisco Unified Communications Manager 8.0\(3\)](#)

[Release Notes for Cisco Unified Communications Manager Release 8.5\(1\)](#)

[Release Notes for Cisco Unified Communications Manager, Release 9.1\(1\)](#)

[New and Changed Document for Cisco Unified Communications Manager Release 9.1\(1\)](#)

Release Notes for phone firmware. The [Cisco Unified Communications System Release Summary Matrix for IP Telephony](#) summarizes the phone firmware version recommended with all Cisco Unified Communications Manager releases.

Disaster recovery

[Disaster Recovery System Administration Guide for Release 6.1\(2\)](#)

[Disaster Recovery System Administration Guide for Cisco Unified Communications Manager Release 7.0\(1\)](#)

[Disaster Recovery System Administration Guide for Release 7.1\(2\)](#)

[Disaster Recovery System Administration Guide for Release 8.0\(2\)](#)

[Disaster Recovery System Administration Guide for Release 8.5\(1\)](#)

Troubleshooting

[Database Replication Error in Cisco Unified Communications Manager](#)