# Region Setup

This chapter provides information to add, update, or delete regions, and synchronize configuration changes with affected devices.

For additional information, see topics related to regions in the *Cisco Unified Communications Manager System Guide*, as well as topics related to Call Admission Control in the *Cisco Unified Communications Manager System Guide*.



# Audio Codec Preference List

In Cisco Unified Communications Manager (Unified CM) Administration, use the **System > Region Information > Audio Codec Preference** menu path to configure the order of audio codec preference, both for calls within a region and for between regions.

Unified Communications Manager has two default Audio Codec Preference lists, one for lossy regions and another for low-loss regions. These are the Factory Default lossy, and the Factory Default low loss. Start with a default Audio Codec Preference list to create a custom list.

With the Audio Codec Preference feature, you can:

- Change the relative priorities of audio codecs.
- Save the custom Audio Codec Preference list with a unique name.
- Assign custom codec preference lists for use within a region or between regions.
- Create multiple custom codec preference list.

# Create New Audio Codec Preference List

**Procedure**

**Step 1** Click **Add New** from the **Find and List Audio Codec Preference lists** page.
The **Audio Codec Preference List Configuration** page is displayed.

**Step 2** Choose an Audio Codec Preference list from the dropdown list.

**Step 3** Click **Copy**.

**Step 4** In the **Audio Codec Preference List Information** section, enter a **`Name`** and **`Description`**.

**Step 5** Place the codecs in the preferred order by using the up and down arrows.

**Step 6** Click **Save**.

# Edit Audio Codec Preference List

**Procedure**

**Step 1** In the **Audio Codec Preference** lists section, click the list to be edited.
The **Audio Codec Preference List Configuration** page is displayed.

**Step 2** Reorder the audio codecs using the up and down arrows.

**Step 3** Click **Save**.

# Delete Audio Codec Preference List

**Note** You cannot delete the Factory Default lossy or low loss audio codec preference lists.

**Procedure**

**Step 1** Select the list to be deleted from the **Audio Codec Preference lists** section.

**Step 2** Click **Delete Selected**.
A message box appears “You are about to permanently delete one or more Audio Codec Preference Lists. This action cannot be undone. Continue?”

**Step 3** Click **OK**.

# About Region Setup

In Cisco Unified Communications Manager Administration, use the **System** > **Region** menu path to configure regions.

You use regions to limit the bandwidth that is used for audio and video calls within a region and between existing regions by specifying the transport-independent maximum bit rates for audio and for video calls. You can specify the maximum bit rates for audio and video calls within a region and between existing regions.

- The maximum audio bit rate determines the codecs that are allowed for calls by filtering out codecs with bit rates that exceed the specified limit.
- The maximum video call bit rate comprises the sum of the audio and video bit rates, but does not include transport overhead.

Cisco Unified Communications Manager supports up to 2000 regions. The following limitations and restrictions apply:

- Configure as many regions as possible to Use System Default for the audio bit rate and video call bit rate fields.
- This enhancement requires a virtual machine OVA with a capacity of 7500 users or larger.
- See the "Regions" subtopic under the "Administration Considerations" topic of the "IP Video Telephony" chapter of the *Cisco Unified Communications Solution Reference Network Design (SRND)* for the current release, which provides recommendations as to how the video bandwidth should be set for regions and locations, so the video portion of video calls will succeed, and the video calls will not get rejected nor set up as audio-only calls.

### Regions Setup Tips

For every region, an association exists with that region in other regions; therefore, the addition of regions occurs in a matrixlike fashion. For example, if you add regions A, B, and C, a matrix with region A, region B, and region C as both columns and rows results, as shown in the following matrix:

| | Region A | Region B | Region C |
|---|---|---|---|
| Region A | | | |
| Region B | | | |
| Region C | | | |

If you assign 20 regions, the database adds 400 entries (20 x 20). Some performance limitations exist when large numbers of regions are assigned.

**Note** Cisco Unified Communications Manager allows you to add up to 2000 regions.

**Note** Cisco recommends that you reset devices after changing a region name.

# Set Up Regions

Follow these additional steps when configuring regions.

### Procedure

**Step 1** To configure the settings to use within a particular region, click the name of this region to highlight it in the Regions window pane; then, configure the settings, as described in Table 1: Region Settings , on page 5.

**Step 2** To configure the default codecs to use between this region and other regions, click another region name (other than this region) to highlight it in the Regions window pane. Then, configure the settings, as described in Table 1: Region Settings , on page 5.

**Tip** For enhanced scalability and to conserve resources, Cisco recommends that you properly set the default values in the Clusterwide Parameters (System - Location and Region) section of the Cisco Unified Communications Manager Administration Service Parameters Configuration window for the audio codec, video call bandwidth, and link loss type values and then choose the Use System Default entries in the Cisco Unified Communications Manager Administration Region Configuration window for these fields.

**Step 3** To save the new region in the database, click **Save**.

**Tip** The Find and List Regions window displays an Rows per page drop-down list box that allows you to list 25, 50, 100, 150, 200, or 250 configured regions. If you choose to display 100 or more regions, Cisco Unified Communications Manager may experience performance degradation.

### What to do next

After you configure a region, you can use it to configure device pools. Devices acquire a region setting from the device pool to which they are assigned.

# Region Deletion

**Note** You cannot delete a region that any device pools are using.

To find out which device pools use the region, choose Dependency Records from the Related Links drop-down list box on the Region Configuration window and click Go.

If the dependency records feature is not enabled for the system, the dependency records summary window displays a message that shows the action that you can take to enable the dependency records; the message also displays information about high CPU consumption that is related to the dependency records feature.

If you attempt to delete a region that is in use, Cisco Unified Communications Manager displays a message. Before deleting a region that is currently in use, you must perform either or both of the following tasks:

- Update the device pools to use a different region.
- Delete the device pools that use the region that you want to delete.

**Tip** The Find and List Regions window displays an Items per page drop-down list box that allows you to list 25, 50, 100, 150, 200, or 250 configured regions. If you choose to display 100 or more regions, Cisco Unified Communications Manager may experience performance degradation.

# Audio and Video Call Bit Rate Settings

The following table summarizes the audio bit rate and video call bit rate settings that you can specify for regions.

***Table 1: Region Settings***

| Field | Description |
|---|---|
| **Region Information** | |
| Name | Enter a unique name for this region. This name can comprise up to 30 characters. Valid characters include letters, numbers, dashes, dots (periods), blanks, and underscores.<br>**Note** Cisco recommends that you reset devices after changing a region name. |
| **Region Relationships** | |
| Region | The entries in this column display all regions for which non-default relationships have been configured.<br>**Note** If the relationships between the region that you are configuring and this region specify only default values, this region does not display in this column. |
| Audio Codec Preference List | The entries in this column specify the audio codec preference relationship between the region that you are configuring and the region that displays in the corresponding row. |

| Field | Description |
|---|---|
| Maximum Audio Bit Rate | The entries in this column specify the maximum audio bit rate between the region that you are configuring and the region that displays in the corresponding row. |
| Maximum Session Bit Rate for Video Calls | The entries in this column specify the maximum video bit rate (including audio) between the region that you are configuring and the region that displays in the corresponding row. |
| Maximum Session Bit Rate for Immersive Video Calls | The entries in this column specify the maximum immersive video bit rate (including audio) between the region that you are configuring and the region that displays in the corresponding row. |
| **Modify Relationship to other Regions** | |
| Regions | The entries in this window pane specify all existing regions, including the Default region, the region that you are configuring, and all other regions.<br>Choose a region in this pane prior to configuring the relationships between the region that you are configuring and the chosen region. |

| Field | Description |
|---|---|
| Audio Codec Preference List | For each region that is specified in the Regions window pane, choose the corresponding value from the drop-down list box in this column to set the Audio Codec Preference list describing the network conditions between this region and the specified region. The Audio Codec Preference list determines the relative preferences for certain audio codecs, optimizing the audio quality based on whether or not the network conditions are lossy. Certain audio codecs are more robust when faced with packet loss, jitter, and delay.<br><br>Choose from the following values:<br><br>• Keep Current Setting—Choose this value to keep the link loss type between the region that you are configuring and the region that you specified in the Regions window pane.<br><br>• Use System Default—Choose this value to use the system default value for link loss type between the region that you are configuring and the region that you specified in the Regions window pane. (System default is set in the Service Parameters Configuration window.)<br><br>• Factory Default Low Loss—Choose this value to specify a low-loss link loss type between the region that you are configuring and the region that you specified in the Regions window pane.<br><br>• Factory Default Lossy—Choose this value to specify a lossy link loss type between the region that you are configuring and the region that you specified in the Regions window pane.<br><br>• <Custom Audio Codec Preference list>—Choose a custom Audio Codec Preference list that you have created.<br><br>**Caution** Custom audio codec preferences must be configured identically in both clusters for H.323 Intercluster Trunks (ICTs). Inconsistent audio codec preferences may result in calls with no audio. |

| Field | Description |
|---|---|
| Maximum Audio Bit Rate | For each region that is specified in the Regions window pane, choose the value from the drop-down list box in this column to set the maximum bit rate to use for audio between this region and the specified region. This setting applies to both audio and video calls and serves as an upper limit for the audio bit rate, which means that audio codecs with higher bit rates than the one that you specify are not used for these calls.<br><br>For example, if you choose 64 kbps (G.722, G.711), G.722 or G.711 may get negotiated for the calls because both codecs use 64 kb/s. G.722 has better audio quality than G.711, so it is preferred for a call.<br><br>• Cisco recommends that you update the intraregion and interregion maximum audio bit rate service parameters. In addition, Cisco recommends that Use System Default option be chosen for this field.<br><br>Configuring and using the service parameter values facilitates the modification of the Max Audio Bit Rate for many region pairs at one time.<br><br>• Because of bandwidth constraints at most remote-site deployments, use 8 kb/s (G.729) as the recommended setting between a new region and existing regions.<br>• If you choose Keep Current Setting, you keep the value that is specified in the Regions Relationships pane for the region pair that you are creating.<br>• If you choose Use System Default, the value for the Intraregion or Interregion Max Audio Bit Rate service parameter gets used, depending on the region that is selected. This service parameter supports the Cisco CallManager service. |

| Field | Description |
|---|---|
| Maximum Session Bit Rate for Video Calls | For each region that is specified in the Regions window pane, click one radio button in this column as specified:<br>• Keep Current Setting—Click this button to use the current setting for the video call bandwidth.<br>• Use System Default—Click this button to use the default value. The default value normally specifies 384 kbps, unless the default value has been set to a different value in the Service Parameters Configuration window.<br>• None—Click this radio button if no video call bit rate is allotted between this region and the specified region. If you choose this option, the system does not allow video calls.<br>• kbps—Click this button to set the maximum video call bit rate between the region that you are configuring and the specified region. Enter the bit rate that is available for each video call between these two regions; remember that the audio bit rate is included. Valid values range from 1 to 32256. |
| Maximum Session Bit Rate for Immersive Video Calls | For each region that is specified in the Regions window pane, click one radio button in this column as specified:<br>• Keep Current Setting—Click this button to use the current setting for the immersive video call bandwidth.<br>• Use System Default—Click this button to use the default value. The default value normally specifies 2000000000 kbps, unless the default value has been set to a different value in the Service Parameters Configuration window.<br>• None—Click this radio button if no immersive video call bit rate is allotted between this region and the specified region. If you choose this option, the system does not allow immersive video calls.<br>• kbps—Click this button to set the maximum immersive video call bit rate between the region that you are configuring and the specified region. Enter the bit rate that is available for each immersive video call between these two regions; remember that the audio bit rate is included. Valid values range from 1 to 2147483647. |

# Synchronize Region Settings with Devices

To synchronize devices with a Region that has undergone configuration changes, perform the following procedure, which applies any outstanding configuration settings in the least-intrusive manner possible. (For example, a reset/restart may not be required on some affected devices.)

### Procedure

**Step 1** Choose **System** > **Region**.

The Find and List Regions window displays.

**Step 2** Choose the search criteria to use.

**Step 3** Click **Find**.

The window displays a list of Regions that match the search criteria.

**Step 4** Click the Region to which you want to synchronize applicable devices.

The Find and List Regions window displays.

**Step 5** Make any additional configuration changes.

**Step 6** Click **Save**.

**Step 7** Click **Apply Config**.

The Apply Configuration Information dialog displays.

**Step 8** Click **OK**.