CHAPTER 19

Annunciator

An annunciator, a SCCP device that uses the Cisco IP Voice Media Streaming Application service, enables Cisco CallManager to play pre-recorded announcements (.wav files) and tones to Cisco IP Phones, gateways, and other configurable devices. The annunciator, which works with Cisco CallManager Multilevel Precedence Preemption, enables Cisco CallManager to alert callers as to why the call fails. Annunciator can also play tones for some transferred calls and some conferences.

This section covers the following topics:

Understanding Annunciators

In conjunction with Cisco CallManager, the annunciator device provides multiple one-way, RTP stream connections to devices, such as Cisco IP Phones and gateways.

To automatically add an annunciator to the Cisco CallManager database, you must activate the Cisco IP Voice Media Streaming Application service on the server where you want the annunciator to exist in the cluster.

Caution Cisco recommends that you do not manually add an annunciator unless you have deleted it and the Cisco IP Voice Media Streaming Application service still runs on the server. When you deactivate the Cisco IP Voice Media Streaming Application service, Cisco CallManager automatically deletes the annunciator from the database. Likewise, when you activate the service, Cisco CallManager automatically adds an annunciator to the database.

Cisco CallManager uses SCCP messages to establish a RTP stream connection between the annunciator and the device. The annunciator plays the announcement or tone to support the following conditions:

- Announcement—Devices configured for Cisco Multilevel Precedence Preemption
- Barge tone—Before a participant joins an ad hoc conference
- Ring back tone—When you transfer a call over the PSTN through an IOS gateway

  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
- Ring back tone—When you transfer calls to the SIP client from a SCCP phone

Tip For specific information about supported announcements and tones, see the "Supported Tones and Announcements" section on page 19-5.

Before the announcement/tone plays, the annunciator reads the following information from the annunciator.xml file in the Cisco CallManager database:

- The numeric announcement or tone identifier, which is hard coded in the database.
- The user locale identifier for the phone, which is added to the database if you install the Cisco IP Telephony Locale Installer on every server in the cluster
- The network locale identifier for the phone or gateway, which is added to the database if you install the Cisco IP Telephony Locale Installer on every server in the cluster
- The device settings
- The user-configured service parameters

Planning Your Annunciator Configuration

Consider the following information before you plan your annunciator configuration. Use this information in conjunction with the "Annunciator System Requirements and Limitations" section on page 19-4.

- For a single annunciator, Cisco CallManager sets the default to 48 simultaneous streams, as indicated in the annunciator service parameter for streaming values.

Caution Cisco recommends that you do not exceed 48 annunciator streams on a co-resident server where the Cisco CallManager and Cisco IP Voice Media Streaming Application services run.

- You can change the default to best suit your network. For example, a 100-MB Network/NIC card can support 48 annunciator streams, while a 10-MB NIC card supports up to 24 annunciator streams. The exact number of annunciator streams that are available depends on the factors, such as the speed of the processor and network loading.

- If the annunciator runs on a standalone server where the Cisco CallManager service does not run, the annunciator can support up to 255 simultaneous announcement streams.
- If the standalone server has dual CPU and a high-performance disk system, the annunciator can support up to 400 simultaneous announcement streams.

Consider the following formula to determine the approximate number of annunciators that you need for your system. This formula assumes that the server can handle the default number of streams (48); you can substitute the default number for the number of streams that your server supports.

n/number of annunciator devices that you server supports

where:

n represents the number of devices that require annunciator support

Tip If a remainder exists in the quotient, consider adding another server to support an additional annunciator device. To perform this task, activate the Cisco IP Voice Media Streaming Application service on another server and update the configuration of the device, if you do not want to use the default settings.

Annunciator System Requirements and Limitations

The following system requirements and limitations apply to annunciator devices:

- For one annunciator device, activate only one Cisco IP Voice Media Streaming Application service in the cluster. To configure additional annunciators, you must activate the Cisco IP Voice Media Streaming Application service on additional Cisco Media Convergence Servers or Cisco-approved, third-party servers where Cisco CallManager is installed in the cluster.

Caution Cisco strongly recommends that you do not activate the Cisco IP Voice Media Streaming Application service on a Cisco CallManager with a high call-processing load.

- Each annunciator registers with only one Cisco CallManager at a time. The system may have multiple annunciators depending on your configuration, each of which may register with different Cisco CallManager servers.
- Each annunciator belongs to a device pool. The device pool associates the secondary (backup) Cisco CallManager and the region settings.
- Each annunciator can support G.711 a-law, G.711 mu-law, wideband, and G.729 codec formats. A separate wav file exists for each codec that is supported.
- For information on the number of streams that are available for use, see the "Planning Your Annunciator Configuration" section on page 19-3.
- To manage the media resources in the cluster, you can add the annunciator to a Media Resource Group, and likewise, a Media Resource List.
- When you update/configure the annunciator, the changes automatically occur when the annunciator becomes idle, when no active announcements are played.

Caution If you configured redundancy between Cisco CallManager servers, all announcements that are playing during the failover drop. The annunciator does not preserve announcement streams during Cisco CallManager failover.

Supported Tones and Announcements

Cisco CallManager automatically provides a set of recorded annunciator announcements when you activate the Cisco IP Media Streaming Application service. If you want to do so, you can customize the announcements to suit your purposes. No tool exists for adding new announcements to the annunciator.xml file where the Cisco-provided announcements exist. The announcement files exist in language and country directories in the directory, C:\Program Files\Cisco\TFTPPath. You cannot manually delete the announcements from the directories.

Tip You may need to customize announcements for Cisco CallManager Multilevel Precedence Preemption. For example, you may need to prepend the location of the site, for example, the building or city, before the announcement file name.

Annunciator announcements, which consist of 1 or 2 wav files, support localization if you have installed the Cisco IP Telephony Locale Installer and configured the locale settings for the Cisco IP Phone or, if applicable, the device pool. Each announcement plays in its entirety.

Cisco CallManager supports only one announcement per conference. During a conference if the system requests a new announcement while another announcement currently plays, the new announcement preempts the other announcement.

Annunciator supports the announcements in Table 19-1.

Table 19-1 Announcements

Condition	Announcement
An equal or higher precedence call is in progress.	Equal or higher precedence calls have 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.

Annunciator supports the following tones:

- Busy tone
- Alerting/Ring back tone
- Conference barge-in tone

Dependency Records

To find which media resource groups include an annunciator device, click the Dependency Records link that displays on the Annunciator Configuration window. The Dependency Records Summary window displays information about media resource groups that use the annunciator device. 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.

For more information about Dependency Records, refer to "Accessing Dependency Records" and "Deleting a Media Resource Group" in the *Cisco CallManager Administration Guide*.

Annunciator Performance Monitoring and Troubleshooting

Microsoft Performance Monitor counters for annunciator allow you to monitor the number of streams that are used, the streams that are currently active, the total number of streams that are available for use, the number of failed annunciator streams, the current connections to the Cisco CallManager, and the total number of times a disconnection occurred from the Cisco CallManager. When an annunciator stream is allocated or de-allocated, the performance monitor counter updates the statistic. For more information about performance monitor counters, refer to the *Cisco CallManager Serviceability System Guide* and the *Cisco CallManager Serviceability Administration Guide*.

Cisco CallManager writes all errors for the annunciator to the Event Viewer. In Cisco CallManager Serviceability, you can set traces for the Cisco IP Voice Media Streaming Application service; to troubleshoot most issues, you must choose the Significant or Detail option for the service, not the Error option. Reset trace level to the Error option after you troubleshoot the issue.

Cisco CallManager generates registration and connection alarms for annunciator in Cisco CallManager Serviceability. For more information on alarms, refer to the *Cisco CallManager Serviceability Administration Guide* and the *Cisco CallManager Serviceability System Guide*.

If you need technical assistance, locate annunciator logs from C:\Program Files\Cisco\Trace\CMS\cms*.* before you contact your Cisco AVVID Partner or the Cisco Technical Assistance Center (TAC).

Annunciator Configuration Checklist

Table 19-2 provides a checklist to configure an annunciator.

Table 19-2 Annunciator Configuration Checklist

Configuration Steps		Procedures and Related Topics
Step 1	Determine the number of annunciator streams that are needed and the number of annunciators that are needed to provide these streams.	Planning Your Annunciator Configuration, page 19-3
Step 2	Verify that you have activated the Cisco IP Voice Media Streaming Application service on the server where you want the annunciator to exist.	*Cisco CallManager Serviceability Administration Guide* *Cisco CallManager Serviceability System Guide*
Step 3	Perform additional annunciator configuration tasks if you want to change the default settings.	Annunciator Configuration, *Cisco CallManager Administration Guide*

Table 19-2 Annunciator Configuration Checklist (continued)

Configuration Steps		Procedures and Related Topics
Step 4	Add the new annunciators to the appropriate media resource groups and media resource lists.	Media Resource Management, page 18-1 Media Resource Group Configuration Settings, *Cisco CallManager Administration Guide*
Step 5	Reset or restart the individual annunciator or all devices that belong to the media resource group/list.	Annunciator System Requirements and Limitations, page 19-4

Where to Find More Information

Related Topics

- Media Resource Management, page 18-1
- Media Resource Group Configuration, *Cisco CallManager Administration Guide*
- Multilevel Precedence and Preemption, *Cisco CallManager Features and Services Guide*
- Annunciator Configuration, *Cisco CallManager Administration Guide*