



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

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## Preface

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- [Related documentation, page xi](#)
- [Documentation and service requests, page xi](#)

## Overview

This document provides installation and upgrade information about the IP telephony components and configurations that have been tested and verified as a part of Cisco Unified Communications System testing. It consists of two parts:

- Part 1: System installation for IP telephony—Describes the system-level procedures used to install IP telephony components in Cisco Unified Communications System Release 9.0(1).
- Part 2: System upgrade for IP telephony—Describes the system-level procedures used to upgrade software and hardware components in the IP telephony environment from Cisco Unified Communications Release 8.6(1) to Cisco Unified Communications Release 9.0(1).

This document also includes information related to compatibility, upgrade paths between releases, and upgrade strategies for different sized network installations. It discusses the upgrade sequence for individual test sites emphasizing the order in which the components are to be upgraded and provides references to installation and upgrade documentation for individual components.



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**Note**

Many of the IP telephony component names have changed as part of Cisco Unified Communications System releases. The latest product names are used in this document, even when referencing products from previous releases.

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# Audience

This document is intended for system administrators who are familiar with various hardware and software components included in Cisco Unified Communications System family of IP telephony products. Readers should have the technical and product knowledge to install, configure, manage, and troubleshoot the system described.

# Organization

This document is organized as follows:

Chapter	Description
Part 1: System installation for IP telephony	
<a href="#">System Installation Planning, on page 3</a>	Provides an overview of the system installation, a list of components in a typical IP telephony environment, and different installation strategies.
<a href="#">Preparation for System Installation, on page 15</a>	Discusses the general approach for the installation of IP telephony components, installation release set versions, and software dependencies and considerations.
<a href="#">Performing Your System Installation, on page 29</a>	Provides information about the installation order and process for all IP telephony components that are configured in specific deployment models.
Part 2: System upgrade for IP telephony	
<a href="#">System Upgrade Planning, on page 49</a>	Provides an overview of the system upgrade requirements, the targeted release versions involved in the upgrade process, and upgrade paths and strategies.
<a href="#">System Upgrade Preparation, on page 67</a>	Discusses the general upgrade approach for the different IP telephony components, upgrade release versions, and software compatibility considerations.
<a href="#">System Upgrade, on page 81</a>	Contains information on the upgrade order for all IP telephony components, including North America and Europe and Emerging Market, configured in specific deployment models for Cisco Unified Communications Release 9.0(1).

## Related documentation

The Cisco Unified Communications solution provides a suite of interactive documentation that covers details about system architecture and components, installation and upgrade information, troubleshooting, topology diagrams, and related information. You can access this information from:

<http://www.cisco.com/go/unified-techinfo>

You can access sites specific to IP Telephony or contact center system applications for Cisco Unified Communications System Release 9.0(1) at:

- Cisco Unified Communications System for IP Telephony Release 9.0(1) at:  
<http://www.cisco.com/cisco/web/docs/iam/unified/ipt901/index.html>
- Cisco Unified Communications System for Contact Center Release 9.0(1) at:  
<http://www.cisco.com/cisco/web/docs/iam/unified/ipcc901/index.html>

## Documentation and service requests

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feed is a free service and Cisco currently supports RSS Version 2.0.





## **PART**

# **System Installation for IP Telephony**

- [System Installation Planning, page 3](#)
- [Preparation for System Installation, page 15](#)
- [Performing Your System Installation, page 29](#)





## CHAPTER

# 1

## System Installation Planning

This chapter provides an overview of the installation processes for IP telephony components. It describes the types of installations, provides an overview of components that are included in the release sets, and describes various installation strategies.



### Note

Many of the IP telephony component names have changed as part of Cisco Unified Communications System releases. The latest product names are used in this document, even when referencing products from previous releases.

- [Cisco Unified Communications System Overview, page 3](#)
- [Scope of this Installation Documentation, page 4](#)
- [System Installation Overview, page 5](#)
- [System Installation Strategies, page 12](#)
- [Interoperability and Compatibility Portals, page 13](#)

## Cisco Unified Communications System Overview

The Cisco Unified Communications System is a full-featured business communications system built into an intelligent IP network. It enables voice, data, and video communications for businesses of all sizes. The Cisco Unified Communications System in this document is defined around commonly deployed business topology models in North America and European and Emerging Markets (EUEM). The Cisco Unified Communications System testing process validates the interoperability of voice products to ensure that they work together as an integrated system.

Cisco Unified Communications System provides an integrated system to meet a wide variety of customer needs. Cisco Unified Communications refers to the entire range of specific Cisco IP Communications products including all call control, conferencing, voicemail and messaging, customer contact, IP phone, video telephony, video conferencing, rich media clients, and voice application products. These products and applications are designed, developed, tested, documented, sold, and supported as an integrated system. Cisco Unified Communications System for enterprise is built upon IP telephony products that centers around the core call processing component, Cisco Unified Communications Manager. Cisco Unified Communications System for

midmarket is built upon IP telephony products that center around the call processing component, Cisco Business Edition.

## Scope of this Installation Documentation

The installation procedures that are described in this document are intended to provide a high-level guide to installing the Cisco Unified Communications System. This document provides installation information from a system perspective and only for products that are part of Cisco Unified Communications System Release 9.0(1).

The Cisco Unified Communications IP telephony systems should meet the following basic characteristics and requirements:

- A deployment that is based on Cisco recommendations and guidelines for network design and architecture
- A new greenfield or a legacy system deployment, as described in the [Installation Types](#), on page 5 section.
- An installation of Cisco Unified Communications System, not an upgrade from previous software versions. This topic only provides information related to installing components that are present in the Cisco Unified Communications System. See [Release Set Versions](#), on page 19 for more information.




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**Note** If you have a legacy system with PBXs and other products that need to interoperate with the Cisco Unified Communications System, see [Interoperability and Compatibility Portals](#), on page 13.

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Due to the variety of options and complexity of procedures required to set up an IP telephony system completely, this document does not provide installation or configuration procedures for:

- Individual standalone components and features of the components




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**Note** Installation and configuration information for an individual component is available in the product level documentation set for that component.

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- Third-party coresident applications, such as antivirus, security, server management, and remote access
- Additional third-party off-board applications such as operator console, and billing and accounting
- Server replacement (hardware installation) for components. For information on how to replace a single server or an entire cluster for Cisco Unified Communications Manager Release 9.0(1), see:

[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cucm/install/8\\_6\\_1/cluster/clstr861.html](http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/install/8_6_1/cluster/clstr861.html)

For information on supported Cisco 7800 Series Media Convergence Servers and Unified Computing System B-series servers, see: [http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod\\_brochure\\_list.html](http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod_brochure_list.html)

Refer to product-specific installation documents to perform the installation and configuration of the IP telephony products.

- Cisco Unified Communications on the Cisco Unified Computing System Solution Overview:



[http://www.cisco.com/en/US/prod/collateral/voicesw/ps6790/ps5748/ps378/solution\\_overview\\_c22-597556.html](http://www.cisco.com/en/US/prod/collateral/voicesw/ps6790/ps5748/ps378/solution_overview_c22-597556.html)

- Product-specific installation documentation for all Cisco voice products is available at:  
<http://www.cisco.com/cisco/web/psa/default.html?mode=prod>
- List of URLs for component-specific installation and configuration documents for all IP telephony components in Cisco Unified Communications System Release 9.0(1) are available at:  
[http://www.cisco.com/cisco/web/docs/iam/unified/ipt901/Component\\_Installation\\_and\\_Configuration\\_Guides.html](http://www.cisco.com/cisco/web/docs/iam/unified/ipt901/Component_Installation_and_Configuration_Guides.html)
- Links to configuration information for IP telephony components tested in the Cisco Unified Communications System Release 9.0(1) are available at:  
[http://docwiki.cisco.com/wiki/Category:Unified\\_Communications\\_System\\_Implementation](http://docwiki.cisco.com/wiki/Category:Unified_Communications_System_Implementation)

### Related Topics

[Preparation for System Installation, on page 15](#)

[Interoperability and Compatibility Portals, on page 13](#)

[Related Documentation, on page 41](#)

[Performing Your System Installation, on page 29](#)

## System Installation Overview

### Installation Types

When installing and creating an IP telephony environment, consider the following deployment types:

- Greenfield deployment—A completely new installation of Cisco Unified Communications System, using no existing equipment.
- Legacy deployment—A new installation of Cisco Unified Communications System combined with existing legacy equipment, such as TDM PBXs and third-party adjuncts, which may require long-term co-existence and integration or eventual migration to new installation.
- Installed base (*brownfield* deployment)—An existing Cisco Unified Communications System, which requires an upgrade and migration from a previous system release to current system release. For more information about upgrading an existing installed base, see the upgrade chapters in this document.




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**Note** When performing upgrades, be aware of backward compatibility issues such as co-existence and interoperability with previous system release versions.

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### Release Sets

A release set is defined as the combination of products, components, and software versions that were tested to work together as an integrated Cisco Unified Communications System. A particular system release is also referred to as a release set.

## Legacy Deployment and Installed Base Release Sets

If you are dealing with a legacy or brownfield deployment, be aware of interoperability issues between legacy and existing component versions and Cisco Unified Communications System Release 9.0(1) component versions.

You can verify a previous system release set by product release version in a summary matrix. Use the following links if you are unfamiliar with the versions of release sets deployed in IP telephony environments:

- Cisco Unified Communications System Release Summary Matrix for IP Telephony:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/uc\\_system/unified/communications/system/versions/IPTMtrix.html](http://www.cisco.com/en/US/docs/voice_ip_comm/uc_system/unified/communications/system/versions/IPTMtrix.html)
- IP Communications System Test Release:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/uc\\_system/GB\\_resources/ipcmatrix.htm](http://www.cisco.com/en/US/docs/voice_ip_comm/uc_system/GB_resources/ipcmatrix.htm)

### Related Topics

[Interoperability and Compatibility Portals](#), on page 13

## Greenfield Deployment Release Set

If you are dealing with a greenfield deployment, be aware that certain features, applications, and components are part of Cisco Unified Communications System Release 9.0(1) family of products and have been tested and verified for interoperability and compatibility.

Based on your specific network design, you may choose to install all or some of these features, applications, and components.

For information about the Cisco Unified Communications System Release 9.0(1) IP telephony components and their software and firmware versions, see [Release Set Versions](#), on page 19.

### Related Topics

[Component Installation Overview](#), on page 7

## System Installation Roadmap

The following table provides an overview of tasks that are performed during the installation of Cisco Unified Communications System.

**Table 1: Overview of Installation Tasks**

	Task	Remarks
Step 1	Perform preinstallation tasks.	Refer to the tasks that are described in the individual product installation documents.
Step 2	Install and configure network infrastructure.	Install and cable the hardware.
Step 3	Install and configure the software for the components to enable functionality between the installed components.	

	Task	Remarks
Step 4	Initialize installed components and ensure that components are functional.	<ol style="list-style-type: none"> <li>1 Applications at the system level (such as cold start, elapse time)</li> <li>2 Each application at node level</li> </ol>
Step 5	Perform verification and validation testing to ensure that installed components interoperate.	—
Step 6	Integrate Cisco and third-party or legacy components and ensure interoperability.	Refer to the tasks that are described in the individual product installation documents.
Step 7	Perform postinstallation tasks	

### Related Topics

- [Before You Begin, on page 15](#)
- [Performing Your System Installation, on page 29](#)
- [Preparation for System Installation, on page 15](#)
- [Postinstallation Tasks, on page 40](#)

## Component Installation Overview

The Cisco Unified Communications System IP telephony environment consists of these primary software components:

- Call processing—Unified Communications Manager, Unified Communications Manager Express, Unified SRST
- Communications—Cisco Emergency Responder, Cisco Unified Contact Center Express
- Messaging—Cisco Unity Connection, Cisco Unity Express
- Instant Messaging and Presence— Cisco Unified Communications Manager IM and Presence Service (formerly Cisco Unified Presence)
- Conferencing—Cisco Unified MeetingPlace, Cisco Unified Videoconferencing
- System Management—Cisco Unified Operations Manager, Cisco Unified Service Monitor, Cisco Unified Service Statistics Manager, Cisco Unified Provisioning Manager, LAN Management Solution
- Virtualization—VMware vSphere, VMware ESXi, VMware vCenter Server, Cisco UCS 2104XP Fabric Extender, Cisco UCS 6100 Series Fabric Interconnect, Cisco UCS 5108 Blade Server Chassis, Cisco UCS C-Series servers

In addition, the following Cisco hardware and software products are required for a complete IP telephony deployment:

- Cisco Unified IP Phones, Cisco IP Communicator, Cisco Unified Personal Communicator
- Cisco gateways, gatekeepers, Cisco Unified Border Element

- Cisco LAN/WAN infrastructure and components
- Cisco security components

The following table provides an overview of primary components in Cisco Unified Communications System Release 9.0(1) product family that can be installed and configured in IP telephony environments.

**Note**

Cisco Unified Communications System IP telephony components listed in the following table are for enterprise business models. Not all these components are required for midmarket business models.

**Table 2: System Installation Overview for Cisco Unified Communications System IP Telephony Components**

Component/Application/Feature	Purpose
<b>Communications Infrastructure and Wireless Components</b>	
Switches and routers	Cisco switches and routers provide switching and intelligent routing services that can deliver voice, video, data and Internet access, wireless, and other applications. They can also provide high-speed connectivity between users, applications, and communications systems.
Gateways and gatekeepers	Cisco gateways and gatekeepers are optimized for data, wireless, and IP communications. They support IP-to-IP connectivity between independent voice-over-IP (VoIP) networks and analog phone gateways using your existing phone equipment.
Firewall and security components	Security components include firewall and policy enforcement services, antivirus software, and domain and web server hardening.  Firewall allows any port on the device to operate as a firewall port and integrates firewall security inside the network infrastructure.  Policy enforcement services can protect networks from unauthorized access. These services combine with VPN services to enable businesses to securely extend their networks to business partners, remote sites, and mobile workers.
Wireless components	Wireless components provide for secure, scalable, cost-effective WLANs with real-time access to instant messaging, email, and network resources.
System network management applications	These applications provide the means to monitor, manage, and troubleshoot the Cisco Unified Communications System.  For example, Unified Operations Manager provides comprehensive monitoring and diagnostics for the entire system. It performs automatic discovery of the entire system and provides contextual diagnostics for rapid troubleshooting.
<b>Cisco Unified Communications Manager and Call Processing Components</b>	

<b>Component/Application/Feature</b>	<b>Purpose</b>
Cisco Unified Communications Manager	Unified Communications Manager provides the call-processing functionality to Cisco Unified Communications IP telephony networks.
Cisco Unified Communications Manager Services	There are a variety of services on the publisher, subscribers, and TFTP servers that are essential for call processing in the Unified Communications Manager cluster.
Cisco Unified Communications Manager Express	Cisco Unified Communications Manager Express provides call-processing functionality for small sized businesses
Cisco Unified IP Phones (SCCP and SIP)	Use methods such as auto-registration and Bulk Administration Tool (BAT) to install and configure Unified IP Phones and to add them to Unified Communications Manager database.
Virtualization Experience Clients	The Cisco Virtual Experience Infrastructure (VXI) system integrates virtualized data centers, networks, and endpoints with desktop virtualization services for comprehensive media, security, and performance acceleration.
Cisco TelePresence EX90	The Cisco TelePresence EX90 for the desktop is a video endpoint that provides a simple and efficient collaborative solution.
Install and configure Cisco IP Communicator	Cisco IP Communicator is a software-based application that delivers enhanced telephony support through desktop. It is designed to meet diverse customer needs by serving as a supplemental telephone when traveling, a telecommuting device, or as a primary desktop telephone.
Conferencing applications	Cisco Unified MeetingPlace provides intuitive interfaces for setting up, attending and managing meetings. Extensive voice, video using Cisco Unified Videoconferencing and web conferencing capabilities enable a range of meeting applications, including highly collaborative meetings, training sessions, and presentations.
Cisco Unified Communications Manager cluster (integration with switches, routers, gateways, gatekeepers, and Cisco Unified Communications Manager Telephony client	Install the Unified Communications Manager Telephony client on the Cisco Unified Contact Center Express system to enable communication with Unified Communications Manager cluster.
Voice Mail and Unified Messaging components	These applications combine voice messaging, integrated messaging, speech recognition capabilities, and call-routing rules. The applications include Cisco Unity Connection, and Cisco Unity Express.
Presence application	Cisco Unified Communications Manager IM and Presence Service (formerly Cisco Unified Presence) links the various knowledge within each application to provide a ubiquitous and broad view of a defined user within the Cisco Unified Communications System.

Component/Application/Feature	Purpose
Mobility components	Wireless and mobility components provide services that enable secure, scalable, methods to real-time access to instant messaging, email, and network resources. Some examples of these components are Cisco Unified Mobility Advantage, and Cisco Unified Mobile Communicator.
Cisco Unified Computing System	<p>The Cisco Unified Computing System (UCS) is a data center platform that unites computing, networking, storage access, and virtualization into a cohesive system and integrates a low-latency, lossless 10 Gb Ethernet unified network fabric with enterprise-class, x86-architecture servers.</p> <p>It includes products such as blade servers, network adapters, blade server chassis, fabric interconnect and extenders and UCS Manager, which provides centralized management capabilities for the Cisco Unified Computing System.</p>

### Related Topics

[Component Installation Overview for Cisco Business Edition, on page 10](#)

## Component Installation Overview for Cisco Business Edition

The Cisco Unified Communications System IP telephony environment for midmarket consists of these primary software components:

- Call processing—Cisco Business Edition, Unified SRST
- Communications—Cisco Unified Contact Center Express
- Messaging—Cisco Unity Connection
- Instant Messaging and Presence—Unified Communications Manager IM and Presence Service

In addition, the following Cisco hardware and software products are required for a complete IP telephony deployment:

- Cisco Unified IP Phones, Cisco IP Communicator, Cisco Unified Personal Communicator
- Cisco gateways and gatekeepers
- Cisco LAN/WAN infrastructure and components
- Cisco security components

The following table provides a an overview of primary components in the Cisco Unified Communications System Release 9.0(1) product family that can be installed and configured in IP telephony midmarket environments.

**Table 3: System Installation Overview for Cisco Unified Communications System IP Telephony Components for Midmarket Businesses**

Component/Application/Feature	Purpose
<b>Communications Infrastructure and Wireless Components</b>	
Switches and routers	Cisco switches and routers provide switching and intelligent routing services that can deliver voice, video, data and Internet access, wireless, and other applications. They can also provide high-speed connectivity between users, applications, and communications systems.
Gateways and gatekeepers	Cisco gateways and gatekeepers are optimized for data, wireless, and IP communications. They support IP-to-IP connectivity between independent voice-over-IP (VoIP) networks and analog phone gateways using your existing phone equipment.
Firewall	Allows any port on the device to operate as a firewall port and integrates firewall security inside the network infrastructure.
<b>Cisco Business Edition and Call Processing Devices</b>	
Cisco Business Edition	Cisco Business Edition (includes Cisco Unified Communications Manager and Cisco Unity Connection) provides call-processing functionality for midmarket businesses. It integrates call-processing, conferencing, mobility, and messaging on a single platform and eliminates the need for multiple servers to run each application.
Cisco Unified IP Phones (SCCP and SIP)	Use methods such as auto-registration and Bulk Administration Tool (BAT) to install and configure Unified IP Phones and to add them to Unified Communications Manager database.
Virtualization Experience Clients	The Cisco Virtual Experience Infrastructure (VXI) system integrates virtualized data centers, networks, and endpoints with desktop virtualization services for comprehensive media, security, and performance acceleration.
Cisco TelePresence EX90	The Cisco TelePresence EX90 for the desktop is a video endpoint that provides a simple and efficient collaborative solution.
Conferencing applications	Cisco Unified MeetingPlace provides intuitive interfaces for setting up, attending and managing meetings. Extensive voice, video using Cisco Unified Videoconferencing and web conferencing capabilities enable a range of meeting applications, including highly collaborative meetings, training sessions, and presentations.
Cisco Unity Connection	These applications combine voice messaging, integrated messaging, speech recognition capabilities, and call-routing rules. Cisco Unified Communications Manager Business Edition includes Cisco Unity Connection.

Component/Application/Feature	Purpose
Presence application	Cisco Unified Communications Manager IM and Presence Service (formerly Unified Presence) links the various knowledge within each application to provide a ubiquitous and broad view of a defined user within Cisco Unified Communications System.
Cisco Unified Business Attendant Console	The Cisco Unified Business Attendant Console uses a powerful queuing engine to direct the calls to the operator and provides the operator several monitoring features to help ensure that incoming calls are handled efficiently.

For installation information on Cisco Unified Communications System Release 9.0(1) for contact center components, see the following:

- System Installation and Upgrade for Contact Center: [http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/uc\\_system/UC9.0.1/cc\\_system\\_inst\\_upg/VTGS\\_BK\\_SDA92D62\\_00\\_system-install-manual-contact-center.pdf](http://www.cisco.com/en/US/docs/voice_ip_comm/uc_system/UC9.0.1/cc_system_inst_upg/VTGS_BK_SDA92D62_00_system-install-manual-contact-center.pdf)

## System Installation Strategies

This section describes the installation strategies that can be used for an IP telephony deployment. Details of individual components installations are not described unless additional information or clarification is required.

Installation of new networks in Cisco Unified Communications IP telephony environments (using new hardware) is supported via a *flash-cut* or a *shrink-and-grow* approach.

### Single-Stage Installation Using New Hardware (Greenfield Deployments)

A completely new network is built using the components and software versions in the current Cisco Unified Communications System release set. The new system becomes operational when it is turned on after the required software is installed and initial configuration is completed.

### Single-Stage Installation Using New Hardware (Legacy Deployments)

A new network using components and software versions in the current Cisco Unified Communications System release set is built alongside the legacy network. The new network is staged and configured to support the production environment.

All users should be migrated from the existing legacy network to the new network in a single installation window using a flash-cut installation process. Because interoperability with the legacy system is not required, components of the legacy system do not need to be upgraded. After all users are moved to the newly installed system, the legacy system is decommissioned.



## Multistage Installation Using New Hardware (Legacy Deployments)

A new network using components and software versions in the current Cisco Unified Communications System release set is built alongside the legacy network. The new network is staged and configured to support the production environment.

This strategy uses either a flash-cut or shrink-and-grow installation process or a combination of both to:

- Deploy all the applications in one installation window (flash-cut) or in several installation windows (shrink-and-grow).
- Migrate all the users in one installation window (flash-cut) or in multiple installation windows (shrink-and-grow).

After all users have been moved to the newly installed system, the legacy system is decommissioned.

## Multisite Phased Installation

For large enterprises with many sites, you can install one site at a time in multiple phases. Depending on whether it is a greenfield or legacy deployment, within each site, you can either employ the single-stage or multistage installation strategies described in this section.

## Interoperability and Compatibility Portals

For information about support for legacy products and third-party product interoperability with Cisco IP telephony products, see the Cisco Interoperability Portal at:

<http://www.cisco.com/go/interoperability>

For detailed information about the compatibility with Unified Communications Manager and Cisco Unified Contact Center Express, see the following sites:

- Cisco Unified Communications Compatibility Tool:  
<http://tools.cisco.com/ITDIT/vtgsca>
- Cisco Unified Communications Manager Compatibility Information: [http://www.cisco.com/en/US/products/sw/voicew/ps556/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/products/sw/voicew/ps556/products_device_support_tables_list.html)
- *Cisco Unified Contact Center Express Software and Hardware Compatibility Guide*:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cust\\_contact/contact\\_center/crs/express\\_compatibility/matrix/crscomtx.pdf](http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/crs/express_compatibility/matrix/crscomtx.pdf)
- *Cisco Unified Communications Manager Express and Cisco IOS Software Version Compatibility Matrix*:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cucme/requirements/guide/33matrix.htm](http://www.cisco.com/en/US/docs/voice_ip_comm/cucme/requirements/guide/33matrix.htm)
- Cisco Computer Telephony Integration Option: CTI Compatibility Matrix:  
[http://www.cisco.com/en/US/products/sw/custcosw/ps14/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps14/prod_technical_reference_list.html)  
Cisco 7800 Series Media Convergence Servers: [http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod\\_brochure\\_list.html](http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod_brochure_list.html)
- UCS and MCS Server Models Supported by Cisco Unified Communications Manager Releases

[http://www.cisco.com/en/US/prod/collateral/voicesw/ps6790/ps5748/ps378/prod\\_brochure0900aecd8062a4f9.html](http://www.cisco.com/en/US/prod/collateral/voicesw/ps6790/ps5748/ps378/prod_brochure0900aecd8062a4f9.html)

- Cisco Unified Communications Virtualization (including links to UCS hardware information):  
[www.cisco.com/go/uc-virtualized](http://www.cisco.com/go/uc-virtualized)

- Cisco Unified Communications System Release Summary Matrix for IP telephony:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/uc\\_system/unified/communications/system/versions/IPTMtrix.html](http://www.cisco.com/en/US/docs/voice_ip_comm/uc_system/unified/communications/system/versions/IPTMtrix.html)



## CHAPTER 2

# Preparation for System Installation

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This chapter provides information that you should review before you install Cisco Unified Communications System. It describes preinstallation tasks and initial installation sequence. It also lists the components in the release set and provides information regarding deployment of various components.



### Note

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Many of the IP telephony component names have changed as part of Cisco Unified Communications System releases. The latest product names are used in this document, even when referencing products from previous releases.

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- [Before You Begin](#), page 15
- [System Installation Approach](#), page 17
- [Release Set Versions](#), page 19
- [System Installation Dependencies](#), page 27

## Before You Begin

Before you install Cisco Unified Communications System, make sure to perform the following activities, which are on the Cisco Systems product deployment and lifecycle model.



### Note

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See Cisco Unified Communications System Technical Information Site at: <http://www.cisco.com/go/unified-techno> for a comprehensive system-level deployment and lifecycle model information.

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### Prepare and Plan Phase

- Review preinstallation planning guidelines from Steps to Success at: <http://www.cisco.com/web/partners/tools/steps-to-success/index.html>
- Understand your business and technical requirements such as call flows, capacity and critical features, and incumbent dependencies.

- Consider integration issues for legacy and third-party products. See [System Installation Overview](#), on page 5 in Chapter 1.
- Assess your services and support strategy for training and lifecycle support.
- Assess system passwords requirements and create a password synchronization and maintenance strategy.

### Design Phase

- Develop a high-level and low-level design, including product and component selections appropriate for your needs.
- Use the recommendations provided in the Cisco Solution Reference Network Design (SRND) documents at: <http://www.cisco.com/go/srnd>.
- Become familiar with Cisco Unified Communications System Release 9.0(1) components and subsystems in the Cisco Unified Communications System 9.x SRND:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cucm/srnd/9x/uc9x.html](http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/srnd/9x/uc9x.html)
- Review system architecture and testing information for IP telephony systems at:  
<http://www.cisco.com/cisco/web/docs/iam/unified/ipt901/index.html>



#### Note

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The results obtained from conducting the tasks in the prepare, plan, and design phases indicate which Cisco Unified Communications System components apply to your business requirements and should be part of your deployment.

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### Implement Phase

- Confirm the design and special feature considerations developed during the design phase.
- Develop an implementation plan and a migration or integration strategy.



#### Note

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The implementation plan derived from the implement phase should drive the staging, phases, and deadlines of the system installation.

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- Review preinstallation and planning documents, such as site surveys, equipment lists, and product-specific documents.
- Conduct hardware installation and verification tasks such as:
  - Catalog and inventory equipment
  - Rack mount equipment
  - Complete cabling and other physical connectivity
  - Verify that all units power up correctly
  - Capture rack layout, cabling, port-specific details, and related information
- Conduct software installation and verification tasks such as:

- Check that all required installation discs are available for each of the system components being installed.
- Check that all required installation discs for software applications, including third-party applications, are available.
- Access and download license files required to install and operate the appropriate software from: <http://www.cisco.com/go/license>

### Related Topics

[System Installation Overview](#), on page 5

## System Installation Approach

After you perform preinstallation tasks, install each Cisco Unified Communications Manager cluster and its associated IP telephony components. Install each cluster one at a time, following the general sequence that is described in the following table.

The installation sequence of IP telephony components should also be dictated by the following considerations:

- The relative importance of the service that these components provide. For example, basic phone service is considered to be of greater importance than supplementary services or voice messaging services.
- Integration and configuration of the system components to ensure interoperability.

**Table 4: System Installation General Sequence**

	Procedure	Remarks
Step 1	Install and configure network infrastructure, wireless, and security components.	These components should be installed first to ensure that the infrastructure is able to support the services that the Cisco Unified Communications System components required.
Step 2	Install the operating system on system servers and install and configure directory and network services.	Network services include NTP, DHCP, DNS, TFTP, and LDAP servers.  <b>Note</b> You can set up a virtualized environment by running Unified Communications applications on a virtual machine on a Unified Computing System (UCS). For additional details, including UCS hardware information and third-party requirements, see: <a href="http://www.cisco.com/go/uc-virtualized">www.cisco.com/go/uc-virtualized</a>
Step 3	Install and configure network management tools	Network management tools include Unified Provisioning Manager, Unified Operations Manager, Unified Service Monitor and Cisco Unified Service Statistics Monitor.

	<b>Procedure</b>	<b>Remarks</b>
Step 4	Install call processing components such as Unified Communications Manager clusters.	Make sure that you complete all initial setup and configuration procedures that are required.
Step 5	Install Media resource components	Includes Music on Hold, Transcoders, Conferences Bridges, Media Termination Points (MTPs) and RSVP agents.
Step 6	Install IOS Gatekeeper, voice and data gateways	—
Step 7	Install and configure messaging components	Includes Cisco Unity Connection
Step 8	Install and configure mobility components	—
Step 9	Install and configure conferencing components	Includes Cisco Unified MeetingPlace components
Step 10	Install and Configure contact center components	Includes Cisco Unified Contact Center Express and Unified IP Phone Agents
Step 11	Install and Configure presence/IM components	Includes Cisco Unified Communications Manager IM and Presence Service (formerly Unified Presence) and Cisco Unified Personal Communicator
Step 12	Install and Configure videoconferencing components	Includes Cisco Unified Videoconferencing Manager, gateways and Multiple Control Units (MCUs), and SCCP/SIP/H.323/H.320 video endpoints
Step 13	Install and Configure Cisco applications co-resident on MCS servers	Includes Cisco Security Agent, ASA
Step 14	Install and configure the IPT components based on your requirements and the interdependencies of components.	—
Step 15	Install and configure third-party applications	Includes Antivirus, backup agent, management agent
Step 16	Complete postinstallation tasks.	These tasks include system validation and verification.

## Release Set Versions

This section lists the applications and components that are part of the Cisco Unified Communications System Release 9.0(1) family of products. These products have been tested and verified for interoperability and compatibility and are used in a greenfield deployment of an IP telephony system. Based on your network design, you may choose to install all or some of these applications and components.

### Software Release Versions in Cisco Unified Communications Release 9.0(1) for IP Telephony (Unified Communications Manager)

The table below lists the release versions of the Cisco Unified Communications System Release 9.0(1) components for business model that were used in the IP telephony test environment.


**Note**

For current Cisco Unified Communications System Release 9.0(1) compatible component versions, refer to the Cisco Unified Communications Compatibility Tool: <http://tools.cisco.com/ITDIT/vtgsca/VTGServlet>.

**Table 5: Software Release Versions in Cisco Unified Communications Release 9.0(1) for IP Telephony (Unified Communications Manager)**

Category	Component	Release
Call Control	Cisco Unified Communications Manager	9.0(1)
	Cisco Unified Communications Manager—Cisco IP Telephony Operating System	Bundled with Unified Communications Manager
	Cisco Business Edition 3000	8.6(4)
	Cisco Unified Communications Manager Express	9.0(1) 15.2(3)T1
	Cisco Unified Survivable Remote Site Telephony (SRST)	9.0(1) 15.2(3)T1
	Cisco TelePresence Video Communication Server	X7.2
	Cisco TelePresence Video Communications Server Expressway	X7.2
Contact Center	Cisco Unified Contact Center Express	9.0(1)
	Cisco Unified Contact Center Express Operating System	Bundled with Unified Contact Center Express
	SocialMiner	8.5(5)

<b>Category</b>	<b>Component</b>	<b>Release</b>
Applications	Cisco Unified Communications Manager IM and Presence Service (formerly Unified Presence)	9.0(1)
	Cisco Unified SIP Proxy	8.5(3)
	Cisco Emergency Responder	9.0(1)
	Cisco Emergency Responder—Cisco IP Telephony Operating System	Bundled with Cisco Emergency Responder
	Cisco Unified Business Attendant Console and Unified Department Attendant Console	9.0(1)
	Cisco Unified Enterprise Attendant Console	9.0(1)
Conferencing	Cisco Unified MeetingPlace	8.5(3) MR1
	Cisco WebEx for Android	2.0
	Cisco WebEx for Apple iOS	3.5
	Microsoft Outlook for Cisco Unified MeetingPlace	8.5(1)
	Cisco Unified Media Server for 3545 MCU (video)	5.7.0.0.4
	Cisco Unified Media Server for 3545 MCU (audio)	6.1.0.0.16
	Cisco Unified Videoconferencing 3522 BRI Gateways	5.0.0.0.22
	Cisco Unified Videoconferencing 3527 and 3545 PRI Gateways	5.0.0.0.22
	Cisco Voice Conferencing for ISR Routers	15.1(4)M3
	Cisco Voice and Video Conferencing for ISR G2 Routers	15.2(3)T1



Category	Component	Release
Telepresence	Cisco TelePresence System 500 Series, 1000, 1100, 1300 Series, 3000 Series, 3200 Series	CTS 1.9
	Cisco TelePresence System EX90 and Cisco TelePresence System EX60	TE 6 <sup>1</sup>
	Cisco TelePresence System Profile Series 42-inch, 52-inch, 52-inch Dual, 65-inch, and 65-inch Dual	TC 6
	Cisco TelePresence System Quick Set C20 and Cisco TelePresence System Integrator Package C40, C60, and C90	TC 6
	Cisco IP Video Phone E20	TE 6 <sup>2</sup>
	Cisco TelePresence System 1700 MXP	F 9.0.2 PAL
	Cisco TelePresence MX 200 Series	TC 6
	Cisco TelePresence Server 7010	2.2
	Cisco TelePresence MCU MSE Series	4.3
	Cisco TelePresence ISDN Gateway 3241	2.1
	Cisco TelePresence Multipoint Switch	1.7
	Cisco TelePresence Conductor	1.2
	Media Experience Engine 5600	1.3
Voice Mail and Unified Messaging	Cisco Unity Connection	9.0(1)
	Cisco Unity Express	8.6(3)

Category	Component	Release
Endpoints	Cisco Cius	9.2(4)
	Cisco Unified IP Phones models 7906G, 7911G, 7931, 7941G, 7942G, 7945G, 7961G, 7962G, 7965G, 7970G, 7971G, 7975G	Bundled with Unified Communications Manager Firmware 9.3(1)
	Cisco Unified IP Phones models 7921G, 7925G	1.4(2)
	Cisco Unified IP Phones models 7926	1.4(2)
	Cisco Unified IP Phones model 7937G	1.4(4)
	Cisco Unified IP Phones model 7936	3.3(21)
	Cisco Unified IP Phones model 7985G	4.1(7)
	Cisco Unified IP Phones model 3905	Firmware 9.2(1)
	Cisco Unified IP Phones models 6901, 6911	Firmware 9.3(1)
	Cisco Unified IP Phones models 6921, 6941, 6961	Firmware 9.3(1)
	Cisco Unified IP Phones models 8941, 8945	Firmware 9.3(1)
	Cisco Unified IP Phones models 8961, 9951, and 9971	Firmware 9.3(1)
	Cisco Unified IP Phones model 6945	Firmware 9.3(1)
	Clients	Cisco Virtualization Experience Clients
Cisco IP Communicator		8.6(1)
Cisco Unified Personal Communicator		8.5(5)
Cisco UC Integration for Microsoft Office Communicator		8.5(2)
Cisco UC Integration™ for Microsoft Lync		8.5(2)
Cisco Unified Communications for RTX		9.0(1)
Cisco Unified Communications Widgets		8.0(1) VVM 8.0 C2C 7.0(1) PD
Cisco Unified Video Advantage		2.2(2)

<b>Category</b>	<b>Component</b>	<b>Release</b>
Wireless and Mobility	Cisco Aironet 3502 Access Point	AIR-WLC4400-K9-7-0-116-0-ER.aes
	Cisco Aironet 1142 Access Point	AIR-WLC4400-K9-7-0-116-0-ER.aes
	Cisco 4400 Series Wireless LAN Controllers	AIR-WLC4400-K9-7-0-230-0.aes
	Cisco 5508 Wireless LAN Controller	AIR-CT5500-K9-7-2-103-0.aes
	Cisco Mobile for Nokia	8.5(1)
	Cisco Mobile for Android	8.5(1)
	Cisco Jabber for Mac	9.0(1)
	Cisco Jabber for iPad	1.1
	Cisco Jabber for iPhone	9.0
	Cisco Jabber for Windows	9.0(1)
Security	Cisco Intrusion Prevention System (AIP-SSM, IDSM-2 Module, IPS-4200)	7.1(4)E4
	Management Center for Cisco Security Agents	5.2.1
	Cisco Security Agent for Unified Contact Center Express	Bundled with Unified Contact Center Express
	Cisco Security Agent for Cisco Unified MeetingPlace	6.0(1)
Network Management	Cisco Prime Collaboration Manager	1.2
Licensing	Enterprise License Manager	9.0(1)

Category	Component	Release
Communications Infrastructure	Cisco IOS Extended Maintenance Deployment	15.1(4)M3
	Unified Computing System B200 M2, C200 M2, and C210 M2 (Unified Communications Virtualization)	Cisco UCS B-Series 2.0(1q), Cisco UCS C-Series 1.4(3c)2, VMware ESXi 5.0
	Cisco 2801, 2821, 2851, 3825, 3845 (router, voice/data gateway) <sup>3</sup>	15.1(4)M3
	Cisco 38xx Gatekeepers	15.1(4)M3
	Cisco Integrated Services Router (ISR) 1861	15.1(4)M3
	Cisco Integrated Services Router (ISR) 2901, 2911, 2921, 2951, 3925, 3945, 3925E, 3945E	15.2(3)T1
	Cisco SRE 910 Service Module	15.2(3)T1
	Cisco Unified Border Element Enterprise Edition for Cisco ISR Series	15.2(3)T1
	Cisco Unified Border Element Enterprise Edition for Cisco ASR 1000 Series	3.6
	Cisco Catalyst 3750 (data center switch)	12.2(53)SE2
	Cisco Catalyst 4503 Switch	12.2(53)SE2
	Cisco Catalyst 4506 (access switch)	12.2(54)SG
	Cisco Catalyst 6506, 6509 (voice access switch, supervisor 2/MSFC2)	12.2(33)SX14CatOS 8.6(6a)
	Cisco Catalyst 6506, 6509 (core switch, supervisor 720)	12.2(33)SX14
	Cisco Catalyst 6608, 6624 (voice gateway)	Bundled with Unified Communications Manager
	Cisco VG202 and 204 (analog voice gateway)	15.1(4)M3
	Cisco VG224 (analog voice gateway)	15.1(4)M3
	Cisco VG248 (analog voice gateway)	1.3(2)
	Cisco VG350 (analog voice gateway)	15.2(4)M
	Cisco ATA 187 (analog telephony adaptor)	9.3(1)
Cisco 4451-X Integrated Services Router	IOS-XE 3.9.1	
Third Party	McAfee Antivirus <sup>4</sup>	Enterprise 8.7.0i

<sup>1</sup> Component does not support CTI OS based silent monitoring.

<sup>2</sup> Component does not support CTI OS based silent monitoring.

- <sup>3</sup> IOS 15.2(3)T is not compatible with the 28xx and 38xx routers. The option to stay on IOS 15.1(4)M may be available to maintain 28/38xx routers which will continue to receive extended maintenance in accordance with IOS EOL and EOS policies.
- <sup>4</sup> You can install third-party antivirus agents on Windows-based servers such as Unified Operations Manager and Unified Provisioning Manager, but not on non-Windows appliances such as Unified Communications Manager and Unified Communications Manager Business Edition.

## Software Release Versions in Cisco Unified Communications Release 9.0(1) for IP Telephony (Cisco Business Edition)

The following table lists the release versions of the Cisco Unified Communications System Release 9.0(1) components for midmarket business model that were used in the IP telephony test environment.



### Note

For current Cisco Unified Communications System Release 9.0(1) compatible component versions, refer to the Cisco Unified Communications Compatibility Tool: <http://tools.cisco.com/ITDIT/vtgsca/VTGServlet>

**Table 6: Software Release Versions in Cisco Unified Communications Release 9.0(1) for IP Telephony (Cisco Business Edition)**

Category	Component	Release Version
Call Control	Cisco Business Edition 3000 (formerly known as Cisco Unified Communications Manager Business Edition 3000)	8.6(4)
	Cisco Unified Survivable Remote Site Telephony (SRST)	9.0(1) 15.2(3)T1
Contact Center	Cisco Unified Contact Center Express	9.0(1)
	Cisco Unified Contact Center Express Operating System	Bundled with Unified Contact Center Express
Applications	Cisco Emergency Responder	9.0(1)
	Cisco Unified Business Attendant Console and Unified Department Attendant Console	9.0(1)
	Cisco Unified Communications Manager IM and Presence Service	9.0((1)
Conferencing	Cisco Unified MeetingPlace	8.5(3) MR1
Voice Mail and Unified Messaging	Cisco Unity Connection	9.0(1)

Category	Component	Release Version
Endpoints	Cisco Unified IP Phones models 7906G, 7911G, 7931, 7941G, 7942G, 7945G, 7961G, 7962G, 7965G, 7970G, 7971G, 7975G	Bundled with Unified Communications Manager Firmware 9.3(1)
	Cisco Unified IP Phones models 6901, 6911	Firmware 9.3(1)
	Cisco Unified IP Phones models 6921, 6941, 6961	Firmware 9.3(1)
	Cisco Unified IP Phones models 8961, 9951, and 9971	Firmware 9.3(1)
Clients	Cisco IP Communicator	8.6(1)
	Cisco Unified Personal Communicator	8.5(5)
Wireless and Mobility	Cisco Aironet 1142 Access Point	AIR-WLC4400-K9-7-0-116-0-ER.aes
Communications Infrastructure	Cisco IOS Extended Maintenance Deployment	15.1(4)M3
	Cisco 38xx Gatekeepers	15.1(4)M3
	Cisco Integrated Services Router (ISR) 1861	15.1(4)M3
	Cisco Integrated Services Router (ISR) 2901, 2911, 2921, 2951, 3925, 3945, 3925E, 3945E	15.2(3)T1
	Cisco 4451-X Integrated Services Router	IOS-XE 3.9.1
	Cisco Catalyst 4503 Switch	12.2(53)SE2
	Cisco Catalyst 4506 (access switch)	12.2(54)SG
	Cisco Catalyst 6506, 6509 (voice access switch, supervisor 2/MSFC2)	12.2(33)SXI4CatOS 8.6(6a)
	Cisco VG224 (analog voice gateway)	15.1(4)M3
Third Party	McAfee Antivirus <sup>5</sup>	Enterprise 8.7.0i

<sup>5</sup> You can install third-party antivirus agents on Windows-based servers such as Unified Contact Center Express, Unified Operations Manager, and Unified Provisioning Manager, but not on non-Windows appliances such as Unified Communications Manager and Unified Communications Manager Business Edition.

## System Installation Dependencies

The components within each release set are compatible with each other and will interoperate correctly. As you install individual components, the overall system may not be operational until all components have been installed or until initial configuration or setup is completed.







# Performing Your System Installation

This chapter provides guidance for the installation order components for a Cisco Unified Communications IP telephony deployment. This information is to be used with the information from the planning and design phases as input to the implementation phase. The implementation phase drives the staging phases and deadlines of the system installation.

This document does not describe installation procedures for individual components. This information is included in the installation documents for the components.



**Note**

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Many of the IP telephony component names have changed as part of Cisco Unified Communications System releases. The latest product names are used in this document, even when referencing products from previous releases.

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- [Deployment Models, page 29](#)
- [Component Installation, page 34](#)
- [Postinstallation Tasks, page 40](#)
- [Related Documentation, page 41](#)

## Deployment Models

This section describes the general order of installation for each Cisco Unified Communications System deployment models. Because each model can include different components, compare these deployments to your deployment to best understand the installation process that is applicable in your environment.

**Related Topics**

- [Unified Communications Manager IP Telephony Models, on page 30](#)
- [Cisco Business Edition IP Telephony Model, on page 33](#)

## Unified Communications Manager IP Telephony Models

This section provides the general installation sequence for the various IP telephony components in the enterprise deployment models.

For more detailed information about these IP telephony deployment models, see:

[http://www.cisco.com/cisco/web/docs/iam/unified/ipt901/Review\\_Tested\\_Site\\_Models.html](http://www.cisco.com/cisco/web/docs/iam/unified/ipt901/Review_Tested_Site_Models.html)

Also see the following documents:

- *System Description: Cisco Unified Communications Release 9.0(1)* at:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/uc\\_system/UC9.0.1/system\\_description/VTGS\\_BK\\_C1D3CC9C\\_00\\_cisco-unified-communications-system-description.pdf](http://www.cisco.com/en/US/docs/voice_ip_comm/uc_system/UC9.0.1/system_description/VTGS_BK_C1D3CC9C_00_cisco-unified-communications-system-description.pdf)
- Solution Reference Network Design (SRND) document for various IP telephony components are available at:  
<http://www.cisco.com/go/srnd>

After you determine the general installation sequence, use one of the installation strategies that is described in [Component Installation](#), on page 34 to install your components.

### Related Topics

- [Single-Site Model](#), on page 30
- [Multisite Centralized with SRST or SRSV Model](#), on page 32
- [Multisite WAN Distributed Model](#), on page 32
- [Clustering Over the WAN Model](#), on page 33

### Single-Site Model

A single-site deployment refers to any scenario in which voice gateways, phones, and call processing servers (Cisco Unified Communications Manager) are located at the same site and have no WAN connectivity between any software modules.

For a single-site deployment, install components in the following order:

- 1 Infrastructure Components such as:
  - Core switches
  - Access switches
  - Security Components
  - Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
  - Cisco Wireless LAN Controller(s) and Access Points
- 2 Directory and network service components such as
  - NTP server
  - DHCP server
  - DNS server

- TFTP server
  - LDAP server
- 3 Network management applications such as:
    - Cisco Unified Provisioning Manager,
    - Cisco Unified Operations Manager
    - Cisco Unified Service Monitor
    - Cisco Unified Service Statistics Manager
  - 4 Call processing components such as:
    - Cisco Unified Communications Manager
    - Cisco Unified IP Phones
    - Cisco IP Communicator
    - Cisco Unified Communications Manager-Session Manager Edition (Cisco UCM-SME) (optional)

**Note**


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For Cisco Business Edition, Unity Connection is installed with Cisco Unified Communications Manager as a co-resident application.

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- 5 Media resource components such as:
  - Music on Hold
  - Transcoders
  - Conferences Bridges
  - Media Termination Points (MTPs)
  - RSVP agents (optional)
- 6 Cisco IOS Gatekeeper
- 7 Voice and data gateways
- 8 Cisco Messaging components such as Cisco Unity Connection and optional Voice Recognition Server
- 9 Cisco Unified MeetingPlace components
- 10 Cisco Unified Contact Center Express, Cisco Unified IP Phone Agents
- 11 Cisco Unified Communications Manager IM and Presence Service (formerly Cisco Unified Presence), and Cisco Unified Personal Communicator
- 12 Cisco Unified Videoconferencing Manager, gateways, and Multipoint Control Units (MCU)
- 13 SCCP/SIP/H.323/H.320 video endpoints
- 14 Cisco applications co-resident on MCS servers such as Cisco Security Agent
- 15 Third-party on-board agents on MCS servers such as Antivirus, backup agent, and management agent

- 16 Cisco and third-party adjunct applications or endpoints on other servers

### Multisite Centralized with SRST or SRSV Model

A multisite centralized with Unified SRST or Unified SRSV deployment refers to any scenario in which call processing servers (for example, Unified Communications Manager) are located at the same site, while any combination of voice gateways, and phones are located remotely across a WAN link or centrally.

For a multisite Centralized with Unified SRST or Unified SRSV deployment, the central site should be installed first.

For each remote site, install components in the following order:

- 1 Access switches
- 2 Security Components such as Cisco Adaptive Security Appliance
- 3 Cisco Wireless LAN Controllers and Access Points
- 4 Cisco Unified Communications Manager Express or Unified SRST router or Unified SRSV router, Cisco Unified IP Phones, Cisco IP Communicator
- 5 Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
- 6 SCCP/SIP/H.323/H.320 video endpoints

#### Related Topics

[Single-Site Model, on page 30](#)

### Multisite WAN Distributed Model

In a multisite WAN distributed deployment model, each site has its own Unified Communications Manager cluster. However, as with the centralized call processing model, sites can be deployed with or without local voice gateways. Some deployments may contain a combination of distributed voice gateways (possibly for locally dialed calls) and centralized voice gateways (possibly for toll-free calls). The multisite distributed model includes several Unified Communications Manager cluster sites interconnected by ICT or H.323 trunks.

The installation of each site should be treated as a separate stage in the overall system installation.

For each remote site, install components in the following order:

- 1 Access Switches
- 2 Security Components such as Cisco Adaptive Security Appliance
- 3 Cisco Wireless LAN Controller(s) and Access Points
- 4 Cisco Unified Communications Manager Express or Unified SRST router or Unified SRSV router, Cisco Unified IP Phones, Cisco IP Communicator
- 5 Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
- 6 SCCP/SIP/H.323/H.320 video endpoints

#### Related Topics

[Single-Site Model, on page 30](#)

## Clustering Over the WAN Model

In the clustering over the WAN model, the Unified Communications Manager cluster is distributed across several sites connected by a QoS-enabled WAN. This model provides the redundancy of the distributed model while offering the convenience of administering a single Unified Communications Manager cluster.



**Note** Install clustered components in the same installation period and stage at each of the central sites.

Next install remote sites. For each remote site, install components in the following order:

- 1 Access Switches
- 2 Cisco Adaptive Security Appliance
- 3 Cisco Wireless LAN Controller(s) and Access Points
- 4 Cisco Unified Communications Manager Express or Unified SRST router or Unified SRSV router, Cisco Unified IP Phones, Cisco IP Communicator
- 5 Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
- 6 SCCP/SIP/H.323/H.320 video endpoints

### Related Topics

[Single-Site Model](#), on page 30

## Cisco Business Edition IP Telephony Model

This section provides the general installation sequence for the various IP telephony components in a medium business deployment model.

For more detailed information about these IP telephony deployment models, see: [http://www.cisco.com/cisco/web/docs/iam/unified/ipt901/Review\\_Tested\\_Site\\_Models.html](http://www.cisco.com/cisco/web/docs/iam/unified/ipt901/Review_Tested_Site_Models.html).

### Related Topics

[Multisite Centralized with SRST Model](#), on page 33

## Multisite Centralized with SRST Model

A multisite centralized with SRST deployment refers to any scenario in which call processing servers (for example, Unified Communications Manager Business Edition) are located at the same site, while any combination of voice gateways, and phones are located remotely across a WAN link or centrally.

In the central site, install components in the following order:

- 1 Infrastructure Components such as:
  - Core switches
  - Access switches
  - Security Components
  - Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)

- Cisco Wireless LAN Controller(s) and Access Points
- 2 Call processing components such as:
    - Cisco Business Edition (formerly Cisco Unified Communications Manager Business Edition)/Cisco Unified Communications Manager with Cisco Unity Connection installed as a co-resident application
    - Cisco Unified IP Phones
    - Cisco IP Communicator
  - 3 Media resource components such as:
    - Music on Hold
    - Transcoders
    - Conferences Bridges
    - Media Termination Points (MTPs)
    - RSVP agents (optional)
  - 4 Cisco Unified Contact Center Express, Cisco Unified IP Phone Agents
  - 5 Cisco Unified Business Attendant Console

For each remote site, install components in the following order:

- 1 Access switches
- 2 Security Components
- 3 Cisco Wireless LAN Controller(s) and Access Points
- 4 Cisco Unified Survival Remote Site Telephony Router, Cisco Unified IP Phones, Cisco IP Communicator
- 5 Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
- 6 SCCP/SIP/H.323/H.320 video endpoints
- 7 Cisco Computer Telephony Interface (CTI) OS Agent and Supervisor Desktop
- 8 Cisco Unified Business Attendant Console and Cisco Unified Department Attendant Console

## Component Installation

After you review the general installation sequence for the deployment model that you are installing, install your components based on the following installation strategies:

- Single-stage installation (Unified Communications Manager)—Recommended for small single-site or multisite enterprise installations.
- Single-stage installation, Cisco Business Edition—Recommended for small single-site or multisite midmarket installations.
- Multistage system installation—Recommended for large single-site or multisite enterprise installations.

See “System installation planning” for additional information and for the software release versions of the components in the release set.



**Note** After you install the software and applications, be aware that you may also need to install client software such as Cisco IP Communicator on the client desktops.

When you install each component, see the product-specific installation document for detailed information.

#### Related Topics

[Single-Stage Installation \(Unified Communications Manager\), on page 35](#)

[Single-Stage Installation \(Cisco Business Edition\), on page 36](#)

[Multistage System Installation, on page 37](#)

[System Installation Planning, on page 3](#)

[Related Documentation, on page 41](#)

## Single-Stage Installation (Unified Communications Manager)

The single-stage installation process is recommended for small single-site and multisite enterprise installations and can be performed in a single installation window.

The following table lists the recommended order in which to install components.

**Table 7: Single-Stage Installation Order for IP Telephony Components for Enterprise**

Installation Order	Component
1	Switches and routers
2	Security components
3	Wireless components
4	Directory and network services
5	Network management components
6	Call processing components
7	Media resources
8	Gatekeepers and voice and data gateways
9	Messaging components
10	TelePresence components
11	Mobility components
12	Cisco Unified MeetingPlace components

Installation Order	Component
13	Contact Center components
14	Presence/IM components
15	Videoconferencing components
16	Cisco applications coresident on MCS servers
17	Third-party on-board agents on MCS servers <sup>6</sup>
18	Cisco and third-party applications on other servers

<sup>6</sup> If using MCS servers for Unified Communications Manager Release 9.0(1), third party on-board agents must be installed on a separate MCS server.

### Related Topics

[System Installation Planning](#), on page 3

## Single-Stage Installation (Cisco Business Edition)

The single-stage installation process is recommended for small single-site and multisite midmarket deployment installations and can be performed in a single installation window.

The following table lists the recommended order in which to install components.

**Table 8: Single-Stage Installation Order for IP Telephony Components for Midmarket**

Installation Order	Component
1	Switches and routers
2	Security components
3	Wireless components
4	Network management components
5	Call processing components
6	Voice and data gateways
7	Media resources
8	Queuing and self-service components
9	Messaging components
10	Cisco Unified MeetingPlace components



Installation Order	Component
11	Cisco and third-party applications on other servers

### Related Topics

[System Installation Planning](#), on page 3

## Multistage System Installation

A multistage system installation is the recommended approach for medium and large single-site and medium multisite installations. In this process, components are grouped for installation in several stages or installation windows. Within each installation window, there is a recommended order for installing each component.

The grouping of the components into the stages may vary depending on the size of the networks being upgraded. For smaller networks, several installation windows may be collapsed into a single installation window. Additional stages may be necessary for larger sites.

After each installation window and before initiating the next installation stage, we recommend that you verify that the operation of all basic and critical call types remain unaffected. We also recommend that you maintain a list of components that have been installed and the ones yet to be installed.

The following table lists the recommended order in which to install components.

**Table 9: Multi-Stage System Installation Order for IP Telephony Components**

Stage	Component Groupings	Installation Order of Components in Each Stage
1	Switches, Routers and Security components	<ol style="list-style-type: none"> <li>1 Core Switches</li> <li>2 Access Switches</li> <li>3 Cisco Adaptive Security Appliance (ASA) 5540 Services</li> </ol>
2	Wireless Components	<ol style="list-style-type: none"> <li>1 Cisco Aironet Access Point</li> </ol>
3	Directory and network services	<ol style="list-style-type: none"> <li>1 Domain Controllers (including Active Directory)</li> <li>2 LDAP Directory</li> <li>3 NTP Server</li> <li>4 DHCP Server</li> <li>5 DNS Server</li> <li>6 TFTP Server</li> </ol>

Stage	Component Groupings	Installation Order of Components in Each Stage
4	Network Management applications	<ol style="list-style-type: none"> <li>1 Cisco Unified Provisioning Manager</li> <li>2 Cisco Unified Operations Manager</li> <li>3 Cisco Unified Service Monitor</li> <li>4 Cisco Unified Service Statistics Monitor</li> </ol>
5	Call processing components	<ol style="list-style-type: none"> <li>1 Cisco Unified Communications Manager (includes ATA)</li> <li>2 Cisco Unified IP Phones</li> <li>3 Cisco Unified Communications Manager-Session Management Edition (optional)</li> <li>4 Cisco IP Communicator</li> <li>5 Cisco Emergency Responder</li> </ol>
6	Gatekeepers and voice and data gateways	<ol style="list-style-type: none"> <li>1 Cisco Unified Communications Manager Express</li> <li>2 IOS Gateways (SIP, MGCP, and H.323)</li> <li>3 IOS Gatekeepers</li> <li>4 Cisco Unified Border Element</li> </ol>
7	Media resources	<ol style="list-style-type: none"> <li>1 Conference bridges</li> <li>2 Transcoders</li> <li>3 Music-On-Hold servers</li> <li>4 Media termination points</li> <li>5 RSVP Agents</li> </ol>
8	Cisco MeetingPlace components	<ol style="list-style-type: none"> <li>1 Cisco Unified MeetingPlace components</li> </ol>
9	Cisco TelePresence components	<ol style="list-style-type: none"> <li>1 Cisco TelePresence components</li> </ol>

Stage	Component Groupings	Installation Order of Components in Each Stage
10	Cisco Unity components	<ol style="list-style-type: none"> <li>1 Cisco Unity components</li> <li>2 Cisco Unity Express</li> <li>3 Domain Controller (including Active Directory)</li> <li>4 Cisco Unity Connection</li> </ol>
11	Contact Center Components	<ol style="list-style-type: none"> <li>1 Cisco Unified Contact Center Express Unified IP Phone Agents</li> </ol>
12	Presence/Messaging components	<ol style="list-style-type: none"> <li>1 Cisco Unified Communications Manager IM and Presence Service (formerly Cisco Unified Presence)</li> <li>2 Cisco Unified Personal Communicator</li> </ol>
13	Video conferencing components	<ol style="list-style-type: none"> <li>1 SCCP/ H.323 /H.320 Video Endpoints</li> <li>2 IP/VC Gateway and MCUs</li> <li>3 Cisco VT Advantage (Video PC Endpoint)</li> </ol>
14	Cisco applications coresident on MCS servers	<ol style="list-style-type: none"> <li>1 Depends on the applications being upgraded</li> </ol>
15	Third-party on-board agents on MCS servers <a href="#">7</a>	<ol style="list-style-type: none"> <li>1 Depends on the applications being upgraded</li> </ol>
16	Cisco and third-party applications on other servers	<ol style="list-style-type: none"> <li>1 Depends on the applications being upgraded</li> </ol>

<sup>7</sup> If using MCS servers for Unified Communications Manager Release 9.0(1), third party on-board agents must be installed on a separate MCS server.

### Related Topics

[System Installation Planning](#), on page 3

## Postinstallation Tasks

After you complete the tasks in the implement phase and install the IP telephony components in the Cisco Unified Communications System release set, be aware of the following postinstallation phases and related tasks.


**Note**

See the Cisco Unified Communications System Technical Information Site at <http://www.cisco.com/go/unified-techinfo> for comprehensive system-level deployment and lifecycle model information.

### Implement Phase

Configure the newly-installed IP telephony system using the configuration information available at: [http://docwiki.cisco.com/wiki/Category:Unified\\_Communications\\_System\\_Implementation](http://docwiki.cisco.com/wiki/Category:Unified_Communications_System_Implementation)

### Operate Phase

Ensure that the newly installed IP telephony system is fully operational by performing tasks that include the following:

- Manage the newly installed network by conducting:
  - Fault and performance management at the platform level—Use the Real-Time Monitoring Tool (RTMT), which is a client application, to monitor CPU, memory, disk space, processes, and critical services.
  - Network management at the system level—Use Unified Operations Manager to perform SNMP/HTTP polling, track device and inventory status, and monitor logical relationships and physical connectivity in the network.
- Conduct Day 1 operations (cutover to customer) tasks such as:
  - Train administrators to support end-users to use the newly installed IP telephony system.
  - Provide documentation including as-builts, equipment inventory lists, topology diagrams, unique design or feature considerations, and others.
  - Explain the engagement process with Technical Assistance Center (TAC) support and tasks to perform prior to contacting TAC.
- Conduct Day 2 operations (post-cutover) tasks such as:
  - Enforce security with the appropriate antivirus security software, where applicable.
  - Provision for system password synchronization and maintenance.
  - Implement data backup and restore. For more information, see Backing up and Restoring Components at: [http://www.cisco.com/cisco/web/docs/iam/unified/ipt901/Backing\\_Up\\_and\\_Restoring\\_Components.html](http://www.cisco.com/cisco/web/docs/iam/unified/ipt901/Backing_Up_and_Restoring_Components.html)
  - Plan for release set management and system and security patches updates.

### Optimize Phase

During this phase, perform system optimizations tasks such as:

- Tune and resize the network for better performance.
- Perform configuration cleanup procedures such as deleting user IDs that are no longer in use.
- Set trace logs and reporting levels to ensure optimal performance.

## Related Documentation

This section lists compatibility guides and installation documentation for Cisco Unified Communications System components.

For information about support for legacy products and third-party product interoperability with Cisco Unified Communications contact center products, see the Cisco Interoperability Portal at:

<http://www.cisco.com/go/interoperability>

### Compatibility Guides

The following documentation provides information about compatibility of components:

- For information about support for legacy products and third party product interoperability with Cisco IP telephony products, see the Cisco Interoperability Portal at:  
<http://www.cisco.com/go/interoperability>
- Cisco Unified Communications Compatibility Tool:  
<http://tools.cisco.com/ITDIT/vtgsca>
- Cisco Unified Communications Manager Compatibility Information: [http://www.cisco.com/en/US/products/sw/voicesw/ps556/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_device_support_tables_list.html)
- Cisco Unified Contact Center Express Software and Hardware Compatibility Guide:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cust\\_contact/contact\\_center/crs/express\\_compatibility/matrix/crscomtx.pdf](http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/crs/express_compatibility_matrix/crscomtx.pdf)
- Cisco Unified Communications Manager Express and Cisco IOS Software Version Compatibility Matrix:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cucme/requirements/guide/33matrix.htm](http://www.cisco.com/en/US/docs/voice_ip_comm/cucme/requirements/guide/33matrix.htm)
- Cisco Computer Telephony Integration Option:  
[http://www.cisco.com/en/US/products/sw/custcosw/ps14/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps14/prod_technical_reference_list.html)
- Cisco 7800 Series Media Convergence Servers:  
[http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod\\_brochure\\_list.html](http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod_brochure_list.html)
- UCS and MCS Server Models Supported by Cisco Unified Communications Manager Releases  
[http://www.cisco.com/en/US/prod/collateral/voicesw/ps6790/ps5748/ps378/prod\\_brochure0900aecd8062a4f9.html](http://www.cisco.com/en/US/prod/collateral/voicesw/ps6790/ps5748/ps378/prod_brochure0900aecd8062a4f9.html)
- Cisco Unified Communications Virtualization (including links to UCS hardware information):  
[www.cisco.com/go/uc-virtualized](http://www.cisco.com/go/uc-virtualized)

Cisco Unified Communications System Release Summary Matrix for IPT:

[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/uc\\_system/unified/communications/system/versions/IPTMtrix.html](http://www.cisco.com/en/US/docs/voice_ip_comm/uc_system/unified/communications/system/versions/IPTMtrix.html)

## Component Release Notes and Installation and Upgrade Documents

The following table provides references to release notes and installation and upgrade documents for components. These URLs link to web pages that list various release versions of these documents. Review the appropriate documents based on the release versions of the components in your base and target release sets.

**Table 10: Component-Specific Release Notes and Installation and Upgrade Documents**

Components	Release Notes	Installation and Upgrade Documents
Cisco Unified Communications Manager	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_installation_guides_list.html</a>
Cisco Unity Express	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps5520/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps5520/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps5520/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps5520/prod_installation_guides_list.html</a>
Cisco Unified MeetingPlace	<a href="http://www.cisco.com/en/US/products/sw/ps5664/ps5669/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/ps5664/ps5669/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/sw/ps5664/ps5669/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/ps5664/ps5669/prod_installation_guides_list.html</a>
Cisco IP/VC 3500 Series Videoconferencing	<a href="http://www.cisco.com/en/US/products/hw/video/ps1870/prod_release_notes_list.html">http://www.cisco.com/en/US/products/hw/video/ps1870/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/hw/video/ps1870/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/hw/video/ps1870/prod_installation_guides_list.html</a>
Cisco Unified Video Advantage	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps5662/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps5662/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps5662/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps5662/prod_installation_guides_list.html</a>
Cisco Unity Connection	<a href="http://www.cisco.com/en/US/products/ps6509/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps6509/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps6509/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps6509/prod_installation_guides_list.html</a>
Cisco TelePresence System 3200 Series	—	<a href="http://www.cisco.com/en/US/products/ps9573/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps9573/prod_installation_guides_list.html</a>
Cisco TelePresence System 3100 Series	—	<a href="http://www.cisco.com/en/US/products/ps8333/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps8333/prod_installation_guides_list.html</a>
Cisco TelePresence System 1300 Series	—	<a href="http://www.cisco.com/en/US/products/ps10340/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps10340/prod_installation_guides_list.html</a>

Components	Release Notes	Installation and Upgrade Documents
Cisco TelePresence System 1100 Series	—	<a href="http://www.cisco.com/en/US/products/ps10521/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps10521/prod_installation_guides_list.html</a>
Cisco TelePresence System 1000 Series	—	<a href="http://www.cisco.com/en/US/products/ps7073/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps7073/prod_installation_guides_list.html</a>
Cisco TelePresence System 500 Series	—	<a href="http://www.cisco.com/en/US/products/ps9599/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps9599/prod_installation_guides_list.html</a>
Cisco TelePresence System EX90 and EX60 Series	<a href="http://www.cisco.com/en/US/products/ps11327/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps11327/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps11327/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps11327/prod_installation_guides_list.html</a>
Cisco TelePresence System Profile Series	<a href="http://www.cisco.com/en/US/products/ps11326/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps11326/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps11326/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps11326/prod_installation_guides_list.html</a>
Cisco TelePresence MX Series	<a href="http://www.cisco.com/en/US/products/ps11776/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps11776/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps11776/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps11776/prod_installation_guides_list.html</a>
Cisco TelePresence MCU MSE	<a href="http://www.cisco.com/en/US/products/ps11447/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps11447/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps11447/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps11447/prod_installation_guides_list.html</a>
Cisco TelePresence ISDN Gateway	<a href="http://www.cisco.com/en/US/products/ps11448/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps11448/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps11448/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps11448/prod_installation_guides_list.html</a>
Cisco IP Video Phone E20	<a href="http://www.cisco.com/en/US/products/ps11329/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps11329/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps11329/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps11329/prod_installation_guides_list.html</a>
Cisco Unified IP Phone 9900 Series	<a href="http://www.cisco.com/en/US/products/ps10453/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps10453/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps10453/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps10453/prod_installation_guides_list.html</a>
Cisco Unified IP Phone 8900 Series	<a href="http://www.cisco.com/en/US/products/ps10451/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps10451/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps10451/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps10451/prod_installation_guides_list.html</a>
Cisco Unified IP Phone 7900 Series	<a href="http://www.cisco.com/en/US/products/hw/phones/ps379/prod_release_notes_list.html">http://www.cisco.com/en/US/products/hw/phones/ps379/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/hw/phones/ps379/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/hw/phones/ps379/prod_installation_guides_list.html</a>

Components	Release Notes	Installation and Upgrade Documents
Cisco Unified IP Phone 6900 Series	<a href="http://www.cisco.com/en/US/products/ps10326/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps10326/prod_release_notes_list.html</a>	—
Cisco Unified Operations Manager	<a href="http://www.cisco.com/en/US/products/ps6535/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps6535/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps6535/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps6535/prod_installation_guides_list.html</a>
Cisco Unified Communications Manager IM and Presence Service (formerly Cisco Unified Presence)	<a href="http://www.cisco.com/en/US/products/ps6837/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps6837/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps6837/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps6837/prod_installation_guides_list.html</a>
Cisco IP Communicator	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps5475/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps5475/prod_release_notes_list.html</a>	—
Cisco Cius	—	<a href="http://www.cisco.com/en/US/products/ps11156/tsd_products_support_install_and_upgrade.html">http://www.cisco.com/en/US/products/ps11156/tsd_products_support_install_and_upgrade.html</a>
Cisco Jabber for Windows	<a href="http://www.cisco.com/en/US/products/ps12511/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps12511/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/docs/voice_ip_comm/jabber/Windows/9_0_1/b_jabber_win_icg.html">http://www.cisco.com/en/US/docs/voice_ip_comm/jabber/Windows/9_0_1/b_jabber_win_icg.html</a>
Cisco Jabber for Mac	<a href="http://www.cisco.com/en/US/products/ps11764/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps11764/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps11764/prod_maintenance_guides_list.html">http://www.cisco.com/en/US/products/ps11764/prod_maintenance_guides_list.html</a>
Cisco Virtualization Experience Client	<a href="http://www.cisco.com/en/US/products/ps11582/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps11582/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps11582/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps11582/prod_installation_guides_list.html</a>
Cisco Unified Contact Center Express	<a href="http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_installation_guides_list.html</a>
Cisco Emergency Responder	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps842/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps842/prod_release_notes_list.html</a>	—
Cisco Unified Survivable Remote Site Telephony	—	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps2169/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps2169/prod_installation_guides_list.html</a>
Cisco Catalyst 3550 Series Access Switches	<a href="http://www.cisco.com/en/US/products/hw/switches/ps646/prod_release_notes_list.html">http://www.cisco.com/en/US/products/hw/switches/ps646/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/hw/switches/ps646/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/hw/switches/ps646/prod_installation_guides_list.html</a>



Components	Release Notes	Installation and Upgrade Documents
Cisco Catalyst 6500 Series Switches	<a href="http://www.cisco.com/en/US/products/hw/switches/ps708/prod_release_notes_list.html">http://www.cisco.com/en/US/products/hw/switches/ps708/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/hw/switches/ps708/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/hw/switches/ps708/prod_installation_guides_list.html</a>
Cisco IOS Software Releases 15.1	<a href="http://www.cisco.com/en/US/products/ps10592/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps10592/prod_release_notes_list.html</a>	—
Cisco 1861 Integrated Services Router	—	<a href="http://www.cisco.com/en/US/products/ps5853/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps5853/prod_installation_guides_list.html</a>
Cisco 3800 Series Voice Gateways	<a href="http://www.cisco.com/en/US/products/ps5855/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps5855/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps5855/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps5855/prod_installation_guides_list.html</a>
Cisco 2800 Series Voice Gateways	—	<a href="http://www.cisco.com/en/US/products/ps5854/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps5854/prod_installation_guides_list.html</a>
Cisco 3900 Series Voice Gateways	—	<a href="http://www.cisco.com/en/US/products/ps10536/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps10536/prod_installation_guides_list.html</a>
Cisco 2900 Series Voice Gateways	—	<a href="http://www.cisco.com/en/US/products/ps10537/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps10537/prod_installation_guides_list.html</a>





## PART **II**

# System Upgrade for IP Telephony

- [System Upgrade Planning, page 49](#)
- [System Upgrade Preparation, page 67](#)
- [System Upgrade, page 81](#)





# CHAPTER 4

## System Upgrade Planning

This chapter provides an overview of the upgrade process for IP telephony components, the software releases that are involved in the upgrade process, and different upgrade strategies that can be used based on the size of your network.

**Note**

The following upgrade strategies are recommendations only. No formal upgrade testing was done for the UC 9.0 system release.

**Note**

Many of the IP telephony component names have changed as part of Cisco Unified Communications System releases. The latest product names are used in this document, even when referencing products from previous releases.

- [Cisco Unified Communications System Overview, page 49](#)
- [Release Sets, page 51](#)
- [Perform System Upgrade, page 52](#)
- [Upgrade Overview, page 53](#)
- [System Upgrade Paths to Cisco Unified Communications System Release 9.0\(1\), page 58](#)
- [System Upgrade Strategies, page 59](#)

## Cisco Unified Communications System Overview

The Cisco Unified Communications System is a full-featured business communications system built into an intelligent IP network. It enables voice, data, and video communications for businesses of all sizes. The Cisco Unified Communications System is defined around commonly deployed midmarket and topology models in North America and European and Emerging Markets (EUEM).

Cisco Systems provides an integrated system to meet a wide variety of customer needs. Cisco Unified Communications refers to the entire range of specific Cisco IP Communications products including all call control, conferencing, voicemail and messaging, customer contact, IP phone, video telephony, video

conferencing, rich media clients, and voice application products. These products and applications are designed, developed, tested, documented, sold, and supported as an integrated system. Cisco Unified Communications System for enterprise is built upon IP telephony products that centers around the core call processing component, Cisco Unified Communications Manager. Cisco Unified Communications System for midmarket is built upon IP telephony products that center around the call processing component, Cisco Business Edition.

Cisco Unified Communications System testing is a process for specifying (designing) and validating the interoperability of enterprise voice products to ensure that they work together as an integrated system.

## Scope of this Upgrade Documentation

The upgrade process that is discussed in this document addresses upgrade strategies, preparations for upgrade operation, order of operations such as the sequence in which IP telephony components should be upgraded, and other dependencies such as backward compatibility of software.

This chapter provides information related to upgrading components present in base release sets that are to be upgraded.

This chapter does not provide installation, upgrade, or backup procedures for:

- Components not part of the existing production network and the newly added components as a part of the next release. This information is available in the product specific documentation.
  - Individual standalone components such as Unified Communications Manager and Cisco Unity. This section addresses only the upgrade procedures of Cisco Unified Communications System components at the system level.
  - Third-party co-resident applications (although these applications may be used during the upgrade and backup process) such as:
    - Antivirus
    - Security
    - Server management
    - Remote access
  - Additional third-party off-board applications such as:
    - Operator console
    - VoIP recording
    - Billing and accounting
    - Paging and Informacast
    - Unity Fax Server
    - DPNSS gateway specific Server replacement (hardware upgrade) for components. For information on how to replace a single server or an entire cluster for Cisco Unified Communications Manager Release 9.0(1), see: [http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cucm/install/8\\_6\\_1/cluster/clstr861.html](http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/install/8_6_1/cluster/clstr861.html)
- For information on supported Cisco 7800 Series Media Convergence Servers and Unified Computing System B-series servers, see: [http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod\\_brochure\\_list.html](http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod_brochure_list.html)

- Cisco Unified Communications on the Cisco Unified Computing System Solution Overview:  
[http://www.cisco.com/en/US/prod/collateral/voicesw/ps6790/ps5748/ps378/solution\\_overview\\_c22-597556.html](http://www.cisco.com/en/US/prod/collateral/voicesw/ps6790/ps5748/ps378/solution_overview_c22-597556.html)

### Related Topics

[Release Sets](#), on page 51

## Release Sets

A release set is a combination of products, components, and software versions that were tested to work together as an integrated Cisco Unified Communications System. A particular system release is also referred to as a release set.

A *base* release or release set is the starting release set that is being upgraded. A *target* release or release set is the ending release set to which the base release set is being upgraded.

### Cisco Unified Communications System (Unified Communications Manager)

The enterprise systems involved in the upgrade process include:

- Base release—Your environment may include the following base release set:
  - Cisco Unified Communications System Release 8.6(1) —For detailed information about the IP telephony deployment models and topologies that are developed to test this release set, see [Review Tested Site Models for IP Telephony](#) and [Review Tested Site Models for Contact Center](#).
- Target release:
  - Cisco Unified Communications System Release 9.0(1) —The new software release set that is the goal of the upgrade process, regardless of your base release set. For detailed information about the IP telephony deployment models and topologies that were developed to test this release set, see [Review Tested Site Models for IP Telephony](#).

### Cisco Unified Communications System (Cisco Business Edition)

The midmarket systems that are involved in the upgrade and that are discussed in this document include:

- Base releases—Your environment may include one of the following base release sets:
  - Cisco Unified Communications System Release 8.6(1) —The new software release set that is the goal of the upgrade process, regardless of your base release set. For detailed information about the IP telephony deployment models and topologies that were developed to test this release set, see [Review Tested Site Models for IP Telephony](#).



#### Note

This upgrade path was tested by upgrading the components in the base release set to the target release set in a single stage or single maintenance window.

- Target release:
  - Cisco Unified Communications System Release 9.0(1) —The new software release set that is the goal of the upgrade process, regardless of your base release set. For detailed information about the IP telephony deployment models and topologies that were developed to test this release set, see [Review Tested Site Models for IP Telephony](#).

### Related Topics

[System Upgrade Strategies](#), on page 59

[System Upgrade Preparation](#), on page 67

## Perform System Upgrade

This section provides a summary of the high-level upgrade tasks:

### Procedure

- 
- Step 1** Review your hardware and software requirements.  
For example, verify that the deployed hardware configurations and operating system support the target release and are ready for an upgrade.  
For a list of supported MCS servers, see the following:
- Cisco 7800 Series Media Convergence Servers Brochures:  
[http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod\\_brochure\\_list.html](http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod_brochure_list.html)
  - Hardware and Software Interoperability Matrix for Unified Computing System (UCS) B-series Servers:  
[http://www.cisco.com/en/US/docs/unified\\_computing/ucs/interoperability/matrix/r\\_hcl\\_B\\_rel2\\_0.pdf](http://www.cisco.com/en/US/docs/unified_computing/ucs/interoperability/matrix/r_hcl_B_rel2_0.pdf)
  - Hardware and Software Interoperability Matrix for Unified Computing System (UCS) C-series Servers:  
[http://www.cisco.com/en/US/docs/unified\\_computing/ucs/interoperability/matrix/r\\_hcl\\_C\\_rel1.43.pdf](http://www.cisco.com/en/US/docs/unified_computing/ucs/interoperability/matrix/r_hcl_C_rel1.43.pdf)
  - Cisco Unified Communications Manager Server Support Matrix:  
[http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod\\_brochure0900aecd8062a4f9.html](http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod_brochure0900aecd8062a4f9.html)
  - Cisco Unity Connection Supported Platforms List:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/connection/9x/supported\\_platforms/9xcucspl.html](http://www.cisco.com/en/US/docs/voice_ip_comm/connection/9x/supported_platforms/9xcucspl.html)
- Step 2** Perform all required hardware equipment checks.  
For example, verify that the DVD ROM drive in the server on which you plan to perform the upgrade tasks is operational before you start the upgrade process.
- Step 3** Upgrade the *existing* network components from the base release set to the target release set.  
**Note** The existing network should include components that are already supported by one of the base release sets.  
Use the recommended upgrade paths defined in the [System Upgrade Paths to Cisco Unified Communications System Release 9.0\(1\)](#), on page 58 section and the upgrade strategies described in [System Upgrade Strategies](#), on page 59 section to perform the upgrade. The upgrade paths and strategies that you select should depend on a number of factors, such as:



- Base release set currently deployed in your network
- Size of the network and number of sites
- Topology of the network

**Step 4** Perform verification and validation testing in between upgrading components in multiple stages to ensure that the components in the network interoperate.

**Step 5** Install and configure *new* components that are supported by the target release.

**Step 6** Remove or replace any components from your network that are not part of the target release or that have reached end-of-life (EOL) or end-of-sale (EOS).

Follow proper procedures to uninstall these components.

**Note** See the EOS/EOL website for a list of recommended replacements at: [http://www.cisco.com/en/US/products/prod\\_end\\_of\\_life.html](http://www.cisco.com/en/US/products/prod_end_of_life.html) . For Cisco EOS/EOL policy, see the information at: [http://www.cisco.com/en/US/products/products\\_end-of-life\\_policy.html](http://www.cisco.com/en/US/products/products_end-of-life_policy.html).

### Related Topics

[Existing Components in Base Release Sets](#), on page 53

[System Upgrade](#), on page 81

[New Components in Target Release Set](#), on page 57

[Components Not in Target Release Set](#), on page 57

## Upgrade Overview

This section lists existing components included in the base release sets that are involved in the upgrade process, components that have to be newly installed for the target release set, and components that must be uninstalled because they are not part of the target release set.

### Existing Components in Base Release Sets

The following table lists the components that are part of the base release sets that are being upgraded to Cisco Unified Communications System Release 9.0(1).

**Table 11: IP Telephony Components in Base Release Sets**

Component	Unified Communications Base Release 8.6(1)
Cisco Unified Communications Manager	X
Cisco Unified Communications Manager—Cisco IP Telephony Operating System	X
Cisco Business Edition 3000	X
Cisco Unified Communications Manager Express	X

<b>Component</b>	<b>Unified Communications Base Release 8.6(1)</b>
Cisco Unified Survivable Remote Site Telephony (SRST)	X
Cisco Unified Contact Center Express	X
Cisco Unified Contact Center Express Operating System	X
Cisco Unified Communications Manager IM and Presence Service	X
Cisco Unified SIP Proxy	X
Cisco Emergency Responder	X
Cisco Emergency Responder—Cisco IP Telephony Operating System	X
Cisco ASA Phone Proxy	X
Cisco Unified Business Attendant Console and Unified Department Attendant Console	X
Cisco Unified Enterprise Attendant Console	X
Cisco Unified MeetingPlace	X
Cisco Unified MeetingPlace Web Conferencing	X
Microsoft Outlook for Cisco Unified MeetingPlace	X
Jabber for Cisco Unified MeetingPlace	X
Microsoft Office Communicator for Cisco Unified MeetingPlace	X
Cisco Unified Media Server for 3545 MCU (video)	X
Cisco Unified Media Server for 3545 MCU (audio)	X
Cisco Unified Videoconferencing 3522 BRI Gateway	X
Cisco Unified Videoconferencing 3527 and 3545 PRI Gateways	X
Cisco Integrated Services Router (ISR) 2800, 3800 (Voice DSP for Ad Hoc Conferencing)	X
Cisco Integrated Services Router (ISR) 2900, 3900 (Voice DSP for Ad Hoc Conferencing)	X
Cisco Unity Connection	X
Cisco Unity Express	X

<b>Component</b>	<b>Unified Communications Base Release 8.6(1)</b>
Cisco Unified Survivable Remote Site Voicemail	X
Cisco Cius	X
Cisco Unified IP Phones models 7906G, 7911G, 7921G, 7925G, 7931, 7937G, 7940G, 7941G, 7942G, 7945G, 7960G, 7961G, 7962G, 7965G, 7970G, 7971G, 7975G	X
Cisco Unified IP Phones model 3911, 3951	X
Cisco Unified IP Phones models 6921, 6941, 6961	X
Cisco Unified IP Phones models 6901, 6911	X
Cisco Unified IP Phones models 7936, 7985G	X
Cisco Unified IP Phones models 8961, 9951 and 9971	X
Cisco IP Communicator	X
Cisco Unified Personal Communicator	X
Cisco UC Integration™ for Microsoft Lync	X
Cisco Unified Communications for RTX	X
Cisco Unified Client Services Framework	X
Cisco UC Integration for Webex	X
Cisco Unified Video Advantage	X
Cisco Unified Communications Widgets	X
Cisco Aironet Access Point (AP)	X
Cisco 4400 Series Wireless LAN Controllers	X
Cisco Unified Mobility Advantage	X
Cisco Unified Mobile Communicator	X
Cisco Mobile for Nokia	X
Cisco Mobile for Android	X
Cisco ASA Adaptive Security Appliance	X

<b>Component</b>	<b>Unified Communications Base Release 8.6(1)</b>
Cisco Intrusion Prevention System (AIP-SSM, IDSM-2 Module, IPS-4200)	X
Management Center for Cisco Security Agents	X
Cisco Security Agent for Cisco Unified Communications Manager	X
Cisco Security Agent for Cisco Emergency Responder	X
Cisco Security Agent for Unified Contact Center Express	X
Cisco Security Agent for Cisco Unified MeetingPlace	X
Cisco Unified Operations Manager	X
Cisco Unified Service Monitor	X
Cisco Unified Service Statistics Manager	X
Cisco Unified Provisioning Manager	X
Cisco IOS Mainline Release	X
Unified Computing System B200 M2, C200 M2, and C210 M2 (Unified Communications Virtualization)	X
Cisco 2801, 2821, 2851, 3825, 3845 (router, voice/data gateway)	X
Cisco 38xx Gatekeepers	X
Cisco Integrated Services Router (ISR) 1861	X
Cisco Integrated Services Router (ISR) 2901, 2911, 2921, 2951, 3925, 3945, 3925E, 3945E	X
Cisco Unified Border Element Enterprise Edition for Cisco ISR Series	X
Cisco Unified Border Element Enterprise Edition for Cisco ASR 1000 Series	X
Cisco Secure RTP and Cisco Secure SRST	X
Cisco Catalyst 3750 (data center switch)	X
Cisco Catalyst 4503 Switch	X
Cisco Catalyst 4506 (access switch)	X
Cisco Catalyst 6506, 6509 (voice access switch, supervisor 2/MSFC2)	X

Component	Unified Communications Base Release 8.6(1)
Cisco Catalyst 6506, 6509 (core switch, supervisor 720)	X
Cisco Catalyst 6608, 6624 (voice gateway)	X
Cisco VG202 and 204 (analog voice gateway)	X
Cisco VG224 (analog voice gateway)	X
Cisco VG248 (analog voice gateway)	X
McAfee Antivirus <sup>8</sup>	X

<sup>8</sup> You can install third-party antivirus agents on Windows-based servers such as Unified Operations Manager and Unified Provisioning Manager, but not on non-Windows appliances such as Unified Communications Manager and Unified Communications Manager Business Edition.

## New Components in Target Release Set

Some components are new to the Cisco Unified Communications System Release 9.0(1) release set. You must install these new components and configure them in the network (instead of upgrading them).

For information about installing and configuring these components, see the documentation for each component at the URL shown:

- Enterprise License Manager
- Cisco SocialMiner
- Cisco TelePresence MX 200 Series
- Cisco WebEx for Android
- Cisco WebEx for Apple iOS
- Cisco Unified IP Phones model 7926
- Cisco Jabber for Mac
- Cisco Jabber for iPad
- Cisco Jabber for iPhone
- Cisco Jabber for Windows
- Cisco VG350 (analog voice gateway)
- Cisco Prime Collaboration Manager

## Components Not in Target Release Set

The following components should be removed or replaced with appropriate new components because they are no longer supported in the target release of Unified Communications System 9.0(1) deployments.

- Cisco Unified SRST Manager (Enhanced Survivability (E-SRST))
- Cisco TelePresence Movi
- Cisco Unified Messaging Gateway
- Cisco Unified Mobility Advantage
- Cisco Unified Mobile Communicator
- Cisco Intercompany Media Engine
- Cisco Unified Operations Manager
- Cisco Unified Provisioning Manager
- Cisco Unified Service Monitor
- Cisco Unified Service Statistics Manager
- Cisco Unity
- Unity-CM TSP
- Cisco Unity—Microsoft Exchange
- Cisco Unified Messaging Gateway
- Cisco Security Agent for Cisco Unity
- Cisco 3800 and 3900 (IP-to-IP gateways)

**Note**

See the EOS/EOL website for a list of recommended replacements (if any) for the above components: [http://www.cisco.com/en/US/products/prod\\_end\\_of\\_life.html](http://www.cisco.com/en/US/products/prod_end_of_life.html). For Cisco EOS/EOL policy, see the information at: [http://www.cisco.com/en/US/products/products\\_end-of-life\\_policy.html](http://www.cisco.com/en/US/products/products_end-of-life_policy.html).

## System Upgrade Paths to Cisco Unified Communications System Release 9.0(1)

The following upgrade paths are available in Cisco Unified Communications System Release 9.0(1) for IP telephony environments:

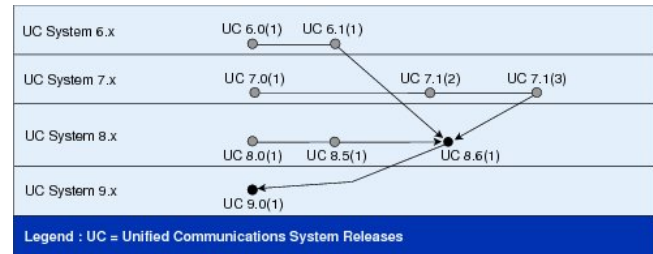
- Cisco Unified Communications System Release 8.6(1) to Cisco Unified Communications System Release 9.0(1)

**Note**

You can access a complete listing of all the Cisco Unified Communications System releases for IP telephony components at the Cisco Unified Communications System Release Summary Matrix for IP Telephony: [http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/uc\\_system/unified/communications/system/versions/IPTMtrix.html](http://www.cisco.com/en/US/docs/voice_ip_comm/uc_system/unified/communications/system/versions/IPTMtrix.html).

See the following figure for a representation of the upgrade paths for Cisco Unified Communications System Release 9.0(1).

**Figure 1: Upgrade Paths to Cisco Unified Communications System Release 9.0(1)**



## System Upgrade Strategies

This section discusses the upgrade strategies for all components in the target release deployment scenarios. Details of individual components upgrades are not described unless additional information or clarification is required.

The following upgrade strategies are available for use when upgrading to target release:

- Single-stage upgrade using existing hardware (flash-cut)—All components in the network start at a base release set and all components are upgraded to the target release set within a single maintenance window.
- Single-stage upgrade using new hardware (either flash-cut or shrink-and-grow)—A parallel target release network should be built using new hardware and pre-staged with configuration to support the existing production network.

All users can then be moved from the existing production network to the new network in either of these ways:

- In a single maintenance window using a flash-cut upgrade process
- In several maintenance windows using a shrink-and-grow upgrade process (where a single maintenance window is used to implement the new release versions on the new hardware, but multiple windows are used to migrate the users)



### Note

We recommend that you do not use backup and restore procedures to perform the pre-staged configuration on the parallel network. In many applications, you are required to use the same hostname and IP address for the backup and restore process. This approach can prevent you from creating a truly parallel network, as two systems cannot exist on the same network with identical hostnames and IP addresses.

The upgrade strategies involving the single-stage upgrade approach are appropriate for small sites (fewer than 500 seats) with smaller number of components in the network.

- Multistage system upgrade using existing hardware (hybrid system)—The components in individual sites can be upgraded from the base release set software to the target release set software in stages, during separate maintenance windows.

At the completion of each intermediate stage, the network within each site exists as a *hybrid system* with a mix of the following:

- Some components are operating on the base release set
- Other upgraded components are operating on the target release set




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**Note** *Hybrid system* refers to interproduct versions, not to intraproduct versions. For example, all Unified Communications Manager servers in the same cluster will remain at the same software release version.

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The multistage system upgrade approach is recommended for medium-to-large sites (ranging from 501 to 1,499 seats for medium and 1,500 to 4,999 seats for large) with a greater number of components in the network.

- Multisite migration (via hybrid network with release set interworking)—Components are upgraded from the base release set software to the target release set software on a site-by-site basis during separate maintenance windows.

At the completion of each maintenance window, a *hybrid network* exists within the multiple sites with a mix of the following:

- Sites whose components are operating on the base release set
- Sites whose components are operating on the target release set
- Sites whose components are a hybrid system

This model assumes that sites may be upgraded independently. However, with the multisite migration strategy, you must account for distributed applications with shared components among sites. For example, if you have deployed a Cisco Emergency Responder supporting multiple Unified Communications Manager clusters, Centralized TFTP clusters, or a Unified Communications Manager cluster using Clustering-over-WAN (CoW), then these sites must be upgraded concurrently.

Users can be moved in stages from the existing production network to the new network operating on the target release set software.

The multisite migration strategy is recommended for large multisite environments (more than 5000 seats) with a large number of components in the network.

### Related Topics

[Multistage System Upgrade Using Existing Hardware \(Hybrid System\), on page 62](#)

## Single-Stage Upgrade Using Existing Hardware

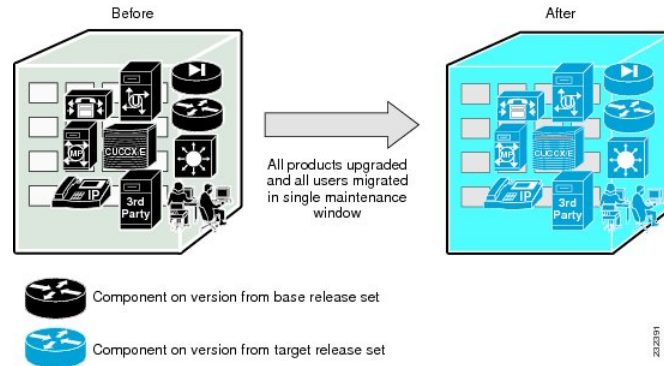
All components in the network start at the base release set and all components are upgraded to the target release set software within a single maintenance window. Since all components are upgraded within a single maintenance window, interoperability is not required between the base and target release sets.

The single-stage upgrade on existing hardware approach is typically not recommended for large sites and networks, since it has to be performed within a single maintenance window.



The following figure shows an example of the single maintenance window that is involved in the single-stage upgrade on existing hardware approach.

**Figure 2: Single-Stage Upgrade Using Existing Hardware**



## Single-Stage Upgrade Using New Hardware

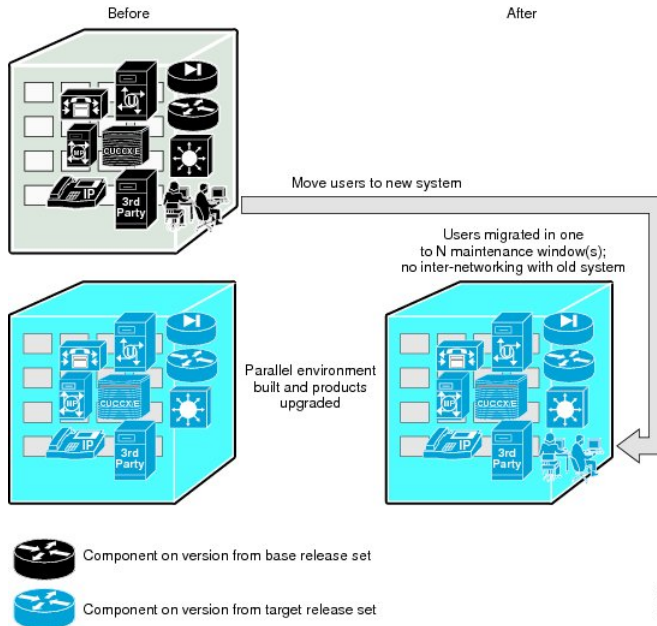
A parallel Cisco Unified Communications System network should be built using new hardware and pre-staged with configuration to support the existing production network. All users can then be moved from the existing production network to the new network operating with the target release set software either in a single maintenance window (using flash-cut) or in several maintenance windows (using shrink-and-grow).

The single-stage upgrade on new hardware approach is not recommended for large sites and networks for the following reasons:

- The upgrade cannot be performed within a single maintenance window.
- The expense of a complete new parallel network is significant.

The figure below shows an example of the maintenance windows that are involved in the single-stage upgrade on new hardware approach.

**Figure 3: Single-Stage Upgrade Using New Hardware**



## Multistage System Upgrade Using Existing Hardware (Hybrid System)

Individual components and/or sites can be upgraded in stages, from the base release set software to the target release set software, during separate maintenance windows. At the completion of each intermediate stage, the individual site exists as a *hybrid system* with a mix of the following:

- Some components operating on the base release set software
- Other upgraded components operating on the target release set software

The multistage system upgrade on existing hardware is the recommended approach for medium-to-large networks. In this case, individual components within a single site and/or individual sites in a multisite environment are progressively upgraded over the span of several days or weekends.

This type of staging is required because:

- Sufficient time may not be available (maintenance window) to take the system out of service for the complete upgrade of all the components involved.
- You must test existing functionality following the upgrade.
- You must test new functionality following the upgrade.

You can view a staged upgrade as a series of maintenance windows separated by inter-maintenance window intervals. During each maintenance window, one or more components of the system or a subset of the components is upgraded.

Businesses typically have a maintenance window during which service disruptions are likely to cause minimal disruption and affect only a limited number of users, for example, during the night or during a weekend.

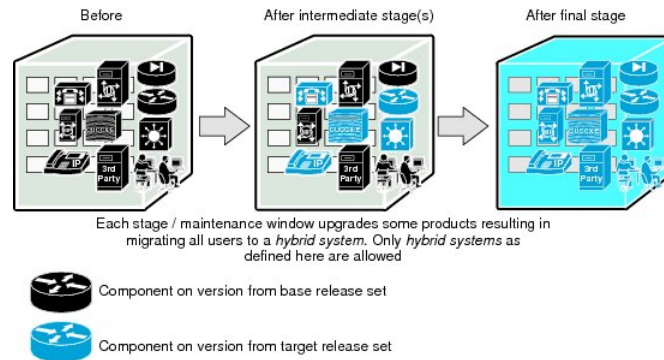
Before the staged upgrade is completed, the whole network exists in a partially upgraded state where some components have been upgraded to the target release set software and the remaining components are operating with the base release set software.

Backward compatibility of the components is critical during the staged upgrade, so that target release set components are able to interoperate with the base release set components. If any component is not backward compatible, this can potentially result in prolonged periods of service outage spanning several maintenance windows (possibly several weeks).

Therefore, during multistage upgrades, it is mandatory to have interoperability between the base and target release set software versions.

The following figure shows an example of the maintenance windows that are involved in the multistage system upgrade on existing hardware approach.

**Figure 4: Multistage System Upgrade Using Existing Hardware (Hybrid System)**



## Related Topics

[System Upgrade Preparation](#), on page 67

## Multisite Migration (Hybrid Network)

Components are upgraded from the base release set to the target release set on a site-by-site basis during separate maintenance windows.

At the completion of each maintenance window, a *hybrid network* will exist across multiple sites. Within each site, either a single-stage or multistage system upgrade strategy can be used to upgrade that particular site's components from the base to the target release set.

Interworking can be expected among sites with *pure* base release set versions and sites with pure target release set versions as shown in the figure below. However, interworking will not be possible between these *pure* sites and *hybrid* system sites.



### Note

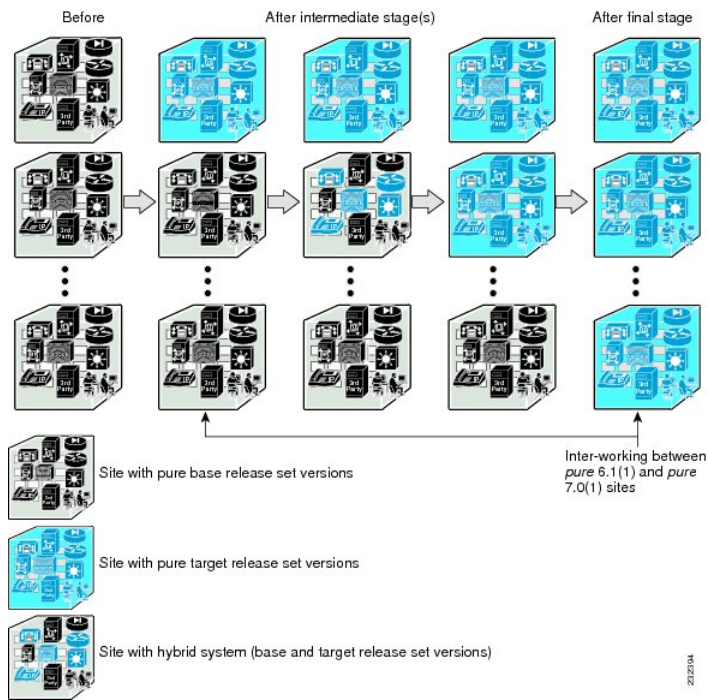
A component that is common to multiple sites, such as shared Cisco Emergency Responder, may affect the interoperability itself, the order in which sites may be upgraded, or which sites must be upgraded concurrently.

Users can be moved in stages from the existing production network to the new network operating with the target release set software. The number of users on the existing base network will shrink while the number on the target network will grow correspondingly.

This migration process can span several weeks and, sometime months, if necessary. During this upgrade approach, it is essential that the two networks, existing and new, be able to communicate with each other.

The following figure shows an example of the maintenance windows that are involved in the multisite migration approach.

**Figure 5: Multisite Migration**



The following table provides a summary of the upgrade strategies.

**Table 12: Summary of Upgrade Strategies**

	Single-Stage Upgrade	Multistage System Upgrade	Multisite Migration Upgrade
Type of deployment	<ul style="list-style-type: none"> <li>• Small single-site</li> <li>• Small multisite (fewer than 500 seats)</li> </ul>	<ul style="list-style-type: none"> <li>• Medium single-site</li> <li>• Medium multisite (501–1,499 seats)</li> <li>• Large single-site (1,500 – 4,999 seats)</li> </ul>	<ul style="list-style-type: none"> <li>• Large multisite (5,000 or more seats)</li> </ul>

	<b>Single-Stage Upgrade</b>	<b>Multistage System Upgrade</b>	<b>Multisite Migration Upgrade</b>
Maintenance window (MW)	One	Multiple	Multiple
Interoperability between releases at component level	Not required	Required	Required
Interoperability between releases at site level	Not required	<ul style="list-style-type: none"> <li>• Medium single-site— Not required</li> <li>• Large single-site— Not required</li> <li>• Medium multisite— Required</li> </ul>	Required
User migration	Complete in one stage	Partial until final stage	Partial until final stage
Upgrade time	One time slot, for example, during a weekend maintenance window	Several days to weeks	Several weeks to months

### Related Topics

[System Upgrade Preparation, on page 67](#)





## System Upgrade Preparation

This section discusses information to be aware of before performing the actual upgrade process, such as the general upgrade approach for different components, upgrade release versions of components involved in the upgrade, and release version compatibility.



**Note**

The following upgrade strategies are recommendations only. No formal upgrade testing was done for the UC 9.0 system release.



**Note**

Many of the IPT component names have changed as part of Cisco Unified Communications System releases. The latest product names are used in this document, even when referencing products from previous releases.

- [System Upgrade Approach](#), page 67
- [System Upgrade Dependencies](#), page 68
- [Upgrade Release Versions](#), page 75

## System Upgrade Approach

The general approach is to upgrade each Cisco Unified Communications Manager cluster and its associated IP telephony components one at a time before upgrading the next cluster.



**Note**

Access and download the license files required to upgrade (or newly install) and operate the appropriate software at: <http://www.cisco.com/go/license>.

For each cluster, upgrade the components of the Cisco Unified Communications System solution in the following order:

- 1 Infrastructure components, including switches, routers, and security components. These components should be upgraded first to ensure that the infrastructure is able to support the services required by Cisco Unified Communications System components.

- 2 Cisco data and voice gateways and gatekeepers (including videoconferencing MCUs and 3G gateways).

**Note**

These components should be upgraded first to ensure that the infrastructure is able to support the services required by Cisco Unified Communications System components.

- 3 Network Management Components
- 4 Call processing components, such as Unified Communications Manager clusters
- 5 Queuing and self-service components such as Cisco Unified Contact Center Express
- 6 Messaging components such as Cisco Unity Connection
- 7 Cisco Unified MeetingPlace components
- 8 Video Conferencing components
- 9 Cisco applications co-resident on servers

After all the Unified Communications Manager clusters in the network have been upgraded, install any new components included in the target release set and remove obsolete or end-of-life components.

The upgrade sequence of the IP telephony components should be dictated by the following considerations:

- The criticality of the service that these components provide. For example, basic phone service is considered to be of greater importance than supplementary services or voice messaging services.
- Backward compatibility of the software releases of these components.
- The components which provide more critical service should be upgraded first. See [Upgrade Release Versions](#), on page 75 section, which describes, for each base release set, whether components need to be upgraded before or after upgrading Unified Communications Manager, or if the upgrade order does not matter.

**Related Topics**

[System Upgrade](#), on page 81

[Backward Compatibility Issues](#), on page 73

## System Upgrade Dependencies

Cisco Unified Communications System Release 9.0(1) offers support for new hardware for several components and has removed support for some of the existing hardware platforms. The bridge upgrade provides a migration path for customers who use discontinued server models. A bridge upgrade works on unsupported or discontinued hardware for the purpose of creating a DRS backup. The DRS backup can be restored on new hardware after completion of a fresh installation. When preparing for an upgrade to Release 9.0(1), read all product upgrade documentation if you plan to migrate to the new hardware offerings.

**Note**

You can set up a virtualized environment by running Unified Communications applications on a virtual machine on a Unified Computing System (UCS). For additional details, including UCS hardware information and third-party requirements, see: [www.cisco.com/go/uc-virtualized](http://www.cisco.com/go/uc-virtualized).



Components within each release set are compatible with each other and will interoperate correctly. That is, components in a specific base release set are compatible with each other and will interoperate, and components in the target release set are compatible with each other and will interoperate.

The order of operations also needs to be taken into account the impact of backward compatibility or incompatibility, especially for multistage system and multisite migration upgrades, where each stage (or maintenance window) upgrades only some of the components in the release set. Additional backward compatibility information is provided later in this section.

As you upgrade individual components of the integrated system, the overall system may operate in a state of degraded service when some components have been upgraded to the next release level and do not interoperate with components that are still at the previous release level.

Components that are upgraded first should interoperate with other components that are still at the previous release level. For example, Gateways are upgraded first so they can interoperate with Cisco Unified Communications Manager that is still on the base release.

## Cisco Unified Communications Manager Upgrade and Compatibility Considerations

As some of the components have to be upgraded prior to Unified Communications Manager, there are certain upgrade issues and considerations to be aware of. For bridge upgrade and migration on Unified Communications Manager hardware, see *New and Changed Document for Cisco Unified Communications Manager 9.0(1)* at:

[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cucm/rel\\_notes/9\\_0\\_1/delta/CUCM\\_BK\\_N38FD301\\_00\\_cucm-new-and-changed-90.pdf](http://www.cisco.com/en/US/docs/voice_ip_comm/cucm/rel_notes/9_0_1/delta/CUCM_BK_N38FD301_00_cucm-new-and-changed-90.pdf)

### Pre-upgrade Migration

You can migrate Cisco Unified Communications System applications before upgrading Unified Communications Manager, if:

- Existing version of the application is incompatible with the new version of Unified Communications Manager
- New version of the application is compatible with both the existing and new versions of Unified Communications Manager

### Post-upgrade Migration

You should migrate Cisco Unified Communications System applications after upgrading Unified Communications Manager, if:

- Existing version of application is compatible with new version of Unified Communications Manager
- New version of application is compatible with the new version of Unified Communications Manager, but incompatible with the existing version

For compatibility and interoperability information about Unified Communications Manager and Unified Communications components, see the following sites:

- Cisco Unified Communications Compatibility Tool:  
<http://tools.cisco.com/ITDIT/vtgsca>

Cisco Unified Communications Manager (CallManager) Compatibility Information: [http://www.cisco.com/en/US/products/sw/voicesw/ps556/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_device_support_tables_list.html)

## Refresh Upgrade Feature When Upgrading to Cisco Unified Communications Manager Release 9.0(1)

Refresh Upgrade is a feature that allows upgrades between incompatible OS.

When you install 9.0(1) upgrade software, there is a temporary server outage while the Cisco Unified Communications Manager software is installed. Once you start the upgrade using either the command line or graphical user interface, the data is exported, and the system automatically reboots, at which point the server outage begins. The duration of this outage depends on your configuration and amount of data.



### Caution

If you are upgrading your software on HP 7825H3 or HP7828H3 hardware, there is no option to revert to the previous version of Cisco Unified Communications Manager. To perform an upgrade on one of these machines, you must use a 16GB USB key to migrate the data from the old system to the new installation.

When the upgrade is complete, you can choose to activate the partition with the new upgrade software or return to using the partition with the previous version of the software. With the exception of HP 7825H3 and HP7828H3 hardware upgrades, the previous software remains in the inactive partition until the next upgrade. Your configuration information migrates automatically to the upgraded version in the active partition.



### Note

All upgrade paths prior to 8.5(2) require the installation of a Cisco Option Package (COP) file. The COP file delivers functionality to allow the upgrade path to be supported and to provide user experience enhancements.

For more information and detailed procedures, see [Software Upgrades](#) chapter in Cisco Unified Communications Operating System Administration Guide.

## Unified Communications Manager L2 Upgrade Space Issue

The Cisco Unified Communications Manager System may experience issues during an L2 upgrade if the necessary disk space is not available during the upgrade. The issue is more common if the Unified Communication Manager implementation comprises different types of endpoints where the TFTP directory can significantly increase due to the different endpoints firmware. You may also experience issues if you enable detailed logs and traces in a particular Cisco Unified Communications node. In this case, the issue may not appear immediately, but could be seen over time. For more detailed information on ensuring you have the necessary disk space before performing a Unified Communications Manager L2 upgrade see: [http://docwiki.cisco.com/wiki/Unified\\_CM\\_L2\\_Upgrade\\_Disk\\_Space\\_issues](http://docwiki.cisco.com/wiki/Unified_CM_L2_Upgrade_Disk_Space_issues).

## Cisco Unified Contact Center Express Considerations

Unified CCX versions prior to 8.5(1) are not supported with Unified Communications Manager 9.0. You must upgrade Unified CCX to 8.5(1)SU3 or 9.0(1) before upgrading Unified Communications Manager to 9.0(1).

### Related Topics

[Multistage System Upgrade](#), on page 90

## Cisco Unified Communications Manager IM and Presence Service

Cisco Unified Presence (now known as Cisco Unified Communications Manager IM and Presence Service) is integrated into Cisco Unified Communications Manager 9.0(1) as a service.

Upgrade Unified Communications Manager before you upgrade Cisco Unified Communications Manager IM and Presence Service. Be aware of the following considerations while upgrading Unified Communications Manager IM and Presence Service.



### Note

Cisco Unified Communications Manager IM and Presence Service provides a bridge upgrade for customers to migrate from a discontinued hardware to supported hardware. The bridge upgrade allows you to create a DRS backup on the discontinued hardware. You can then restore the DRS backup on supported hardware after you complete a fresh Cisco Unified Communications Manager IM and Presence Service installation on the supported hardware.

If you are performing a bridge upgrade to Cisco Unified Communications Manager IM and Presence Service 8.5(1), do the following:

### Upgrade from Unified Communications Manager IM and Presence Service Release 6.x to Release 8.5(1)

- 1 6.x to 8.x upgrade is not supported. You must first upgrade to Release 7.x before upgrading to Release 8.x.
- 2 Change the SIP Trunk Destination Port on Unified Communications Manager to 5060, since the SIP Trunk listening port for Unified Communications Manager IM and Presence Service Release 7.x has changed to 5060.
- 3 Perform a DRS backup.
- 4 Then complete a fresh installation of Unified Communications Manager IM and Presence Service Release 7.x on the supported hardware.
- 5 Finally restore the DRS backup on the supported hardware and upgrade to Unified Communications Manager IM and Presence Service 8.5(1).

### Upgrading from Unified Communications Manager IM and Presence Service Release 7.x to Release 8.5(1)

- 1 Upgrade from 7.x to 8.x on the discontinued hardware. Perform a DRS backup of the Unified Communications Manager IM and Presence Service Release 8.x.
- 2 Then complete a fresh installation of Unified Communications Manager IM and Presence Service Release 8.5(1) on the supported hardware. For multi-node cluster, install first node, do post-install configuration, configure second node in GUI, and install second node.
- 3 Finally restore the DRS backup on the supported hardware (restore as a cluster, both nodes at the same time) and upgrade to Unified Presence Release 8.5(1).
  - After upgrading Unified Communications Manager, stop and then restart the Intercluster Sync Agent using the Serviceability Pages in Unified Communications Manager IM and Presence Service. This enables a complete reinitialization and resynchronization required due to database schema changes between Unified Communications Manager 6.x, 7.x and 8.x.
  - Upgrade both nodes in a Unified Communications Manager IM and Presence Service cluster, starting with the first node and then the subsequent node.

Proxy Profiles need not be configured for Release 8.x. If upgrading from Unified Presence Release 6.0(2) to 8.x, delete any Proxy Profiles that have been configured. They are not inaccessible and are not used in Release 8.x.

## Cisco Unified IP Phones Considerations

The following are considerations to be aware of when upgrading Unified IP Phones:

- When you upgrade your Unified Communications Manager servers, note that the Unified IP Phone firmware is also automatically upgraded to the version bundled with the Unified Communications Manager.

For more detailed information about SIP Unified IP Phones and the differences between features on the SCCP and SIP phones, see the following documentation:

- Cisco 7900 Series IP Phones Maintain and Operate Guides:  
[http://www.cisco.com/en/US/products/hw/phones/ps379/prod\\_maintenance\\_guides\\_list.html](http://www.cisco.com/en/US/products/hw/phones/ps379/prod_maintenance_guides_list.html)
- Cisco 7900 Series IP Phones End-User Guides:  
[http://www.cisco.com/en/US/products/hw/phones/ps379/products\\_user\\_guide\\_list.html](http://www.cisco.com/en/US/products/hw/phones/ps379/products_user_guide_list.html)
- “IP Telephony Endpoints” chapter in *Cisco Unified Communications SRND based on Cisco Unified Communications Manager 9.x*:  
[www.cisco.com/go/srnd](http://www.cisco.com/go/srnd)

## Secure SIP Trunk Security Profile Considerations

For a Cisco Extension Mobility Cross Cluster (EMCC) solution, a Secure SIP Trunk profile cannot be configured on the special EMCC SIP Trunk. This means that Transport Layer Security (TLS) will not be used to encrypt signaling for any calls that are initiated by the Home cluster to a Visiting cluster Local Route Group or PSTN gateway. For more information, see [CSCtw76154](#).

## Migration to Cisco Unified MeetingPlace 8.5(3)MR1 from Cisco Unified MeetingPlace Express

Currently Cisco supports migrations from only Cisco Unified MeetingPlace Express Release 2.1.2 to Cisco Unified MeetingPlace Release 8.x; therefore, if you are using an earlier version of Cisco Unified MeetingPlace Express, you must first upgrade to Cisco Unified MeetingPlace Express Release 2.1.2.

Perform the following to migrate to Cisco Unified MeetingPlace Release 8.x from Cisco Unified MeetingPlace Express:

- 1 Use the `migrate_tool` utility to export data from the Cisco Unified MeetingPlace Express system.
- 2 Install and configure your Cisco Unified MeetingPlace Release 8.5(3)MR1 system.
- 3 Get new licenses for your Cisco Unified MeetingPlace Release 8.5(3)MR1 system. Licenses for Cisco Unified MeetingPlace Express do not work with a Cisco Unified MeetingPlace Release 8.x system.
- 4 Use the `migrate_tool` utility to import data to the Cisco Unified MeetingPlace Release 8.5(3)MR1 system.

**Note**

Do not run any other processes or tasks on your system during the data migration. This can potentially affect the data that is being transferred from one system to another.

- 5 Verify that the data was successfully migrated to the Cisco Unified MeetingPlace Release 8.5(3)MR1 by comparing the number of user profiles on the Cisco Unified MeetingPlace Express system with the number of user profiles on the Cisco Unified MeetingPlace system.

For more information on migrating to Cisco Unified MeetingPlace Release 8.5(3)MR1 from Cisco Unified MeetingPlace Express, see the Cisco Unified MeetingPlace Documentation at:

[http://www.cisco.com/en/US/products/sw/ps5664/ps5669/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/sw/ps5664/ps5669/tsd_products_support_series_home.html)

## Cisco Unified MeetingPlace Considerations

You can upgrade your system from Cisco Unified MeetingPlace Release 8.0(1) directly to Release 8.5(3)MR1.

However, to upgrade from Release 6.1(1) or Release 7.1(3) to Release 8.5(3)MR1, you need to migrate your system. Migration means that you can use an old configuration, but you have to reinstall the software system completely.

For detailed information about Unified MeetingPlace migration procedures, see the documentation at:

[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/meetingplace/8\\_5/english/books/install\\_guide/85mpinst.html](http://www.cisco.com/en/US/docs/voice_ip_comm/meetingplace/8_5/english/books/install_guide/85mpinst.html)

## Backward Compatibility Issues

In multistage system upgrade scenarios, you may have to consider additional issues such as backward compatibility across components.

A version of one component is backward compatible with a previous version of another component when service functionality and behavior are maintained between the two component versions. Backward compatibility between two components or applications may limit the order of upgrade of the components and cause service outage during upgrades.

If two components are upgraded during separate maintenance windows, as in the multistage system or multisite migration upgrade scenarios, the whole system exists in a partially upgraded state in the interval between the two maintenance windows.

The service capability during the period between maintenance windows depends on backward compatibility between the two components, as discussed in this section. If the two components are not backward compatible, service outages occur in the interval between the two maintenance windows.

### Related Topics

[Backward Compatibility Scenarios, on page 73](#)

[Compatibility Guides, on page 110](#)

## Backward Compatibility Scenarios

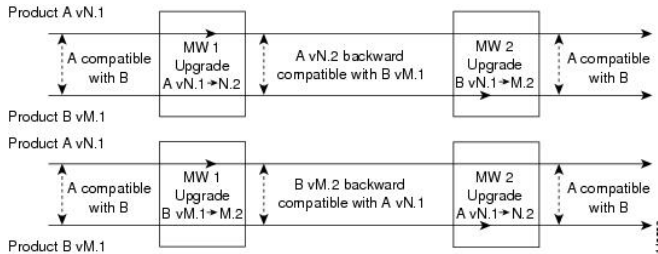
### *Both New Versions are Backward Compatible*

It is possible for versions of two components to each be backward compatible with the previous version of the other component, for example Unified MeetingPlace and Unified Communications Manager. In this case,

there is no backward compatibility restriction in the order of upgrades. Either component may be upgraded first and will be able to interoperate with the other component as illustrated in the figure below.

You can perform the upgrade for these components across multiple maintenance windows.

**Figure 6: Both New Release Versions are Backward Compatible**



**Related Topics**

[System Upgrade Planning, on page 49](#)

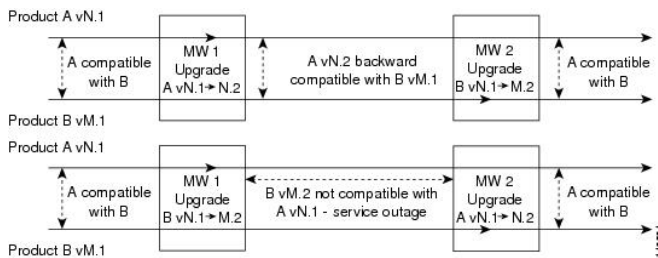
**Only One New Version is Backward Compatible**

It is possible that only one of the new versions is backward compatible with the previous version of the other component. There are no components that fit this model.

In this case, the component that is backward compatible should be upgraded first to avoid a service outage during the upgrade, as illustrated in the following figure.

You should perform the upgrade for these components across two separate maintenance windows. This type of upgrade is described in the multistage system and multisite migration upgrade approaches in [System Upgrade Planning, on page 49](#)

**Figure 7: One New Release Version is Backward Compatible**

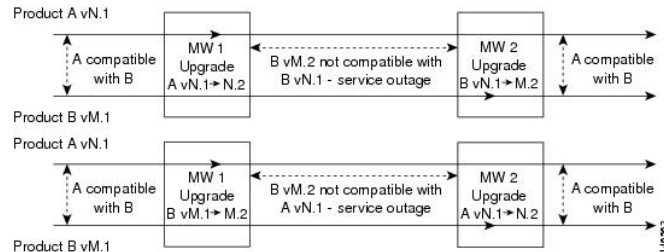


**Neither New Version is Backward Compatible**

It is possible that neither of the new versions is backward compatible with the previous version of the other component, as with Unified Contact Center Express and Unified Communications Manager.

In this case, a service outage exists from the time the first product is upgraded until the second component is upgraded, as shown in the following figure.

**Figure 8: Neither New Release Version is Backward Compatible**



### Related Topics

[System Upgrade Planning, on page 49](#)

## Upgrade Release Versions

The tables in this section list the component release versions of the base and target release sets in relation to Unified Communications Manager 9.0(1).



### Note

The starting point of the upgrade will be the latest maintenance or service release of the same train on Cisco.com, if available. For example, Unified Communications 7.1(3) Release exited test with Cisco Unified Communications Manager version 7.1(3); however, the latest service release on Cisco.com is 7.1(3) XX. Therefore, Unified Communications Manager 7.1(3) XX would be the starting point of the upgrade for the Unified Communications 7.1(3) solution set.

## IP Telephony Components in Release 8.6(1) and Release 9.0(1) Software Release Sets

The following table lists the software versions for the IP telephony components in the Cisco Unified Communications System Release 8.6(1) and Release 9.0(1) release sets.

**Table 13: IP Telephony Components in Cisco Unified Communications System Release 8.6(1) and Release 9.0(1) Release Sets**

Component	Release 9.0(1)	Release 8.6(1)
Cisco Unified Communications Manager	9.0(1)	8.6(1a)
Cisco Unified Communications Manager—Cisco IP Telephony Operating System	Bundled with Unified Communications Manager	Bundled with Unified Communications Manager

<b>Component</b>	<b>Release 9.0(1)</b>	<b>Release 8.6(1)</b>
Cisco Business Edition 3000	8.6(4)	8.6(1a)
Cisco Unified Communications Manager Express	9.0(1) 15.2(3)T1	8.6(1) 15.1.(4)M1
Cisco Unified Survivable Remote Site Telephony (SRST)	9.0(1) 15.2(3)T1	8.6(1) 15.1(4)M1
Cisco TelePresence Video Communication Server	X.7.2	X6.1
Cisco TelePresence Video Communication Server Expressway	X7.2	X6.1
Cisco Unified Contact Center Express	9.0(1)	8.5(1)SU1
Cisco Unified Contact Center Express Operating System	Bundled with Unified Contact Center Express	Bundled with Unified Contact Center Express
Cisco Unified Communications Manager IM and Presence Service (formerly Cisco Unified Presence)	9.0(1)	8.5(1)
Cisco Unified SIP Proxy	8.5(3)	8.5(2)
Cisco Emergency Responder	9.0(1)	8.6(1a)
Cisco Emergency Responder—Cisco IP Telephony Operating System	Bundled with Cisco Emergency Responder	Bundled with Cisco Emergency Responder
Cisco Unified Business Attendant Console and Unified Department Attendant Console	9.0(1)	8.6(1)
Cisco Unified Enterprise Attendant Console	9.0(1)	8.6(1)
Cisco Unified MeetingPlace	8.5(3) MR1	8.5(1)
Microsoft Outlook for Cisco Unified MeetingPlace	8.5(1)	8.5(1)
Cisco Unified Media Server for 3545 MCU (video)	5.7.0.0.4	5.7.0.0.4
Cisco Unified Media Server for 3545 MCU (audio)	6.1.0.0.16	6.1.0.0.16
Cisco Unified Videoconferencing 3522 BRI Gateways	5.0.0.0.22	5.0.0.0.22
Cisco Unified Videoconferencing 3526, 3527, and 3545 PRI Gateways	5.0.0.0.22	5.0.0.0.22
Cisco Voice Conferencing for ISR Routers	15.1(4)M3	15.1(4)M1



Component	Release 9.0(1)	Release 8.6(1)
Cisco Integrated Services Router (ISR) 1861	15.1(4)M3	15.1(4)M1
Cisco Voice and Video Conferencing for ISR G2 Routers	15.2(3)T1	15.1(4)M1
Cisco Integrated Services Router (ISR) 2901, 2911, 2921, 2951, 3925, 3945, 3925E, 3945E	15.2(3)T1	15.1(4)M1
Cisco Hosted Collaboration Solution	8.6(2)	8.6(1)
Cisco TelePresence System 500 Series, 1000, 1100, 1300 Series, 3000 Series, 3200 Series	CTS 1.9	CTS 1.7.3
Cisco TelePresence System EX90 and Cisco TelePresence System EX60 <sup>9</sup>	TE 6	TC 5.0
Cisco TelePresence System Profile Series. 42-inch, 52-inch, 52-inch Dual, 65-inch, and 65-inch Dual	TC 6.0.0	TC 5.0
Cisco TelePresence System Quick Set C20 and Cisco TelePresence System Integrator Package C40, C60, and C90	TC 6.0.0	TC 5.0
Cisco IP Video Phone E20 <sup>10</sup>	TE 6	TE 4.1
Cisco TelePresence MX 200 Series	TC 6.0.0	--
Cisco TelePresence System 1700 MXP	F 9.0.2 PAL	F 9.0.2 PAL
Cisco TelePresence Server 7010	2.2	2.2
Cisco TelePresence MCU MSE Series	4.3	4.2
Cisco Telepresence ISDN Gateway 3241	2.1	2.1
Cisco Unity Connection	9.0(1)	8.6.(1)
Cisco Unity Express	8.6(3)	8.6(1)
Cisco Unified IP Phones models 7906G, 7911G, 7931, 7941G, 7942G, 7945G, 7961G, 7962G, 7965G, 7970G, 7971G, 7975G	Bundled with Unified Communications Manager Firmware 9.3(1)	Bundled with Unified Communications Manager Firmware 9.2(1)SR1
Cisco Unified IP Phones model 7937G	1.4(4)	1.4(4)
Cisco Unified IP Phones models 7921G, 7925G	1.4(2)	1.4(1)
Cisco Unified IP Phone model 3905	Firmware 9.2(1)	Firmware 9.2(1)

<b>Component</b>	<b>Release 9.0(1)</b>	<b>Release 8.6(1)</b>
Cisco Unified IP Phones model 3911, 3951	8.1(4a)	8.1(4a)
Cisco Unified IP Phones models 6921, 6941, 6961	Firmware 9.3(1)	Firmware 9.2(1)
Cisco Unified IP Phones models 6901, 6911	Firmware 9.3(1)	Firmware 9.2(1)
Cisco Unified IP Phones models 8961, 9951, 9971	Firmware 9.3(1)	Firmware 9.2(1)
Cisco Unified IP Phones model 6945	Firmware 9.3(1)	Firmware 9.2(1)
Cisco Virtualization Experience Clients	Firmware 9.2(1)	Firmware 9.2(1)
Cisco Cius	9.2(4)	8.6(1)
Cisco IP Communicator	8.6(1)	8.6(1)
Cisco Unified Personal Communicator	8.5(5)	8.5(1)
Cisco UC Integration for Microsoft Lync (formerly Microsoft Office Communicator)	8.5(2)	8.5(2)
Cisco Unified Communications for RTX	9.0(1)	8.5(1)
Cisco Aironet 3502 Access Point	AIR-WLC4400-K9-7-0-116-0-ER.aes	AIR-WLC4400-K9-7-0-116-0-ER.aes
Cisco Aironet 1142 Access Point	AIR-WLC4400-K9-7-0-116-0-ER.aes	AIR-WLC4400-K9-7-0-116-0-ER.aes
Cisco 4400 Series Wireless LAN Controllers	AIR-WLC4400-K9-7-0-230-0.aes	AIR-WLC4400-K9-7-0-116-0-ER.aes
Cisco 5508 Series Wireless LAN Controllers	AIR-CT5500-K9-7-2-103-0.aes	AIR-WLC4400-K9-7-0-116-0-ER.aes
Cisco Mobile for Nokia	8.5(1)	8.5(1)
Cisco Mobile for Android	8.5(1)	8.5(1)
Cisco ASA Adaptive Security Appliance	8.4(3)	8.4(1)
Cisco Intrusion Prevention System (AIP-SSM, IDSM-2 Module, IPS-4200)	7.1(4)E4	7.0(2)E3
Management Center for Cisco Security Agents	5.2.1	5.2.1
Cisco Security Agent for Cisco Unified Communications Manager	Bundled with Unified Communications Manager	Bundled with Unified Communications Manager

<b>Component</b>	<b>Release 9.0(1)</b>	<b>Release 8.6(1)</b>
Cisco Security Agent for Cisco Emergency Responder	Bundled with Unified Communications Manager	Bundled with Unified Communications Manager
Cisco Security Agent for Unified Contact Center Express	Bundled with Unified Contact Center Express	Bundled with Unified Contact Center Express
Cisco Security Agent for Cisco Unified MeetingPlace	6.0(1)	6.0(1)
Cisco Virtual Desktop Integration	9.2(1)	9.2(1)
Cisco IOS Extended Maintenance Deployment	15.1(4)M3	15.1(4)M1
Cisco 2801, 2821, 2851, 3825, 3845 (router, voice/data gateway)	15.1(4)M3	15.1(4)M1
Cisco 38xx Gatekeepers	15.1(4)M3	15.1(4)M1
Cisco Integrated Services Router (ISR) 1861	15.1(4)M3	15.1(4)M1
Cisco Integrated Services Router (ISR) 2901, 2911, 2921, 2951, 3925, 3945, 3925E, 3945E	15.2(3)T1	15.1(4)M1
Cisco 4451-X Integrated Services Router	IOS-XE 3.9.1	IOS-XE 3.9.1
Cisco Unified Border Element Enterprise Edition for Cisco ISR Series	15.2(3)T1	15.1(4)M1
Cisco Unified Border Element Enterprise Edition for Cisco ASR 1000 Series	3.6	3.3
Cisco Catalyst 4503 Switch	12.2(53)SE2	12.2(53)SE2
Cisco Catalyst 4506 (access switch)	12.2(54)SG	12.2(54)SG
Cisco Catalyst 6506, 6509 (voice access switch, supervisor 2/MSFC2)	12.2(33)SXI4Cat OS8.6(6a)	12.2(33)SXI4Cat OS8.6(6a)
Cisco Catalyst 6506, 6509 (core switch, supervisor 720)	12.2(33)SXI4	12.2(33)SXI4
Cisco Catalyst 6608, 6624 (voice gateway)	Bundled with Unified Communications Manager	Bundled with Unified Communications Manager
Cisco VG202 and 204 (analog voice gateway)	15.1(4)M3	15.1(4)M1
Cisco VG224 (analog voice gateway)	15.1(4)M3	15.1(4)M1

Component	Release 9.0(1)	Release 8.6(1)
Cisco VG248 (analog voice gateway)	1.3(2)	1.3(2)
Cisco VG350 (analog voice gateway)	15.2(4)M	--
Cisco ATA 187 (analog telephony adaptor)	9.3(1)	9.2(1)
McAfee Antivirus <sup>11</sup>	Enterprise 8.7.0i	Enterprise 8.7.0i

<sup>9</sup> Component does not support CTI OS based silent monitoring.

<sup>10</sup> Component does not support CTI OS based silent monitoring.

<sup>11</sup> You can install third-party antivirus agents on Windows-based servers such as Unified Operations Manager and Unified Provisioning Manager, but not on non-Windows appliances such as Unified Communications Manager and Unified Communications Manager Business Edition.



## System Upgrade

This chapter discusses in detail the upgrade sequence for all of the IP telephony components that are configured in various deployment models for Cisco Unified Communications System Release 9.0(1).

Upgrade procedures for individual IP telephony components are not described in this document as they are available in individual component upgrade product documents.



**Note**

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The following upgrade strategies are recommendations only. No formal upgrade testing was done for the UC 9.0 system release.

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**Note**

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Many of the IP telephony component names have changed as part of Cisco Unified Communications System releases. The latest product names are used in this document, even when referencing products from previous releases.

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- [IP Telephony Deployment Models, page 81](#)
- [IP Telephony Component Upgrades, page 88](#)
- [Related Documentation, page 110](#)

## IP Telephony Deployment Models

The upgrade procedures in this document are tailored for each deployment model in the IP telephony test environment, because each site includes different components.

### Unified Communications Manager IP Telephony Models

This section provides the upgrade procedures for the various IP telephony components in the enterprise deployment models.

Detailed information about IP telephony deployments and site models that are tested for the target release is available at: [http://www.cisco.com/iam/unified/ipt901/Review\\_Tested\\_Site\\_Models.htm](http://www.cisco.com/iam/unified/ipt901/Review_Tested_Site_Models.htm)

The following deployment models were tested in the Cisco Unified Communications System IP telephony test environment:

- Single-site or campus deployment model
- Multisite centralized with SRST model
- Multisite WAN distributed model
- Clustering over WAN model

Choose the deployment model that best matches your deployment to understand the upgrade process that best applies to your environment. The following sections provide the general upgrade sequence for the components in the each deployment model and provide other detailed upgrade procedures.

After you determine the general upgrade sequence, use one of the upgrade strategies that is described in [IP Telephony Component Upgrades](#), on page 88 to upgrade your components.

### Related Topics

- [Single-Site or Campus Deployment Model](#), on page 82
- [Multisite Centralized with SRST Model](#), on page 83
- [Multisite WAN Distributed Model](#), on page 84
- [Clustering over WAN Model](#), on page 86

## Single-Site or Campus Deployment Model

In an IP telephony single-site (campus) deployment model, upgrade the components in the following order:

- 1 Infrastructure components such as:
  - Core and access switches and routers
  - Security components such as Cisco Adaptive Security Appliance
  - Wireless LAN Controllers and Access Points
- 2 Gatekeepers and data/voice gateways:
  - Cisco Unified Communication Manager Express
  - IOS Gateways (MGCP, H.323, SIP)
  - IOS based transcoders and conference bridges
  - Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
  - Gatekeepers
  - Cisco Unified Border Element (formerly IPIPGW)
  - Cisco Unified SIP Proxy
  - Analog Phone Gateways (VG224, VG30D)
  - Cisco Aironet Access Points and Wireless Access Points
- 3 Network management tools such as Cisco Unified Operations Manager, Cisco Unified Service Monitor, Cisco Unified Service Statistics Manager, Cisco Unified Provisioning Manager.

- 4 Call processing components. The following components should be upgraded first in the following order:
  - a Cisco Unified Communications Manager
  - b Cisco Unified Communications Manager IM and Presence Service
  - c JTAPI on client applications (if necessary)
  - d Cisco Security Agent and virus scanning software
  - e Cisco Unified IP Phones Firmware (if needed) including ATA

The following call processing components can be upgraded in any order:

- Cisco Emergency Responder and Music On Hold
- Cisco IP Communicator and Cisco Unified Personal Communicator
- Cisco Unified Video Advantage (Video PC endpoint)
- Cisco UC Integration for Microsoft Office Communicator

- 5 Queuing and self-service components such as Cisco Unified Contact Center Express and Cisco Unified Intelligence Suite.
- 6 Cisco Messaging components such as, Cisco Unity Express, Domain Controller (including Active Directory), Cisco Unity Connection.
- 7 Cisco Unified MeetingPlace components
- 8 Video Endpoints SCCP/SIP/H.323/H.320 and IP/VC gateways and MCU
- 9 Cisco and third-party adjunct applications or endpoints on other servers (such as SCCP video endpoints)

### **Multisite Centralized with SRST Model**

You must first upgrade central sites followed by the remote SRST sites in the multisite centralized model.

#### **Central Site**

In each central site, upgrade the components in the following order:

- 1 Infrastructure components such as:
  - Core and access switches and routers
  - Security components such as Cisco Adaptive Security Appliance
  - Wireless LAN Controllers and Access Points
- 2 Gatekeepers and data/voice gateways:
  - Cisco Unified Communication Manager Express
  - PSTN Gateways (IOS)
  - Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
  - Gatekeepers




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**Note** Gatekeeper licensing required for 3800 series integrated services routers.

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- Cisco Unified Border Element (formerly IPIPGW)
  - Analog Phone Gateways (VG224, VG30D)
  - Cisco Aironet Access Points
- 3 Network management tools such as Cisco Unified Operations Manager and Cisco Unified Service Monitor.
  - 4 Cisco Unified Communications Manager, Cisco Unified Communications Manager IM and Presence Service and Cisco Unified IP Phones
  - 5 Cisco Emergency Responder and Music On Hold
  - 6 Cisco Unified Personal Communicator and Cisco IP Communicator
  - 7 Unified Contact Center Express
  - 8 Cisco Unified MeetingPlace components
  - 9 Video components
  - 10 Cisco applications co-resident on Media Convergence servers (MCSs) (such as Cisco Security Agent, JTAPI software)
  - 11 Third-party on-board agents on MCS servers (such as antivirus, Backup agent, Management agent (SNMP))
  - 12 Cisco and third-party adjunct applications or endpoints on other servers

### Remote Site

In each remote site, upgrade the components in the following order:

- 1 Infrastructure components including switches, routers and security components such as Cisco Adaptive Security Appliance
- 2 Analog Voice Gateways (VG224, VG30D)
- 3 PSTN Gateways (IOS)
- 4 Network management tools such as Cisco Unified Operations Manager and Cisco Unified Service Monitor
- 5 Cisco Unified Communications Manager Express or Unified SRST router/SRSV, Cisco Unified IP Phones, Cisco IP Communicator
- 6 Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
- 7 SCCP/SIP/H.323/H.320 video endpoints

### Multisite WAN Distributed Model

The multisite distributed model includes several Cisco Unified Communications Manager cluster sites interconnected by ICT or H.323 trunks.



**Note**

You should treat the upgrade of each site as a separate stage in the overall upgrade process.

Upgrade the components within each site in the following order:

- 1 Infrastructure components such as:
  - Core and access switches and routers
  - Security components such as Cisco Adaptive Security Appliance
  - Wireless LAN Controllers and Access Points
- 2 Gatekeepers and data/voice gateways:
  - Cisco Unified Communication Manager Express
  - PSTN Gateways (IOS)
  - Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
  - Gatekeepers
  - Cisco Unified Border Element (formerly IPIPGW)
  - Analog Phone Gateways (VG224, VG230D)
  - Cisco Aironet Access Points
- 3 Network management tools such as Cisco Unified Operations Manager and Cisco Unified Service Monitor.
- 4 Cisco Unified Communications Manager, Cisco Unified Communications Manager IM and Presence Service and Cisco Unified IP Phones
- 5 Cisco Emergency Responder and Music On Hold
- 6 Cisco Unified Personal Communicator and Cisco IP Communicator
- 7 Unified Contact Center Express
- 8 Cisco Unified MeetingPlace components
- 9 Video components
- 10 Cisco applications co-resident on MCSs (such as Cisco Security Agent, JTAPI software)
- 11 Third-party on-board agents on MCS servers (such as antivirus, Backup agent, Management agent (SNMP))
- 12 Cisco and third-party adjunct applications or endpoints on other servers (such as SCCP video endpoints)

In each remote site, upgrade the components in the following order:

- 1 Infrastructure components including switches, routers and security components such as Cisco Adaptive Security Appliance
- 2 Analog Voice Gateways (VG224, VG30D)
- 3 PSTN Gateways (IOS)
- 4 Network management tools such as Cisco Unified Operations Manager and Cisco Unified Service Monitor

- 5 Cisco Unified Communications Manager Express or Unified SRST router, Cisco Unified IP Phones, Cisco IP Communicator
- 6 Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
- 7 SCCP/SIP/H.323/H.320 video endpoints

### Clustering over WAN Model

In the IP telephony clustering over the WAN model, upgrade the components in the following order:

- 1 Infrastructure components such as:
  - Core and access switches and routers
  - Security components such as Cisco Adaptive Security Appliance
  - Wireless LAN Controllers and Access Points
- 2 Gatekeepers and data/voice gateways:
  - Cisco Unified Communication Manager Express
  - PSTN Gateways (IOS)
  - Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
  - Gatekeepers
  - Cisco Unified Border Element (formerly IPIP GW)
  - Analog Phone Gateways (VG224, VG30D)
  - Cisco Aironet Access Points
- 3 Network management tools such as Cisco Unified Operations Manager and Cisco Unified Service Monitor.
- 4 Cisco Unified Communications Manager, Cisco Unified Communications Manager IM and Presence Service and Cisco Unified IP Phones
- 5 Cisco Emergency Responder and Music On Hold
- 6 Cisco Unified Personal Communicator and Cisco IP Communicator
- 7 Unified Contact Center Express
- 8 Cisco Unified MeetingPlace components
- 9 Video components
- 10 Cisco applications coresident on Media Convergence Servers (MCSs) (such as Cisco Security Agent, JTAPI software)
- 11 Third-party on-board agents on MCS servers (such as antivirus, Backup agent, Management agent (SNMP))
- 12 Cisco and third-party adjunct applications or endpoints on other servers (such as SCCP video endpoints)

If there are any remote sites, upgrade the components in those sites in the following order:

- 1 Infrastructure components including switches, routers and security components such as Cisco Adaptive Security Appliance

- 2 Analog Voice Gateways (VG224, VG30D)
- 3 PSTN Gateways (IOS)
- 4 Network management tools such as Cisco Unified Operations Manager and Cisco Unified Service Monitor
- 5 Cisco Unified Communications Manager Express or Unified SRST router, Cisco Unified IP Phones, Cisco IP Communicator
- 6 Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
- 7 SCCP/SIP/H.323/H.320 video endpoints

## Cisco Business Edition IP Telephony Models

This section provides the general installation sequence for the various IP telephony components in midmarket business deployment models.

For more detailed information about these IP telephony deployment models, see: [http://www.cisco.com/iam/unified/ipt901/Review\\_Tested\\_Site\\_Models.htm](http://www.cisco.com/iam/unified/ipt901/Review_Tested_Site_Models.htm)

### Related Topics

[Multisite Centralized with SRST or SRSV Model](#), on page 87

## Multisite Centralized with SRST or SRSV Model

A multisite centralized with SRST deployment refers to any scenario in which call processing servers (for example, Cisco Business Edition) are located at the same site, while any combination of voice gateways, and phones are located remotely across a WAN link or centrally.

You must first upgrade central sites followed by the remote SRST sites in the multisite centralized model.

In each central site, upgrade the components in the following order:

- 1 Infrastructure Components such as:
  - Core switches
  - Access switches
  - Security Components
  - Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
  - Cisco Wireless LAN Controller(s) and Access Points
- 2 Call processing components such as:
  - Cisco Unified Communications Manager IM and Presence Service
  - Cisco Business Edition
  - Cisco Unified Communications Manager




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**Note** Upgrade of Cisco Unified Communication Manager in a Cisco Unified Business Edition site includes upgrading the co-resident Unity Connection on a UCS C-series server.

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- Cisco Unified IP Phones
- Cisco IP Communicator
- Cisco Unified Personal Communicator

**3** Media resource components such as:

- Music on Hold
- Transcoders
- Conferences Bridges
- Media Termination Points (MTPs)
- RSVP agents

**4** Cisco Unified Contact Center Express, Cisco Unified IP Phone Agents

**5** Cisco Unity Connection and optional Voice Recognition Server

**6** Cisco Unified Business Attendant Console

For each remote site, install components in the following order:

- 1** Access switches
- 2** Security Components
- 3** Cisco Wireless LAN Controller(s) and Access Points
- 4** Cisco Unified Survival Remote Site Telephony Router, Cisco Unified IP Phones, Cisco IP Communicator
- 5** Cisco Unified Videoconferencing gateway and Multipoint Control Units (MCU)
- 6** SCCP/SIP/H.323/H.320 video endpoints
- 7** Cisco Computer Telephony Interface (CTI) OS Agent and Supervisor Desktop
- 8** Cisco Unified Business Attendant Console and Cisco Unified Department Attendant Console

## IP Telephony Component Upgrades

This section describes the following upgrade strategies for IP telephony components:

- Single-stage upgrade—Recommended for small single-site or multisite installations.
- Multistage system upgrade—Recommended for medium or large single-site and medium multisite installations.

- **Multisite Migration**—To upgrade large, multisite IP telephony installations to the Cisco Unified Communications System release set using the multisite migration upgrade strategy, you can use either the single-stage or multistage system upgrade procedures listed in the respective sections.

See [System Upgrade Planning, on page 49](#) for detailed information about these upgrade strategies and see [System Upgrade Preparation, on page 67](#) for the software release versions of the components involved in the upgrade. For more information about the number of seats in these various types of sites, see [System Upgrade Planning, on page 49](#).

The upgrade paths that are available for upgrading IP telephony components are defined in [System Upgrade Paths to Cisco Unified Communications System Release 9.0\(1\), on page 58](#) in [System Upgrade Planning, on page 49](#).

When performing the upgrade of each component, see the product-specific upgrade document for detailed information. See the [Related Documentation, on page 110](#) section for a list of URLs for component-specific release notes and installation and upgrade documents.

### Related Topics

[Single-Stage Upgrade, on page 89](#)

[Multistage System Upgrade, on page 90](#)

## Single-Stage Upgrade

The single-stage upgrade process is recommended for small single-site and small multisite installations. This upgrade process can be performed in a single maintenance window, which allows you to upgrade components in a relatively short time and with no loss of functionality.

See [System Upgrade Preparation, on page 67](#) for the software release versions of the components involved in the upgrade. Based on your environment and the base release set deployed in your network, upgrade the components in the order listed in the following table.

**Table 14: Single-Stage Upgrade Order for IP Telephony Components**

Component to Upgrade	Upgrade Order for Base Release Set 8.6(1)
Cisco Catalyst 6506 (core switch)	1
Cisco Catalyst 6509/3524 <sup>12</sup> (access switch)	2
Cisco Adaptive Security Appliance	3
Cisco Unified Communications Manager cluster (Cisco Unified IP Phones, Cisco Catalyst 6500/6000 Gateways, Cisco IP Communicator, and Cisco ATA186/188/187 analog telephony adapters are upgraded with cluster)	4
Unified Contact Center Express	5
Cisco Unified Communications Manager IM and Presence Service	6
Cisco Emergency Responder	7

Component to Upgrade	Upgrade Order for Base Release Set 8.6(1)
Cisco Unified Communications Manager Express	8
Cisco IOS Gateway	9
Cisco Communications Media Module	10
Cisco VG224 (analog phone gateway)	11
Cisco VG30D (analog phone gateway)	12
Cisco IOS Gatekeeper	13
Cisco Unified MeetingPlace components	14
Cisco Unity Connection	15
Domain Controller (including Active Directory)	16
SCCP/ SIP / H.323/ H.320 <sup>13</sup> Video Endpoints	17
Cisco Unified Videoconferencing Gateway <sup>14</sup> and Cisco Unified Videoconferencing System MCUs	18
Cisco Unified VideoAdvantage (Video PC Endpoint)	19
Cisco Aironet Access Point	20
Cisco Unified Personal Communicator	21
Cisco applications co-resident on MCS servers	22
Third-party on-board agents on MCS servers	23
Cisco and third-party applications on other servers	24

<sup>12</sup> Tested in EUEM (European & Emerging Markets) site models only during Cisco Unified Communications System testing.

<sup>13</sup> Tested in EUEM (European & Emerging Markets) site models only during Cisco Unified Communications System testing.

<sup>14</sup> Tested in EUEM (European & Emerging Markets) site models only during Cisco Unified Communications System testing.

## Multistage System Upgrade

A multistage system upgrade is the recommended approach for medium and large single-site and medium multisite installations. In this upgrade process, components are grouped for upgrading in several stages or maintenance windows. Within each maintenance window, there is a recommended order for upgrading each component.

The grouping of the components into the stages may vary depending on the size of the networks being upgraded. For smaller networks, several maintenance windows may be collapsed into a single maintenance window. Additional stages may be necessary for larger sites.

After each maintenance window and before initiating the next upgrade stage, we recommend that you verify that the operation of all basic and critical call types remains unaffected. We also recommend that you maintain a list of the components that have been upgraded and the ones yet to be upgraded.

If you are upgrading from the following base release set:

- Cisco Unified Communications System Release 8.6(1) to Release 9.0(1)—You will be running Unified CCX 8.5(1) SU1 and Unified Communications Manager Release 8.6(1a). You can directly proceed with the upgrade recommendations listed below

Cisco recommends the following two upgrade options:

- Same Maintenance Window—You can upgrade all the call processing components first and Unified CCX 8.5(1) next in the same maintenance window. Be aware that time estimates for this option are approximately 16 hours.
- Different Maintenance Windows—You should upgrade Unified CCX to Release 9.0(1) before upgrading Unified Communications Manager Release 9.0(1).

### Related Topics

[Multistage System Upgrade Order for IP Telephony Components from Release 8.6\(1\) to 9.0\(1\)](#), on page 91

## Multistage System Upgrade Order for IP Telephony Components from Release 8.6(1) to 9.0(1)

**Table 15: Multistage System Upgrade Order for IP Telephony Components from Release 8.6(1) to 9.0(1)**

Stage	Component Grouping	Upgrade Order for IP Telephony Components within Stage	Exit Criteria for the Stage
1	Switches, routers and security components	<ol style="list-style-type: none"> <li>1 Core Switches<sup>15</sup></li> <li>2 Access Switch<sup>16</sup></li> <li>3 Cisco security components - Adaptive Security Appliance (ASA) 5540</li> </ol>	Verify the following exit criteria for Stage 1: <ol style="list-style-type: none"> <li>1 <a href="#">Verify Switches and Routers Upgrade, on page 96</a></li> <li>2 <a href="#">Verify Security Components Upgrade, on page 97</a></li> </ol>

Stage	Component Grouping	Upgrade Order for IP Telephony Components within Stage	Exit Criteria for the Stage
2	Gatekeepers and IOS gateways	<ol style="list-style-type: none"> <li>1 Cisco Unified Communications Manager Express</li> <li>2 IOS Gateway (MGCP, H.323<sup>17</sup>, and SIP)</li> <li>3 Cisco VG224 (analog voice gateway)</li> <li>4 IOS based transcoders and conference bridges</li> <li>5 Cisco Unified Border Element</li> <li>6 IOS Gatekeeper</li> <li>7 Cisco Aironet Access Point 1142</li> <li>8 Lightweight Wireless Access Points</li> <li>9 Cisco Unified SIP Proxy</li> </ol>	<p>Verify the following exit criteria for Stage 2:</p> <ol style="list-style-type: none"> <li>1 <a href="#">Verify Gatekeepers and Voice and Data Gateways Upgrade, on page 97</a></li> <li>2 <a href="#">Verify Unified Communications Manager Express Upgrade, on page 99</a></li> <li>3 <a href="#">Verify Cisco IOS Gatekeeper and Cisco Unified Border Element Upgrade, on page 99</a></li> <li>4 <a href="#">Verify Cisco VG224 Upgrade, on page 99</a></li> <li>5 <a href="#">Verify Cisco Aironet Access Point Upgrade, on page 100</a></li> </ol>
3	Network management	<ol style="list-style-type: none"> <li>1 Cisco Unified Operations Manager</li> <li>2 Cisco Unified Service Monitor</li> <li>3 Cisco Unified Service Statistics Monitor</li> <li>4 Cisco Unified Provisioning Manager</li> </ol>	<p>Verify the following exit criteria for Stage 3:</p> <ol style="list-style-type: none"> <li>1 <a href="#">Verify Network Management Components Upgrade, on page 100</a></li> <li>2 <a href="#">Verify Cisco Unified Service Monitor Upgrade, on page 109</a></li> <li>3 <a href="#">Verify Cisco Unified Operation Manager Upgrade, on page 109</a></li> <li>4 <a href="#">Verify Cisco Unified Service Statistic Manager Upgrade, on page 109</a></li> <li>5 <a href="#">Verify Cisco Unified Provisioning Manager Upgrade, on page 110</a></li> </ol>



Stage	Component Grouping	Upgrade Order for IP Telephony Components within Stage	Exit Criteria for the Stage
4	Call processing	<p>Components upgraded first and in order:</p> <ol style="list-style-type: none"> <li>1 Cisco Unified Communications Manager<sup>18</sup></li> <li>2 Cisco Unified Communications Manager IM and Presence Service <sup>19</sup></li> <li>3 Upgrade JTAPI if necessary on client applications</li> <li>4 CSA and virus scanning software</li> <li>5 Cisco Unified IP Phones Firmware (if needed) (including ATA and 6608)</li> </ol> <p>Components below may be upgraded in any order after completion of upgrades above:</p> <ul style="list-style-type: none"> <li>• Cisco Emergency Responder</li> <li>• Cisco IP Communicator</li> <li>• Cisco Unified Personal Communicator<sup>20</sup></li> <li>• Cisco VT Advantage (Video PC Endpoint)</li> </ul> <p>Cisco recommends that Cisco Unified CCX upgrade is performed in the same upgrade stage as Cisco Unified Communications Manager.</p> <ol style="list-style-type: none"> <li>1 Install Cisco Unified Contact Center Express</li> </ol>	<p>Verify the following exit criteria for Stage 4:</p> <ol style="list-style-type: none"> <li>1 <a href="#">Verify Unified Communications Manager Upgrade, on page 100</a></li> <li>2 <a href="#">Verify Cisco Unified Communications Manager IM and Presence Service Upgrade, on page 102</a></li> <li>3 <a href="#">Verify Cisco Security Agent Management Console Upgrade, on page 102</a></li> <li>4 <a href="#">Verify Cisco Unified IP Phones Upgrade, on page 104</a></li> <li>5 <a href="#">Verify Cisco Emergency Responder Upgrade, on page 103</a></li> <li>6 <a href="#">Verify Cisco IP Communicator Upgrade, on page 104</a></li> <li>7 <a href="#">Verify Cisco Unified Personal Communicator Upgrade, on page 102</a></li> <li>8 <a href="#">Verify Cisco Unified Video Advantage Upgrade, on page 105</a></li> </ol> <p>Verify the following exit criteria after installing Cisco Unified CCX:</p> <ol style="list-style-type: none"> <li>1 <a href="#">Verify Unified Contact Center Express Upgrade, on page 105</a></li> </ol>

Stage	Component Grouping	Upgrade Order for IP Telephony Components within Stage	Exit Criteria for the Stage
5	Voice mail and Unified Messaging	<ol style="list-style-type: none"> <li>1 Cisco Unity Express</li> <li>2 Domain Controller (including Active Directory)</li> <li>3 Cisco Unity Connection<sup>21, 22</sup></li> </ol>	Verify the following exit criteria for Stage 5: <ol style="list-style-type: none"> <li>1 <a href="#">Verify Cisco Unity Connection Upgrade, on page 105</a></li> <li>2 <a href="#">Verify Cisco Unity Express Upgrade, on page 106</a></li> </ol>
6	Conferencing	<ol style="list-style-type: none"> <li>1 Cisco Unified MeetingPlace</li> <li>2 Migrate Cisco Unified MeetingPlace Express Release 2.1.2 to Cisco Unified MeetingPlace Release 8.5(2). For more information, see the <a href="#">Migration to Cisco Unified MeetingPlace 8.5(3)MR1 from Cisco Unified MeetingPlace Express, on page 72</a> section.</li> </ol>	Verify the following exit criteria for Stage 6: <ol style="list-style-type: none"> <li>1 <a href="#">Verify Unified MeetingPlace 7.x Upgrade, on page 106</a></li> <li>2 <a href="#">Verify Cisco Unified MeetingPlace 6.x or Earlier Upgrade, on page 107</a></li> </ol>
7	Videoconferencing	<ol style="list-style-type: none"> <li>1 SCCP/ H.323 /H.320<sup>23</sup> Video Endpoints</li> <li>2 IP/VC Gateway<sup>24</sup> and MCUs</li> </ol>	Verify the following exit criteria for Stage 7: <a href="#">Verify Cisco IP Videoconferencing and MCU Upgrade, on page 107</a>
8	Cisco and third-party Applications resident on other servers	Depends on the applications being upgraded	
9	Install new components		
10	Remove obsolete or end-of-life components		

15 This component is included in Cisco Business Edition deployments in EUEM site model.  
 16 This component is included in Cisco Business Edition deployments in EUEM site model.  
 17 This component is included in Cisco Business Edition deployments in EUEM site model.  
 18 Upgrading Cisco Business Edition includes upgrading co-resident Cisco Unity Connection.

- 19 This component is included in Cisco Business Edition deployments in EUEM site model.  
 20 This component is included in Cisco Business Edition deployments in EUEM site model.  
 21 This component is included in Cisco Business Edition deployments in EUEM site model.  
 22 Upgrading Cisco Business Edition includes upgrading co-resident Cisco Unity Connection.  
 23 Applies to EUEM deployments only  
 24 Applies to EUEM deployments only

### Related Topics

[Migration to Cisco Unified MeetingPlace 8.5\(3\)MR1 from Cisco Unified MeetingPlace Express, on page 72](#)

### Exit Criteria for Multistage System Upgrade Stages

The following table provides exit criteria you need to execute after completing each system upgrade stage.

**Table 16: System Upgrade Stages and Exit Criteria Matrix**

Component Grouping	Multistage System Upgrade Stage							
	1	2	3	4	5	6	7	8
Switches and Routers Upgrade Exit Criteria	X							
Security Components Exit Criteria	X							
Gatekeepers and Voice and Data Gateways Exit Criteria		X						
Unified Communications Manager Express Upgrade Exit Criteria		X						
Cisco IOS Gatekeeper and Cisco Unified Border Element (formerly IPIPGW) Upgrade Exit Criteria		X						
Cisco VG248; Cisco VG224 Upgrade Exit Criteria Cisco VG30D		X						
Cisco Aironet Access Point 1142 Upgrade Exit Criteria		X						
Network Management Components Upgrade Exit Criteria			X					
Unified Communications Manager Upgrade Exit Criteria				X				
Cisco Unified Communications Manager IM and Presence Service Upgrade Exit Criteria				X				
Cisco Security Agent (CSA) Management Console Upgrade Exit Criteria				X				
Cisco Unified Personal Communicator Upgrade Exit Criteria				X				

Component Grouping	Multistage System Upgrade Stage							
Cisco Emergency Responder Upgrade Exit Criteria				X				
Cisco Unified IP Phones Upgrade Exit Criteria				X				
Cisco IP Communicator Upgrade Exit Criteria				X				
Cisco Unified Video Advantage Upgrade Exit Criteria				X				
Unified Contact Center Express Upgrade Exit Criteria				X				
Cisco Unity Connection Upgrade Exit Criteria					X			
Cisco Unity Express Upgrade Exit Criteria					X			
Unified MeetingPlace 7.x Upgrade Exit Criteria						X		
Cisco Unified MeetingPlace 6.x or Earlier Upgrade Exit Criteria						X		
Cisco IP Videoconferencing and MCU Upgrade Exit Criteria							X	
Cisco Unified Messaging Gateway Upgrade Exit Criteria					X			
Cisco Unified Service Monitor Upgrade Exit Criteria			X					
Cisco Unified Operation Manager Upgrade Exit Criteria			X					
Cisco Unified Service Statistics Manager Upgrade Exit Criteria			X					
Cisco Unified Provisioning Manager Upgrade Exit Criteria			X					
Cisco UC Integration™ for Microsoft Office Communicator								

*Verify Switches and Routers Upgrade*

After upgrading core routers and switches, verify the following:

### Procedure

---

- Step 1** Check the buffer log or console for error messages.
  - Step 2** Verify that a dump file was not created in the flash memory.
  - Step 3** Use the show running-config command to verify that previous configuration was not deleted during the upgrade process.
  - Step 4** Use the show ip interface brief command to verify that configured interfaces are in up/up state.
  - Step 5** Verify that the Unified IP Phones connected to the switches are powered up and register correctly with their primary Unified Communications Manager node.
- 

#### *Verify Security Components Upgrade*

After upgrading Cisco Catalyst 6500 Services Switch and Cisco Adaptive Security Appliance (ASA), verify the following:

### Procedure

---

- Step 1** In a deployment where Unified Communications Manager servers are separated by a Adaptive Security Appliance (ASA), place a call from a Unified IP Phone that is registered to one Unified Communications Manager to a Unified IP Phone that is registered to another Unified Communications Manager.
  - Step 2** When Unified CM servers are inside the Firewall, make a call between outside and inside phones of the same Unified CM cluster. After the call is completed and disconnected, perform a factory reset of the outside phone. Verify that the outside phone can successfully register with Cisco Unified Communications Manager.
  - Step 3** Repeat the above step for SIP phone.
  - Step 4** (For IP telephony only) Update the Call Forward All (CFA) entry for a Unified IP Phone in a Unified Communications Manager cluster and verify that the update also happens in the other Unified Communications Manager when the Unified Communications Manager servers are separated by ASA.
  - Step 5** Verify that database replication is successful between Unified Communications Manager servers which are separated by ASA.
  - Step 6** Verify that all voice gateways outside of the firewall can register with Unified Communications Manager within the firewall.
- 

#### *Verify Gatekeepers and Voice and Data Gateways Upgrade*

After upgrading IOS Gateways, verify the following:

### Procedure

---

- Step 1** At the Cisco IOS exec level, execute the CLI commands.
  - To verify that the upgraded IOS target image is running:  
show version
  - To verify that the boot system is configured to boot the correct image:

show running-config

- To verify that configuration done previously (i.e. H.323/SIP dial-peer and MGCP) is not lost.

show running-config

- To verify that the ISDN connection status is at MULTIFRAME\_ESTABLISHED:

show isdn status

- To verify that configured interfaces are in up/up state:

show ip interface brief

- To verify a manually placed incoming call:

show isdn history

- To verify IP routing from branch site to a data center:

ping or traceroute

- To verify IP routing from one branch site to another branch site:

ping or traceroute

- Step 2** Ensure that all MGCP end points (FXS, FXO, PRI, T1 CAS and BRI) are properly registered with Unified Communications Manager.
- 

#### **IOS MGCP gateways upgrade exit criteria:**

- 1 From the PSTN make an inbound call to an IP Phone in Cisco Unified Communications Manager through MGCP Gateway.  
IP (SCCP and SIP) <-> PSTN via MGCP Gateway.
- 2 Put the call on hold and then resume the call.
- 3 Verify that the PSTN user hears MOH when the call is on hold.

#### **IOS SIP gateways upgrade exit criteria:**

- 1 From the PSTN make an inbound call to an IP Phone in Cisco Unified Communications Manager through SIP Gateway.  
IP (SCCP and SIP) <-> PSTN via SIP Gateway.
- 2 Put the call on hold and then resume the call.
- 3 Verify that the PSTN user hears MOH when the call is on hold.

#### **IOS H.323 gateways upgrade exit criteria:**

- 1 From the PSTN make an inbound call to an IP Phone in Cisco Unified Communications Manager through an H.323 Gateway.  
IP (SCCP and SIP) <-> PSTN via H.323 Gateway.
- 2 Put the call on hold and then resume the call.
- 3 Verify that the PSTN user hears MOH when the call is on hold.

*Verify Unified Communications Manager Express Upgrade*

After upgrading Unified Communications Manager Express, verify the following:

**Procedure**

- 
- Step 1** To check the Cisco Unified Communications Manager Express version running on the box, type the following show command:

**Example:**

```
show telephony-service
```

- Step 2** Verify that the phones register to Cisco Unified Communications Manager Express after the upgrade.
- Step 3** Verify if you are able to make internal and PSTN calls from IP Phones.
- Step 4** Call From Phone A to Phone B which is CFA/CFNA to a PSTN Number.
- Step 5** Test calls to Shared Line.
- Step 6** Verify that you can call VM (either Cisco Unity or Cisco Unity Express) from an IP Phone.
- Step 7** Verify call-blocking functionality in Cisco Unified Communications Manager Express.
- Step 8** Verify the Cisco Unified Communications Manager Express DN Overlay functionality.
- 

*Verify Cisco IOS Gatekeeper and Cisco Unified Border Element Upgrade*

After upgrading Cisco IOS Gatekeeper and Cisco Unified Border Element (formerly IPIPGW), verify the following:

**Procedure**

- 
- Step 1** To verify the running IVS version of IOS Image (for example, Cisco IOS Software, 3800 Software (C3845-IPVOICE\_IVS-M), type the following show command:
- ```
show version
```
- Step 2** To verify that the configuration is not lost, use the following show command:
- ```
show running-config
```
- Step 3** Verify that all H.323 End Points are configured to register with Gatekeeper registers properly.
- Step 4** Verify that Cisco Unified Communications Manager registers with Gatekeeper.
- Step 5** Make a call between two end points that use Gatekeeper. Verify that the call is successful and that proper bandwidth is reduced in Gatekeeper for that call.
- 

*Verify Cisco VG224 Upgrade*

After upgrading Cisco VG224, verify the following:

**Procedure**

- 
- Step 1** Verify that all configured VG224 ports are registered to Cisco Unified Communications Manager.
  - Step 2** Make a call to a VG224 Analog port and verify two way audio is working.
  - Step 3** Make a call to a VG224 Analog port and do a hook-flash transfer to an IP Phone.
- 

*Verify Cisco Aironet Access Point Upgrade*

After upgrading Cisco Aironet Access Point 1142, verify the following:

**Procedure**

- 
- Step 1** Verify that the 7920 and 7921 phones register with Cisco Unified Communications Manager; and stay registered after the upgrade.
  - Step 2** Make a call from IP Phone 7920 and IP Phone 7921 to another IP Phone and ensure audio in both directions.
  - Step 3** When the call is active, verify audio in both directions when IP Phone 7920/21 phone roams between Access Points.
  - Step 4** Verify that IP Phone 7920/21 phone can register with different types of encryption.
- 

*Verify Network Management Components Upgrade*

After upgrading network management components, verify the following:

**Procedure**

- 
- Step 1** Verify the software version and the build ID using Cisco Works to ensure that the upgrade was successful.
  - Step 2** Ensure that access to the Unified Operations Manager console is still available.
  - Step 3** Ensure that access to all devices managed by Unified Operations Manager is still available.
- 

*Verify Unified Communications Manager Upgrade*

After upgrading Unified Communications Manager, verify the following:

**Procedure**

- 
- Step 1** Verify that no error messages have occurred during the upgrade process.
  - Step 2** Check the upgrade log file for any errors.
  - Step 3** Verify that there is no replication failure between the Publisher and Subscribers.
  - Step 4** Verify that SIP and SCCP IP Phones are registered with Cisco Unified Communications Manager.
  - Step 5** Ensure the following devices are configured correctly:
    - Gatekeeper



- MGCP/H.323 Gateways
- Trunks
- CTI Route points.

- Step 6** Ensure the Media Resources (Conference or MTP or Transcoder) are configured correctly by checking their status.
- Step 7** Verify that the end users are able to connect to their CTI Managers.
- Step 8** Verify that the license usage is correct as reported in the License Unit Report.
- Step 9** Verify that services on all servers in the cluster are up.
- Step 10** Perform the Cisco Unified Communications Manager Publisher and Subscriber process verification through the following RTMT feature verification.
- Step 11** Verify that the Active Directory integration for user information and authentication is carried out and all users are in place (IP telephony only).

---

**Cisco Unified Communications Manager AAR Upgrade Exit Criteria:**

Verify that AAR configured and working in the system by making a IP to PSTN call (IP telephony only).

**Cisco Unified Communications Manager Hunt Pilots and List Upgrade Exit Criteria:**

Verify that Multiple Hunt Pilot and Hunt List are configured and working (IP telephony only).

**Cisco Unified Communications Manager Attendant Console Upgrade Exit Criteria:**

Verify that Attendant Console Cisco Unified Business Attendant Console /CUDAC (as applicable) are configured and running (IP telephony only).

**Cisco Unified Communications Manager IPMA Upgrade Exit Criteria:**

Verify that Cisco IPMA is configured and running (IP telephony only):

- 1 Verify Manager can intercept incoming call
- 2 Verify all call routed to Assistance
- 3 Verify intercom is working

**Other Cisco Unified Communications Manager Upgrade Exit Criteria:**

- 1 Verify that Extension Mobility is configured and working.
- 2 Verify that IP Phone Services are configured and working.
- 3 Verify that Web Dialer is configured and working (IP telephony only).
- 4 Verify that non Cisco Skinny Video End Points are working (IP telephony only).
- 5 Verify that Client Matter Codes (CMC) and Forced Authorization Codes (FAC) are configured for Route Patterns (IP telephony only).
- 6 Verify that Multilevel Administration (MLA) is configured (IP telephony only).
- 7 Verify that the Active Directory integration for user information and authentication is carried out and all users are in place (IP telephony only).
- 8 Verify that the phones can register in both Encrypted/Authenticated mode (IP telephony only).
- 9 Verify that Device Mobility is configured and working (IP telephony only).

10 Verify that CAR is configured and working (IP telephony only).

#### *Verify Cisco Unified Communications Manager IM and Presence Service Upgrade*

After upgrading Cisco Unified Communications Manager IM and Presence Service, verify the following:

##### **Procedure**

---

- Step 1** Verify that no error messages have occurred during the upgrade process.
  - Step 2** Verify that the upgrade log file for any errors.
  - Step 3** Verify that the license usage is correct as reported in the License Unit Report.  
Using RTMT, Verify that the CPU usage is consistent over 5 minutes of time without any spikes.
  - Step 4** Add other Cisco Unified Personal Communicator clients to a Cisco Unified Personal Communicator client's buddy list.
  - Step 5** Change the presence status of a client and verify that its presence status is updated in the other Cisco Unified Personal Communicator client.
- 

#### *Verify Cisco Security Agent Management Console Upgrade*

After upgrading Cisco Security Agent (CSA) Management Console, verify the following:

##### **Procedure**

---

- Step 1** Ensure that basic functionality of call flows that previously worked before the upgrade work the same and operate normally.
  - Step 2** Verify that the previous configuration still exists after the upgrade.
  - Step 3** Verify that access to the console is still available.
  - Step 4** Verify that all managed devices are visible.
- 

#### *Verify Cisco Unified Personal Communicator Upgrade*

After upgrading Unified Personal Communicator, verify the following:

**Procedure**

---

- Step 1** Verify that Unified Personal Communicator is able to derive its soft-phone device name and register with Cisco Unified Communications Manager.
  - Step 2** Establish a video call from the Cisco Unified Personal Communicator client.
  - Step 3** Verify that Cisco Unified Personal Communicator is able to derive its soft-phone device name and register with Cisco Unified Communications Manager.
  - Step 4** Verify that Cisco Unified Personal Communicator in Softphone mode is able to make internal and PSTN calls.
  - Step 5** Verify that Cisco Unified Personal Communicator is able to control IP hard phones.
  - Step 6** Verify that IP Phone Messenger is configured and working.
- 

*Verify Cisco Unified Mobility Advantage Upgrade*

After upgrading Cisco Unified Mobility Advantage, verify the following:

**Procedure**

---

- Step 1** Register Cisco Unified Mobile Communicator clients with Cisco Unified Mobility Advantage
  - Step 2** Verify that new messages for subscriber are received as voicemail alerts by Cisco Unified Mobile Communicator client.
  - Step 3** Verify that the Cisco Unified Mobile Communicator client receive call log information after the call to the client's desk phone is torn down.
- 

*Verify Cisco Emergency Responder Upgrade*

After upgrading Cisco Emergency Responder, verify the following:

### Procedure

---

- Step 1** In the OS Admin page, go to **Settings > Version** to verify that the correct active and inactive versions are shown.
  - Step 2** Ensure that 911, 912 and 913 Route points are registered in Cisco Unified Communications Manager.
  - Step 3** Ensure that CTI ports for on site security alert are registered in Cisco Unified Communications Manager
  - Step 4** Select **Tools > Event Viewer** on the Serviceability page to ensure Cisco Emergency Responder did not raise any “SNMP unreachable” alert for any switch or the Cisco Unified Communications Manager.
  - Step 5** In the Serviceability page, select **Tools > Control Center** and verify that there is no stopped service.
  - Step 6** Ensure that there are no additional phones marked as unlocated by Cisco Emergency Responder after the upgrade.
  - Step 7** In a dual-node deployment, shut down the Primary Cisco Emergency Responder and ensure that the secondary Cisco Emergency Responder takes over. Then restart Primary Cisco Emergency Responder and ensure that the primary Cisco Emergency Responder takes control.
  - Step 8** Ensure that 911, 912 and 913 Route points are registered in Cisco Unified Communications Manager.
- 

#### *Verify Cisco Unified IP Phones Upgrade*

After upgrading Cisco Unified IP Phones, verify the following:

### Procedure

---

- Step 1** Verify that the phones are upgraded to the target firmware images as indicated in the Unified Communications Manager.
  - Step 2** Verify access to the Corporate Directories in the Unified IP Phones.
  - Step 3** Verify that Unified IP Phone services such as Fast Dial, Extension Mobility, and so forth are working properly.
- 

#### *Verify Cisco IP Communicator Upgrade*

After upgrading Cisco IP Communicator, verify the following:

### Procedure

---

- Step 1** After rebooting the PC, launch IP Communicator and verify that it registers correctly with Unified Communications Manager.
  - Step 2** Place a call to IP Communicator and verify that the two-way audio works properly.
  - Step 3** Place outbound, inbound, and PSTN calls from the IP Communicator and verify that the two-way audio works properly.
  - Step 4** Verify that additional call functionality such as hold, transfers and conferences work correctly. Verify access to the Corporate Directories in the Unified IP Phones.
  - Step 5** Verify that Unified IP Phone services such as Fast Dial and Extension Mobility are working properly.
-

*Verify Cisco Unified Video Advantage Upgrade*

After upgrading Cisco Unified Video Advantage, verify the following:

**Procedure**

- 
- Step 1** After rebooting your PC, launch Cisco Unified Video Advantage.
  - Step 2** Verify that Cisco Unified Video Advantage finds the Unified Video Advantage phones and becomes associated to them.
  - Step 3** Verify that you are able to make a call to another Unified Video Advantage phone.
  - Step 4** Verify that the Video pops-up.
  - Step 5** Verify that when you put a call on hold, the video disappears, and when you resume the call, the video returns.
- 

*Verify Unified Contact Center Express Upgrade*

After upgrading Cisco Unified Contact Center Express Solutions, verify the following:

**Procedure**

- 
- Step 1** Verify that no error messages have occurred during the upgrade process.
  - Step 2** Check the upgrade log file for any errors. Verify that all required services are up after the upgrade.
  - Step 3** Verify that JTAPI is upgraded to the proper version and that it is properly connected and synchronized to Cisco Unified Communications Manager.
  - Step 4** Verify that all CTI Ports are registered with Cisco Unified Communications Manager.
  - Step 5** Verify that all CTI Route Points are registered with Cisco Unified Communications Manager.
  - Step 6** Verify that a prompt is heard when a call is made.
  - Step 7** Perform Telephony Synchronization and ensure that it is successful.
  - Step 8** If you are using CAD desktop, ensure that the desktop auto upgrades to the version bundled with Cisco Unified Contact Center Express Solutions.
  - Step 9** Log in to IP Phone Agent, CAD Agent and CRSADMIN, and ensure that all logins are successful.
  - Step 10** Make an inbound call and ensure that the call is presented to Ready Agent.
  - Step 11** If it is dual node, ensure that one node is Master while other Node is in Slave state.
- 

*Verify Cisco Unity Connection Upgrade*

After upgrading Unity Connection, verify the following:

## Procedure

---

- Step 1** Check the Cisco Unity Connection software version from the CLI using the **show cuc** command.
  - Step 2** Check the software version on the active partition from Cisco Unified OS Administration web page.
  - Step 3** Check the status of the services either from the Serviceability page or through the CLI.
  - Step 4** Check the status of voicemail ports in Unified Communication Manager.
  - Step 5** Run the **Test Port** command from the Port page under Telephony Integrations.
  - Step 6** Prior to the upgrade, activate the Message Waiting Indicator (MWI) by leaving a voicemail for a subscriber. After the upgrade, refresh the MWI status and verify that the MWI is still on.
  - Step 7** Create some subscribers and verify that supervised transfers and the MWI functionality work properly.
  - Step 8** If authentication and encryption have been enabled for the ports, place a call from an endpoint that supports encryption into Unity Connection and verify that the RTP is encrypted.
  - Step 9** If authentication and encryption have been enabled for the ports, place a call from an endpoint that supports authentication into Unity Connection and verify that the signaling is secure.
  - Step 10** Make a call to the Unity Connection Subscriber's DN extension and deposit a short voicemail.
  - Step 11** Retrieve the voicemail and then delete the voice mail from Unity Connection.
- 

### *Verify Cisco Unity Express Upgrade*

After upgrading Unity Express, verify the following:

## Procedure

---

- Step 1** Check the Cisco Unity Express software version from the CLI using the **show software status** command.
  - Step 2** To verify that Cisco Unity Express is registered to Cisco Unified Communications Manager, use the **show ccn status ccm-manager** command.
  - Step 3** Prior to the upgrade, leave a voicemail for a subscriber for message-waiting indication (MWI) to turn on. Perform the upgrade and refresh the MWI status. Check to see if MWI is still on.
  - Step 4** Configure notification for a subscriber and verify that Cisco Unity Express can place call to the configured extension when there is a new voicemail.
  - Step 5** Create a subscriber, leave and check a voicemail and delete the subscriber.
  - Step 6** Make a call to the Unity Express Subscriber's DN extension and deposit a short voicemail.
  - Step 7** Retrieve the voicemail and then delete the voicemail from Unity Express.
- 

### *Verify Unified MeetingPlace 7.x Upgrade*

After upgrading Unified MeetingPlace 7.x, verify the following:

## Procedure

---

- Step 1** Since you cannot upgrade on the internal Cisco Unified MeetingPlace server, to verify if the installation is successful, log in to the Cisco Unified MeetingPlace Application server console as root and type the **mpx\_version** command.
  - Step 2** To verify all services running, type the **mpx\_sys status** command from the MeetingPlace console or through SSH.
  - Step 3** Log in to the Cisco Unified MeetingPlace web server, select **Home > Admin > Test Server Configuration** and check that no error is reported.
  - Step 4** Log in to the Cisco Unified MeetingPlace web server, schedule audio, web and video. Verify that you are able to dial-in, dial-out, join web and video calls.
  - Step 5** Log in and schedule audio, web and video meetings through outlook and verify that recipients receive meeting requests and are able to join these meetings.
  - Step 6** Repeat step 4 for the DMZ (SMA) server.
  - Step 7** Log in as Conference Manager to the Unified MeetingPlace Application server console and verify that you are able to schedule and attend audio, web and video meetings.
- 

### *Verify Cisco Unified MeetingPlace 6.x or Earlier Upgrade*

After upgrading Unified MeetingPlace 6.x or earlier, verify the following:

## Procedure

---

- Step 1** To verify that the Cisco Unified MeetingPlace software version has upgraded, log in to the Cisco Unified MeetingPlace Audio Server and type the **swstatus** command.
  - Step 2** To verify that all the other servers (such as Unified MeetingPlace web server, Unified MeetingPlace IPGW, Unified MeetingPlace DMZ and Unified MeetingPlace DS) are registered to the Cisco Unified MeetingPlace Application Server after the upgrade, type the **gwstatus** command.
  - Step 3** Log in to “MeetingTime” or “Conference Manager” client software, schedule meetings (audio, web and video) and verify that you are able to dial-in, dial-out of audio meeting, web conference, and video call.
  - Step 4** To verify that the Cisco Unified MeetingPlace software version has upgraded on the Unified MeetingPlace web server, Unified MeetingPlace IP Gateway, Unified MeetingPlace DMZ, Unified MeetingPlace Outlook and Unified MeetingPlace Video, type the **gwstatus** command on the Unified MeetingPlace Audio Server.
  - Step 5** Log in to Cisco Unified MeetingPlace web server through a browser and schedule audio, web and video meetings. Verify that you are able to dial-out, dial-in through web and video endpoints for these meetings.
  - Step 6** After the upgrade, check the logs in **Event Viewer > System Log and Event Viewer > Application Log** for any red alert/alarm for Cisco Unified MeetingPlace Web, Unified MeetingPlace IPGW, Unified MeetingPlace DS on Windows server.
- 

### *Verify Cisco IP Videoconferencing and MCU Upgrade*

After upgrading Cisco IP Videoconferencing and MCU, verify the following:

**Procedure**

---

- Step 1** After you reboot Cisco IP Videoconferencing, verify that it registers to Cisco Unified Communications Manager in SCCP or H.323 mode.
  - Step 2** When a video end point registers to Cisco Unified Communications Manager, initiate a conference with two other video end points.
  - Step 3** Verify that all parties can see each other with the configured multiple video window display.
  - Step 4** Invite one more people to the conference and verify that this person is seen in the video window display.
- 

*Verify Stage 1 for Cisco Unified Messaging Gateway*

In Stage 1, use the existing subscribers of Cisco Unity Express, Unity Connection, Unity and perform the following:

**Procedure**

---

- Step 1** Send and mark a voicemail for a Cisco Unity Express user as urgent.
  - Step 2** Successfully retrieve the Cisco Unity Express user's message and delete it.
  - Step 3** Send and mark a voicemail for a Cisco Unity Connection user as private.
- 

*Verify Stage 6 for Cisco Unified Messaging Gateway*

In Stage 6, do the following after each messaging component is upgraded:

**Procedure**

---

- Step 1** Send and mark a voicemail for a Cisco Unity Express user as urgent.
  - Step 2** Successfully retrieve the Cisco Unity Express user's message and delete it.
  - Step 3** Send and mark a voicemail for a Cisco Unity Connection user as private.
  - Step 4** Successfully retrieve the Unity Connection user's message and delete it.
  - Step 5** Send a voicemail for a Unity Connection user and mark it private and urgent.
  - Step 6** Successfully retrieve the Unity user's message and delete it.
-



*Verify Cisco Unified Service Monitor Upgrade***Procedure**

- 
- Step 1** In the Cisco Unified Service Monitor user interface, go to **Configuration > Trap Receivers**.
  - Step 2** Enter the Community String and IP address of the OM server.
  - Step 3** Click **ok**. Click **yes** when the message window prompts you, "Do you want this set up?".
  - Step 4** Start background load traffic.
  - Step 5** In OM Dashboard, launch the Service Quality Alerts report.
  - Step 6** In the Cisco Unified Service Monitor GUI, go to **Configuration > Trap Receivers**.
  - Step 7** Enter the Community String and IP address of the OM server.
  - Step 8** Click **ok**. Click **yes** when the message window prompts you, "Do you want this set up?".
  - Step 9** Ensure background load traffic is running.
  - Step 10** Verify that the traps are sent to trap receiver.
- 

*Verify Cisco Unified Operation Manager Upgrade***Procedure**

- 
- Step 1** Verify that the devices are in Monitored state.
  - Step 2** Stop the Cisco Unified Communications Manager services or trigger a means for the Cisco Unified Operation Manager to generate an alert.
  - Step 3** (Optional) Check whether email is generated when the services go down.
  - Step 4** Emails are generated based on the severity and setting on Cisco Unified Operation Manager. Emails should be generated for the criteria that was set under Notification.
  - Step 5** Check whether Discovery ends after discovering all the devices (sometimes the discovery runs continuously).
  - Step 6** Check whether the devices that falls in the subnet range are discovered.
  - Step 7** Check whether the filtered IPs are not getting discovered during the process.
  - Step 8** Schedule Phone discovery.
  - Step 9** After the discovery is complete, verify whether all the above listed phone types are being discovered.
  - Step 10** Configure and run Auto Discovery.
  - Step 11** After the discovery is complete, verify whether the devices listed in the description are discovered.
  - Step 12** Ensure Cisco Unified Operation Manager is able to discover device cap of the device discovered.
- 

*Verify Cisco Unified Service Statistic Manager Upgrade***Procedure**

Periodically receive reports from Cisco Unified Operation Manager and Cisco Unified Service Monitor.

*Verify Cisco Unified Provisioning Manager Upgrade***Procedure**

- 
- Step 1** Successfully create two new users. One user is for Cisco Unified Communications Manager and Unity, the other user is for Cisco Unified Communications Manager and Unity Connection.
- Step 2** Verify that the same two new users are in Cisco Unified Communications Manager, Unity, and Unity Connection.
- Step 3** Verify a test call to each newly created user's DN.
- 

*Verify Cisco Unified SIP Proxy Upgrade***Procedure**

- 
- Step 1** Verify that SIP calls from Unified CM to Cisco Business Edition through Cisco Unified SIP Proxy is successful.
- Step 2** Verify that SIP calls from Unified CME to Unified CM through Cisco Unified SIP Proxy is successful.
- Step 3** Verify that conference calls between Unified CM and Business Edition through Cisco Unified SIP Proxy is successful.
- 

## Related Documentation

The following sections list compatibility guides and installation documentation for Cisco Unified Communications System components.

**Related Topics**

[Compatibility Guides](#), on page 110

[Component Release Notes and Installation and Upgrade Documentation](#), on page 111

## Compatibility Guides

The following documentation provides information about compatibility of components:

- For information about support for legacy products and third-party product interoperability with Cisco IP telephony products, see the Cisco Interoperability Portal at:  
<http://www.cisco.com/go/interoperability>
- Cisco Unified Communications Compatibility Tool:  
<http://tools.cisco.com/ITDIT/vtgsca>
- Cisco Unified Communications Manager Compatibility Information: [http://www.cisco.com/en/US/products/sw/voicesw/ps556/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_device_support_tables_list.html)
- Cisco Unified Contact Center Express Software and Hardware Compatibility Guide:

[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cust\\_contact/contact\\_center/crs/express\\_compatibility/matrix/crscomtx.pdf](http://www.cisco.com/en/US/docs/voice_ip_comm/cust_contact/contact_center/crs/express_compatibility/matrix/crscomtx.pdf)

- Cisco Unified Communications Manager Express and Cisco IOS Software Version Compatibility Matrix:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cucme/requirements/guide/33matrix.htm](http://www.cisco.com/en/US/docs/voice_ip_comm/cucme/requirements/guide/33matrix.htm)
- Cisco Computer Telephony Integration Option: CTI Compatibility Matrix:  
[http://www.cisco.com/en/US/products/sw/custcosw/ps14/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps14/prod_technical_reference_list.html)
- Cisco 7800 Series Media Convergence Servers: [http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod\\_brochure\\_list.html](http://www.cisco.com/en/US/products/hw/voiceapp/ps378/prod_brochure_list.html)
- UCS and MCS Server Models Supported by Cisco Unified Communications Manager Releases  
[http://www.cisco.com/en/US/prod/collateral/voicesw/ps6790/ps5748/ps378/prod\\_brochure0900aecd8062a4f9.html](http://www.cisco.com/en/US/prod/collateral/voicesw/ps6790/ps5748/ps378/prod_brochure0900aecd8062a4f9.html)
- Cisco Unified Communications Virtualization (including links to UCS hardware information):  
[www.cisco.com/go/uc-virtualized](http://www.cisco.com/go/uc-virtualized)
- Cisco Unified Communications System Release Summary Matrix for IPT:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/uc\\_system/unified/communications/system/versions/IPTMtrix.html](http://www.cisco.com/en/US/docs/voice_ip_comm/uc_system/unified/communications/system/versions/IPTMtrix.html)
- IP Communications System Test Release at:  
[http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/uc\\_system/GB\\_resources/ipcmatrix.htm](http://www.cisco.com/en/US/docs/voice_ip_comm/uc_system/GB_resources/ipcmatrix.htm)

## Component Release Notes and Installation and Upgrade Documentation

The following table provides references to release notes and installation and upgrade documents for components. These URLs link to web pages that list various release versions of these documents. Review the appropriate documents based on the release versions of the components in your base and target release sets.

**Table 17: Component-Specific Release Notes and Installation and Upgrade Documents**

Components	Release Notes	Installation and Upgrade Documents
Cisco Unified Communications Manager	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_installation_guides_list.html</a>
Cisco Unity	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps2237/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps2237/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps2237/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps2237/prod_installation_guides_list.html</a>
Cisco Unity Express	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps5520/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps5520/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps5520/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps5520/prod_installation_guides_list.html</a>

<b>Components</b>	<b>Release Notes</b>	<b>Installation and Upgrade Documents</b>
Cisco Unified MeetingPlace	<a href="http://www.cisco.com/en/US/products/sw/ps5664/ps5669/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/ps5664/ps5669/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/sw/ps5664/ps5669/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/ps5664/ps5669/prod_installation_guides_list.html</a>
Cisco IP/VC 3500 Series Videoconferencing	<a href="http://www.cisco.com/en/US/products/hw/video/ps1870/prod_release_notes_list.html">http://www.cisco.com/en/US/products/hw/video/ps1870/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/hw/video/ps1870/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/hw/video/ps1870/prod_installation_guides_list.html</a>
Cisco Unified Video Advantage	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps5662/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps5662/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps5662/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps5662/prod_installation_guides_list.html</a>
Cisco Unity Connection	<a href="http://www.cisco.com/en/US/products/ps6509/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps6509/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps6509/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps6509/prod_installation_guides_list.html</a>
Cisco Unified IP Phone 9900 Series	<a href="http://www.cisco.com/en/US/products/ps10453/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps10453/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps10453/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps10453/prod_installation_guides_list.html</a>
Cisco Unified IP Phone 8900 Series	<a href="http://www.cisco.com/en/US/products/ps10451/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps10451/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps10451/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps10451/prod_installation_guides_list.html</a>
Cisco Unified IP Phone 7900 Series	<a href="http://www.cisco.com/en/US/products/hw/phones/ps379/prod_release_notes_list.html">http://www.cisco.com/en/US/products/hw/phones/ps379/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/hw/switches/ps646/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/hw/switches/ps646/prod_installation_guides_list.html</a>
Cisco Unified IP Phone 6900 Series	<a href="http://www.cisco.com/en/US/products/ps10326/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps10326/prod_release_notes_list.html</a>	—
Cisco Unified IP Phone 3900 Series	<a href="http://www.cisco.com/en/US/products/ps7193/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps7193/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps7193/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps7193/prod_installation_guides_list.html</a>
Cisco Unified Operations Manager	<a href="http://www.cisco.com/en/US/products/ps6535/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps6535/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps6535/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps6535/prod_installation_guides_list.html</a>
Cisco Unified Communications Manager IM and Presence Service (formerly Cisco Unified Presence)	<a href="http://www.cisco.com/en/US/products/ps6837/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps6837/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps6837/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps6837/prod_installation_guides_list.html</a>
Cisco Unified Service Monitor	<a href="http://www.cisco.com/en/US/products/ps6536/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps6536/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps6536/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps6536/prod_installation_guides_list.html</a>

Components	Release Notes	Installation and Upgrade Documents
Cisco Virtualization Experience Clients	<a href="http://www.cisco.com/en/US/products/ps11582/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps11582/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps11582/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps11582/prod_installation_guides_list.html</a>
Cisco Cius	—	<a href="http://www.cisco.com/en/US/products/ps11156/tsd_products_support_install_and_upgrade.html">http://www.cisco.com/en/US/products/ps11156/tsd_products_support_install_and_upgrade.html</a>
Cisco IP Communicator	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps5475/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps5475/prod_release_notes_list.html</a>	—
Cisco Unified Contact Center Express	<a href="http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_installation_guides_list.html</a>
Cisco Emergency Responder	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps842/prod_release_notes_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps842/prod_release_notes_list.html</a>	—
Cisco Unified Survivable Remote Site Telephony	—	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps2169/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/sw/voicesw/ps2169/prod_installation_guides_list.html</a>
Cisco Catalyst 6500 Series Switches	<a href="http://www.cisco.com/en/US/products/hw/switches/ps708/prod_release_notes_list.html">http://www.cisco.com/en/US/products/hw/switches/ps708/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/hw/switches/ps708/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/hw/switches/ps708/prod_installation_guides_list.html</a>
Cisco IOS Software Releases 15.1	<a href="http://www.cisco.com/en/US/products/ps10592/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps10592/prod_release_notes_list.html</a>	—
Cisco 1861 Integrated Services Router	—	<a href="http://www.cisco.com/en/US/products/ps5853/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps5853/prod_installation_guides_list.html</a>
Cisco 3800 Series Voice Gateways	<a href="http://www.cisco.com/en/US/products/ps5855/prod_release_notes_list.html">http://www.cisco.com/en/US/products/ps5855/prod_release_notes_list.html</a>	<a href="http://www.cisco.com/en/US/products/ps5855/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps5855/prod_installation_guides_list.html</a>
Cisco 2800 Series Voice Gateways	—	<a href="http://www.cisco.com/en/US/products/ps5854/prod_installation_guides_list.html">http://www.cisco.com/en/US/products/ps5854/prod_installation_guides_list.html</a>
Cisco 4451-X Integrated Services Router	<a href="http://www.cisco.com/en/US/docs/routers/access/4400/release/notes/isr4451rn.pdf">http://www.cisco.com/en/US/docs/routers/access/4400/release/notes/isr4451rn.pdf</a>	<a href="http://www.cisco.com/en/US/docs/routers/access/4400/hardware/installation/guide/C4400isr.pdf">http://www.cisco.com/en/US/docs/routers/access/4400/hardware/installation/guide/C4400isr.pdf</a>





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