Changing the Cisco Unity Codecs

This chapter contains the following sections:

Configuration Changes That May Require Cisco Unity Codec Changes

The following configuration changes may require changing one or more codecs in use on the Cisco Unity system:

- Installing a new phone system.
- Installing a new server that changes the amount of disk space available for message storage.
- Setting up Cisco Unity VPIM Networking.
- Setting up text to speech (TTS).
- Setting up TTY.

Changes to improve audio quality or system performance may also involve codec changes.

If you change one or more of the codecs in use on the Cisco Unity system, then you need to evaluate codec compatibility systemwide. See the "Task List for Changing Cisco Unity Codecs" section on page 5-2.

For information on choosing and implementing audio codecs during a new Cisco Unity installation, refer to *White Paper: Audio Codecs and Cisco Unity* at http://www.cisco.com/univercd/cc/td/doc/product/voice/c_unity/whitpapr/codecs.htm.

Task List for Changing Cisco Unity Codecs

Generally, the following tasks are needed to change the Cisco Unity system configuration to use one or more of the supported codecs. If a task does not apply to your situation, skip it.

1. Confirm or change the phone system codec. See the "Confirming or Changing the Phone System Codec" section on page 5-2.
2. Choose a codec for message recording and storage. See the "Changing the Message Recording and Storage Codec" section on page 5-2.
3. Match the codec format of Cisco Unity recorded names and greetings to the message recording and storage codec. See the "Changing the Codec Format of Existing Greetings and Recorded Names" section on page 5-6.
4. Match the codec format of Cisco Unity system prompts to the message recording and storage codec. See the "Changing the Codec Format of System Prompts" section on page 5-7.
5. Choose one or more codecs for message retrieval, and configure each subscriber workstation as needed. See the "Changing the Message Retrieval Codec(s)" section on page 5-4.
6. Test the changes. See the "Testing the Codec Configuration Changes" section on page 5-9.

Confirming or Changing the Phone System Codec

The phone system codec is chosen and set up when the system is installed. If you are installing a new phone system or upgrading an existing phone system, confirm that the phone system codec that you want to use is supported for use with Cisco Unity.

G.711 and G.729a codecs are supported by Cisco CallManager and Cisco Unity, and are recommended for best sound quality and system performance. If OKI ADPCM, GSM 6.10, or G.726 codecs are used for message storage on a Cisco Unity system with a Cisco CallManager integration, transcoding will take place at the Cisco Unity server, and this may affect audio quality and system performance.

Cisco CallManager codecs are set up by using the Region Configuration Settings. Refer to the *Cisco CallManager Administration Guide* for your version of Cisco CallManager, available at http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_administration_guides_list.html.

A site with a circuit-switched phone system integration may choose to use G.711 or one of the OKI ADPCM codecs for message recording and storage. For circuit-switched phone system codec setup, refer to the manufacturer documentation.

Changing the Message Recording and Storage Codec

In sites with only one Cisco Unity server installed, a single codec is chosen for message recording and storage. In a networked environment, different Cisco Unity servers may be configured with different recording and storage codecs to meet the needs of their sites.

When a message is recorded and stored in a lower-quality codec and then later converted to a higher-quality codec during playback, the sound quality does not improve. If anything, the quality suffers during transcoding, especially when the sampling rate is changed.

For example, to preserve the best possible sound quality, do not use OKI ADPCM 6 kHz if it will then need to be converted to G.711 Mu-Law 8 kHz to play on Cisco hardware. Instead, use the OKI ADPCM 8-kHz format.

To change the recording and storage codec for new messages, you use the Set Record Format utility, available in the Cisco Unity Tools Depot. The dialog box displayed by the Set Record Format utility lists all of the codecs that are installed on the server, and may include codecs that are not supported for use with Cisco Unity.

The following audio codecs are supported for use with Cisco Unity:

G.711 Mu-Law and A-Law	Automatically installed on the Cisco Unity server and subscriber workstations when the Windows operating system is installed.
G.729a	Automatically installed on the Cisco Unity server with Cisco Unity.
OKI ADPCM 6 kHz and 8 kHz	Manually installed by using the Avvox_setup.exe program, which is available on the Cisco Software Center website.
GSM 6.10	Automatically installed on the Cisco Unity server and subscriber workstations when the Windows operating system is installed.
G.726	Automatically installed on the Cisco Unity server and on the server with the Cisco Unity Voice Connector for Microsoft Exchange, and manually installed on subscriber workstations by using manufacturer installation instructions (if applicable).

Note the following considerations:

- The codec format of existing messages cannot be changed by using the Set Record Format utility.
- If a Cisco Unity system has been running for a while and the recording and storage codec is changed, Cisco Unity will have messages stored in more than one format.
- Cisco Unity can transcode messages recorded and stored in multiple formats. However, we recommend minimizing the number of different codecs in use on a Cisco Unity system (for example, for message recording and storage, Cisco CallManager region, prompts, and/or VPIM) in order to reduce the need for transcoding and, thus, to minimize CPU-performance impact and preserve audio quality.
- G.711 MuLaw must be selected as the message recording and storage codec if you are using the Cisco Unity TTY language. Cisco Unity TTY is not compatible with G.729a or other message recording and storage codecs.

To Change the Message Recording and Storage Codec

Step 1 Stop Cisco Unity (right-click the **Cisco Unity** icon in the system tray, click **Stop Cisco Unity**, and click **OK** to confirm that you want to stop the Cisco Unity software).

Step 2 To use the G.711 Mu-law or A-Law, G.729a, G.726, or GSM 6.10 codec, skip to Step 3.

To use one of the optional OKI ADPCM codecs (6 kHz or 8 kHz):

a. Go to the Other Cisco Unity Components Software Download page at http://www.cisco.com/cgi-bin/tablebuild.pl/unity.

Note To access the software download page, you must be logged on to Cisco.com as a registered user.

b. Click **CiscoUnityDialogicCodec.exe**, and download the file to the directory of your choice on the Cisco Unity server.

c. Unzip the **CiscoUnityDialogicCodec.exe** file to the directory of your choice.

d. Double-click **Avvox_setup.exe**, and follow the on-screen prompts.

Step 3 On the Cisco Unity desktop, double-click the **Cisco Unity Tools Depot** icon.

Step 4 In the left pane, under Audio Management Tools, double-click **Set Record Format**.

Step 5 In the Format list, select the applicable codec, and click **OK**.

Step 6 Restart the Cisco Unity server.

Step 7 If the Cisco Unity system is configured for failover, repeat Step 1 through Step 6 on the secondary server.

Changing the Message Retrieval Codec(s)

In a Cisco Unity Unified Messaging environment, subscribers can listen to voice messages on the phone or by playing WAV files from their desktops.

Although different Cisco Unity servers may be configured with different recording and storage codecs to meet the needs of their sites, subscribers can listen to voice messages from any phone, regardless of the recording and storage codec in use. Depending on the configuration, Cisco Unity, the PSTN, the phone system, the gateway, the voice card, and/or the phone itself performs any transcoding that is needed.

To play WAV files stored in the supported codec formats, subscribers need a compatible audio player (one that uses Audio Compression Manager, such as IBM Lotus Domino Unified Communications (DUC) for Cisco, Sound Recorder, or Windows Media Player) installed on their workstations, and may need one or more codecs installed. In environments where messages may be forwarded to recipients outside of the organization, the audio players of the recipients must also be able to play messages recorded in each of the codec formats in use.

The default Cisco Unity audio player, DUC for Cisco, is compatible with all codecs supported for use with Cisco Unity.

Table 5-1 lists the codecs required on subscriber workstations when an audio player other than the default player is installed on the workstations.

Table 5-1 Required Codecs for Audio Players Other Than DUC for Cisco Installed on Subscriber Workstations

Message Storage Format	Required Codec
G.711 Mu-Law or A-Law	G.711 Already installed on workstation by default with operating system.
GSM 6.10	GSM 6.10 Already installed on workstation by default with operating system.
G.729a	G.729a See the "To Install the G.729a Codec for Cisco Unity on a Subscriber Workstation That Does Not Have DUC for Cisco Installed" procedure on page 5-5 to install on workstation.

Table 5-1 Required Codecs for Audio Players Other Than DUC for Cisco Installed on Subscriber Workstations (continued)

Message Storage Format	Required Codec
OKI ADPCM	OKI ADPCM See the "To Install an OKI ADPCM Codec for Cisco Unity on a Subscriber Workstation That Does Not Have DUC for Cisco Installed" procedure on page 5-5 to install on workstation.
G.726	G.726 See the "To Install the G.726 Codec on a Subscriber Workstation" procedure on page 5-6 to install on workstation.

Note that if incoming VPIM messages are not converted, they may be stored in G.726, GSM 6.10, or G.711 format. The G.726 codec must be installed on all subscriber workstations in order to play G.726-format messages, regardless of the audio player installed.

If needed, multiple supported codecs may be installed on subscriber workstations.

Note GSM 6.10 is supported for playback on a Pocket PC, and is a higher quality recording format than MP3.

To Install the G.729a Codec for Cisco Unity on a Subscriber Workstation That Does Not Have DUC for Cisco Installed

Step 1 On Cisco Unity DVD 1 or CD 1, browse to the **Utilities** directory.

Step 2 Copy the **SI_G729a_setup.exe** file to the directory of your choice on the network or to a disk.

Step 3 Administrators or subscribers can install the codec from the network or from the disk:

a. Confirm that the subscriber workstation is using a Windows operating system and that a compatible audio player is installed.

b. Double-click **SI_G729a_setup.exe**, and follow the on-screen prompts.

c. Restart the subscriber workstation for the codec change to take effect.

To Install an OKI ADPCM Codec for Cisco Unity on a Subscriber Workstation That Does Not Have DUC for Cisco Installed

Step 1 Go to the Other Cisco Unity Components Software Download page at http://www.cisco.com/cgi-bin/tablebuild.pl/unity.

Note To access the software download page, you must be logged on to Cisco.com as a registered user.

Step 2 Click **CiscoUnityDialogicCodec.exe**, and download the file to the directory of your choice on the network or to a disk.

Step 3 Administrators or subscribers can install a codec from the network or from the disk:

a. Confirm that the subscriber workstation is using a Windows operating system and that a compatible audio player is installed.

b. Unzip the **CiscoUnityDialogicCodec.exe** file to the directory of your choice on the workstation.

c. Double-click **Avvox_setup.exe**, and follow the on-screen prompts.

d. Restart the subscriber workstation for the codec change to take effect.

To Install the G.726 Codec on a Subscriber Workstation

Step 1 Purchase license(s) from the vendor of your choice.

Step 2 Follow the vendor instructions for installing to the directory of your choice on the network or to a disk.

Step 3 Administrators or subscribers can install the codec on their workstations from the network or from the disk.

Changing the Codec Format of Existing Greetings and Recorded Names

For consistent sound quality, the codec format of all existing greetings and recorded names should match the message recording and storage codec being used by Cisco Unity. Greetings and names are recorded in the codec format selected in the Set Record Format utility at the time the recordings are made.

This section contains two procedures. You view the codec format of greetings and recorded names by using the Codec Checker utility. You change the codec format of greetings and recorded names by using the Set WAV Format utility. Both utilities are available in the Cisco Unity Tools Depot.

To View the Codec Format of Existing Greetings and Recorded Names

Step 1 On the Cisco Unity desktop, double-click the **Cisco Unity Tools Depot** icon.

Step 2 In the left pane, under Audio Management Tools, double-click **Codec Checker**. In the Codec Checker window, codec information appears in the first column of the Greetings and Voice Names table and of the Prompts table.

Step 3 Export a CSV copy of the information displayed by the Codec Checker, if applicable.

Step 4 Click **Exit**.

To Change the Codec Format of Existing Greetings and Recorded Names

Step 1 On the Cisco Unity desktop, double-click the **Cisco Unity Tools Depot** icon.

Step 2 In the left pane, under Audio Management Tools, double-click **Set WAV Format**.

Step 3 Under Select Greetings and Voice Names to Adjust, click **Select All**.

Step 4 Under Back Up Original Voice Names and Greetings, check the Save Original Files To check box, and enter a location to which to save the files.

Step 5 In the New WAV File Format list, click the new codec.

Step 6 Click **Set WAV Format**.

Step 7 When the Set Wave Format dialog box displays "Finished," click **OK** to view the log file, which lists the greetings and recorded names that were updated.

Step 8 Close the log file, and click **Exit**.

Step 9 If the Cisco Unity system is configured for failover, repeat Step 1 through Step 8 on the secondary server.

Changing the Codec Format of System Prompts

For consistent sound quality, the codec format of Cisco Unity system prompts should match the message recording and storage codec being used by Cisco Unity. Table 5-2 lists the system-prompt formats to be used with Cisco Unity recording and storage codecs.

Table 5-2 Matching the System-Prompt Codec Format

Cisco Unity Recording and Storage Codec	System Prompt Codec Format
G.711 (default)	G.711
G.729a	G.729a
OKI ADPCM, GSM 6.10, or G.726	G.711

Note that if incoming VPIM messages are not converted, they may be in G.726, GSM 6.10, or G.711 format, and the default G.711 prompts should be used.

Both the G.711 and the G.729a system prompt formats are available in all supported phone languages.

Caution Customizing system prompts is not supported for any of the Cisco Unity phone languages. All system prompts are automatically deleted and replaced whenever you upgrade Cisco Unity, including the installation of maintenance releases.

For a Cisco Unity system running version 4.0(1) or later, you choose either the G.711 or the G.729a system-prompt codec format during installation or during an upgrade. To change the format at any other time, do the first procedure, "To Run the Cisco Unity Installation and Configuration Assistant to Change the Codec Format of System Prompts." If you change the system prompt format from G.711 to G.729, also do the second procedure, "To Change the Record Beep Prompt Codec Format."

When you run the Cisco Unity Installation and Configuration Assistant to add or change features, you may be required to complete wizards that are not directly related to the change that you are making to Cisco Unity because the assistant removes and recopies Cisco Unity files.

To Run the Cisco Unity Installation and Configuration Assistant to Change the Codec Format of System Prompts

Step 1 Log on to Windows by using the Cisco Unity installation account.

Note If you have not already done so, disable virus-scanning and Cisco Security Agent services on the server, if applicable. Otherwise, the installation may fail.

Step 2 On Cisco Unity DVD 1 or CD 1, or from the location to which you saved the downloaded Cisco Unity CD 1 image files, browse to the root directory and double-click **Setup.exe**.

Step 3 If Cisco Unity is not set up to use SSL, the Set Up the Cisco Personal Communications Assistant to Use SSL page appears. Click **Do Not Set Up Cisco Personal Communications Assistant to Use SSL**, and click **Next**.

Note If you want to set up Cisco Unity to use SSL, see the "Manual Procedures for Setting Up Cisco Unity to Use SSL" chapter of the applicable Cisco Unity installation guide at http://www.cisco.com/en/US/products/sw/voicesw/ps2237/prod_installation_guides_list.html.

Step 4 On the Summary screen, click **Add or Change Cisco Unity Features**.

Step 5 On the Install Cisco Unity screen, click **Run the Cisco Unity Setup Program**.

Note Note that by running the Cisco Unity Setup program, you are reinstalling the version of Cisco Unity on the disc.

Step 6 In the Setup dialog box, click **Next**.

Step 7 Follow the on-screen prompts until the Select Features dialog box appears.

Step 8 In the Select Features dialog box:

a. Check the **Upgrade Cisco Unity** check box.

b. If the Cisco Unity license includes text to speech, check the **Enable TTS** check box.

   If not, uncheck the **Enable TTS** check box.

c. Uncheck the **Install Voice Card Software** check box.

Step 9 Follow the on-screen prompts until the Choose the System Prompt Set dialog box appears.

Step 10 In the Choose the System Prompt Set dialog box, choose either the **G.711** or **G.729a** prompt set format.

Step 11 Follow the on-screen prompts until you are prompted to restart the Cisco Unity server.

Step 12 Check the **Yes, I Want to Restart My Computer Now** check box, and click **Finish**.

Step 13 In the main window of the Cisco Unity Installation and Configuration Assistant, click **Run the Cisco Unity Services Configuration Wizard**. (Note that you should be logged on to Windows with the Cisco Unity installation account.)

Step 14 On the Welcome screen, click **Next**.

Step 15 Follow the on-screen prompts to complete the services configuration.

Step 16 In the main window of the assistant, click **Run the Cisco Unity Message Store Configuration Wizard**. (Note that you should be logged on to Windows with the Cisco Unity installation account.)

Step 17 On the Welcome screen, click **Next**.

Step 18 Follow the on-screen prompts to complete the message store configuration.

Step 19 Click **Finish**.

Step 20 On the Summary screen, click **Close**.

Step 21 If the Cisco Unity system is configured for failover, repeat Step 1 through Step 19 on the secondary server.

Do the following procedure only if you changed the system prompt codec format from G.711 to G.729a.

To Change the Record Beep Prompt Codec Format

Step 1 On the Cisco Unity server, on the Windows Start menu, click **Programs > Accessories > Entertainment > Sound Recorder**.

Step 2 In the Sound – Sound Recorder dialog box, on the File menu, click **Open**.

Step 3 Browse to the directory **CommServer\Support**.

Step 4 Double-click the **Recordbeep.wav** file.

Step 5 In the Recordbeep Sound Recorder dialog box, on the File menu, click **Properties**.

Step 6 In the Properties for Recordbeep.wav dialog box, click **Convert Now**.

Step 7 In the Sound Selection dialog box, in the Format list, click **G.729a**.

Step 8 Click **OK** twice to close the Sound Selection and the Properties for Recordbeep.wav dialog boxes.

Step 9 In the Recordbeep Sound Recorder dialog box, on the File menu, click **Save**.

Step 10 On the File menu, click **Exit**.

Step 11 If the Cisco Unity system is configured for failover, repeat Step 1 through Step 10 on the secondary server.

Testing the Codec Configuration Changes

After Cisco Unity, the phone system, and the network have been configured to use the chosen codec(s), it is imperative that the configuration be thoroughly tested before subscribers and outside callers interact with the system. Consider the following recommendations when deciding how to test the configuration:

- Record messages at all locations, with any and all devices potentially in use, including subscriber desk phones, cellular phones, wireless headsets, and microphones at subscriber workstations.
- Retrieve messages at all locations, with any and all devices potentially in use, including subscriber desk phones, cellular phones, wireless headsets, and desktop audio applications.

- Assess the audio quality of retrieved voice messages, system prompts, recorded names, and greetings.
- Fully test the phone system integration by using the procedures in the applicable Cisco Unity integration guide. (Integration guides are available at http://www.cisco.com/en/US/products/sw/voicesw/ps2237/products_installation_and_configuration_guides_list.html.)
- If the Cisco Unity system is configured for failover, also conduct the tests on the secondary server.

Refer to *Release Notes for Cisco Unity* (available at http://www.cisco.com/en/US/products/sw/voicesw/ps2237/prod_release_notes_list.html) for open caveats and documentation updates that may affect how Cisco Unity operates with the various supported audio codecs.