Configure Media Resources

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About Media Resources

Cisco Unified Communications Manager functionality requires the use of media resources. Cisco Unified Communications Manager includes media resources such as:

- Annunciators
- Interactive Voice Response (IVR)
- Media Termination Points (MTP)
- Transcoders
- Trusted Relay Points
- Conference Bridges
- Music On Hold/Video on Hold

You can make media resources available to calls by assigning them to a media resource group list, and then assigning that list to a device pool, or to an individual device. The default setting for individual devices is to use the media resources that are assigned to the device pool that the device is using.

Note For information on configuring Music On Hold, refer to the *Feature Configuration Guide for Cisco Unified Communications Manager*.

Media Termination Points

A media termination point (MTP) is an entity that accepts two full-duplex media streams, bridging the streams together and allowing them to be set up and torn down independently. Cisco Unified Communications Manager can insert an MTP in the media path to resolve many situations:

- To act as a Trusted Relay Point (TRP)

- To provide conversion between IPv4 and IPv6 for RTP streams
- To deliver SIP Early Offer over SIP trunks
- To address DTMF transport mismatches
- To act as an RSVP agent

MTP for H.323 Calls

Media Termination Points can be inserted in the media path for H.323 calls in order to extend supplementary services, such as call hold, call transfer, call park, and conferencing, that are normally not available when a call is routed to an H.323 endpoint. For H.323 supplementary services, MTPs are only required for endpoints that do not support EmptyCapability Set (ECS) or FastStart. All Cisco and other third party other endpoints that support ECS and FastStart do not require an MTP.

MTP Types

Cisco Unified Communications Manager supports the following MTP types:

- Software MTPs in IOS gateways
- Hardware MTPs in IOS gateways
- Software MTP provided by the Cisco IP Voice Media Streaming service

The Cisco Media Termination Point Software MTP type provides a default of 48 MTP (user configurable) resources, depending on the speed of the network and the network interface card (NIC). For example, a 100-MB Network/NIC card can support 48 MTP resources, while a 10-MB NIC card cannot.

For a 10-MB Network/NIC card, approximately 24 MTP resources can be provided. However, the exact number of MTP resources that are available depends on the resources that other applications on that PC are consuming, the speed of the processor, network loading, and various other factors.

MTP Registration

An MTP device always registers with its primary Unified Communications Manager if that Unified Communications Manager is available and informs the Unified Communications Manager about the number of MTP resources it supports. You can register multiple MTPs with the same Unified Communications Manager. When more than one MTP is registered with a Unified Communications Manager, that Cisco Unified Communications Manager controls the set of resources for each MTP.

For example, consider MTP server 1 as configured for 48 MTP resources, and the MTP server 2 as configured for 24 resources. If both MTPs register with the same Unified Communications Manager, that Unified Communications Manager maintains both sets of resources for a total of 72 registered MTP resources.

When Unified Communications Manager determines that a call endpoint requires an MTP, it allocates an MTP resource from the MTP that has the least active streams. That MTP resource gets inserted into the call on behalf of the endpoint. MTP resource use remains invisible to both the users of the system and to the endpoint on whose behalf it was inserted. If an MTP resource is not available when it is needed, the call connects without using an MTP resource, and that call does not have supplementary services.

Media Termination Points Interactions and Restrictions

Table 1: Media Termination Points Interactions and Restrictions

Restriction	Description
Cisco IP Voice Streaming Application	You can activate only one Cisco IP Voice Streaming Application per server. To provide more MTP resources, you can activate the Cisco IP Voice Streaming application on additional networked servers. Cisco strongly recommends that you do not activate the Cisco IP Voice Streaming Media Application on a Cisco Unified Communications Manager with a high call-processing load because it can adversely affect the performance of the Cisco Unified Communications Manager.
Registering with Cisco Unified Communoications Manager	Each MTP can register with only one Cisco Unified Communications Manager at a time. The system may have multiple MTPs, each of which may be registered to one Cisco Unified Communications Manager, depending on how your system is configured.
Failover and Fallback	This section describes how MTP devices failover and fallback when the Cisco Unified Communications Manager to which they are registered becomes unreachable: • If the primary Cisco Unified Communications Manager fails, the MTP attempts to register with the next available Cisco Unified Communications Manager in the Cisco Unified Communications Manager Group that is specified for the device pool to which the MTP belongs. • The MTP device reregisters with the primary Cisco Unified Communications Manager as soon as it becomes available after a failure and is currently not in use. • The system maintains the calls or conferences that were active in call preservation mode until all parties disconnect. The system does not make supplementary services available. • If an MTP attempts to register with a new Cisco Unified Communications Manager and the register acknowledgment is never received, the MTP registers with the next Cisco Unified Communications Manager. The MTP devices unregister and then disconnect after a hard or soft reset. After the reset completes, the devices reregister with the Cisco Unified Communications Manager.

Transcoders

A transcoder is a device that performs codec conversion, it converts an input stream from one codec into an output stream that uses a different codec. For example, a transcoder can take a G.711 stream and convert it to a G.729 stream in real time. During a call when the endpoints use different voice codecs, the Cisco Unified Communications Manager invokes a transcoder into the media path. The transcoder converts the data streams between the two incompatible codecs to allow communication between the devices. The transcoder is invisible to the user or the endpoints involved in a call.

Transcoder resources is managed by the Media Resource Manager (MRM).

Note The transcoder supports transcoding between G.711 and all codecs, including G.711, when functioning as a transcoder and when providing MTP/TRP functionality.

Transcoders with MTP Functionality

In addition to codec conversion, a transcoder can provide the same functionality as a media termination point (MTP). In cases where both transcoder functionality and MTP functionality are needed, the system allocates a transcoder due to the fact that transcoders can provide both sets of functionality simultaneously. If only MTP functionality is required, the system allocates either a transcoder or an MTP from the resource pool. The choice of resource will be determined by the media resource groups.

If a software MTP resource is not available when it is needed, the call tries to connect without using an MTP resource and MTP/TRP services, if the **Fail Call If Trusted Relay Point Allocation Fails** and **Fail Call If MTP Allocation Fails** fields are set to 'False' in the **Cisco Unified CM Administration** > **System** > **Service Parameters** > **Service Parameter Configuration** window. If hardware transcoder functionality is required (to convert one codec to another) and a transcoder is not available, the call will fail.

Transcoder Types

Transcoder types in Cisco Unified Communications Manager Administration are listed in the following table.

Note The transcoder supports transcoding between G.711 and all codecs, including G.711, when functioning as a transcoder and when providing MTP/TRP functionality.

Table 2: Transcoder Types

Transcoder Type	Description
Cisco Media Termination Point Hardware	This type, which supports the Cisco Catalyst 4000 WS-X4604-GWY and the Cisco Catalyst 6000 WS-6608-T1 or WS-6608-E1, provides the following number of transcoding sessions: For the Cisco Catalyst 4000 WS-X4604-GWY • For transcoding to G.711-16 MTP transcoding sessions For the Cisco Catalyst 6000 WS-6608-T1 or WS-6608-E1 • For transcoding from G.723 to G.711/For transcoding from G.729 to G.711-24 MTP transcoding sessions per physical port; 192 sessions per module

Transcoder Type	Description
Cisco IOS Media Termination Point (hardware)	This type, which supports the Cisco 2600XM, Cisco 2691, Cisco 3725, Cisco 3745, Cisco 3660, Cisco 3640, Cisco 3620, Cisco 2600, and Cisco VG200 gateways, provides the following number of transcoding sessions: Per NM-HDV • Transcoding from G.711 to G.729-60 • Transcoding from G.711 to GSM FR/GSM EFR- 45
Cisco IOS Enhanced Media Termination Point (hardware)	**Per NM-HD** This type, which supports Cisco 2600XM, Cisco 2691, Cisco 3660, Cisco 3725, Cisco 3745, and Cisco 3660 Access Routers, provides the following number of transcoding sessions: • Transcoding for G.711 to G.729a/G.729ab/GSMFR-24 • Transcoding for G.711 to G.729/G.729b/GSM EFR-18 **Per NM-HDV2** This type, which supports Cisco 2600XM, Cisco 2691, Cisco 3725, Cisco 3745, and Cisco 3660 Access Routers, provides the following number of transcoding sessions: • Transcoding for G.711 to G.729a/G.729ab/GSMFR-128 • Transcoding for G.711 to G.729/G.729b/GSM EFR-96 **PVDM4** • Onboard PVDM4 modules (PVDM4-32, PVDM4-64, PVDM4-128, PVDM4-256) • DSP module on T1/E1 modules (PVDM4-32, PVDM4-64, PVDM4-128, PVDM4-256) • DSP NIMs (NIM-PVDM4-32, NIM-PVDM4-64, NIM-PVDM4-128, NIM-PVDM4-256) These types support ISR4K (ISR44xx, ISR43xx), C83xx, and C82xx platforms provide the following number of transcoding sessions: • Transcoding for G.711 to G.729a/G.729ab/GSMFR-24 • Transcoding for G.711 to G.729/G.729b/GSM EFR-18 • Transcoding for G.711 to G.729a/G.729ab/GSMFR-128 • Transcoding for G.711 to G.729/G.729b/GSM EFR-96 • Transcoding for G.711/G.729/G.729ab/G.729a/G.729b to Opus

Transcoder Type	Description
Cisco Media Termination Point (WS-SVC-CMM)	This type provides 64 transcoding sessions per daughter card that is populated: 64 transcoding sessions with one daughter card, 128 transcoding sessions with two daughter cards, 192 transcoding sessions with three daughter cards, and 256 transcoding sessions with four daughter cards (maximum). This type provides transcoding between any combination of the following codecs: • G.711 a-law and G.711 mu-law • G.729 annex A and annex B • G.723.1 • GSM (FR) • GSM (EFR)

Transcoder Interactions and Restrictions

Transcoder Interactions and Restrictions

Interactions or Restriction	Description
Transcoder Deletion	You cannot delete a transcoder that is assigned to a media resource group. To find out which media resource groups are using the transcoder, click **Dependency Records** from the **Related Links** drop-down list box on the **Transcoder Configuration** window and click **Go**. The Dependency Records Summary window displays information about media resource groups that are using the transcoder. To find out more information about the media resource group, click the media resource group, and the Dependency Records Details window displays. If the dependency records are not enabled for the system, the dependency records summary window displays a message. If you try to delete a transcoder that is in use, Cisco Unified Communications Manager displays a message. Before deleting a transcoder that is currently in use, you must remove the transcoder from the media resource group(s) to which it is assigned.

Interactions or Restriction	Description
Failover and Fallback	Transcoder failover and fallback works as follows: • If the primary Unified Communications Manager node fails, the transcoder attempts to register with the next available node in the Unified Communications Manager Group that is specified for the device pool to which the transcoder belongs. • The transcoder device reregisters with the primary Cisco Unified Communications Manager node as soon as it becomes available. • A transcoder device unregisters with a Unified Communications Manager node that becomes unreachable. Calls that were using this transcoding profile for transcoding move to the preservation state and the transcoder attempts to register with the next available node. Gateway uses RTP/ RTCP timeout to inform to registered Unified Communications Manager of resource release. • If a transcoder attempts to register with a new Unified Communications Manager node and the register acknowledgment is never received, the transcoder registers with the next node in the list. Transcoder devices will unregister and then disconnect after a hard or soft reset. After the reset completes, the devices reregister with the primary Cisco Unified Communications Manager node.

Trusted Relay Point Overview

A Trusted Relay Point (TRP) is an MTP or transcoder that Cisco Unified Communications Manager can insert into the media stream to act as a control point for call media. The TRP can provide further processing on the stream and can ensure that the stream follows a specific path.

When a call requires a trusted relay point, Cisco Unified Communications Manager allocates an MTP or transcoder that has been enabled with TRP functionality.

Configuration

Both MTPs and transcoders can be configured to provide TRP functionality by checking the **Trusted Relay Point** check box in the **Media Termination Point Configuration** or **Transcoder Configuration** window.

You can configure the TRP requirement for individual calls by setting the **Use Trusted Relay Point** field to **On** for the following configuration windows:

- Phone Configuration
- Gateway Configuration
- Voicemail Port Configuration
- Trunk Configuration
- CTI Route Point Configuration
- Common Device Configuration
- Universal Device Template Configuration

- Various media resource configurations (Annunciator, IVR, MTPs, Transcoders, Conference Bridges, Music On Hold)

Trusted Relay Points Interactions and Restrictions

Feature	Interactions and Restrictions
Resource Reservation Protocol (RSVP)	If RSVP is enabled for the call, Cisco Unified Communications Manager first tries to allocate an RSVPAgent that is also labeled as TRP. Otherwise, another TRP device is inserted between the RSVPAgent and the endpoint.
Transcoder for call	If you need a transcoder for the call and need to allocate it on the same side as the endpoint that needs TRP, Cisco Unified Communications Manager first tries to allocate a transcoder that is also labeled as TRP. Otherwise, another TRP device is inserted between the transcoder and the endpoint.
MTP allocation for endpoint	If you check both the **Media Termination Point Required** check box and the **Use Trusted Relay Point** check box for an endpoint, Cisco Unified Communications Manager should allocate an MTP that is also a TRP. If the administrator fails to allocate such an MTP or TRP, the call status appears.
TRP allocation	In most instances, TRP is allocated after users answer the call, so if a call fails due to failure to allocate the TRP, users may receive fast-busy tone after answering the call. (The SIP outbound leg with MTP required, or H.323 outbound faststart, represents an exception.)
TRP Insertion for endpoint	Cisco Unified Communications Manager must insert a TRP for the endpoint if you have checked the **Use Trusted Relay Point** check box for either the endpoint or the device pool that is associated with the device. The call may fail if Cisco Unified Communications Manager fails to allocate a TRP while the **Fail Call If Trusted Relay Point Allocation Fails** service parameter is set to **`True`**.
TRP and remote users	TRP is not recommended for providing secure solution for work from home remote users. Expressway's Mobile and Remote Access is the recommended solution.

Call Behavior with Insufficent TRP Resources

The following sections provide examples of how Cisco Unified Communications Manager handles calls when insufficient MTP resources are allocated. The ulimate call behavior depends on whether MTPs and TRPs are required for those endpoints, and whether the system is configured to fail calls automatically when MTP or TRP allocation fails.

MTP and TRP are Both Required

The following table shows whether a call fails when both the **Media Termination Point Required** and **Use Trusted Relay Point** options are selected for an endpoint, and insufficient MTP and TRP resources exist.

The final call status depends on whether the **Fail Call If Trusted Relay Point Allocation Fails** and the **Fail Call if MTP Allocation Fails** service parameters are set to fail calls automatically.

Fail Call If TRP Allocation Fails Service Parameter	Fail Call If MTP Allocation Fails Service Parameter	Unified CM Fails
True	True	Yes
True	False	Yes
False	True	Yes, if MTP is rec MTP is required f
False	False	No

Automatic Call Failure for Insufficient MTP/TRP Resources Not Enabled

The following table shows the call behavior when insufficient MTP/TRP resources exists and both the **Fail Call If Trusted Relay Point Allocation Fails** and **Fail Call If MTP Allocation Fails** service parameters are set to **`False`**.

MTP Required = Yes	Use TRP = Yes	Resource Allocation Status	Call Behavior
Y	Y	TRP allocated	Audio call only because no pass-through support exists.
Y	Y or N	MTP only	Audio call only. No TRP support.
Y	Y or N	None allocated	If MTP required is checked for H.323 endpoint, supplementary services will be disabled.
N	Y	TRP allocated	Audio or video call depends on endpoint capabilities, and call admission control (CAC). Supplementary services still work.
N	Y	None allocated	Audio or video call. Supplementary services still work, but no TRP support exists.

Annunciator Overview

An annunciator is an SCCP software devices that runs on Cisco Unified Communications Manager and which allows you to send prerecorded messages and tones to Cisco IP Phones and gateways. The annunciator is activated on a cluster node by turning on the Cisco IP Voice Media Streaming service on that node. Features such as MLPP, SIP trunks, IOS gateways, and software conference bridges rely on the annunciator to send the predefined message to the phone or gateway via a one-way media stream. In addition:

- Both IPv4 and IPV6 are supported. The annunciator is configured automatically in dual mode when the system's platform is configured for IPv6 and the IPv6 enterprise parameter is enabled.
- SRTP is supported

Annunciator Scalability

By default, an annunciator supports 48 simultaneous media streams. You can add capacity by activating the annunciator on additional nodes or by changing the default number of annunciator media streams via the **Call Count** service parameter. However, it's not recommended to increase this value on a node unless the **Cisco CallManager** service is deactivated on that node.

If the annunciator runs on a dedicated subscriber node where the **Cisco CallManager** service does not run, the annunciator can support up to 255 simultaneous announcement streams. If the dedicated subscriber node meets the OVA virtual machine configuration for 10,000 users, the annunciator can support up to 400 simultaneous announcement streams.

Caution We recommend that you do not activate the annunciator on Unified Communications Manager nodes that have a high call-processing load.

Annunciator with Conference Bridge

The Annunciator is available to a conference bridge under the following conditions:

- If the media resource group list that contains the annunciator is assigned to the device pool where the conference bridge exists.
- If the annunciator is configured as the default media resource.

The annunciator is not available to a conference bridge if the media resource group list is assigned directly to the device that controls the conference.

Each conference supports only one announcement. If the system requests another announcement while the current announcement is playing, the new announcement preempts the one that is playing.

Default Annunciator Announcements and Tones

Cisco Unified Communications Manager automatically provides a set of prerecorded annunciator announcements when you activate the Cisco IP Media Streaming Application service. An announcement or a tone is played for the following conditions:

- Announcement — Played for devices that are configured for Cisco Multilevel Precedence and Preemption.
- Barge tone — Heard before a participant joins an ad hoc conference.
- Ring back tone — When you transfer a call over the PSTN through an IOS gateway, the annunciator plays the tone because the gateway cannot play the tone when the call is active.
- Ring back tone — When you transfer calls over an H.323 intercluster trunk, a tone is played.
- Ring back tone — When you transfer calls to the SIP client from a phone that is running SCCP, a tone is played.

You cannot change the default prerecorded annunciator announcements or add additional announcements. Localization of the announcement is supported if the Cisco Unified Communications Manager Locale Installer is installed and the locale settings are configured for the Cisco Unified IP Phone or device pool. For information about the Locale Installer and the files to install for user and (combined) network locales, see *Installing Cisco Unified Communications Manager*. To download the locale installer, see the support pages at www.cisco.com.

Table 3: Prerecorded Annunciator Announcements

Condition	Announcement
An equal or higher precedence call is in progress.	Precedence access limitation has prevented the completion of your call. Please hang up and try again. This is a recording.
A precedence access limitation exists.	Precedence access limitation has prevented the completion of your call. Please hang up and try again. This is a recording.
Someone attempted an unauthorized precedence level.	The precedence used is not authorized for your line. Please use an authorized precedence or ask your operator for assistance. This is a recording.
The call appears busy, or the administrator did not configure the directory number for call waiting or preemption.	The number you have dialed is busy and not equipped for call waiting or preemption. Please hang up and try again. This is a recording.
The system cannot complete the call.	Your call cannot be completed as dialed. Please consult your directory and call again or ask your operator for assistance. This is a recording.
A service interruption occurred.	A service disruption has prevented the completion of your call. In case of emergency call your operator. This is a recording.

The following table lists the tones that the annunciator supports.

Table 4: Tone Description

Type	Description
Busy tone	A busy tone is heard when the dialed number is busy.
Barge tone	A conference barge-in tone is heard before the participant joins an ad hoc conference.
Ring back tone	An alert tone is heard for the following scenarios: • When you transfer a call over the PSTN through an IOS gateway. • When you transfer a call over an H.323 intercluster trunk. • When you transfer a call to the SIP client from an SCCP phone.

Interactive Voice Response Overview

The Interactive Voice Response (IVR) device enables Cisco Unified Communications Manager to play prerecorded feature announcements (.wav files) to devices such as Cisco Unified IP Phones and Gateways. These announcements play on devices that use features which require IVR announcements, like Conference Now.

When you add a node, an IVR device is automatically added to that node. The IVR device remains inactive until the Cisco IP Voice Media Streaming Application service is activated on that node.

An IVR supports 48 simultaneous callers by default. You can change the number of IVR callers using the Cisco IP Voice Media Streaming Application service parameter. However, we recommend that you do not exceed 48 IVR callers on a node. You can configure the number of callers for IVR based on expected simultaneous calls to IVR for joining Conference Now.

Caution Do not activate the IVR device on Cisco Unified Communications Manager nodes that have a high call-processing load.

Default IVR Announcements and Tones

Cisco Unified Communications Manager automatically provides a set of prerecorded Interactive Voice Response (IVR) announcements when you activate the Cisco IP Media Streaming Application service. You can replace the default prerecorded IVR announcements. An announcement is played for the following conditions:

Table 5: Prerecorded IVR Announcements

Announcement	Condition
ConferenceNowAccessCodeFailed Announcement	Plays when an attendee enters the wrong access code to join Conference Now after exceeding the maximum number of attempts.
ConferenceNowAccessCodeInvalid Announcement	Plays when an attendee enters the wrong access code.
ConferenceNowCFBFailed Announcement	Plays when the conference bridge capacity limit is exceeded while initiating Conference Now.
ConferenceNowEnterAccessCode Announcement	Plays when an attendee joins Conference Now and the host sets an attendee access code.
ConferenceNowEnterPIN Announcement	Plays when a host or attendee tries to join a meeting.
ConferenceNowFailedPIN Announcement	Plays after the host exceeds the maximum number of attempts to enter a correct PIN.
ConferenceNowGreeting Announcement	Plays a greeting prompt for Conference Now.
ConferenceNowInvalidPIN Announcement	Plays when the host enters a wrong PIN.
ConferenceNowNumberFailed Announcement	Plays when a host or attendee enters the wrong meeting number after exceeding the maximum number of attempts.
ConferenceNowNumberInvalid Announcement	Plays when a host or attendee enters a wrong meeting number.

Interactive Voice Response Restrictions

Feature	Restriction
Load Balancing	The Interactive Voice Response (IVR) uses Real-Time Protocol (RTP) streams through a common media device driver. This device driver is also used by other software media devices provided by the Cisco IP Voice Media Streaming Application services such as Music On Hold (MOH), Software Media Termination Point (MTP), Software Conference Bridge (CFB), and Annunciator. Configuring a larger call volume affects the system performance. This also impacts call processing if the Call Manager service is active on the same server node.
DTMF Digits	The IVR supports only Out-Of-Band (OOB) DTMF digit collection method. If there is a DTMF capability mismatch between the calling device and the IVR, an MTP will be allocated.
Codecs	The IVR only supports codec G.711 (a-law and mu-law), G.729, and Wide Band 256k. If there is a codec mismatch between the calling device and the IVR, a transcoder will be allocated.

Announcements Overview

In Cisco Unified Communications Manager Administration, use the **Menu Resources** > **Announcements** menu path to configure announcements. There are two classifications of announcements:

- System Announcements—Pre-defined announcements that are used in normal call processing or provided as sample feature announcements.
- Feature Announcements—Used by features such as Music on Hold (MOH), Hunt Pilots with Call Queuing or External Call Control. You can customize your own feature announcements by uploading Cisco-provided audio files or uploading custom `.wav` files. Upload all custom announcement `.wav` files to all servers in the cluster.

Note You can hear custom announcements such as warning or reorder tones if you are connected through a trunk or gateway. However, you cannot hear custom announcements on calls between two IP phones or IP phones and Jabber clients.

Formats

The recommended format for announcements includes the following specifications:

- 16-bit PCM wav file
- Stereo or mono
- Sample rates of 48 kHz, 44.1 kHz, 32 kHz, 16 kHz, or 8 kHz

Default Announcements

You can upload custom announcement .wav files or change the Cisco-provided file for a system announcement. However, you cannot change the announcement identifier. For example, the System announcement (VCA_00121) is played when a caller dials an invalid number. This is commonly known as the vacant call announcement.

Table 6: Announcements in the Find and List Announcements Window

Announcement Identifier	Description
Gone_00126	System: Gone
MLPP-BNEA_00123	System: MLPP Busy not equipped
MLPP-BPA_00122	System: MLPP Higher precedence
MLPP-ICA_00120	System: MLPP Service disruption
MLPP-PALA_00119	System: MLPP Precedence access limit
MLPP-UPA_00124	System: MLPP Unauthorized precedence
Mobility_VMA	Please press 1 to be connected
MonitoringWarning_00055	System: Monitoring or Recording
RecordingWarning_00038	System: Recording
TemporaryUnavailable_00125	System: Temporary unavailable
VCA_00121	System: Vacant number / invalid number dialed
Wait_In_Queue_Sample	Builtin: Sample queued caller periodic announcement
Welcome_Greeting_Sample	Builtin: Sample caller greeting

Media Resources Configuration Task Flow

Complete these tasks to configure media resources for your system.

Procedure

	Command or Action	Purpose
Step 1	Activate Software Media Resources, on page 15	Turning on the IPVMS service activates software media resources on the server.
Step 2	Configure Media Termination Points, on page 16	Configure Media Termination Points (MTPs) for your system.
Step 3	Configure Transcoders, on page 16	Add Transcoder resources to the system.

	Command or Action	Purpose
Step 4	Configure the Interactive Voice Response (IVR), on page 17	Configure default settings for the system IVR.
Step 5	Configure the Annunicator, on page 17	Configure system settings for the Annunciator.
Step 6	Configure Media Resource Groups, on page 18	Add your media resources into a Media Resource Group. Set up multiple groups with different combinations of resources.
Step 7	Configure Media Resource Group Lists, on page 18	Create a list of Media Resource Groups that you can assign to an endpoint, or class of endpoints.
Step 8	Assign Media Resources to Device or Device Pool, on page 19	Make media resources available to endpoints by assigning them to a device or device pool.
Step 9	Configure Announcement, on page 19	**Optional**. Configure settings for specific announcements. Announcements are used in normal processing, or for features like Music On Hold or IVR.
Step 10	Upload a Customized Announcement, on page 20	**Optional**. Upload a prerecorded announcement. Assign the file to a new or existing announcement.

Activate Software Media Resources

Activate the **Cisco IP Voice Media Streaming** service to turn on the following software media resources:

- Annunciator
- Interactive Voice Response (IVR)
- Media Termination Point (MTP)
- Software Conference Bridges
- Music On Hold

Procedure

Step 1 From Cisco Unified Serviceability, choose **Tools** > **Service Activation**.

Step 2 From the **Server**, select a Unified Communications Manager node.

Step 3 Check the **Cisco IP Voice Media Streaming Service** and click **Save**.

Configure Media Termination Points

Use this procedure to configure a software Media Terminiation Point (MTP).

Before you begin

The Cisco IP Voice Media Streaming service must be running for the software Media Termination Point (MTP) to be active.

Determine the number of MTP resources that are needed and the number of MTP devices that are needed to provide these resources.

Procedure

Step 1 From Cisco Unified CM Administration, choose **Media Resources** > **Media Termination Point**.

Step 2 Do either of the following:

- Click **Find** and select an existing MTP.
- Click **Add New** to create a new MTP.

Step 3 Assign a **Media Termination Point Name**.

Step 4 Assign a **Device Pool**.

Step 5 Check the **Trusted Relay Point** check box if you want to designate this MTP as a Trusted Relay Point (TRP).

Step 6 Click **Save**.

Configure Transcoders

A transcoder is a device that converts an input stream from one codec into an output stream that uses a different codec.

Before you begin

The Cisco IP Voice Media Streaming service must be running for the IVR to be active.

Determine the number of transcoder resources that are needed and the number of transcoder devices that are needed to provide these resources.

Procedure

Step 1 Log into Cisco Unified CM Administration and choose **Media Resources** > **Transcoder**.

Step 2 Do either of the following:

- Click **Find** and select an existing transcoder.
- Click **Add New**.

Step 3 Select the **Transcoder Type**.

Step 4 Enter the **MAC Address** of the transcoder.

Step 5 Assign a **Device Pool** from the drop-down menu.

Step 6 Check the **Trusted Relay Point** check box if you want to make this transcoder available as a trusted relay point.

Step 7 Click **Save**.

Configure the Interactive Voice Response (IVR)

Use this procedure to configure settings for the IVR.

Before you begin

The Cisco IP Voice Media Streaming service must be running for the Interactive Voice Response (IVR) to be active.

Procedure

Step 1 From Cisco Unified CM Administration, choose **Media Resources** > **Interactive Voice Response**.

Step 2 Click **Find** and select the IVR.

Step 3 Enter a **Name** and **Description**.

Step 4 If you want IVR calls to use a trusted relay point, set the **Use Trusted Relay Point** drop-down to **On**.

Step 5 Complete the remaining fields in the **Interactive Voice Response Configuration** window. For help with the fields and their settings, see the online help.

Step 6 Click **Save**.

Configure the Annunicator

Configure system settings for the Annunciator.

Before you begin

The Cisco IP Voice Media Streaming service must be running for the Annunciator to be active.

Procedure

Step 1 From Cisco Unified CM Administration, choose **Media Resources** > **Annunciator**.

Step 2 Click **Find** and select the annunciator.

Step 3 Enter a **Name** and **Description**.

Step 4 Select a **Device Pool**.

Step 5 If you want the annunciator to use a trusted relay point, set the **Use Trusted Relay Point** drop-down to **On**.

Step 6 Click **Save**.

Configure Media Resource Groups

A media resource group contains a list of media resources that you want to assign to endpoints, or groups of endpoints.

Procedure

Step 1 From Cisco Unified CM Administration, choose **Media Resources** > **Media Resource Group**.

Step 2 Do either of the following:

- Click **Find** and select an existing media resource group.
- Click **Add New** to create a new media resource group.

Step 3 Configure the fields in the **Media Resource Group Configuration** window. See the online help about the fields and their configuration options.

Step 4 Enter a **Name** and **Description** for the group.

Step 5 From **Available Media Resources**, select the resources you want to add to this group, and use the arrows to move the resources to **Selected Media Resources**.

Step 6 (Optional) To use multicast for Music On Hold audio, check the **Use Multi-cast for MOH Audio** check box.

Step 7 Click **Save**.

Configure Media Resource Group Lists

Create a prioritized listing of media resource groups. You can assign this list to individual devices or to to a device pool.

Procedure

Step 1 From Cisco Unified CM Administration, choose **Media Resources** > **Media Resource Group List**.

Step 2 Do either of the following:

- Click **Find** and select an existing list.
- Click **Add New** and create a new list.

Step 3 Enter a **Name** for the media resource group list.

Step 4 From **Available Media Resource Groups**, select the groups you want to add, and use the arrows to move them to **Selected Media Resource Groups**.

Step 5 Click **Save**.

Note

For endpoints to use these media resources, you must assign the list to a device pool, gateway port, or to a device.

Assign Media Resources to Device or Device Pool

Assign media resources to endpoints by associating the prioritized media resource group list to a device pool, or to an individual device.

Procedure

Step 1 From the Cisco Unified CM Administration, choose **Devices** > **Phone**.

- To add media resources to a device pool, choose **System** > **Device Pools**.
- To add media resource directly to an endpoint, choose **Device** > **Phone**.

Step 2 Click **Find** and select the device pool or device to which you want to assign these media resources.

Step 3 From the **Media Resource Group List** drop-down, select a list.

Step 4 Click **Save**.

Step 5 Click **Apply Config to Selected**.
The **Apply Configuration** window appears showing the device name and the applicable configuration changes.

Configure Announcement

You can configure an announcement that you can use as a system announcement or as a feature announcement. A system announcement is used for call processing or for the use of sample feature announcements whereas a feature announcement is used for specific features, such as music on hold (MOH) in association with hunt pilot call queuing or external call control.

You can modify an existing announcement or configure a new announcement in Cisco Unified Communications Manager.

Procedure

Step 1 From Cisco Unified CM Administration, choose **Media Resources** > **Announcement**.

Step 2 Do one of the following:

- Click **Find** and select an existing announcement to edit.
- Click **Add New** to add a new announcment.

Step 3 Configure the fields in the **Announcement Configuration** window. For more information on the fields and their configuration options, see the system Online Help.

Step 4 Click **Save**.

Upload a Customized Announcement

You can modify a default announcement with an uploaded custom .wav file with a different announcement. When you import an audio source file, Unified Communications Manager processes the file and converts the file to the proper formats for use by the music on hold (MOH) server.

Note Announcements are specific to the locale (language). If your installation is using more than one language locale, you have to record each custom announcement each language as a separate .wav file and upload with the correct locale assignment. This task also requires that the correct locale package is installed on each server before uploading custom announcement .wav files for languages other than United States English.

Similar to MOH audio source files, the recommended format for announcements includes the following specifications:

- 16-bit PCM .wav file
- Stereo or mono
- Sample rates of 48 kHz, 44.1 kHz, 32 kHz, 16 kHz, or 8 kHz

You cannot update announcements that are not hyperlinked in the **Find and List Announcements** window in Unified Communications Manager. You can add customized announcements for Cisco-provided announcements that are underlined with a hyperlink in this window. For example, MLPP-ICA_00120 and MonitoringWarning_00055.

Procedure

Step 1 From Cisco Unified CM Administration, choose **Media Resources** > **Announcement**.

Step 2 From the **Find and List Announcements** window, enter search criteria, click **Find**, and click the hyperlink for the announcement from the resulting list.

Step 3 From the **Announcement Configuration** window, click **Upload File**.

Step 4 From the **Upload File** pop-up window, choose the locale, enter the filename and browse to select the .wav file, and click **Upload File**.

The upload process begins and the status is updated after the processing is complete. Select **Close** to close the **Upload File** window.

Step 5 (Optional) If you want Unified Communications Manager to play the customized announcement instead of playing the Cisco-provided announcement, check the **Enable** check box appears in the **Announcement by Locale** pane in the **Announcements Configuration** window.

If the **Enable** check box is unchecked, Unified Communications Manager plays the Cisco-provided announcement.

Step 6 Click **Save**.

What to do next

Upload the announcement on each node in the cluster as the announcement files are not propagated between servers in a cluster. Browse for Cisco Unified Communications Manager Administration on each server in the cluster and repeat the upload process.