Cisco Collaboration Meeting Rooms (CMR) Premises

Primary Deployment Guide with Cisco Unified Communications Manager

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Release 5.0

Cisco TelePresence Conductor XC4.0

Cisco TelePresence Management Suite 15.0

Cisco TMS Provisioning Extension 1.5

Cisco TelePresence Server 4.2

Introduction

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 Overview*.

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. For information about the secondary deployment, which uses the Cisco TelePresence Video Communication Server (Cisco VCS) for call control, refer instead to the secondary deployment guide.

Core Architecture

Figure 1: High-level view of the solution architecture
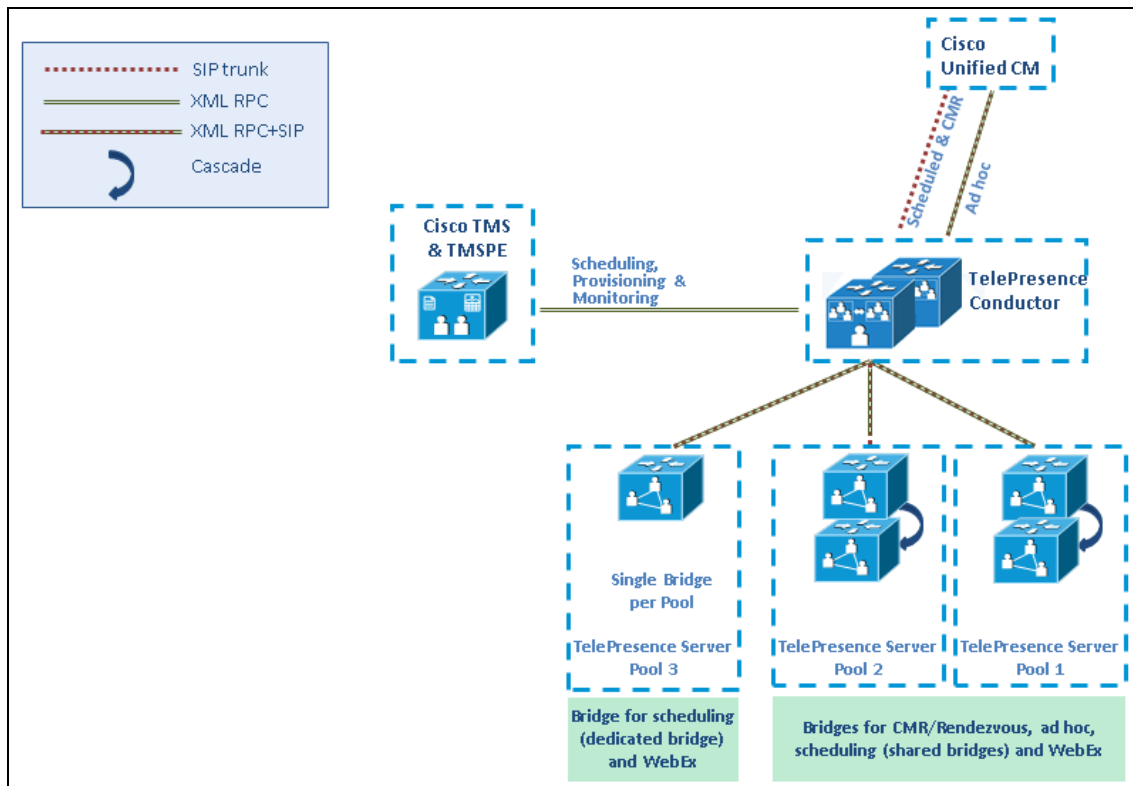
Solution Products and Required Versions

To deploy the solution you need some or all of the products listed below, depending on which solution features you use. Each product that you use must be running at least the minimum version specified in the tables below:

Table 1   Required versions for infrastructure products

Product	Minimum version	Recommended version	Role
TelePresence Conductor	XC4.0	XC4.0*x* (latest)	Conference resource allocation
Cisco TMS	15.0	15.0	Conference management & scheduling
Cisco TMSPE	1.5	1.5	Conference provisioning
TelePresence Server	4.2	4.2*x* (latest)	Conference bridge resource
MCU 5300 Series, MCU 4500 Series, MCU 4501 Series, MCU MSE 8510	4.5*x* (latest)	4.5*x* (latest)	Conference bridge resource
Unified CM In networks with multiple Unified CM installations, for full solution functions each one must be at the required version.	10.5(2)	10.5(2)	Call control See the solution Release Notes, *Compatibility* section, for information about using earlier versions of Unified CM.
Cisco Expressway-C	X8.5.3	X8.5.3	Remote endpoint registration to Unified CM, business-to-business connectivity, and Microsoft Lync interworking.
Cisco Expressway-E	X8.5.3	X8.5.3	Secure firewall traversal
Cisco TMSXE	5.0	5.0	[Optional] Conference scheduling for Microsoft environments
Microsoft SQL Server	Microsoft SQL Server 2008 R2 64-bit	Microsoft SQL Server 2012 SP2 64-bit	Database for Cisco TMS
Cisco WebEx	WBS (T) T29.13	WBS (T) T30	Cloud conferencing with audio, video, and content sharing capabilities for WebEx clients

Microsoft Lync

For details about the recommended Microsoft Lync server and client versions, see the associated *Cisco Expressway with Microsoft Lync Deployment Guide*, or the *Cisco TelePresence Microsoft Lync and Cisco VCS Deployment Guide* for VCS-based deployments.

Table 2   Required versions for endpoints and soft clients

Product	Minimum version	Recommended version
Cisco TelePresence IX5000	IX 8.0.1	IX 8.0.4
Cisco DX70, DX80	10.2.4	10.2.4
Cisco DX650	10.2.4	10.2.4
Cisco TelePresence MX200 G2, MX300 G2, MX700, MX800	TC7.1.3	TC7.3.3
Cisco TelePresence Quick Set SX10, SX20	TC7.1.3	TC7.3.3
Cisco TelePresence EX Series EX60 and EX90	TC7.1.3	TC7.3.3
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 1.10.5	CTS 1.10.11
Cisco TelePresence System CTS 1100, CTS 1300	CTS 1.10.5	CTS 1.10.11
Cisco TelePresence System CTS 500-32	TX6.1.2	TX6.1.9
Cisco TelePresence TX9000 and TX9200 immersive systems	TX6.1.2	TX6.1.9
Cisco Unified IP Phone 9900 Series and 8900 Series	9.4(2)	9.4(2)
Cisco Jabber for Android	10.6	10.6
Cisco Jabber for iPad		
Cisco Jabber for iPhone		
Cisco Jabber for Mac		
Cisco Jabber for Windows		
Cisco Jabber Video for TelePresence	4.8.8	4.8.8

Deployment Requirements and Best Practices

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 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.

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.

To set the SIP TCP timeout value:

1. Access the command line interface (this setting cannot be configured through the web interface).
2. Type the following 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 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 (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 TelePresence Conductor **Location** and on the call controller (**SIP Trunk Security Profile**). See *Cisco TelePresence Conductor with Unified Communications Manager Deployment Guide* for details.

Media encryption from Cisco Expressway / Cisco VCS

If you want to apply media encryption to calls that egress the Expressway solution towards 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 towards 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 towards the Internet. To do this set **Media encryption mode** on that zone to *Auto*.

Resilience and Clustering

We recommend that the solution components are deployed in cluster configurations, to provide redundancy in case of a failure. Deploying clusters of TelePresence Conductors and multiple bridge pools ensures resilience for escalated and Personal CMR / rendezvous conferences.

Resiliency is not supported for conferences scheduled via Cisco TMS. Although Cisco TMS supports multiple TelePresence Conductors, this is for scale and not for resilience. If the TelePresence Conductor configured in Cisco TMS is down, the administrator needs to manually fail over to another TelePresence Conductor cluster member in TMS.

For details about Conductor clustering see *Cisco TelePresence Conductor Clustering with Cisco Unified Communications Manager Deployment Guide*.

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.

■ 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 39).

  – 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 34 for more details.

■ 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.

■ 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.

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.

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

CMR Premises 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.

Upgrading an Existing Deployment

This section describes how to upgrade an existing CMR Premises Release 3.0 or Release 4.0 deployment to Release 5.0. If you are installing CMR Premises for the first time, skip this section and go to .

Configuration Prerequisites for Upgrades

Make sure the following items are in place before you upgrade the earlier solution release configuration to CMR Premises Release 5.0:

- Endpoints must be registered to Unified CM (or to Cisco VCS in the case of any legacy H.323 endpoints in the network).
- To ensure operational continuity in the network we recommend that the solution components are installed in the sequence specified in Recommended Implementation Sequence for Upgrades, page 14.

Configuration Checklist for Upgrades

This topic summarizes the CMR Premises configuration process to upgrade an existing solution deployment to 5.0.

Task 1: Upgrade Product Versions

Upgrade/install each product in your solution deployment to the required version for 5.0, listed in Solution Products and Required Versions, page 3. Follow the sequence specified in Recommended Implementation Sequence for Upgrades, page 14.

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

If you use Multiparty Licensing with PMP licenses, you do not need a separate license for Cisco TelePresence Management Suite Provisioning Extension (Cisco TMSPE) in order 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 **Systems > Provisioning** menu in TMS).

At this stage, do *not* update your configuration for 5.0 functionality.

Task 2: Verify New Versions in Existing Configuration

Verify that the new software runs satisfactorily on your existing solution Release 3 / Release 4 configuration and that the network is functioning as you expect.

Task 3: Check Prerequisites are Complete

Check that all prerequisites listed in Configuration Prerequisites for Upgrades, page 11 are complete.

Task 4: Check Solution Release Notes

Check for any configuration requirements in the latest solution release notes for CMR Premises 5.0 on Cisco.com and action any necessary steps.

Task 5: Configure the Conference Bridges, Conductor and the Call Control Device

Configure the TelePresence Conductor, its conference bridges (TelePresence Server recommended) and Unified CM for CMR Premises conferencing. See Connecting the Conference Bridges, Conductor, and Unified CM, page 21 for instructions.

Task 6: Add Latest Normalization Scripts to Unified CM

Skip this task if you are upgrading from an existing CMR Premises Release 4.0 deployment and you added the latest scripts when you installed Release 4.0.

Install the latest TelePresence normalization scripts on the SIP trunks. See Appendix 1: Adding the Unified CM Normalization Scripts, page 64 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, and 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: Convert to SIP Early Offer

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

SIP Early Offer is recommended in all cases, and required for CMR Hybrid conferences and some third party services. See Configuring Early Offer (and Fallback to Delayed Offer) for SIP Trunks, page 25 for instructions.

Task 8: Deploy the Cisco Expressway for Remote Access (Optional)

If you want 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 Configuring the Cisco Expressway or Cisco VCS, page 41 for instructions.

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

If you want to support interoperability with Microsoft Lync, follow the instructions to configure the Cisco Expressway in the latest *Cisco Expressway and Microsoft Lync Deployment Guide* on the Cisco Expressway Configuration Guides page.

Task 10: Deploy the Cisco VCS for H.323 Interworking (Optional)

If you want participants with H.323 endpoints to participate in the video conferences, add a Cisco VCS for those endpoints to register to. See Configuring the Cisco Expressway or Cisco VCS, page 41 for instructions.

Task 11: Verify ActiveControl Configuration

Check that the iX protocol (a prerequisite for ActiveControl to endpoints) is configured correctly in the relevant solution components, as described in Using ActiveControl, page 56.

If your CMR Premises network connects to Unified CM systems running Version 8.*x* or earlier, or to third-party networks, to avoid unpredictable results you should disable the iX protocol on all relevant trunks to isolate iX traffic from external systems that do not support it. Follow the instructions in Limiting ActiveControl in External Connections, page 58.

Task 12: Set Up CMR Hybrid (Optional)

To set up an integration with the CMR Hybrid service, see Using CMR Hybrid in Scheduled Conferences, page 50.

After you have set up the integration, you can optionally add WebEx meetings to Personal CMRs. See Using CMR Hybrid with Personal CMRs, page 51.

Task 13: Standardize User Display Names

We recommend that you follow the configuration steps in Appendix 2: Provisioning Display Names Across the Solution, page 66 to ensure that the names displayed for participants in conferences are consistent across the solution.

Recommended Implementation Sequence for Upgrades

Table 3 Recommended upgrade / install sequence for CMR Premises components

Order	Component
1	Endpoints (endpoints can be upgraded in any order)
2	Unified CM
3	Cisco Expressway, if used
4	Cisco VCS, if you need to support calls from legacy/H.323 endpoints in your network
5	Cisco TMS
6	Cisco TelePresence MCU Series, if used
7	TelePresence Server
8	TelePresence Conductor
9	Cisco TMSPE
10	Cisco TMSXE, if used

First-Time Deployments

This section describes how to implement CMR Premises Release 5.0 as a first-time deployment. Skip this section if you are upgrading from an earlier solution release, and go to Upgrading an Existing Deployment, page 10.

Configuration Prerequisites for First-Time Deployments

Make sure the following items are in place before you configure CMR Premises 5.0:

- You need access to the administration web interfaces of the following devices on your network:
  - A Unified CM, already configured with a base configuration. Ensure connectivity by registering at least three endpoints to Unified CM. Then check they can all call each other with voice and video. For Unified CM-related information, see the Cisco Unified Communications Manager documentation on Cisco.com.
  - Cisco TMS is required for personal CMR and scheduled conferencing, as well as for conference provisioning and monitoring. For Cisco TMS-related information, see the Cisco TelePresence Management Suite documentation on Cisco.com.
  - A TelePresence Conductor, configured according to the *Cisco TelePresence Conductor Virtual Machine Installation Guide* and reachable via the network. For Conductor-related information, see the Cisco TelePresence Conductor documentation on Cisco.com.
  - One or more conference bridges. We recommend TelePresence Servers, but MCUs are supported as an optional addition. Basic configuration for each conference bridge must be complete, as described in the relevant Installation Guide or Getting Started Guide:
    - TelePresence Server on Multiparty Media 820
    - TelePresence Server 7010
    - TelePresence Server MSE 8710
    - TelePresence Server on Virtual Machine
    - TelePresence Server on Multiparty Media 310/320
    - MCU 5300 Series
    - MCU 4500 Series
    - MCU MSE 8420
    - MCU MSE 8510
- Endpoints must be registered to Unified CM (or to Cisco VCS in the case of any legacy H.323 endpoints in the network).
- All devices must be running the software and firmware versions listed in Solution Products and Required Versions, page 3.
- To ensure operational continuity in the network we recommend that the solution components are installed in the sequence specified in Recommended Implementation Sequence for First-Time Deployments, page 19.

Configuration Checklist for First-Time Deployments

This topic summarizes the solution configuration process to deploy CMR Premises for the first time.

Task 1: Install Required Product Versions

Install each product in your solution deployment at the required version for 5.0, listed in Solution Products and Required Versions, page 3. Follow the sequence specified in Recommended Implementation Sequence for Upgrades, page 14.

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

If you use Multiparty Licensing with PMP licenses, you do not need a separate license for Cisco TelePresence Management Suite Provisioning Extension (Cisco TMSPE) in order 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 **Systems > Provisioning** menu in TMS).

Task 2: Check Prerequisites are Complete

Check that all prerequisites listed in Configuration Prerequisites for First-Time Deployments, page 16 are complete.

Task 3: Check Solution Release Notes

Check for any configuration requirements in the latest solution release notes for CMR Premises 5.0 on Cisco.com and action any necessary steps.

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

Configure the TelePresence Conductor, its conference bridges (TelePresence Server recommended) and Unified CM for CMR Premises conferencing. See Connecting the Conference Bridges, Conductor, and Unified CM, page 21 for instructions.

Task 5: 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 64 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, and 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 6: 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 Configuring Early Offer (and Fallback to Delayed Offer) for SIP Trunks, page 25 for instructions.

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

If you want 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 Configuring the Cisco Expressway or Cisco VCS, page 41 for instructions.

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

If you want to support interoperability with Microsoft Lync, follow the instructions to configure the Cisco Expressway in the latest *Cisco Expressway and Microsoft Lync Deployment Guide* on the Cisco Expressway Configuration Guides page.

Task 9: Verify ActiveControl Configuration

Check that the iX protocol (a prerequisite for ActiveControl to endpoints) is configured correctly in the relevant solution components, as described in Using ActiveControl, page 56.

If your CMR Premises network connects to Unified CM systems running Version 8.*x* or earlier, or to third-party networks, to avoid unpredictable results you should disable the iX protocol on all relevant trunks to isolate iX traffic from external systems that do not support it. Follow the instructions in Limiting ActiveControl in External Connections, page 58.

Task 10: Set Up CMR Hybrid (Optional)

To set up an integration with the CMR Hybrid service, see Using CMR Hybrid in Scheduled Conferences, page 50.

After you have set up the integration, you can optionally add WebEx meetings to Personal CMRs. See Using CMR Hybrid with Personal CMRs, page 51.

Task 11: Standardize User Display Names

We recommend that you follow the configuration steps in Appendix 2: Provisioning Display Names Across the Solution, page 66 to ensure that the names displayed for participants in conferences are consistent across the solution.

Recommended Implementation Sequence for First-Time Deployments

Table 4   Recommended upgrade / install sequence for CMR Premises components

Order	Component
1	Endpoints (endpoints can be upgraded in any order)
2	Unified CM
3	Cisco Expressway, if used
4	Cisco VCS, if you need to support calls from legacy/H.323 endpoints in your network
5	Cisco TMS
6	Cisco TelePresence MCU Series, if used
7	TelePresence Server
8	TelePresence Conductor
9	Cisco TMSPE
10	Cisco TMSXE, if used

Setting Up the Solution Components

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

Connecting the Conference Bridges, Conductor, and Unified CM

Note: In CMR Premises, the TelePresence Conductor is deployed using its B2BUA. External policy service mode is not supported.

Before You Start

- Cisco TelePresence Conductor must be installed according to the instructions in *Cisco TelePresence Conductor Virtual Machine Installation Guide*.
- Cisco Unified Communications Manager must be installed and configured with a base configuration. Ensure connectivity by registering at least three endpoints. 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 the Cisco TelePresence Conductor over HTTP/HTTPS and SIP TLS. HTTPS is recommended in all cases and is required for Multiparty Licensing to work.

Process

General - for all types of conferences	1. Complete the following tasks in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC4.0)*:
	
	  – 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.
	
	2. Enable Multiparty Licensing (recommended).
	  a. Log in to TelePresence Conductor.
	  b. Ensure there are no active calls on the TelePresence Conductor. Any currently active calls are ended when you enable Multiparty Licensing.
	  c. Go to **Maintenance > Option key**.
	  d. 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.
	  e. Click **Add option**.
	  f. 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.
	  g. On the same page, under **Multiparty Licensing**, set **Multiparty licensing for TelePresence Servers** to *Enabled*.
	  h. You can now apply the Multiparty licenses to end users, as described in Managing Multiparty Licenses, page 48.

Ad hoc conferences	1. To support ad hoc conferences, also complete these tasks in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC4.0)*:
	
	  – Configuring the TelePresence Conductor for ad hoc conferences.
	  – Configuring the Unified CM for ad hoc conferences.
	
	Result: When these configuration steps are completed:
	
	  – TelePresence Conductor is configured with one or more Locations to support ad hoc conferences.
	  – A SIP trunk is established between Unified CM and TelePresence Conductor for each Location for ad hoc calls.
	  – TelePresence Conductor Locations define the conference template to use for ad hoc conferences.
	
	2. If you want to use any PMP licenses for ad hoc conferences, you need to do the following:
	
	  – In Cisco TMSPE, enable Personal CMRs for each PMP license user group (see Enabling Personal CMRs, page 26)
	  – 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 as is defined in the Personal CMR [see *Cisco Unified Communications Manager Administration Guide, Release 10.0(1)*, *Associate Devices to End User* subsection of the *End User Setup* chapter].
	
	When a user initiates an ad hoc conference, Unified CM notifies the conference initiator's ID to TelePresence Conductor. Conductor then 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 ad hoc conference.

Personal CMR / rendezvous conferences	The preferred approach for permanent conferencing is to deploy Personal CMRs rather than rendezvous conferences.
	
	1. To deploy Personal CMRs, follow the instructions described in Enabling Personal CMRs, page 26.
	
	2. If you do need rendezvous conferences, then you manually configure them directly on TelePresence Conductor. To do this, complete these tasks in *Cisco TelePresence Conductor with Unified CM Deployment Guide (XC4.0)*:
	  a. Configuring the TelePresence Conductor for rendezvous conferences.
	  b. Configuring the Unified CM for rendezvous conferences.
	
	3. If you use Multiparty Licensing, note that no further configuration is required to support them for Personal CMR conferencing.
	
	Result: When these configuration steps are completed:
	
	  ■ TelePresence Conductor is configured with Locations to support Personal CMR / rendezvous conferences.
	  ■ A SIP trunk is established between Unified CM and TelePresence Conductor for each Location for Personal CMR / rendezvous calls.
	  ■ Personal CMR / 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.

Scheduled conferences	1. To support PMP licenses with scheduled conferences, enable Personal CMRs as described in Enabling Personal CMRs, page 26.
	If you have PMP licenses, you must enable Personal CMRs for each license user group. When Cisco TMS creates a scheduled conference, TelePresence Conductor looks through the list of Personal CMRs. If there is a Personal CMR with a PMP license defined for the user, the PMP license is used. If there is no matching user, an SMP license is used.
	2. Personal CMRs cannot be scheduled through Cisco TMS (although the Personal CMR details can of course be added to an invite for the participant to dial into the CMR).
	You must 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 37.
	Result: When these configuration steps are completed:
	– TelePresence Conductor is configured with Locations to support Personal CMR / rendezvous conferences, which are required for scheduled conferences.
	– A SIP trunk is established between Unified CM and TelePresence Conductor for each Location 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.

Configuring the Unified CM for Early Offer

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

This section describes our recommended approach for configuring 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.

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

All trunks between the following CMR Premises elements should be enabled for Early Offer, as described below.

- 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:

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.

Configuring 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.

Enabling 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 5   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 48.

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 URIs 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 2: Workflow for Personal CMRs
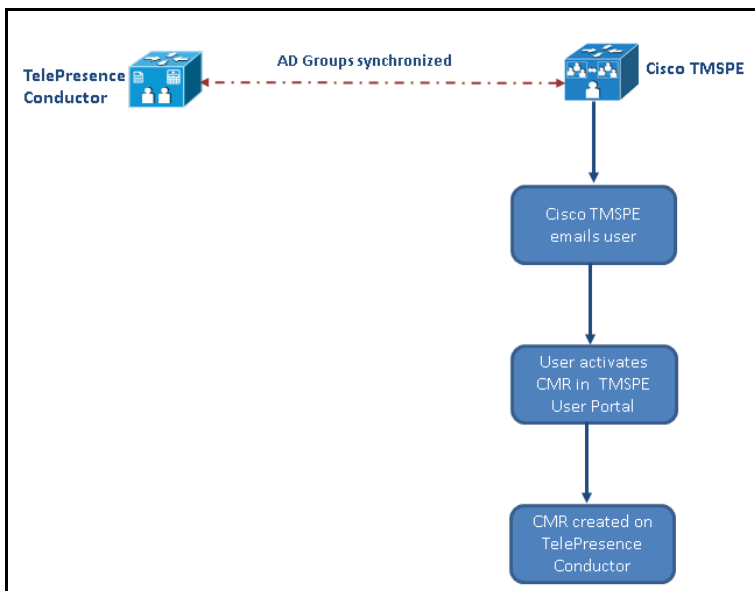
The CMR template corresponds to a conference template and a conference alias on TelePresence Conductor. CMRs created by using Cisco TMSPE cannot be modified through the TelePresence Conductor web user interface. Conference templates and aliases created by using TelePresence Conductor cannot be modified through Cisco TMSPE.

Before You Start

- The TelePresence Conductor must have at least one populated bridge pool and Service Preference.
- Cisco TMSPE must be installed and enabled in Cisco TMS.
- Cisco TMSPE is accessed from the **Systems > Provisioning** menu in Cisco TMS.
- A user base must exist for Cisco TMSPE. For information on how to set up a user base see section **Creating groups and adding users** in *Cisco TelePresence Management Suite Provisioning Extension with Cisco Unified CM Deployment Guide*.

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 51, 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 30).

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 the *Cisco TelePresence Managment Suite Administrator Guide* (search for "Adding systems").

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 Connecting the Conference Bridges, Conductor, and Unified CM, page 21, you can now use the following conference methods:

- Personal CMRs
- Ad hoc conferences using PMP licenses or SMP licenses
- Scheduled conferences using PMP licences 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 46.

For details about the TelePresence Conductor Provisioning API, see *Cisco TelePresence Conductor Product Programming Reference Guide XC4.0*.

For details about CMR configuration settings, see "*Deploying Collaboration Meeting Rooms*" in *Cisco TelePresence Management Suite Provisioning Extension with Cisco Unified CM Deployment Guide*.

Using Host and Guest Roles in Personal CMRs

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

Host Privileges

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

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

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

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

Process for Enabling the Guest Role in a CMR

On the template of the CMR:

- Check **Allow Guest Role**.
  To make the guest role optional to CMR owners, you must leave the host PIN requirement as 0 (optional).
- Select whether to enable **Guest Lobby**, which means guests must wait in the lobby unless at least one host is present in the CMR.
  This setting will apply to all rooms based on the template and is not configurable for the CMR owner.

When the guest role is allowed:

- The guest role will only be used if the administrator or CMR owner set a PIN requirement for the host.
  If no PIN is set for the host, everyone is allowed into the CMR automatically with host permissions.
- If a PIN is set for the host, but not for the guests, guests will be asked to press # to connect to the CMR.
- You can only have a PIN requirement for the guest if there is also a PIN requirement for the host.

Process for Disabling the Guest Role in a CMR

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

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

Enabling Scheduled Conferences

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 3:   Scheduling configurations
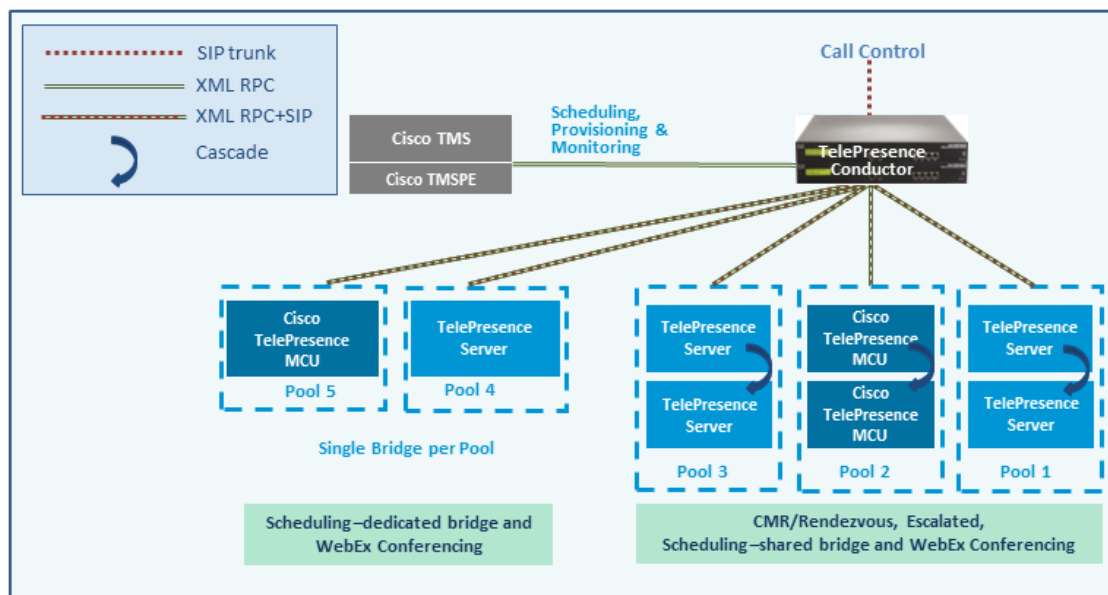
TelePresence Conductor and Cisco TMS Interaction

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.

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 Cisco TMS creates a scheduled conference, TelePresence Conductor looks through the list of Personal CMRs. If there is a Personal CMR with a PMP license defined for the user, the PMP license is used. If there is no matching user, 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 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 they 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 provided by a TSP that is configured to use the same bridge as the previous scheduled conference, we recommend that you turn off the auto-extend function in Cisco TMS.

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.
- CMR Premises 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.

Requirements for Dedicated Bridge Scheduling

If you use dedicated conference bridges for scheduling, the following additional points apply:

- 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, then 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.
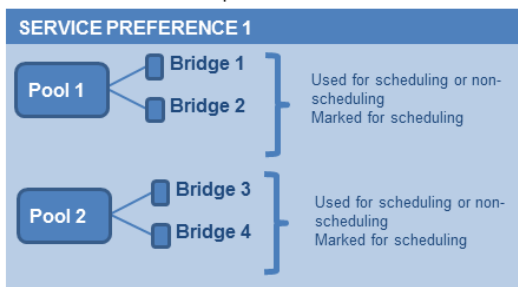
Shared Bridges

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	One or more pools, shared for scheduled and non-scheduled conferences. All pools are marked for scheduling in the TelePresence Conductor Service Preference and reported to Cisco TMS. We recommend enabling cascading in this scenario otherwise conferences may fail in some circumstances.	Cascaded conferencing available (if enabled). Targeted management of bridge resources. Over time, monitoring of use patterns can identify the most appropriate pool configuration.	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.

Example 1 – shared use

SERVICE PREFERENCE 1

Pool 1 — Bridge 1, Bridge 2 — Used for scheduling or non-scheduling. Marked for scheduling

Pool 2 — Bridge 3, Bridge 4 — Used for scheduling or non-scheduling. Marked for scheduling

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

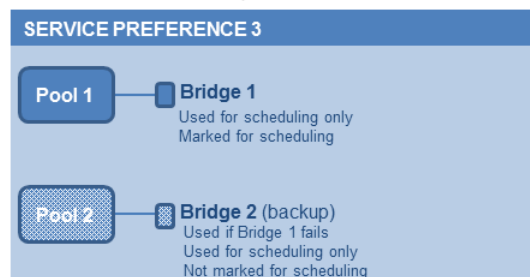|	Service Preference contains ...	Configuration	Advantages	Disadvantages
Example 2	Dedicated bridge for scheduled conferences.	Single pool, with a single conference bridge. Pool marked to be used for scheduling in the TelePresence Conductor Service Preference. Pool is reported to Cisco TMS in capacity information requests.	Conference availability is guaranteed, subject to bridge failure (or full capacity). Maximizes use of resources, as Cisco TMS will book ports until the bridge is full.	Uses one conference bridge exclusively for scheduling. Cascaded conferencing does not occur: to avoid wasting resources, cascading should be disabled.
Example 3	■ Dedicated bridge for scheduled conferences ■ Dedicated backup bridge	Two pools. Both pools contain a single conference bridge. The second pool is used as a backup if the bridge in the highest priority pool fails. Only the first pool is marked for scheduling in the TelePresence Conductor Service Preference and reported to Cisco TMS.	As for Example 2, with added benefit of fallback in case of bridge failure.	Uses two conference bridges exclusively for scheduling. Consumes backup resources. To avoid wasting resources, cascading should be disabled.
Example 4	■ Dedicated bridge for scheduled conferences ■ Shared-use backup bridges for both scheduled and non-scheduled conferences	Two or more pools. Highest priority pool with one bridge only, used for scheduled conferences. Other pools contain bridges for both scheduled (as backup) and non-scheduled conferences. Only the first pool is marked for scheduling in the TelePresence Conductor Service Preference and reported to Cisco TMS.	As for Example 2, with possible benefit of fallback in case of bridge failure if the other pools have spare capacity.	Uses one conference bridge exclusively for scheduling. To avoid wasting resources on the dedicated bridge, cascading should be disabled.

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

	Service Preference contains ...	Configuration	Advantages	Disadvantages
Example 5	■ Dedicated bridges for scheduled conferences ■ Shared-use backup bridges for both scheduled and non-scheduled conferences	Two or more pools. Highest priority pool with two or more bridges, used for scheduled conferences. Cascading enabled on the associated conference template. Other pools contain bridges for both scheduled (as backup and overflow) and non-scheduled conferences. Only the first pool is marked for scheduling in the TelePresence Conductor Service Preference and reported to Cisco TMS.	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. Bridges in the backup pools are used for scheduling if: ■ A bridge in Pool 1 fails. ■ Cascading in Pool 1 uses up bridge resources that Cisco TMS expected to be available for scheduling.	Uses conference bridges exclusively for scheduling. If scheduled conferences are cascaded, they may need resources from a shared-use pool.

Example 2

SERVICE PREFERENCE 2

Pool 1 — Bridge 1
Used for scheduling only
Marked for scheduling

Example 3

SERVICE PREFERENCE 3

Pool 1 — Bridge 1
Used for scheduling only
Marked for scheduling

Pool 2 — Bridge 2 (backup)
Used if Bridge 1 fails
Used for scheduling only
Not marked for scheduling

Example 4

SERVICE PREFERENCE 4

Pool 1 — Bridge 1
Used for scheduling only
Marked for scheduling

Pool 2 — Bridge 2
Bridge 3
Used for scheduling or non-scheduling
Only used for scheduling if the scheduling bridge fails
Not marked for scheduling

Example 5

SERVICE PREFERENCE 5

Pool 1 — Bridge 1
Bridge 2
Used for scheduling only
Marked for scheduling
Cascade enabled

Pool 2 — Bridge 3
Bridge 4
Used for scheduling or non-scheduling
Only used for scheduling if a scheduling bridge fails
or overflows
Not marked for scheduling

How to Enable Scheduled Conferencing

Before You Start

- Check that the tasks in Limitations and Requirements for Scheduled Conferencing, page 33 are complete.
- Review the best practice guidelines for Bridge Pools and Service Preferences, page 8.

Process

Task 1: Add TelePresence Conductor to Cisco TMS

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

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*.

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 4:   Example alias settings for Conductor

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 5: Example alias settings for Cisco TMS
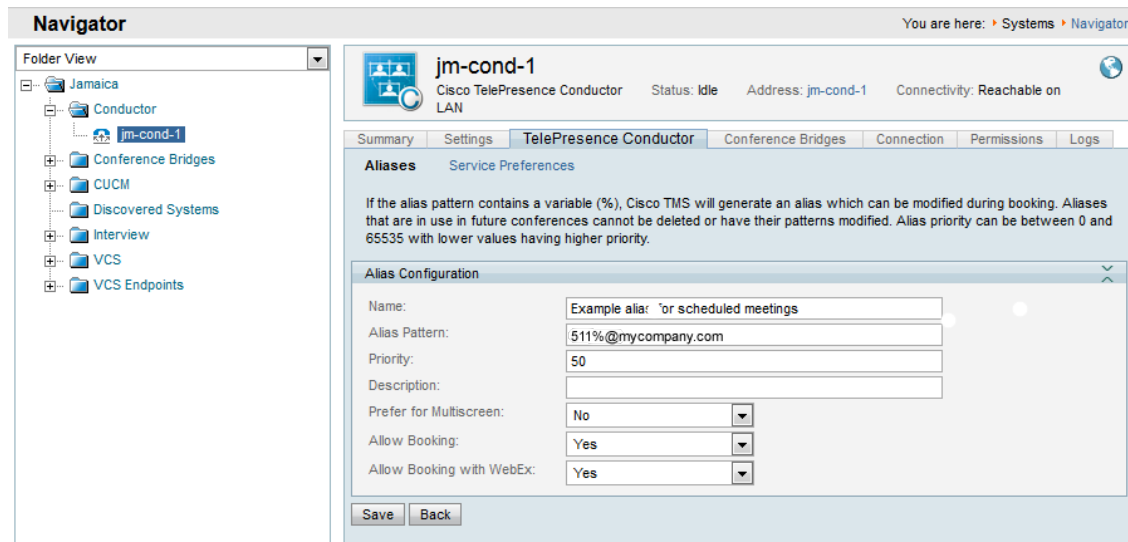
Task 8: Edit Service Preferences in Cisco TMS (optional)

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.

■ 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 32

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*

Configuring the 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 Reduce Default SIP TCP Timeout in Cisco Expressway / Cisco VCS, page 7.
- 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 Security and Encryption, page 7.

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

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 3):

- BE6000 Product ID BE6K-SW-9X10X-XU or BE7000 Product lD 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 6:   Solution on BE6000/BE7000 (using a shared bridge for scheduled and non-scheduled conferences)
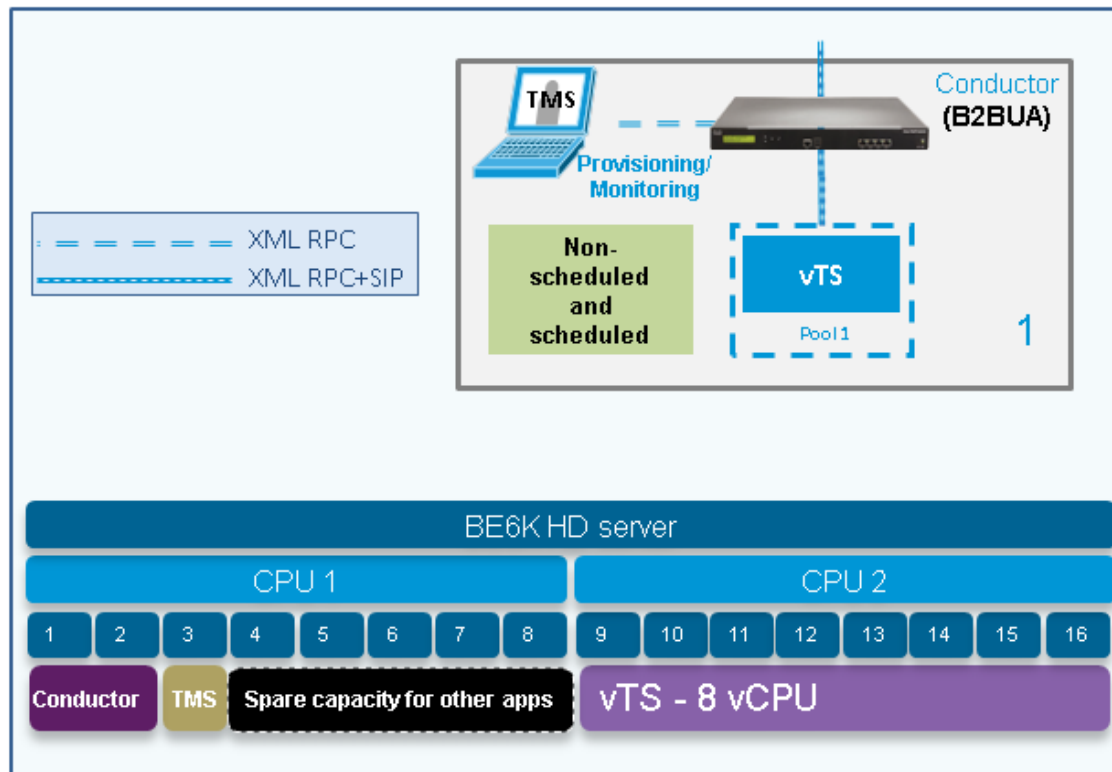
Scaling Up

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 7:   Example BE6000/BE7000 deployment
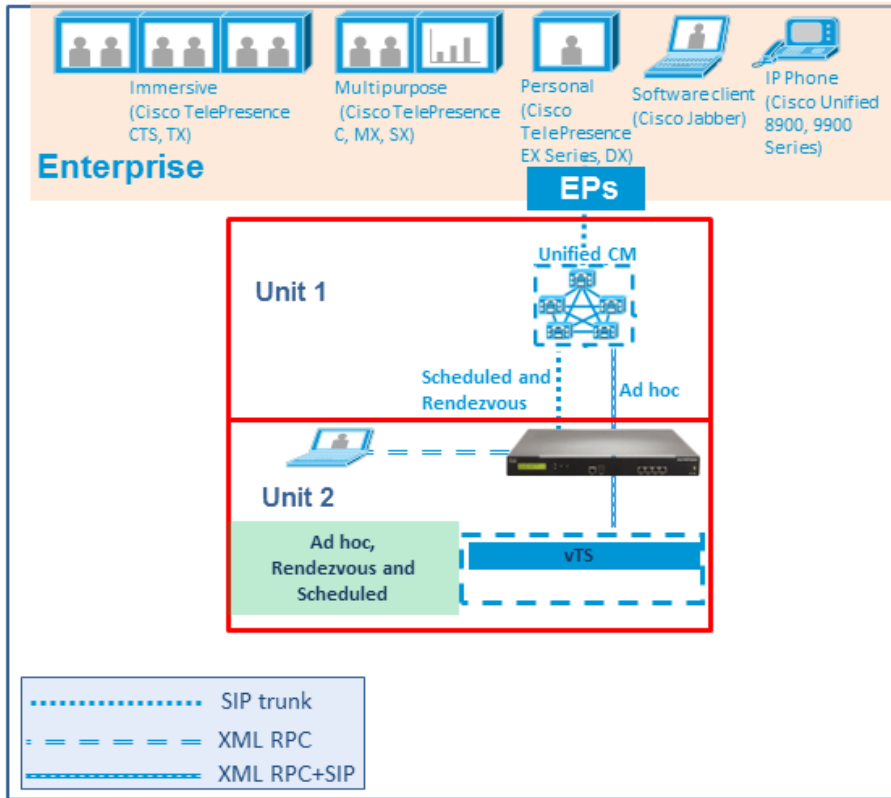
Configuring Conference Services

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	You can change the settings for a template that has already been assigned to a group. The changes will impact the available CMR settings in the affected group(s). 1. In Cisco TMS, go to **Systems > Provisioning > Users > Collaboration Meeting Room Templates**. 2. In the template list, click the pencil icon next to the required template, make the changes and click **Save**. Repeat as necessary for any other templates that need modifying. 3. The counter next to **Check sync status** indicates how many CMRs are out of sync with the modified templates. Click **Regenerate CMRs** to synchronize the change on TelePresence Conductor. The **SIP Alias Pattern** will always regenerate. The **Numeric Alias Pattern** never regenerates once it is set on a CMR. If the template changes make the PIN policy stricter, Cisco TMSPE generates a new PIN for any non-compliant CMRs when the changes are synchronized (PINs are generated for all CMRs that do not meet the new criteria).
Removing CMR entitlement	Set the CMR template for the group to *None*. This removes CMR capabilities from the users in that group. **Note:** To set sub-groups to *None*, the parent root group must be set to *None*. 1. In Cisco TMS, go to **Systems > Provisioning > Users** 2. Select the relevant group. 3. Under **Collaboration Meeting Room Templates**, click *None* in the Active column. 4. In the **Change Template for Group** popup, click **Yes**.
Selecting a different template for a group	1. In Cisco TMS, go to **Systems > Provisioning > Users** 2. For the relevant group, select the button for the required template in the **Active** column.
Deleting templates	1. In Cisco TMS, go to **Systems > Provisioning > Users > Collaboration Meeting Room Templates** 2. Click the red deletion icon next to the template name in the list. You cannot delete a template that is associated with an existing CMR.
Deleting users	If you delete a user from the user base, the user's CMR is automatically deleted.

Moving users between groups	If a user's group changes in the user base (normally due to changes in Active Directory) their assigned CMR template will also change if the new group has a different template. Cisco TMSPE will register the change during the next health check. Or you can run a health check manually from the **Provisioning Extension Diagnostics** page (**Run Health Check**). The user's CMR will be displayed as out of sync. To synchronize, click **Regenerate CMRs** to have the change reflected on TelePresence Conductor.
Manually synchronizing all Personal CMRs	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: 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 XC4.0*.

For details about CMR configuration settings, see "*Deploying Collaboration Meeting Rooms*" in *Cisco TelePresence Management Suite Provisioning Extension with Cisco Unified CM Deployment Guide*.

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.

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 Enabling Personal CMRs, page 26

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 46.

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**.

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* so that your Cisco TelePresence applications are enabled for Cisco WebEx-to-Cisco TelePresence interoperability. Detailed instructions and a first-time configuration checklist are provided in that guide.

Task 2: Configure Cisco WebEx Site Administration

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

Task 3: Book the Conferences (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*.

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

Using CMR Hybrid with Personal CMRs

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

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

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

Before You Start

Before you can enable WebEx in CMRs:

■ CMR Hybrid must be deployed. See *Cisco Collaboration Meeting Rooms Hybrid Configuration Guide* for details and instructions.

■ The owner of each CMR must be a registered WebEx user associated with a current WebEx site with their own username and password. Otherwise, the **Create WebEx Connection** button will not appear for the user.

■ If planning to change an existing template, read Managing Administration Changes to Personal CMRs, page 46.

■ 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).

- Cascading is not supported from one conference bridge to another bridge that is outside the boundaries of the local enterprise network.
- Cascade links share only a single screen of video between TelePresence Server.
- Cascading is not supported from a TelePresence Server bridge to an MCU, or from an MCU to a TelePresence Server.
- On cascade-enabled conferences, cascading resources are reserved from the start of the conference for the configured **Maximum number of cascades**, whether or not they are actually used. For this reason we recommend using the cascade option sparingly–typically for large-scale meetings or for Personal CMR / rendezvous conferences used by VIP personnel.
- Cascading should not be enabled if certainty of resource availability is critical. For example where you have a conference bridge reserved for scheduled conferences only.

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 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.

Configuring Conference Features

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

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 topic 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.

Using ActiveControl

ActiveControl allows participants in a video conference to view and change some aspects of the conference directly from the touch panel 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.

The iX protocol is a prerequisite for ActiveControl support.

Limitations and Requirements

- Endpoints need Touch controllers, and software version TC7.1.3 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 58 for instructions.

Managing IX Protocol Settings

The iX protocol is enabled by default in most of the relevant solution components. The table explains how to verify the iX protocol settings in each affected components, and where you need to manually configure the settings:

Table 8   iX configuration settings

Component	IX setting…
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: 1. Go to the **Advanced parameters** for the template applied to the TelePresence Servers. 2. The **Enable iX protocol** field should be set to *True*.
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: 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**.

Table 8   iX configuration settings (continued)

Unified CM (per trunk)	Depends on the SIP profile in use–iX is enabled by default in some profiles (including *Standard SIP Profile For TelePresence Conferencing*) but not in all. It is disabled by default in manually created profiles. You should check each SIP profile, and if necessary manually enable the iX protocol as follows: 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 9   Call handling summary for calls that contain an iX header

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

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 disabled 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 10 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 8:   Where to enable/disable iX in outward connections from Unified CM-managed systems
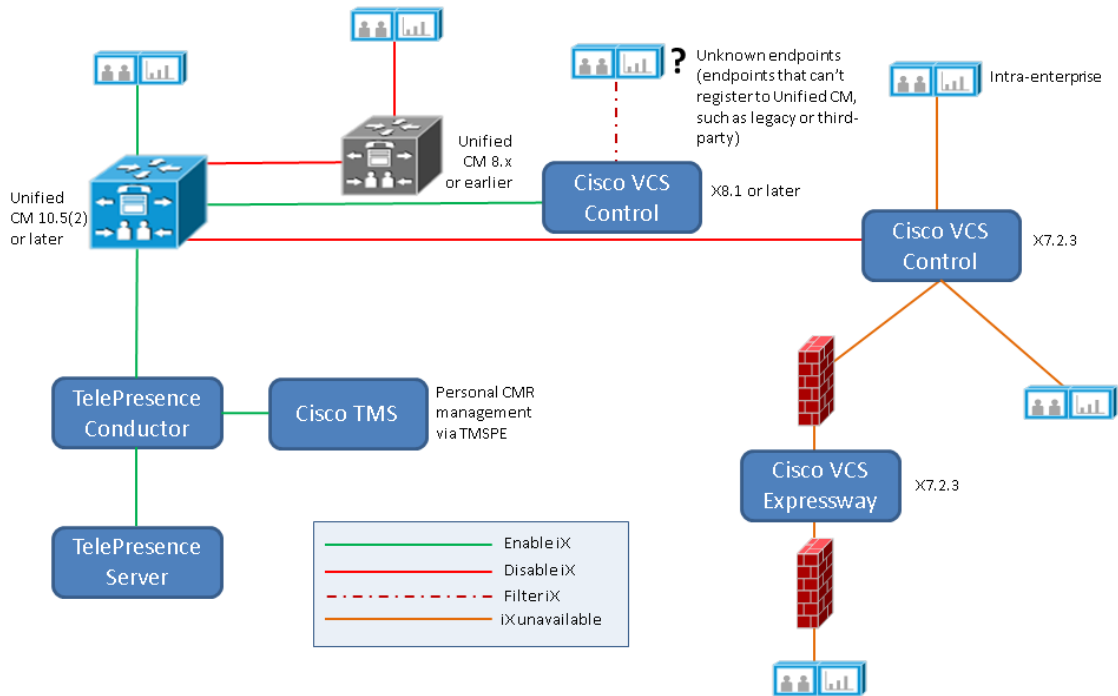
Note: This illustration does not show any business-to-business scenarios. The elements shown are all sited within the local enterprise.

Figure 9:   Example iX configuration in a Unified CM Session Management Edition deployment
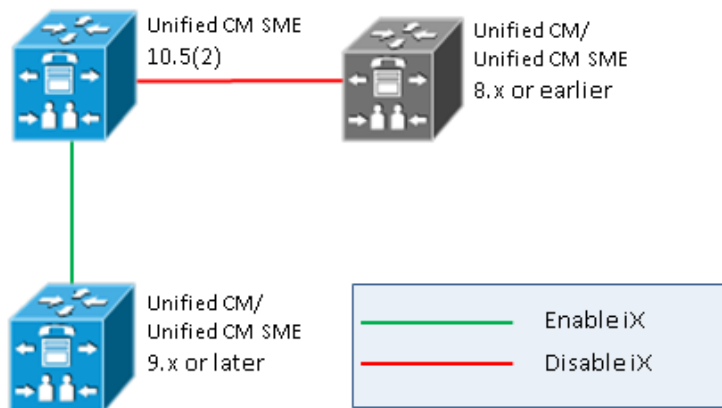
Audio-Only Quality Setting in Ad Hoc Conferencing

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.

Related Documentation

Title	Link
Cisco Collaboration Meeting Rooms (CMR) Premises Secondary Deployment Guide 5.x with Cisco VCS	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco Collaboration Meeting Rooms (CMR) Premises Solution Guide 5.x	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco Collaboration Meeting Rooms (CMR) Premises Release Notes 5.x	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-release-notes-list.html
Cisco TelePresence Conductor with Cisco Unified Communications Manager Deployment Guide Unified CM 10.x	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco TelePresence Management Suite Provisioning Extension with Cisco Unified CM Deployment Guide	http://www.cisco.com/c/en/us/support/conferencing/telepresence-management-suite-extensions/products-installation-guides-list.html
Cisco TelePresence Conductor Administrator Guide XC4.0x	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-maintenance-guides-list.html
Cisco Unified Communications Manager Administration Guide, Release 10.5n	http://www.cisco.com/c/en/us/support/unified-communications/unified-communications-manager-callmanager/products-maintenance-guides-list.html
Cisco Unified Communications Manager with Cisco Expressway (SIP Trunk) Deployment Guide, Cisco Expressway	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 TelePresence Management Suite Deployment Guide	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-installation-and-configuration-guides-list.html
Cisco TelePresence Management Suite Administrator Guide Version 15.0x	http://www.cisco.com/c/en/us/support/conferencing/telepresence-management-suite-tms/products-maintenance-guides-list.html
Cisco Collaboration Meeting Rooms (CMR) Hybrid Configuration Guide	http://www.cisco.com/c/en/us/support/conferencing/telepresence-management-suite-tms/products-installation-and-configuration-guides-list.html
Cisco TelePresence Conductor Product Programming Reference Guide XC4.0x (includes Conductor Provisioning API reference)	http://www.cisco.com/c/en/us/support/conferencing/telepresence-conductor/products-programming-reference-guides-list.html

Title	Link
Cisco Expressway Administrator Guide X8.5.3	http://www.cisco.com/c/en/us/support/unified-communications/expressway-series/products-maintenance-guides-list.html

More Product Documentation on Cisco.com

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

Appendix 1: Adding the Unified CM Normalization Scripts

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

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 11   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.

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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 10:   Display Names Example
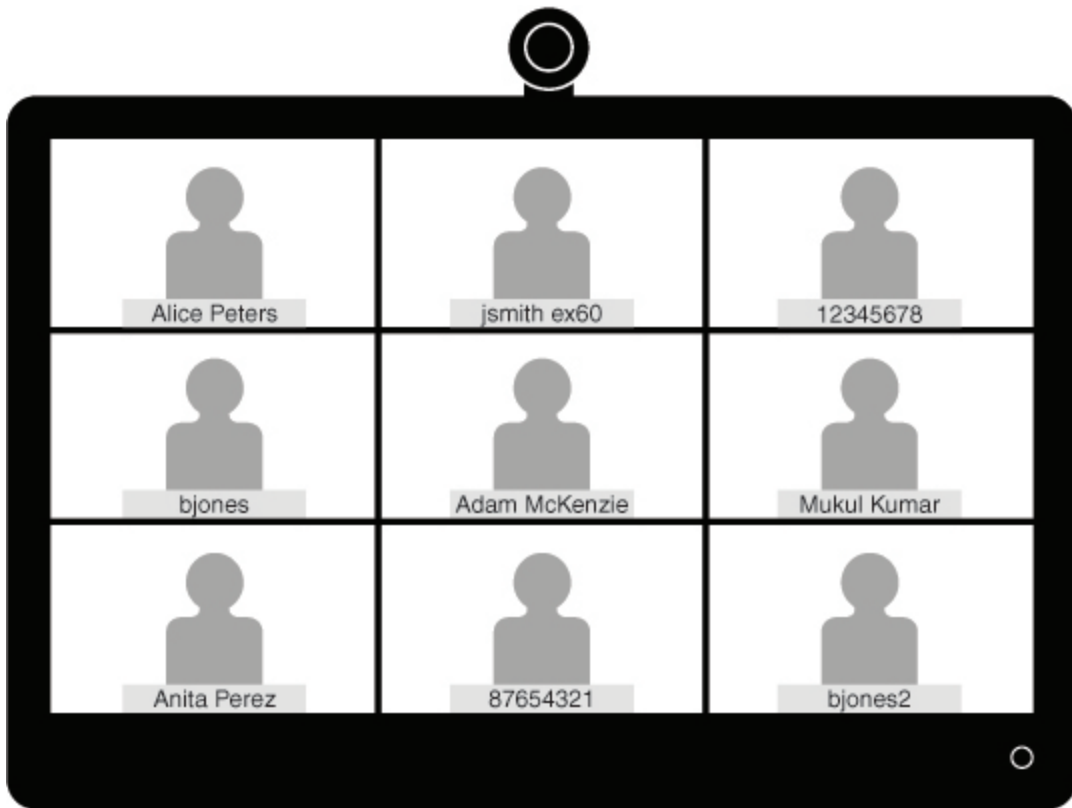
If no display name is explicitly provisioned the system chooses one based on the endpoint's SIP URI or device number. The name will reflect how the particular users and rooms have been provisioned. As a result name information in conferences may be displayed in inconsistent formats, as shown in the example 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 on Unified CM, page 67.
- If you also have Cisco VCS-registered endpoints in your network, see Provisioning Display Names on Cisco VCS, page 69.

Provisioning Display Names on Unified CM

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 provides 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.

You must first have users configured and associated to devices. For information on provisioning users, see *Cisco Unified Communications Manager Administration Guide*.

Process

1. To export user records, see "*Export User Records*" in *Cisco Unified Communications Manager Administration Guide, Release 10.0(1)*.
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*.

Using Manual Configuration

This procedure explains how to configure the display name for a device that is registered to Unified CM. The device may be a shared conference room device or assigned to a specific user.

You must first have users configured and associated to devices. For information on provisioning users, see *Cisco Unified Communications Manager Administration Guide*.

Process

1. Log in to the Cisco Unified CM Administration user interface and choose **Device > Phone** to go to the **Find and List Phone** window.
2. Choose the **Device Name(Line)** for the device you want to configure to get to the **Phone Configuration** window for that device.
3. Choose the line for the device from the **Association** area on the left hand side of the window. This 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 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.

7. 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 on Cisco VCS

On Cisco VCS two methods can be used to provision display names:

- 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.

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*.

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*.

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).
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**.

Document Revision History

Date	Description	Changes
March 2016	Updated for Release 5.0	Adjusted wording of recommendation to enable cascading in *Configurations for Scheduled conferencing* section, in example 1 on page 34.
January 2016	Updated for Release 5.0	Added recommendation to enable cascading in *Configurations for Scheduled conferencing* section, in example 1 on page 34.
November 2015	Updated for Release 5.0	Removes version information for the Microsoft Lync service and instead references the *Cisco Expressway with Microsoft Lync Deployment Guide*.
October 2015	Updated issue for Release 5.0	Includes references to a new, secondary deployment guide for VCS-based organizations.
September 2015	First issue for Release 5.0	Defines a new primary deployment architecture. Introduces centralized licensing. Adds support for the Cisco TelePresence Server on Multiparty Media 820 hardware platform. Updates the product software versions.

Cisco Legal Information

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