



# Optimized Conferencing for Cisco Unified CM and Cisco VCS

Solution Guide

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# Introduction

The Optimized Conferencing solution is part of a continuing program to unify Cisco Unified CM-based video and TelePresence-based video networks into a common architecture. The goal of this program is to support optimal use of conference resources and the best possible conference experience for participants.

## About this document

This document explains the recommended architecture to support the Optimized Conferencing for Cisco Unified CM and Cisco VCS solution across your video network, and the underlying concepts of the architecture. The primary audience for this document are people who want a high-level view of Cisco's recommended solution for optimal deployment of video conferencing. This document does not describe how to deploy the solution. Instead it provides links to external deployment guides that contain step by step instructions for deploying the infrastructure required to support the solution.

The deployment guides referenced by this document are written for partners and technical sales people who have a good technical understanding of Cisco video infrastructure products and their place in a video architecture. They expect as a minimum that readers are familiar with installing and configuring the associated product.

### Terms used

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

**WebEx conferencing.** Describes conferences that allow joint video participation by Cisco TelePresence users and WebEx users (also known as Cisco WebEx Enabled TelePresence—formerly Cisco TelePresence WebEx OneTouch).

For clarity the following short versions of Cisco product/solution names are used:

Table 1: Product names used in this document

Product/solution	Short name
Optimized Conferencing for Cisco Unified CM and Cisco VCS	Optimized Conferencing
Cisco Unified Communications Manager	Cisco Unified CM
Cisco TelePresence Conductor	TelePresence Conductor
Cisco TelePresence Server	TelePresence Server
Cisco TelePresence MCU Series	MCU
Cisco TelePresence Management Suite	Cisco TMS
Cisco TelePresence Video Communication Server	Cisco VCS

# Overview of Optimized Conferencing

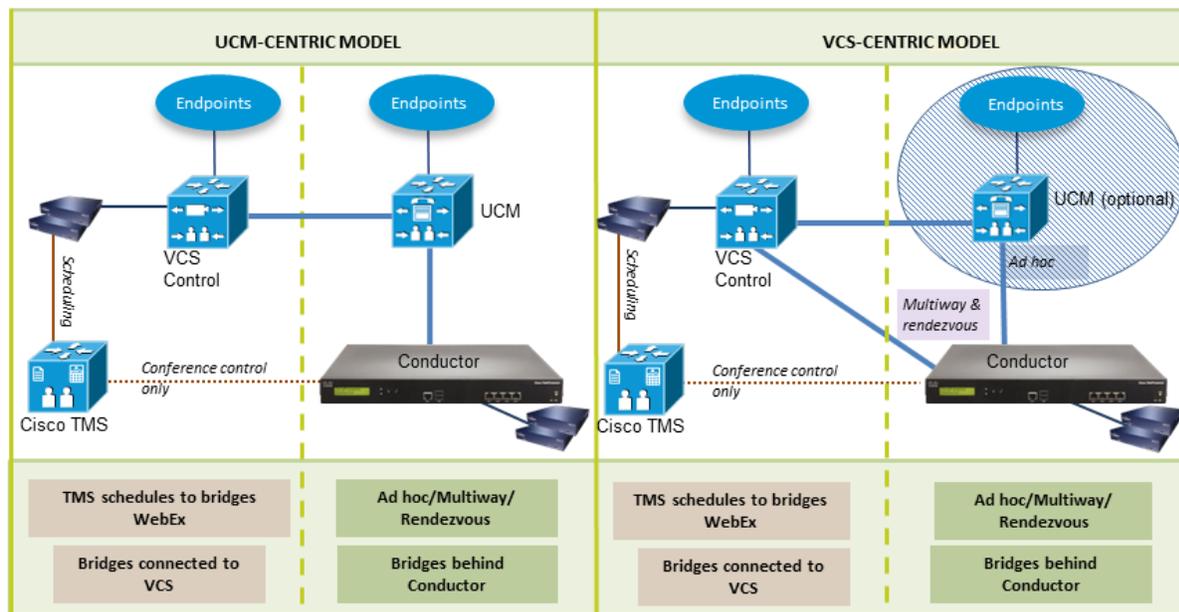
For both Cisco Unified CM-based and Cisco VCS-based networks, the Optimized Conferencing solution extends video conferencing and call escalation across Cisco TelePresence products, including the ability to schedule conferences for WebEx participation. For either type of network the solution streamlines the underlying network architecture.

**CAUTION:** Support for any given component is dependent on the requirements described in this guide regarding supported device types, software versions, and interoperability.

The Optimized Conferencing solution is implemented as a set of products in approved configurations and running approved software versions. In this release it can be deployed in either of two configurations:

- **UCM-centric model**  
 Recommended for Cisco Unified CM-based organizations. Supports scheduling for WebEx conferences (requires Cisco VCS). TelePresence Conductor is configured with Cisco Unified CM only. Cisco Unified CM manages all call control except for scheduled conferencing, including WebEx, which is handled separately by Cisco VCS.
- **VCS-centric model**  
 Recommended for Cisco VCS-based organizations. Required for organizations that do not use Cisco Unified CM for video conferencing. Supports scheduling for WebEx conferences. TelePresence Conductor is configured with Cisco VCS, which manages all call control except for ad hoc conferences. TelePresence Conductor can also be configured with Cisco Unified CM if ad hoc conferencing is used. (In this context ad hoc conferencing does not include Multiway™, which is managed by Cisco VCS.)

Figure 1: High-level view of the two deployment models



TelePresence Conductor manages the conference bridges, with the exception of any bridges used for scheduled conferences. Bridges managed by TelePresence Conductor are divided into Service Preferences and pools.

### **Key benefits of the solution**

- Simplified, optimal user experience for conference participants.
- Flexible and extendable architecture that allows customers to deploy one or more of ad hoc, rendezvous, Multiway, and scheduled conferencing capabilities.
- Dynamic optimization of conference resources on the TelePresence Server (for inbound calls).
- Ability to increase the number of conference participants beyond the capacity of a single MCU bridge.
- Resilience in the video network, which allows bridges to be taken offline for maintenance (excluding scheduled bridges).

### **What's new**

For details of new and changed features in Optimized Conferencing Version 2.0, see the latest solution release notes on [Cisco.com](https://www.cisco.com).

## Solution components and required versions

The products used in Optimized Conferencing and the required software/firmware versions for each product are listed below. Your organization may not use all the products but those that are used must be running the specified version. (For information about upgrading see [Implementing Optimized Conferencing across your network \[p.30\].](#))

- [Infrastructure \[p.7\]](#)
- [Endpoints and peripherals \[p.8\]](#)

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**Note:** Networks with multiple Cisco Unified CM or Cisco VCS installations can only get full Optimized Conferencing functionality if every installed Cisco Unified CM or Cisco VCS is at the required software version specified here.

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### Infrastructure

Table 2: Required software for infrastructure products

Product	Required version	Role
TelePresence Conductor	XC2.2	Conference resource allocation
TelePresence Server Includes TelePresence Server 7010 and MSE 8710, TelePresence Server on Multiparty Media 310/320, and TelePresence Server on Virtual Machine	3.1	Conference bridges
MCU Includes 5300 Series, 4500 Series, 4501 Series, 4200 Series, MCU MSE Series 8420 and 8510	4.4	Conference bridges
Cisco Unified CM	9.1.2	Call control
Cisco VCS	X7.2 (X7.2.2 recommended)	Call control in VCS-centric deployments; H.323 interworking
Cisco TMS	14.3	Conference management & scheduling
Cisco TMSXE	3.1	Conference management & scheduling for Microsoft environments
Cisco VCS Expressway	X7.2 (X7.2.2 recommended)	Secure firewall traversal; registration of standards-based endpoints across the Internet
Cisco WebEx	T28.12 or later	WebEx conferencing

## Endpoints and peripherals

Table 3: Required software for endpoints and peripherals

Product	Version
Cisco TelePresence EX Series (EX60, EX90)	TC6.2
Cisco TelePresence Quick Set C20 and SX20	
Cisco TelePresence Codec C Series (C40, C60, C90)	
Cisco TelePresence MX Series (MX200, MX300)	
Cisco TelePresence Profile Series	
Cisco Desktop Collaboration Experience DX650	10.0(2)
Cisco TelePresence Systems (CTS 500, CTS 1100, CTS 1300, CTS 3010, CTS 3210)	CTS 1.10.2
Cisco TelePresence TX Systems (TX9000 Series and TX9200 Series)	TX6.0.3
Cisco Unified IP Phone 9900 Series	9.3(4)
Cisco Unified IP Phone 8900 Series	9.3(2)
Cisco Jabber for iPad	9.3
Cisco Jabber for Windows	9.2
Cisco Jabber Video for TelePresence (formerly Movi)	4.6
Cisco IP Video Phone E20	TE4.1.3

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

### Third-party endpoints

For details of third-party endpoints tested for compatibility with Optimized Conferencing Version 2.0, see the latest solution release notes on [Cisco.com](https://www.cisco.com).

## How Optimized Conferencing components interact

Deployments can have either the Cisco Unified CM or the Cisco VCS as their primary call control component, and in VCS-centric deployments the Cisco Unified CM may also provide call control for ad hoc conferencing. The TelePresence Conductor talks directly to the call control component.

Other elements in the solution will vary between deployments, but will include conference bridges and endpoints and typically also the Cisco TMS for conference management and optionally for scheduling. The Cisco VCS Expressway component is required for external video conferencing support for remote participants and WebEx users.

The conference bridges sit behind TelePresence Conductor and appear to the rest of the network as a single bridge. TelePresence Conductor manages the bridges behind the scenes, freeing network administrators from much of the management complexity. Bridges used for scheduling are an exception and are managed manually.

# Understanding the two deployment models

This section summarizes the Optimized Conferencing deployment models:

- UCM-centric
- VCS-centric

Both deployments have the TelePresence Conductor at their core and the underlying products supported by each one are identical. The difference is in the configuration of the products. The choice of which deployment to use is based on the primary call control. Organizations that are exclusively Cisco VCS-based should use the VCS-centric model. Organizations that are exclusively Cisco Unified CM-based should use the UCM-centric model.

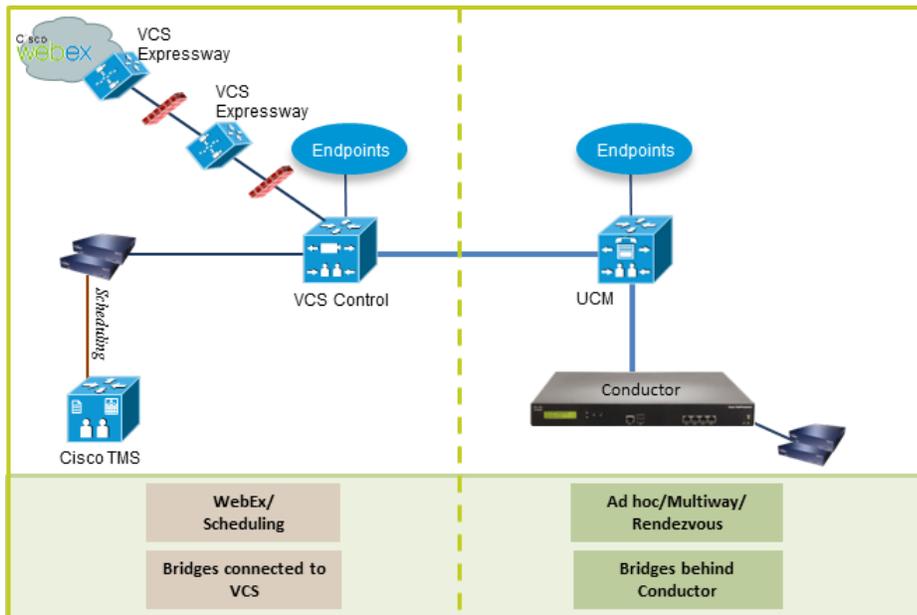
## UCM-centric deployment summary

In UCM-centric deployments the TelePresence Conductor is configured with Cisco Unified CM. Scheduling conferences for participation by both TelePresence and WebEx users is supported, using Cisco TMS in conjunction with the Cisco VCS.

Bridge resources are managed separately for ad hoc, rendezvous, and Multiway conferencing on the one hand, and scheduled conferencing on the other. In this release, scheduling is performed directly between the Cisco TMS and the bridges, with the Cisco VCS providing the call control functionality for the scheduled conferences. TelePresence Conductor is not involved.

Ad hoc, rendezvous, and Multiway conferencing is routed through Cisco Unified CM to TelePresence Conductor. Bridges for scheduled conferencing must be connected to the Cisco VCS.

Figure 2: High-level view of the UCM-centric deployment

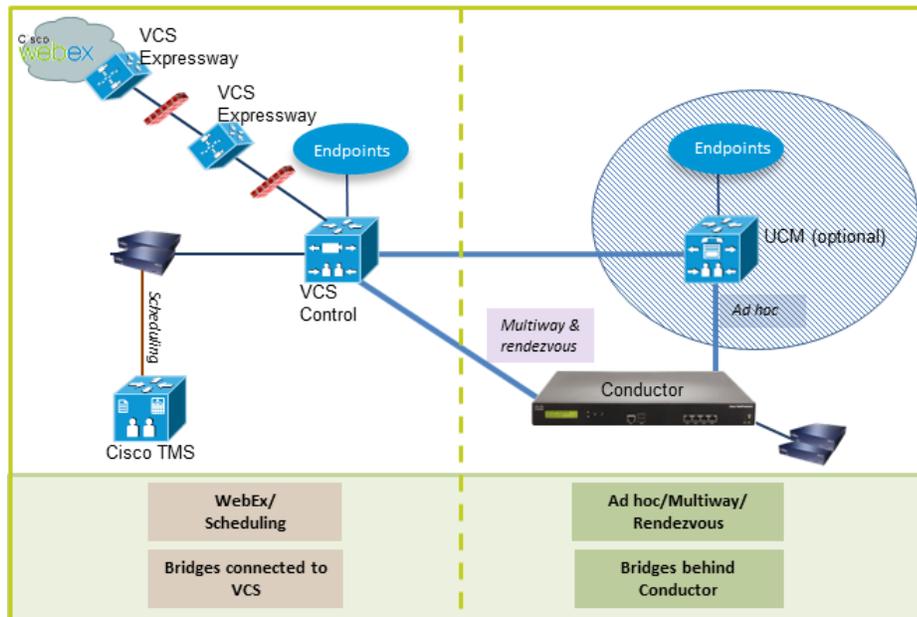


## VCS-centric deployment summary

In VCS-centric deployments the TelePresence Conductor is primarily configured with Cisco VCS. To allow [ad hoc conferencing](#), additional trunks from Cisco Unified CM can be added, but these are not required if you do not use ad hoc conferencing. Scheduling conferences for participation by both TelePresence and WebEx users is supported, using Cisco TMS in conjunction with the Cisco VCS.

In this release all incoming and outgoing calls for rendezvous and Multiway conferencing are routed from Cisco Unified CM via the trunk to Cisco VCS and from there to TelePresence Conductor. Calls associated with ad hoc conferences are routed directly between Cisco Unified CM and TelePresence Conductor.

Figure 3: High-level view of the VCS-centric deployment



## Conference experience with Optimized Conferencing

In both deployment models the solution supports conferencing between individuals in any [Location](#), using the endpoints listed in [Solution components and required versions \[p.7\]](#). As conference attendees join the conference, they join at the resolution supported by their endpoint provided that it is below or equal to the maximum level set by the conference administrator.

### ActiveControl to endpoints

Meeting participants who have endpoints with Touch controllers (and the requisite software version) can view and use certain conference control features direct from their endpoint touchpads.

### Cisco ClearPath technology

Cisco ClearPath technology is supported for conferences hosted on TelePresence Servers. ClearPath uses advanced error correction techniques to optimize video quality over low quality connections.

### Ad hoc and rendezvous conference requirements may differ

For optimal user experience, ad hoc and rendezvous conferences may have different configuration requirements for conference PINs, quality, number of screens and so on. For example, if you define a conference PIN for rendezvous conferences in the conference template and you use the same template for ad hoc conferences, a PIN will also be required for ad hoc conferences (which you may not intend). To prevent the PIN being applied in the ad hoc case, define a separate template for ad hoc with no PIN set.

### TelePresence Server resource optimization

TelePresence Server resources are allocated to an individual endpoint based primarily on the number of screens it should use and the quality settings to be applied for that endpoint. Resources are initially allocated when a participant joins the conference. Resource optimization refers to the ability subsequently to free up any unused portion of the initial allocation and make those resources available for other conferences or later attendees. Resources are optimized down to the highest codec negotiated by the endpoint, not to the endpoint's current usage (to ensure that the negotiated resources remain available to the endpoint at any time).

Resource optimization does not occur in the following cases, which have their own mechanisms for defining specific quality requirements and which it would be inappropriate to override:

- Pre-configured endpoints
- Auto-dialed participants

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**Note:** Resource optimization also does not occur for one-off outdialed participants, who are simply joined into an ongoing conference via a Cisco TMS request.

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**Note:** Ad hoc call flows (which are managed by Cisco Unified CM) cannot be used to add participants to conferences created in another manner, and other call flows cannot be used to add participants to ad hoc conferences. So the ad hoc call escalation method is only supported in an ad hoc conference that was created by it, and conferences generated by other methods cannot be extended by the ad hoc mechanism. This avoids any potential for chained conferences.

The MCU auto attendant is not supported in the UCM-centric model.

## Conference bridges

Conference bridges can be MCUs or TelePresence Servers or a combination.

Table 4: Conference bridges supported in the UCM-centric deployment model

Bridge type	Required version
TelePresence Server	3.1
MCU	4.4

### General configuration considerations

TelePresence Servers must be in remotely managed operation mode for bridges pooled behind TelePresence Conductor and in locally managed mode for bridges directly connected to the Cisco VCS. The TelePresence Server on Multiparty Media 310/320 and TelePresence Server on Virtual Machine do not need configuring as they are always in remotely managed operation mode.

In certain cases, TelePresence Servers are optimized dynamically by TelePresence Conductor if *Optimize resources* is enabled in the TelePresence Conductor conference template.

### Bridges for ad hoc, Multiway™ and rendezvous

All conference bridge types can support ad hoc, Multiway, and rendezvous conferencing. TelePresence Server bridges must be configured in remotely managed mode.

The conference bridges are grouped into pools of like devices in TelePresence Conductor, to which TelePresence Conductor applies Service Preferences to prioritize the use of the pools for specific conference calls (see [Pooling and Service Preferences \[p.26\]](#)). The illustration in [Figure 4: UCM-centric deployment model \[p.13\]](#) shows co-located bridges in Pools 1-3 behind TelePresence Conductor for ad hoc, rendezvous or Multiway conferencing.

### Bridges for scheduling/WebEx

Scheduled/WebEx conferencing is supported on all MCU models and on the TelePresence Server 7010 and 8710. To host scheduled conferences a dedicated bridge needs to be connected to the Cisco VCS. TelePresence Server bridges must be configured in locally managed mode. The illustration in [Figure 4: UCM-centric deployment model \[p.13\]](#) shows four dedicated bridges used for scheduling and WebEx.

### More information

For guidance about configuring TelePresence Server bridges see the [TelePresence Server product documentation](#). For information about resource optimization see the [Cisco TelePresence Conductor Administrator Guide XC2.2](#) and [Cisco TelePresence Server Version 3.1 Printable Online Help](#).

## Role of the TelePresence Conductor

TelePresence Conductor manages the bridge resources for ad hoc, Multiway, and rendezvous conferences, selecting which bridge or bridge pools to host a specific conference, and balances the conference load across the bridges in the defined pools. Cisco Unified CM is unaware of the individual bridges in the network and only communicates with the TelePresence Conductor.

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**Note:** Cisco Unified CM delivers ad hoc and rendezvous conferences to different IP addresses on TelePresence Conductor. Multiple Cisco Unified CMs (from Version 8.6.2) can access the same IP address on TelePresence Conductor. The Cisco Unified CMs do not need to be in the same physical location.

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## Conference support for endpoints

Rendezvous conferences for endpoints registered to Cisco Unified CM are channeled through TelePresence Conductor to the conference bridge.

Endpoints registered to Cisco VCS Control can be included in the following conferences:

- Ad hoc conferences initiated by Cisco Unified CM.
- Multiway conferences initiated by an endpoint registered to Cisco VCS Control, but hosted on the bridges behind the TelePresence Conductor connected to Cisco Unified CM.
- Rendezvous conferences hosted on the bridges behind the TelePresence Conductor connected to Cisco Unified CM.
- Scheduled/WebEx conferences created by Cisco TMS which are directly hosted on the conference bridges connected to the Cisco VCS.

## Routing for ad hoc, Multiway™ and rendezvous calls

Ad hoc, Multiway, and rendezvous calls all route via the Cisco Unified CM. Ensuring that incoming and outgoing calls follow the same path provides simplicity in the architecture. The configuration process summary is as follows:

1. Configure the appropriate [Locations](#) in TelePresence Conductor (see [Cisco TelePresence Conductor with Unified Communications Manager Deployment Guide](#) for details).
2. [For ad hoc] Configure a Cisco Unified CM bridge resource (and a Media Resource Group and Media Resource Group List).
3. [For rendezvous] Configure a Cisco Unified CM Trunk and Route Pattern with a special TelePresence Conductor IP for rendezvous conferencing.
4. Configure the Cisco VCS to route rendezvous and Multiway calls via Cisco Unified CM.
5. Configure the TelePresence Servers to use TelePresence Conductor for remote management. The TelePresence Server on Multiparty Media 310/320 and TelePresence Server on Virtual Machine do not need configuring as they are always in remotely managed operation mode.

## Scheduled/WebEx conferences

Both conference scheduling and conference control functions are performed by Cisco TMS directly to the bridges.

- WebEx and TelePresence users can participate jointly in scheduled meetings.
- TelePresence Servers must be configured in locally managed mode.
- Bridges used for scheduled conferences must be registered to the Cisco VCS. Cisco TMS can only schedule bridges with active registrations.

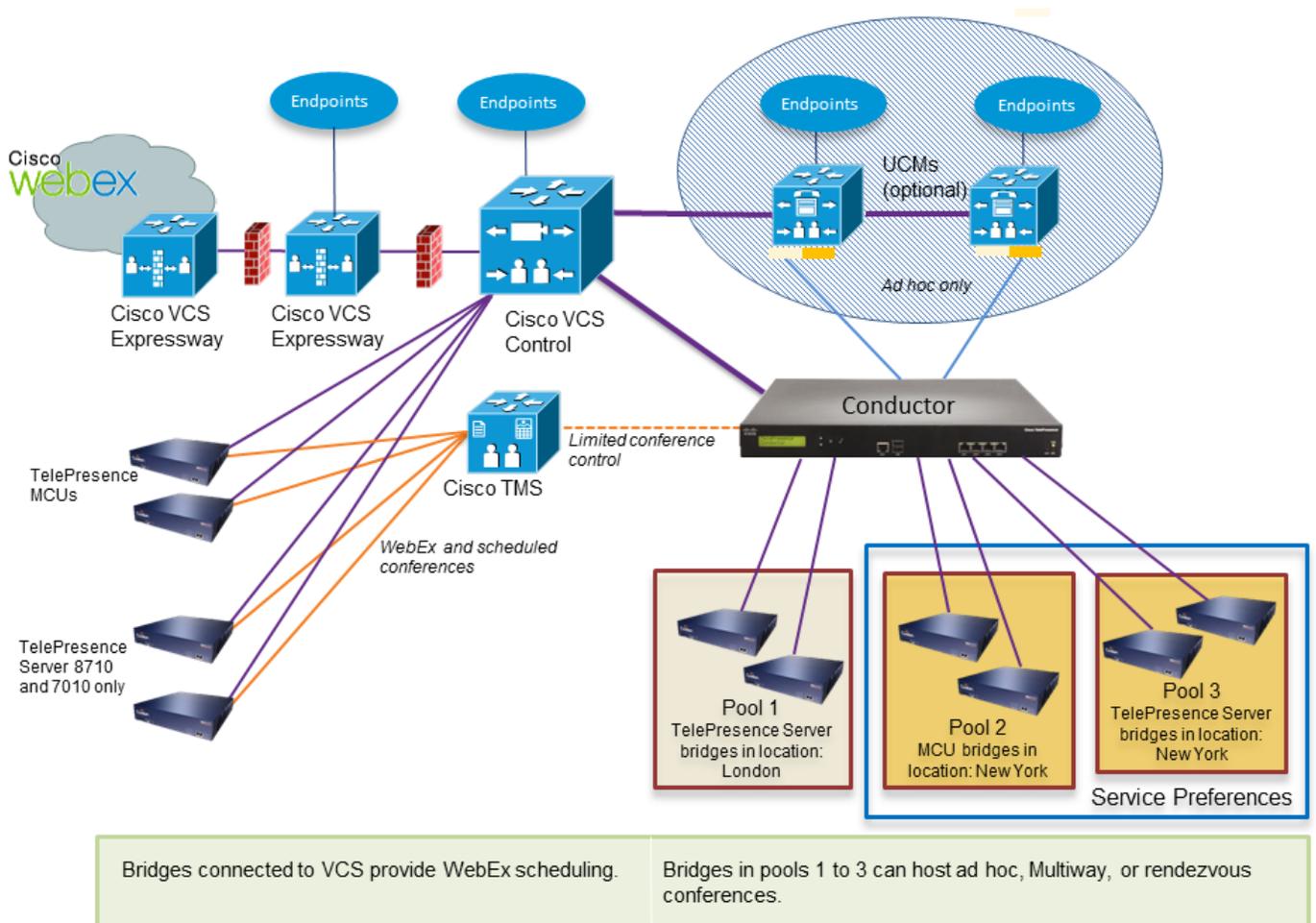
For guidance about how to use Cisco TMS to schedule conferences, see the [Cisco TelePresence Management Suite Administrator Guide 14.3](#). For general background information about scheduling conferences, see [Conference scheduling and control in Optimized Conferencing \[p.21\]](#).

## VCS-centric deployment model

The TelePresence Conductor is primarily configured with Cisco VCS, which is the main call controller. Optionally TelePresence Conductor may also be configured with Cisco Unified CM if [ad hoc conferencing](#) is used. Bridges are pooled behind TelePresence Conductor for Multiway and rendezvous (and ad hoc if used). For scheduled conferencing (including WebEx) dedicated bridges are managed directly by the Cisco VCS.

**Note:** The Optimized Conferencing solution requires TelePresence Conductor to be deployed using its back-to-back user agent (B2BUA); the external policy server interface is not supported.

Figure 5: VCS-centric deployment model



## Conference call flows

- Cisco VCS provides call registration and routing of voice and video for standards-based endpoints. Optionally the Cisco Unified CM may be used for additional SIP-based voice and video endpoints.
- All calls associated with non-scheduled conferences are managed by TelePresence Conductor on the conference bridges. The calls are carried to and from TelePresence Conductor as follows:
  - Rendezvous and Multiway calls are trunked (SIP) between TelePresence Conductor and a Cisco VCS Control network managed with Cisco TMS.

- Ad hoc calls are carried over SIP trunks between Cisco Unified CM and TelePresence Conductor. XML RPC connections are established between each Cisco Unified CM and the TelePresence Conductor.

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**Note:** Ad hoc call flows (which are managed by Cisco Unified CM) cannot be used to add participants to conferences created in another manner. Other call flows cannot be used to add participants to ad hoc conferences. This avoids any potential for chained conferences.

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## Conference bridges

Conference bridges can be MCUs or TelePresence Servers or a combination.

Table 5: Conference bridges supported in the VCS-centric deployment model

Bridge type	Required version
TelePresence Server	3.1
MCU	4.4

### General configuration considerations

TelePresence Servers must be in remotely managed operation mode for bridges pooled behind TelePresence Conductor and in locally managed mode for bridges directly connected to the Cisco VCS. The TelePresence Server on Multiparty Media 310/320 and TelePresence Server on Virtual Machine do not need configuring as they are always in remotely managed operation mode.

In certain cases, TelePresence Servers are optimized dynamically by TelePresence Conductor if *Optimize resources* is enabled in the TelePresence Conductor conference template.

### Bridges for ad hoc, Multiway™ and rendezvous

All conference bridge types can support ad hoc, Multiway, and rendezvous conferencing. TelePresence Server bridges must be configured in remotely managed mode.

The conference bridges are grouped into pools of like devices in TelePresence Conductor, to which TelePresence Conductor applies Service Preferences to prioritize the use of the pools for specific conference calls (see [Pooling and Service Preferences \[p.26\]](#)). The illustration in [VCS-centric deployment model \[p.17\]](#) shows co-located bridges in Pools 1-3 behind TelePresence Conductor for ad hoc, rendezvous or Multiway conferencing.

### Bridges for scheduling/WebEx

Scheduled/WebEx conferencing is supported on all MCU models and on the TelePresence Server 7010 and 8710. To host scheduled conferences a dedicated bridge needs to be connected to the Cisco VCS. TelePresence Server bridges must be configured in locally managed mode. The illustration in [VCS-centric deployment model \[p.17\]](#) shows four dedicated bridges used for scheduling and WebEx.

### More information

For guidance about configuring TelePresence Server bridges see the [TelePresence Server product documentation](#). For information about resource optimization see the [Cisco TelePresence Conductor Administrator Guide XC2.2](#) and [Cisco TelePresence Server Version 3.1 Printable Online Help](#).

## Role of the TelePresence Conductor

TelePresence Conductor manages the bridge resources for all ad hoc, Multiway, and rendezvous conferences. It selects which bridge or bridge pools to host a specific conference, and balances the conference load across the bridges in the defined pools. Cisco VCS and Cisco Unified CM are unaware of the individual bridges in the network and only communicate with the TelePresence Conductor.

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**Note:** Cisco Unified CM delivers ad hoc conferences to different IP addresses on TelePresence Conductor. Multiple Cisco Unified CM systems (from Version 8.6.2) can access the same IP address on TelePresence Conductor. The Cisco Unified CMs do not need to be in the same physical location.

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## Conference support for endpoints

Rendezvous conferences for endpoints registered to Cisco Unified CM are channeled through TelePresence Conductor to the conference bridge (via Cisco VCS).

Endpoints registered to Cisco VCS Control can be included in the following conferences:

- Rendezvous calls hosted on the bridges behind TelePresence Conductor (via Cisco VCS).
- Multiway conferences initiated by an endpoint registered to Cisco VCS Control, but hosted on the bridges behind TelePresence Conductor (via Cisco VCS).
- Ad hoc calls initiated by endpoints registered to Cisco Unified CM and channeled through Cisco Unified CM to TelePresence Conductor.

## Routing for ad hoc, Multiway™ and rendezvous calls

In this release, regardless of where endpoints are registered, rendezvous and Multiway conference calls all route via the Cisco VCS and ad hoc conference calls route via the Cisco Unified CM to TelePresence Conductor. Ensuring that incoming and outgoing calls follow the same path provides simplicity in the architecture. The configuration process summary is as follows:

1. Configure a Cisco Unified CM bridge resource (and a Media Resource Group and Media Resource Group List) which points at the TelePresence Conductor IP for ad hoc conferencing.
2. Configure the SIP trunk between Cisco VCS Control and TelePresence Conductor. For Multiway and rendezvous calls, you need to define search rules in the Cisco VCS to point to the appropriate zone.
3. Configure the TelePresence Servers to use TelePresence Conductor for remote management.

## Scheduled/WebEx conferences

Both conference scheduling and conference control functions are performed by Cisco TMS directly to the bridges.

- WebEx and TelePresence users can participate jointly in scheduled meetings.
- TelePresence Servers must be configured in locally managed mode.
- Bridges used for scheduled conferences must be registered to the Cisco VCS. Cisco TMS can only schedule bridges with active registrations.

For guidance about how to use Cisco TMS to schedule conferences, see the [Cisco TelePresence Management Suite Administrator Guide 14.3](#). For general background information about scheduling conferences, see [Conference scheduling and control in Optimized Conferencing \[p.21\]](#).

# Conference scheduling and control in Optimized Conferencing

The solution supports direct scheduling (not through TelePresence Conductor) for conferences. Bridges used for scheduling must be registered to a Cisco VCS. All conference booking (scheduling) is done by the Cisco TMS, which schedules conferences direct to the MCU and/or TelePresence Server bridges.

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## Notes:

- TelePresence Servers must be configured in locally managed mode.
  - Scheduling is not supported on the TelePresence Server on Multiparty Media 310/320 and TelePresence Server on Virtual Machine.
- 

## Conference control facilities

Conference control facilities are not available for ad hoc conferences. For rendezvous and Multiway conferences, administrators can control various aspects of ongoing conferences using the Cisco TMS Conference Control Center features. These allow administrators to:

- See which conferences are currently running on bridge resources on the network.
  - View a list of participants in a conference.
  - Control a conference, including adding or removing participants, and handing over conference controls to a participant.
  - End the conference.
- 

**Note:** Participants cannot be moved from one conference to another conference hosted on a different bridge.

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# Conferencing fundamentals

When three or more participants are involved in a call, the call becomes a conference. Ad hoc, Multiway, rendezvous, and scheduled conferences are supported in an Optimized Conferencing deployment, providing a consistent conference experience for users of [supported endpoints](#).

Within TelePresence Conductor, bridge resources can be set up to host only ad hoc or only rendezvous conferences, or a mixture of the two. Selecting both ad hoc and rendezvous can save purchasing extra bridges as you only need to buy equipment for the maximum number of conference participants, rather than the maximum ad hoc participants and maximum rendezvous participants.

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**Note:** Third-party endpoints can participate in ad hoc, rendezvous, Multiway, and scheduled conferences using standard SIP.

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## Ad hoc conferences

Point-to-point calls hosted on a Cisco Unified CM can be escalated to an ad hoc conference hosted on a bridge. A third party calling one of the parties already in a point-to-point call can be added to the ad hoc conference. Alternatively, a third party can be added by one of the parties in the point-to-point call by putting the call on hold, dialing the third party and adding them to the conversation using the conference button on the phone. For details on the actual steps to escalate a point-to-point call, refer to the user documentation supplied with the endpoints. Only endpoints with the conference key can create an ad hoc conference. Optionally an ad hoc conference can be further extended by adding more participants. As additional participant(s) leave, the conference is automatically returned to a point-to-point call when only two participants remain, without any disruption to the call.

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### Notes:

- An ad hoc escalation of a participant in a rendezvous conference or Multiway conference will cause a chained conference. Clicking the conference button on the Cisco Unified CM endpoint causes the endpoint to try to create a new ad hoc conference escalation rather than extend the rendezvous or Multiway conference. This causes the ad hoc conference to be chained with the existing rendezvous or Multiway conference. The endpoints will end up across the two chained conferences, resulting in a degraded conference experience for the participants.
  - Similarly, participants of ad hoc conferences should not be added to rendezvous and Multiway conferences. Attempting to add a whole conference as a participant to an existing conference will lead to chained conferences, resulting in a degraded conference experience for the participants.
- 

## Multiway™ conferences

Multiway conferences are conferences that escalate from a point-to-point call on a Cisco VCS Control to a three-party call, similar to the ad hoc call escalation on Cisco Unified CM. Multiway conference requests are routed as follows:

- UCM-centric deployments. From Cisco VCS via the Cisco Unified CM to TelePresence Conductor.
- VCS-centric deployments. From Cisco VCS direct to TelePresence Conductor.

The Multiway conference will be hosted on a bridge connected to the TelePresence Conductor.

Multiway enables endpoint users to introduce a third party into a call, or when the third party calls one of the parties already in the point-to-point call and the participants wish to include the third party in the call. The

endpoint user who escalates the call requires an endpoint that supports the **Merge and Accept** button on the user interface.

Multiway callers can be joined to a rendezvous conference.

See the latest [Multiway™ Deployment Guide](#) for the steps to configure Multiway conferences.

## Rendezvous conferences

Rendezvous conferences can occur at any time without the need for the conference to be scheduled. The administrator creates the conference 'rendezvous' number as a conference alias on TelePresence Conductor, the host is told this rendezvous number and shares it with all participants of the conference. Rendezvous conferences are created when multiple participants dial the configured 'rendezvous' number. See [Cisco TelePresence Conductor Administrator Guide](#) for information about creating conference aliases.

Rendezvous conferences can be created as generic conferences or conferences with unique configuration for a specific user or group.

In Optimized Conferencing deployments, rendezvous conferences are configured on the TelePresence Conductor so the conference is never statically defined on a single bridge. TelePresence Conductor load balances the conferences across the available bridges in a pool, increasing conference resilience while maintaining the ability to have unique conference settings per rendezvous conference.

---

**Note:** Rendezvous conferences in a Optimized Conferencing UCM-centric deployment require a SIP trunk between Cisco Unified CM and TelePresence Conductor. Cisco Unified CM routes rendezvous participants to the IP address of this SIP trunk.

---

## Scheduled conferences

Scheduled conferences are pre-booked conferences with a start and end time and a pre-defined set of participants. They are booked through Cisco TMS, either using Cisco TMS directly or via a third-party product such as Microsoft Exchange with the Cisco TMSXE extension plug-in.

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**Note:** An ad hoc escalation of a participant in a scheduled conference will cause a chained conference. This happens because the escalation creates a new three-party conference, where one of the participants is the scheduled meeting. The result is a degraded conference experience for the participants.

---

## Auto-dialed participants (ADP)

TelePresence Conductor supports auto-dialing participants for rendezvous conferences. This is particularly useful for conferences which need to be recorded or when senior management need to easily join a conference. Auto-dialed participants are addresses that are automatically dialed when a conference starts. The address can relate to a device such as an endpoint or recording device (multiscreen endpoints are not supported), or could be any dial-able ID. See [Cisco TelePresence Conductor Administrator Guide](#) and [Cisco TelePresence Conductor with Cisco Unified Communications Manager Deployment Guide](#) for information about setting up auto-dialed participants.

# Technology and configuration considerations

## Locations

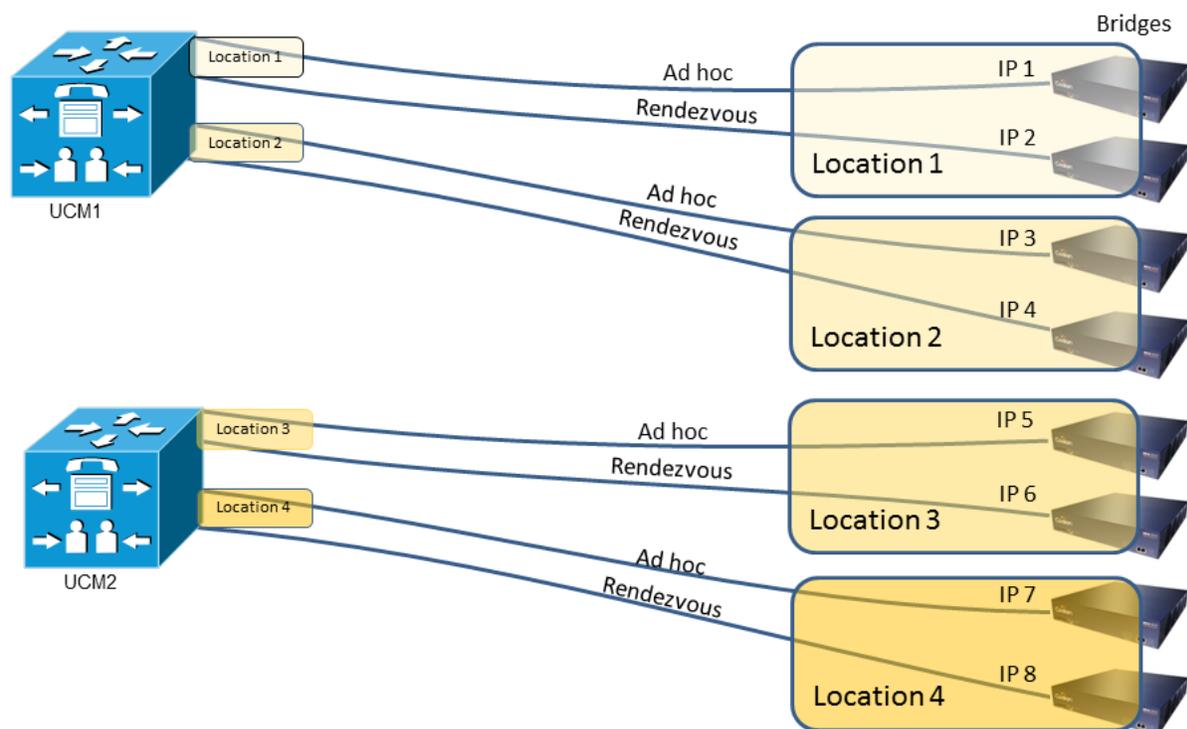
The Locations feature in Cisco Unified CM enables administrators to implement call admission control and determine the maximum permitted bandwidth between and within Locations. To avoid overloading the network, administrators often configure Cisco Unified CM with different Locations for each office site or campus.

**Note:** If you do not use call admission control to limit the audio and video bandwidth on an IP WAN link, an unlimited number of calls can be active on that link at the same time. This can cause the audio quality of each audio call and the video quality of each video call to degrade as the link becomes oversubscribed.

## Background

Without the TelePresence Conductor in the deployment, Cisco Unified CM connects directly to MCU conference bridges with different MCUs connected for ad hoc calls and for rendezvous calls. If the Locations feature is used, separate ad hoc and rendezvous bridges are needed per Location. This illustration assumes each Location requires both ad hoc and rendezvous conferencing:

Figure 6: Connecting Cisco Unified CM directly to bridges



## Connecting Cisco Unified CM to bridges through the TelePresence Conductor

TelePresence Conductor supports conferences from endpoints registered directly with Cisco Unified CM. Cisco Unified CM call admission control is supported by TelePresence Conductor if the TelePresence Conductor is configured with multiple IP addresses to emulate the connectivity Cisco Unified CM would expect.

The steps required to connect TelePresence Conductor to Cisco Unified CMs which are configured to support Locations are described in [Cisco TelePresence Conductor with Cisco Unified Communications Manager Deployment Guide](#). The end result of the configuration is:

- Cisco Unified CM sees TelePresence Conductor as one or more bridges in each Location.
- A SIP trunk is established between Cisco Unified CM and TelePresence Conductor for rendezvous calls.
- TelePresence Conductor is configured with Locations to support ad hoc, rendezvous or both types of conferences, according to the specific requirements of each Location.
- Locations are configured within TelePresence Conductor, and conference bridge pools and Service Preferences are assigned.

---

**Note:** Cisco Unified CM delivers ad hoc and rendezvous conferences to different IP addresses on TelePresence Conductor. Multiple Cisco Unified CMs (from Version 8.6.2) can access the same IP address on TelePresence Conductor. The Cisco Unified CMs do not need to be in the same physical location.

---

**Note:** Bridge pools and Service Preferences configured in TelePresence Conductor should only contain bridges within the same physical location.

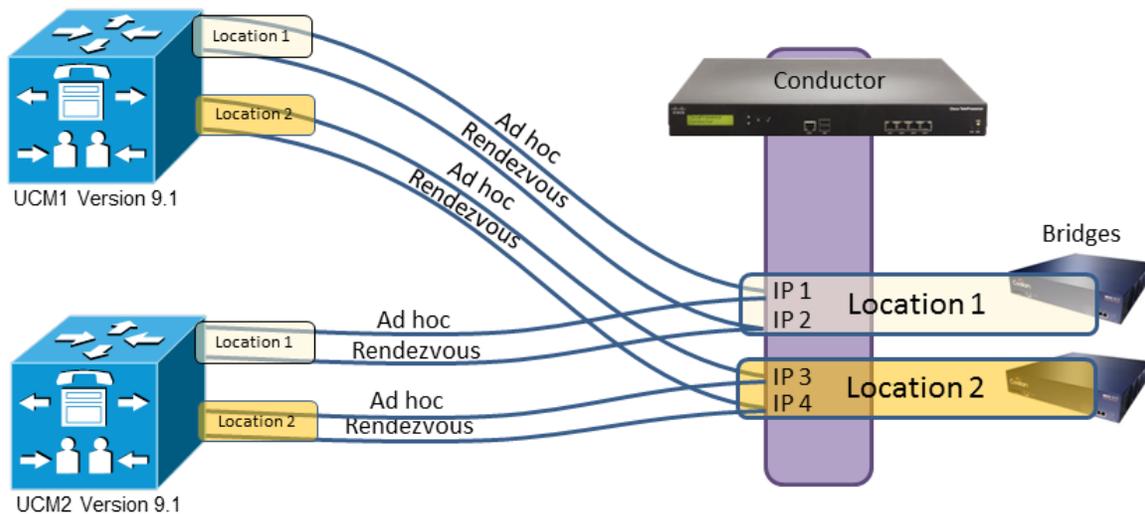
---

Outbound calls from conference bridges to participants registered on or available via Cisco Unified CM are supported. Bridge pools are assigned a Location within TelePresence Conductor and outbound calls use the same SIP trunk as incoming rendezvous calls. Outbound calls are typically used for automatic dialing of conference participants into a conference, or to add a participant to an existing conference via the Cisco TMS conference control center, or to add a recording server or an audio bridge.

The conference administrator must ensure that aliases dialed from endpoints connected to Cisco Unified CM only use bridges in the Location expected by Cisco Unified CM. If bridges in a different Location are specified and used, TelePresence Conductor will place the call on the bridge in a different Location from that expected by Cisco Unified CM. This means Cisco Unified CM will account for the call bandwidth in the wrong Location, and wrongly allocate the bandwidth to the expected Location with no bandwidth allocation to the actual Location.

Cisco Unified CM Version 9.1 extends Location handling, enabling multiple Cisco Unified CM clusters to support the same Location. The following illustration shows multiple Cisco Unified CM clusters communicating with specific IP addresses on a TelePresence Conductor. For example, both UCM1 and UCM2 route ad hoc calls to Location 1 using the same IP address on TelePresence Conductor. UCM1 and UCM2 route ad hoc calls to Location 2 using another IP address. Similarly, rendezvous calls are routed from both UCM1 and UCM2 to a single IP for Location 1 and to a single IP for Location 2.

Figure 7: Using Locations with Cisco Unified CMs running 9.1



## Pooling and Service Preferences

All conference bridges configured in a TelePresence Conductor pool or Service Preference must be in the same physical location and of the same type (MCU or TelePresence Server).

### Conference bridge pools

With the exception of conference bridges used for scheduling, each conference bridge in the deployment must be assigned to a conference bridge pool in TelePresence Conductor. A conference bridge can belong to only one pool. All bridges in a pool are configured with the same capabilities. Pools must reflect the bridge type (and location) of the bridge. For example, in [Figure 5: VCS-centric deployment model \[p. 17\]](#) Pool 1 could be a group of TelePresence Servers located in the London office, Pool 2 a group of MCUs with HD ports in New York, and Pool 3 a group of TelePresence Servers with SD ports, also in New York.

### Service Preferences

A Service Preference is a prioritized list of conference bridge pools set up through TelePresence Conductor, which defines the order to use pools if conference resources are limited. For any particular conference the administrator can determine the order of preference for the pools that TelePresence Conductor will attempt to use to host that conference. If no conference bridges in the first pool can be used to host a conference (for example insufficient resources are available to meet the conference requirements), TelePresence Conductor will check whether the second pool in the list can be used.

A Service Preference can contain anywhere between 1 and 30 conference bridge pools. A single conference bridge pool can be used in any number of Service Preferences.

---

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

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See *Cisco TelePresence Conductor with Unified Communications Manager Deployment Guide* for more information about assigning conference bridges to pools and setting up Service Preferences.

## Encryption

Communication security across Optimized Conferencing is provided by TLS encryption of the signaling and SRTP encryption of the media. All SIP and HTTP (XML API) communication can be encrypted by using SIP TLS between Cisco Unified CM and TelePresence Conductor. All TelePresence Conductor-to-bridge communication *must* be encrypted.

---

**Note:** The MCU sends encrypted outgoing content over SIP in the main video channel.

---

See *Cisco TelePresence Conductor with Unified Communications Manager Deployment Guide* for more information about configuring encryption across an Optimized Conferencing deployment.

## IPv4

An Optimized Conferencing deployment supports IPv4 only. All bridges and endpoints within the deployment must be configured to use IPv4. Bridges and endpoints connected to a Cisco VCS Control may be configured to use IPv6 providing the Cisco VCS Control is also configured to use IPv6.

## Content channel

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

To ensure that content is handled appropriately through TelePresence Conductor, you need to set **Content mode (Advanced parameters)** to *Transcoded* in the Conference template in TelePresence Conductor. Content is then handled in the correct manner irrespective of whether the bridge type hosting the conference is an MCU (which supports both transcoding and passthrough mode) or a TelePresence Server (which supports transcoding only). On the bridges side, TelePresence Servers are set to *Transcoded* by default and you should set MCU bridges to *Hybrid*.

---

**Note:** Transcoded mode is only relevant for MCU bridges. Selecting Transcoded mode in a TelePresence Conductor template results in the allocation of a dedicated content port or video port, depending on the MCU model and configuration.

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### Content channel considerations on encrypted MCU bridges (WebEx/external calls)

By default, MCU bridges with encryption enabled deliver presentation content for encrypted SIP calls in the main video channel. For WebEx calls, the Optimized Conferencing solution requires separate channels to be used for main video and content. Separate channels can also optionally be used for other external connection types. To configure separate channels, the MCU must be set to optional encryption and encryption must not be used for the SIP media on the internal leg of calls. The result of this is to unencrypt the internal leg of the call and hence split video and content into separate channels—so media is not encrypted on the internal network when sent from the MCU to WebEx, or vice versa.

For external/WebEx calls the outgoing media for the external leg of the call is encrypted as part of the firewall traversal. Incoming media is decrypted at the edge of the network before being sent unencrypted over the internal network.

The process to switch off encryption on the trunk in the Cisco VCS is described in [Cisco WebEx Enabled TelePresence Configuration Guide](#), section "[Configuring Traversal Zones for MCUs with Encryption Enabled](#)". In summary, connect a new traversal client zone in VCS Control with media encryption set to

*Force unencrypted* (with a different port number) to a new traversal server zone in VCS Expressway with media encryption set to *Force encrypted*. Then set up an appropriate search rule in VCS Control to match WebEx traffic. Optionally this method can be extended to other groups of external connections by altering the search rule.

## H.323 interworking

The Optimized Conferencing network is SIP-based. If you want to connect H.323 endpoints to conferences within the Optimized Conferencing network, the call must be interworked before reaching the TelePresence Conductor. This can be done by configuring the Cisco VCS to perform the necessary SIP/H.323 interworking.

To perform interworking only for locally registered endpoints, set the **H.323 <-> SIP interworking mode** to *Registered only* (accessed from **VCS configuration > Protocols > Interworking**). If you want to allow interworking of business-to-business H.323 calling between external networks and your conferences, set the **H.323 <-> SIP interworking mode** to *On*. This will interwork all incoming calls.

## ActiveControl and the iX protocol

ActiveControl provides conference control functions and conference information for endpoints running software version TC6.2 or later (provided they have Touch controllers). From the touchpad, users can see a list of participants and other information during a conference. On certain endpoints they can change the conference layout displayed locally, and users can disconnect other participants.

---

**CAUTION: Enabling ActiveControl may cause call failures in some situations**

ActiveControl, or more specifically the iX protocol which supports it, must be used with care if you connect the Optimized Conferencing network to external networks or to older systems. In these cases limitations exist on where you can enable iX. For details of the configuration requirements, see [ActiveControl in Optimized Conferencing for Cisco Unified CM and Cisco VCS Deployment Guide](#).

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ActiveControl requires the TelePresence Server to be running in remotely managed operation mode.

## Resilience

A TelePresence Conductor can be part of a cluster of up to three Conductors. Each Conductor (or each cluster) can manage up to 30 conference bridges or 2400 concurrent conference calls.

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**Note:** Clustering TelePresence Conductors does not increase the maximum number of conference bridges / concurrent calls that can be supported, which remains at 30 bridges / 2400 calls.

---

Deploying clusters of TelePresence Conductors and bridges ensures service availability even if individual conference bridges or Conductors are taken out of service. For more information see the appropriate deployment guide ([Cisco TelePresence Conductor Clustering with Cisco Unified Communications Manager Deployment Guide](#) or [Cisco TelePresence Conductor Clustering with Cisco TelePresence VCS \(B2BUA\) Deployment Guide](#)).

## SIP messaging is Delayed Offer

The Optimized Conferencing solution requires Delayed Offer for SIP messaging in the Cisco Unified CM. This section provides some general background about the Delayed Offer mechanism.

Cisco Unified CM uses the SIP Offer/Answer model for establishing SIP sessions. In this context, an Offer is contained in the Session Description Protocol (SDP) fields sent in the body of a SIP message. The key SIP standard (RFC 3261) defines two ways that SDP messages can be sent in the Offer and Answer, which are commonly known as Delayed Offer and Early Offer.

In an Early Offer, the session initiator (calling device) sends its capabilities (such as codecs supported) in the SDP contained in the initial Invite. This allows the called device to choose its preferred codec for the session.

In a Delayed Offer, the session initiator does not send its capabilities in the initial Invite but waits for the called device to send its capabilities first (such as the list of codecs supported by the called device). This allows the calling device to choose the codec to be used for the session.

## Endpoints

For a list of endpoints that have been tested with Optimized Conferencing, see the latest solution release notes on [Cisco.com](https://www.cisco.com).

### Administration for TIP multiscreen devices

This feature applies to deployments with Cisco TIP multiscreen endpoints and TelePresence Server bridges. Providing you are running TelePresence Conductor version XC2.2, Cisco TIP devices are automatically allocated the appropriate number of screens (up to the *Default maximum screens* setting in the template) *except* in the following cases:

- Pre-configured endpoints. Resources are allocated according to the configured settings.
- Ad hoc conferences. The default maximum screens defined in the conference template are allocated (although subsequently on successful connection the allocation is optimized down if appropriate).

Manual configuration may still be needed for multiscreen devices that do not support TIP, and for some third-party devices. For details about resource allocation and optimization settings, see [Cisco TelePresence Conductor Administrator Guide](#)

### Third-party endpoints

Endpoints from other equipment providers can participate in ad hoc, Multiway, rendezvous, and scheduled conferences using standard SIP. For Multiway, endpoints must implement the “join” button if they want to be hosts. For ad hoc, endpoints must be registered to Cisco Unified CM, and must implement the “conference” button if they want to be hosts.

# Implementing Optimized Conferencing across your network

This section summarizes how to implement the solution:

1. Required software/firmware versions
2. Recommended order for upgrading
3. Prerequisites for configuration
4. Configuration process

## Required software/firmware versions

Optimized Conferencing requires the network devices to be running the versions specified below.

**CAUTION:** To ensure continuity of operation in the video conferencing network, devices must be upgraded in the sequence specified in [Recommended order for upgrading \[p.32\]](#).

### Infrastructure

Table 6: Required software for infrastructure products

Product	Required version	Role
TelePresence Conductor	XC2.2	Conference resource allocation
TelePresence Server Includes TelePresence Server 7010 and MSE 8710, TelePresence Server on Multiparty Media 310/320, and TelePresence Server on Virtual Machine	3.1	Conference bridges
MCU Includes 5300 Series, 4500 Series, 4501 Series, 4200 Series, MCU MSE Series 8420 and 8510	4.4	Conference bridges
Cisco Unified CM	9.1.2	Call control
Cisco VCS	X7.2 (X7.2.2 recommended)	Call control in VCS-centric deployments; H.323 interworking
Cisco TMS	14.3	Conference management & scheduling
Cisco TMSXE	3.1	Conference management & scheduling for Microsoft environments
Cisco VCS Expressway	X7.2 (X7.2.2 recommended)	Secure firewall traversal; registration of standards-based endpoints across the Internet
Cisco WebEx	T28.12 or later	WebEx conferencing

## Endpoints and peripherals

Table 7: Required software for endpoints and peripherals

Product	Version
Cisco TelePresence EX Series (EX60, EX90)	TC6.2
Cisco TelePresence Quick Set C20 and SX20	
Cisco TelePresence Codec C Series (C40, C60, C90)	
Cisco TelePresence MX Series (MX200, MX300)	
Cisco TelePresence Profile Series	
Cisco Desktop Collaboration Experience DX650	10.0(2)
Cisco TelePresence Systems (CTS 500, CTS 1100, CTS 1300, CTS 3010, CTS 3210)	CTS 1.10.2
Cisco TelePresence TX Systems (TX9000 Series and TX9200 Series)	TX6.0.3
Cisco Unified IP Phone 9900 Series	9.3(4)
Cisco Unified IP Phone 8900 Series	9.3(2)
Cisco Jabber for iPad	9.3
Cisco Jabber for Windows	9.2
Cisco Jabber Video for TelePresence (formerly Movi)	4.6
Cisco IP Video Phone E20	TE4.1.3

## Recommended order for upgrading

Follow the upgrade sequence recommended in the table below to implement Optimized Conferencing in your video network. The upgrade order applies to both UCM-centric and VCS-centric deployments, and to upgrades from an earlier version of Optimized Conferencing. This sequence has been tested by Cisco and verified to interoperate at all stages while you roll out the upgrade program across your network.

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

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**Note:** The upgrade sequence differs from the sequence for the previous Optimized Conferencing release.

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Table 8: Recommended upgrade sequence for Optimized Conferencing components

Order	Role	Component	Upgrade to version...
1	Management	Cisco TMS	14.3
2	Call control	Cisco Unified CM	9.1.2
3	Call control	Cisco VCS	X7.2 or later. X7.2.2 recommended
4	Load balancing	TelePresence Conductor (including trial version)	XC2.2 If this is the first time TelePresence Conductor has been installed in your video network, you can install and upgrade it at any stage in the sequence. After configuring TelePresence Conductor, configure locally managed bridges first and then remotely managed bridges:
5	Bridges	MCU	4.4
		TelePresence Server	3.1
-	Endpoints	Endpoints (EX60, EX90, C20, C40, C60, C90, SX20, MX200, MX3000, and Profile Series)	TC6.2 Endpoints can be upgraded in any order.

WebEx conferencing requires Cisco WebEx 28.12 or later.

## Prerequisites for configuration

Before you start the system configuration for Optimized Conferencing, make sure the following prerequisites are complete:

- You have access to the web interfaces of the following devices on your network:
  - A Cisco Unified CM, already configured with a base configuration. Ensure connectivity by registering at least three endpoints to Cisco Unified CM, and make sure they are all capable of calling each other with voice and video communications. For Cisco Unified CM-related information, see the [Cisco Unified Communications Manager](#) documentation on Cisco.com.
  - A Cisco VCS is required for VCS-centric deployments and for UCM-centric deployments that use WebEx/scheduling. For Cisco VCS-related information, see the [Cisco TelePresence Video Communication Server](#) documentation on Cisco.com.
  - A Cisco TMS is required for VCS-centric deployments and for UCM-centric deployments that use WebEx/scheduling. For Cisco TMS-related information, see the [Cisco TelePresence Management Suite](#) documentation on Cisco.com.
  - A TelePresence Conductor, which must be deployed using its back-to-back user agent (B2BUA). For assistance in accessing the device over the network, see [Cisco TelePresence Conductor Getting Started Guide](#).
  - One or more conference bridges, either MCUs or TelePresence Servers.
- Basic configuration for each conference bridge must be complete, as described in the relevant Getting Started Guide, (or Deployment Guide in the case of virtual bridges).
  - [MCU 5300 Series](#)
  - [MCU 4500 Series](#)
  - [MCU 4200 Series](#)
  - [MCU MSE 8420](#)
  - [MCU MSE 8510](#)
  - [TelePresence Server 7010](#)
  - [TelePresence Server MSE 8710](#)
  - [TelePresence Server on Virtual Machine](#)
  - [TelePresence Server on Multiparty Media 310/320](#)
- For TelePresence Server bridges the operation mode must be configured as follows:
  - Remotely managed for bridges pooled behind TelePresence Conductor.
  - Locally managed for bridges directly connected to the Cisco VCS.
- Endpoints and bridges must be configured to use IPv4. Bridges and endpoints connected to a Cisco VCS Control may be configured to use IPv6 providing the Cisco VCS is also configured to use IPv6.
- Endpoints must be registered to Cisco Unified CM, and/or to the Cisco VCS as appropriate.
- All devices must be running the required software / firmware versions (see [Required software/firmware versions \[p.30\]](#)).

## Configuration process

**CAUTION:** It is essential that you follow in full the steps in the deployment guides referenced below for each task that applies to your chosen deployment.

### Step 1. Check the release notes

Check the release-specific configuration considerations described in the latest solution release notes for Optimized Conferencing Version 2.0 on [Cisco.com](https://www.cisco.com).

### Step 2. Configure the TelePresence Conductor

Configure TelePresence Conductor for your chosen deployment of Optimized Conferencing. To do this follow the step by step instructions in the associated deployment guide:

UCM-centric deployments	<a href="#">Cisco TelePresence Conductor with Cisco Unified Communications Manager Deployment Guide (XC2.2)</a> (D14998)
VCS-centric deployments	<a href="#">Cisco TelePresence Conductor with Cisco TelePresence VCS (B2BUA) Deployment Guide (XC2.2)</a> (D15014)

In addition to the steps described in the deployment guides, the following specific configuration requirements apply for Optimized Conferencing:

- The Optimized Conferencing solution requires TelePresence Conductor to be deployed using its back-to-back user agent (B2BUA); the external policy service interface is not supported.
- If you want to take advantage of automatic resource allocation and optimization of TelePresence Server resources, the Conference template in TelePresence Conductor must define appropriate maximum screen settings and quality settings, and must enable the optimize resources setting. For more information about resource optimization in Optimized Conferencing, see [TelePresence Server resource optimization \[p. 12\]](#). For details about template settings, see [Cisco TelePresence Conductor Administrator Guide](#).
- The VCS **Zone profile** for the trunk between Cisco VCS Control and TelePresence Conductor should be set to *Custom* with **Automatically respond to SIP searches** set to *On*. For details see the task description for *Adding the TelePresence Conductor as a neighbor zone* in the *Cisco TelePresence Conductor with Cisco TelePresence VCS (B2BUA) Deployment Guide*. This step assumes that back-to-back user agent (B2BUA) mode is configured, as recommended. It does not apply in policy server mode (when each bridge is added as a neighbor zone and then as an infrastructure device).

### Step 3. Configure the Cisco VCS and Cisco Unified CM SIP trunk

Configure the Cisco VCS to Cisco Unified CM SIP trunk. To do this follow the step by step instructions in [Cisco TelePresence Cisco Unified Communications Manager with Cisco VCS \(SIP Trunk\) Deployment Guide](#) (D14602), which describes how to interwork a Cisco VCS and Cisco Unified CM over a SIP trunk.

### Step 4. Configure other devices

Links to the relevant deployment guides and associated product documentation are provided in [Related documentation \[p.36\]](#), including:

- [Cisco TelePresence Management Suite Administrator Guide](#) for guidelines on setting up scheduled conferences through Cisco TMS connected to a Cisco VCS Control.

- [Cisco WebEx Enabled TelePresence Configuration Guide](#) for guidelines on setting up scheduled conferences for participants to join from either WebEx or TelePresence (UCM-centric deployments).

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**Note:** If TelePresence Conductor is deployed in back-to-back user agent (B2BUA) mode (recommended), it must be configured in the Cisco TMS as SIP only.

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## Related documentation

Title	Reference	Link
Cisco TelePresence Conductor with Cisco Unified Communications Manager Deployment Guide XC2.2, CUCM 8.6.2 and 9.x	D14998	<a href="http://www.cisco.com/en/US/products/ps11775/products_installation_and_configuration_guides_list.html">http://www.cisco.com/en/US/products/ps11775/products_installation_and_configuration_guides_list.html</a>
Cisco TelePresence Conductor with Cisco TelePresence VCS (B2BUA) Deployment Guide XC2.2, X7.0 and later	D15014	<a href="http://www.cisco.com/en/US/products/ps11775/products_installation_and_configuration_guides_list.html">http://www.cisco.com/en/US/products/ps11775/products_installation_and_configuration_guides_list.html</a>
ActiveControl in Optimized Conferencing for Cisco Unified CM and Cisco VCS	D15051	<a href="http://www.cisco.com/en/US/products/ps11775/products_installation_and_configuration_guides_list.html">http://www.cisco.com/en/US/products/ps11775/products_installation_and_configuration_guides_list.html</a>
Cisco TelePresence Conductor Administrator Guide XC2.2	D14826	<a href="http://www.cisco.com/en/US/products/ps11775/prod_maintenance_guides_list.html">http://www.cisco.com/en/US/products/ps11775/prod_maintenance_guides_list.html</a>
Cisco Unified Communications Manager with Cisco VCS (SIP Trunk) Deployment Guide, Cisco VCS X7.2, CUCM 8.6.x, 9.x	D14602	<a href="http://www.cisco.com/en/US/products/ps11337/products_installation_and_configuration_guides_list.html">http://www.cisco.com/en/US/products/ps11337/products_installation_and_configuration_guides_list.html</a>
Cisco TelePresence Multiway™ Deployment Guide, Cisco VCS, MCU, Conductor	D14366	<a href="http://www.cisco.com/en/US/products/ps11775/products_installation_and_configuration_guides_list.html">http://www.cisco.com/en/US/products/ps11775/products_installation_and_configuration_guides_list.html</a>
Cisco TelePresence Video Communication Server Basic Configuration (Control with Expressway) Deployment Guide Cisco VCS X7.2	D14651	<a href="http://www.cisco.com/en/US/products/ps11337/products_installation_and_configuration_guides_list.html">http://www.cisco.com/en/US/products/ps11337/products_installation_and_configuration_guides_list.html</a>
Cisco TelePresence Management Suite Administrator Guide Version 14.3	D13741	<a href="http://www.cisco.com/en/US/products/ps11338/prod_maintenance_guides_list.html">http://www.cisco.com/en/US/products/ps11338/prod_maintenance_guides_list.html</a>
Cisco WebEx Enabled TelePresence Configuration Guide	OL-21352-02	<a href="http://www.cisco.com/en/US/products/ps11338/products_installation_and_configuration_guides_list.html">http://www.cisco.com/en/US/products/ps11338/products_installation_and_configuration_guides_list.html</a>
Cisco TelePresence Video Communication Server Administrator Guide X7.2	D14049	<a href="http://www.cisco.com/en/US/products/ps11337/prod_maintenance_guides_list.html">http://www.cisco.com/en/US/products/ps11337/prod_maintenance_guides_list.html</a>

## More product documentation on Cisco.com

Product	Link
TelePresence Conductor	<a href="http://www.cisco.com/en/US/products/ps11775/tsd_products_support_series_home.html">http://www.cisco.com/en/US/products/ps11775/tsd_products_support_series_home.html</a>
Cisco Unified CM	<a href="http://www.cisco.com/en/US/products/sw/voicesw/ps556/tsd_products_support_series_home.html">http://www.cisco.com/en/US/products/sw/voicesw/ps556/tsd_products_support_series_home.html</a>
MCU 5300 Series	<a href="http://www.cisco.com/en/US/products/ps12283/tsd_products_support_series_home.html">http://www.cisco.com/en/US/products/ps12283/tsd_products_support_series_home.html</a>
MCU 4500 Series	<a href="http://www.cisco.com/en/US/products/ps11341/tsd_products_support_series_home.html">http://www.cisco.com/en/US/products/ps11341/tsd_products_support_series_home.html</a>

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MCU MSE Series	<a href="http://www.cisco.com/en/US/products/ps11447/tsd_products_support_series_home.html">http://www.cisco.com/en/US/products/ps11447/tsd_products_support_series_home.html</a>
TelePresence Server	<a href="http://www.cisco.com/en/US/products/ps11339/tsd_products_support_series_home.html">http://www.cisco.com/en/US/products/ps11339/tsd_products_support_series_home.html</a>
Cisco VCS	<a href="http://www.cisco.com/en/US/products/ps11337/tsd_products_support_series_home.html">http://www.cisco.com/en/US/products/ps11337/tsd_products_support_series_home.html</a>

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