



## **High Availability Upgrade Procedure for Cisco Unified Communications Manager Release 7.1(5) to 9.1(x)**

**First Published:** April 26, 2013

### **Americas Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 527-0883

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses used in this document are not intended to be actual addresses. Any examples, command display output, and figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses in illustrative content is unintentional and coincidental.

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <http://www.cisco.com/go/trademarks>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

© 2013 Cisco Systems, Inc. All rights reserved.



## CONTENTS

---

### CHAPTER 1

#### Introduction 1

About high availability upgrades 1

---

### CHAPTER 2

#### Upgrade preparation checklist 3

Licensing 3

Compatibility verification 4

Virtualization requirements 4

Software downloads 5

Configuration and login information 5

Cluster registration 6

Security tokens 6

Test plan 6

Create a backup 7

---

### CHAPTER 3

#### Preupgrade procedures 9

Preupgrade procedures 9

---

### CHAPTER 4

#### Upgrade process 11

Upgrade your current cluster to Release 8.5(1) 11

Virtualize Unified Communications Manager Release 8.5(1) 12

Upgrade your virtualized Release 8.5(1) to Release 9.1(x) 14

---

### CHAPTER 5

#### Rollback procedures 17

Rollback process 17

---

### CHAPTER 6

#### Related information 19

Links and references 19





# Introduction

---

This document provides procedures for performing a high availability upgrade to Cisco Unified Communications Manager (Unified Communications Manager) Release 9.1(x) from Release 7.1(5).

- [About high availability upgrades, page 1](#)

## About high availability upgrades

Perform the upgrade in three stages:

- 1 Upgrade to Unified Communications Manager Release 8.5(1).
- 2 Virtualize Unified Communications Manager Release 8.5(1).
- 3 Upgrade to Unified Communications Manager Release 9.1(x).

The procedures in this document support high availability for all three stages of the upgrade.

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

- Unified Communications Manager Release 7.1(5) is installed.
- None of the current Media Convergence Server (MCS) servers support Unified Communications Manager Release 9.1(x).
- All of the current MCS servers can support an upgrade to Unified Communications Manager Release 8.5(1).
- You require high availability during the upgrade process.
- 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\(1\)](#).





## CHAPTER 2

# 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 5](#)
- [Configuration and login information, page 5](#)
- [Cluster registration, page 6](#)
- [Security tokens, page 6](#)
- [Test plan, page 6](#)
- [Create a backup, page 7](#)

## Licensing

This upgrade procedure requires licenses for Unified Communications Manager 9.1(x) and for Release 8.5(1), which is the intermediate version. The 8.5(1) licensing is required when you upgrade your current cluster to Release 8.5(1) and once again when you virtualize. The licenses required for this upgrade are:

- Unified Communications Manager Release 8.x Software Feature License based on the MCS Server MAC address. Software Feature Licenses apply to major releases of Unified Communications Manager, so you will request a license for Release 8.x.
- Unified Communications Manager Release 8.5(1) Node, Software feature License and device license based on the License MAC for the virtual server.
- Unified Communications Manager Release 9.1(x)

Before you upgrade to Unified Communications Manager Release 9.1(x) from earlier Unified Communications Manager versions, install all previously purchased license files before you begin the upgrade; otherwise, your unclaimed licenses will not be available to your upgraded Unified Communications Manager. You cannot re-install licenses after the upgrade.

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).

Obtain the Unified Communications Manager Release 8.x Software Feature License based on the MCS Server MAC address before you begin the upgrade process. The Unified Communications Manager Release 8.5(1) Licenses will later need to be re-hosted to the License MAC for the virtual server. You can generate the License MAC prior to the upgrade by using the following tool:

[Cisco Unified Communications Answer File Generator](#)

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 8.5(1) upgrade image	<a href="http://software.cisco.com/download/navigator.html?mdfid=268439621&amp;flowid=37562">http://software.cisco.com/download/navigator.html?mdfid=268439621&amp;flowid=37562</a>
Cisco Unified Communications Manager Release 9.1(x) upgrade image	
Phone firmware for Unified Communications Manager Release 9.1(x)	
Cisco Unified Communications Manager Release 8.5(1) device package	
(Optional) Cisco Unified Communications Release 9.1(x) Locale Installer for your local language	
Virtual Server Template (OVA file) for Unified Communications Manager Release 8.5	
Refresh Upgrade COP file for upgrading from Unified Communications Manager Release 8.5(1) to Unified CM Release 9.1(x)	
Cisco Unified Communications Manager Recovery software for your current Unified Communication Manager release	
Bootable version of Unified Communications Manager Release 8.5(1) from which to create the virtualized Unified Communications Manager nodes	

## 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](#).

Create a backup



## Preupgrade procedures

---

This section provides the following information:

- [Preupgrade procedures, page 9](#)

## 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** Ensure that the device name for the Cisco Unified Mobile Communicator device contains a maximum of 15 characters. For more information, see the [Command Line Interface Guide for Cisco Unified Communications Solutions](#).
- Step 6** 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

---

Cisco Unified Communications Manager supports virtualization from Releases 8.0(2) and higher. Unified Communications Manager Release 8.5(1) is the interim release for migration purposes and you should upgrade to Unified Communications Manager Release 9.1(x) as soon as possible.

Use the following procedures to complete the upgrade process:

- [Upgrade your current cluster to Release 8.5\(1\), page 11](#)
- [Virtualize Unified Communications Manager Release 8.5\(1\), page 12](#)
- [Upgrade your virtualized Release 8.5\(1\) to Release 9.1\(x\), page 14](#)

### Upgrade your current cluster to Release 8.5(1)

Use the following procedure to upgrade from Unified Communications Manager Release 7.1(5) to Release 8.5(1):

#### Before You Begin

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

#### 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 your current cluster.
- Step 4** Upgrade the publisher node to Unified Communications Manager Release 8.5(1) and choose **No** for automatic reboot.
- Step 5** Upgrade each subscriber node and each utility node in the cluster, such as dedicated TFTP nodes and dedicated music-on-hold servers; choose **No** for automatic reboot.
- Step 6** Switch the publisher node to the upgraded partition and install the **Software Feature license**. To receive the Software Feature License, register the Product Authorization Key (PAK) that you received, along with the Unified Communications Manager upgrade kit. See <http://www.cisco.com/go/license> to obtain the license for your MCS server.

- Step 7** Install the device package that corresponds to Release 8.5(1). If the publisher node is also your TFTP server, restart the TFTP service.
- Step 8** Switch the dedicated TFTP nodes to the upgraded partition.
- Step 9** Install the device package that corresponds to Release 8.5(1) and restart the TFTP service on the dedicated TFTP servers.
- Step 10** Switch the backup subscriber nodes to the upgraded partition.
- Step 11** When the switch to the upgraded partition is complete for the publisher node, the TFTP node, and the backup subscriber nodes, 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\(1\)](#).
- Step 12** 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, or by using device pools.
- Step 13** Switch all of the primary subscriber nodes to the upgraded partition.  
At this point, all the IP phones and devices will register with the backup subscriber nodes on Release 8.0(3) and continue operation for calls.
- Step 14** Verify that the primary subscriber nodes are upgraded and that database replication completed with no errors.
- Step 15** Configure the phones and devices 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 the primary subscriber nodes.  
At this point, all the IP phones and devices will register with the primary subscribers and continue operation for calls.
- Step 16** Run your post-upgrade test plan.  
At this point, the entire cluster is running on the upgraded Unified Communications Manager Release 8.0(3) on MCS servers.
- Step 17** Perform a Disaster Recovery System (DRS) backup up of your entire cluster now that it is upgrade to Unified Communications Manager Release 8.5(1).
- 

### What to Do Next

Proceed to [Virtualize Unified Communications Manager Release 8.5\(1\)](#), on page 12.

## Virtualize Unified Communications Manager Release 8.5(1)

To virtualize your Unified CM Release 8.5(1) prior to upgrading to Unified CM Release 9.1(x), perform the following steps:

### Procedure

---

- Step 1** Stop all configuration tasks. Do not perform any configuration tasks during the upgrade.
- Step 2** For every node in your cluster, create virtual machines using the Virtual Server Template (OVA file) recommended for Unified Communications Manager Release 8.5.  
Cisco recommends that you deploy the same OVA file throughout your entire cluster. There are two different releases of OVA files available. 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 environment in which the virtualized UC applications will be deployed.

- Step 3** Shut down your existing MCS publisher node and install it using the same IP Address, hostname, and security password as a virtual machine on a UCS server.
- Step 4** Restore the Unified Communications Manager Release 8.5(1) data on the virtual Communications Manager Release 8.5(1) publisher node.
- Step 5** Transfer the physical MAC license from the MCS to the virtualized license MAC on the new UCS using the steps described in "Obtaining New Licenses" in [Cisco Unified Communications Manager on virtualized servers](#). Re-host the new license on the virtual machine.  
At this point, only the Unified Communications Manager Release 8.5(1) publisher node is running in virtualized mode.
- Step 6** Install the device package that corresponds to Release 8.5(1) and restart the TFTP service on the dedicated TFTP servers.
- Step 7** To minimize the downtime for phone services, **reboot the remaining Unified CM nodes** starting with the TFTP nodes, followed by all the backup Unified Communications Manager nodes. Verify that the backup subscriber nodes are functional and database replication from the publisher node to the backup subscriber nodes is functioning. For more information, see the *Upgrade Tasks* section in the [Upgrade Guide for Cisco Unified Communications Manager, Release 9.1\(1\)](#).
- Note** You must reboot the remaining nodes in the cluster to synchronize the database with the virtualized Unified CM publisher after a DRS restore.
- Step 8** Reboot all of the primary subscriber nodes.  
At this point, all the IP phones and devices will switch registrations to the secondary subscriber nodes and continue operation for calls. The TFTP nodes and subscriber nodes running on MCS servers have a publisher that is the only server that is running in a virtualized mode.
- Step 9** Shut down and then replace each Unified Communications Manager node in the order recommended in [Replace a Single Server or Cluster for Cisco Unified Communications Manager Release 9.1\(1\)](#). Start with the TFTP nodes, and then proceed to replace all the backup subscriber nodes.
- Step 10** Install each Unified Communications Manager node as virtual machine on UCS servers using the same IP Addresses, hostnames, and security passwords as on your MCS servers.
- Step 11** Restore Unified Communications Manager data on each virtualized node and reboot each one.
- Step 12** Verify that database replication is complete between the virtualized publisher node, the virtualized TFTP nodes, and the virtualized backup subscriber nodes running on UCS servers.
- Step 13** Configure the phones in the cluster to use the backup subscriber nodes for registration by changing the order in the Unified Communications Manager group.
- Step 14** Shut down all of the primary subscriber nodes.  
At this point, all of the IP phones and devices will switch registrations to the secondary subscriber nodes and continue operation for calls.
- Step 15** Install all of the primary subscriber nodes as virtual machines on UCS servers using the same IP Addresses, hostnames, and security passwords as on your MCS servers.
- Step 16** Restore Unified Communications Manager data on each virtualized primary subscriber node and reboot all primary subscriber nodes. Verify that database replication completed without errors between virtualized primary subscriber nodes and the virtualized publisher nodes.
- Step 17** 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 the 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 18** If you have a secure cluster, update the CTL files. For more information, see the *Update CTL File* section in [Cisco Unified Communications Manager Security Guide, Release 9.0\(1\)](#).
- Step 19** Reinstall the COP file enablers for any custom device types that do not ship with Unified Communications Manager. For more information, see the [Upgrade Guide for Cisco Unified Communications Manager, Release 9.1\(1\)](#).
- Step 20** (Optional) Reinstall any locales that were installed on the Unified Communications Manager. For more information, see the [Upgrade Guide for Cisco Unified Communications Manager, Release 9.1\(1\)](#).
- Step 21** Run your post-upgrade test plan.  
At this point, the entire Unified Communications Manager Release 8.5(1) cluster is virtualized on UCS servers.
- Step 22** Backup your virtualized Unified Communications Manager Release 8.5(1) running on UCS servers.
- 

### What to Do Next

Proceed to [Upgrade your virtualized Release 8.5\(1\) to Release 9.1\(x\)](#), on page 14

## Upgrade your virtualized Release 8.5(1) to Release 9.1(x)

Use the following procedure to upgrade from virtualized Unified Communications Manager Release 8.5(1) to Release 9.1(x).

The upgrade from Release 8.5(1) to Release 9.1(x) 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 an L2 upgrade. A typical refresh upgrade takes between 1 and 4 hours per server, depending on the size of the database.

## Procedure

---

- Step 1** Stop all configuration tasks. Do not perform any configuration tasks during the upgrade.
- Step 2** Install the refresh upgrade COP files on all nodes.
- Step 3** Upgrade the publisher node from Unified Communications Manager Release 8.5(1) to Release 9.1(x); choose **run new version** at the completion of the upgrade.
- Step 4** Shut down the publisher node and change the virtual machine 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 5** When the publisher node OS 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\(1\)](#).
- Step 6** Shut down the virtual machine and change the Guest OS version to **Red Hat Enterprise Linux 5 (32-bit)** starting with the dedicated TFTP nodes, followed by the backup subscriber nodes. For more information, see [Release Notes for Unified Communications Manager, Release 9.1\(1\)](#).
- Step 7** Verify that database replication is complete between the publisher node and TFTP nodes and the backup subscriber nodes in the cluster after the upgrade to Release 9.1(x).
- Step 8** Configure the phones in the cluster to use the backup subscriber nodes for registration by changing the order in the Unified Communications Manager group. Restart the Cisco Call Manager service on all the primary subscriber nodes.  
At this point, all the IP phones and devices will switch registrations to the secondary subscriber nodes on Release 9.1(x) and continue operation for calls.
- Step 9** Upgrade the primary subscriber nodes, and 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\(1\)](#).
- Step 10** Shut down and change the virtual machine Guest OS version to **Red Hat Enterprise Linux 5 (32-bit)** for all the primary Unified CM Subscriber(s). For more information, see [Release Notes for Unified Communications Manager, Release 9.1\(1\)](#).
- Step 11** 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 12** 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 13** 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 14** If you changed any database replication timeout values as recommended in the pre-upgrade procedures, restore the timeout to the default value.  
At this point, the entire virtual Unified Communications Manager cluster is on Release 9.1(x) on UCS servers.

- Step 15** Enable extension mobility for the cluster.
- Step 16** Migrate your current Release 8.5(1) 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 17** Run your post-upgrade test plan.  
Once your test plan is executed successfully, your upgrade is complete.
-



## Rollback procedures

---

- [Rollback process, page 17](#)

### 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 19](#)

## 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](#)