



Cisco CMR Premises

Primary Deployment Guide - Unified CM

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Release 7.0

Cisco TelePresence Conductor XC4.2

Cisco TelePresence Management Suite 15.2

Cisco TMS Provisioning Extension 1.7

Cisco TelePresence Server 4.2

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Preface

Change History

Table 1 Document Change History

Date	Changes	Reason
May 2016	Updated version.	Cisco TMS support for two-node TelePresence Conductor clusters is no longer a preview feature.
April 2016	First version.	New solution release.

About this Guide

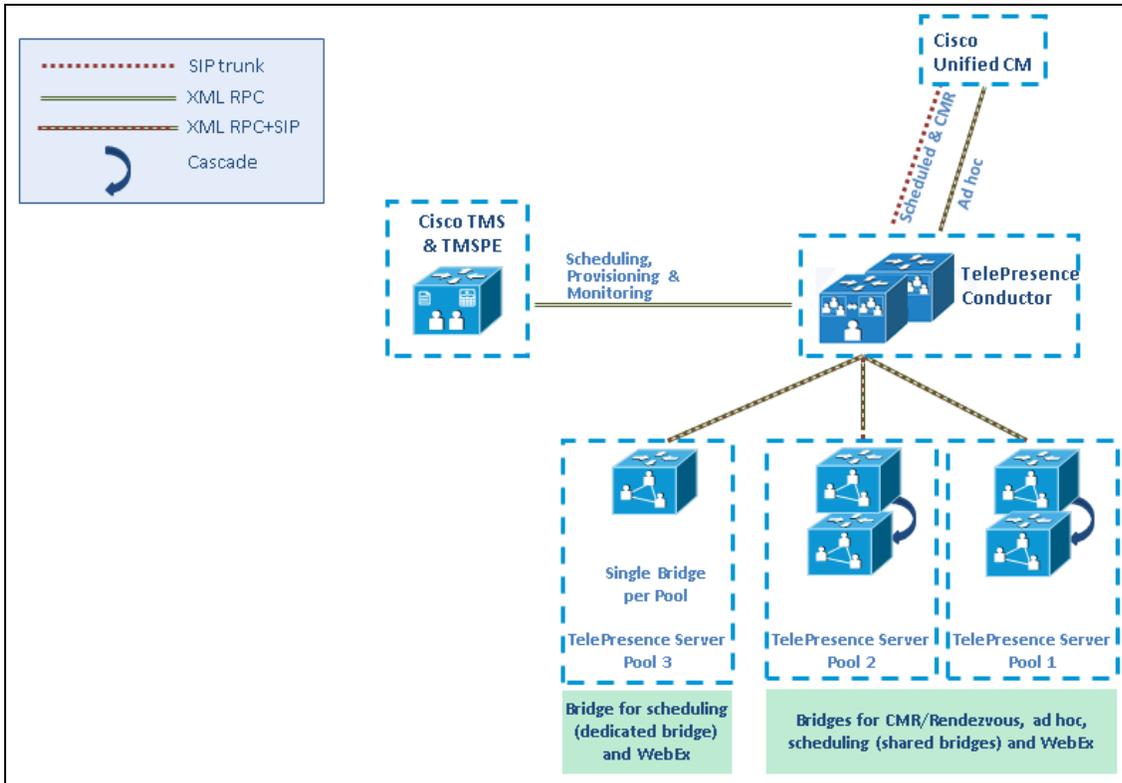
This guide describes how to implement the Cisco Collaboration Meeting Rooms (CMR) Premises solution across a video network. It summarizes the required processes and refers to the associated product guides for step-by-step details. For general information about the solution architecture and supported features see the accompanying [Cisco Collaboration Meeting Rooms \(CMR\) Premises Solution Guide](#).

The guide and the product-related documents that it references are written for partners and technical sales people with 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.

This guide describes the primary deployment for the solution, which uses Cisco Unified Communications Manager (Unified CM) for call control. If you use the Cisco TelePresence Video Communication Server for call control, refer instead to the [secondary deployment guide](#).

Solution Architecture Summary

Figure 1 High-level view of the architecture



Related Documentation

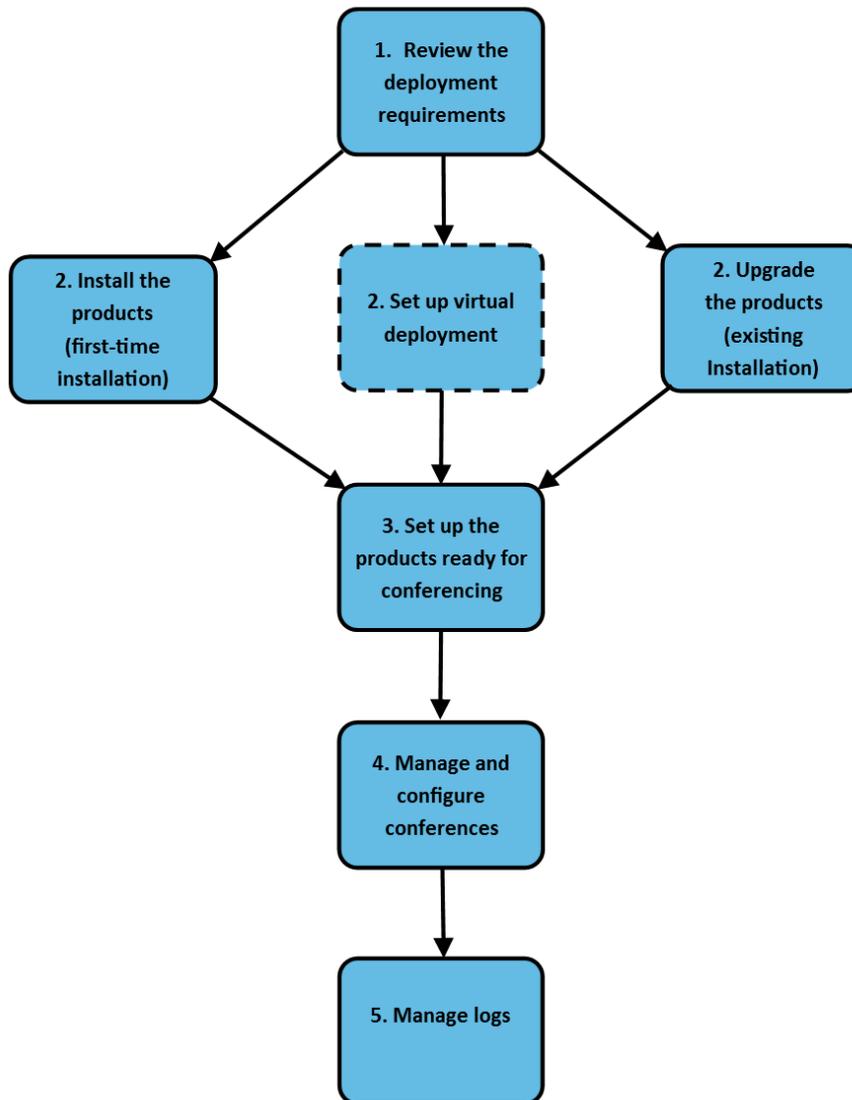
Title	Link
Cisco CMR Premises Deployment Guide - Primary for Cisco Unified Communications Manager	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco CMR Premises Solution Guide Release	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco CMR Premises Release Notes	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	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco TMSPE with Cisco Unified Communications Manager 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	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-maintenance-guides-list.html
Cisco Unified Communications Manager Administration Guide	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	http://www.cisco.com/c/en/us/support/unified-communications/expressway-series/products-installation-and-configuration-guides-list.html
Cisco Expressway Basic Configuration Deployment Guide	http://www.cisco.com/c/en/us/support/unified-communications/expressway-series/products-installation-and-configuration-guides-list.html
Cisco TelePresence Conductor with Cisco TMS Deployment Guide	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco TMS Administrator Guide Version	http://www.cisco.com/c/en/us/support/conferencing/telepresence-management-suite-tms/products-maintenance-guides-list.html
Cisco 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	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-programming-reference-guides-list.html
Cisco Expressway Administrator Guide	http://www.cisco.com/c/en/us/support/unified-communications/expressway-series/products-maintenance-guides-list.html
Cisco Expressway and Microsoft Lync Deployment Guide	http://www.cisco.com/c/en/us/support/unified-communications/expressway-series/products-installation-and-configuration-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
TelePresence Server	http://www.cisco.com/c/en/us/support/conferencing/telepresence-server/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 MSE Series	http://www.cisco.com/c/en/us/support/conferencing/telepresence-mcu-mse-series/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
Unified CM	http://www.cisco.com/c/en/us/support/unified-communications/unified-communications-manager-callmanager/tsd-products-support-series-home.html

Getting Started

Figure 2 Sequence of tasks to set up and manage the solution





Deployment Requirements

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Solution Products and Required Versions

To deploy the solution you need some or all of the products listed in this section, depending on which solution features you use. Each product you deploy must be running at a minimum the version specified here. The specified versions have been validated for this release of the solution.

Infrastructure Products

Note: Java 8 is required in this release of the solution.

Table 2 Infrastructure product versions validated for this release

Product	Version	Role
TelePresence Conductor	XC4.2	Conference resource allocation
Cisco TMS	15.2	Conference management & scheduling
Cisco TMSPE	1.7	Conference provisioning
Cisco TMSXE	5.2	[Optional] Conference scheduling for Microsoft environments
TelePresence Server	4.3x (latest)	Conference bridge resource
MCU 5300 Series, MCU MSE 8510	4.5x (latest)	Conference bridge resource
Unified CM In networks with multiple Unified CM installations, for full solution functions each one must be at the version specified here.	11.0(1a)SU1 or later 10.5(2) also acceptable. Except not recommended for multistreaming / enhanced layouts.	Call control See the solution Release Notes, Compatibility section, for information about using earlier versions of Unified CM.
Cisco Expressway-C	X8.7.1 X8.5.3 or X8.6 also acceptable. Except Microsoft Lync screen sharing needs X8.6. Clustering with Lync screen sharing needs X8.7.	Remote endpoint registration to Unified CM, business-to-business connectivity, and Microsoft Lync interworking.
Cisco Expressway-E	X8.7.1 X8.5.3 or X8.6 also acceptable.	Secure firewall traversal
Microsoft Windows Server	Windows Server 2012 SP2 64-bit Windows Server 2008 R2 64-bit also acceptable.	Database for Cisco TMS

Deployment Requirements

Table 2 Infrastructure product versions validated for this release (continued)

Product	Version	Role
Cisco WebEx	WBS30 or WBS31	Cloud conferencing with audio, video, and content sharing capabilities for WebEx clients

Microsoft Lync

If you want to support Microsoft Lync 2013 interoperability, you need Microsoft Lync Server 2013 and Lync 2013 for Windows clients. We do not support any other Lync servers or clients with the solution (including Skype for Business). For more details about Lync 2013 server and client requirements, see:

- *Cisco Expressway and Microsoft Lync Deployment Guide* at [Expressway Configuration Guides](#) listing page, for Unified CM-based deployments.
- *Cisco VCS and Microsoft Lync Deployment Guide* at [VCS Configuration Guides](#) listing page, for VCS-based deployments.

Endpoints and Soft Clients

Table 3 Endpoint and soft client versions validated for this release

Product	Version
Cisco TelePresence IX5000	IX 8.1(1)
Cisco DX70, DX80	10.2.5
Cisco DX650	10.2.5
Cisco TelePresence MX200 G2, MX300 G2, MX700, MX800 (multistream-capable)	CE8.1 or TC7.3.6 CE software needed for enhanced layouts (multistream video).
Cisco TelePresence Quick Set SX20, SX80 (multistream-capable)	CE8.1 or TC7.3.6 CE software needed for enhanced layouts (multistream video).
Cisco TelePresence Quick Set SX10 (not multistream-capable)	CE8.1 or TC7.3.6
Cisco TelePresence EX Series EX60 and EX90	TC7.3.6
Cisco TelePresence Quick Set C20	
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 1.10.11
Cisco TelePresence System CTS 1100, CTS 1300	CTS 1.10.11
Cisco TelePresence System CTS 500-32	TX6.1.9

Deployment Requirements

Table 3 Endpoint and soft client versions validated for this release (continued)

Product	Version
Cisco TelePresence TX9000 and TX9200 immersive systems	TX6.1.9
Cisco Unified IP Phone 9900 Series and 8900 Series	9.4(2)
Cisco Jabber for Android	11.5
Cisco Jabber for iPad	
Cisco Jabber for iPhone	
Cisco Jabber for Mac	
Cisco Jabber for Windows	
Cisco Jabber Video for TelePresence	4.8.8

Configuration Requirements

Install Java 8

This release of the solution requires Java 8 to be installed.

Conference Bridges

The recommended deployment architecture for the solution uses TelePresence Server conference bridges. (In this release we also support MCUs as an optional addition.) The conference bridges are trunked to the TelePresence Conductor.

TelePresence Conductor

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

If you use Multiparty Licensing, you do not need screen licenses on the TelePresence Servers. Instead the Multiparty Licenses are managed centrally by TelePresence Conductor.

If you have Cisco TelePresence MCU Series bridges, although they can be added to a Conductor running in Multiparty Licensing mode, you need to install port licenses on the individual bridges.

Reduce Default SIP TCP Timeout in Cisco Expressway / Cisco VCS

From Cisco Expressway / Cisco VCS Version X8.5.3, the SIP TCP timeout value is configurable. The default value is 10 seconds. We strongly recommend that you set the timeout to the lowest value that is appropriate for your deployment.

A value of 1 second is likely to be suitable in most cases, unless your network has extreme amounts of latency such as video over satellite communications.

If an outbound call is placed to an external DNS destination, and that destination has secondary/tertiary servers and the primary server is out of service, it will take N seconds (where N is the timeout value) to timeout and try the secondary server, and N seconds again to timeout and try the tertiary server, and so on. This applies to B2B point to point calls and calls into cloud-based hosted services.

Setting the SIP TCP timeout value

- Version X8.6 and later. Do the following to set the SIP TCP timeout value:
 - Go to **Configuration > Protocols > SIP** and set the value for **SIP TCP connect timeout**. For example, *1*
- Version X8.5.3. On version X8.5.3, the SIP TCP timeout value can't be configured through the web interface and instead you set it through the command line interface:
 1. Access the command line interface.
 2. Type this command, replacing "n" with the required timeout value:

```
xConfiguration SIP Advanced SipTcpConnectTimeout: n
```

Example: `xConfiguration SIP Advanced SipTcpConnectTimeout: 1`

Security and Encryption

Signaling traffic

TLS encryption is mandatory for TelePresence Conductor-to-bridge SIP communication, and Multiparty Licensing requires HTTPS connections between Conductor and the bridges. We also recommend TLS for all other SIP (and XML

Deployment Requirements

RPC) communication in the solution – between endpoints and the call control device, and between the call controller and TelePresence Conductor.

Media traffic

SRTP encryption is recommended for media traffic. For a call to support SRTP encrypted media, its associated SIP signaling must use TLS for all hops, as follows:

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

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

Configuration summary

Conference bridges must be configured to use TCP port 5061 and signaling mode TLS (**SIP Settings** page). From TelePresence Server Version 4.2, HTTPS and SIP signaling over TLS does not need an encryption key installed on the conference bridges. For media encryption, you still need to install a media encryption key. Port 443 is the default for HTTPS; port 5061 is the default for TLS.

Specify TCP port 5061 and TLS signaling mode on the Conductor **Location** and on the call controller (**SIP Trunk Security Profile**). See *Cisco TelePresence Conductor with Cisco Unified CM Deployment Guide* on the [Conductor Configuration Guides](#) page.

Media encryption from Cisco Expressway / Cisco VCS

If you want to apply media encryption to calls that egress the Expressway solution toward DNS Zone destinations, we strongly recommend that you use this approach:

1. Enable media encryption on the traversal client zone, from the Cisco Expressway-C / Cisco VCS Control toward the Cisco Expressway-E / Cisco VCS Expressway. To do this set **Media encryption mode** to *Best effort* or *Force encrypted*, depending on your security policy.
2. Disable additional, unnecessary media encryption on the DNS egress zone, from the Cisco Expressway-E / Cisco VCS Expressway toward the Internet. To do this set **Media encryption mode** on that zone to *Auto*.

SIP Early Offer Messaging

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.

Bridge Pools and Service Preferences

- 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).
- All conference bridges within a pool must be configured identically
- We strongly recommend that all conference bridges within a pool have the same capacity, so that conferences can be distributed efficiently across conference bridges. If conference bridges with different capacities exist in the same pool, unbalanced conference placement may occur in some scenarios.

Deployment Requirements

- 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, two configuration methods for pools and Service Preferences are possible:
 - Our recommended approach is to allow the TelePresence Conductor to manage resources that are shared across all conference types, including scheduling. This gives the best trade off between utilization of resources, user experience, and availability. When peak hour usage increases, you should consider adding more bridges. You can use the Capacity Adjustment setting in Cisco TMS to control over- or under-subscription (see [Task 8: Edit Service Preferences in Cisco TMS \(optional\)](#), page 50).
 - Or, to avoid the situation where scheduled conferences may be impacted because resources have already been used up by unscheduled conferences, you can dedicate a conference bridge for use only by scheduled conferences. Use a single bridge per Service Preference and configure it for scheduling in Cisco TMS.

See [Configurations for Scheduled Conferencing](#), page 45 for more details.

- Make sure that aliases dialed from endpoints connected to Unified CM only use bridges in the Location expected by Unified CM. If bridges in a different Location are specified and used, Unified CM accounts for the call bandwidth in the wrong Location. Bandwidth will be wrongly allocated to the expected Location, with no bandwidth allocated to the actual Location.

Recommended Best Practices

Conference Bridges

- TelePresence Servers must be configured for remote management by Conductor (for models where this is a configurable option).
- To support Multiparty Licensing, connections between TelePresence Conductor and the conference bridges must use HTTPS.
- H.323 must be disabled on the conference bridges.

Multiparty Licensing

Multiparty Licensing lets you administer licenses centrally on the Cisco TelePresence Conductor instead of loading screen licenses locally onto the Cisco TelePresence Servers. Compared to traditional screen licensing, Multiparty Licensing allows for greater capacity at lower cost. Two variants are available:

- Personal Multiparty (PMP) licenses. Each license is assigned to a specific user. PMP licenses are suitable for users who initiate conferences frequently.
PMP licenses are purchased through Cisco Unified Workspace Licensing (CUWL Pro). They are available for deployments with Unified CM for call control.
- Shared Multiparty (SMP) licenses. Each license is shared by multiple users, but only in one conference at a time. SMP licenses are suitable for users who initiate conferences infrequently.
SMP licenses are available for deployments with either Unified CM or Cisco VCS for call control.

Each TelePresence Conductor can support either Multiparty Licensing or TelePresence Server screen licensing, but not both together. If you have a mix of TelePresence Server and Cisco TelePresence MCU Series conference bridges however, you can use Multiparty Licensing for the TelePresence Servers and port licensing for the MCUs together on the same Conductor.

For information about the interaction of Multiparty Licenses with Personal CMRs, see [About Personal CMRs, page 53](#).

Resilience and Clustering

We recommend deploying the solution products in cluster configurations, for redundancy in case of a failure. Deploying clusters of TelePresence Conductors and multiple bridge pools ensures resilience for escalated and Personal CMR / rendezvous conferences. For future compatibility we recommend that TelePresence Conductor clusters are configured with no more than two nodes. If you currently deploy three-node clusters, you should consider removing a node. Cisco may discontinue the ability to add a third node to a cluster in a future software release.

Cisco TMS supports multiple TelePresence Conductors. You can configure TMS to fail over automatically from a primary Conductor node in a cluster to a subsidiary (peer) node if the primary node becomes unavailable. See [Configuring TMS Support for Two-Node Conductor Clusters, page 64](#).

For details about Conductor clustering see *Cisco TelePresence Conductor Clustering with Cisco Unified Communications Manager Deployment Guide* on the [Conductor Configuration Guides](#) listing page.

Content Channel

Most TelePresence endpoints support the use of a second video channel for content such as presentations.

- For MCU conference bridges, in the Conference template in TelePresence Conductor set **Content mode** to *Transcoded* (**Advanced parameters**). 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.

Deployment Requirements

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 it reaches the TelePresence Conductor. To do this configure the Cisco VCS Control 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 interworks all incoming calls.

Escalated/Instant Conferencing

We do not support Multiway (the Cisco VCS method of escalated conferencing) in the primary deployment.

Microsoft Lync 2013 Interoperability

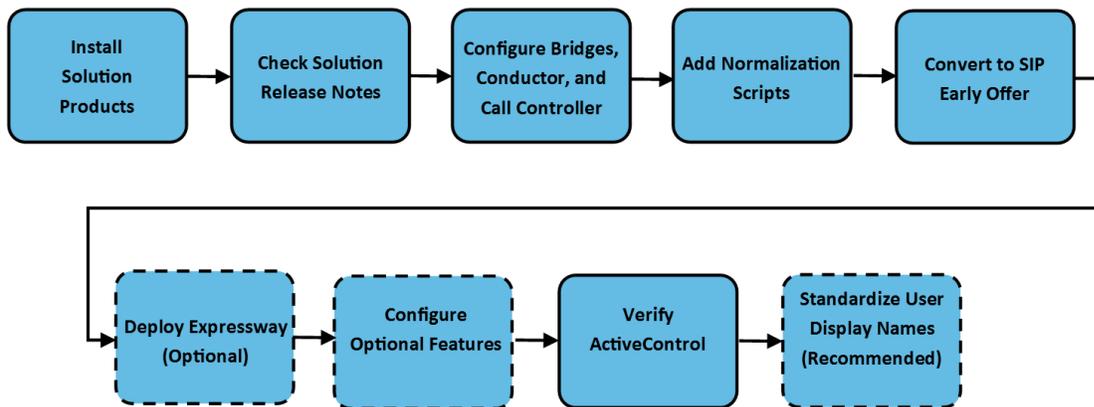
The solution supports interoperability with the Microsoft Lync 2013 service via interworking by the Cisco Expressway-C (needs the *Microsoft Interoperability* key). For capacity reasons we recommend that you implement separate Cisco Expressway-C devices for Lync access, and for other networking requirements respectively.



Installing the Solution Products – First-time Deployments

This section describes how to implement CMR Premises Release 7.0 as a first-time deployment. If you are upgrading from an earlier solution release, go to the [Upgrading the Solution Products - Existing Deployments, page 26](#) instead.

Figure 3 Summary of first-time deployment tasks



Before You Start

If you haven't already done so, review the [Deployment Requirements, page 12](#).

You need a Cisco Unified Communications Manager (Unified CM) for call control, already configured with a base configuration. See the [Unified CM documentation](#) on Cisco.com.

The other products to be installed for the solution depend on the features you use. As a minimum you will need:

- A TelePresence Conductor, configured according to its install guide and reachable via the network.
- One or more conference bridges, configured according to their install guide. We recommend TelePresence Servers, but MCUs are supported as an optional addition.
- Video endpoints.
- Cisco TelePresence Management Suite (Cisco TMS) is required if you want to schedule or monitor conferences.
- Cisco TelePresence Management Suite Provisioning Extension (Cisco TMSPE) is required if you want to use Personal CMRs.

If you use Multiparty Licensing with PMP licenses

If you use Multiparty Licensing with PMP licenses, you do not need a separate license for Cisco TMSPE to provision Personal CMRs (or to use the Smart Scheduler booking feature in Cisco TMSPE). Just download the TMSPE software from the [Cisco TMS software download page](#) on Cisco.com. You do *not* need the *Cisco TMS Provisioning Extension*

Installing the Solution Products - First-time Deployments

option key. The TMSPE user interface is accessed through TMS (primarily from the TMS **Systems > Provisioning** menu).

If you use 4096-bit certificates on Conductor

To enable 4096-bit encryption on Cisco TMSPE, the following procedure must be followed for the Java software on Cisco TMSPE:

Edit `<jre-path>\lib\security\java.security` and insert an entry for bouncy castle as below (shown in **bold**). The other entries are incremented by 1, so the contents should be:

```
security.provider.1=sun.security.provider.Sun
security.provider.2=org.bouncycastle.jce.provider.BouncyCastleProvider
security.provider.3=sun.security.rsa.SunRsaSign
security.provider.4=sun.security.ec.SunEC
security.provider.5=com.sun.net.ssl.internal.ssl.Provider
security.provider.6=com.sun.crypto.provider.SunJCE
security.provider.7=sun.security.jgss.SunProvider
security.provider.8=com.sun.security.sasl.Provider
security.provider.9=org.jcp.xml.dsig.internal.dom.XMLDSigRI
security.provider.10=sun.security.smartcardio.SunPCSC
security.provider.11=sun.security.mscapi.SunMSCAPI
```

Note: If you do not make the above change, TMSPE cannot access Conductor and users will not be able to edit their Personal Collaboration Meeting Rooms (CMRs). In addition, the following error is displayed in the TMSPE logs: *VMR::ConductorConnector - TelePresence Conductor failure with: Could not generate DH keypair.*

Task 1: Install the Solution Products

Install each product that you need for your solution deployment at the required version for 7.0. We recommend that you install the products in the order listed here.

Table 4 Order to upgrade / install the products

Order	Product	Version	Install guide	Software download
1	Cisco Unified Communications Manager (if not already installed)	11.0(1a)SU1 or later 10.5(3)SU3 also acceptable. Except not recommended for multistreaming / enhanced layouts.	Installation Guide for Cisco Unified Communications Manager, Release 11.0 (1)	Unified CM
2a	Cisco Expressway, if used	X8.7.1 X8.5.3 or X8.6 also acceptable.	X8.7 Installation Guide for your Expressway platform	Expressway Series
2b	Cisco VCS, if you support calls from legacy/H.323 endpoints in your network	X8.7.1	X8.7 Installation Guide for your VCS platform	VCS
3	Cisco TMS	15.2	TMS Installation and Upgrade Guide 15.0	TMS

Table 4 Order to upgrade / install the products (continued)

Order	Product	Version	Install guide	Software download
4	Upgrade/ set up endpoints	See Solution Products and Required Versions, page 13 . Endpoints must be registered to Unified CM (or to Cisco VCS in the case of any legacy H.323 endpoints in the network).		
5	Cisco MCU, if used	4.5.X (latest)	<ul style="list-style-type: none"> ■ MCU 5300 Series Install Guide ■ MCU MSE 8510 Installation Guide 	MCU
6	TelePresence Server	4.3.X (latest)	<ul style="list-style-type: none"> ■ Cisco TelePresence Server on Multiparty Media 820 Installation Guide ■ Cisco TelePresence Server 7010 Installation Guide ■ TelePresence Server MSE 8710 Installation Guide ■ TelePresence Server on Virtual Machine Installation Guide ■ TelePresence Server on Multiparty Media 310/320 Installation Guide 	TelePresence Server
7	Cisco TMSPE	1.7 Install Java 8 before Cisco TMSPE	Cisco TMSPE Deployment Guide	TMSPE
8	TelePresence Conductor	XC4.2	Cisco TelePresence Conductor Virtual Machine Installation Guide	Conductor
9	Cisco TMSXE, if used	5.2	Cisco TMSXE Deployment Guide	TMSXE

Task 2: Check Solution Release Notes

Check for any configuration requirements in the latest solution *Release Notes* for Release 7.0 on the [CMR Premises solution documentation](#) page and action any necessary steps.

Task 3: Configure Conference Bridges, Conductor, and Call Control Device

Connect TelePresence Conductor to the conference bridges and the Unified CM, and configure for CMR Premises. See [Task 1: Connect Conductor to the Bridges and Unified CM, page 32](#) for instructions.

Task 4: Add Normalization Scripts to Unified CM

Install the latest TelePresence normalization scripts on the SIP trunks. See [Appendix 1: Adding the Unified CM Normalization Scripts, page 87](#) for instructions.

Verify that the system is working as expected before you continue. We suggest testing some calls across the trunks - check that endpoints can dial into the conference bridges and the bridges can dial out to endpoints.

Task 5: Convert to SIP Early Offer

SIP Early Offer is recommended in all cases, and required for CMR Hybrid conferences and some third party services. See [Task 4: Configure the Unified CM for Early Offer, page 35](#) for instructions.

Task 6: Deploy the Cisco Expressway for Remote Access (Optional)

If you need participants outside of the company network to participate in the video conferences, deploy Cisco Expressway-C and Cisco Expressway-E for the firewall traversal (if not already in place). See [Task 5: Connect Unified CM to Cisco Expressway or Cisco VCS, page 37](#) for instructions.

Verify that the system is working as expected before you continue. We suggest testing that calls can be placed to and from remotely located endpoints. If applicable for your deployment, also test that Unified CM-managed endpoints can call VCS-managed endpoints.

Task 7: Configure Cisco Expressway for Microsoft Lync (Optional)

If you need interoperability with Microsoft Lync, follow the instructions to configure Cisco Expressway in the latest *Cisco Expressway and Microsoft Lync Deployment Guide X8.7* at [Expressway Configuration Guides page](#).

Task 8: Configure TMS for Conductor Failover

This task applies if you use clustered Conductors. You can configure Cisco TMS to automatically transfer to a peer Conductor node if the primary Conductor fails. See [Configuring TMS Support for Two-Node Conductor Clusters, page 64](#) for instructions.

Task 9: Set Up CMR Hybrid for WebEx Participation (Optional)

If you need to set up an integration with the CMR Hybrid service, see [Using CMR Hybrid in Scheduled Conferences, page 65](#) for instructions. After you set up the integration, you can optionally add WebEx meetings to Personal CMRs (see [Using CMR Hybrid with Personal CMRs, page 66](#)).

Task 10: Verify ActiveControl and IX Protocol Configuration

1. Check that the iX protocol is configured correctly in the relevant solution components, as described in [Using ActiveControl, page 78](#). The iX protocol is a prerequisite for ActiveControl to endpoints.
2. This step applies if your CMR Premises network connects to Unified CM systems that run Version 8.x or earlier, or to third-party networks. In such cases, to avoid unpredictable results you should disable the iX protocol on all relevant trunks. This isolates iX traffic from external systems that do not support it. See [Limiting ActiveControl in External Connections, page 79](#) for instructions.

Note: The iX protocol is also a prerequisite for [multistreaming video](#) to endpoints, for enhanced layouts support.

Task 11: Standardize User Display Names

To ensure that the participant names displayed in conferences are consistent across the solution, we recommend following the configuration steps in [Appendix 2: Provisioning Display Names Across the Solution, page 89](#).

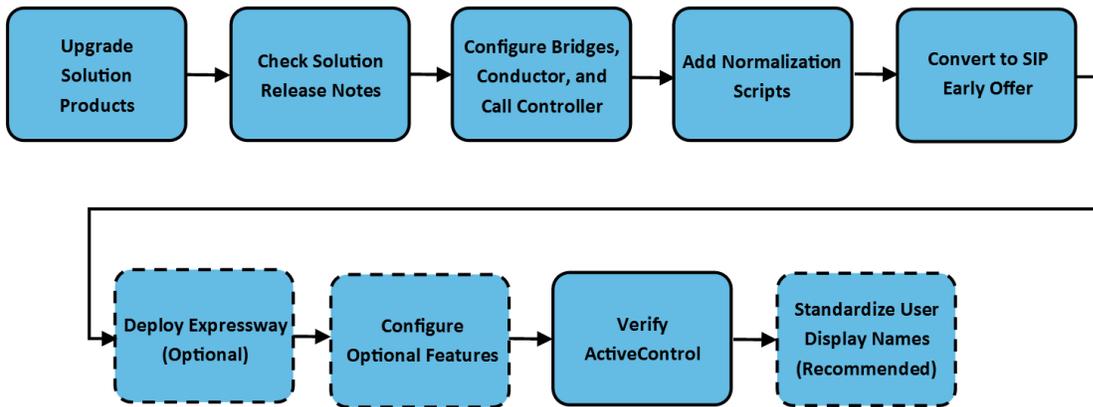
What Next?

Now go to the section [Setting Up the Solution Products Ready for Conferencing, page 31](#).

Upgrading the Solution Products – Existing Deployments

This section describes how to upgrade an existing deployment to Release 7.0. If you are installing CMR Premises for the first time, go to the [Installing the Solution Products – First-time Deployments, page 21](#) instead.

Figure 4 Summary of deployment upgrade tasks >



Before You Start

If you haven't already done so, review the [Deployment Requirements, page 12](#).

If you use endpoints running CE software

If your CE endpoints are running CE8.1 software (recommended), you must also update your Cisco TMS software to Version 15.1 or later (15.2 is recommended for this release).

If you use Multiparty Licensing with PMP licenses

If you use Multiparty Licensing with PMP licenses, you do not need a separate license for Cisco TMSPE to provision Personal CMRs (or to use the Smart Scheduler booking feature in Cisco TMSPE). Just download the TMSPE software from the Cisco TMS software download page on Cisco.com. You do *not* need the *Cisco TMS Provisioning Extension* option key. The TMSPE user interface is accessed through TMS (primarily from the TMS **Systems > Provisioning** menu).

If you use 4096-bit certificates on Conductor

To enable 4096-bit encryption on Cisco TMSPE, the following procedure must be followed for the Java software on Cisco TMSPE:

Edit `<jre-path>\lib\security\java.security` and insert an entry for bouncy castle as below (shown in **bold**). The other entries are incremented by 1, so the contents should be:

```

security.provider.1=sun.security.provider.Sun
security.provider.2=org.bouncycastle.jce.provider.BouncyCastleProvider

```

Upgrading the Solution Products - Existing Deployments

```

security.provider.3=sun.security.rsa.SunRsaSign
security.provider.4=sun.security.ec.SunEC
security.provider.5=com.sun.net.ssl.internal.ssl.Provider
security.provider.6=com.sun.crypto.provider.SunJCE
security.provider.7=sun.security.jgss.SunProvider
security.provider.8=com.sun.security.sasl.Provider
security.provider.9=org.jcp.xml.dsig.internal.dom.XMLDSigRI
security.provider.10=sun.security.smartcardio.SunPCSC
security.provider.11=sun.security.mscapi.SunMSCAPI

```

Note: If you do not make the above change, TMSPE cannot access Conductor and users will not be able to edit their Personal Collaboration Meeting Rooms (CMRs). In addition, the following error is displayed in the TMSPE logs:
VMR::ConductorConnector - TelePresence Conductor failure with: Could not generate DH keypair.

Virtual Conference Bridges

The Cisco TelePresence Server on Virtual Machine has been migrated to a new platform in this release. You must **redeploy** any Cisco TelePresence Server on Virtual Machines with the new OVA file, as it's not possible to migrate the platform via a software upgrade.

A script to support the migration process is available from the [TelePresence Server software download page](#) on Cisco.com. The script ensures that your existing bridge configurations, keys, and serial numbers are preserved. Detailed instructions are available on the [TelePresence Server Install and Upgrade Guides page](#).

Task 1: Upgrade the Solution Products

Upgrade each product in your solution deployment to the versions specified in the table below. We recommend that you upgrade the products in the order listed here.

At this stage, do *not* update your configuration for 7.0 functionality.

Table 5 Order to upgrade / install the products

Order	Product	Version	Install guide	Software download
1	Cisco Unified Communications Manager (if not already installed)	11.0(1a)SU1 or later 10.5(3)SU3 also acceptable. Except not recommended for multistreaming / enhanced layouts.	Installation Guide for Cisco Unified Communications Manager, Release 11.0 (1)	Unified CM
2a	Cisco Expressway, if used	X8.7.1 X8.5.3 or X8.6 also acceptable.	X8.7 Installation Guide for your Expressway platform	Expressway Series
2b	Cisco VCS, if you support calls from legacy/H.323 endpoints in your network	X8.7.1	X8.7 Installation Guide for your VCS platform	VCS
3	Cisco TMS	15.2	TMS Installation and Upgrade Guide 15.0	TMS

Upgrading the Solution Products - Existing Deployments

Table 5 Order to upgrade / install the products (continued)

Order	Product	Version	Install guide	Software download
4	Upgrade/ set up endpoints	See Solution Products and Required Versions, page 13 . Endpoints must be registered to Unified CM (or to Cisco VCS in the case of any legacy H.323 endpoints in the network).		
5	Cisco MCU, if used	4.5.X (latest)	<ul style="list-style-type: none"> ■ MCU 5300 Series Install Guide ■ MCU MSE 8510 Installation Guide 	MCU
6	TelePresence Server	4.3.X (latest)	<ul style="list-style-type: none"> ■ Cisco TelePresence Server on Multiparty Media 820 Installation Guide ■ Cisco TelePresence Server 7010 Installation Guide ■ TelePresence Server MSE 8710 Installation Guide ■ TelePresence Server on Virtual Machine Installation Guide ■ TelePresence Server on Multiparty Media 310/320 Installation Guide 	TelePresence Server
7	Cisco TMSPE	1.7 Install Java 8 before Cisco TMSPE	Cisco TMSPE Deployment Guide	TMSPE
8	TelePresence Conductor	XC4.2	Cisco TelePresence Conductor Virtual Machine Installation Guide	Conductor
9	Cisco TMSXE, if used	5.2	Cisco TMSXE Deployment Guide	TMSXE

Task 2: Verify New Versions in Existing Configuration

Verify that the new software runs satisfactorily on your existing solution configuration and that the network is functioning as you expect.

Task 3: Check Solution Release Notes

Check for any configuration requirements in the latest solution *Release Notes* for Release 7.0 on the [CMR Premises solution documentation](#) page and action any necessary steps.

Task 4: Configure Conference Bridges, Conductor, and Call Control Device

Connect TelePresence Conductor to the conference bridges and the Unified CM, and configure for CMR Premises. See [Task 1: Connect Conductor to the Bridges and Unified CM, page 32](#) for instructions.

Task 5: Add Latest Normalization Scripts to Unified CM

Skip this task if you are upgrading from CMR Premises Release 4.0 or higher, and you already added the latest scripts for that release.

Install the latest TelePresence normalization scripts on the SIP trunks. See [Appendix 1: Adding the Unified CM Normalization Scripts, page 87](#) for instructions.

Verify that the system is working as expected before you continue to the next step. We suggest testing some calls across the trunks - that endpoints can dial into the conference bridges and the bridges can dial out to endpoints.

Task 6: Convert to SIP Early Offer

Skip this task if you are upgrading from CMR Premises Release 4.0 or higher and you already converted to Early Offer for that release.

SIP Early Offer is recommended in all cases, and required for CMR Hybrid conferences and some third party services. See [Task 4: Configure the Unified CM for Early Offer, page 35](#) for instructions.

Task 7: Deploy the Cisco Expressway for Remote Access (Optional)

If you need participants outside of the company network to participate in the video conferences, deploy Cisco Expressway-C and Cisco Expressway-E for the firewall traversal (if not already in place). See [Task 5: Connect Unified CM to Cisco Expressway or Cisco VCS, page 37](#) for instructions.

Verify that the system is working as expected before you continue. We suggest testing that calls can be placed to and from remotely located endpoints. If applicable for your deployment, also test that Unified CM-managed endpoints can call VCS-managed endpoints.

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

If you need interoperability with Microsoft Lync, follow the instructions to configure Cisco Expressway in the latest *Cisco Expressway and Microsoft Lync Deployment Guide X8.7* at [Expressway Configuration Guides page](#).

Task 9: Deploy Cisco VCS for H.323 Interworking (Optional)

For users with H.323 endpoints to participate in video conferences, add a Cisco VCS for those endpoints to register to. See [Task 5: Connect Unified CM to Cisco Expressway or Cisco VCS, page 37](#) for instructions.

Task 10: Configure TMS for Conductor Failover

This task applies if you use clustered Conductors. You can configure Cisco TMS to automatically transfer to a peer Conductor node if the primary Conductor fails. See [Configuring TMS Support for Two-Node Conductor Clusters, page 64](#) for instructions.

Task 11: Set Up CMR Hybrid for WebEx Participation (Optional)

If you need to set up an integration with the CMR Hybrid service, see [Using CMR Hybrid in Scheduled Conferences, page 65](#) for instructions. After you set up the integration, you can optionally add WebEx meetings to Personal CMRs (see [Using CMR Hybrid with Personal CMRs, page 66](#)).

Task 12: Verify ActiveControl and IX Protocol Configuration

1. Check that the iX protocol is configured correctly in the relevant solution components, as described in [Using ActiveControl, page 78](#). The iX protocol is a prerequisite for ActiveControl to endpoints.
2. This step applies if your CMR Premises network connects to Unified CM systems that run Version 8.x or earlier, or to third-party networks. In such cases, to avoid unpredictable results you should disable the iX protocol on all relevant trunks. This isolates iX traffic from external systems that do not support it. See [Limiting ActiveControl in External Connections, page 79](#) for instructions.

Note: The iX protocol is also a prerequisite for [multistreaming video](#) to endpoints, for enhanced layouts support.

Task 13: Standardize User Display Names

To ensure that the participant names displayed in conferences are consistent across the solution, we recommend following the configuration steps in [Appendix 2: Provisioning Display Names Across the Solution, page 89](#).

What Next?

Now go to the section [Setting Up the Solution Products Ready for Conferencing, page 31](#).



Setting Up the Solution Products Ready for Conferencing

By the end of this section, you should have CMR Premises installed on all of the solution products, with the products configured to talk to each other and each conferencing method enabled.

Task 1: Connect Conductor to the Bridges and Unified CM	32
Task 2: Enable Multiparty Licensing (Recommended)	32
Task 3: Configure for Conferencing	33
Task 4: Configure the Unified CM for Early Offer	35
Task 5: Connect Unified CM to Cisco Expressway or Cisco VCS	37

Task 1: Connect Conductor to the Bridges and Unified CM

Before You Start

- Cisco TelePresence Conductor must be installed according to the instructions in [Cisco TelePresence Conductor Virtual Machine Installation Guide](#).
- In the solution, Conductor is deployed with its B2BUA. External policy service mode is not supported.
- Unified CM must be installed and configured with a base configuration. Ensure connectivity by registering at least three endpoints. Then check that they can all call each other with voice and video.
- One or more conference bridges must be powered on and accessible to Conductor over HTTP/HTTPS and SIP TLS. HTTPS is recommended in all cases and is required for Multiparty Licensing to work.

Process

1. Complete the following tasks in *Cisco TelePresence Conductor with Cisco Unified CM Deployment Guide* on the [Conductor Configuration Guides](#) page:
 - Configuring the Cisco TelePresence MCU Series (if applicable).
 - Configuring the TelePresence Server.
 - Configuring the TelePresence Conductor's general settings.
 - Configuring the Unified CM's general settings.

Task 2: Enable Multiparty Licensing (Recommended)

Process

1. Log in to TelePresence Conductor.
2. Make sure there are no active calls on Conductor. Any active calls are ended when you enable Multiparty Licensing.
3. Go to **Maintenance > Option key**.
4. Under **Software option** in the **Add option key** field, enter the option key for the Personal Multiparty (PMP) or Shared Multiparty (SMP) licenses you have purchased.
5. Click **Add option**.
6. Repeat for any other PMP and SMP license keys you have purchased. License keys are additive. So for example, two option keys for 100 Personal Multiparty licenses result in 200 Personal Multiparty licenses.
7. On the same page, under **Multiparty Licensing**, set **Multiparty licensing for TelePresence Servers** to *Enabled*.

Result

You can now apply the Multiparty licenses to end users, as described in [Managing Multiparty Licenses, page 60](#).

Task 3: Configure for Conferencing

The following tables explain how to configure the solution for each conferencing method that you want to support. You may want to configure all, or just some of them:

- [Ad hoc](#)
- [Personal CMR](#)
- [Scheduled](#)
- [Rendezvous](#)

Step A: Ad Hoc Conferences

1. To support ad hoc conferences, complete these tasks in *Cisco TelePresence Conductor with Cisco Unified CM Deployment Guide* on the [Conductor Configuration Guides](#) page:

- Configuring the TelePresence Conductor for ad hoc conferences.
- Configuring the Unified CM for ad hoc conferences.

Result:

- Conductor is configured with one or more Locations to support ad hoc conferences.
- A SIP trunk is established between Unified CM and Conductor for each Location for ad hoc calls.
- Locations in Conductor define the conference template to use for ad hoc conferences.

2. If you want to use any PMP licenses for ad hoc conferences, do the following:

- In Cisco TMSPE, enable Personal CMRs for each PMP license user group (see [About Personal CMRs, page 53](#))
- Ensure that Unified CM and Cisco TMSPE are using the same user base directory.
- In Unified CM, ensure that the endpoint used for ad hoc escalations is associated with the same user defined in the Personal CMR. See the section *Associate Devices to End User* in *Cisco Unified Communications Manager Administration Guide (End User Setup chapter)* at [Cisco Unified Communications Manager Maintain and Operate Guides](#) page.

When a user initiates an ad hoc conference, Unified CM notifies the conference initiator's ID to Conductor, which checks the Personal CMRs list for a matching user ID. If a Personal CMR with a PMP license is defined for the user, the PMP license is used. If no matching user exists or the user has no PMP license, an SMP license is used for the conference.

Step B: Personal CMR Conferences

To support Personal CMR conferences you need to configure at least one non-ad hoc Location and associated SIP trunk on Conductor. To do this, complete the following tasks in *Cisco TelePresence Conductor with Cisco Unified CM Deployment Guide* on the [Conductor Configuration Guides](#) page

1. Configuring the TelePresence Conductor for rendezvous conferences.
2. Configuring the Unified CM for rendezvous conferences.

Note: If you use Multiparty Licenses, no further configuration is required to support them for Personal CMR conferencing.

Result:

- Conductor is configured with Locations to support Personal CMR conferences.
- A SIP trunk is established between Unified CM and Conductor for Personal CMR calls.
- Personal CMR conferences rely on the dialed number/URI to determine the bridge used. Appropriate configuration is needed in Conductor and Unified CM to ensure that the correct bridges are selected.

Further steps are needed later to actually switch on CMR Conferencing, as described in [About Personal CMRs, page 53](#).

Step C: Scheduled Conferences

1. Create dedicated conference templates and conference aliases on TelePresence Conductor. Cisco TMS can then schedule against these conference templates and aliases. For instructions see [How to Enable Scheduled Conferencing, page 48](#).

Result:

- TelePresence Conductor is configured with Locations to support Personal CMR conferences, which are required for scheduled conferences.
- A SIP trunk is established between Unified CM and TelePresence Conductor for scheduled calls.
- Scheduled conferences rely on the dialed number/URI to determine the bridge used. (Assuming that TelePresence Conductor and Unified CM are configured as described above.)

2. To support PMP licenses with scheduled conferences, enable Personal CMRs as described in [About Personal CMRs, page 53](#).

If you have PMP licenses, you must enable Personal CMRs for each license user group. When a scheduled conference starts, TelePresence Conductor looks through the list of Personal CMRs. If a Personal CMR with a PMP license is defined for the user, the PMP license is used. If no matching user exists, an SMP license is used.

Personal CMRs cannot be scheduled through Cisco TMS. The Personal CMR details can of course be added to an invite for the participant to dial into the CMR.

Step D: Rendezvous Conferences

If you need to support rendezvous conferences, you manually configure them directly on TelePresence Conductor. To do this, complete the following tasks in *Cisco TelePresence Conductor with Cisco Unified CM Deployment Guide* on the [Conductor Configuration Guides](#) page

1. Configuring the TelePresence Conductor for rendezvous conferences.
2. Configuring the Unified CM for rendezvous conferences.

Result:

- TelePresence Conductor is configured with Locations to support rendezvous conferences.
- A SIP trunk is established between Unified CM and TelePresence Conductor for each Location for rendezvous calls.
- Rendezvous conferences rely on the dialed number/URI to determine the bridge used. Appropriate configuration is needed in TelePresence Conductor and Unified CM to ensure that the correct bridges are selected.

Task 4: Configure the Unified CM for Early Offer

Skip this task if you are upgrading from an existing CMR Premises Release 4.0 or later deployment and you already converted to SIP Early Offer when you installed the release.

The default configuration for Unified CM trunks is **Delayed Offer**. We recommend that you configure outbound trunks as Early Offer. This is recommended in all cases, and *required* in these cases:

- If you support CMR Hybrid calls (WebEx participation), configure Early Offer for the SIP trunks between:
 - TelePresence Conductor and Unified CM
 - Unified CM and Cisco Expressway-C or Cisco VCS Control
- For any other services that require Early Offer, such as Cisco WebEx and some third party conferencing services, configure Early Offer from Cisco Unified Communications Manager endpoints to Cisco Expressway. The entire path from the calling device to the service must be configured.

All trunks between the following CMR Premises elements should be enabled for Early Offer:

- Unified CM to Cisco Expressway-C
- Unified CM to Cisco VCS Control
- Unified CM to TelePresence Conductor
- 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. 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.

For Cisco Unified Communications Manager Session Management Edition (Unified CM SME) clusters, you should manually restrict the use of media termination point (MTP) resources by removing all MTP resources from each Unified CM SME cluster.

Some specific points apply in various deployment scenarios:

Setting Up the Solution Products Ready for Conferencing

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)

A Cisco Unified Communications Manager SME cluster with one or more 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.

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

A Cisco Unified Communications Manager SME cluster with one or more 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.

Process to Configure Early Offer (and Fallback to Delayed Offer) for SIP Trunks

1. For each trunk (**SIP Profile**), 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 on all Unified CM clusters.
3. For each trunk (**SIP Trunk**), set **SIP Trunk DTMF Signaling Method** to *RFC 2833*.
4. In the **SIP Profile** settings, 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.

Task 5: Connect Unified CM to Cisco Expressway or Cisco VCS

Skip this task if you only use video conferencing within the local enterprise, with SIP endpoints. It's required if you use Cisco Expressway (conference participants who are remote or Microsoft Lync 2013 users), or Cisco VCS (participants from H.323-based networks or within the enterprise with H.323 endpoints).

Recommendations

- Use Cisco Expressway if you have external and/or Microsoft Lync participants. Use Cisco VCS (the Cisco VCS Control component) if you have H.323 participants.
- From software Version X8.5.3 we recommend that you configure the default SIP TCP timeout value in the Cisco Expressway / Cisco VCS as described in [Recommended Best Practices, page 19](#).
- If you want to apply media encryption to calls that egress the Expressway solution towards DNS discoverable endpoints, we strongly recommend that you use the approach described in [Recommended Best Practices, page 19](#).

To connect the Unified CM and Cisco Expressway Series

If Cisco Expressway is not already set up with Unified CM, follow the step-by-step instructions in the [Cisco Expressway and CUCM 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.

To connect the Unified CM and Cisco VCS

If Cisco VCS is not already set up with Unified CM, follow the step-by-step instructions in the [Cisco VCS and CUCM \(SIP Trunk\) 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.
- Enabling endpoints registered on Unified CM to call endpoints registered on Cisco VCS Control.
- Connecting Cisco VCS to Unified CM using TLS.

What Next?

CMR Premises is now installed on all the solution products, with each conferencing method enabled. The rest of this guide describes how to do any of the following tasks, depending on your local requirements:

- Managing Personal CMRs.
- Managing scheduled conferences.
- Configuring conference services, like cascading.
- Configuring conference features, like Active Meeting Manager.



Virtual Deployments on Cisco Business Edition 6000 / 7000

You can deploy the solution as a virtualized application on the Cisco Business Edition 6000 (BE6000) or Cisco Business Edition 7000 (BE7000) platforms.

Hardware and Sizing

The standard sizing and hardware guidelines for all Cisco Unified Communications (UC) applications on Unified CM deployments apply:

- http://docwiki.cisco.com/wiki/Unified_Communications_Virtualization_Sizing_Guidelines
- http://docwiki.cisco.com/wiki/UC_Virtualization_Supported_Hardware

Physical CPU cores must not be over-subscribed for UC virtual machines. One physical CPU core must equal one virtual machine vCPU core.

You should enable hyperthreading on the CPU when available. But note the resulting logical cores do not change standard UC app rules. The rules use one-to-one mapping of physical cores-to-vCPU, not logical cores-to-vCPU.

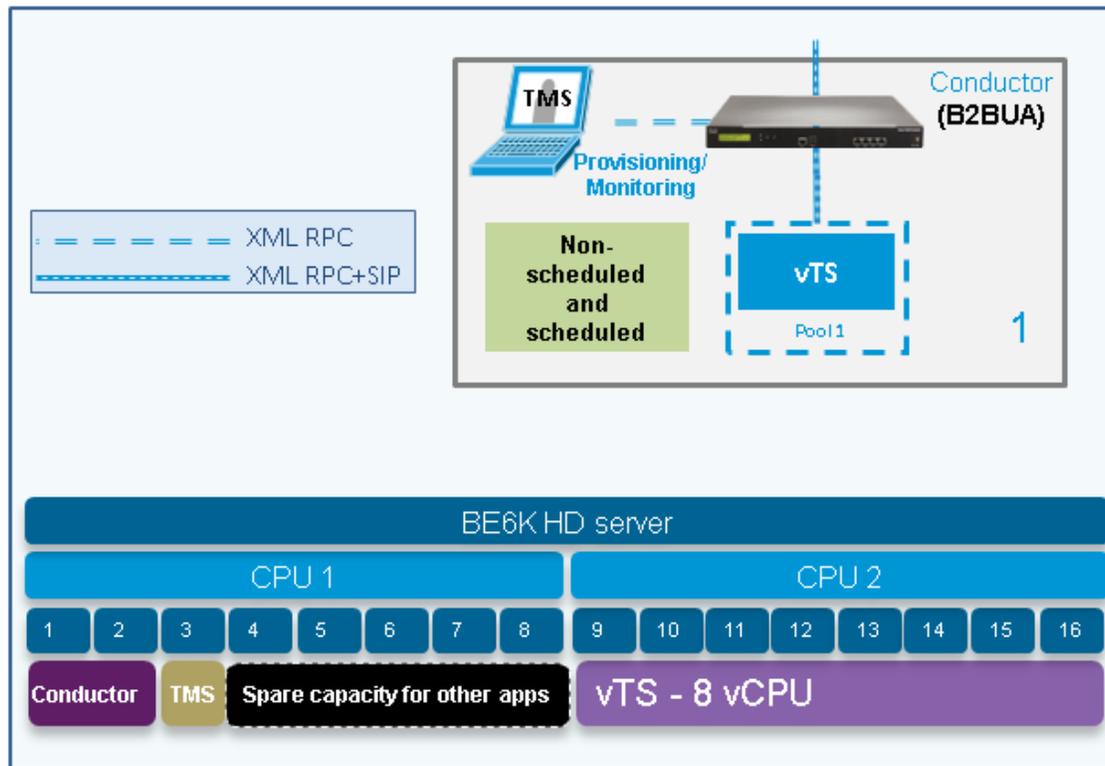
Details about running UC applications in a virtualized environment are available in http://docwiki.cisco.com/wiki/Unified_Communications_in_a_Virtualized_Environment

The [Virtual Machine Placement Tool](#) on Cisco.com is available to assist with planning VM-to-physical server placement. You can use it to quickly check what virtual machine configuration is appropriate for a given physical server configuration.

Recommended Configuration

Many BE6000/BE7000 configurations are compatible with CMR Premises. The following configuration is the one that we test for the solution. All elements must be running the required versions for CMR Premises ([Solution Products and Required Versions, page 13](#)):

- BE6000 Product ID BE6K-SW-9X10X-XU or BE7000 Product ID BE7K-SW-9X10X-XU
- Cisco Business Edition 6000/7000 High Density or Cisco Business Edition 7000 Medium Density server (they have two 8-core CPUs).
- Hyperthreading enabled.
- One-core virtualized Cisco TMS.
- Two-core virtualized Cisco TelePresence Conductor (Select version).
- Eight-core Cisco TelePresence Server on Virtual Machine conference bridge.
- Optionally a physical Cisco Expressway for remote user access.
- Unified CM for call control. You can run the call control on the remaining cores or on another BE6000/BE7000 unit.

Figure 5 Solution on BE6000/BE7000 (using a shared bridge for scheduled and non-scheduled conferences)

Scaling Up

This deployment can be scaled up by running additional vTS instances on further BE6000/BE7000 systems or by adding dedicated hardware. Depending on their capacity requirements, scaled-up deployments may need either Conductor Select or full capacity Conductor licenses.

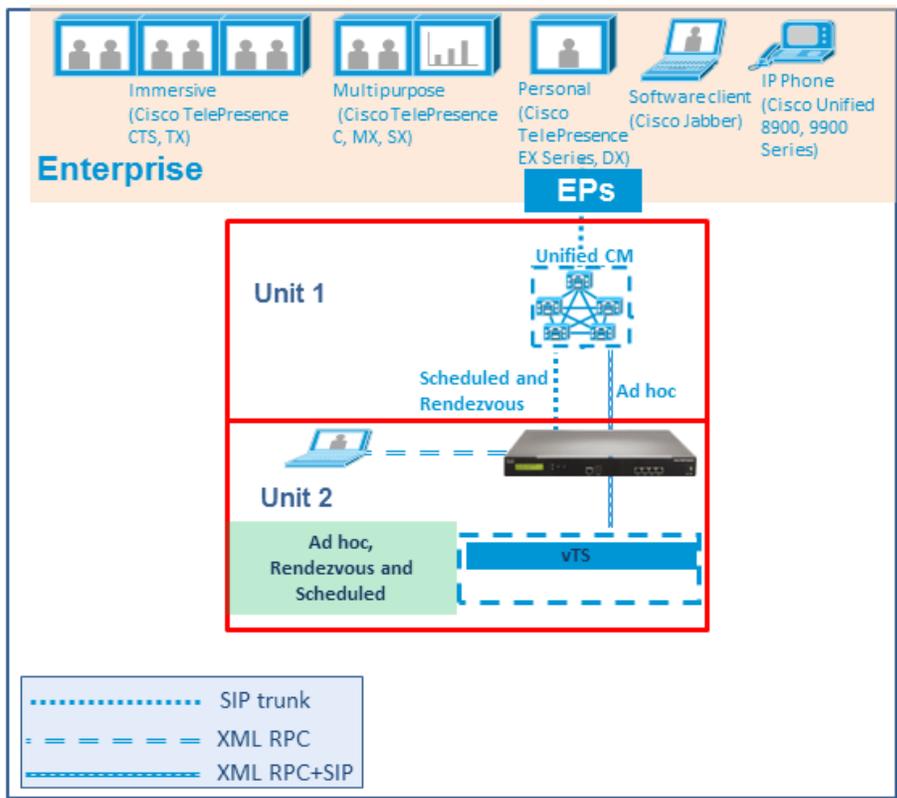
Using a Dedicated Bridge for Scheduled Conferences

The default BE6000 and BE7000 configurations support only a single Cisco TelePresence Server on Virtual Machine (vTS) conference bridge. This has implications if you want to use a [dedicated bridge](#) for scheduled conferences. In this case the sole bridge will be available only for scheduled conferences. If you also want to support non-scheduled conferences (Personal CMR / rendezvous, ad hoc) you need to use additional TelePresence Servers. The additional units can be virtual machines or physical appliances.

Example Deployment

In this example the core conferencing elements are running on one BE6000/BE7000 unit and the Unified CM is running on a second unit. By trunking an Expressway to the call controller the standard configuration can be extended to support access by remote and mobile users.

Figure 6 Example BE6000/BE7000 deployment





Managing Scheduled Conferencing

- How Scheduling Works in the Solution 42
- Limitations and Requirements for Scheduled Conferencing 44
- Configurations for Scheduled Conferencing 45
- How to Enable Scheduled Conferencing 48

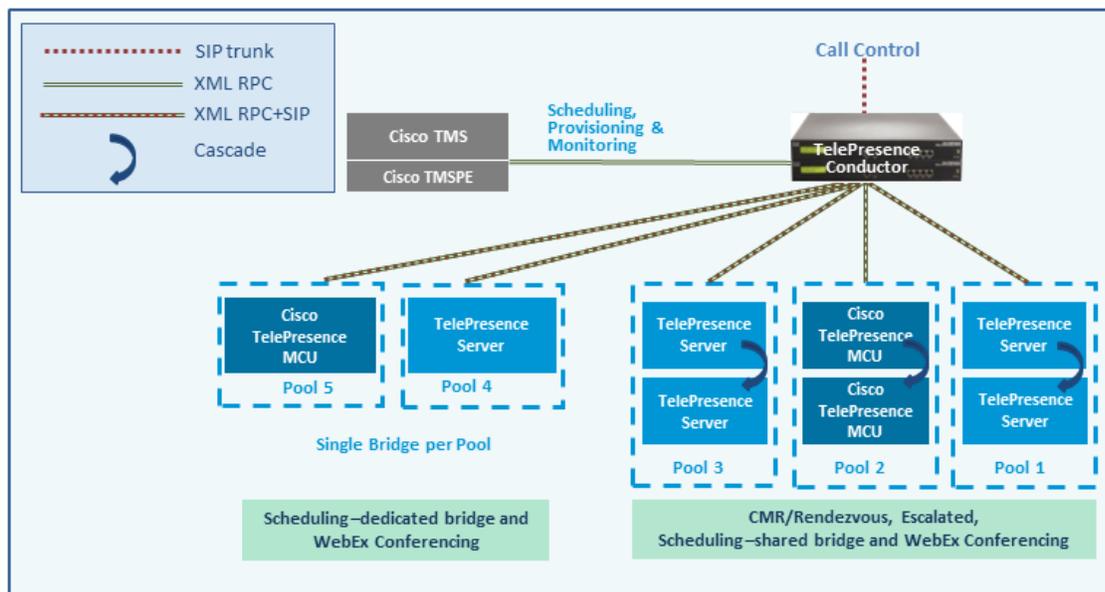
How Scheduling Works in the Solution

The solution supports two scheduling methods:

- Shared bridge. Our recommended method is to allow bridges to be shared for non-scheduled as well as scheduled conferences.
- Dedicated bridge. Alternatively you can deploy one or more bridges that are reserved just for scheduled conferences. Each bridge is in a pool of its own, with or without a second dedicated bridge-and-pool combination for backup.

Note: With shared bridges, although the system will reserve the correct meeting resources based on the booking, it is possible for those resources to be over-subscribed for the meeting. For example if unexpected participants or unscheduled rooms join the conference. Also, resources may be used up by non-scheduled conferences, without Cisco TMS being aware of it.

Figure 7 Scheduling configurations



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.

Managing Scheduled Conferencing

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 dedicated bridge case). To do this:

1. "Mark" the relevant conference bridge pools in the TelePresence Conductor Service Preference (**Pools to use for scheduling** option). Conductor only notifies TMS about the pools that are marked for scheduling.
2. Make sure that the relevant pool is only used in a single Service Preference, which is not used for non-scheduled conferencing.
3. Set **Scheduled conference** in the TelePresence Conductor template to Yes.

Managing the priority of Cisco TMS conference aliases (optional)

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 use the alias that has the lowest priority number assigned to it (the lower the priority number the *higher* the priority). If the capacity of that Service Preference on Cisco TMS is used up, Cisco TMS selects the alias with the next lowest priority number on another Service Preference, and so on.

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.

Multiparty Licensing

If you have PMP licenses, you must enable Personal CMRs for each license user group. When a scheduled conference starts, TelePresence Conductor looks through the list of Personal CMRs. If a Personal CMR with a PMP license is defined for the user, the PMP license is used. If no matching user exists, an SMP license is used.

Cisco TMS has no information about the number of Multiparty licenses that are available on a particular TelePresence Conductor. You need to monitor the alarms on TelePresence Conductor and tickets on Cisco TMS to check that you are not exceeding the valid number of licenses.

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 TMS Deployment Guide](#)

Limitations and Requirements for Scheduled Conferencing

Limitations

Caution: If you use clustered TelePresence Conductors, be aware that for failover purposes, 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).

Unified CM's failover mechanism allows the remaining Conductor cluster members to receive calls for already-scheduled conferences (and Personal CMRs) providing Cisco TMS started the conference before the Conductor failed. Ongoing conferences will continue, but participants dialed in through the failing Conductor are disconnected after a time-out period. They need to dial back in to join the same conference.

Users cannot schedule meetings to their Personal CMRs via the Cisco TMSPE user portal. However, when they schedule meetings through Microsoft Outlook, users can include their Personal CMR for the meeting simply by adding the CMR alias to the "Location" field in the meeting invite.

If you deploy the CMR Hybrid service, and have TSP Audio from a TSP that uses the same bridge as the previous scheduled conference, we recommend you turn off the auto-extend function in TMS.

TelePresence Conductor may wait up to 30 seconds before releasing resources between meetings. This may cause denial of inbound and outbound calls for back-to-back meetings, and utilization spikes if participants repeatedly leave and join a meeting.

Requirements

- Ensure that the solution-level prerequisites and configuration process for CMR Premises are complete.
- The solution requires the Cisco TMS management tool for scheduling. Conferences are not scheduled directly on TelePresence Conductor.
- Participants in a scheduled conference should not escalate to an ad hoc (instant/escalated) conference. This causes a degraded conference experience for participants.
- If you use dedicated conference bridges for scheduling, some additional points apply, as described in the next section.

Requirements for Dedicated Bridge Scheduling

- The bridge resources will only be used for scheduled conferencing (subject to correct configuration). TelePresence Conductor supplies Cisco TMS with a list of just the 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, the optimization will reduce the capacity needed on the shared backup bridge(s).

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 instant/escalated conference.

Configurations for Scheduled Conferencing

Various configurations are possible to support scheduled conferencing in the solution. They are controlled by the [bridge pool](#) and [Service Preference](#) settings in TelePresence Conductor.

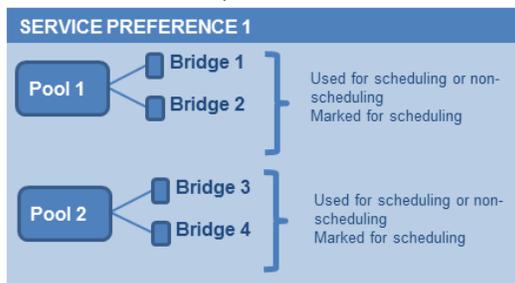
Shared Bridges

This is the recommended shared-bridge approach, which allows other types of conferences as well as scheduled conferences to run on the conference bridges:

Table 6 Deploying shared bridges for scheduling

	Service Preference contains ...	Configuration	Advantages	Disadvantages
Example 1	Shared-use bridges for scheduled and non-scheduled conferences	<p>One or more pools, shared for scheduled and non-scheduled conferences.</p> <p>All pools are marked for scheduling in the TelePresence Conductor Service Preference and reported to Cisco TMS.</p> <p>We recommend enabling cascading in this scenario, otherwise conferences may fail in some circumstances.</p>	<p>Cascaded conferencing available (if enabled).</p> <p>Targeted management of bridge resources. Over time, monitoring of use patterns can identify the most appropriate pool configuration.</p>	<p>Resource availability for scheduled conferences not guaranteed (could be used up by non-scheduled conferences). This risk can be reduced by using the Capacity Adjustment setting in Cisco TMS to under-allocate capacity below 100%. Only the specified reduced percentage is made available to TMS for scheduling conferences, rather than the actual capacity.</p>

Example 1 – shared use



Alternative Options (Dedicated Bridges)

If you want to reserve bridges for use just by scheduled conferences, this table provides examples of possible approaches and their advantages and disadvantages:

Table 7 Deploying dedicated bridge(s) for scheduling

	Service Preference contains ...	Configuration	Advantages	Disadvantages
Example 2	Dedicated bridge for scheduled conferences.	<p>Single pool, with a single conference bridge.</p> <p>Pool marked to be used for scheduling in the TelePresence Conductor Service Preference. Pool is reported to Cisco TMS in capacity information requests.</p>	<p>Conference availability is guaranteed, subject to bridge failure (or full capacity).</p> <p>Maximizes use of resources, as Cisco TMS will book ports until the bridge is full.</p>	<p>Uses one conference bridge exclusively for scheduling.</p> <p>Cascaded conferencing does not occur: to avoid wasting resources, cascading should be disabled.</p>
Example 3	<ul style="list-style-type: none"> ■ Dedicated bridge for scheduled conferences ■ Dedicated backup bridge 	<p>Two pools.</p> <p>Both pools contain a single conference bridge. The second pool is used as a backup if the bridge in the highest priority pool fails.</p> <p>Only the first pool is marked for scheduling in the TelePresence Conductor Service Preference and reported to Cisco TMS.</p>	<p>As for Example 2, with added benefit of fallback in case of bridge failure.</p>	<p>Uses two conference bridges exclusively for scheduling.</p> <p>Consumes backup resources.</p> <p>To avoid wasting resources, cascading should be disabled.</p>
Example 4	<ul style="list-style-type: none"> ■ Dedicated bridge for scheduled conferences ■ Shared-use backup bridges for both scheduled and non-scheduled conferences 	<p>Two or more pools.</p> <p>Highest priority pool with one bridge only, used for scheduled conferences.</p> <p>Other pools contain bridges for both scheduled (as backup) and non-scheduled conferences.</p> <p>Only the first pool is marked for scheduling in the TelePresence Conductor Service Preference and reported to Cisco TMS.</p>	<p>As for Example 2, with possible benefit of fallback in case of bridge failure if the other pools have spare capacity.</p>	<p>Uses one conference bridge exclusively for scheduling.</p> <p>To avoid wasting resources on the dedicated bridge, cascading should be disabled.</p>

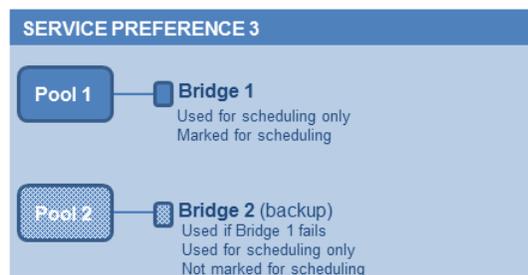
Table 7 Deploying dedicated bridge(s) for scheduling (continued)

	Service Preference contains ...	Configuration	Advantages	Disadvantages
Example 5	<ul style="list-style-type: none"> ■ Dedicated bridges for scheduled conferences ■ Shared-use backup bridges for both scheduled and non-scheduled conferences 	<p>Two or more pools.</p> <p>Highest priority pool with two or more bridges, used for scheduled conferences. Cascading enabled on the associated conference template.</p> <p>Other pools contain bridges for both scheduled (as backup and overflow) and non-scheduled conferences.</p> <p>Only the first pool is marked for scheduling in the TelePresence Conductor Service Preference and reported to Cisco TMS.</p>	<p>As for Example 2, with possible benefit of fallback in case of bridge failure and overflow resource when cascading is used in a scheduled conference.</p> <p>Bridges in the backup pools are used for scheduling if:</p> <ul style="list-style-type: none"> ■ A bridge in Pool 1 fails. ■ Cascading in Pool 1 uses up bridge resources that Cisco TMS expected to be available for scheduling. 	<p>Uses conference bridges exclusively for scheduling.</p> <p>If scheduled conferences are cascaded, they may need resources from a shared-use pool.</p>

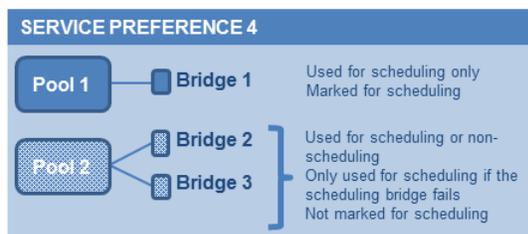
Example 2



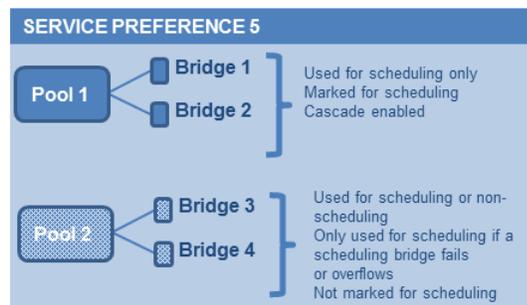
Example 3



Example 4



Example 5



How to Enable Scheduled Conferencing

Before You Start

- Check that the tasks in [Limitations and Requirements for Scheduled Conferencing, page 44](#) are complete.
- Review the best practice guidelines for [Recommended Best Practices, page 19](#).

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 *Cisco TelePresence Management Suite Administrator Guide* at [Cisco TelePresence Management Suite \(TMS\) Maintain and Operate Guides](#) page.

Note: If you use clustered TelePresence Conductors, add *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 an IP zone for TelePresence Conductor.

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 (recommended).

Using dedicated bridges for scheduling

If you opt to use dedicated bridges for scheduled conferences, 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 instant/escalated 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.

Managing Scheduled Conferencing

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.

Figure 8 Example alias settings for Conductor

The screenshot displays the 'Conference aliases' configuration interface. At the top, it indicates the current location: 'You are here: Conference configuration > Conference aliases > New'. The main area is titled 'Modify conference alias' and contains several configuration fields, each with a red asterisk indicating a required field:

- Name:** Alias for scheduled meetings
- Description:** (empty)
- Incoming alias (must use regex):** 5%
- Conference name:** 11
- Priority:** 50
- Conference template:** Template for scheduled meetings (dropdown menu)
- Role type:** Participant (dropdown menu)
- Allow conference to be created:** No (dropdown menu)

Additional information includes 'Conference bridge type: TelePresence Server' and 'i' icons for help. At the bottom, there are 'Create conference alias' and 'Cancel' buttons.

Task 7: Configure conference aliases in Cisco TMS

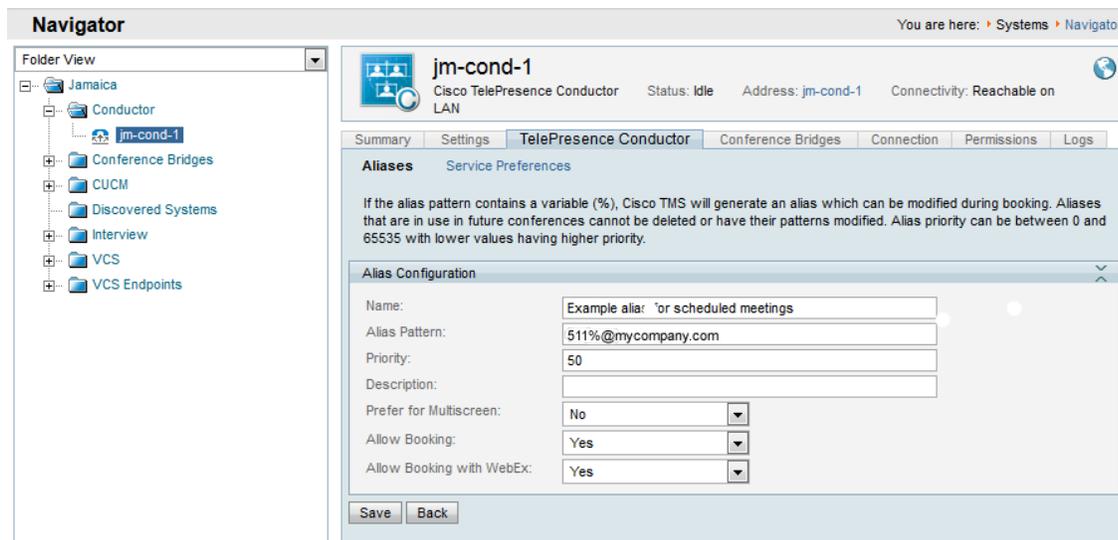
In Cisco TMS, go to **Systems > Navigator >** select the TelePresence Conductor > **Aliases** and select **New**.

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.

Figure 9 Example alias settings for Cisco TMS



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**.

TelePresence Conductor reports the total capacity of a Service Preference to Cisco TMS. Unless you use a single, dedicated bridge for scheduling, you may want to change the **Capacity Adjustment** setting from its default value of 100% and monitor the effect. This setting specifies what percentage of the total capacity will be available to Cisco TMS for scheduling conferences with this Service Preference.

If you set a value over 100% then TMS allows conferences to be scheduled beyond the potential real-life capacity. If you set 120% for example, TMS adjusts its (logical) resources available for scheduling upwards by 20%. Over-allocating capacity (greater than 100%) might be a good idea if scheduling patterns and actual usage indicate significant idle resources, even when all resources are booked.

Examples

You might want to set the Capacity Adjustment to *greater* than 100 if:

- You use cascades, and meetings tend not to cascade frequently. This could offset the potential for cascade resources to be reserved, but not actually used.
- You use resource optimization for the bridges. Cisco TMS does not take optimization into account for resources that are dedicated just for scheduled conference use. Depending on the mix of endpoints involved, the endpoints may not actually use all of the resources that get allocated to them via the Conductor template settings. Over-allocating capacity may offset the potential for resources to be reserved but not actually used, if the capacity initially booked by TMS is greater than the resources actually used after optimization frees up initial resources.

Over-allocating capacity clearly increases the risk that resources will be insufficient to support all participants. To minimize that risk you could use a reserve bridge pool that isn't marked for scheduling, which oversubscribed conferences can flow into.

You might want to set the Capacity Adjustment to *less* than 100 in the following cases:

- Generally with shared bridges for scheduled and non-scheduled conferences, since under-allocating capacity can minimize the risk of people being unable to join due to insufficient resources.

Managing Scheduled Conferencing

- If meetings tend to get bigger than predicted (where invites are being forwarded or uninvited participants try to join).

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

If you want to do so, there are some advantages in optionally configuring TelePresence Conductor-managed conference bridges in Cisco TMS. See [Conference Bridges in Cisco TMS, page 43](#)

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. Other methods available include Smart Scheduler through Cisco TMSPE, Microsoft Outlook through Cisco TMSXE, the Cisco TelePresence Management Suite Extension Booking API (Cisco TMSBA), and the Cisco TMS Booking API for customer groupware scheduling.

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 TMS Deployment Guide](#)



Managing Personal CMR Conferencing

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About Personal CMRs

The primary function of Personal Collaboration Meeting Rooms (CMRs) is to provide virtual rooms for users to host meetings and collaborate with others. Using Cisco TMSPE, administrators provision Personal CMRs on TelePresence Conductor for groups of users. Users can then activate and personalize their own CMR through a user portal.

Role of Personal CMRs in Multiparty Licensing

If you use Multiparty Licensing, then Personal CMRs have a secondary function. For deployments with a mix of Personal Multiparty (PMP) and Shared Multiparty (SMP) licenses they allow administrators to define whether each user is allocated a PMP or an SMP license (defined via the user group). This mechanism is used for all conference types, including ad hoc and scheduled conferences, not just for CMR conferences.

- If a user does not have a Personal CMR, they consume SMP licenses for any scheduled or ad hoc conferences they initiate.
- If a user has a Personal CMR, they consume a PMP license if the **Multiparty Licensing Mode** value for the CMR template is left to default (*Personal Multiparty*). Their PMP license is used for any CMR, scheduled, or ad hoc conferences they initiate. (Except for ad hoc conferences initiated from somewhere other than the user's personal video device—like a meeting room—when an SMP license is used.)
- If a user has a Personal CMR, and the **Multiparty Licensing Mode** value is changed to *Shared Multiparty*, they consume SMP licenses for their conferences.

If you don't want a user to consume SMP licenses for their conferences and the user does not already have a Personal CMR, you need to provision a Personal CMR with the default licensing mode (*Personal Multiparty*). If the user has a Personal CMR then no action is needed unless you previously changed the default licensing mode.

Note: Users without a PMP license who initiate back-to-back conferences will consume two SMP licenses if the first conference overlaps the second. Either by running long, or by the second conference starting five minutes early when the Allow Early Join feature is enabled on Cisco TMS.

Table 8 License summary

Endpoint in use	Does user have PMP?	Then user consumes...
Any	No	SMP
User's personal endpoint	Yes	PMP
Other endpoint - for scheduled or CMR	Yes	PMP
Other endpoint - for ad hoc	Yes	SMP

For details about administrator tasks for Multiparty Licenses, see [Managing Multiparty Licenses, page 60](#).

Scheduling with Personal CMRs

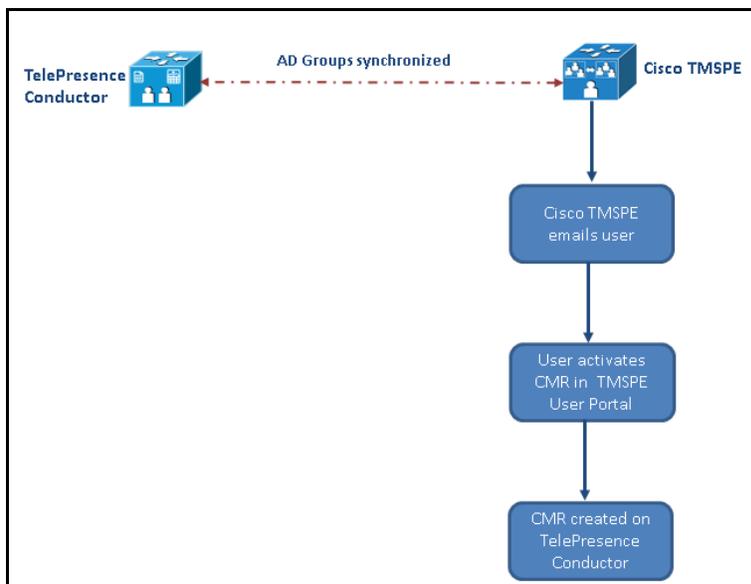
Users cannot schedule meetings to their Personal CMRs via the Cisco TMSPE user portal. However, when they schedule meetings through Microsoft Outlook they can include their Personal CMR for the meeting simply by adding the CMR alias to the "Location" field in the meeting invite.

Enabling Personal CMRs - Workflow Summary

To enable Personal CMRs, you define an API-enabled *User* on each TelePresence Conductor or cluster. Then in Cisco TMSPE you add the TelePresence Conductor *User*, create one or more CMR templates to specify the base dial plan for CMR URLs and numeric aliases, and apply the templates to Active Directory user groups. Active Directory users are regularly synchronized with Cisco TMS. After synchronizing, TMS emails the CMR details to the affected users so they can activate their CMRs. The CMR is created on TelePresence Conductor when the user activates it. Detailed configuration steps are in the process below.

When a Personal CMR is created, Cisco TMSPE applies the settings in the CMR template associated with the user's group, creates the room on TelePresence Conductor, and emails the user. No further interaction is needed from you as the administrator.

Figure 10 Workflow for Personal CMRs



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.

Enabling Personal CMRs - 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** (to access Cisco TMSPE).
2. Click **TelePresence Conductor Settings**.
3. Click **Add New**.
4. In the **TelePresence Conductor Configuration** dialog add the TelePresence Conductor details and user credentials:
 - **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 Conductor user that you created in the previous step.
 - **Domain:** TelePresence Conductor will append this domain for all numeric aliases created through Cisco TMSPE.
5. Click **Save**.

Task 3: Enable WebEx for Personal CMRs (Optional)

If you have CMR Hybrid, you can optionally enable it in Personal CMRs to allow joint participation by Cisco WebEx and TelePresence users. You can do this as a separate task later, as described in [Using CMR Hybrid with Personal CMRs, page 66](#), and regenerate the CMRs at that point. Or you can do it now, before you define the CMRs.

1. In Cisco TMS, go to **Administrative Tools > Configuration > Provisioning Extension Settings** (to access Cisco TMSPE).
2. Under **Collaboration Meeting Room**, set **Allow WebEx Connections** to *Yes*.
3. Click **Save**.

If you do it now, remember to check **Include WebEx** when you create the CMR templates in the next step.

Task 4: Create CMR Templates

1. In Cisco TMS, go to **Systems > Provisioning > Users** (to access Cisco TMSPE).
2. Under **Collaboration Meeting Room Templates**, create one or more templates as required.
 - If this CMR template is for users with a PMP license, set **Multiparty License Mode** to *Personal Multiparty* on the **CMR Template**.
 - The **SIP Alias Pattern** specifies the URI pattern that users can dial to connect into the CMR. The **Numeric Alias Pattern** optionally specifies numeric dialing in addition, which can be based on number ranges or on regex patterns (*Office Phone* or *Mobile Phone* in Active Directory).
 - Check **Include WebEx** if you have CMR Hybrid and want to allow WebEx users to access the room.
 - You can also specify whether the CMR owner can distinguish between host and guest roles (see [Using Host and Guest Roles in Personal CMRs, page 58](#)).

Task 5: Apply the CMR Templates to Groups

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

Task 6: 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 *Cisco TelePresence Management Suite Administrator Guide* at [Cisco TelePresence Management Suite \(TMS\) Maintain and Operate Guides](#) page.

Task 7: Wait for Personal CMRs to Synchronize or Manually Synchronize CMRs

Cisco TMSPE automatically synchronizes all Personal CMRs once per day. You can either wait for the synchronization to occur or (if you want to use the Personal CMRs or PMP licenses straight away) you can manually synchronize the CMRs, as described here.

If you are upgrading an existing system and you want to manually synchronize, take care to do the synchronization at a time when it will have minimum impact on existing CMR users.

1. In Cisco TMS, go to **Systems > Provisioning > Users** (to access Cisco TMSPE).
2. Under **Collaboration Meeting Room Templates**, click **TelePresence Conductor Settings**.
3. Find the relevant TelePresence Conductor and click its associated  icon. The icon is on the right-hand side (with a tool-tip labeled 'TelePresence Conductor Multiparty Licensing').
4. Click **Synchronize Now**.

You have now completed all tasks to enable CMR conferencing. Assuming you have completed the relevant tasks in [Task 1: Connect Conductor to the Bridges and Unified CM, page 32](#), you can now use the following conference methods:

- Personal CMRs
- Ad hoc conferences using PMP licenses or SMP licenses
- Scheduled conferences using PMP licenses or SMP licenses

Task 8: Users Can Now Activate Their CMRs

This step does not involve the administrator. When the synchronization completes, Cisco TMS notifies the affected users by email that their Personal CMRs are available. Users can now activate and customize their CMRs through the Cisco TMSPE User Portal. When a user activates their CMR, it is created on TelePresence Conductor.

More Information

For guidance about subsequent administrator-level changes to Personal CMR configurations, see [Managing Administration Changes to Personal CMRs, page 62](#).

For details about the TelePresence Conductor Provisioning API, see *Cisco TelePresence Conductor Product Programming Reference Guide* at [Cisco TelePresence Conductor Programming Guides](#) page.

For details about CMR configuration settings, see "*Deploying Collaboration Meeting Rooms*" in *Cisco TelePresence Management Suite Provisioning Extension with Cisco Unified CM Deployment Guide* at [Cisco TelePresence Management Suite \(TMS\) Configuration Guides](#) page.

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. When a conference is initiated, automatic dial out is initiated for all the favorite endpoints that are part of the conference. In this case, the favorite participant will join the conference first and then subsequently all the remaining participants in the lobby will join the conference.
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.



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Managing Multiparty Licenses

This section applies if you have TelePresence Server conference bridges and use Multiparty Licensing. In this case you administer licenses centrally on the Cisco TelePresence Conductor instead of loading screen licenses onto the bridges.

Requirements for Multiparty Licensing

- Cisco TelePresence Server conference bridges, with software version 4.2 or later and running in remotely managed mode.
- TelePresence Conductor, with software version XC4.0 or later.
- All connections between TelePresence Conductor and the TelePresence Servers must use HTTPS.
- Cisco TMSPE, with software version 1.5 or later. Cisco TMSPE is not required if you only use SMP licenses, although we recommend it to allow users to have a vanity URI/number.
- PMP licenses are associated with users for ad hoc, Personal CMR and scheduled conferences, after the Personal CMRs have been configured in Cisco TMSPE.

Licenses on Clustered Conductors

The licenses (option keys) can be installed on any node in a clustered Conductor configuration. If the node fails, the option keys remain valid for 30 days.

Installing the Licenses and Enabling Multiparty Licensing

You enable Multiparty Licensing through TelePresence Conductor, by applying the purchased licenses to Conductor and switching on the Multiparty Licensing option:

1. Have the option key code(s) for the purchased licenses available. (Option keys are obtained by registering the Product Authorization Key (PAK) from the sales order, at <http://www.cisco.com/go/license>)
2. In TelePresence Conductor, go to **Maintenance > Options**.
3. Paste the first option key code into the **Add option key** field.
4. Click **Add option**.
5. Repeat if you have further licenses/option key codes.
6. Set **Multiparty Licensing for TelePresence Servers** to *Enabled*.

Applying Licenses to Users

If you have a mix of Shared Multiparty (SMP) and Personal Multiparty (PMP) licenses, you can define whether each user in a particular user group should be allocated a PMP or an SMP license. Users consume a Shared Multiparty (SMP) license for their conferences, unless they have a [Personal CMR](#) provisioned and the Personal CMR specifies Personal Multiparty (PMP) licensing mode (the default). You should do this when you set up the Personal CMRs. See [About Personal CMRs, page 53](#)

To check what license type is in use for a given user group:

1. In Cisco TMS, go to **Systems > Provisioning > Users**.
2. Under **Collaboration Meeting Room Templates**, select the template concerned.
3. The **Multiparty License Mode** drop-down determines what licensing mode is applied for the user groups with this template assigned.

Changing the Licensing Mode

Caution: This process relates only to changing the licensing mode. Other changes to templates are potentially disruptive and need pre-planning, as described in [Managing Administration Changes to Personal CMRs, page 62](#).

Configuring Conference Services

To change the licensing mode for a given user group:

1. Check that sufficient PMP or SMP licenses (as appropriate) are available to support the change.
2. In Cisco TMS, go to **Systems > Provisioning > Users**.
3. Under **Collaboration Meeting Room Templates**, select the template concerned.
4. Set the **Multiparty License Mode** drop-down as required. To apply PMP licenses to users, select *Personal Multiparty*.
5. Click **Save**.
6. The counter next to **Check sync status** indicates if CMRs are now out of sync with the modified template. That is, the number of CMRs that use this template and have had rooms configured. Click **Regenerate CMRs** to synchronize the change on TelePresence Conductor and remove the warning.
7. The licensing change will not take effect until after the automatic daily CMR synchronization by Cisco TMSPE. Optionally you can synchronize manually for immediate effect (see next task).

Manually Synchronizing Licenses (via Personal CMRs)

Personal Multiparty (PMP) licenses are automatically synchronized by Cisco TMSPE's daily synch of the associated Personal CMRs. You can synchronize manually if you want to use PMP licenses, or change the licensing mode, straight away:

1. We recommend that you synchronize during a maintenance window, or at least avoid doing it in peak hours.
2. In Cisco TMS, go to **Systems > Provisioning > Users**.
3. Under **Collaboration Meeting Room Templates**, click **TelePresence Conductor Settings**.
4. Find the relevant TelePresence Conductor and click its associated  icon. The icon is on the right-hand side (with a tool-tip labeled 'TelePresence Conductor Multiparty Licensing').
5. Click **Synchronize Now**.

Monitoring License Use

You can view how many licenses are installed, how many PMP licenses are assigned to users, and the peak usage of SMP licenses in the last 60 days:

In TelePresence Conductor go to **Status > Multiparty licenses**.

Managing Administration Changes to Personal CMRs

This section explains how to make administrator-level changes to the Personal CMR configuration in your 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 own CMRs.

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	<p>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).</p> <ol style="list-style-type: none"> 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. <p>The SIP Alias Pattern will always regenerate. The Numeric Alias Pattern never regenerates once it is set on a CMR.</p> <p>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).</p>
Removing CMR entitlement	<p>Set the CMR template for the group to <i>None</i>. This removes CMR capabilities from the users in that group.</p> <p>Note: To set sub-groups to <i>None</i>, the parent root group must be set to <i>None</i>.</p> <ol style="list-style-type: none"> 1. In Cisco TMS, go to Systems > Provisioning > Users 2. Select the relevant group. 3. Under Collaboration Meeting Room Templates, click <i>None</i> in the Active column. 4. In the Change Template for Group popup, click Yes.
Selecting a different template for a group	<ol style="list-style-type: none"> 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.

Configuring Conference Services

Deleting templates	<ol style="list-style-type: none"> 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	<p>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.</p> <p>Cisco TMSPE will register the change during the next health check. Or you can run a health check manually from the Provisioning Extension Diagnostics page (Run Health Check).</p> <p>The user's CMR will be displayed as out of sync. To synchronize, click Regenerate CMRs to have the change reflected on TelePresence Conductor.</p>
Manually synchronizing all Personal CMRs	<p>If you make changes to Personal CMRs and you want to use the Personal CMRs or PMP licenses straight away, you can synchronize them manually. To do this:</p> <ol style="list-style-type: none"> 1. In Cisco TMS, go to Systems > Provisioning > Users. 2. Under Collaboration Meeting Room Templates, click TelePresence Conductor Settings. 3. In the dialog window that opens, find the relevant TelePresence Conductor and click the  icon for it. The icon is on the right-hand side (with a tool-tip labeled 'TelePresence Conductor Multiparty Licensing'). 4. In the dialog window that opens, click Synchronize Now.

More Information

For details about the TelePresence Conductor Provisioning API, see *Cisco TelePresence Conductor Product Programming Reference Guide* at [Cisco TelePresence Conductor Programming Guides](#) page.

For details about CMR configuration settings, see "Deploying Collaboration Meeting Rooms" in *Cisco TelePresence Management Suite Provisioning Extension with Cisco Unified CM Deployment Guide* at [Cisco TelePresence Management Suite \(TMS\) Configuration Guides](#) page.

Configuring TMS Support for Two-Node Conductor Clusters

This feature applies if you use two-node clustered TelePresence Conductors (three nodes are not supported). You can configure Cisco TMS to automatically switch over to the subordinate Conductor if the primary Conductor node fails. TMS monitors the status of the primary node through a mix of polling and feedback requests. Failover happens only while the primary node is down, and TMS reroutes to the primary Conductor when it's available again.

While the primary node is down you can continue to schedule meetings as normal, without any manual intervention on the TMS. Some Conference Control Center functions are also available. If the primary node is still down at the scheduled start time, TMS switches the meeting to the subordinate node. Note that TMS does **not** display the subordinate node as an available bridge for booking. Conductor cluster behavior remains unchanged – calls may drop and have to dial back into their meetings, and some services may be temporarily unavailable during the cluster's recovery from a node failure.

Cisco TMSPE and its associated functions do not failover.

All failover operations are logged (see [TMS Logging for Conductor Failover, page 86](#)).

The "primary Conductor" is mainly a concept in TMS rather than Conductor. TMS designates a specific Conductor node in any cluster as the primary Conductor. TMS will always use this node (or revert to it after a node failure) in preference to the subordinate node in the cluster.

Subject to proper configuration of the cluster in TelePresence Conductor, TMS automatically knows which Conductors are present in a cluster. However, you do need to manually add each Conductor in the cluster as a system in TMS.

Before You Start

The cluster must already be configured in TelePresence Conductor.

Please review the *Release Notes* on the [CMR Premises solution documentation](#) listing page before you use this feature.

We recommend using the same Conductor for Cisco TMSPE, and as the primary Conductor in Cisco TMS.

TMS automatically designates the primary node, as the Conductor with at least one conference bridge and an alias defined. (TMS only ever adds bridges to one Conductor in the cluster.)

The TMS **Systems > Navigator** page for Conductor systems displays the **TelePresence Conductor** and **Conference Bridges** tabs only for the primary node, not for the subordinate node.

The **Clustering** tab on the **Systems > Navigator** page lists the peers in a cluster, and their status. If the nodes are reachable and TMS can communicate with them normally, the status is *OK*. Otherwise the status is *Inaccessible*.

Process to Configure TMS

This is a summary of the steps in TMS. Detailed instructions are available in the *Cisco TelePresence Management Suite Administrator Guide* on the [TMS Maintain and Operate Guides](#) page.

1. Add the primary TelePresence Conductor as a system in TMS.
2. Configure an alias for the primary Conductor.
3. Add the conference bridges for the primary Conductor.
4. Add the subordinate Conductor as a system in TMS.

Using 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.
- SIP Early Offer messaging is required as described in the [Early Offer](#) section.

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* on the [Cisco TelePresence Management Suite \(TMS\) Configuration Guides](#) listing page 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* on the [Cisco TelePresence Management Suite \(TMS\) Configuration Guides](#) listing page.

Task 3: Book the Conferences (Users)

Now users can book conferences.

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

When you save a conference, Cisco TMS emails you the meeting details with WebEx and TelePresence dial-in information. Depending on your site configuration you may also get emails from WebEx.

For details, see the chapter about scheduling CMR Hybrid meetings in Cisco TMS in *Cisco Collaboration Meeting Rooms (CMR) Hybrid Configuration Guide* on the [Cisco TelePresence Management Suite \(TMS\) Configuration Guides](#) listing page.

Task 4: Forward the Meeting Details (Users)

Forward the meeting email 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 TelePresence Management Suite Administrator Guide* on the [Cisco TelePresence Management Suite \(TMS\) Maintain and Operate Guides](#) listing page.
- For detailed configuration steps to enable this feature, see *Cisco Collaboration Meeting Rooms (CMR) Hybrid Configuration Guide* on the [Cisco TelePresence Management Suite \(TMS\) Configuration Guides](#) listing page.

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 Administration Changes to Personal CMRs](#), page 62.
- 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, page 48](#)).

- Cascading is not supported from one conference bridge to another bridge that is outside the boundaries of the local enterprise network.
- Multistream video is not available over cascade links.
- 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 based on the configured maximum number of cascades. The resources are reserved whether or not they are actually used.

For this reason, we recommend using the cascade option sparingly. Typically for large-scale meetings or for Personal CMR / rendezvous conferences used by VIP personnel.

- You should not enable cascading if it is critical to have certainty about resource availability. Such as a conference bridge that is reserved for scheduled conferences only.
- Cascade links share only a single screen of video between TelePresence Servers.

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 [Task 2: Enable Cascading in TelePresence Conductor, page 68](#).

Task 1: Create a Cascade-Enabled CMR Template

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

If the maximum number of cascades is set to 2, up to 3 bridges can be used for the conference.

A small number of cascades may result in insufficient resources, if the number of participants is large and the bridges have filled up.

A large number of cascades will result in resources being used up for the cascade links and will reduce the user experience for participants on the cascade bridges.

Task 2: Apply the CMR Template to a Group

1. In Cisco TMS, go to **Systems > Provisioning > Users**.
2. Under **Users and Groups**, choose the relevant group.
3. Under **Collaboration Meeting Room Templates**, select the radio button for the required template in the **Active** column.

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: Enable Cascading in TelePresence Conductor

1. In TelePresence Conductor, go to **Conference configuration > Conference templates**.
2. Select an existing conference template or click **New**.
3. Set an appropriate value for **Maximum number of cascades**.

A value of 0 disables cascading.

If the maximum number of cascades is set to 2, up to 3 bridges can be used for the conference.

A small number of cascades may result in insufficient resources, if the number of participants is large and the bridges have filled up.

A large number of cascades will result in resources being used up for the cascade links and will reduce the user experience for participants on the cascade bridges.

Localizing and Customizing the Solution

For TelePresence Server-hosted conferences, the supplied conference prompts (voice and text) are available in various languages in addition to the default English (U.S.). The TelePresence Conductor interface lets you select a language for the prompts from the **Conference configuration > Global settings**. These take effect at the Conductor level for all bridges managed by that Conductor.

You can optionally create and use your own customized conference prompts. These override the corresponding settings in Conductor, and take effect at the conference template level. They are managed through the conference bridge API.

You may want to use your own prompts if:

- You need a language that we don't supply.
- You want to change the language per conference template rather than per TelePresence Conductor.

The supplied languages include:

- Chinese (Simplified)
- Chinese (Traditional)
- French (France)
- French (Canada)
- Italian
- Korean
- Polish
- Portuguese (Brazil)
- Turkish

The *TelePresence Conductor Administrator Guide* has more information about the Cisco-supplied prompts, with a full list of the available languages.

Using Your Own Prompts

Prompts are customized using TelePresence Server API parameters. You apply the API parameters through Conductor, using JSON commands in the **Advanced Parameters** for the relevant conference templates.

For voice prompts, the audio files must be hosted on an external HTTP/HTTPS server. You specify the URL of the relevant audio file for a voice prompt, in the JSON command.

An example of how to use JSON to define custom parameters for the TelePresence Server is provided in the *TelePresence Conductor Administrator Guide*.

The following prompts are customizable:

Table 9 TelePresence Server Voice and Text Prompts

Voice		Text		
JSON Name	Message	JSON Name	Message	Comment
customPINEntryAudio	Please enter the security PIN followed by #.	customPINEntryMessage	Please enter the security PIN followed by #.	Used if PIN for all is required.

Table 9 TelePresence Server Voice and Text Prompts (continued)

Voice		Text		
JSON Name	Message	JSON Name	Message	Comment
customOptionalPINEntryAudio	Please enter the security PIN followed by #, <i>[one second pause]</i> or press # to continue.	customOptionalPINEntryMessage	Please enter the security PIN followed by # or press # to continue.	Used if no pin for guests is required.
customPINIncorrectAudio	You have not entered the PIN correctly, please try again.	customPINIncorrectMessage	You have not entered the PIN correctly, please try again.	
customPINFailedExitAudio	You have not entered the PIN correctly. This call will be disconnected.	customPINEntryFailedMessage	You have not entered the PIN correctly. This call will be disconnected.	
welcomeScreenAudio	Welcome to the conference. <i>[one second pause]</i>	welcomeScreenMessage	Welcome to the conference.	Text is only displayed if the conference does not have a name.
customOnlyParticipantAudio	<i>[one second pause]</i> You are the only call in this conference.	customVideoOnlyParticipantMessage	You are the only call in this conference.	This prompt plays one second of silence before any speech is heard. This will be fixed in a future release. Bug ID: CSCuz05735
customWaitingForChairAudio	Please wait until the host joins.	customWaitingForChairMessage	Please wait until the host joins.	

Table 9 TelePresence Server Voice and Text Prompts (continued)

Voice		Text		
JSON Name	Message	JSON Name	Message	Comment
NA	NA	customConferenceEndingMessage	The scheduled meeting ends in 1 minute.	
customConferenceEndedExitAudio	The conference has ended. Thank you for joining.	customConferenceEndedExitMessage	The conference has ended. Thank you for joining.	'Thank you for joining.' will be moved to the customDisconnectPlatitudeMessage in a future release. Bug ID: CSCuz05731
customParticipantDisconnectedExitAudio	This call has been disconnected. Thank you for joining.	customParticipantDisconnectedExitMessage	This call has been disconnected. Thank you for joining.	'Thank you for joining.' will be moved to the customDisconnectPlatitudeMessage in a future release. Bug ID: CSCuz05731
NA	NA	customMutedCanUnmuteMessage	Your audio has been muted. Press *6 to unmute.	
NA	NA	customMutedCannotUnmuteMessage	Your audio has been muted.	
NA	NA	customDisconnectPlatitudeMessage		'Thank you for joining.' will be moved to this message in a future release. Bug ID: CSCuz05731
NA	NA	customConferenceAutoDisconnectExitMessage	[empty]	Blank by default

Recommendation

Before changing any conference prompts settings, make sure there are no conferences running on the Conductor.

More Information

- For more information about the Cisco-supplied languages, see the *TelePresence Conductor Administrator Guide* on the [TelePresence Conductor Maintain and Operate Guides](#) listing page.

Configuring Conference Services

- For information about the API commands to customize voice or text prompts, see the *TelePresence Server API Reference Guide* on the [TelePresence Server Programming Guides](#) listing page.
- For information about recording voice prompts, see the article on the [TelePresence Server Maintain and Operate TechNotes](#) listing page.



Configuring Conference Features

This section assumes that basic configuration for the CMR Premises solution is complete. Typically you will already have done some of the tasks in this section as part of the initial implementation.

The tasks are grouped here for administrator convenience, from the view of enabling individual solution features rather than the overall solution as a whole.

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Changing the Conference Placement Method

This section describes how to optionally specify the method that Conductor uses to select bridges for conferences:

- **Favor Scheduled:** selects the bridge with the fewest conferences currently in progress (better for conferences that start at the same time). This is the default setting.
- **Favor CMRs:** selects the bridge with the most spare capacity (better for conferences with staggered start times).

Favor Scheduled treats all bridges equally so that the smaller bridges in the pool get the same number of conferences as the bigger bridges. A disadvantage to this approach is that meetings on the smaller bridge have a greater risk of failing to accommodate additional participants.

Example 1: Two bridges - each with 10 ports. Bridge A has a 4-port conference started in the previous hour (leaving 6 available ports). Three new calls come in to three new conferences, none of which reserves additional resources. They are all placed on Bridge B (consuming 3 ports). Five minutes later, each of those conferences tries to grow to 4 ports (requiring a total 12 ports) and each runs out of room. If one conference had been placed on Bridge A, they all would have fit.

In this first example, if **Favor Scheduled** were selected, the bridge with the fewest conferences currently running would be selected. The first new conference would be placed on Bridge B, and one of the remaining new conferences would be placed on Bridge A and the other on Bridge B, so that all conferences would fit.

Example 2: Same two bridges as Example 1. Bridge A has an 8-port conference (leaving 2 available ports). The three new conferences only grow to 3 ports. Like Example 1, the first is placed on Bridge B and one of the remaining two is placed on Bridge B and the other on Bridge A. However, in this case, the one placed on Bridge A doesn't fit.

In this second example, if **Favor CMRs** were selected, all conferences would fit if each conference grew to its full size before the next conference was placed.

To change the conference placement method

1. In Conductor, go to **Conference configuration > Global settings**.
2. Select the required conference placement setting.

Changing the Switching Mode on the TelePresence Server

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

- Segment-switched (default)
- Room-switched

This section describes how to optionally change the TelePresence Server mode.

Note: Conference participants with Cisco TelePresence IX5000, TX Series, or Cisco CTS endpoints can manually choose between segment-switched or room-switched mode.

Changing the Mode on Cisco TMS-Managed Conferences (Administrator)

To change the mode for Personal CMR conferences (which are managed through Cisco TMS):

1. In Cisco TMS go to **Systems > Provisioning > Users**.
2. Under **Collaboration Meeting Room Templates** click the edit button for the appropriate CMR template.
3. Check **Advanced Parameters**.
4. Type the following JSON command into the **Advanced Parameters** field:

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

Changing the Mode on the TelePresence Conductor (Administrator)

For rendezvous conferences (which are managed with TelePresence Conductor) the **Segment switching** field in the conference template determines the switching mode. To change the mode:

1. In TelePresence Conductor go to **Conference configuration > Conference templates**.
2. Click the appropriate conference template.
3. Change the **Segment switching** setting as appropriate. *Yes* for segment switching or *No* for room switching.

Changing the Mode on Endpoints (User)

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

Managing iX Protocol Settings

The iX protocol is required for these solution features:

- ActiveControl
- Multistreaming (for enhanced layouts)

This table describes the default iX settings in the solution, and where the settings can be configured for each affected component.

Table 10 iX configuration settings

Component	iX setting...
CE-based 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. No action needed unless you have changed the default.
TC-based 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. No action needed unless you have changed the default.
TelePresence Server	Enabled by default. No action needed unless you have changed the default.
TelePresence Conductor	Enabled by default. No action needed unless you have changed the default. You can verify the current Conductor setting as follows: <ol style="list-style-type: none"> 1. Go to the Advanced parameters for the template applied to the TelePresence Servers. 2. The Enable iX protocol field should be set to <i>True</i>.
Cisco TMSPE (for Personal CMRs)	Enabled by default for Personal CMRs. No action needed unless you have changed the default. You can verify the current Conductor setting as follows: <ol style="list-style-type: none"> 1. In Cisco TMS, go to Systems > Provisioning > Users and select the relevant CMR template. 2. On the Edit CMR Template page, check the check box for Custom Parameters. 3. In the Advanced parameters field, enter {"callAttributes": {"iXEnabled": true}} and click Save.
Unified CM (per trunk)	Depends on the SIP profile in use. iX is enabled by default in some profiles (including <i>Standard SIP Profile For TelePresence Conferencing</i> and <i>Standard SIP Profile For VCS</i>) but not in all. iX is disabled by default in manually created profiles. <p>You can manually enable the iX protocol as follows:</p> <ol style="list-style-type: none"> 1. Select the relevant SIP profile (Device > Device Settings > SIP Profile). 2. In the SIP Profile Configuration window, check the Allow iX Application Media check box and click Save. 3. Apply the updated SIP profile to each affected trunk (Device > Trunk; click Apply Config).

Examples of iX Call Handling Behavior

Table 11 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 - if no support for iX and no SDP implementation	Endpoint may reboot or calls may fail

Using ActiveControl

ActiveControl allows participants in a video conference to view and change some aspects of the conference directly from the Touch controller on their endpoints. Users can see a list of participants and other conference information, and on certain models they can also change the local layout display and disconnect other participants.

Limitations and Requirements

- The iX protocol is required for this feature to work to endpoints. iX is enabled by default in most solution components, *except* certain SIP profiles. Check these profiles and if necessary enable the iX protocol as described in [Managing iX Protocol Settings, page 76](#).
 - The SIP profiles for multistream-capable endpoints.
 - The SIP profile for each trunk between multistream endpoints and Conductor.
- Endpoints need Touch controllers, and software version TC7.1.3 or later or CE 8.0 or later. ActiveControl is not supported on other endpoints, including the Cisco TelePresence IX, TX or DX Series, Cisco TelePresence System CTS, or Cisco Jabber.
- 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/iX protocol traffic is not encrypted.
- ActiveControl is a SIP only feature. H.323 interworking is not supported.

Caution: Care is needed with connections to external networks which may not support the iX protocol (including systems running Unified CM 8.x or earlier). To avoid unpredictable results and call failures in the event of mismatched iX capabilities, you should disable the iX protocol for all such outward connections. See [Limiting ActiveControl in External Connections, page 79](#) for instructions.

Limiting ActiveControl in External Connections

The iX protocol 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 section 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.

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, as follows:

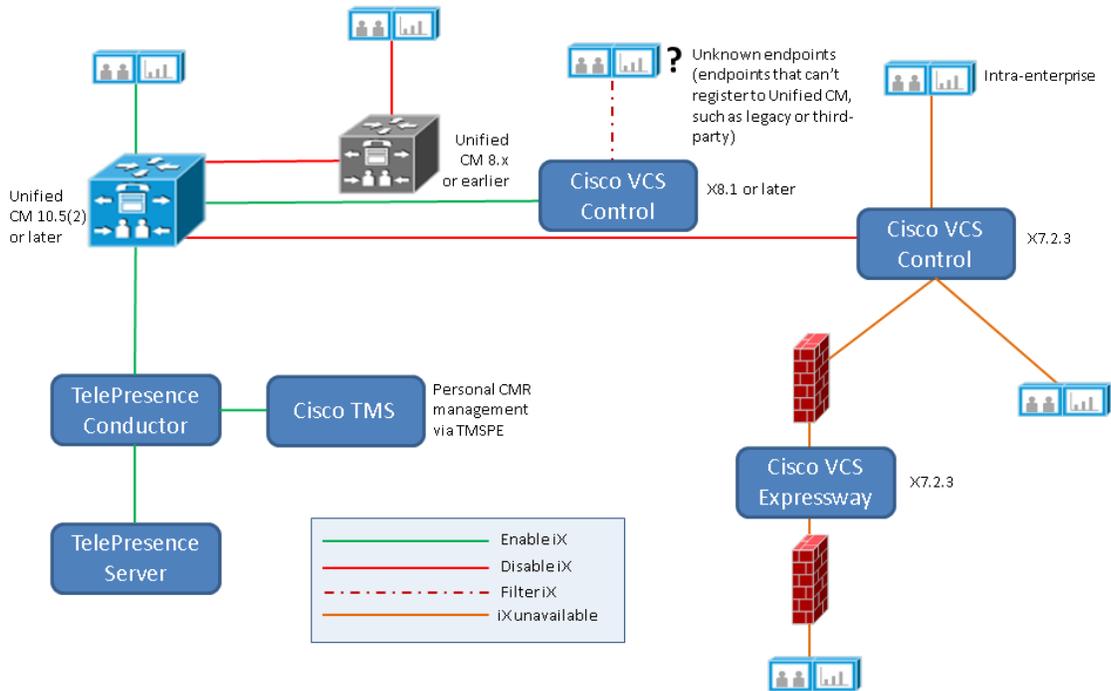
- Deployments that connect to Unified CM 8.x or earlier systems. In these cases the older Unified CM systems will reject calls from ActiveControl-enabled devices. To avoid these calls failing, leave iX switched off on any trunk towards the Unified CM 8.x device in the CMR Premises network. If the 8.x device is reached via a SIP proxy, ensure that iX is disabled on the trunk towards that proxy.
- 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.

Table 12 Summary of iX configuration requirements in the CMR Premises network

Network connection from...	Network connections to...	Can you enable iX (ActiveControl)?
Unified CM 10.5(2)	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 or later / 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 or later / 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

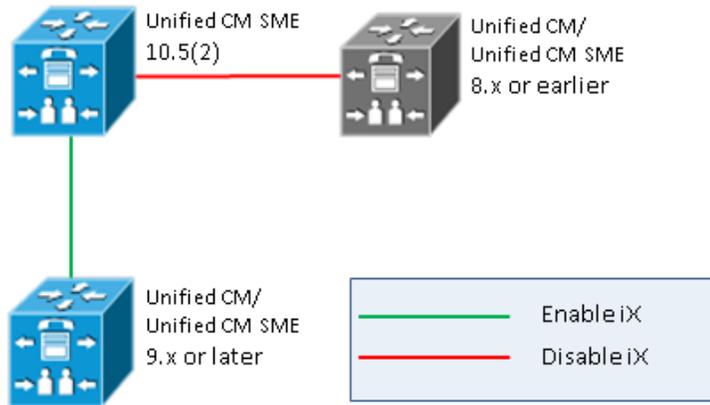
Figure 11 Where to enable/disable iX in outward connections from Unified CM-managed systems



Note: This illustration does not show any business-to-business scenarios. The elements shown are all sited within the local enterprise.

Configuring Conference Features

Figure 12 Example iX configuration in a Unified CM Session Management Edition deployment



Audio-Only Quality Setting in Ad Hoc Conferencing

TelePresence Conductor supports audio-only as a quality setting (service level) for TelePresence Server conference bridges.

We provide a default audio-only option (**Conference configuration > Quality settings**) which you can apply 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. 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 Cisco TelePresence MCU Series 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.

Managing Multistream Video (Supports Enhanced Layouts)

Multistreaming is enabled by default in most solution products, but some configuration is required as described here.

Requirements

- Multistream-capable endpoints running software version CE8.0 or later (Cisco TelePresence MX200 G2, MX300 G2, MX700, MX800, SX20, SX80). *Multistreaming is off by default in the endpoints.*
- Cisco TelePresence Server on Virtual Machine, Cisco Multiparty Media 310/320, or Media 820 running TelePresence Server 4.2 software or later.
- Unified CM Version 11.0(1a)SU1 or later. We do not recommend Unified CM Version 10.5(2) for multistreaming.
- The iX protocol is required for this feature to work to endpoints. iX is enabled by default in most solution components, *except* certain SIP profiles. Check these profiles and if necessary enable the iX protocol as described in [Managing iX Protocol Settings, page 76](#). The SIP profiles for multistream-capable endpoints. The SIP profile for each trunk between multistream endpoints and Conductor.
- Do not disable the iX protocol in any conference templates in Conductor or in any CMR templates in Cisco TMSPE.

Limitations

Some restrictions currently apply to enhanced layouts. See the *Limitations* section of the *CMR Premises Release Notes* on the [CMR Premises solution documentation](#) web page.

Enabling Multistreaming

Task 1: Endpoints

Configure the endpoints to support multistreaming. Go to **System Configuration > Conference** and set **Multistream Mode** to *Auto*.

Task 2: TelePresence Server

The TelePresence Server supports multistreaming by default and you do not need to configure it.

Task 3: Unified CM Trunk Configuration

Make sure that each Unified CM trunk SIP profile is configured as follows:

1. **SDP Transparency Profile** is set to *Pass all unknown SDP attributes*.
2. **Early Offer support for voice and video calls** is set to *Best Effort (no MTP inserted)*.
3. **Allow iX Application Media** is checked.

Note: You can't modify the settings on default SIP profiles supplied with Unified CM. If you are using a default SIP profile, copy the profile settings to a new SIP profile. Then update all trunks to use the new profile.

Task 4: Adjust Unified CM Maximum Incoming SIP Message Size

In multistreaming mode the TelePresence Server and endpoints produce larger SIP messages than for single-stream calls. To avoid possible call failure, follow these steps so that Unified CM correctly handles the larger SDP size.

1. In Unified CM, choose **System > Service Parameters**.
2. Select the required Unified CM in the Server box.
3. Select Service: *Cisco CallManager (active)*.

Configuring Conference Features

4. Click **Advanced**.
5. Change **SIP Max Incoming Message Size** to at least 18000 and click **Save**.

Disabling Multistreaming

You can optionally switch off multistreaming. Either for individual endpoints (assuming you have previously configured them for multistreaming), or in the Conductor conference templates or the CMR templates in Cisco TMSPE. You can also disable multistreaming at trunk level, by switching off the iX protocol for a specific Unified CM-Conductor trunk. However, this is not recommended as it *also has the effect of disabling ActiveControl*. In which case non-multistream endpoints cannot support ActiveControl for participant lists and conference control.

To disable multistreaming for individual endpoints:

On the endpoint, go to **System Configuration > Conference** and set **Multistream Mode** to *Off*.

To disable multistreaming in Conductor templates:

1. In Conductor, go to **Conference configuration > Conference templates** and select the first conference template.
2. In the **Advanced parameters** section, click **Edit**. The **Advanced Template Parameters** page opens.
3. In the **Custom parameters** field, type the following JSON command:

```
{"callAttributes":{"multistreamMode":"multistreamOff"}}
```
4. Select the check box next to the **Custom parameters** field.
5. Repeat for other templates as required.

To disable multistreaming in CMR templates:

1. In Cisco TMS, go to **Systems > Provisioning > Users** (to access TMSPE).
2. In the Collaboration Meeting Room Templates section, select the first template and click the Edit icon.
3. Select the check box next to the **Advanced Parameters** field.
4. In the **Advanced Parameters** field, type the following JSON command:

```
{"callAttributes":{"multistreamMode":"multistreamOff"}}
```
5. Click **Save**.
6. Repeat for other templates as required.

Troubleshooting

If multistream video does not work, try these steps:

Element	Check that ...
Endpoints	Conference > Multistream Mode and Conference > ActiveControl Mode settings are enabled (set to <i>Auto</i>). iX protocol is enabled in the SIP profiles for the endpoints.
Unified CM	iX protocol is enabled on the relevant trunks.
TelePresence Conductor templates	iX protocol is enabled in the Advanced template parameter page.
Cisco TMSPE Personal CMR templates	iX protocol is enabled in the Advanced parameters field. Enter <code>{"callAttributes":{"iXEnabled": true}}</code> .
Various	Bandwidth values for the relevant links, endpoints and templates are valid. Multistream is disabled if the call rate drops below 512k.

Active Meeting Manager (Preview Feature)

The Active Meeting Manager (AMM) preview feature will be removed from the solution in an upcoming release. Customers are therefore advised not to deploy this feature.

You can optionally disable AMM in Cisco TMSPE so that users don't see it in their CMR portal pages. You may want to do this as an interim measure until we remove the feature. To disable AMM:

1. In Cisco TMS Portal, go to **Administrative Tools > Configuration > Provisioning Extension Settings > Collaboration Meeting Room**.
2. Set **Allow Active Meeting Manager** to *No*.



Managing Logs and Reporting Data

TMS Logging for Conductor Failover

If the primary TelePresence Conductor in a cluster goes offline for any reason, the TMS will transfer to a clustered peer node. This is subject to previous configuration in Cisco TMS, as described in [Configuring TMS Support for Two-Node Conductor Clusters, page 64](#)).

Cisco TMS records all such transfers and associated messages in the **Conductorfailover-liveservice** log. The log is activated by default. A log entry is triggered if a packet cannot be delivered to the primary Conductor. And when TMS starts using the primary Conductor again.

Logging for Conductor Resource Usage

TelePresence Conductor collects resource usage data based on a set of predefined events, which trigger a log record when they occur. Up to 10 GB of log entries can be stored and be available for download. You can use a third-party tool such as Microsoft Excel to analyze the entries. The log includes information designed to help you determine everyday bridge utilization and hourly usage.

Conductor also writes a log record for every bridge at midnight each day. This ensures that unused bridges are also recorded in the log (as 0% utilization).

Logging is automatically enabled in Conductor.

To download the log:

In Conductor, go to **Maintenance > Diagnostics > Usage report**. JSON, CSV, or XML formats are available.

More Information

See the Conductor online help or *Cisco TelePresence Management Suite Administrator Guide* on the [TMS Maintain and Operate Guides](#) page.



Appendix 1: Adding the Unified CM Normalization Scripts

Skip this section if you are upgrading from an existing CMR Premises Release 4.0 or later deployment and you added the latest scripts when you installed your existing release.

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. The normalization scripts have not changed since the previous solution release. You only need to add the normalization scripts for new installations.

The following normalization scripts are available:

Table 13 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. Although the scripts are auto-installed with the software, you should always manually download the latest versions of the scripts 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.

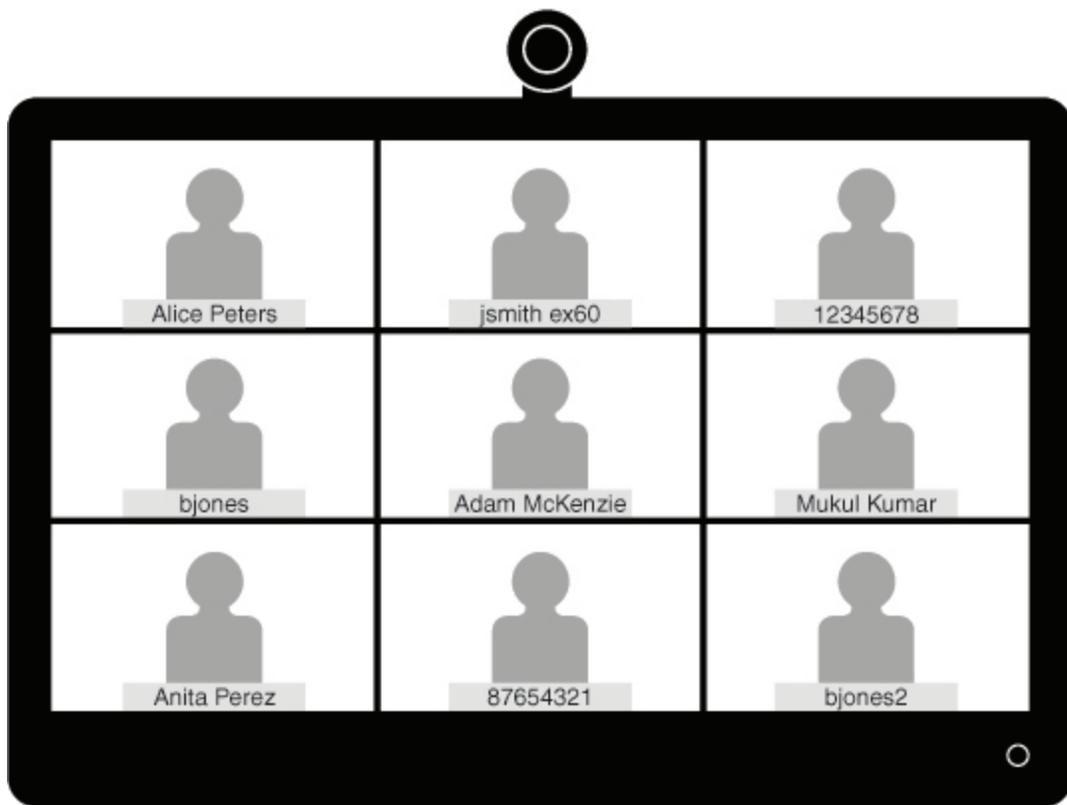
Appendix 1: Adding the Unified CM Normalization Scripts

10. To install the scripts onto the SIP trunks:
 - a. On the Unified CM go to **Device > Trunk** 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: Provisioning Display Names Across the Solution

Display names are used across endpoints such as TelePresence to identify a user to other participants. The preferred format is the user's first name and last name (for example *Alice Peters*) or the name of the conference room where the endpoint is installed (for example *MDR21-3-#120* for room 120 on floor 3 of building 21 in Madrid).

Figure 13 Display Names Example



If no display name is explicitly provisioned the system chooses one based on the endpoint's SIP URI or device number. The name will reflect how the particular users and rooms have been provisioned. As a result name information in conferences may be displayed in inconsistent formats, as shown in the example above.

This topic describes how to provision display names so that they appear in a consistent format.

- For information on provisioning endpoints registered to Unified CM see [Provisioning Display Names for Unified CM-Registered Endpoints, page 90](#).
- If you also have Cisco VCS-registered endpoints in your network, see [Provisioning Display Names for Cisco VCS-Registered Endpoints, page 92](#).

Provisioning Display Names for Unified CM-Registered Endpoints

This section describes how to update display names in the Cisco Unified CM Administration user interface for Unified CM registered endpoints. It explains how users, devices, and lines are configured so that the names display correctly, and also describes some optional advanced settings for trunks.

Users, Devices and Lines

On the Cisco Unified CM Administration user interface, new users are configured in the **User Management > End User** window. You can create new users or 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 are not 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#**.

Display names are configured on the line that is associated with the device. So the display name is set for a particular device to which that user is associated. For shared lines it is possible to set different display names on each appearance of the line. However we recommend you to use the same display name across all devices—using the user's first name and last name or the conference room name.

Using Bulk Administration

You can use Bulk Administration to set the display names for Unified CM-registered endpoints for large numbers of users.

Before You Start

You must first have users configured and associated to devices. For information on provisioning users, see *Cisco Unified Communications Manager Administration Guide* at [Cisco Unified Communications Manager \(CallManager\) Maintain and Operate Guides](#) page.

Process

1. To export user records, see "*Export User Records*" in *Cisco Unified Communications Manager Administration Guide*, at [Cisco Unified Communications Manager \(CallManager\) Maintain and Operate Guides](#) page.
2. In the resulting CSV file that you download, copy the first name and last name columns into a new CSV file.
3. To upload this CSV file to the appropriate device, see "*Update phones using custom file*" in *Cisco Unified Communications Manager Administration Guide*, at [Cisco Unified Communications Manager \(CallManager\) Maintain and Operate Guides](#) page.

Using Manual Configuration

You can manually configure the display name for a Unified CM-registered device. The device may be a shared conference room device or assigned to a specific user.

Before You Start

You must first have users configured and associated to devices. For information on provisioning users, see *Cisco Unified Communications Manager Administration Guide* at [Cisco Unified Communications Manager \(CallManager\) Maintain and Operate Guides](#) page.

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.

Appendix 2: Provisioning Display Names Across the Solution

3. Choose the line for the device from the **Association** area on the left hand side of the window. This takes you to the **Directory Number Configuration** window.
4. In the **Directory Number Information** area, enter the display name in **Alerting name** and **ASCII Alerting name**. This is 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 **Display (Caller ID)** and **ASCII Display (Caller ID)**. This will appear on devices which are on the same cluster as the Cisco Unified CM.
6. For TMS-managed endpoints, set the **Description** field for each endpoint to match the display name specified in the previous step for the associated line. TMS uses the **Description** [not the **Display (Caller ID)**] as the label/display name in Active Meeting Manager and the Conference Control Center.
7. For shared lines, to ensure changes appear on all devices, check **Update Shared Device Settings**, and click **Propagate selected**.

For the display name in the Alerting Name, ASCII Alerting Name, Display (Caller ID) and ASCII Display (Caller ID) fields, we recommend using 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 in shared spaces.

8. Click **Save**.

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

Optional Settings for all Trunks

The following settings can optionally be configured on the **Trunk Configuration** window for further control over display name behavior:

- In the **Device Information** area, check **Transmit UTF-8 for Calling Party Name** to transmit the ASCII Alerting Name on devices that support UTF-8.
- To hide display names on a per-trunk basis, in the **Inbound Calls** area select *Restricted* from the **Connected Name Presentation** drop-down.
- In the **Caller Information** area, you can set **Caller Name** to override individual device display names.

Provisioning Display Names for Cisco VCS-Registered Endpoints

Two methods are available to provision display names for Cisco VCS-registered endpoints.

- **FindMe templates.** Use this method to provision individual users. Each template contains the details for each user, including their Display Name.
- **Direct Manage.** Use this method to provision Conference Room endpoints. Each Display Name is individually provisioned for each Conference Room endpoint on the endpoint itself.

TMS-Managed Endpoints

For TMS-managed endpoints, an extra configuration recommendation applies. See [Display Name for TMS-Managed Endpoints, page 93](#) below.

FindMe

FindMe is a Cisco TMSPE feature which allows users to specify which video and audio devices should ring when someone calls their ID. A single ID can be used to reach multiple devices associated with that ID. 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, see *Deploying FindMe in Cisco TelePresence Management Suite Provisioning Extension with Cisco VCS Deployment Guide*, at [Cisco TelePresence Management Suite Provisioning Extension](#) page.

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 have large numbers of users we recommend that you import their details using Active Directory or LDAP. Then user display names are imported and set automatically.

Before You Start

Cisco TMSPE must be installed and provisioned. 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*, at [Cisco TelePresence Management Suite \(TMS\) Configuration Guides](#) page.

Process

1. In 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. If the user was imported using LDAP, the Display Name is already associated with the user.
4. Click **OK**.

Setting Caller ID Display Names for Conference Rooms

This section describes how to use the Direct Manage method to set Display Names for Conference Rooms.

1. In 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 you want to configure. This takes you to the user interface of the selected endpoint.
4. Choose **Configuration > System Configuration**, and search for 'display' in the search field (left side of window).

Appendix 2: Provisioning Display Names Across the Solution

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**.

Display Name for TMS-Managed Endpoints

This step is recommended for TMS-managed endpoints, to avoid labeling mismatches in Active Meeting Manager (and Conference Control Center).

1. Set the **Name** field in TMS to match the **Display Name** defined for the endpoint.

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