Cisco Collaboration Meeting Rooms (CMR) Premises

Deployment Guide

Release 4.0

Cisco TelePresence Conductor XC3.0
Cisco TelePresence Management Suite 14.6
Cisco TelePresence Server 4.1
Cisco TelePresence MCU Series 4.5

January 2015

Contents

Introduction

About This Document

This document describes how to implement the Cisco Collaboration Meeting Rooms (CMR) Premises solution across a video network. It summarizes the required processes and refers to the associated product guides for step-by-step details. For information about the solution architecture and features, see the accompanying *Cisco Collaboration Meeting Rooms (CMR) Premises Solution Guide 4.0*.

This document and the product-related guides that it references are written for partners and technical sales people who have a good technical understanding of Cisco video infrastructure products and their place in a video architecture. We assume that you are familiar with installing and configuring the relevant products.

Terms and Product Names

Standards-based. Describes devices or technology that support the wider ITU-T standards for video conferencing (including H.323, H.320, and SIP) in contrast to SIP-only elements designed specifically for SIP environments.

The following short versions of Cisco product/solution names are used:

Table 1: Product/solution names used in this document

Product	Short name
Cisco Collaboration Meeting Rooms (CMR) Premises	CMR Premises
Cisco Collaboration Meeting Rooms (CMR) Hybrid	CMR Hybrid
Cisco Unified Communications Manager	Unified CM
Cisco TelePresence Conductor	TelePresence Conductor
Cisco TelePresence Server	TelePresence Server
Cisco TelePresence MCU Series	MCU
Cisco TelePresence Management Suite	Cisco TMS
Cisco TelePresence Management Suite Provisioning Extension	Cisco TMSPE
Cisco TelePresence Management Suite Extension for Microsoft Exchange	Cisco TMSXE
Cisco TelePresence Video Communication Server	Cisco VCS
Cisco Unified Communications Manager Session Management Edition	Unified CM SME

Fundamentals of CMR Premises

Core Architecture

The core elements of CMR Premises are:

■ TelePresence Conductor.

■ TelePresence Server and/or Cisco TelePresence MCU Series conference bridges.

■ Cisco TMS and Cisco TMSPE CMR.

The TelePresence Conductor manages the conference bridges. SIP trunks connect the bridges to the TelePresence Conductor, which in turn is trunked to one or more call controllers. All XML RPC connections also route via the TelePresence Conductor. Cisco TMS provides conference management, including scheduling, provisioning and monitoring of conferences. XML RPC connections link Cisco TMS to the TelePresence Conductor.

The solution architecture is exclusively SIP. Conferencing with H.323 endpoints requires interworking by a Cisco VCS Control or Cisco Expressway-C.

Note: The solution is IPv4 based.

Figure 1: High-level view of the architecture
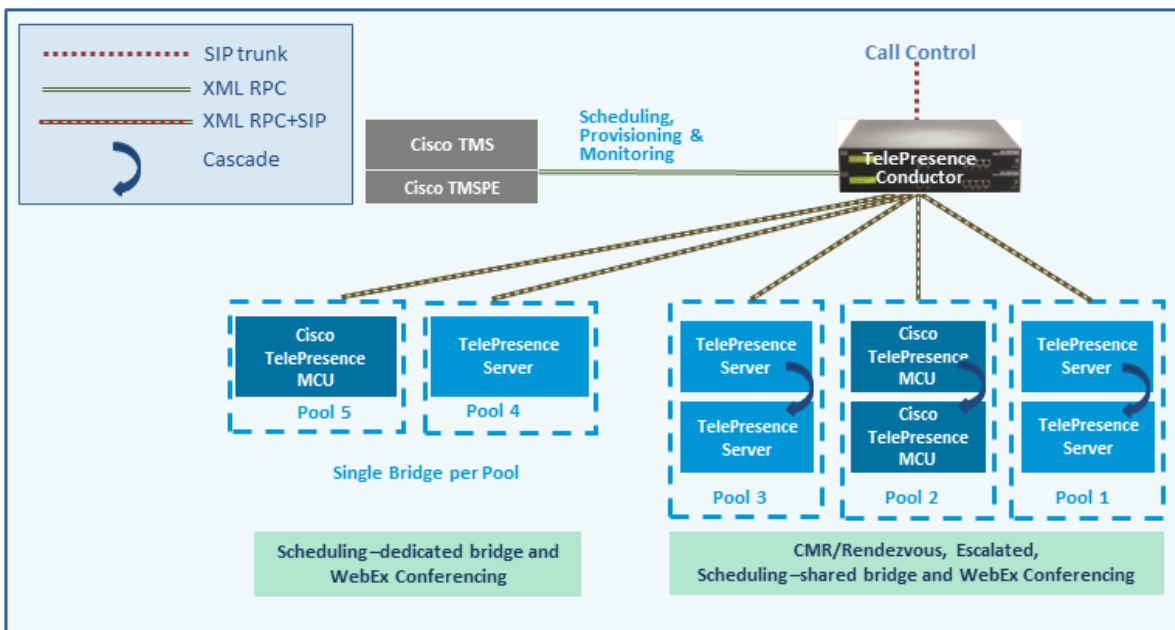
Note: Only Cisco multiparty conference bridges (such as the Cisco TelePresence Server and Cisco TelePresence MCU Series) are supported by the TelePresence Conductor. We do not support other conference bridges.

Call control

You can use either the Cisco Unified Communications Manager (Unified CM) or the Cisco TelePresence Video Communication Server (Cisco VCS) for call control. The Unified CM is recommended. Deployments with Unified CM are known as "Unified CM-Centric" and deployments with Cisco VCS are known as "Cisco VCS-Centric".

Solution Components and Required Versions

This section lists the products used in CMR Premises and their required software/firmware versions. You may not use all the products but those that are used must be running the specified version. As a minimum, you need a TelePresence Conductor, one or more TelePresence Server or MCU conference bridges, and a Unified CM or Cisco VCS call control device.

Note: In networks with multiple Unified CM or Cisco VCS installations, for full CMR Premises functionality every installed Unified CM or Cisco VCS must be at the required version.

Infrastructure

Table 2: Required software versions for infrastructure products

Product	Required Version	Role
TelePresence Conductor	XC3.0	Conference resource allocation
Cisco TMS	14.6	Conference management & scheduling
TelePresence Server 7010 and MSE 8710, TelePresence Server on Multiparty Media 310/320, TelePresence Server on Virtual Machine, Cisco Multiparty Media 400v	4.1	Conference bridge resource
MCU 5300 Series, 4500 Series, 4501 Series, MCU MSE Series 8510	4.5	Conference bridge resource
Unified CM	9.1(2)SU2 or 10.5(2)	Call control
Cisco Expressway-C	X8.5 X8.2.2 or later if you only need Microsoft Lync interworking.	Remote endpoint registration, business-to-business connectivity, and Microsoft Lync interworking.
Cisco Expressway-E	X8.5	Secure firewall traversal
Cisco VCS Control	X8.5 X8.2.2 or later if you only need Microsoft Lync interworking. X7.2.3 or later if you only need H.323 interworking.	Call control (Cisco VCS-Centric deployments). Microsoft Lync interworking. H.323 interworking.
Cisco VCS Expressway	X8.5	Secure firewall traversal. Registration of standards-based endpoints across the Internet.
Cisco TMSPE	1.4	Conference provisioning

Table 2: Required software versions for infrastructure products (continued)

Product	Required Version	Role
Cisco TMSXE	4.1	[Optional] Conference scheduling for Microsoft environments
Microsoft SQL Server	Microsoft SQL Server 2012 R1 recommended. Microsoft SQL Server 2008 R2 64-bit minimum.	Database for Cisco TMS
Cisco WebEx	T29.11	Cloud conferencing with audio, video, and content sharing capabilities for WebEx clients

Endpoints, Soft Clients and Peripherals

Table 3: Required software versions for endpoints, soft clients and peripherals

Product	Required Version	Supported in deployments...
Cisco TelePresence IX5000	IX 8.0.1	Unified CM-Centric
Cisco TelePresence MX200 and MX300	TC7.1.3	Unified CM-Centric Cisco VCS-Centric
Cisco DX70, DX80	10.2(2)	Unified CM-Centric
Cisco DX650	10.2(2)	Unified CM-Centric
Cisco TelePresence EX Series EX60 and EX90	TC7.1.3	Unified CM-Centric Cisco VCS-Centric
Cisco TelePresence Quick Set C20, SX10, SX20, SX80		
Cisco TelePresence SX80 Codec		
Cisco TelePresence Codec C Series C40, C60, C90		
Cisco TelePresence Profile Series		
Cisco TelePresence MX200 and MX300		
Cisco TelePresence Systems CTS 3010, CTS 3210	CTS 1.10.5 or later	Unified CM-Centric
Cisco TelePresence System CTS 500-32, CTS 1100, CTS 1300	CTS 1.10.5 or later	Unified CM-Centric
Cisco TelePresence TX9000 and TX9200 immersive systems	TX6.1.2 or later	Unified CM-Centric
Cisco Unified IP Phone 9900 Series and 8900 Series	9.4(2)	Unified CM-Centric

Table 3: Required software versions for endpoints, soft clients and peripherals (continued)

Product	Required Version	Supported in deployments...
Cisco Jabber for Android	10.6	Unified CM-Centric
Cisco Jabber for iPad		Unified CM-Centric
Cisco Jabber for iPhone		Unified CM-Centric
Cisco Jabber for Mac		Unified CM-Centric
Cisco Jabber for Windows		Unified CM-Centric
Cisco Jabber Video for TelePresence	4.8.8	Cisco VCS-Centric
Microsoft Lync Client	Lync 2013 Client	Unified CM-Centric Cisco VCS-Centric

Note: The video conference network may also include other endpoints that support H.323 or SIP, and are registered to the Cisco VCS or call into it.

Deployment Requirements and Best Practices

TelePresence Conductor

The TelePresence Conductor must be deployed using its back-to-back user agent (B2BUA). The external policy server interface is not supported.

TelePresence Server Conference Bridges

TelePresence Server bridges are trunked to the TelePresence Conductor and must be configured for remote management by the TelePresence Conductor.

Encryption

All TelePresence Conductor-to-bridge SIP communication must be encrypted.

Resilience and Clustering

We recommend that the solution components are deployed in cluster configurations, to provide redundancy in case of a failure. Deploying clusters of TelePresence Conductors and bridges ensures service availability even if individual conference bridges or Conductors are taken out of service.

CAUTION! For scheduled conferences, regardless of the number of TelePresence Conductor nodes in a cluster, it is not possible to add more than one Conductor node to Cisco TMS.

For details about Conductor clustering see the appropriate deployment guide:

- *Cisco TelePresence Conductor Clustering with Cisco Unified Communications Manager Deployment Guide*
- *Cisco TelePresence Conductor Clustering with Cisco VCS (B2BUA) Deployment Guide*

SIP Early Offer Messaging in Unified CM-Centric Deployments

Early Offer messaging is strongly recommended for all Unified CM-connected SIP trunks that carry TelePresence calls, and is required for CMR Hybrid conferences and some third-party services. Cisco VCS-Centric deployments always run in Early Offer mode, except for H.323 to SIP interworked calls. (Because H.323 uses Slow Start signaling mode on Cisco VCS and Cisco Expressway, SIP messaging for interworked calls is done using Delayed Offer.)

Bridge Pools and Service Preferences

- H.323 must be disabled on the conference bridges.
- At least one Service Preference is required in TelePresence Conductor. You can optionally place all conference bridge pools into a single Service Preference.

- All conference bridges must be assigned to a conference bridge pool in TelePresence Conductor. Each conference bridge can belong to only one pool.

- All conference bridges in a TelePresence Conductor pool must be of the same type (MCU or TelePresence Server). Usually it is best to configure a pool with bridges from the same location, although this is optional, not mandatory.

- As with pools, all conference bridges in a Service Preference must be of the same type (MCU or TelePresence Server).

- If Unified CM call admission control is implemented to control bandwidth usage, each Service Preference must only contain pools of bridges for a single location.

- For scheduled conferences, if conference availability is a priority then we recommend dedicating a conference bridge for scheduling use only (to avoid resources being used up by unscheduled conferences).

Content Channel

Most TelePresence endpoints support the use of a second video channel known as the content channel. Typically this is used for presentations running alongside live video.

- For MCU conference bridges, set the **Content mode** for the Conference template in TelePresence Conductor to *Transcoded* (**Advanced parameters**). When this mode is selected in a TelePresence Conductor template, a dedicated content port or video port will be allocated depending on the MCU model and configuration.

- For TelePresence Server conference bridges, currently the content mode is always *Transcoded* and is not configurable.

H.323 Interworking

The CMR Premises network is SIP-based. To connect H.323 endpoints to conferences within the CMR Premises network, the call must be interworked before reaching the TelePresence Conductor. To do this configure the Cisco VCS Control or Cisco Expressway-C to perform the necessary SIP/H.323 interworking.

- To interwork only for locally registered endpoints, set the **H.323 <-> SIP interworking mode** to *Registered only* (accessed from **VCS configuration > Protocols > Interworking**).

- To optionally allow interworking of business-to-business H.323 calling between external networks and your conferences, set the **H.323 <-> SIP interworking mode** to *On*. This will interwork all incoming calls.

Escalated Conferencing

We do not support ad hoc conferencing (the Unified CM method of escalated conferencing) in Cisco VCS-Centric deployments, or Multiway (the Cisco VCS method) in Unified CM-Centric deployments.

Upgrading an Existing Deployment

This section describes how to upgrade an existing solution Release 3.0 deployment to 4.0. Skip this section if you are installing CMR Premises for the first time.

CAUTION: To ensure operational continuity in the network we recommend that the solution components are installed in the sequence specified in Recommended Implementation Sequence [p.22].

Recommended Implementation Sequence

Follow the sequence in the table below to implement CMR Premises in your video network. This sequence applies to upgrades from the previous solution Release 3.0 or to first-time deployments of CMR Premises, and to Unified CM-Centric and Cisco VCS-Centric deployments. It has been tested by Cisco and verified to interoperate at all stages.

The software can be downloaded from http://www.cisco.com/cisco/software/navigator.html. See the associated product documentation for instructions on how to upgrade each software component.

Table 4: Recommended upgrade / install sequence for CMR Premises components

Order	Component	Software version
1	Unified CM	9.1(2)SU2 or 10.5(2) (if not already on a supported release). Version 10.5(1) is required for Microsoft Lync interoperability. This component is not relevant to Cisco VCS-Centric deployments unless a Unified CM exists in the Cisco VCS enterprise.
2	Cisco VCS	X8.2.2 or later. **X8.5 is recommended**. X7.2.3 or later is supported for H.323 registration. Not relevant to Unified CM-Centric deployments unless a Cisco VCS exists in the Unified CM enterprise.
3	Cisco Expressway	X8.2.2 or later. **X8.5 is recommended**. Not relevant to Cisco VCS-Centric deployments unless a Unified CM exists in the enterprise.
4	Cisco TMS	14.6
5	MCU	4.5
6	TelePresence Server	4.1
7	TelePresence Conductor	XC3.0
8	Cisco TMSPE	1.4
9	Endpoints	Endpoints can be upgraded in any order.

Configuration Prerequisites for Upgrades

Make sure the following items are in place before you upgrade your earlier solution release configuration to CMR Premises 4.0.

■ TelePresence Server bridges must be configured for remote management by the TelePresence Conductor.

■ Endpoints must be registered to Unified CM or to Cisco VCS as appropriate.

■ All devices must be running the software and firmware versions listed in Solution Components and Required Versions [p.8].

Configuration Checklist for Upgrades

This topic summarizes the CMR Premises configuration process to upgrade an existing solution deployment to 4.0. For detailed upgrade paths, see Appendix 2: Migration Paths to CMR Premises Release 4.0 [p.82].

Task 1: Upgrade Product Versions

Upgrade / install each product in your solution deployment to the required version for 4.0. Follow the sequence specified in Recommended Implementation Sequence [p.22].

At this stage, do *not* update your configuration for 4.0 functionality.

Task 2: Verify New Versions in Existing Configuration

Verify that the new software runs satisfactorily on your existing Release 3.0 configuration and the network is functioning as expected.

Task 3: Check Prerequisites are Complete

Check that all prerequisites listed in Configuration Prerequisites for Upgrades [p.15] are complete.

Task 4: Check Solution Release Notes

Check the release-specific configuration considerations described in the latest solution release notes for CMR Premises 4.0 on Cisco.com.

Task 5: Configure the TelePresence Conductor

Configure the TelePresence Conductor for CMR Premises. The TelePresence Conductor settings for CMR Premises have changed in this release.

- For Unified CM-Centric deployments, see Connecting TelePresence Conductor to the Unified CM [p.29]
- For Cisco VCS-Centric deployments, see Connecting TelePresence Conductor to the Cisco VCS [p.30].

Task 6: Add Latest Normalization Scripts to Unified CM (Unified CM-Centric Deployments)

Skip this step for Cisco VCS-Centric deployments, unless a Unified CM exists in the enterprise. Unified CM-Centric deployments that use encryption and TLS on SIP trunks for TelePresence must install the *latest* TelePresence normalization scripts on the trunks. See Appendix 1: Adding the Unified CM Normalization Scripts [p.80] for instructions.

Verify that the system is working as expected before you continue to the next step.

Task 7: Convert to SIP Early Offer (Unified CM-Centric Deployments)

Skip this step for Cisco VCS-Centric deployments. This step is recommended, and required for CMR Hybrid conferences and some third party services. See Configuring Early Offer (and fallback to Delayed Offer) for SIP trunks [p.28] for instructions.

Task 8: Set Up Resource Optimization (Optional)

To set up automatic resource allocation and optimization for TelePresence Server resources, see Setting up TelePresence Server Resource Optimization (Optional) [p.66].

Task 9: Configure the Cisco Expressway / Cisco VCS for Microsoft Lync (Optional)

If your deployment requires interoperability with Microsoft Lync, see Configuring Microsoft Lync 2013 Interoperability [p.68].

Task 10: Configure the iX Protocol for ActiveControl Support (Optional)

To use ActiveControl in the CMR Premises network, see Setting up the ActiveControl Feature [p.70].

CAUTION: If your CMR Premises network connects to Unified CM systems running Version 8.*x* or earlier, or to third-party networks, before you enable ActiveControl you *must* first disable the iX protocol on all relevant trunks to isolate iX traffic from systems that do not support it. If you do not do this, the consequences may be unpredictable and include dropped calls.

Task 11: Configure Cisco TMS for Scheduled Conferencing

To set up scheduled conferencing, see How to Enable Scheduled Conferencing [p.62]

Note: The differences between scheduling in the previous release (direct-managed conference bridges) and in this release (TelePresence Conductor-managed conference bridges) are summarized in Cisco Collaboration Meeting Rooms (CMR) Premises Solution Guide 4.0.

Task 12: Set Up CMR Hybrid (Optional)

To set up an integration with CMR Hybrid, see Enabling CMR Hybrid in Scheduled Conferences [p.39].

After you have set up the integration, you can also optionally add WebEx meetings to personal CMRs. See Using CMR Hybrid with Personal CMRs [p.41].

Task 13: Check External Endpoints are Registered to the Enterprise Unified CM (Unified CM-Centric Deployments)

Skip this step for Cisco VCS-Centric deployments. In older solution releases, endpoints that were external from the local enterprise needed to be registered to a Cisco VCS Expressway. From Release 3.0 they can be registered to Unified CM, through Cisco Expressway.

Differences when Scheduling TelePresence Conductor-Managed Bridges

Before moving to a TelePresence Conductor scheduling deployment, note the following differences between scheduling direct-managed bridges and bridges managed by a TelePresence Conductor:

Table 5: Differences when scheduling TelePresence Conductor-managed bridges

	Direct-managed	TelePresence Conductor-managed
Booking	■ Conference configurations can be set per conference, over-riding default conference settings. ■ Cisco TMS chooses the SIP URI to provide the dial-in number for the conference. ■ Can be added to Cisco TMS participant and conference templates. ■ No option to overbook bridge resources.	■ Some conference configurations are set on the TelePresence Conductor conference template, and cannot be changed during booking. ■ Users can input the variable part of the alias during booking to create the dial-in number for the conference. ■ Cannot be added to Cisco TMS participant and conference templates. ■ Overbooking of bridge resources: Using the service preference capacity adjustment feature, you can configure Cisco TMS to allow overbooking of the actual resource available on the bridges in the pools associated with the service preference. By doing this, you allow for the case where users unnecessarily book more ports than they need for conferences, thereby freeing up unused resources for other users.
Cascading	■ Does not support cascaded TelePresence Servers. ■ Cisco TMS decides whether to cascade MCUs when routing conferences. ■ Cisco TMS cannot create a cascade after the conference has started if more participants join than the capacity on the hosting MCU(s). ■ More functionality in **Conference Control Center** for example, moving participants from one cascaded MCU to another. ■ Cascading is selected using the Distribution options when booking a conference. ■ Cascading is not possible when booking using clients that use Cisco TMS Booking API (Cisco TMSBA) for example: Microsoft Outlook and Smart Scheduler.	■ Supports cascaded TelePresence Servers. ■ TelePresence Conductor cascades the bridges. ■ TelePresence Conductor can cascade on the fly if more participants join than the initial capacity of the hosting bridge(s). ■ No functionality in **Conference Control Center** except visibility of which bridge a participant is connected to. ■ You have to select an alias that supports cascading when booking the conference. ■ Cascading is possible when booking using clients that use Cisco TMS Booking API (Cisco TMSBA) for example: Microsoft Outlook and Smart Scheduler.

Table 5: Differences when scheduling TelePresence Conductor-managed bridges (continued)

	Direct-managed	TelePresence Conductor-managed
Conference Control Center	Full functionality dependent on the bridge type hosting the conference.	The following functionality is not available for conferences hosted on a TelePresence Server managed by a TelePresence Conductor: ■ Video protocol ■ Audio protocol ■ Encryption status ■ Number ■ Participant Audio Level ■ Video Resolution ■ Duo Video Status ■ Snapshots
Reporting	Full functionality.	■ Call Detail Records (CDRs) from TelePresence Conductor-managed conference bridges will not contain any ConferenceIDs. ■ TelePresence Conductor itself does not feed back any conference CDRs to Cisco TMS. The bridges themselves will however, if added to Cisco TMS. ■ Depending on the call direction you might get incomplete CDR data, as dialing out can lead to incorrect data. ■ Bridge utilization reporting is not supported for conferences hosted on a TelePresence Conductor.
Zones	Cisco TMS uses IP zones to ensure that systems use bridges that are geographically closer.	Cisco TMS chooses which TelePresence Conductor to use based on IP zones but will disregard any IP zone information for the bridges themselves.

First-Time Deployments

This section describes how to implement CMR Premises 4.0 as a first-time deployment. Skip this section if you are upgrading from an earlier solution release.

CAUTION: To ensure operational continuity in the network we recommend that the solution components are installed in the sequence specified in Recommended Implementation Sequence [p.22].

Recommended Implementation Sequence

Follow the sequence in the table below to implement CMR Premises in your video network. This sequence applies to upgrades from the previous solution Release 3.0 or to first-time deployments of CMR Premises, and to Unified CM-Centric and Cisco VCS-Centric deployments. It has been tested by Cisco and verified to interoperate at all stages.

The software can be downloaded from http://www.cisco.com/cisco/software/navigator.html. See the associated product documentation for instructions on how to upgrade each software component.

Table 6: Recommended upgrade / install sequence for CMR Premises components

Order	Component	Software version
1	Unified CM	9.1(2)SU2 or 10.5(2) (if not already on a supported release). Version 10.5(1) is required for Microsoft Lync interoperability. This component is not relevant to Cisco VCS-Centric deployments unless a Unified CM exists in the Cisco VCS enterprise.
2	Cisco VCS	X8.2.2 or later. **X8.5 is recommended**. X7.2.3 or later is supported for H.323 registration. Not relevant to Unified CM-Centric deployments unless a Cisco VCS exists in the Unified CM enterprise.
3	Cisco Expressway	X8.2.2 or later. **X8.5 is recommended**. Not relevant to Cisco VCS-Centric deployments unless a Unified CM exists in the enterprise.
4	Cisco TMS	14.6
5	MCU	4.5
6	TelePresence Server	4.1
7	TelePresence Conductor	XC3.0
8	Cisco TMSPE	1.4
9	Endpoints	Endpoints can be upgraded in any order.

Configuration Prerequisites for First-Time Deployments

Make sure the following items are in place before you configure CMR Premises 4.0.

- You need access to the administration web interfaces of the following devices on your network:
  - A Unified CM is required for Unified CM-Centric deployments, already configured with a base configuration. Ensure connectivity by registering at least three endpoints to Unified CM, and make sure they are all capable of calling each other with voice and video communications. For Unified CM-related information, see the Cisco Unified Communications Manager documentation on Cisco.com.
  - A Cisco VCS is required for Cisco VCS-Centric deployments. For Cisco VCS-related information, see the Cisco TelePresence Video Communication Server documentation on Cisco.com.
  - Cisco TMS is required for scheduled conferencing and for conference provisioning and monitoring. For Cisco TMS-related information, see the Cisco TelePresence Management Suite documentation on Cisco.com.
  - A TelePresence Conductor, deployed using its back-to-back user agent (B2BUA). For Conductor-related information, see the Cisco TelePresence Conductor documentation on Cisco.com.
  - One or more conference bridges, either TelePresence Servers or MCUs. Basic configuration for each conference bridge must be complete, as described in the relevant Installation Guide or Getting Started Guide:
    - TelePresence Server 7010
    - TelePresence Server MSE 8710
    - TelePresence Server on Virtual Machine
    - TelePresence Server on Multiparty Media 310/320
    - MCU 5300 Series
    - MCU 4500 Series
    - MCU MSE 8420
    - MCU MSE 8510

- TelePresence Server bridges must be configured for remote management by the TelePresence Conductor.

- Endpoints must be registered to Unified CM or to Cisco VCS as appropriate.

- All devices must be running the software and firmware versions listed in Solution Components and Required Versions [p.8].

Configuration Checklist for First-Time Deployments

This topic summarizes the solution configuration process to deploy CMR Premises for the first time. For detailed migration paths, see Appendix 2: Migration Paths to CMR Premises Release 4.0 [p.82].

Task 1: Install Required Product Versions

Install each product in your solution deployment at the required version for 4.0. Follow the sequence specified in Recommended Implementation Sequence [p.22].

Task 2: Check Prerequisites are Complete

Check that all prerequisites listed in Configuration Prerequisites for First-Time Deployments [p.23] are complete.

Task 3: Check Solution Release Notes

Check the release-specific configuration considerations described in the latest solution release notes for CMR Premises 4.0 on Cisco.com.

Task 4: Configure the TelePresence Conductor

Configure the TelePresence Conductor for CMR Premises.

- For Unified CM-Centric deployments, see Connecting TelePresence Conductor to the Unified CM [p.29]
- For Cisco VCS-Centric deployments, see Connecting TelePresence Conductor to the Cisco VCS [p.30].

Task 5: Add Normalization Scripts to Unified CM (Unified CM-Centric Deployments)

Skip this step for Cisco VCS-Centric deployments, unless a Unified CM exists in the enterprise. Unified CM-Centric deployments that use encryption and TLS on SIP trunks for TelePresence must install the latest TelePresence normalization scripts on the trunks. See Appendix 1: Adding the Unified CM Normalization Scripts [p.80] for instructions.

Verify that the system is working as expected before you continue to the next step.

Task 6: Convert to SIP Early Offer (Unified CM-Centric Deployments)

Skip this step for Cisco VCS-Centric deployments. This step is recommended, and required for CMR Hybrid conferences and some third party services. See Configuring Early Offer (and fallback to Delayed Offer) for SIP trunks [p.28] for instructions.

Task 7: Set Up Resource Optimization (Optional)

To set up automatic resource allocation and optimization for TelePresence Server resources, see Setting up TelePresence Server Resource Optimization (Optional) [p.66].

Task 8: Configure the Cisco Expressway / Cisco VCS for Microsoft Lync (Optional)

If your deployment requires interoperability with Microsoft Lync, see Configuring Microsoft Lync 2013 Interoperability [p.68].

Task 9: Configure the iX Protocol for ActiveControl Support (Optional)

To use ActiveControl in the CMR Premises network, see Setting up the ActiveControl Feature [p.70].

CAUTION: If your CMR Premises network connects to Unified CM systems running Version 8.*x* or earlier, or to third-party networks, before you enable ActiveControl you *must* first disable the iX protocol on all relevant trunks to isolate iX traffic from systems that do not support it. If you do not do this, the consequences may be unpredictable and include dropped calls.

Task 10: Configure Cisco TMS for Scheduled Conferencing

To set up scheduled conferencing, see How to Enable Scheduled Conferencing [p.62]

Task 11: Set Up CMR Hybrid (Optional)

To set up an integration with CMR Hybrid, see Enabling CMR Hybrid in Scheduled Conferences [p.39].

After you have set up the integration, you can also optionally add WebEx meetings to personal CMRs. See Using CMR Hybrid with Personal CMRs [p.41].

Configuring and Connecting the Solution Components

By the end of this section, you should have CMR Premises installed on all of the solution components, with the components configured to talk to each other.

Configuring the Unified CM for Early Offer

This section is only relevant to Unified CM-Centric deployments. It provides the recommended approach for configuring outbound trunks as Early Offer.

Note: The default configuration for Unified CM trunks is **Delayed Offer**.

All trunks between the following CMR Premises elements should be enabled for Early Offer. No media termination point (MTP) resources should be made available to these trunks, directly or indirectly:

- Unified CM to Cisco Expressway-C
- Unified CM to Cisco VCS Control
- Unified CM to TelePresence Conductor
- Unified CM to TelePresence Server
- Unified CM to MCU
- Unified CM to Unified CM trunks which carry traffic originating from a TelePresence endpoint and any of the network elements listed above should also be enabled for Early Offer, with no media termination point (MTP) resources. For example, in a call flow scenario of EX90 >> UCM1 >> UCM2 >> Conductor >> TelePresence Server, the trunk between UCM1 >> UCM2 and the trunk between UCM2 >> Conductor should be enabled for Early Offer.

To restrict the use of MTPs, all MTP resources should be removed from all Cisco Unified Communications Manager Session Management Edition (Unified CM SME) clusters, and all MTP resources on Cisco Unified Communications Manager clusters should be placed in Media Resource Groups that are inaccessible both to TelePresence endpoints and to SIP trunks carrying TelePresence traffic.

Some specific points apply in various deployment scenarios:

Scenario 1. Configuring Early Offer in a single Unified CM system

TelePresence Conductor and conference bridges are connected to the Cisco Unified Communications Manager, with Cisco Unified Communications Manager trunked to the Cisco Expressway. Endpoints are registered to the Cisco Unified Communications Manager. In this scenario the following trunks must be configured for Early Offer:

- Unified CM to Cisco Expressway-C.
- Unified CM to the TelePresence Conductor.

Scenario 2. Configuring Early Offer in a multi-cluster system (TelePresence Conductor connected to Unified CM SME)

One or more Unified CM SME clusters with connected leaf Cisco Unified Communications Manager clusters. The TelePresence Conductor and conference bridges are connected to the Cisco Unified Communications Manager SME. The Cisco Unified Communications Manager SME is trunked to the Cisco Expressway-C. In this scenario the following trunks must be configured for Early Offer:

- Unified CM SME to Cisco Expressway-C.
- Unified CM SME to the TelePresence Conductor.

Note: In multi-cluster systems with three or more clusters, where one Cisco Unified Communications Manager cluster is a dedicated Cisco Unified Communications Manager SME, endpoints never register to the Cisco Unified Communications Manager SME but always to a leaf Cisco Unified Communications Manager cluster.

Scenario 3. Configuring Early Offer in a multi-cluster system (TelePresence Conductor connected to leaf clusters)

One or more Cisco Unified Communications Manager SME clusters with connected leaf Cisco Unified Communications Manager clusters. The TelePresence Conductor and conference bridges are connected to the leaf cluster(s). A single trunk connects the Cisco Unified Communications Manager SME to the Cisco Expressway-C. In this scenario the following trunks must be configured for Early Offer:

- Unified CM SME to Cisco Expressway-C.
- Leaf Unified CM clusters to the TelePresence Conductor.
- Leaf Unified CM clusters to the Unified CM SME.

Configuring Early Offer (and fallback to Delayed Offer) for SIP trunks

1. For each trunk, do one of the following depending on your Cisco Unified Communications Manager version:
   - For Version 9.1(2) systems, enable the **Early Offer support for voice and video calls (insert MTP if needed)**.
   - For Version 10.5(1) systems, in the **Early Offer support for voice and video calls** dropdown, select *Best Effort (no MTP inserted)*.
2. Remove all MTP resources from the following elements:
   a. Unified CM SME clusters (in the case of Unified CM SME deployments).
   b. All TelePresence endpoints and SIP trunks on all Unified CM clusters.
3. Set **SIP Trunk DTMF Signaling Method** to *RFC 2833* (the default).
4. Enable the **Accept Audio Codec Preference in Received Offer** option on the following elements:
   a. All Unified CM SME SIP trunks (in the case of Unified CM SME deployments).
   b. All SIP trunks that carry TelePresence calls on all Unified CM clusters.

Fallback to Delayed Offer

For outgoing calls, the default settings provide for automatic fallback to Delayed Offer in cases where no MTP resource exists. Without fallback, issues may arise in areas of the network that are not configured for the solution. For incoming calls, Early Offer is supported with no requirement for MTP resources.

Connecting TelePresence Conductor to the Unified CM

Note: In CMR Premises, the TelePresence Conductor is deployed using its B2BUA. The external policy service interface is not supported.

Before You Start

- Cisco TelePresence Conductor must be installed according to the instructions in Cisco TelePresence Conductor Getting Started or Cisco TelePresence Conductor Virtual Machine Installation Guide.
- Cisco Unified Communications Manager must be installed and configured with a base configuration. Ensure connectivity by registering at least three endpoints, and make sure they are all capable of calling each other with voice and video communications.
- One or more conference bridges must be powered on and accessible to the Cisco TelePresence Conductor over HTTP/HTTPS and SIP TLS.

Process

To configure the TelePresence Conductor for CMR Premises in Unified CM-Centric deployments, follow the step-by-step instructions in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)*. These instructions walk you through:

- Configuring the Cisco TelePresence MCU Series.
- Configuring the TelePresence Server.
- Configuring the TelePresence Conductor's general settings and configuring it for ad hoc and rendezvous conferences.
- Configuring the Unified CM's general settings and configuring it for ad hoc and rendezvous conferences.

For information on setting up scheduled conferencing, see How to Enable Scheduled Conferencing [p.62].

Note: The preferred deployment is to deploy personal CMRs as described in Enabling Personal CMRs [p.34] later in this document. In this case you can skip the rendezvous conference configuration steps (the tasks that set up conference templates, conference aliases and auto-dialed participants on the TelePresence Conductor).

Connecting TelePresence Conductor to the Cisco VCS

Before You Start

- Cisco TelePresence Conductor must be installed according to the instructions in Cisco TelePresence Conductor Getting Started or Cisco TelePresence Conductor Virtual Machine Installation Guide.
- Cisco TelePresence Video Communication Server must be installed and configured to act as a SIP registrar and proxy.
- One or more conference bridges must be powered on and accessible to the TelePresence Conductor over HTTP/HTTPS and SIP TLS.

Process

To configure the TelePresence Conductor for CMR Premises in Cisco VCS-Centric deployments, follow the step-by-step instructions in the *Cisco TelePresence Conductor with Cisco VCS (B2BUA) Deployment Guide (XC3.0)*, with the following caveat:

- The VCS **Zone profile** for the trunk between Cisco VCS Control and TelePresence Conductor should be set to *Custom* with **Automatically respond to SIP searches** set to *On*. For details, see *Adding the TelePresence Conductor as a neighbor zone* in *Cisco TelePresence Conductor with Cisco TelePresence VCS (B2BUA) Deployment Guide XC3.0*.

The instructions walk you through:

- Designing a dial plan.
- Configuring the Cisco TelePresence MCU Series.
- Configuring the TelePresence Server.
- Configuring Cisco VCS with a neighbor zone and search rule for TelePresence Conductor.
- Configuring the TelePresence Conductor in B2BUA mode (deployments using the Cisco VCS external policy service are not supported)

For information on setting up scheduled conferencing, see How to Enable Scheduled Conferencing [p.62].

Note: The preferred deployment is to deploy personal CMRs as described in Enabling Personal CMRs [p.34] later in this document. In this case you can skip the rendezvous conference configuration steps (the tasks that set up conference templates, conference aliases and auto-dialed participants on the TelePresence Conductor).

Connecting the Unified CM and the Cisco Expressway Series or Cisco VCS

For Unified CM-Centric deployments beyond the standard deployment model (external, with Microsoft Lync 2013, or legacy deployments) your deployment must include either the Cisco Expressway Series or Cisco TelePresence Video Communication Server. For an overview of the deployment types, see *Cisco Collaboration Meeting Rooms (CMR) Premises Solution Guide*.

Before You Start

- Cisco Unified Communications Manager must be installed and configured with a base configuration. Ensure connectivity by registering at least three endpoints, and make sure they are all capable of calling each other with voice and video communications.
- The Cisco Expressway-C or Cisco VCS Control must be configured with IP address, DNS and NTP information, and be accessible for management via its web interface.
- If you are using the Cisco Expressway Series, rich media licenses must be installed.

Process for Cisco Expressway Series

To connect the Unified CM and Cisco Expressway Series, follow the step-by-step instructions in the *Cisco Unified Communications Manager with Cisco Expressway via SIP Trunk Deployment Guide*. These instructions walk you through:

- Configuring Unified CM for a Cisco Expressway trunk
- Configuring Cisco Expressway routing
- Connecting Cisco Expressway to Unified CM using TLS

Process for Cisco VCS

To connect the Unified CM and Cisco VCS, follow the step-by-step instructions in the *Cisco Unified Communications Manager with Cisco VCS (SIP Trunk) Deployment Guide*. These instructions walk you through:

- Enabling calls between endpoints registered on the Cisco VCS Control
- Enabling calls between endpoints registered on Unified CM
- Enabilng endpoints registered on Unified CM to call endpoints registered on Cisco VCS Control
- Connecting Cisco VCS to Unified CM using TLS

Configuring Security

This section assumes that the standard configuration requirements for CMR Premises are complete.

CMR Premises supports TLS encryption for signaling. TLS is mandatory for TelePresence Conductor-to-bridge SIP communication. Other SIP (and XML RPC) communication can optionally be TLS-encrypted between the endpoint and the call manager, and between the call manager and TelePresence Conductor.

Communication security for conference participants is supported through SRTP encrypted media. For a call to support SRTP encrypted media, its associated SIP signaling must use TLS for *all* hops. That is:

1. Between the endpoint and the call controller.
2. Between the call controller and TelePresence Conductor.
3. Between TelePresence Conductor and the conference bridge (always mandatory anyway).

CAUTION: Unless TLS signaling is in place for all three elements, the call cannot support SRTP.

Configuration information

Conference bridges must have the encryption key enabled and be configured to use TCP port 5061 and signaling mode TLS (**SIP Settings** page).

Specify TCP port 5061 and TLS signaling mode on the TelePresence Conductor**Location** and on the call controller (**SIP Trunk Security Profile** for Unified CM; **Neighbor Zone** for Cisco VCS).

See the appropriate deployment guide for details:

- *Cisco TelePresence Conductor with Unified Communications Manager Deployment Guide* for Unified CM-Centric deployments
- *Cisco TelePresence Conductor with Cisco VCS (B2BUA) Deployment Guide* for Cisco VCS-Centric deployments

Configuring Conferencing Services

Enabling Personal CMRs

Personal Collaboration Meeting Rooms (CMRs) provide rendezvous-type permanent conference aliases that individual users can create for themselves through the Cisco TMSPE User Portal.

To enable personal CMRs, the administrator creates a new user with API access on each TelePresence Conductor or cluster. Then, in Cisco TMSPE, the administrator adds the TelePresence Conductor user, creates one or more CMR templates to specify the base dial plan for CMR URIs and numeric aliases, and applies the templates to user groups. This allows end users to create and personalize their own CMRs.

When an end user creates a personal CMR, Cisco TMSPE applies the settings defined by the administrator in the CMR template associated with the user's group, and makes a provisioning API call to create the conference on TelePresence Conductor. No further interaction is needed from the administrator.

The CMR template corresponds to a conference template and a conference alias on TelePresence Conductor. CMRs created by using Cisco TMSPE cannot be modified through the TelePresence Conductor web user interface. Conference templates and aliases created by using TelePresence Conductor cannot be modified through Cisco TMSPE.

Before You Start

- The TelePresence Conductor must have at least one populated bridge pool and Service Preference.
- Cisco TMSPE must be installed and enabled in Cisco TMS.
- Cisco TMSPE is accessed from the **Systems > Provisioning** menu in Cisco TMS.
- A user base must exist for Cisco TMSPE.

Process

Task 1: Create a TelePresence Conductor User with API Access

In TelePresence Conductor, go to **Users > Administrator accounts** and create a User with the following attributes:

- **Access level**: *Read-write*
- **Web access**: *No*
- **API access**: *Yes*
- **State**: *Enabled*

Task 2: Add the TelePresence Conductor API User to Cisco TMSPE

1. In Cisco TMS, go to **Systems > Provisioning > Users**.
2. Click **TelePresence Conductor Settings**.
3. Click **Add New**.
4. In the **TelePresence Conductor Configuration** dialog add the TelePresence Conductor details and the credentials of the new user with API access:
   - **Hostname/IP**: Hostname or IP address of the TelePresence Conductor.
   - **Port**: Port to connect on (default is HTTPS on port 443).
   - **Username / Password**: The credentials for the new user with API access.

- **Domain**: TelePresence Conductor will append this domain for all numeric aliases created through Cisco TMSPE.

5. Click **Save**.

Task 3: Create One or More CMR Templates

In Cisco TMS, go to **Systems > Provisioning > Users > Collaboration Meeting Room Templates** and create one or more templates as required.

Task 4: Apply the CMR Templates to Groups

In Cisco TMS, go to **Systems > Provisioning > Users**. Choose the relevant group, then select the button for the required template in the **Active** column.

Task 5: Enable Monitoring for Personal CMRs

If you want to enable monitoring, add the TelePresence Conductor to Cisco TMS. You must do this even though TelePresence Conductor has been added to Cisco TMSPE.

See the Cisco TMS context-sensitive help or the _Cisco TMS Administrator Guide_ (search for "Adding systems").

More Information

For details about the TelePresence Conductor Provisioning API, see _Cisco TelePresence Conductor Product Programming Reference Guide XC3.0_

For details about CMR configuration settings, see the section "_Deploying Collaboration Meeting Rooms_" in the appropriate deployment guide:

- _Cisco TelePresence Management Suite Provisioning Extension with Cisco Unified CM Deployment Guide_
- _Cisco TelePresence Management Suite Provisioning Extension with Cisco VCS Deployment Guide_

Using Host and Guest Roles in Personal CMRs

When creating a template for Collaboration Meeting Rooms, the administrator can choose whether or not the CMR owner will be able to distinguish between host and guest participants.

Host privileges

The participant or participants connecting to a CMR as a host can connect at any time regardless of whether there are other participants in the room.

A PIN may be required for them to join, depending on the configurations made by the administrator and the CMR owner.

Depending on the bridge used, participants connecting as guests may be required to wait until a host joins the meeting before they will be allowed into the CMR.

- Cisco TelePresence MCU Series: guests must always wait for a host to join.
- TelePresence Server: the policy is determined by the **Guest Lobby** setting of the CMR.

Process for Enabling the Guest Role in a CMR

On the template of the CMR:

- Check **Allow Guest Role**.
  To make the guest role optional to CMR owners, you must leave the host PIN requirement as `0` (optional).

- Select whether to enable **Guest Lobby**, which means guests must wait in the lobby unless at least one host is present in the CMR.
  This setting will apply to all rooms based on the template and is not configurable for the CMR owner.

When the guest role is allowed:

- The guest role will only be used if the administrator or CMR owner set a PIN requirement for the host.
  If no PIN is set for the host, everyone is allowed into the CMR automatically with host permissions.

- If a PIN is set for the host, but not for the guests, guests will be asked to press `#` to connect to the CMR.

- You can only have a PIN requirement for the guest if there is also a PIN requirement for the host.

Process for Disabling the Guest Role in a CMR

To make all participants have the same PIN requirements and the same privileges, uncheck **Allow Guest Role** on the CMR template.

When the guest role is not allowed, all participants are treated as hosts and can connect at any time regardless of whether there are other participants in the room.

Managing Changes to Personal CMRs

This section explains how to make changes that affect the Collaboration Meeting Rooms (CMR) deployment.

Before You Start

CAUTION: Some changes will impact CMRs and may cause disruption to users.

We strongly recommend that administrators fine-tune templates as much as possible before applying them to groups and allowing users to create their CMR.

If you need to make changes to templates after making CMRs available to users, we recommend using maintenance windows or advising users in advance when they should avoid creating or changing CMRs. Where appropriate notify users about the likely impact of the changes.

Process

Task	Instructions
Modifying template settings	You can change the settings for a template that has already been assigned to a group. The changes will impact the available CMR settings in the affected group(s). 1. In Cisco TMS, go to **Systems > Provisioning > Users > Collaboration Meeting Room Templates**. 2. In the template list, click the pencil icon next to the required template, make the changes and click **Save**. Repeat as necessary for any other templates that need modifying. 3. The counter next to **Check sync status** indicates how many CMRs are out of sync with the modified templates. Click **Regenerate CMRs** to synchronize the change on TelePresence Conductor. The **SIP Alias Pattern** will always regenerate. The **Numeric Alias Pattern** never regenerates once it is set on a CMR. If the template changes make the PIN policy stricter, Cisco TMSPE generates a new PIN for any non-compliant CMRs when the changes are synchronized (PINs are generated for all CMRs that do not meet the new criteria).
Removing CMR entitlement	Set the CMR template for the group to *None*. This removes CMR capabilities from the users in that group.
Selecting a different template for group	1. In Cisco TMS, go to **Systems > Provisioning > Users** 2. For the relevant group, select the button for the required template in the **Active** column.
Deleting templates	1. In Cisco TMS, go to **Systems > Provisioning > Users > Collaboration Meeting Room Templates** 2. Click the red deletion icon next to the template name in the list. You cannot delete a template that is associated with an existing CMR.
Deleting users	If you delete a user from the user base, the user's CMR is automatically deleted.

Moving users between groups	If a user's group changes in the user base (normally due to changes in Active Directory) their assigned CMR template will also change if the new group has a different template.
	Cisco TMSPE will register the change during the next health check (or a **Run Health Check** can also be initiated manually from the **Provisioning Extension Diagnostics** page).
	The user's CMR will be displayed as out of sync. To synchronize, click **Regenerate CMRs** to have the change reflected on TelePresence Conductor.

More Information

For details about the TelePresence Conductor Provisioning API, see *Cisco TelePresence Conductor Product Programming Reference Guide XC3.0*

For details about CMR configuration settings, see the section "*Deploying Collaboration Meeting Rooms*" in the appropriate deployment guide:

- *Cisco TelePresence Management Suite Provisioning Extension with Cisco Unified CM Deployment Guide*
- *Cisco TelePresence Management Suite Provisioning Extension with Cisco VCS Deployment Guide*

Enabling CMR Hybrid in Scheduled Conferences

This section describes how to enable CMR Hybrid for scheduled conferences in a CMR Premises deployment, for participation by Cisco WebEx and TelePresence users.

Before You Start

- The standard requirements for enabling scheduled conferences apply.
- In Unified CM-Centric deployments, SIP Early Offer messaging is required as described in the Early Offer section.
- In Cisco VCS-Centric deployments, SIP Early Offer messaging is the default. However, if you have a Unified CM in the network and it is required to support WebEx, you must ensure that Early Offer messaging is configured on the SIP trunks between the following elements:
  - Bridges used for calls between Early Offer-based services and the Cisco Expressway.
  - Any third-party call controller and the Cisco VCS Control.
  - Any Unified CM-managed endpoints and the Cisco Expressway. The entire path from the calling device to the service must be configured to support Early Offer.
    If you do not need external Early Offer-based services in an Cisco VCS-Centric deployment, then any Unified CMs may be configured for either Delayed Offer or Early Offer.

Process

Task 1: Configure TelePresence Applications for Cisco WebEx Support

If not already done, complete the first-time configuration steps in Cisco Collaboration Meeting Rooms (CMR) Hybrid Configuration Guide so that your Cisco TelePresence applications are enabled for Cisco WebEx-to-Cisco TelePresence interoperability. Detailed instructions and a first-time configuration checklist are provided in that guide.

Task 2: Configure Cisco WebEx Site Administration

If not already done, after the first-time configuration steps in Task 1 are complete you need to set up Cisco WebEx site administration, as described in Cisco Collaboration Meeting Rooms (CMR) Hybrid Configuration Guide.

Task 3: Book the Conferences

In Cisco TMS, go to **Booking > New Conference** and complete the relevant fields on the **Basic Settings** tab. In particular, make sure **Include WebEx Conference** is checked and optionally create a **WebEx Meeting Password**.

For details, see the chapter about scheduling CMR Hybrid meetings in Cisco TMS in Cisco Collaboration Meeting Rooms (CMR) Hybrid Configuration Guide.

Task 4: Cisco TMS calculates the route and issues email confirmation

This task is done by the Cisco TMS. When you save the conference, Cisco TMS calculates the route for the meeting and emails the meeting details, including WebEx and TelePresence dial-in information, to the conference booker. Depending on your site configuration you may also receive emails from WebEx.

Task 5: Forward the meeting details

Forward the meeting emails issued in the previous step to the conference participants.

More Information

■ For detailed information about Cisco TMS settings, see the context-sensitive help for Cisco TMS or Cisco TMS Administrator Guide.

■ For detailed configuration steps to enable this feature, see Cisco Collaboration Meeting Rooms (CMR) Hybrid Configuration Guide.

Using CMR Hybrid with Personal CMRs

If you have deployed CMR Hybrid, you can include WebEx in CMRs so that users may connect using either TelePresence or WebEx.

When enabled through the Collaboration Meeting Room template, a **Create WebEx Connection** button will appear on each user's CMR page on the TelePresence User Portal. The button allows the user to create a temporary WebEx connection for their CMR.

As the connection is temporary and will eventually time out, the portal page advises users to create the connection and distribute the WebEx details shortly before the meeting starts.

Before You Start

Before you can enable WebEx in CMRs:

- CMR Hybrid must be deployed. See *Cisco Collaboration Meeting Rooms Hybrid Configuration Guide* for details and instructions.
- The owner of each CMR must be a registered WebEx user associated with a current WebEx site with their own username and password. Otherwise, the **Create WebEx Connection** button will not appear for the user.
- If planning to change an existing template, read Managing Changes to Personal CMRs [p.37].
- To prevent potential toll fraud issues, we recommend disabling **Call-back teleconferencing** on the WebEx site that is used for CMRs.

Process

You must enable WebEx for CMR before you can include the feature in one or more templates:

1. In Cisco TMS, go to **Administrative Tools > Configuration > Provisioning Extension Settings**.
2. Under Collaboration Meeting Room, set **Allow WebEx Connections** to *Yes*.
3. Go to **Systems > Provisioning > Users**.
4. Select an existing template for editing or create a new template.
5. Check **Include WebEx**.
6. Click **Save**.
7. Click **Regenerate CMRs**.

Setting Up Cascading for Large-Scale or Critical Meetings

Within the local CMR Premises enterprise network, larger conferences that exceed the capacity of a single conference bridge can be cascaded (distributed) across one or more additional bridges. The bridges must be routable with each other and with TelePresence Conductor.

Before You Start

In the case of cascading for scheduled conferences, the standard requirements for enabling scheduled conferences apply (see How to Enable Scheduled Conferencing [p.62]).

Note: Cascading is not supported from one conference bridge to another bridge that is outside the boundaries of the local enterprise network.

- Cascade links share only a single screen of video between TelePresence Server.
- Cascading is not supported from a TelePresence Server bridge to an MCU, or from an MCU to a TelePresence Server.
- On cascade-enabled conferences, cascading resources are reserved from the start of the conference for the configured **Maximum number of cascades**, whether or not they are actually used. For this reason we recommend using the cascade option sparingly—typically for large-scale meetings or for rendezvous conferences / personal CMRs used by VIP personnel.
- Cascading should not be enabled where certainty of resource availability is critical, such as the dedicated bridge scheduling case (where a single bridge in its own pool is reserved for scheduling).
- The ActiveControl feature on the TelePresence Server supports up to 500 participants.

Process for CMR Conferences

Note: This process uses the Cisco TMSPE provisioning extension of Cisco TMS. If your deployment does not use Cisco TMSPE, you can instead use the TelePresence Conductor to configure cascading, as described in the Conductor documentation.

Task 1: Create a Cascade-Enabled CMR Template

1. In Cisco TMS, go to **Systems > Provisioning > Users > Collaboration Meeting Room Templates** and create one or more templates as required.
2. Check the **Allow Cascading** check box.
3. Specify the maximum number of cascades allowed for a conference.

Task 2: Apply the CMR Template to a Group

In Cisco TMS, go to **Systems > Provisioning > Users**. Choose the relevant group, then select the button for the required template in the **Active** column.

More Information

For details, see the appropriate deployment guide:

■ For details about Cisco TMSPE settings in Unified CM-Centric deployments, see *Cisco TelePresence Management Suite Provisioning Extension with Cisco Unified CM Deployment Guide*

■ For details about Cisco TMSPE settings in Cisco VCS-Centric deployments, see *Cisco TelePresence Management Suite Provisioning Extension with Cisco VCS Deployment Guide*

Process for Scheduled Conferences

For deployments that use dedicated bridges for scheduling, cascading is not recommended (or possible in the case of a single pool with a single bridge). For deployments with shared-use bridges, which support both scheduled and non-scheduled conferences, the solution supports cascading of scheduled conferences on TelePresence Conductor-managed TelePresence Server or MCU conference bridges.

Cisco TMS will prompt you at booking time if the number of participants exceeds the single bridge capacity.

Task 1: Book the Scheduled Conference as Normal in Cisco TMS

Add the TelePresence Conductor to the conference (unless it is defined as the default MCU).

Task 2: Check TelePresence Conductor Settings

Check the associated TelePresence Conductor settings, and modify as appropriate.

More Information

For details, see *Cisco TelePresence Conductor with Cisco TelePresence Management Suite Deployment Guide*.

Enabling Ad Hoc (Instant) Conferencing

This section does not apply to Cisco VCS-Centric deployments.

Ad hoc conferencing in CMR Premises requires conference bridges to be managed by TelePresence Conductor as media resources. TelePresence Conductor acts as a conference controller and manager between Unified CM and the bridges, through SIP trunks and registered media resource conference bridges.

TelePresence Conductor conference templates are referenced by multiple virtual IP addresses. These addresses register with Unified CM as ad hoc conference bridges and are used in media resource group lists (MRGLs) and media resource groups (MRGs). Unified CM uses MRGLs and MRGs to prioritize and allocate media resources, including conference bridges.

Note: A single TelePresence Conductor or cluster can have multiple conference templates configured to support a variety of service levels and user experiences.

Before You Start

- Ensure that the prerequisites and configuration process for the solution are complete. In particular:
  - Ad hoc conferences are controlled by their originating Unified CM, which routes ad hoc calls directly to TelePresence Conductor. An API/SIP trunk pair is required between the TelePresence Conductor and every Unified CM that supports ad hoc conferencing.
  - The SIP trunks should be configured for Early Offer messaging.
  - The TelePresence Conductor needs at least one populated conference bridge pool and Service Preference.
  - The TelePresence Conductor needs a network IP address defined for ad hoc handling for each Location and/or Conference template that is to support ad hoc calls.
  - TelePresence Server conference bridges must be configured to be managed by the TelePresence Conductor.
- Ad hoc call flows cannot be used to add participants to other types of conference. Other call flows cannot be used to add participants to ad hoc conferences.
- We do not recommend ad hoc escalations by participants in a rendezvous, Multiway, or scheduled conference. This will cause a "chained" conference. Clicking the conference button on the endpoint causes the endpoint to try to create a new ad hoc conference escalation rather than extending the existing conference. The ad hoc conference will be chained with the existing conference. The endpoints will be across the two chained conferences, causing a degraded conference experience for participants.
- Similarly, participants of ad hoc conferences should not be added to rendezvous, Multiway or scheduled conferences. Attempting to add a whole conference as a participant to an existing conference will also lead to a chained conference.
- Some limitations exist for the audio-only quality setting with ad hoc conferencing on TelePresence Servers. These are described in Audio-Only Quality Setting in Ad Hoc Conferencing with TelePresence Servers [p.47].
- Unified CM delivers ad hoc and rendezvous conferences to different IP addresses on TelePresence Conductor.

Process

Task 1: Configure General Settings on TelePresence Conductor

Define TelePresence Conductor settings to support integration with Unified CM, including the following:

1. Password administration.
2. Define a user for Unified CM access.
3. Update the DNS settings.
4. Create conference bridge pools.
5. Create Service Preferences.
6. Add IP addresses for ad hoc and rendezvous Locations on TelePresence Conductor.

The settings are described in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)*, section "*Configuring general settings on TelePresence Conductor*".

Task 2: Create a Conference Template for Ad Hoc on TelePresence Conductor

In TelePresence Conductor, go to **Conference configuration > Conference templates** and create a template for ad hoc.

- Set **Conference type** to *Meeting*.
- Assign a **Service Preference**.

- Disable cascade resource reservation (set **Maximum number of cascade ports** to '*0*').
- For TelePresence Server bridges, specify a **Participant quality** value.

Task 3: Create a Location on TelePresence Conductor

In TelePresence Conductor, go to **Conference configuration > Locations** and create a Location for ad hoc (or you can optionally use the same Location for rendezvous calls).

1. Set **Conference type** to *Ad hoc* (or to *Both* to use the same Location for rendezvous calls).
2. Set **Ad hoc IP address** to the TelePresence Conductor IP address for ad hoc calls in this location.
3. In **Ad hoc template** assign a template. TelePresence Conductor should be configured so that endpoints use Service Preferences with conference bridges that are local to the endpoints.

Task 4: Add the Location to a Conference Bridge Pool on TelePresence Conductor

This task defines the Location for TelePresence Conductor to use for outbound calling.

In TelePresence Conductor, go to **Conference configuration > Conference bridge pools**. Click the relevant pool and in the **Location** dropdown, select the Location defined in the previous step.

Task 5: Configure General Settings on Unified CM

To support integration with TelePresence Conductor, configure the settings described in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)*, section "*Configuring general settings on Unified CM*".

Task 6: Configure a SIP trunk to TelePresence Conductor (Unified CM Version 10.0 and later)

From Unified CM Version 10.0, a SIP trunk between Unified CM and TelePresence Conductor must be explicitly configured on Unified CM for ad hoc conferences. In Unified CM, go to **Device > Trunk** and create a trunk with the TelePresence Conductor's Location-specific ad hoc IP address.

Details are in "*Adding a SIP trunk connecting to TelePresence Conductor*" in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)* or refer to the context-sensitive help.

Task 7: Add TelePresence Conductor as a Conference Bridge

In Unified CM, go to **Media Resources > Conference Bridge** and create a Conference Bridge for the TelePresence Conductor.

Details are in "*Adding the TelePresence Conductor as a Conference bridge to Unified CM*" in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)* or refer to the context-sensitive help.

Task 8: Add TelePresence Conductor to an MRG and MRGL

In Unified CM, go to **Media Resources > Media Resource Group** and **Media Resources > Media Resource Group List** respectively and create a Media Resource Group and a Media Resource Group List. Configure them with the Conference Bridge defined for TelePresence Conductor in the previous step.

Details are in "*Adding the TelePresence Conductor to an MRG and MRGL*" in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)* or refer to the context-sensitive help.

Task 9: Add the MRGL to a Device Pool (or Endpoints)

Depending on the implementation, you can configure a Device Pool to apply to all endpoints, or assign individual endpoints to a specific Media Resource Group List (MRGL). If an MRGL is applied to both a Device Pool and an endpoint, the endpoint setting will be used.

To configure a Device Pool, in Unified CM, go to **System > Device Pool** and select the appropriate device profile for video.

More details are in "*Adding an MRGL to a Device Pool or Device*" in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)* or refer to the context-sensitive help.

Task 10: Create an ad hoc call to test the deployment

For instructions on setting up an ad hoc call, see "*Creating an ad hoc meeting*" in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)*.

Third-party Endpoints

Endpoints from other equipment providers can participate in ad hoc conferences using standard SIP:

- The endpoints must be registered to Unified CM.
- Endpoints must have a conference button (or a join button or similar soft key) to initiate ad hoc conferences. Endpoints without a conference button can still be participants, but they must be added to the conference by an endpoint that has a conference button.

Troubleshooting

If an ad hoc call fails, review the *Troubleshooting* section in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)*. The topic in "*Specific issues > Ad hoc call does not connect*" suggests various device settings to check.

Audio-Only Quality Setting in Ad Hoc Conferencing with TelePresence Servers

TelePresence Conductor supports audio-only as a quality setting (service level) for TelePresence Server conference bridges. A default audio-only option is provided (**Conference configuration > Quality settings**) which like other quality settings is applied through the conference template, auto-dialed participant, or pre-configured endpoint codec values.

This section describes some limitations and recommendations to be aware of when using the audio-only quality setting with ad hoc conferencing in Unified CM deployments. System behavior may not be as you expect.

Note: The issues described in this section apply to ad hoc conferences only and are not relevant to rendezvous and CMR conferences.

Limitations for ad hoc conferencing

- For Intelligent Bridge Selection purposes, in ad hoc conferences Unified CM always treats TelePresence Conductor as a video resource regardless of the Conductor template settings. It does not differentiate between audio and video templates. The implications of this are described in the example below.
- TelePresence Conductor does not support the audio-only quality setting for MCU bridges.

Example: Audio-Only Handling for Ad Hoc Conferences

Assume a single-TelePresence Conductor configuration with these templates defined for Unified CM Media Resource Group 1:

- Cond-Video (*HD* specified for **Participant quality**)
- Cond-Audio (*Audio-only* specified for **Participant quality**)

The Conductor is added to Unified CM as two separate conference bridges, using separate IP addresses. One address is linked to the Cond-Video template and the other to Cond-Audio.

Unified CM's Intelligent Bridge Selection does not favor the Cond-Video resource for ad hoc conferences involving two or more video endpoints, and the Cond-Audio resource for ad hoc conferences involving audio-only endpoints. Instead, because Unified CM believes all Conductor resources to be video resources, load balancing is performed between Cond-Video and Cond-Audio. This may result in a group of video endpoints being allocated to the Cond-Audio resource and having no video (because audio and video templates are not differentiated).

Recommendations for Audio-Only in Ad Hoc Conferences

1. In Unified CM, use a dedicated Media Resource Group (MRG) for TelePresence Conductor conference bridges with an audio-only template.
2. Do not add any other type of audio conference bridge (such as PVDMs) to the MRG.

3. Assign the MRG to a Media Resource Group List (MRGL) and assign this MRGL to your audio-only endpoints.

Enabling Multiway (Instant) Conferencing

This section does not apply to Unified CM-Centric deployments.

Cisco TelePresence Multiway™ (Multiway) conference requests are routed from Cisco VCS direct to the TelePresence Conductor. The Multiway conference is hosted on a bridge connected to TelePresence Conductor.

Before You Start

- TelePresence Conductor and Cisco VCS must be configured for CMR Premises.
- Cisco VCS needs the following option keys applied:
    - H323-SIP interworking
    - Non-traversal calls
- TelePresence Server conference bridges must be configured to be managed by the TelePresence Conductor.
- If you will be using Cisco TMS to provision endpoints with unique Multiway URIs, the supported method is to use Cisco TelePresence Management Suite Provisioning Extension (Cisco TMSPE) in conjunction with a Cisco VCS running in Provisioning Extension mode. The Device Provisioning option key is required.

Process

Complete these configuration steps to route Multiway calls through the Cisco VCS Control:

1. Configure a neighbor zone for the SIP trunk between Cisco VCS Control and the TelePresence Conductor.
2. Define a search rule in the Cisco VCS to route Multiway aliases to the TelePresence Conductor neighbor zone.
3. Configure a Multiway conference alias on the TelePresence Conductor.
4. Configure Multiway on the relevant endpoints. You can do this manually or using Cisco TMSPE.

The *Cisco TelePresence Multiway™ Deployment Guide* provides detailed configuration information about each step.

Third-Party Endpoints

Endpoints from other equipment providers can participate in Multiway conferences using standard SIP, if they meet these requirements:

- Support for the SIP REFER message.
- Endpoints initiating a Multiway conference must have Multiway support.
- Endpoints joining a Multiway conference must have call hold and call forward functionality.

Enabling Rendezvous Conferencing

You can enable rendezvous conferencing, if you decide not to use the new personal Collaboration Meeting Room feature. In CMR Premises, rendezvous conferences are configured on the TelePresence Conductor.

Before You Start

- Ensure that the prerequisites and configuration process for the solution are complete. In particular:
  - A SIP trunk is required between the call controller and TelePresence Conductor.
    In Unified CM-Centric deployments, Unified CM routes rendezvous participants to the IP address of this SIP trunk.
  - The SIP trunks should be configured for Early Offer messaging.
  - The TelePresence Conductor must be deployed using its back-to-back user agent (B2BUA). The external policy server interface is not supported.
  - The TelePresence Conductor needs at least one populated conference bridge pool and one Service Preference.
  - TelePresence Server conference bridges must be configured to be managed by the TelePresence Conductor.
- Rendezvous call flows cannot be used to add participants to ad hoc or other conference types. Ad hoc call flows cannot be used to add participants to rendezvous or other conference types.
- Unified CM delivers ad hoc and rendezvous conferences to different IP addresses on TelePresence Conductor.

Process for Unified CM-Centric Deployments

These are the configuration steps to enable Rendezvous calls in Unified CM-Centric deployments:

Task 1: Configure General Settings on TelePresence Conductor

Define TelePresence Conductor settings to support integration with Unified CM, including the following:

1. Password administration.
2. Define a user for Unified CM access.
3. Update the DNS settings.
4. Create conference bridge pools.
5. Create Service Preferences.
6. Add IP addresses for ad hoc and rendezvous Locations on TelePresence Conductor.

The settings are described in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)*, section "*Configuring general settings on TelePresence Conductor*".

Task 2: Create a Conference Template for Rendezvous on TelePresence Conductor

In TelePresence Conductor, go to **Conference configuration > Conference templates** and create a template for rendezvous.

- Set **Conference type** to *Meeting*.
- Assign a **Service Preference**.

- Configure cascade resource reservation (set **Maximum number of cascade ports** to '*1*' or a higher number if you want to cascade to one or more bridges, or to '*0*' to disable cascading).
- For TelePresence Server bridges, specify a **Participant quality** value.

Task 3: Create a Conference Alias for Rendezvous on TelePresence Conductor

In TelePresence Conductor, go to **Conference configuration > Conference aliases** and create an alias. The alias can be for a specific user, or it can contain wildcards to allow a wide range of users to create conferences with the same conference settings applied. The **Incoming alias** setting lets you define a regular expression to match the incoming string from Unified CM. SIP requests received from Unified CM are in the format `name@<IP address | FQDN>:<port>`

The settings are described in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)*, section "*Creating a conference alias for a rendezvous Meeting-type conference*".

Task 4: Create a Location on TelePresence Conductor

In TelePresence Conductor, go to **Conference configuration > Locations** and create a Location for rendezvous (or you can optionally use the same Location for ad hoc calls):

1. Set **Conference type** to *Rendezvous* (or to *Both* to use the same Location for ad hoc calls).
2. Set **Rendezvous IP address** to the TelePresence Conductor IP address for rendezvous calls in this location.
3. [Optional] If you want to support out-dialing from the conference bridges to Unified CM, including auto-dial participants or out-dialed calls initiated by Cisco TMS **Conference Control Center** or Cisco TMS scheduling, do the following:
   a. Define up to three trunk IP addresses for **Trunk 1-3 IP address**. Use more than one address if you have a Unified CM cluster. TelePresence Conductor considers all trunk IP addresses for a Location as equivalent and it may use any of the trunk addresses, as long as the destination is reachable. If the current SIP trunk destination becomes unreachable, TelePresence Conductor automatically uses another reachable destination.
      Also set **Trunk 1-3 Port** to the receiving port of the Unified CM, typically *5061* for TLS and *5060* for TCP.
   b. If you want to support encrypted calls, set **Trunk transport protocol** to *TLS*.
4. In the template setting, assign a template which uses a Service Preference that contains pools of conference bridges sited only at this location.

Task 5: Add the Location to a Conference Bridge Pool on TelePresence Conductor

This task defines the Location for TelePresence Conductor to use for outbound calling.

In TelePresence Conductor, go to **Conference configuration > Conference bridge pools**. Click the relevant pool and in the **Location** dropdown, select the Location defined in the previous step.

Task 6: Configure General Settings on Unified CM

Various Unified CM settings are needed to support integration with TelePresence Conductor. The settings are described in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)*, section "*Configuring general settings on Unified CM*".

Task 7: Configure a SIP trunk to TelePresence Conductor

A SIP trunk between Unified CM and TelePresence Conductor must be configured on Unified CM. In Unified CM, go to **Device > Trunk** and create a trunk with the TelePresence Conductor's Location-specific rendezvous IP address.

Details are in "*Adding a SIP trunk connecting to TelePresence Conductor*" in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)* or refer to the context-sensitive help.

Task 8: Configure a Unified CM Route Pattern

In Unified CM, go to **Call Routing> Route/Hunt > Route Pattern** and create a route pattern to match the number plan used for TelePresence Conductor aliases to send the call over the SIP trunk to TelePresence Conductor for rendezvous conferences.

Task 9: Create a rendezvous call to test the deployment

For instructions on setting up a rendezvous call, see "*Creating a rendezvous meeting*" in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC3.0)*.

Process for Cisco VCS-Centric Deployments

These are the configuration steps to enable Rendezvous calls in Cisco VCS-Centric deployments:

1. On TelePresence Conductor, go to **System > IP** and add an IP address for Cisco VCS rendezvous conferences. The address must be on the same subnet as the primary TelePresence Conductor IP interface, and must be reserved for use by this TelePresence Conductor alone.
2. On TelePresence Conductor, go to **Conference configuration > Locations** and add a Location for Cisco VCS.
3. On TelePresence Conductor, go to **Conference configuration > Conference aliases** and create an alias for rendezvous conferencing
4. On the Cisco VCS:
   a. Configure a zone for the SIP trunk between Cisco VCS Control and the TelePresence Conductor.
   b. Define a search rule in the Cisco VCS to point to the appropriate zone.

The steps are described in detail in *Cisco TelePresenceConductor with Cisco VCS (B2BUA) Deployment Guide*.
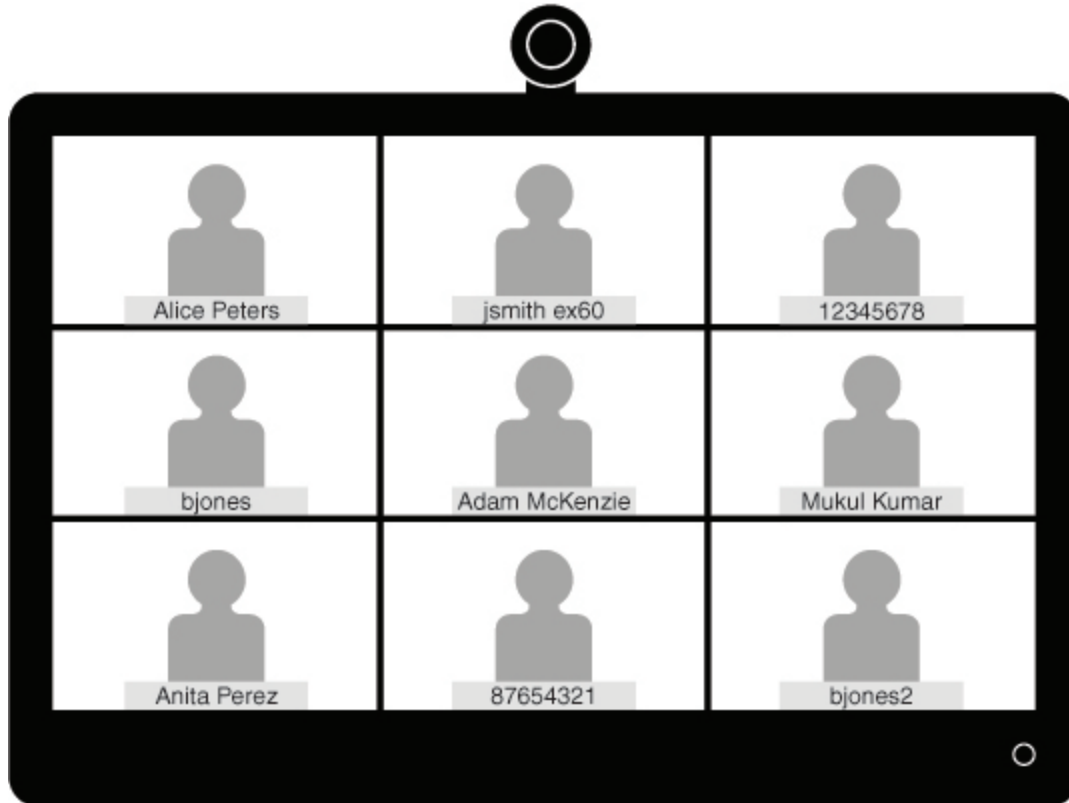
Third-Party Endpoints

Endpoints from other equipment providers can participate in rendezvous conferences using standard SIP.

Provisioning Display Names Across the Solution

Display names are used across endpoints such as TelePresence to identify a user to other participants.

Figure 2: Display Names Example

The preferred format for this name is to use the first name and last name of the user, for example Alice Peters, or the canonical name of the conference room where the endpoint is installed, such as MDR21-3-#120 (room 120 on the 3rd floor of building 21 in Madrid). However if this name is not explicitly provisioned then the system will choose the display name based on the SIP URI or device number of the endpoint. The result that is displayed will depend on how the particular users and rooms have been provisioned. This can lead to inconsistencies in the names displayed on a conference call, with the individual user information being displayed in different formats, as shown in the example above.

To ensure that names display consistently, these settings need to be provisioned in Unified CM and/or in Cisco TelePresence Management Suite Provisioning Extension (Cisco TMSPE) for Cisco VCS registered endpoints.

If the endpoints you want to provision are Unified CM registered see Provisioning Display Names on Unified CM [p.53]. If the endpoints you want to provision are Cisco VCS registered see Provisioning Display Names on Cisco VCS [p.55].

Provisioning Display Names on Unified CM

This section describes how to update display names in the Cisco Unified CM Administration user interface. It describes how users, devices, and lines are configured in order to allow an administrator to identify the

correct fields and locations in which to make those updates, so that the names display correctly. The section titled Trunks [p.55] describes some optional advanced settings that may be useful to some users.

Users and Devices

On the Cisco Unified CM Administration user interface new users are configured in the **User Management > End User** window. It is possible to both create new users or to import them through Active Directory (AD) or LDAP.

New devices are configured in the **Device > Phone** window. Users are then associated to a device. The details supplied during this configuration will not be used for display name purposes. The display name must be manually configured on the line under **Call routing > Directory Number**, or by selecting the line configured on the endpoint under **Device > Phone > Line#**.

Line

Display names are configured on the line that is associated with the device. In this way, the display name is set for a particular device to which that user is associated. In the case of shared lines, it is possible to set different display names on each appearance of the shared line. However, it is recommended that the same display name be used across all devices using the first name and the last name of the user or the name of the conference room.

Setting Display Names for Unified CM Registered Endpoints using Bulk Administration

Bulk Administration can be used to set the display names for Unified CM registered endpoints for large numbers of users.

Before You Start

Ensure that you have users configured and associated to devices. For more information on provisioning users, see *Cisco Unified Communications Manager Administration Guide, Release 10.0(1)*.

Process

1. To export user records, see Export User Records in *Cisco Unified Communications Manager Administration Guide, Release 10.0(1)*.
2. In the CSV file you have downloaded, copy the first name and last name columns into a new CSV file.
3. To upload this CSV file to the correct device, see Update phones using custom file in *Cisco Unified Communications Manager Administration Guide, Release 10.0(1)*.

Manually Setting Display Names for Unified CM Registered Endpoints

This procedure explains how to configure the display name for a device that is registered to Unified CM, whether the device is assigned to a user who is associated with a device, or the device is a shared conference room device.

Before You Start

Ensure that you have users configured and associated to devices. For more information on provisioning users, see *Cisco Unified Communications Manager Administration Guide, Release 10.0(1)*.

Process

1. Log in to the Cisco Unified CM Administration user interface and choose **Device > Phone** to go to the **Find and List Phone** window.

2. Choose the **Device Name(Line)** for the device you want to configure to get to the **Phone Configuration** window for that device.

3. Choose the line for the device from the **Association** area on the left hand side of the window. This brings you to the **Directory Number Configuration** window.

4. In the **Directory Number Information** area, enter the display name in the **Alerting name** and **ASCII Alerting name** fields. **Note:** This will be used to display the user's name when communicating with devices that are not in the Cisco Unified CM cluster.

5. In the **Line 1 on Device** area, enter the display name in the **Display (Caller ID)** and **ASCII Display (Caller ID)** fields. **Note:** This will appear on devices which are on the same cluster as the Cisco Unified CM.

6. If this is a shared line, to ensure changes appear on all devices, check the **Update Shared Device Settings** check box, and click **Propagate selected**. **Note:** We recommend that the display name set in the Alerting Name, ASCII Alerting Name, Display (Caller ID) and ASCII Display (Caller ID) field be the user's full name (for example First Name Last Name), for devices that are associated with a user, or the name of the conference room for endpoints that are in shared conference room spaces.

7. Click **Save**.

The changes are automatically propagated and will take effect immediately, unless the endpoint is on an active call, in which case they will take effect immediately after the active call has ended.

Trunks

If required, the following features can also be configured to further control the behavior of display names. These settings are on the **Trunk Configuration** window.

- In the **Device Information** area, checking the **Transmit UTF-8 for Calling Party Name** check box will transmit the ASCII Alerting Name on devices that support UTF-8.

- It is possible to hide display names on a per-trunk basis. This is done in the **Inbound Calls** area by selecting *Restricted* from the **Connected Name Presentation** drop-down list.

- In the **Caller Information** area, individual device display names can also be overridden by setting the **Caller Name** field.

Provisioning Display Names on Cisco VCS

On Cisco VCS there are two methods which can be used to provision display names.

In the first method, Display Names are provisioned using FindMe templates. This method is used to provision individual users. Each template contains the details for each individual user, including their Display Name.

In the second method, Display Names are provisioned using the Direct Manage method. This method is used to provision Conference Room endpoints. This means that each Display Name is individually provisioned for each Conference Room endpoint on the endpoint itself.

FindMe

FindMe is a Cisco TMSPE feature which allows users to specify which video and audio devices should ring when someone calls their ID. As a result, a single ID can be used to reach multiple devices which are associated with that ID.

In FindMe the administrator provisions users with FindMe accounts and provisioning templates that contain attributes, including the display name. Users can be newly added or imported using AD or LDAP.

For more information on FindMe, see *Deploying FindMe* in *Cisco TelePresence Management Suite Provisioning Extension with Cisco VCS Deployment Guide*.

Setting Caller ID Display Names for Cisco VCS FindMe Users

This section describes how to manually set display names for Cisco VCS FindMe users.

Note: If you are dealing with large numbers of users we recommend that you import their details using Active Directory or LDAP. Using this method, user display names are imported and set automatically.

Before You Start

Ensure that you have installed and provisioned Cisco TMSPE. See *Configuring Cisco VCS for provisioning*, *Installing Cisco TMSPE*, and *Setting up users and provisioning* in *Cisco TelePresence Management Suite Provisioning Extension with Cisco VCS Deployment Guide*.

Process

1. Log in to Cisco TMS, go to **Systems > Provisioning > Users**.
2. In the **User Settings** pane, click **Edit**. The **User Settings** dialog box opens.
3. In the **Display Name** field, enter the first name and last name of the user. **Note:** If the user has been imported using LDAP, the Display Name will be already associated with the user.
4. Click **OK**.

Setting Caller ID Display Names for Conference Rooms

This section explains how to set Display Names for Conference Rooms using the Direct Manage method.

1. Log in to Cisco TMS, go to **Systems > Provisioning > Users**.
2. In the Navigator, choose the conference room you want to update from the pane on the left side of the window.
3. Choose the **Address** of the endpoint that you want to configure. This takes you to the user interface of the selected endpoint.
4. Choose **Configuration > System Configuration**, and search for the word 'display' in the search field on the left side of the window.
5. Enter the Display Name in the **Profile 1 DisplayName** field.
   **Note:** Steps 4 and 5 may vary depending on the endpoint model.
6. Click **Save**.

Configuring Scheduled Conferences

How Scheduling Works in the Solution

Two scheduling methods are possible in the solution:

- Scheduling—dedicated bridge. Deploy one or more bridges that are dedicated just for scheduled conferences, with each bridge in a pool of its own. Optionally a second dedicated bridge and pool combination can be used as a backup.

- Scheduling—shared bridge. Allow bridges to be used for non-scheduled as well as scheduled conferences. In this case resource availability for scheduled conferences cannot be guaranteed, as the necessary resources might already be in use by non-scheduled conferences.
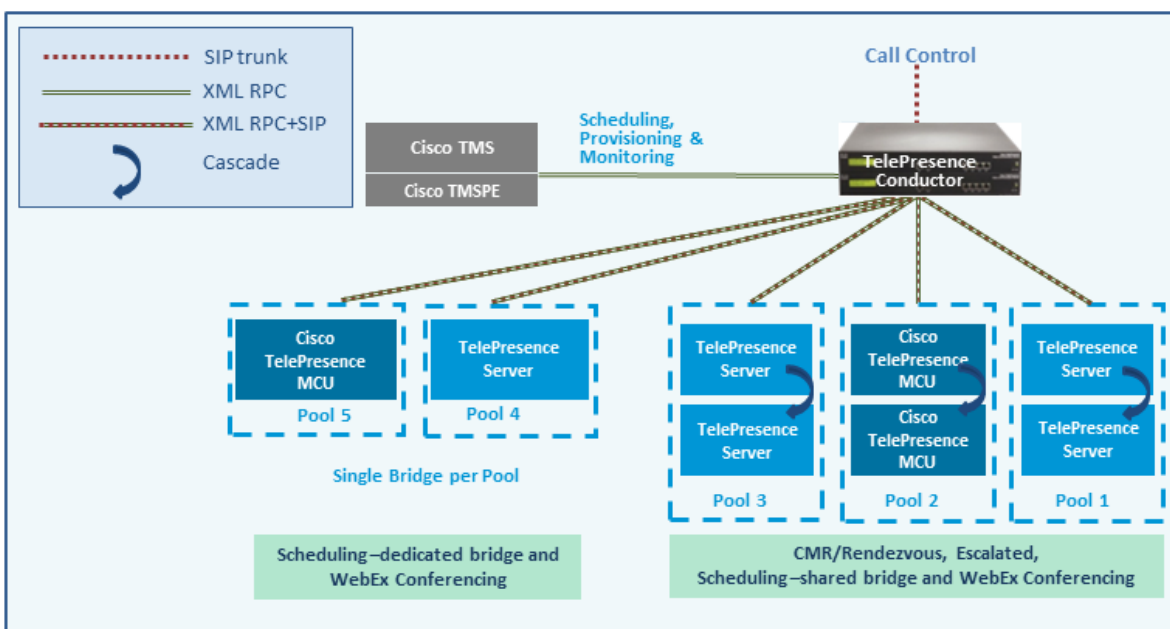
Example configuration scenarios, and their respective advantages and disadvantages, are in *Cisco Collaboration Meeting Rooms (CMR) Premises Solution Guide*.

Limitations and prerequisites apply to scheduled conferencing in this release, described in Limitations and Requirements for Scheduled Conferencing [p.60].

TelePresence Conductor and Cisco TMS Interaction

Setting up scheduling involves configuration tasks on both the TelePresence Conductor and on Cisco TMS. The TelePresence Conductor configuration determines what conference resource information is passed to Cisco TMS. The configuration for Cisco TMS determines how that information is used (such as conference priority and participant numbers).

Alias pattern matching

Scheduling is coordinated between the TelePresence Conductor and Cisco TMS through alias pattern matching. The **Alias Pattern** setting in the Cisco TMS alias must match the **Incoming alias** setting in the conference alias in TelePresence Conductor (and the corresponding pattern on the call control device).

Cisco TMS sends its alias pattern to the TelePresence Conductor, which checks for a matching pattern in its conference aliases. When TelePresence Conductor finds a match, it returns to Cisco TMS the Service Preference settings and other relevant information associated with the matching conference alias.

Multiple conference aliases can share the same Service Preference.

Service Preference and conference priority

The Service Preference on TelePresence Conductor is a key element in managing scheduling. Bridge resources can optionally be reserved for scheduled conferences only (the Scheduling—dedicated bridge case). To do this you "mark" the relevant conference bridge pools in the TelePresence Conductor Service Preference (**Pools to use for scheduling** option). In its Capacity API responses to Cisco TMS, the TelePresence Conductor will only return pools that are marked for scheduling.

To ensure that bridges are only used for scheduling, make sure that the relevant pool is only used in a single Service Preference, which is not used for non-scheduled conferencing, and set **Scheduled conference** in the TelePresence Conductor template to *Yes*.

Managing the priority of Cisco TMS conference aliases

Cisco TMS assigns a conference alias automatically when it creates a conference. Optionally you can change the variable part during booking, per individual conference. Cisco TMS first tries to exhaust the first alias with the lowest priority. If the capacity of that Service Preference is used up, Cisco TMS selects the next lowest priority alias on another Service Preference.

Modeling tool

A Resource Cost Calculator tool is available in Cisco TMS from **Systems > Navigator > Conductor > Service Preferences**. This can be helpful in planning your configuration.

IP Zones in Cisco TMS

Only the IP Zone of the TelePresence Conductor itself is relevant to Cisco TMS bookings, since TelePresence Conductor is the entity that is scheduled. Individual IP Zones for different pools, Service Preferences, or conference aliases in the TelePresence Conductor are not configured in Cisco TMS.

Conference Bridges in Cisco TMS

You can if you wish add TelePresence Conductor-managed conference bridges to Cisco TMS (the bridges are automatically defined as non-bookable in Cisco TMS). This gives the following advantages:

- Conference snapshots in the Cisco TMS **Conference Control Center** are available for Cisco TelePresence MCU bridges.
- Some reporting functionality. Calls are reported in Call Detail Records, but not tied to Cisco TMS conferences.
- Health monitoring for the bridges.

More Information

- *Cisco TelePresence Management Suite Administrator Guide*
- *Cisco TelePresence Conductor Administrator Guide*
- *Cisco TelePresence Conductor API Guide*
- *Cisco TelePresence Conductor with Unified Communications Manager Deployment Guide*
- *Cisco TelePresence Conductor with Cisco TelePresence Management Suite Deployment Guide*

Limitations and Requirements for Scheduled Conferencing

Limitations

CAUTION: If you use clustered TelePresence Conductors, be aware that Cisco TMS only recognizes one TelePresence Conductor node. If that cluster node should fail, the Cisco TMS scheduling service and its CMR provisioning service will be out of service (until the TelePresence Conductor is brought back up or Cisco TMS is updated to communicate with a different TelePresence Conductor in the cluster).

It is not possible to schedule Cisco TMSPE-provisioned CMRs in CMR Premises.

If you use TSP Audio provided by a TSP that is configured to use the same bridge as the previous scheduled conference, we recommend that you turn off the auto-extend function in Cisco TMS.

The scheduling solution with TelePresence Conductor and Cisco TMS has some notable limitations at this time, and significant differences exist from the previous method in Release 3.0 (scheduling to direct-managed bridges). We strongly recommend that before you enable scheduling, you review the following documents:

- Table of differences between scheduling direct-managed bridges (previous release) and scheduling TelePresence Conductor-managed bridges (this release) in *Cisco TelePresence Conductor with Cisco TelePresence Management Suite Deployment Guide*.
- **Limitations** section in the latest release notes for Cisco TMS 14.6.
- **Limitations** section in the latest release notes for TelePresence Conductor XC3.0.

Requirements

- CMR Premises requires the Cisco TMS management tool for scheduling. Conferences are not scheduled directly on TelePresence Conductor.
- Ensure that the solution-level prerequisites and configuration process for CMR Premises are complete. In particular:
  - A SIP trunk is required between the call controller and TelePresence Conductor.
  - The SIP trunks should be configured for Early Offer messaging.
  - The TelePresence Conductor must be deployed using its back-to-back user agent (B2BUA). The external policy server interface is not supported.
  - The TelePresence Conductor needs at least one populated conference bridge pool and one Service Preference. At least one bridge pool in the Service Preference must have the **Pools to use for Scheduling** option enabled.
  - [Unified CM-Centric deployments only] The **telepresence-conductor-interop** normalization script must be added to Cisco Unified Communications Manager if encryption is required.
  - TelePresence Server conference bridges must be configured to be managed by the TelePresence Conductor.
- For the Scheduling—dedicated bridge case, some additional configuration requirements apply (see below).
- Participants in a scheduled conference should not escalate to an ad hoc / instant conference. This will cause a degraded conference experience for the participants.

Requirements for Dedicated Bridge Scheduling

If you use a dedicated conference bridge for scheduling, the following points apply:

- The bridge resources will only be used for conferencing (subject to correct configuration). In Capacity API responses to Cisco TMS, the TelePresence Conductor only returns pools that are "marked" for scheduling in the Service Preference (**Pools to use for scheduling** option).

- For additional resilience you can include one or more additional bridges / pools in the Service Preference used for scheduling. These pools should not be marked for scheduling (so they are not reported to Cisco TMS) and the additional bridges will only be used if the primary bridge becomes unavailable.

- To avoid wasting resources we recommend that you disable cascading. Even though cascading cannot physically happen, resources will still be reserved if cascading is enabled.

- Although TelePresence Server resource optimization will occur, no benefit is gained when the primary conference bridge is in use. Cisco TMS plans bridge usage ahead of actual usage, so the resources recovered by optimization are not actually re-used. If you use backup bridges which are shared resources with non-scheduled conferences, then the optimization will reduce the capacity needed on the shared backup bridge(s).

How to Enable Scheduled Conferencing

Before you Start

- Ensure that the tasks in Limitations and Requirements for Scheduled Conferencing [p.60] are complete.
- Read the guidelines for Bridge Pools and Service Preferences [p.11] in Deployment Requirements and Best Practices [p.11].

Process

Task 1: Add TelePresence Conductor to Cisco TMS

If you have not already done so, add each TelePresence Conductor that you plan to use for scheduling, as a system in Cisco TMS, and associate each system with the appropriate zone. See the Cisco TMS context-sensitive help or the *Cisco TMS Administrator Guide* (search for "Adding systems").

Note: If you use clustered TelePresence Conductors, define *only one node per cluster* to Cisco TMS.

Task 2: Define IP Zone for TelePresence Conductor in Cisco TMS

If you have not already done so, in Cisco TMS go to **Administrative Tools > Locations > IP Zones** and define one IP zone per TelePresence Conductor, or per TelePresence Conductor cluster.

Task 3: Configure conference bridge resources in TelePresence Conductor

In TelePresence Conductor, configure one or more conference bridge pools and Service Preferences for the conference bridges to be used for scheduled conferences.

Various configurations are possible depending on the requirements of your organization. In particular, whether you need to allocate dedicated resources just for scheduled conferences or if it is acceptable to share resources with non-scheduled conferences. The latter case has the risk that a scheduled conference may not be able to start if non-scheduled conferences have already used up the available resources. Configuration examples are given in *Cisco Collaboration Meeting Rooms (CMR) Premises Solution Guide*.

To optionally implement the Scheduling—dedicated bridge case, you must "mark" the relevant conference bridge pool(s) for scheduling use. Do this on the **Service Preference** page in TelePresence Conductor.

Note: When configuring conference bridge pools dedicated for scheduling, we recommend the following:

- Give the conference bridge pool a name indicating that it should only be used for scheduled conferences.
- Check that the pool is only used in a single Service Preference.
- Check that the Service Preference is not used in a CMR or ad hoc conference.

Task 4: Allocate the TelePresence Conductor Location

Allocate the appropriate Location to each conference bridge pool defined in the previous task. Scheduled conferences do not need a dedicated Location. Use the same Location that is assigned for rendezvous conferences.

Task 5: Configure conference templates in TelePresence Conductor

If a suitable conference template does not already exist in TelePresence Conductor, define one or more templates to reflect your scheduled conferencing requirements.

In TelePresence Conductor, go to **Conference configuration > Conference templates**. Set **Scheduled conference** to *Yes*.

Task 6: Configure conference aliases in TelePresence Conductor

Define one or more TelePresence Conductor aliases to reflect your scheduled conferencing requirements.

In TelePresence Conductor, go to **Conference configuration > Conference aliases**.

These configuration requirements apply:

- Personal CMRs provisioned through Cisco TMSPE cannot be used for scheduled conferences.
- A dedicated conference alias is required for scheduled conferences. Do not use a conference alias that is already allocated to non-scheduled conferences.
- Set **Allow conference to be created** to *No*.

Task 7: Configure conference aliases in Cisco TMS

In Cisco TMS, go to **Systems > Navigator >** select the TelePresence Conductor**> Aliases** and select **New**.

The alias names do not have to match their corresponding conference aliases in TelePresence Conductor, but it may be administratively convenient to use the same names.

Specify the **Alias Pattern** setting to match the **Incoming alias** setting for the corresponding conference alias in TelePresence Conductor. (Unlike the TelePresence Conductor the pattern is not specified as a regular expression.)

Note: Cisco TMS aliases are assigned dynamically by TMS when it creates conferences, and can be manually modified.

Task 8: Edit Service Preferences in Cisco TMS (optional)

Unlike conference aliases, Cisco TMS automatically creates its Service Preferences. Values are populated from the Service Preference in TelePresence Conductor that is associated with the relevant alias pattern.

To optionally change Service Preference settings, in Cisco TMS, go to **Systems > Navigator > Conductor > Service Preferences** and select **Edit**.

Note: In particular you may want to change the **Capacity Adjustment** value, which defaults to 100%.

Task 9: Add conference bridges in Cisco TMS (optional)

As described above, there are some advantages in optionally configuring TelePresence Conductor-managed conference bridges in Cisco TMS.

Task 10: Configure TelePresence Conductor settings in Cisco TMS

In Cisco TMS, go to **Systems > Navigator >** select the TelePresence Conductor **> Settings > Edit Settings**.

In **TMS Scheduling Settings**, select the booking and dialing options for the TelePresence Conductor.

1. Do not enable H.323 dialing in either direction.
2. Do enable SIP URI dialing.
3. Optionally, go to **Extended Settings** to configure customized conference ID ranges with a specific number range and step value.

Task 11: Schedule the Conferences

Note: This guide describes the Cisco TMS **Booking > New Conference** method to schedule conferences. You can also use one of the other Cisco TMS applications or the TelePresence Conductor API in conjunction with the Cisco TMS.

In Cisco TMS go to **Booking > New Conference** and define appropriate settings for the conference:

1. Use the **Basic Settings** to define a conference title, connection method, conference owner, start and end time, Cisco WebEx options, and options for recurrence.
2. Further options are available in the **Advanced Settings** area.
3. Use the **Participants** tab to add users and endpoints to the conference.

When you save a conference, dial-in numbers for the conference are distributed via email to the organizer and/or participants. Updated numbers are distributed if you subsequently update a conference.

More Information

- *Cisco TelePresence Management Suite Administrator Guide*
- *Cisco TelePresence Conductor Administrator Guide*
- *Cisco TelePresence Conductor API Guide*
- *Cisco TelePresence Conductor with Unified Communications Manager Deployment Guide*
- *Cisco TelePresence Conductor with Cisco TelePresence Management Suite Deployment Guide*

Configuring Conferencing Features and Options

The tasks in this section assume that the basic configuration requirements for CMR Premises are complete. Typically you will already have completed some or all of the tasks in this section during initial implementation for the solution. The tasks are summarized here for administrator convenience, from the perspective of enabling specific elements of CMR Premises rather than the overall solution.

Setting up TelePresence Server Resource Optimization (Optional)

If you want to take advantage of automatic resource allocation and optimization of TelePresence Server resources, the Conference template in TelePresence Conductor must define appropriate maximum screen and quality settings, and enable the **Optimize resources** setting. For details about Conductor template settings, see the *Cisco TelePresence Conductor Administrator Guide*.

If you provision conferences through Cisco TMSPE these settings are configured through the Cisco TMSPE.

- For details about Cisco TMSPE settings in Unified CM-Centric deployments, see *Cisco TelePresence Management Suite Provisioning Extension with Cisco Unified CM Deployment Guide*

- For details about Cisco TMSPE settings in Cisco VCS-Centric deployments, see *Cisco TelePresence Management Suite Provisioning Extension with Cisco VCS Deployment Guide*

Changing the Switching Mode on the TelePresence Server

The TelePresence Server supports two different switching modes for displaying speakers from telepresence rooms:

- In the default 'segment-switched' mode (also known as speaker switching or panel switching) the TelePresence Server independently switches the display of individual cameras from a multiple camera system. Grouped endpoints and multi-camera endpoints that cannot reveal which camera is associated with the loudest speaker are composed into a single pane, because the TelePresence Server cannot determine which of the segments actually shows the speaker for these types of endpoints.
- In 'room-switched' mode, the TelePresence Server simultaneously switches all of the streams from the room into the display on another multiscreen endpoint.

An additional benefit of segment-switched mode is that single-screen endpoints are no longer forced into the Equal layout (NxN grid) when the group is in the conference; they will see the group in a row, and in the correct order. However, if the display of grouped endpoints on multi-screen systems is more important for your environment than segment switching or the single-screen experience, you may choose to change to room-switched mode.

Process

Changing the Mode on Cisco TMS-Managed Conferences

If you use Cisco TMS to provision conferences on the TelePresence Conductor, set the following option in the conference template Cisco TMS **Custom Parameters**, using this JSON command:

"callAttributes: {"displayLayoutSwitchingMode": <****>}"** where **<******>** should be specified as **switchingRoomSwitched** or **switchingSegmentSwitched**

Changing the Mode on the TelePresence Conductor

On the TelePresence Conductor conference template, the **Segment switching** field determines whether segment or room switching is used. *Yes* (the default) indicates segment switching, *No* indicates room switching.

Changing the Mode on Endpoints

Conference participants with Cisco CTS or TX Series endpoints can manually choose between segment-switched or room-switched mode during a live conference.

Configuring Microsoft Lync 2013 Interoperability

CMR Premises supports interoperability with Microsoft Lync 2013 environments via interworking by the Cisco Expressway-C or Cisco VCS Control, which interworks as follows:

- Between Microsoft H.264 SVC (Scalable Video Coding) and standard H.264 SVC.
- Between Microsoft H.264 SVC and standard H.264 AVC (Advanced Video Coding).

Lync users can participate in ad hoc, Personal CMR / rendezvous and scheduled conferences.

Before You Start

- Familiarize yourself with the requirements for Lync 2013 interoperability in the *Cisco Collaboration Meeting Rooms (CMR) Premises Solution Guide*.
- The following requirements apply in Unified CM-Centric deployments:
  - The Cisco Unified Communications Manager must be configured for Early Offer as described in Configuring the Unified CM for Early Offer [p.27]
  - The Unified CM must be connected to either Cisco Expressway-C or Cisco VCS Control as described in Connecting the Unified CM and the Cisco Expressway Series or Cisco VCS [p.31].

Process for Unified CM-Centric Deployments

In Unified CM-Centric deployments, the Unified CM connects to the Lync server via the Cisco Expressway-C, which acts as a SIP back-to-back user agent and media helper. For configuration instructions, see *Cisco Expressway and Microsoft Lync Deployment Guide (X8.5)*. When you have completed the steps in the guide, you will have configured:

- Static routes to route calls from Lync to a "Lync gateway" Expressway.
- The Expressway B2BUA to route calls to Lync.
- A SIP trunk between the "Lync gateway" Expressway and Unified CM.

Process for Cisco VCS-Centric Deployments

In Cisco VCS-Centric deployments, the Cisco VCS and Lync are peers. For configuration instructions, see *Cisco VCS and Microsoft Lync Deployment Guide (X8.5)*. When you have completed the steps in the guide, you will have configured:

- A SIP trunk to connect a Lync deployment and Cisco VCS Control across an IP network.
- Static routes from Lync to the "Lync gateway" Cisco VCS.
- (Optional) FindMe to provide a more integrated environment.

Setting up Cisco ClearPath

The Cisco ClearPath video quality technology is enabled by default in all CMR Premises devices. No action is required to enable it.

Setting up the ActiveControl Feature

ActiveControl allows conference participants to administer a conference on TelePresence Server from an endpoint by using the video system interface (not available from the TRC5 remote control and on-screen display). With ActiveControl, users can see a list of participants and other information during a conference. On certain endpoints they can change the conference layout displayed locally, and disconnect other participants.

Limitations

- If an ActiveControl enabled call traverses a Unified CM trunk with a Unified CM version lower than 9.1(2), the call may fail. ActiveControl should not be enabled on older Unified CM trunks (Unified CM 8.x or earlier).
- The ActiveControl feature on the TelePresence Server supports up to 500 participants.
- ActiveControl is a SIP only feature. H.323 interworking scenarios are not supported.
- ActiveControl is not supported by Cisco Jabber or Cisco DX Series endpoints.
- ActiveControl/iX protocol traffic is not encrypted.

Overview of Configuring the iX Protocol

ActiveControl uses the iX protocol, which is advertised as an application line in the SIP Session Description Protocol (SDP). Extensions to the SIP SDP are not fully supported in some older systems, which has implications for CMR Premises networks that connect to external networks or to older Unified CMs (Unified CM 8.x or earlier). No issues occur with iX in Unified CM 9.1(2) or later, or with iX in Cisco VCS systems. However, if you are enabling ActiveControl in CMR Premises networks which interface to older Unified CMs (8.x and earlier) or to third-party networks (business-to-business), you must follow the instructions in this document carefully to isolate the iX protocol traffic from systems that do not support it. Failure to do so may lead to unpredictable consequences, including call failures.

The iX protocol is enabled by default in TelePresence Server 4.1. In situations where the far end network is not known or is known to have devices that do not support iX, it may be safest to disable iX on connections leaving the known environment:

- Unified CM-Centric deployments that connect to Unified CM 8.x or earlier systems. In these cases the older Unified CM systems will reject calls from ActiveControl-enabled devices. To avoid these calls failing, leave iX disabled on any trunk towards the Unified CM 8.x device in the CMR Premises network. In cases where the 8.x device is reached via a SIP proxy, ensure that iX is disabled on the trunk towards that proxy.
- Unified CM-Centric deployments that connect to third-party networks. In these cases there is no way to know how the third-party network will handle calls from ActiveControl-enabled devices, but in some instances the handling mechanism may be to reject them. To avoid such calls failing, leave iX disabled on all trunks in the CMR Premises network towards third-party networks.
- Cisco VCS-Centric deployments which connect to external networks or connect internally to older Unified CM versions.
  - Starting in Cisco VCS X8.1, you can turn on a zone filter to disable iX for INVITE requests sent to external networks or older Unified CM systems. (By default, the filter is off.)
  - With version X7.2.3, we recommend that you leave iX disabled throughout the Optimized Conferencing network. (In some situations it is possible to enable iX in X7.2.3 with workarounds, but this should only be done with guidance from Cisco Technical Support.)

Table 7: Summary of iX configuration requirements in the CMR Premises network

Network connection from...	Network connections to…	Can you enable iX (ActiveControl)?
Unified CM 9.1(2) or later	Unified CM 9.x or later	Can be enabled on this trunk. May require disabling on trunks from this second Unified CM.
	Unified CM 8.x or earlier	Disable on this trunk from the first Unified CM.
	Third-party networks	Disable on this trunk from the Unified CM.
	Cisco VCS versions prior to X8.1	Disable on this trunk from the Unified CM if this route is used for trunks to third-party networks or to Unified CM 8.x or earlier systems. Can be enabled if only Unified CM 9.x or Cisco VCS systems can be reached via this trunk.
	Cisco VCS X8.1 and later	Can be enabled on this trunk if you turn on the iX filter in Cisco VCS to neighbor zones connected to the third-party networks or Unified CM 8.x or earlier systems.
Cisco VCS X8.1.1 or later	Unified CM 9.x / Cisco VCS systems only	Yes. Enable as you wish.
	Any other devices, including Unified CM 8.x or earlier	Turn on the iX filter on the neighbor zones between the Cisco VCS and these devices to remove the iX protocol line. (Filters were introduced in Cisco VCS X8.1.)
Cisco VCS X7.2.3	Unified CM 9.x / Cisco VCS systems only	Yes. Enable as you wish.
	Any other devices, including Unified CM 8.x or earlier	No. Disable throughout the network (default).

Illustrations of iX configuration settings

Figure 3: Where to enable/disable iX in outward connections from Unified CM-managed systems
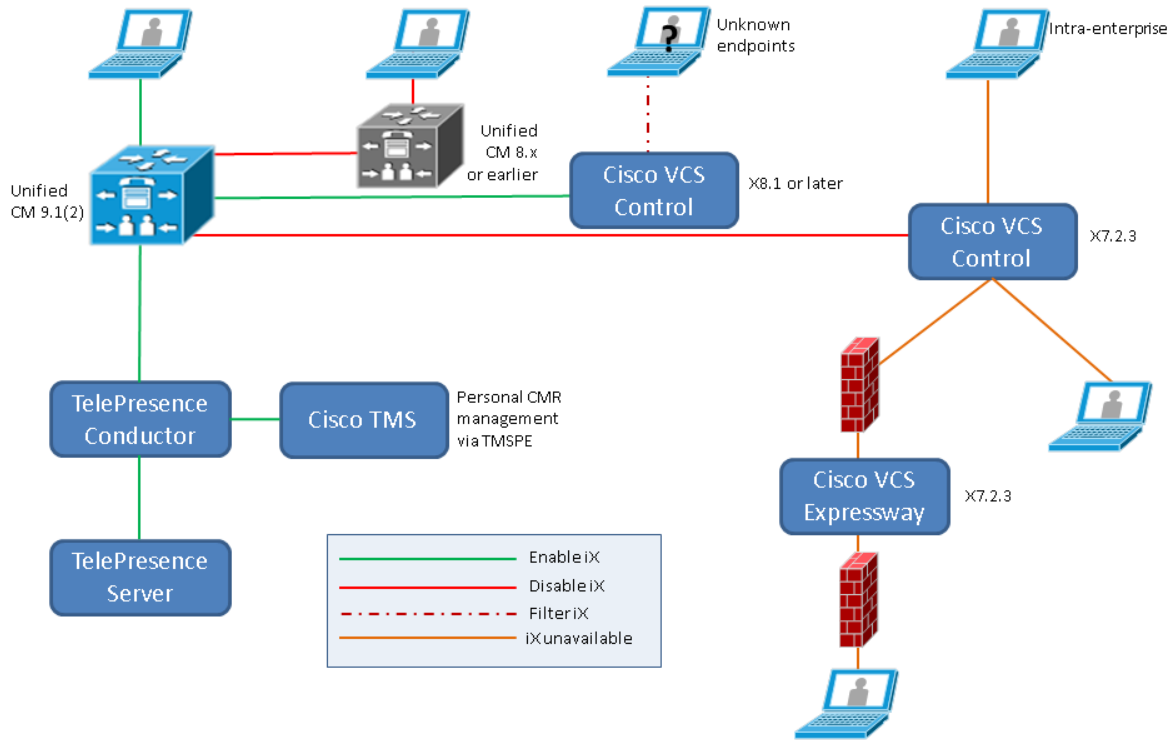
Figure 4: Example iX configuration in a Unified CM Session Management Edition deployment
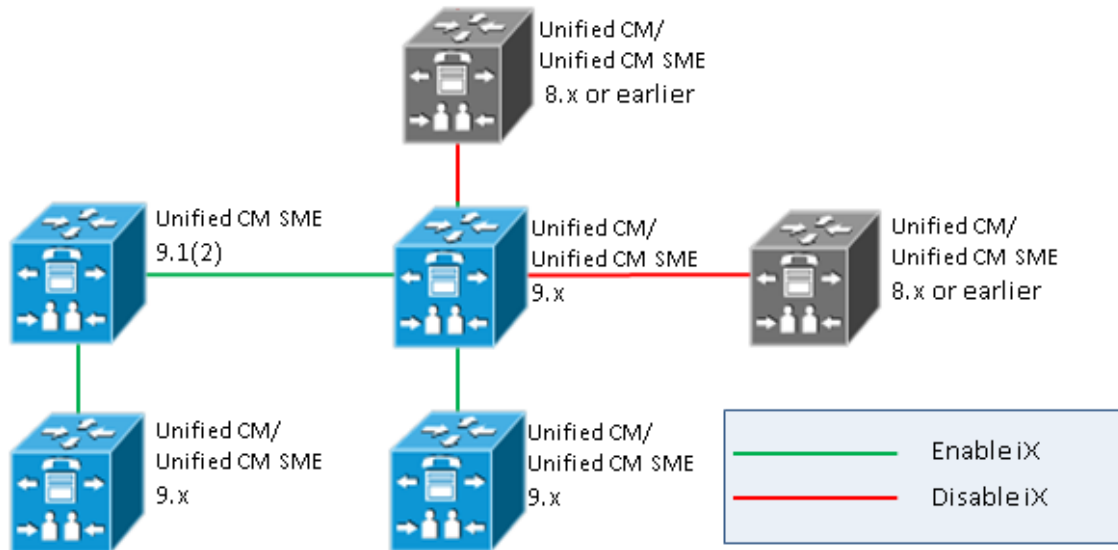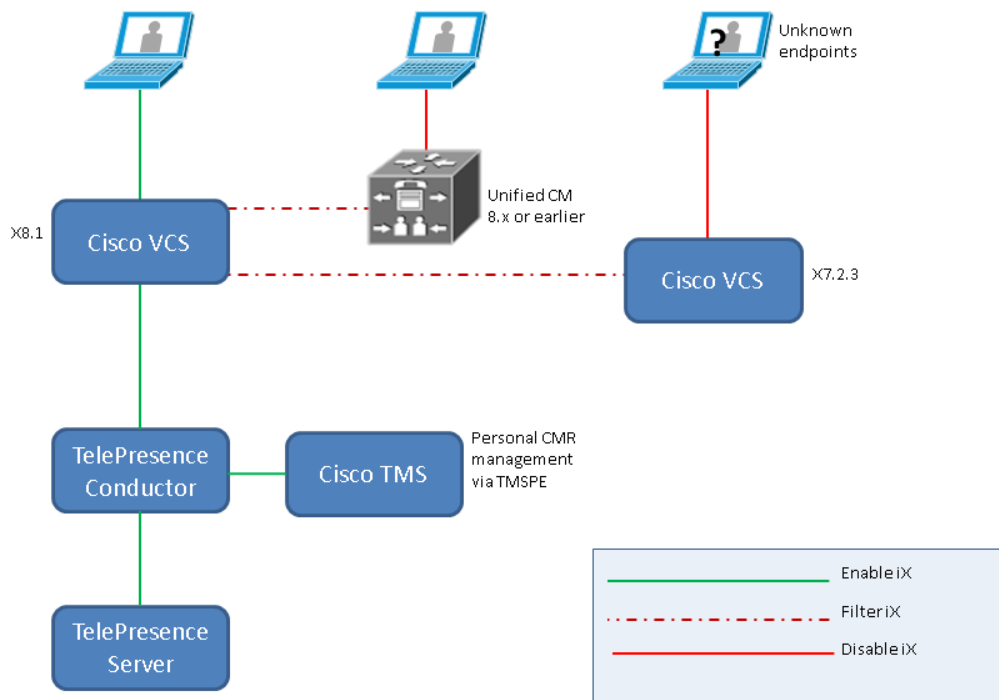

Figure 5: Where to filter iX in outward connections from Cisco VCS-managed systems (Cisco VCS X8.1 and later)

Enabling/disabling iX (ActiveControl) in Optimized Conferencing networks

Table 8: iX configuration settings for CMR Premises devices

Device	IX setting...
TC7.1 endpoints	Default is Auto. (ActiveControl is enabled if the call control system to which the endpoint is registered supports the iX protocol and disabled otherwise.) You do not need to change this.
TelePresence Conductor	Default is not to change the iX defaults on TelePresence Server. For Conductor templates, enable iX by enabling the **iX protocol** field on the Advanced template parameter page for TelePresence Servers. See Process [p.74]
Cisco TMSPE	Default is not to change the iX defaults on TelePresence Server. For personal Collaboration Meeting Rooms, enable iX by setting advanced parameters for the CMR template to `{"callAttributes": {"iXEnabled": true}}`. See Task 2: Enabling ActiveControl for personal CMRs in Cisco TMSPE [p.74].
Unified CM (per trunk)	Set in the Trunk Specific Configuration section of the SIP Profile Configuration window, using the **Allow iX Application Media** checkbox. See Task 3: Enabling iX Support in Cisco Unified Communications Manager [p.75]
Cisco VCS (per neighbor zone)	Disable iX pass-through by turning on SIP UDP/IX filter mode in the custom zone profile for any neighbor zone that connects to an external network or connects internally to an older Unified CM version. See Task 4: Filtering iX in Cisco VCS [p.75].

Note: On the TelePresence Server, the iX configuration setting is available through the API (via the iXEnabled parameter in Participant/Conference calls). However we do not recommend using direct API calls to bridges that are managed by TelePresence Conductor.

Process

Task 1: Enabling iX Support in Cisco TelePresence Conductor Templates

To enable iX in a Cisco TelePresence Conductor template, you must set an advanced template parameter on the conference bridge template used by the Cisco TelePresence Server.

To create or edit advanced template parameter settings:

1. Create a new conference template or select an existing conference template (**Conference configuration > Conference templates**).
2. In the Advanced parameters section click **Edit**.
   The Advanced template parameters page displays.
3. Check the check box for **Enable iX protocol**.
4. From the **primary** drop-down list next to the **Enable iX protocol** check box, choose *True* to enable the protocol.
5. Click **Save**.

Task 2: Enabling ActiveControl for personal CMRs in Cisco TMSPE

To enable ActiveControl for personal Collaboration Meeting Rooms (CMRs), you must set an advanced template parameter on the CMR template in Cisco TMSPE.

To create or edit advanced template parameter settings:

1. Create a new CMR template or select an existing template (**Systems > Provisioning > Users**).

2. On the **Edit CMR Template** page, check the check box for **Custom Parameters**.

3. In the **Advanced parameters** field, enter **{"callAttributes": {"iXEnabled": true}}**.

4. Click **Save**.

Task 3: Enabling iX Support in Cisco Unified Communications Manager

Support for the iX protocol is disabled by default. To enable iX support in Unified CM , you must first configure support in the SIP profile and then apply that SIP profile to the SIP trunk.

Configuring iX support in a SIP profile

1. Choose **Device > Device Settings > SIP Profile**.
   The Find and List SIP Profiles window displays.

2. Do one of the following:
   - To add a new SIP profile, click **Add New**.
   - To modify an existing SIP profile, enter the search criteria and click **Find**. Click the name of the SIP profile that you want to update.
   The SIP Profile Configuration window displays.

3. Check the check box for **Allow iX Application Media**.

4. Make any additional configuration changes.

5. Click **Save**.

Applying the SIP profile to a SIP trunk

1. Choose **Device > Trunk**.
   The Find and List Trunks window displays.

2. Do one of the following:
   - To add a new trunk, click **Add New**.
   - To modify a trunk, enter the search criteria and click **Find**. Click the name of the trunk that you want to update.
   The Trunk Configuration window displays.

3. From the SIP Profile drop-down list, choose the appropriate SIP profile.

4. Click **Save**.

5. To update an existing trunk, click **Apply Config** to apply the new settings.

Task 4: Filtering iX in Cisco VCS

To configure the Cisco VCS to filter out the iX application line for a neighbor zone that does not support the protocol, the zone must be configured with a custom zone profile that has the **SIP UDP/IX filter mode** advanced configuration option set to *On*.

To update advanced zone profile option settings:

1. Create a new neighbor zone or select an existing zone (**Configuration > Zones > Zones**).

2. In the Advanced parameters section, for **Zone profile**, choose *Custom* if it is not already selected.
   The zone profile advanced configuration options display.

3. From the **SIP UDP/IX filter mode** drop-down list, choose `On`.

4. Click **Save**.

Troubleshooting

Table 9: Call handling summary for calls that contain an iX header

Scenario	Outcome
Unified CM 8.x or earlier	Calls fail
Unified CM 9.x earlier than 9.1(2)	Calls handled normally but no ActiveControl
Unified CM 9.1(2)	Calls handled normally plus ActiveControl
Endpoint - no support for iX and no SDP implementation	Endpoint may reboot or calls may fail

Related Documentation

Title	Link
Cisco Collaboration Meeting Rooms (CMR) Premises Solution Guide 4.0	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco Collaboration Meeting Rooms (CMR) Premises Release Notes 4.0	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-release-notes-list.html
Cisco TelePresence Conductor with Cisco Unified Communications Manager Deployment Guide Unified CM 10.x [see Appendix for 9.x]	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco TelePresence Management Suite Provisioning Extension with Cisco Unified CM Deployment Guide	http://www.cisco.com/c/en/us/support/conferencing/telepresence-management-suite-extensions/products-installation-guides-list.html
Cisco TelePresence Conductor with Cisco TelePresence VCS (B2BUA) Deployment Guide	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco TelePresence Management Suite Provisioning Extension with Cisco VCS Deployment Guide	http://www.cisco.com/c/en/us/support/conferencing/telepresence-management-suite-extensions/products-installation-guides-list.html
Cisco TelePresence Conductor Administrator Guide XC3.0	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-maintenance-guides-list.html
Cisco Unified Communications Manager Administration Guide, Release 10.5n	http://www.cisco.com/c/en/us/support/unified-communications/unified-communications-manager-callmanager/products-maintenance-guides-list.html
Cisco Unified Communications Manager Administration Guide, Release 9.1n	http://www.cisco.com/c/en/us/support/unified-communications/unified-communications-manager-callmanager/products-maintenance-guides-list.html
Cisco Unified Communications Manager with Cisco Expressway (SIP Trunk) Deployment Guide, Cisco Expressway X8.5	http://www.cisco.com/c/en/us/support/unified-communications/expressway-series/products-installation-and-configuration-guides-list.html
Cisco Unified Communications Manager with Cisco VCS (SIP Trunk) Deployment Guide, Cisco VCS X8.5	http://www.cisco.com/c/en/us/support/unified-communications/telepresence-video-communication-server-vcs/products-installation-and-configuration-guides-list.html
Cisco TelePresence Multiway™ Deployment Guide, Cisco VCS, MCU, Conductor	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco Expressway Basic Configuration Deployment Guide X8.5	http://www.cisco.com/c/en/us/support/unified-communications/expressway-series/products-installation-and-configuration-guides-list.html

Title	Link
Cisco TelePresence Video Communication Server Basic Configuration (Control with Expressway) Deployment Guide Cisco VCS X8.5	http://www.cisco.com/c/en/us/support/unified-communications/telepresence-video-communication-server-vcs/products-installation-and-configuration-guides-list.html
Cisco TelePresence Conductor with Cisco TelePresence Management Suite Deployment Guide	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco TelePresence Management Suite Administrator Guide Version 14.5	http://www.cisco.com/c/en/us/support/conferencing/telepresence-management-suite-tms/products-maintenance-guides-list.html
Cisco Collaboration Meeting Rooms (CMR) Hybrid Configuration Guide	http://www.cisco.com/c/en/us/support/conferencing/telepresence-management-suite-tms/products-installation-and-configuration-guides-list.html
Cisco TelePresence Conductor Product Programming Reference Guide XC3.0 (includes Conductor Provisioning API reference)	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-programming-reference-guides-list.html
Cisco Expressway Administrator Guide X8.5	http://www.cisco.com/c/en/us/support/unified-communications/expressway-series/products-maintenance-guides-list.html
Cisco TelePresence Video Communication Server Administrator Guide X8.5	http://www.cisco.com/c/en/us/support/unified-communications/telepresence-video-communication-server-vcs/products-maintenance-guides-list.html

More Product Documentation on Cisco.com

Product	Link
TelePresence Conductor	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/tsd-products-support-series-home.html
Cisco TMS	http://www.cisco.com/c/en/us/support/conferencing/telepresence-management-suite-tms/tsd-products-support-series-home.html
Cisco TMSPE and Cisco TMSXE	http://www.cisco.com/c/en/us/support/conferencing/telepresence-management-suite-extensions/tsd-products-support-series-home.html
Unified CM	http://www.cisco.com/c/en/us/support/unified-communications/unified-communications-manager-callmanager/tsd-products-support-series-home.html
MCU 5300 Series	http://www.cisco.com/c/en/us/support/conferencing/telepresence-mcu-5300-series/tsd-products-support-series-home.html
MCU 4500 Series	http://www.cisco.com/c/en/us/support/conferencing/telepresence-mcu-4500-series/tsd-products-support-series-home.html
MCU MSE Series	http://www.cisco.com/c/en/us/support/conferencing/telepresence-mcu-mse-series/tsd-products-support-series-home.html
TelePresence Server	http://www.cisco.com/c/en/us/support/conferencing/telepresence-server/tsd-products-support-series-home.html
Cisco Expressway	http://www.cisco.com/c/en/us/support/unified-communications/expressway-series/tsd-products-support-series-home.html
Cisco VCS	http://www.cisco.com/c/en/us/support/unified-communications/telepresence-video-communication-server-vcs/tsd-products-support-series-home.html

Appendix 1: Adding the Unified CM Normalization Scripts

If your deployment uses encryption and TLS on SIP trunks used for TelePresence you must add one or more of the TelePresence normalization scripts to Cisco Unified Communications Manager.

CAUTION: New versions of the scripts are required for this release. To avoid unexpected call disconnects, you must ensure that the latest versions are installed.

The following normalization scripts are available:

Table 10: Normalization scripts for Cisco Unified Communications Manager

Script	Install on...
telepresence-conductor-interop	SIP trunks that directly interface with a TelePresence Conductor as the next hop peer.
vcs-interop	SIP trunks that directly interface with a Cisco VCS Control or Cisco Expressway-C as the next hop peer.

To add the scripts:

1. Download the scripts that you need from the Cisco website (go to the relevant Unified CM software version and select **SIP Normalization and Transparency Scripts > Scripts**).
2. On Unified CM, go to **Device > Device Settings > SIP Normalization Script**.
3. Click **Add new**.
4. Click **Import File**.
5. Select the script that you downloaded.
6. Click **Import File**.
7. Enter or change the following details:

Name	Enter the script name. For example, `telepresence-conductor-interop`
Description	Enter a description. For example, `Provides interoperability for calls through the TelePresence Conductor`
Memory Threshold	Enter `1000`
Lua Instruction Threshold	Enter `2000`

8. Click **Save**.
9. Repeat these steps until all the scripts you need are added.
10. To install the scripts onto the SIP trunks:
    a. On the Unified CM go to **Device > Trunk** [or **Media Resources > Conference Bridge** for ad hoc conference bridges in Unified CM Version 9.1(2)SU2] and select the relevant trunk / bridge.
    b. In the **Normalization script** area of the **SIP Information** section, from the drop-down list select the

  appropriate script for the trunk / bridge.

 c. Click **Save**.

 d. Click **Reset**.

Appendix 2: Migration Paths to CMR Premises Release 4.0

This appendix describes how to migrate previous solution deployments, and non-CMR Premises deployments, to the 4.0 preferred architecture. This release of CMR Premises has two recommended deployment architectures for deploying conferencing infrastructure:

■ Conferencing infrastructure connected to Unified CM. This is the preferred architecture.

■ Conferencing infrastructure connected to Cisco VCS.

For new (first-time) deployments the Unified CM-connected deployment should be implemented.

For existing audio and video deployments which do not match either of the two scenarios, we recommend that deployments are migrated to the CMR Premises 4.0 deployment using the 4.0 recommended code levels, as this is the tested architecture on top of which new feature developments are being planned.

To move to the CMR Premises 4.0 deployment ("4.0"):

1. Start by moving the infrastructure to the 4.0 standard.
2. Then, if endpoints are currently registered to the Cisco VCS, move the endpoints that can register to Unified CM to Unified CM.

Prerequisites

4.0 makes use of endpoint caller IDs, displaying them in Roster lists and, if enabled, on-screen in conferences in TelePresence Server ActivePresence mode. We recommend reviewing the dial plan to ensure that displayed caller IDs are meaningful. For more information, see Provisioning Display Names Across the Solution [p.53]

4.0 software versions

Table 11: Required software versions

Product	Recommended	Minimum	Notes
TelePresence Server	4.1	4.1	TelePresence Server bridges must be configured for remote management by the TelePresence Conductor.
TelePresence Conductor	XC3.0	XC3.0	
MCU	4.5	4.5	
Cisco VCS	X8.5	X8.2.2 (required for Microsoft Lync)	
Cisco VCS—for H.323 registration	X8.5	X7.2.3	
Cisco Expressway	X8.5	X8.2.2 (required for Microsoft Lync)	

Table 11: Required software versions (continued)

Cisco TMS	14.6	14.6	
Cisco TMSPE	1.4	1.4	
Unified CM	10.5(2)	9.1(2)SU2	Two versions of Unified CM software are supported in CMR Premises 4.0: 9.1(2)SU2 and 10.5(2). If using 9.1(2)SU2 you can stay on that version or upgrade to 10.5(2). If using versions of Unified CM between these two versions you must upgrade to 10.5(2).

Unified CM-only system to 4.0

1. Upgrade Unified CM to the recommended version for CMR Premises 4.0.

2. Add TelePresence Conductor to Unified CM and deploy bridges trunked to TelePresence Conductor— these components support all conference types.

3. Upgrade endpoint software to the version supplied with Unified CM.

4. Upgrade Cisco TMS/Cisco TMSPE to ensure support for Personal CMR / rendezvous and Scheduling.

5. If WebEx participants are to be included in calls, ensure that Unified CM is running at least code version 9.1(2)SU2 and update Unified CM configuration to support Early Offer.

6. To allow participants external to the company network to join conferences, deploy Cisco Expressway-C and Cisco Expressway-E for the firewall traversal.

7. If Lync interop is required add a Cisco Expressway-C / Cisco VCS Control to be the gateway to the Microsoft Lync infrastructure. Version X8.2.2 or later is required. (See the Cisco VCS / Cisco Expressway deployment guides to identify whether Cisco VCS Control or Cisco Expressway-C is most appropriate for your needs.)

8. If you want to add Legacy and H.323 endpoints to the solution, add a Cisco VCS Control onto which those endpoints can register.

Separate audio-only endpoint Unified CM and video endpoint Unified CM to 4.0

Some Unified CM deployments use a Unified CM for audio-only endpoints and a separate Unified CM for video endpoints. The ideal solution is to run both systems at the same Unified CM version, and in that case you should follow the Unified CM-only system to 4.0 [p.83] instructions above.

If there are reasons why audio and video endpoints need to register to separate Unified CMs and they need to run different versions, then, before proceeding, verify with your account manager that the two Unified CM versions are acceptable in the deployment. In this case follow the Unified CM-only system to 4.0 [p.83] instructions above on the video Unified CM.

Unified CM and Cisco VCS to 4.0

1. Upgrade Cisco VCS to the recommended version for CMR Premises 4.0.

2. Upgrade Unified CM to the recommended version for CMR Premises 4.0.

3. Move / keep TelePresence Conductor connected to Unified CM with bridges trunked to TelePresence Conductor.

4. If the TelePresence Conductor is moved from Cisco VCS, ensure that the search rules that used to send calls to the TelePresence Conductor under Cisco VCS now send the calls to Unified CM and that the Unified CM forwards these calls to TelePresence Conductor.

5. Cisco VCS architecture can remain as configured for firewall traversal, Lync interop and Legacy / H.323 endpoint registration.

6. Migrate endpoints that can register to Unified CM to Unified CM, upgrading software to the required versions for this solution release.

Comparison of capabilities of endpoints registered to Unified CM and endpoints registered to Cisco VCS

Table 12: Comparison of capabilities of endpoints registered to Unified CM and endpoints registered to Cisco VCS

Capability	Registered to Unified CM	Registered to Cisco VCS
Phone books	TMS phone books Hierarchical directory	TMS phone books Hierarchical directory
Management	Managed by Unified CM & Prime Collaboration suite Provisioned by Unified CM	Managed by Cisco TMS Provisioned by Cisco TMS
Conference scheduling	Managed by Cisco TMS	Managed by Cisco TMS
Firewall traversal	Using Cisco Expressway-C and Cisco Expressway-E	Using Cisco VCS Expressway
Conference escalation	Ad hoc	Multiway

4.0 features and version dependencies

Table 13: 4.0 features and version dependencies

Feature	Versions required
CMR provisioning and user portal	XC 3.0, TMS 14.6, TMS PE 1.4
TelePresence Server scalability improvements	TS 4.1
Basic TelePresence Server Cascade	TS 4.1, XC 3.0, TMS PE 1.4
TelePresence Server User Experience Improvements	TS 4.1
TelePresence Server Serviceability Improvements	TS 4.1
Single alias for host/guest conference, with role determined by PIN	TS 4.1, XC 3.0, TMS 14.6, TMS PE 1.4

Associated products, versions and features

Table 14: Associated products, versions and features

Product	Version	Features
MCU	4.5	Minimum version for 4.0 operation. Adds: ■ ClearPath (Flux 1) ■ Separate content channel for encrypted SIP participants ■ Domain added for out dial requests without a domain—needed for WebEx out dial (for TSP conferenced audio) when the MCU is trunked to Unified CM.
Unified CM	Unified CM 9.1(2)SU2	Minimum version for 4.0 operation
	10.5(2)	Ad hoc bridge now configured as data connection and explicit SIP trunk
Cisco VCS	X8.2.2	Minimum version for Lync gateway operation in 4.0
Cisco TMS	14.6	Minimum version for WebEx in CMR Premises and Host / Guest PIN

Document Revision History

Date	Description	Changes
January 2015	Initial issue	First version.
January 2015	Re-issue	Updated links to product deployment guides.