CHAPTER 29

Voice Mail Connectivity to Cisco CallManager

A voice-messaging system, which is an integral part of an enterprise telecommunications system, provides voice-messaging features for all users. After receiving voice messages in their mailboxes, users receive message-waiting lights on their phones. Users can retrieve, listen to, reply to, forward, and delete their messages by accessing the voice-messaging system with an internal or external call.

Note You must enter all users and their directory numbers in Cisco CallManager Administration to make it possible for them to retrieve messages from a Cisco Unity voice-mail device.

Cisco CallManager supports an increasing variety of voice-messaging systems and provides configuration of message-waiting indicators for all users, including those with shared line appearances.

As the size or number of Cisco CallManager clusters increases in an enterprise, the likelihood that an administrator needs to deploy multiple voice-messaging systems also increases.

This chapter provides the following topics about configuring voice-messaging systems and features:

Voice-Mail Interfaces

Cisco CallManager supports both directly connected and gateway-based messaging systems. Directly connected voice-messaging systems communicate directly with Cisco CallManager by using a packet protocol. A gateway-based voice-messaging system connects to Cisco CallManager through analog or digital trunks that connect to Cisco gateways.

Cisco CallManager interacts with voice-messaging systems by using the following types of interfaces:

- Skinny Protocol—Directly connected voice-messaging systems that use Skinny protocol could use other protocols to communicate with Cisco CallManager. In Cisco CallManager Administration, you configure the interface to directly connected voice-messaging systems by creating voice-mail ports. To handle multiple, simultaneous calls to a voice-messaging system, you create multiple voice-mail ports and place the ports in a line group and the line group in a route/hunt list. Directly

connected voice-messaging systems send message-waiting indications by calling a message-waiting on and off number that is configured in Cisco CallManager Administration. Refer to "Cisco Voice-Mail Port Configuration" in the *Cisco CallManager Administration Guide*.

When you configure security for voice-mail ports and Cisco Unity SCCP devices, a TLS connection (handshake) opens for authenticated devices after each device accepts the certificate of the other device; likewise, the system sends SRTP streams between devices; that is, if you configure the devices for encryption.

When the device security mode equals authenticated or encrypted, the Cisco Unity TSP connects to Cisco CallManager through the Cisco CallManager TLS port. When the security mode equals nonsecure, the Cisco Unity TSP connects to Cisco CallManager through the Cisco CallManager SCCP port.

- PSTN Gateway Interfaces—H.323-based voice-messaging systems and legacy voice-messaging systems use PSTN gateway interfaces. These systems usually (but not necessarily) send message-waiting indications by using Simplified Message Desk Interface (SMDI) over an EIA/TIA-232 interface. Cisco CallManager also sends call history messages to the voice messaging system using this same SMDI interface. The Cisco Messaging Interface service relays these indications to Cisco CallManager. In Cisco CallManager Administration, you can provision the interface to gateway-based voice-messaging systems simply by provisioning an analog FXS gateway or a digital T1/E1 gateway with CAS or PRI protocols. By creating a route group that contains individual gateway ports or T1 spans, you can enable simultaneous calls to a voice-messaging system. In addition, if the voice-messaging system uses SMDI, you must configure and run the Cisco Messaging Interface service. Refer to the *Cisco CallManager Serviceability System Guide* and the *Cisco CallManager Serviceability Administration Guide*.
- Intercluster Interfaces—A Cisco CallManager in one cluster can provide access to a voice-messaging system in another cluster, if the administrator provisions the voice-mail pilot number on the intercluster trunk. Voice-messaging systems can leave messages and set message-waiting indicators for devices in other clusters if the clusters are connected by QSIG trunks.

Voice-Mail System Access

For directly connected voice-messaging systems, Cisco CallManager uses directory numbers that are assigned to voice-mail ports. Administrators assign the voice-mail ports to a line group and place the line group in a route/hunt list. If multiple users attempt to access a voice-messaging system at the same time, all users have an available port for access to the voice-messaging system. When users access their voice messages, they dial the voice-mail pilot number or press the messages button on the phone.

For gateway-based voice-messaging systems, Cisco CallManager uses route lists. When a user calls the route list number, the route list offers incoming calls to each port of the voice-messaging system by using a search algorithm. For gateway-based voice-messaging systems, the voice-mail pilot number specifies the route list itself.

Calls to directory numbers that are associated with voice-messaging systems cause the called voice-messaging systems to handle the call. When calls are made directly to voice-messaging systems, the system prompts the user for mailbox and password information for message retrieval.

Users can reach a voice-messaging system either by entering the voice-mail pilot number, if known, or by pressing the messages button on a Cisco 7900 series IP Phone. When a user presses the messages button, a call goes to the voice-mail pilot number that the administrator has configured for the line that is currently in use on the Cisco IP Phone. When the active line has no voice-mail pilot number configured, Cisco CallManager directs voice-messaging calls to a default profile.

Voice-Mail Pilot Numbers

The voice-mail pilot number specifies the directory number that you dial to access your voice messages. Cisco CallManager automatically dials the voice-messaging number when you press the messages button on your phone. Each voice-mail pilot number can belong to a different voice-messaging system.

The Voice Mail Pilot Configuration window of Cisco CallManager Administration defines the voice-messaging number.

A default voice-mail pilot number exists in Cisco CallManager. You can create a new default voice-mail pilot number that replaces the current default setting. Refer to the "Cisco Voice-Mail Pilot Configuration" in the *Cisco CallManager Administration Guide*.

Voice-Mail Profiles

Different lines on a device can have different voice-mail profiles. For example, an administrative assistant phone can have a second line for the manager, which routes to the manager's voice-messaging system. The administrative assistant line routes to its own voice-messaging system.

Voice-mail profiles allow you to define any line-related, voice-mail information that is associated to a directory number, not a device. The voice-mail profile contains the following information:

- Voice Mail Profile Name
- Description
- Voice Mail Pilot Number
- Voice Mail Box Mask
- Default (checked if this particular profile is the default profile)

A predefined, default voice-mail profile automatically gets assigned to lines when the administrator adds a line. When you search for voice-mail profiles, "default" appears beside the profile name within the list.

A voice-mail profile takes precedence over other settings when calls are routed to a voice-messaging system. Refer to "Voice-Mail Profile Configuration" in the *Cisco CallManager Administration Guide*.

Message Waiting

For directly connected voice-messaging systems, you can configure message waiting by using a single configuration window in Cisco CallManager Administration. The Message Waiting Configuration window defines directory numbers for message-waiting on and message-waiting off indicator. A directly connected voice-messaging system uses the specified directory number to set or to clear a message-waiting indication for a particular Cisco IP Phone.

The Message Waiting Configuration window of Cisco CallManager Administration provides for the following information:

- Confirmation of multiple message-waiting on and off numbers for a Cisco CallManager cluster
- Explicit association of a message-waiting search space with each message-waiting on and off number
- Validation of the message-waiting number and calling search space entry
- Search for conflicting numbers in the numbering plan.

Message Waiting Indication

When a caller leaves a message in a mailbox, the voice-messaging system sends a message-waiting indication on to the party that received the voice message. Similarly, when the owner of a voice mailbox deletes all pending voice messages, the voice-messaging system sends a messaging-waiting indication off to inform the voice-mailbox owner that no more messages are pending.

Cisco CallManager enables administrators to configure how to turn on the handset indicator of Cisco IP Phones 7940 and 7960 for pending voice messages. You can configure Cisco CallManager to do one of the following actions:

- Light the message-waiting lamp and display the prompt if a message is waiting on primary line.
- Display the prompt if a message is waiting on primary line.
- Light the message-waiting lamp if a message is waiting on primary line.
- Light the message-waiting lamp and display the prompt if a message is waiting on any line.
- Display only the prompt, if a message is waiting on any line.
- Display only the message-waiting lamp, if a message is waiting on any line
- Do not light the message-waiting lamp or display the prompt

You can set the message-waiting indication policy by using two different methods:

- Directory Number Configuration—Use the Message Waiting Lamp Policy field to set when the handset lamp turns on for a given line. Use the following available settings:
  - Use System Policy
  - Light and Prompt
  - Prompt Only
  - Light Only
  - None
- Service Parameter Configuration (for the Cisco CallManager service)—Use the Message Waiting Lamp Policy clusterwide service parameter to set the message-waiting indication policy for all Cisco 7900 series IP Phones. Use the following available settings:
  - Primary Line - Light and Prompt
  - Primary Line - Prompt Only
  - Primary Line - Light Only
  - Light and Prompt
  - Prompt Only
  - Light Only
  - None

The message-waiting policy that you choose depends on the needs of your users. For example, an administrative assistant, who shares the manager's directory number as a secondary directory number, may want to have the policy set to Light and Prompt. The administrator can see whether the manager's line has pending voice messages. General office members, who share a line appearance with a coworker, might set the policy, so the indicator lights only when messages are pending for the primary line appearance.

For customers who do not have complex message-waiting indicator requirements, you can use the Cisco CallManager service parameter to dictate the conditions under which Cisco CallManager turns on the message-waiting lamp.

Note Users can set the message-waiting indication policy on their phones by using the Cisco CallManager User Options window. For more information, refer to the user guide for the Cisco IP Phone.

Call Forwarding in a Multiple Voice-Mail System Environment

Voice-messaging systems support a maximum number of users just as Cisco CallManager supports a maximum number of users.

To ensure that calls are forwarded to the voice-messaging system that is associated with the user for whom a voice message is intended, the Call Forward feature gets modified when calls are forwarded to voice-messaging systems.

Cisco CallManager supports multiple voice-mail pilot numbers (profiles). Each pilot number can belong to a different voice-messaging system. Configure the voice-mail pilot profile on a line-by-line basis. Cisco CallManager forwards a voice-mail call to the voice-messaging system of the original redirect endpoint (directory number) if it has the voice-mail pilot profile.

One limitation exists for intercluster call forwarding. When a call is forwarded from another cluster and then sent to voice mail, Cisco CallManager forwards the call to the voice-messaging system of the first redirect endpoint in the cluster. This occurs because Cisco CallManager does not have the voice-mail pilot profile of the original endpoint in the other cluster. However, if a QSIG trunk links the clusters, the forwarded call will have the correct voice mailbox number but not the voice mail pilot number.

The Directory Number Configuration window of Cisco CallManager Administration contains Call Forward and Pickup Settings. If the Voice Mail check box is chosen, Cisco CallManager can Forward All, Forward Busy, or Forward No Answer to all devices for the chosen voice mail profile.

Examples

Intracluster call-forwarding chains where the final forwarding phone has used the Forward To Voice Mail option

A call forwards-all from a phone that is served by one voice-mail pilot to a phone that is served by another voice-mail pilot. The second phone forwards to voice mail. Cisco CallManager delivers the call to the voice-mail pilot number that is associated with the first phone.

Intracluster call-forwarding chains where the final forwarding phone has not used the Forward To Voice Mail option

A call forwards-all from a phone that is served by one voice-mail pilot to a phone that is served by another voice-mail pilot. The second phone forwards to voice mail, but the voice-mail pilot number was entered as a specific numerical destination and not as a forward-to voice mail. Cisco CallManager delivers the call to the voice-mail pilot number that is associated with the last phone.

Intracluster call-forwarding chains with CTI

When Cisco CallManager Attendant Console or other CTI applications take control of a call, they often choose to eliminate information about the original call, so the next destination receives voice messages. Cisco CallManager must direct the call to the voice-messaging system that manages the voice mailbox that Cisco CallManager reports as the target voice mailbox, as shown in the following examples.

A call arrives at a phone, which forwards to the attendant console, the calling user dials-by-name, and Cisco CallManager extends the call to a destination. The destination forwards to voice mail. Cisco CallManager delivers the call to the voice-messaging number that is associated with the destination that the calling user chose, not the attendant console.

In another example, phone A forwards all calls to phone B. A call arrives at the attendant console, and the attendant console sends the call to phone A. Cisco CallManager forwards the call to phone B. If no one answers the call, Cisco CallManager forwards the call to voice mail. Because the call was originally for phone A, the message goes to the voice mailbox of phone A, not phone B.

Intercluster call-forwarding chains

In an intercluster call scenario, phone A on a Cisco CallManager calls phone B on the same Cisco CallManager. The call forwards over an intercluster trunk to Cisco CallManager, which extends the call to phone C. Phone C forwards to voice mail. Cisco CallManager extends the call to the voice-messaging system that is associated with phone C, but reports the extension number of phone B.

No available voice-mail pilot number information exists about phone B because of the intercluster boundary. Therefore, Cisco CallManager sends the call to the voice-mail pilot number that is associated with the final destination but reports the directory number that was passed from the PBX to Cisco CallManager as the voice mailbox.

Call Transfer with Voice-Mail Systems

Users, who have reached a voice-messaging system over a Cisco analog FXS gateway or a Cisco 6608 T1 CAS gateway, can transfer out of the voice-messaging system to another destination. By responding to a voice-messaging prompt, the user enters a number. The voice-messaging system initiates the action by using a hookflash transfer. Cisco CallManager responds by doing a blind transfer of the call to the target number. When the call transfer completes, the voice channel that connected the original call to the voice-messaging system gets released.

Configure hookflash detection timers for the Cisco Catalyst 6000 T1 Gateway by using Cisco CallManager Administration Gateway Configuration (see Adding a Non-IOS MGCP Gateway in the *Cisco CallManager Administration Guide*).

Note Only E&M T1 ports support the hookflash transfer.

Where to Find More Information

Additional Cisco Documentation

- Cisco Voice-Mail Port Configuration, *Cisco CallManager Administration Guide*
- Cisco Voice Mail Port Wizard, *Cisco CallManager Administration Guide*
- Message Waiting Configuration, *Cisco CallManager Administration Guide*
- Cisco Voice-Mail Pilot Configuration, *Cisco CallManager Administration Guide*
- Voice-Mail Profile Configuration, *Cisco CallManager Administration Guide*
- Service Parameters Configuration, *Cisco CallManager Administration Guide*