



Cisco TelePresence MCU 5300 Series

Version 4.3

Tutorial

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Using the tutorial

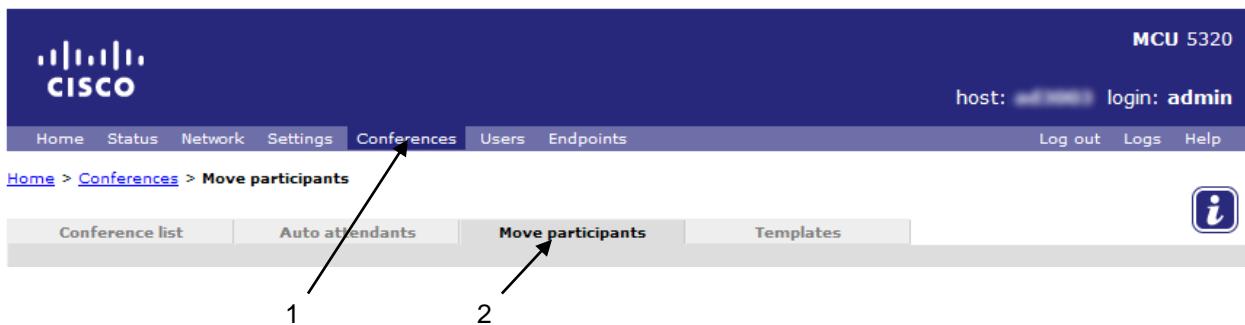
NOTE: Refer to the document [Cisco TelePresence MCU 5300 Series Getting started](#) for instructions on how to connect and configure the MCU before reading this tutorial.

The tutorial is designed to be followed in the order in which the steps are provided.



The online help complements this guide by providing detailed descriptions of each field. To display the help files at any time, click this icon in the top right hand corner of the screen.

In this tutorial the instruction ‘Go to **Conferences > Move participants**’ means click the Conferences link on the menu bar and then click the Move participants tab.



Throughout this guide there are helpful tips in green that explain things in more detail, or provide useful advice on the features and functions of the device, for example:

To see all commands available from the terminal interface type `help` and press `Enter`.

Note: Screenshots are representative and sensitive data has been blurred. This practice does not alter the meaning or purpose of the screenshots.

Assumptions

It is assumed that you have used video conferencing equipment before and understand industry standard terms.

Ideally, you should have at least two endpoints in two adjoining rooms so you can see the effect of some options for conferences. Some features will require additional endpoints; however, even if you cannot demonstrate the features for yourself, you can still follow the steps.

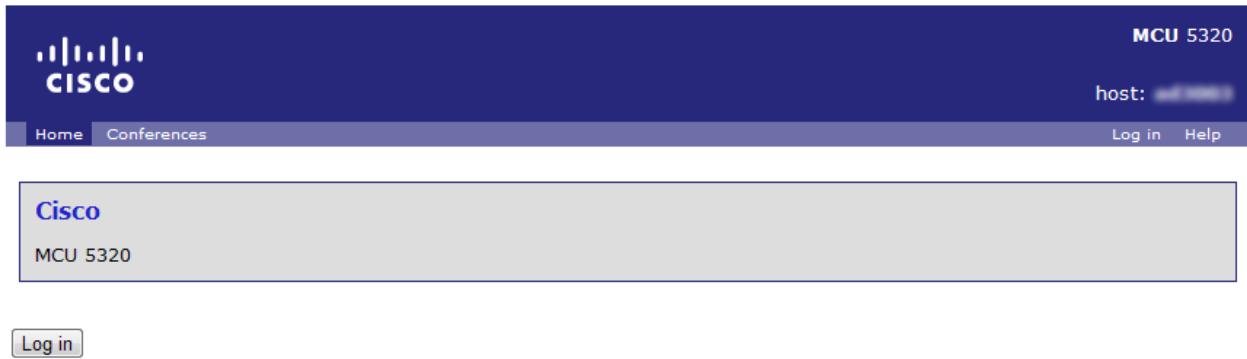
MCU software version

This tutorial was prepared using an MCU 5300 Series device running software version 4.3.

Logging in to the web interface

Once you have connected and performed the initial configuration of the MCU you can log in and control it via the web interface. The web interface is used to administer the MCU device and manage conferences, users, and associated devices.

1. Using a web browser, type in the host name or IP address that you assigned to the MCU during initial configuration as the URL.



2. Click **Log in**.

Log in



Username admin

Password

When the MCU is delivered there are two default users: *admin* and *guest*. (Later in the tutorial you will add a third user.) To configure the unit, you must log in as *admin*.

3. Type in the username *admin* with no password and click **OK**.

You are advised to [set up a password for the admin account](#) [p.46] to restrict who is able to perform box-wide configuration changes such as changing the MCU's IP address.

details'. At the bottom are 'Change login' and 'Change password' buttons. A footer bar at the bottom of the page contains the text '(c) Copyright Cisco Systems 2003-2012, License information'."/>

The web interface screens have a number of features in common:

- ▶ Menu bar with a number of options that open setup, configuration or status screens
- ▶ Screens with one or more tabs. Each tab is a separate page
- ▶ Pages with one or more sections. Section headings are in blue with white text. Some pages have several sections and you will need to scroll down to see all the sections
- ▶ Links and buttons. Some buttons appear more than once on a page so that you do not need to scroll too far
- ▶ Every page except the Home page shown above has a help  icon. Clicking this icon opens the online help page for the current page. There is also an index for the online help that you can access from any help page
- ▶ The 'breadcrumbs' navigation aid, below the menu bar, shows where you are in the web interface by identifying the levels that you have worked through to reach the current page

Creating your first conference

This section describes how to set up your first conference, dial in to the conference from an endpoint and have the MCU call out to endpoints. It also describes some of the advanced abilities of the MCU, including the individual screen layout options and text chat feature.

However, your organization may require that you enable certain prerequisites before you start.

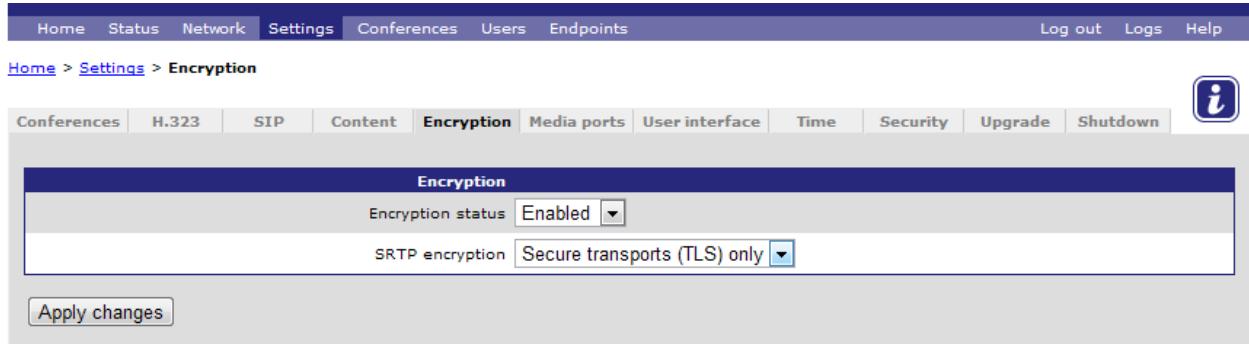
Prerequisites

Enabling encryption

You can create encrypted conferences if the encryption option is installed on the MCU; however, you must globally enable encryption on the device before you create conferences.

1. Go to **Settings > Upgrade** and look in the **Feature management** section to check if the encryption option is in the list of Activated features.
2. Go to **Settings > Encryption** to check if encryption is already enabled – it should be enabled by default.

(If you do not have the encryption option, this page is not available.)



3. For *Encryption status*, select *Enabled* and then click **Apply changes**.

The second field on this page determines whether SRTP encryption is applied to all transports or TLS only, or is disabled. This setting can be modified on a per conference basis. You can also choose whether ad hoc conferences will be encrypted.

For an explanation of ad hoc conferences and the consequences of these settings, see the online help. SRTP encryption only applies to SIP calls; if you will be using SIP, see the online help for more information.

Adding a conference

1. Click **Conferences** on the menu bar (not the tab).

MCU 5320

host: [admin](#) login: **admin**

Log out Logs Help

Home > Conferences > Conference list

Conference list Auto attendants Move participants Templates

No active conferences

Name	Description	Owner	Registration	Participants	Start time	Time remaining
No active conferences						

Page 1 2 3 4 5 6 7 8 9 10 11 12 13

No scheduled conferences

Name	Numeric ID	Security	Owner	Status	Start time	End time
No scheduled conferences						

Delete selected Template for new conference Top level Add new conference Page 1 2 3 4 5 6 7 8 9 10

No completed conferences

Name	Owner	Start time	End time
No completed conferences			

Purge selected Purge all Page 1 2 3 4 5 6 7 8 9 10

Purge selected Purge all Page 1 2 3 4 5 6 7 8 9 10

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The Conference list has three sections:

- ▶ Active conferences that are happening now
- ▶ Scheduled conferences whose start time has not been reached and conferences that recur, for example weekly conferences
- ▶ Completed conferences that are not scheduled to recur

2. Click **Add new conference**.

The screenshot shows the 'Add conference' page of the Cisco TelePresence MCU 5300 Series. The top navigation bar includes links for Home, Status, Network, Settings, Conferences, Users, and Endpoints. The Conferences link is highlighted. The top right corner shows 'MCU 5320', 'host: admin', and 'login: admin'. Below the navigation is a breadcrumb trail: Home > Conferences > Add conference. On the right side of the page is an 'i' icon with a blue border.

Add conference

Parameters

Name	Training
Description	My first conference (optional)
Numeric ID	123 (optional)
PIN	(optional)
Guest numeric ID	(optional)
Guest PIN	(optional)
Owner	admin
Numeric ID registration	<input type="checkbox"/> H.323 gatekeeper <input checked="" type="checkbox"/> SIP registrar
When only guests remain	Disconnect all participants
Automatic lecture mode	Disabled
Timeout for Type 1 automatic lecture mode	Immediately
Visibility	Public
Encryption	Optional
Invite pre-configured participants	At the start of the conference
Mute on join	<input type="checkbox"/> Audio <input type="checkbox"/> Video
Start locked	Unlocked
Maximum video participants	(optional)
Maximum audio-only participants	(optional)

3. Type in a *Name* for the conference, for example *Training*.
4. Type in a *Description*, for example *My first conference*.
5. Add a *Numeric ID*, for example *123* and, if required, a *PIN* needed to join the conference and a second numeric ID/PIN pair for conference guests.

The numeric identifier can be used in a number of ways. If you are using an H.323 gatekeeper or a SIP registrar it is the phone number that participants can use to join the conference directly when calling in to the MCU via a gatekeeper or proxy.

Participants who connect to the conference using the primary ID and PIN become 'chairpersons' (or 'chairs') and those who connect using the guest ID and PIN become 'guests'. Chairs and guests have different sets of privileges. See the online help for further details.

The conference can only start when at least one chairperson has joined (any guests joining earlier will see a blank screen with the message: 'Waiting for conference chairperson'). What happens when the last chairperson leaves the conference is determined by the setting in *When only guests remain*.

Note that, by default, the conference starts immediately and will last for one hour. We recommend while completing the tutorial you create a ‘permanent’ conference. To do this, under *Start time and duration* select *Permanent*.

6. Select the *H.323 gatekeeper* checkbox to register this numeric ID with an H.323 gatekeeper, if the MCU is configured to use one. See [Setting up an external gatekeeper](#) [p.42].
7. Select the *SIP registrar* checkbox to register this numeric ID with a SIP registrar, if the MCU is configured to use one. See [Using a SIP registrar](#) [p.44] of this tutorial.
8. To encrypt this conference, select *Optional* or *Required* in the *Encryption* field.

With *Optional* encryption, H.323 endpoints that support AES encryption will use it when they join this conference. With *Required* encryption, endpoints that do not support AES will not be allowed to join this conference. The situation is similar for SIP endpoints that support SRTP.

See the online help for more information about encryption and how to enable it for the different endpoint types.

9. Leave the default values for all other conference settings.
10. Scroll down and click **Add conference**.

The conference is now active (if you did not set a start time, it starts immediately). If you chose a start time in the future, the conference is listed as scheduled instead.

Name	Description	Owner	Registration	Participants	Start time	Time remaining
Training	My first conference	admin	Registered	0	09:42	58 minutes, 14 seconds

Name	Numeric ID	Security	Owner	Status	Start time	End time
<input type="checkbox"/> Training	123	<none>	admin	In progress	09:42	10:42

You can have up to 200 scheduled conferences at any one time. When you add a conference you can:

- ▶ Register a conference with a H.323 gatekeeper, if one is configured. A gatekeeper allows a telephone number to be assigned to a conference.
- ▶ Enable and disable participants’ use of far end camera control (FECC) and DTMF to change the conference view layout.

- ▶ Set the conference start time and duration.
- ▶ Make the conference permanent, a one-off, or a recurring conference.
- ▶ Add pre-configured endpoints to the conference so that the MCU will automatically call out to these endpoints, either when the conference first becomes active or after a non-configured endpoint calls in. This is useful for recurring conferences with regular participants.
- ▶ Reserve ports for your conference. This is an advanced feature outside the scope of this tutorial.

Calling out to invite participants in to the conference

Participants can now join the active conference in two ways: either the MCU can call out to connect to the specified endpoints, or the endpoints can call in to connect to the MCU.

This procedure describes calling out from the MCU.

1. Go to **Conferences** and click on the name of the conference (*Training*).

There are five pages for controlling the conference. The **Participants** page opens by default.

The screenshot shows the 'Participants' page for the 'Training' conference. At the top, it displays basic conference statistics: Video port usage: 0 (no configured limit), Audio-only port usage: 0 (no configured limit), Registration: Registered, Content channel: not configured, and Encryption: <not required>. To the right, there are buttons for locking or unlocking the conference. Below this, there are two sets of buttons: 'End conference' and 'Add participants'. The main area is titled 'Conference "Training", no active participants'. It shows a table with columns for Type (Participant), Controls, Status, and Preview. The table is currently empty, showing 'No current participants'. At the bottom, there is another set of 'End conference' and 'Add participants' buttons, along with a 'Page 1' indicator. The interface includes a navigation bar at the top with links for Home, Status, Network, Settings, Conferences, Users, and Endpoints, and a login status for host: admin and log out.

On this page you can:

- ▶ Add participants.
- ▶ See a snapshot view of each participant's video and their audio level.

- ▶ Scroll down to see a list of participants who were connected to the conference but have already disconnected.
 - ▶ Connect/disconnect each participant individually or all participants simultaneously.
 - ▶ Mute and unmute each participant individually or all the participants of the conference.
 - ▶ See summary status information about conference participants.
 - ▶ Make a conference participant or the content channel important (See [Controlling the conference](#) [p.17]).
 - ▶ Lock the conference, preventing more participants from joining it.
2. Click **Add participant**.

The screenshot shows the 'Add participants' interface for a conference titled 'Training'. The configuration parameters include:

- Call-out parameters:**
 - Address: [Input field]
 - Call protocol: H.323 (selected)
 - Use SIP registrar: [checkbox]
 - Outgoing transport: <use box-wide setting>
 - DTMF sequence: [Input field]
- Active speaker link parameters:**
 - Use video from: <self>
- Conferencing parameters:**
 - Display name override: [Input field]
 - Motion / sharpness tradeoff: <use box-wide setting>
 - Transmitted video resolutions: <use box-wide setting>
 - Content contribution: <use conference configuration>
 - Content receive: Enabled
 - View border size: <no border>
 - Default view family: <use box-wide setting>
 - Preferred bandwidth from MCU: <use box-wide setting>
 - Preferred bandwidth to MCU: <use box-wide setting>
 - Layout control via FECC / DTMF: <use conference configuration>
 - Send camera control to other participants: <use conference configuration>
 - Mute in-band DTMF: <use conference configuration>
 - Appear as a recording device: Disabled
 - Dial out as: Chair
 - Initial audio status: <use conference configuration>
 - Initial video status: <use conference configuration>
 - Automatic disconnection: Disabled
- Advanced interoperability parameters:**
 - Content negotiation: As master
 - Adaptive Gain Control: <use conference configuration>
 - Custom codec selection: Disabled

A large blue button at the bottom right is labeled 'Call endpoint'.

3. For **Address**, type in the IP address or host name of an accessible endpoint on your network.
4. For **Call protocol**, select which protocol (SIP or H.323) to connect to the endpoint with.
5. Leave the other fields as their default values and click **Call endpoint**.
6. If the endpoint is not configured to automatically answer calls, accept the call on the endpoint.

By setting **Initial audio status** and **Initial video status** to **Muted** (instead of **Active**), participants using this endpoint can be added to the conference but not allowed to contribute audio or video respectively.

Alternatively, you can select the *Mute on join* check boxes in the conference configuration to mute audio, video or both for every participant when they join the conference.

When you click **Call endpoint**, the MCU automatically connects to the endpoint. You are returned to the **Participants** page and the new participant is shown in the active participants list. (The icons are described later in the tutorial.)

Typically, the endpoint will take a few seconds to start sending video and audio streams to the MCU, and so it might be necessary to refresh the page in order for the thumbnail Preview image and audio level to be shown.

The screenshot shows the 'Participants' tab selected on the 'Conferences' page. The conference name is 'Conference "Training", 1 active participant'. Key statistics shown include:

- Video port usage: 1 (no configured limit)
- Audio-only port usage: 0 (no configured limit)
- Registration: Registered
- Content channel: active - no viewers
- Encryption: <not required>

Status bar: This conference is not currently locked. Buttons: Lock conference, Unlock conference.

Type	Participant	Controls	Status	Preview
SIP			Connected at 09:59 Tx: 768 x 448, H.264, 1.09M, AAC-LD Rx: 768 x 448, H.264, 4.00M, AAC-LD Content source (main video)	
	Content channel		Content viewers: 0 Rx (main video): 768 x 448, H.264, 4.00M	

Buttons: End conference, Add participants, Page 1.

Summary section:

Importance	Mute	Disconnect	View	Control
All participants				

- Repeat steps 2 to 6 to add more endpoints to the conference.

Copying conference contact details

- Go to **Conferences** and click the name of the conference.

- Click on the summary icon in the top right hand corner of the screen.

The conference summary page opens in a new window.

Conference "Training"

Conference "Training" started at 11:00 on April 13 2012.
It has no fixed duration set, so will continue indefinitely.

To join this conference, connect to "[\[REDACTED\]](#)" from a H.323/SIP videoconferencing device, and select it from the menu.

To view the configuration or active state of this conference, or to add people to it, you will need to use a web browser to connect to: [http://\[REDACTED\]](http://[REDACTED])

[Copy to clipboard](#)

This page gives the following information about the conference:

- ▶ The address of the conference as it would be called from an endpoint
 - ▶ The direct link to manage the conference via a web browser
3. Click **Copy to clipboard** if you want to use the summary information elsewhere; for example to send email about the forthcoming conference to potential participants.
4. Close the summary window.

Calling in to the conference

Endpoints can also call in to the MCU. In this section use your second endpoint.

- From your endpoint, dial the IP address of the MCU that you made a note of earlier.

The default auto attendant displays a menu of the available auto attendants and conferences.



- Set the endpoint's controls to manage the far end camera control.

By putting the endpoint into FECC mode, the MCU can receive commands from the endpoint and perform actions based on them. The remote control buttons have the following meanings with auto attendant menus:

- ▶ UP or DOWN moves the blue cursor bar up and down to select a conference or auto attendant name
- ▶ RIGHT is used to select the highlighted auto attendant or conference
- ▶ LEFT is used to go back through the menu hierarchy, for instance after selecting a child auto attendant or starting the “Create new conference” process

You can also use DTMF tones to navigate the auto attendant menu. To enable DTMF menu navigation, press the hash key twice (##) on your endpoint keypad.

- Scroll down the list to the conference you want to join.
- To add the endpoint to the conference, press the right hand arrow to select the conference that you created earlier.

If you added a PIN for the conference, you will need to enter the PIN followed by #. You may also be able create new conferences from this page, if **Create new conference** is on the menu.

Controlling the conference

This section describes how to change some of the features of the conference and control the screen layout, for all participants, using some of the pages in the **Conferences** screen. (In the section *Managing individual participants* [p.23], you will change the settings for an individual participant.)

Controlling the layout

When a participant joins a conference, their screen layout is typically determined by the default view set for the MCU. It is also possible to set the layout for all of the conference participants on the conference's **Custom Layout** page. The breadcrumb trail shows you which conference you are working with.

You can also control the layout on a per participant basis and you will do this later in the tutorial.

1. Click the **Custom layout** tab.

The screenshot shows the 'Custom layout' tab selected in the top navigation bar. The main content area displays the following information:

- Current status:** Enabled (radio button selected)
- Disabled:** (radio button unselected)
- Make new participants see this view:** (checkbox unselected)
- Switch all participants to this view:** (button)

Below this, there is a section titled "Available layouts" containing two rows of layout thumbnails. The first row is labeled "These layouts are designed to be suitable for all video conferencing situations." and the second row is labeled "These layouts are designed to be suitable for displaying composed views of standard (4:3) video streams on widescreen (16:9) displays."

If the *Current status* is *Disabled*, each endpoint controls their layout and the participants see the default that is configured on the MCU.

(The current status automatically changes from *Disabled* to *Enabled* when you select a layout.)

2. Select a view from the top part of the *Available layouts* section which has a large pane plus smaller ones.

This type of layout is useful if the endpoint is set up to use a voice-controlled layout. This is the default behavior: the participant who is talking the loudest appears in the largest pane.

The newly-configured conference custom layout is now available for all participants of the conference to select for themselves. This is in addition to the pre-defined layout families and, optionally, a custom layout specific to each endpoint. Using the controls in the Conference custom layout section, you can now:

- ▶ Make new participants see this view when they join the conference
- ▶ Switch all participants to this view at any time in the conference

Note that the participant can change their view immediately using their controller. The features are meant for easy set up, not to restrict the participants.

3. Click **Switch all participants to this view.**
4. Go to the **Participants** page, and in the All participants box, click the 'display layout select panel' icon



Highlighted in red is the layout that is currently selected. Click on a different layout icon to change the layout for all participants.

5. Return to the **Custom layout** page and click **Pane Placement**.

The screenshot shows the 'Pane placement' configuration page for a conference named "Training". The page features a 5x3 grid layout labeled 1 through 15. Panes 1, 2, and 3 are highlighted with orange borders, indicating they are locked to display a specific participant across all endpoints. The right side of the interface lists 15 pane configurations, each with a dropdown menu. The first three dropdowns correspond to the highlighted panes (1, 2, 3), while the others are set to "<default>". A "Custom layout" button is located in the top right corner.

By enabling pane placement, particular panes in your chosen conference layout can be locked to display a particular participant across all endpoints, a blank screen, content (see later in the tutorial), voice activated or the default.

6. For Current status, select Enabled.
7. Place both conference participants in set panes by selecting their entry from the drop down list.
8. Click **Update pane placement**. See how the layout is updated on both endpoints.
9. Reset the panes by selecting <default> and click **Update pane placement**.
10. Click the **Participants** tab.

The **Participants** page has a row of controls for each participant and an “All participants” section below with similar controls.

Video port usage: 2 (no configured limit)
Audio-only port usage: 0 (no configured limit)
Registration: Registered
Content channel: active - no viewers
Encryption: <not required>

This conference is not currently locked
Lock conference Unlock conference

Type	Participant	Controls	Status	Preview
H.323	[REDACTED]	[WAVE, MUTE, VIDEO, MICROPHONE]	Connected at 11:16 Tx: 1280 x 720, H.264, 640k, AAC-LD Rx: 1024 x 576, H.264, 704k, AAC-LD Content tx: pending disable Encrypted - check code: EA1D7CED3442E500	[PREVIEW]
SIP	[REDACTED]	[WAVE, MUTE, VIDEO, MICROPHONE]	Connected at 11:08 Tx: 1280 x 720, H.264, 3.94M, AAC-LD Rx: 1280 x 720, H.264, 4.00M, AAC-LD Content tx: pending disable	[PREVIEW]
Content channel		[WAVE, MUTE]	Content viewers: 0	[PREVIEW]

- Click the icon to make the participant in the other room 'important'.

Only one participant can be important at any time. In a voice-controlled layout (the default) the 'important' participant will always be seen in the largest pane regardless of who is talking the loudest. Individual endpoints can still choose to see another layout.

In the same way, the content channel can be made important by clicking on the icon. Alternatively, there is an option in **Settings > Conferences > Advanced settings** to automatically make the content channel important when the content channel is enabled. Note that this does not affect participants using a separate screen for content channel or participants who have specifically allocated their pane placement. For more information on this feature, please refer to the online help.

- Try speaking loudly in to your endpoint. You should not be able to make yourself appear in the largest pane.
- If you have a second person with you, click the mute icon for one of the participants in another room and ask the person to go in to that room and start talking. Notice that you cannot hear them.
- Click on the unmute icon to unmute the participant and click the far right audio preview when they talk.
Note that the video and audio previews do not update in real time. Click on them to make the previews refresh.
- Click the **Custom layout** tab and choose a different layout. Then click **Make new participants see this view**.
- Click the **Participants** tab.
- Scroll down to the "All participants" section.

18. Disconnect all of the participants and then reconnect them.

Everyone should see the new layout.



The conference-wide controls that would have no effect are not available. For instance, if all participants are already muted then the “mute” icon will be grayed out.

	Clears all participants from being important and resets the default mode in which the loudest participant occupies the largest pane
	Mute and unmute all participants
	Disconnects all participants from the conference
	Forces all participants' view layouts to voice-activated mode. This does not change which layout they are viewing, but stops the layout being focused on a specific participant rather than the loudest speaker
	Selects a full screen layout for all users. i.e. only one participant
	Displays the layout selection panel from which you can select a layout view that all current participants will see. This panel offers the same choices as going to Conferences > Custom layout
	Enables or disables layout control for all participants. If enabled, users may control the layout on their own endpoints. They can do this by putting their endpoints into far end control mode. The buttons on the remote control work differently in this mode: <ul style="list-style-type: none"> ▶ UP or DOWN changes between different styles of layout ▶ LEFT or RIGHT changes the participant who appears in the largest pane of the screen ▶ ZOOM + allows control of the far end camera ▶ Pressing * opens the in call menu which allows you to control many aspects of the conference. See Cisco TelePresence Accessing Conferences Getting started guide MCU 4.3 for more information.

Displaying conference statistics

You can display statistics about a conference and use the information to quickly see how many participants are currently in the conference.

1. Click the **Statistics** tab.
2. Refresh the page to update the *Running time* and other data.

The screenshot shows the 'Statistics' tab selected within the 'Conferences' section of the web interface. The page displays various conference statistics, including start time (11:00), end time (permanent), running time (27 minutes, 57 seconds), and participant counts (2 audio/video, 0 audio-only). Navigation links for 'prev' and 'next' are visible at the top right.

Sending a conference message

You can send messages to all participants in a conference simultaneously. This message appears overlaid on each participant's view.

1. Click the **Send Message** tab.

When you send a message from this page, it appears as a text overlay on each participant's screen. All participants see the message simultaneously. (You can also send a message to one participant; see [Sending a message to one participant \[p.27\]](#))

The screenshot shows the 'Send message' tab selected within the 'Conferences' section. A message box is open, containing fields for 'Message text' (set to 'A test message'), 'Position' (set to 'Bottom'), and 'Duration' (set to '30 seconds'). Below the form, a note states 'Message will be sent to all participants'. Navigation links for 'prev' and 'next' are visible at the top right.

2. Type in a message.
3. For *Position*, select one of the options: *Top*, *Middle* or *Bottom*.
4. For *Duration*, set the length of time that the message will be displayed to *1 minute*.
5. Click **Send message**.

The text message appears on all the endpoint screens.

Managing individual participants

This section takes you through controlling some settings for one participant in a conference, for example the screen layouts and camera controls.

1. Go to **Conferences**, select your conference and then go to **Participants**.

As you saw previously, the participants are listed and the preview shows you the video stream being sent by the endpoint to the MCU.

2. Click on one of the participants in order to manage their endpoint in this conference.

The Participant screen has eight tabs and the **Display** page opens by default. This page can be used to control what the participant sees. The navigation aid tells you which participant you are working with.

The screenshot shows the 'Display' tab of the Participant screen. At the top, there's a navigation bar with Home, Status, Network, Settings, Conferences, Users, Endpoints, Log out, Logs, and Help. Below that is a breadcrumb trail: Home > Conferences > Conference "Training" > Participant "████████" > Display. The main content area has tabs for Display, Camera, Audio, Send DTMF, Send message, Custom layout, Statistics, and Diagnostics. On the right is an information icon and links for <prev next>. The central part of the screen is divided into sections: Preview (showing a video feed of a room), Layout (listing Family 1 through Family 5, Conference custom layout, and Participant custom layout), Controls (with icons for video, audio, and other functions), and Focused participant (with status indicators). A legend on the right defines icons for Voice-switched, Content channel, and other participant states.

Changing a participant's layout

There are a number of ways to select the layout that this participant sees: by family or a set layout. If you select one of the families the exact view will depend on how many participants are active in the conference at the time.

1. If you have enough endpoints, click on *Family 4* and set up and connect to four participants. Now add a fifth participant and notice that the layout changes from 4 panes to 9 panes.

The participant's view changes as soon as you select a family.

The **Edit** buttons work differently. They take you to the **Custom layout** pages for the participant or conference, from which you can select one fixed view that is not in one of the five families.

- For Participant custom layout, click **Edit** or click the Custom layout tab.

The participant **Custom layout** page opens. It is very similar to the one for the whole conference that you saw earlier.

- Click on one of the layouts.

You do not need to click the **Enabled** radio button: as soon as you click on a layout, it is selected automatically.

- Click the **Display** tab.

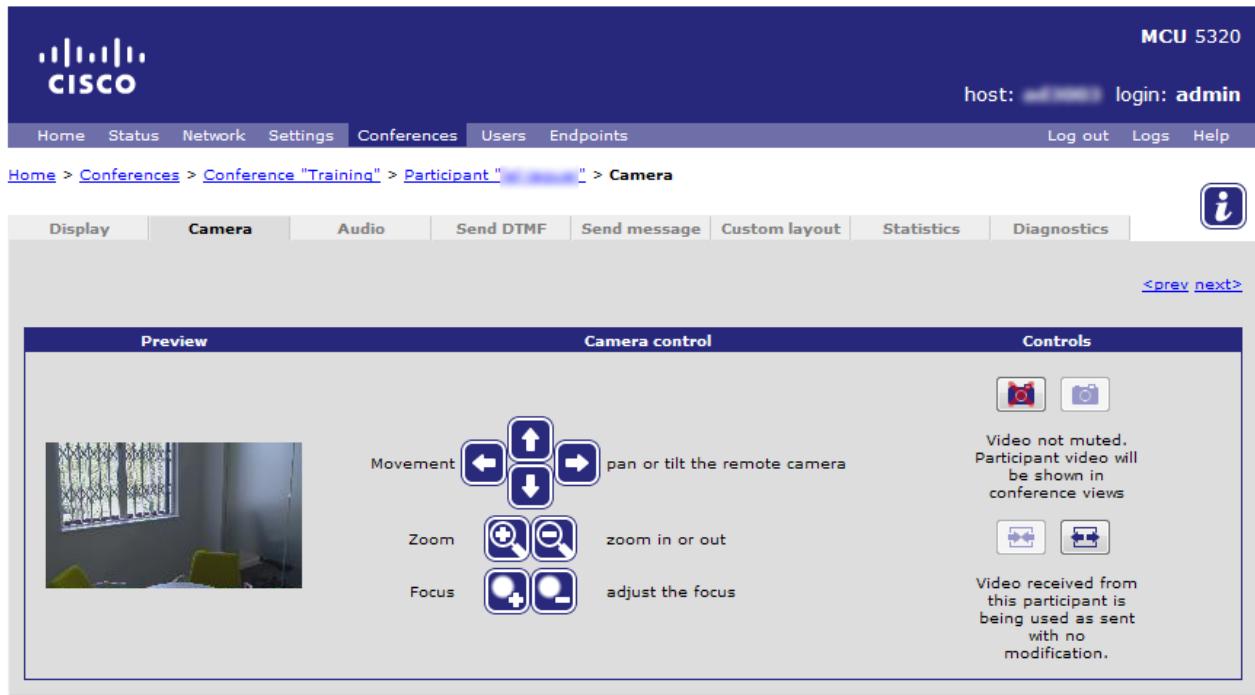
The thumbnail beside the **Edit** button changes to the selection you made and the radio button is selected automatically so this is the view that the participant is seeing. (The participant can still change their view at any time.)

You can select who appears in the largest pane of this participant's screen (i.e. who is the "focused" participant). The *Voice-switched* option is the default and is always available; there is also a radio button for every other active participant in the conference.

- Click one of the radio buttons to choose who is the focused participant viewed by this participant and click on the preview to update it. Then click a different radio button and click on the preview again to watch the view change.

Moving and muting a participant's camera

- Click the **Camera** tab.



This page shows a preview of what the participant's camera is sending to the MCU and allows you to control the participant's camera and therefore what view the other participants have of him/her (The camera controls only appear if the camera control was negotiated for this call).

2. Use the movement, zoom and focus icons to move and control the camera.

The preview shows a static image from the participant's camera. Click the preview to refresh it.

3. Mute and unmute the video transmission to conference.

4. Click the  icon for an explanation of the other icons on this page.

Adjusting a participant's audio

1. Click the **Audio** tab.

You can enable Adaptive Gain Control or apply a fixed gain. The gain controls how the MCU alters the audio stream received from the endpoint, and so affects how loud they sound to other conference participants. Every 3dB represents a doubling of volume, so +6dB is equivalent to making the participant 4 times as loud, -3dB means the sound will be half as loud, and so on. This setting is useful for endpoints whose audio is consistently too quiet or too loud.

2. Increase the audio level that the endpoint places into the call by selecting *Apply fixed gain*. Type a positive number into the *Apply fixed gain* field and click **Apply changes**.

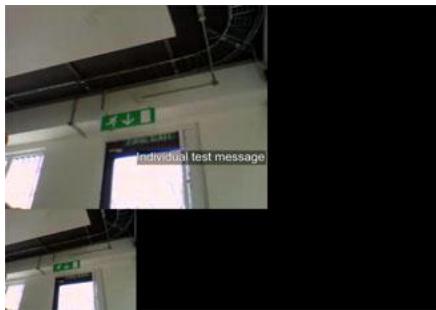
Sending a message to one participant

1. Click the **Send message** tab.

A text message sent from here appears only on this participant's screen.

2. Type a message into the *Message text* field and click **Send message**.

3. Return to the **Display** tab and click on the preview to check that the text has appeared on the screen.



Checking statistics and diagnostics

1. Click the **Statistics** tab to see information about the connection to this participant.

Home Status Network Settings Conferences Users Endpoints Log out Logs Help

Home > Conferences > Conference "Training" > Participant "████████" > Statistics

Display Camera Audio Send DTMF Send message Custom layout Statistics Diagnostics

<prev next>

Audio statistics

Media	Control
Receive stream AAC-LD 64k, 20 ms	RTCP receive address ██████████
Receive address ██████████	Receiver reports 265
Encryption <not active>	Packet loss reported 0
Received jitter 0.0 ms (buffer=38.0 ms)	Sender reports 265
Received energy -29 dB	Other 575
Packets received 57500	
Packet errors 0	RTCP transmit address ██████████
Frame errors 0 / 57500	Packets sent 193
Transmit stream AAC-LD 64k, 20 ms	
Transmit address ██████████	
Encryption <not active>	
Packets sent 57500	

Video statistics

Media	Control
Receive stream H.264, 1280 x 720, Non-interleaved mode	RTCP receive address ██████████
Receive address ██████████	Receiver reports 260
Encryption <not active>	Packet loss reported 0
Channel bit rate 4.00 Mbit/s	Sender reports 260
Receive bit rate 4.00 Mbit/s (actual=2.17 Mbit/s)	Other 553
Received jitter 0.5 ms (buffer=0.0 ms)	
Delay applied for lipsync 38 ms (RTCP delay=34 ms)	RTCP transmit address ██████████
Packets received 233806	Packets sent 186
Packet errors 0	
Frame rate 29.8 fps	Fast update requests 0 received, 3 sent
Frame errors 0 / 34474	Flow control messages 0 received, 0 sent
Transmit stream H.264, 1280 x 720, Non-interleaved mode	
Transmit address ██████████	
Encryption <not active>	
Channel bit rate 3.94 Mbit/s	
Transmit bit rate 3.94 Mbit/s (actual=1.15 Mbit/s)	
Packets sent 422790	
Frame rate 30.0 fps	
Temporal / spatial 20	

Content statistics

Media	Control
Receive stream <no video>	RTCP receive address ██████████
Receive address ██████████	Receiver reports 266
Encryption -	Packet loss reported 0

Look out for packet errors and frame errors because these can indicate network issues such as duplex mismatches.

The *Receive bit rate* may be lower than expected: this can be normal behavior because the MCU asks for less data from the participant if no one is viewing them in a full screen. This helps to reduce network load.

- Click the **Diagnostics** tab to see detailed information for this connection.

The screenshot shows the 'Diagnostics' tab selected in the top navigation bar. Below it, the 'Status' section displays the call state as 'Connected at 13:06' and various performance metrics: Call bit rate (incoming media) 4.00 Mbit/s, Call bit rate (outgoing media) 4.00 Mbit/s, FEC channel status Established, and Floor control protocol Not supported.

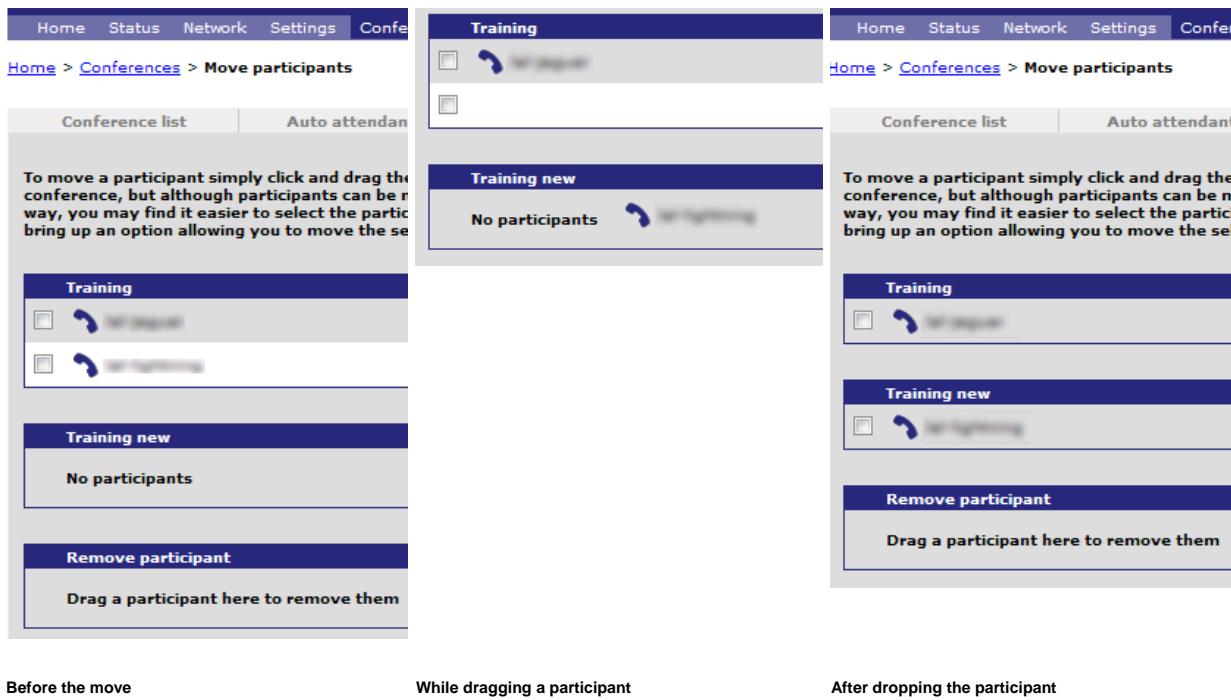
The 'Endpoint-supplied information' section provides details about the endpoint, including its name (redacted), E.164 number <none supplied>, Country code / extension 0x00 / 0x00, Manufacturer code 0x0000, Product TC, and Version 5.1.0.280662.

The 'Media capabilities' section is divided into 'Sent' and 'Received' tabs. Under 'Sent', it lists capability sets sent (1), encryption (Supported), H.261, H.263, H.264, and H.263+ extended modes. Under 'Received', it lists capability sets received (9), encryption (<not supported>), H.261, H.263, H.264, and H.263+ extended modes. Specific details include H.264 bit rate limit 4.00 Mbit/s, maximum size 1920 x 1088, and symmetry Non-symmetric.

Moving participants between conferences

1. Create a new conference (in this example called *Training new*).
2. Go to **Conferences > Move Participants**.
3. Drag a participant from the *Training* conference and drop it on to *Training new*.

The participant moves while you drag it and then becomes a participant in the conference where you drop it:



Before the move

While dragging a participant

After dropping the participant

You can move multiple participants by selecting the checkbox next to each one and then dragging the group.

You can also remove one or more participants from the conference by dragging the selected participants from the conference and dropping them on the Remove participant section.

Pre-configuring endpoints

You can pre-configure endpoints and store them in the MCU's configuration, so that you can invite these endpoints into conferences without having to enter their details each time. This acts as an address book for the endpoints on your network.

The MCU is able to recognize when an incoming call is from a pre-configured endpoint, which has the advantage that the conferencing parameters for that endpoint (for instance, sending video in widescreen format) will automatically take effect. The endpoint's settings won't need to be adjusted each time the endpoint calls in.

1. Go to **Endpoints** and click either **Add H.323** or **Add SIP**. (The screen examples are for Add H.323.)

The screenshot shows the 'Endpoint list' page. At the top, there is a navigation bar with links for Home, Status, Network, Settings, Conferences, Users, and Endpoints. To the right of the navigation bar are links for Log out, Logs, and Help, along with an information icon. Below the navigation bar, the breadcrumb trail shows 'Home > Endpoints > Endpoint list'. The main content area has a title 'Endpoint list' and a message '2 configured endpoints'. Below this, there is a table with three columns: Name, Address, and Type. The table contains two rows. The first row has a checkbox next to 'Other upstairs room HH', an address 'sip:bigroom@mcu.com', and a type 'SIP'. The second row has a checkbox next to 'Upstairs HH', an address 'sip:upstairs@mcu.com', and a type 'H.323'. At the bottom of the table are buttons for 'Delete selected', 'Add H.323', and 'Add SIP'. Above the table, there is a page navigation link 'Page 1 2 3 4'. Below the table, there is another set of buttons for 'Delete selected', 'Add H.323', and 'Add SIP', followed by another page navigation link 'Page 1 2 3 4'.

Name	Address	Type
<input type="checkbox"/> Other upstairs room HH	sip:bigroom@mcu.com	SIP
<input type="checkbox"/> Upstairs HH	sip:upstairs@mcu.com	H.323

The list of previously configured endpoints is displayed. The white arrow shows which column the list is sorted by and whether the list is in ascending or descending order. You can reorder the list by clicking on the appropriate heading.

The screenshot shows the 'Add H.323 endpoint' configuration page. The interface is divided into several sections:

- Display parameters:** Includes a 'Name' field.
- Call-out parameters:** Includes 'Address' and 'DTMF sequence' fields.
- Call-in match parameters:** Includes 'Name', 'IP address', and 'E.164' fields.
- Conferencing parameters:** Includes 'Display name override' and various dropdown settings for motion/sharpness tradeoff, video resolutions, content contribution, content receive, view border size, default view family, bandwidth from MCU, bandwidth to MCU, layout control via FECC/DTMF, camera control, mute in-band DTMF, and appearance as a recording device.
- Advanced interoperability parameters:** Includes 'Content negotiation' (set to 'As master') and 'Custom codec selection' (set to 'Disabled').

At the bottom right of the configuration area is an 'Add endpoint' button. In the top right corner of the main window, there is an 'i' icon enclosed in a blue circle, which likely links to online help.

2. Complete the fields using the online help (click  icon) if necessary.

Call-out parameters are the values that the MCU uses to contact this endpoint.

Call-in match parameters are used by the MCU to recognize this endpoint when it calls in. At least one Call-in match parameter must have a value, though you may provide others. All of the call-in parameters you provide here must match those supplied by the endpoint; however, the MCU does not attempt to match on empty fields.

The Conferencing parameters define the preferred settings for this endpoint.

3. Click **Add endpoint**.

The endpoint appears in the list of configured endpoints.

Adding computer displays to the conference

In this section you configure the MCU to share data with a conference using H.239 or BFCP (also known as the content contribution channel or simply the content channel). The content channel is enabled on the MCU by default but you can enable or disable it on a per conference basis. The content channel is in addition to the main video channel.

The MCU has several methods of displaying data within a conference:

- ▶ Via the content contribution channel to endpoints
- ▶ In the standard or 'main' video channel

Enabling the content channel in a conference

1. Go to **Conferences** and click the *Training* conference.
2. Click the **Configuration** tab.
3. Scroll down to the **Content** section (below **Participant Controls**).

The screenshot shows the 'Configuration' tab selected in the top navigation bar. Below it, the 'Content' section is highlighted. The configuration parameters shown are:

- Content mode: Transcoded
- Outgoing transcoded codec: Automatic
- Content contribution from endpoints: Enabled
- Outgoing transcoded resolutions: 4:3 resolutions only
- Minimum outgoing bit rate: <no minimum>
- Preferred minimum passthrough resolution: <no minimum>

At the bottom of the configuration panel are two buttons: 'Update conference' and 'Pre-configured participants'.

4. Set *Content mode* to *Transcoded*.

The different content modes are explained in the online help.

5. Scroll down and click **Update conference**.

The conference now has a content channel which is shown in the Participants list.

SIP Configuration: [Other upstairs room HH](#)

Connected at 14:59
Tx: 1280 x 720, H.264, 3.94M, AAC-LD
Rx: 1280 x 720, H.264, 4.00M, AAC-LD
Content tx: pending [disable](#)

[Content channel](#)

Content viewers: 0

[End conference](#) [Add participant](#) Page 1

This screenshot shows a conference control interface for the Cisco TelePresence MCU 5300 Series. The top navigation bar includes 'Type' (set to 'Participant'), 'Controls' (with icons for mute, video, camera, and microphone), 'Status' (showing connection details like 'Connected at 14:59' and video settings), and 'Preview' (displaying a thumbnail of the video feed). Below the main participant area, there is a section for 'Content channel' with a video thumbnail showing a black screen. At the bottom, there are buttons for 'End conference' and 'Add participant', along with a page number indicator 'Page 1'.

The auto attendants

You have seen that when endpoints connect to the MCU they see a display offering a number of choices. This is controlled by a series of screens known as 'auto attendants'.

- ▶ Cisco TelePresence MCUs can have many auto attendants (otherwise known as Interactive Voice Responses or IVRs).
- ▶ You can personalize the banner and choose which conferences to show.
- ▶ You can set up menu structures by linking auto attendants.
- ▶ The MCU uses the default auto attendant when a participant dials the MCU using the MCU's IP address, or URI, or from an unknown number.
- ▶ You can assign numeric IDs to Auto attendants so that they can register with gatekeepers and thus be dialed directly.
- ▶ Endpoints with no FECC capability can use DTMF navigation (numbers 2, 8, 4 and 6) to navigate the auto attendant menu.

Go to **Conferences > Auto attendants** to display the auto attendants list.

Name	Numeric ID	H.323 gatekeeper	SIP registrar	Security	Calls	Banner
Default - default	n/a	n/a	<none>	1	<default>	

The Auto attendants list shows all the auto attendants and summary information about each one. When the MCU is delivered there is only one auto attendant - the Default auto attendant.

Creating and linking auto attendants

Additional auto attendants can be added to help callers find the correct conference.

1. Click **Add new auto attendant**.

The screenshot shows the 'Add auto attendant' configuration page. At the top, there's a navigation bar with Home, Status, Network, Settings, Conferences, Users, and Endpoints. On the right, there are Log out, Logs, and Help links. Below the navigation is a breadcrumb trail: Home > Conferences > Auto attendants > Add auto attendant. A help icon is in the top right corner.

Auto attendant

- Name: Auto attendant 1
- Title: (optional)
- Numeric ID: (optional)
- Numeric ID registration: H.323 gatekeeper SIP registrar
- PIN: (optional)
- Re-enter PIN:
- Creation of new conferences: Enabled
- Access to ad hoc conferences: Disabled

Accessible scheduled conferences

- All scheduled conferences
- Selected scheduled conferences
- Available scheduled conferences

Page 1 2 3 4 5 6 7 8 9 10

Training

Links to other auto attendants

- Default

Add auto attendant

2. Type in a name, for example, *Auto attendant 1*.
3. Leave the other fields as their default setting and click **Add auto attendant**.
4. Repeat the steps in this section to add a second auto attendant (for example, *Auto attendant 2*) but this time selecting *Selected scheduled conferences* and choosing the *Training* conference by selecting the checkbox next to its name.

The middle section of the page lets you configure which conferences are displayed on the auto attendant.

5. Select the *Default* auto attendant.

The screenshot shows the 'Auto attendant' configuration page. At the top, there are tabs for Home, Status, Network, Settings, Conferences, Users, and Endpoints. On the right, there are links for Log out, Logs, and Help, along with a help icon.

The main content area has tabs for 'Auto attendant' and 'Banner'. A blue button labeled 'Update auto attendant' is visible.

Auto attendant settings:

- Name: Default
- Title: (optional)
- Numeric ID: (optional)
- Numeric ID registration: H.323 gatekeeper SIP registrar
- PIN: (optional)
- Re-enter PIN: (optional)
- Creation of new conferences: Enabled
- Access to ad hoc conferences: Disabled

Accessible scheduled conferences:

- All scheduled conferences
- Selected scheduled conferences
- Available scheduled conferences
- Training

Page: 1 2 3 4 5 6 7 8 9 10

Links to other auto attendants:

- Auto attendant 1
- Auto attendant 2

Update auto attendant

There are now checkboxes for the new auto attendants.

- Select both auto attendants and click **Update auto attendant**.

Auto attendant 1 and Auto attendant 2 are now displayed in the Default auto attendant.

- Dial the IP address of the MCU from an endpoint.



- Select *Auto attendant 2* in one of the following ways:

- ▶ Put the endpoint into far end camera control mode, press down arrow twice to highlight *Auto attendant 2* and then press right to join it.
- ▶ For endpoints without far end camera control mode, use DTMF navigation mode: press # twice. The message “DTMF navigation enabled” appears briefly at the bottom of the auto attendant screen. Navigate using the 2, 8, 4 and 6 keys for Up, Down, Left and Right, and use 6 to select the menu option. (Exit this mode by pressing # twice.)



The Training conference is listed and you can select this option to join the conference.

Personalizing the auto attendant

1. On the MCU web UI, select the default auto attendant from the auto attendant list and click the **Banner** tab.

The **Banner** page shows which banner is displayed on the auto attendant. You can upload a customized banner instead of the default banner provided by Cisco.

The screenshot shows the 'Auto attendant' configuration page. At the top, there are tabs for 'Auto attendant' and 'Banner'. The 'Banner' tab is selected, displaying the 'Auto attendant banner' configuration. It includes a preview area showing the Cisco logo on a blue background, a radio button for 'Default' (which is selected), another for 'Specific to this auto attendant' (which is not selected), and two buttons: 'Remove banner' and 'Update'. Below this is a 'Banner upload' section with fields for 'Banner for this auto attendant' (containing 'Choose File' and 'No file chosen'), 'Upload new file', and a note about file format and size. A help icon (i) is located in the top right corner.

Restricting access to conferences

The MCU's default behavior is for all conferences to appear on the Default auto attendant, and for that auto attendant to be available to all callers.

This behavior can be changed in various ways:

- ▶ You can configure the Default auto attendant so that it only shows specific conferences [p.37].
- ▶ You can apply guest and chair PINs to a conference so that participants must know the guest PIN to join the conference and the chair PIN to initiate the conference.
- ▶ You can configure the Default auto attendant with a PIN so that only a restricted set of callers can see the available conferences.
- ▶ In a gatekeeper-controlled environment, you can set up each conference with an E.164 number (as well as a PIN if required) and configure the default auto attendant to not show any of them; people can only access the conferences for which they know the number and they call in to those conferences directly (rather than through the video auto attendant menu).
- ▶ To restrict availability of conferences via the web interface, you can configure user accounts with different privilege levels [p.46].

Setting up an external gatekeeper

If you are going to be using an external gatekeeper with your MCU follow the instructions in this section.

1. Go to **Settings > H.323**.

The screenshot shows the 'H.323' configuration page. Key settings include:

- H.323 gatekeeper usage:** Enabled (dropdown menu)
- H.323 gatekeeper address:** 192.168.1.100
- Gatekeeper registration type:** MCU (standard) (dropdown menu)
- Ethernet port association:** Port A IPv4 (checkbox checked), Port A IPv6 (checkbox unselected), Port B IPv4 (checkbox unselected), Port B IPv6 (checkbox unselected)
- (Mandatory) H.323 ID to register:** 100@mcu.local
- Use password:** (checkbox unselected) Password: [empty field]
- Prefix for MCU registrations:** [empty field]
- MCU service prefix:** [empty field] (optional)
- Allow numeric ID registration for conferences:** (checkbox checked)
- Send resource availability indications:** (checkbox unselected) Thresholds: [empty field] conferences [empty field] video ports

Current status:

- H.323 gatekeeper status **not in use**
- Registered address <not registered>
- Alternate gatekeepers available 0
- Resource availability status <indications not configured>
- Number of active registrations 0 [details](#)
- H.323 ID registration n/a
- MCU service prefix n/a

Buttons: Apply changes

2. Complete the fields using the notes below and the online help if necessary.

- ▶ **H.323 gatekeeper usage** (Enabled/Disabled/Required): If you select *Required*, the MCU must be able to connect with the gatekeeper otherwise no calls will be allowed.
- ▶ **H.323 gatekeeper address**: the IP address or host name of the gatekeeper.
- ▶ **Gatekeeper registration type**: In general it is best to use *Terminal/Gateway*.
- ▶ **Ethernet port association** (Port A and/or Port B): Choose which port(s) and IP protocol(s) are associated with the gatekeeper when the Video Firewall option is enabled.
- ▶ **Prefix for MCU registrations**: this number is prefixed to the beginning of all E.164 numeric identifiers registered with the gatekeeper. One use is for prefixing the identifiers with the telephone code for your country or local area.
- ▶ **MCU service prefix**: one or more digits used as a prefix that the gatekeeper will recognize as calls to this MCU.

- ▶ *Allow numeric ID registration for conferences:* Allows conferences to register with the gatekeeper.
- ▶ Leave all other fields blank.

See the online help for information on the fields not discussed here.

3. Click **Apply changes**.

A message indicates that the names and numbers are being registered. Wait a few seconds and click the **H.323** tab again or refresh the page to see whether their registration was successful. If registration fails, ensure that the MCU can reach the gatekeeper by going to the **Network > Connectivity** page. Check that the gatekeeper doesn't have any existing registrations for these numbers.

You can now use the gatekeeper when setting up and making connections in a conference.

Using a SIP registrar

Configure a SIP registrar to allow conference participants with SIP endpoints to connect to the MCU by dialing a directory number rather than an IP address.

1. Go to **Settings > SIP**.

The settings on this page control the MCU's interaction with the SIP registrar and with SIP endpoints.

2. For SIP registrar usage, select Enabled.
3. Complete the remaining fields as follows:
 - ▶ *SIP registrar domain*: This can be specified either as a host name or as an IP address. For example, if you are using the MCU with a Cisco TelePresence Video Communication Server (VCS) this will be the IP or host name of your VCS
 - ▶ *Username*: The login name for the MCU on the SIP registrar
 - ▶ *Password*: The password for the MCU on the SIP registrar
 - ▶ *Allow numeric ID registration for conferences*: This controls whether any scheduled conferences' configured numeric IDs are allowed to be registered with the registrar
 - ▶ *Use local certificate for outgoing connections and registrations*: This forces the MCU to present its local certificate when registering with the SIP registrar

See the online help for more information on the fields not discussed here.

4. Click **Apply changes**.

With the SIP registrar enabled, SIP endpoints can now dial directly into registered conferences by calling the conference ID. Conversely, the MCU can call out to SIP endpoints using the URIs they have registered.

Setting up and editing users' privileges

Adding a new user

1. Go to **Users**.

The list of current users is shown. When the MCU is delivered there are two users: *admin* and *guest*. You must be logged in as the *admin* user to add new users or change a user's configuration.

The screenshot shows the 'User list' page with the following details:

- User list** header.
- 2 configured users** message.
- Delete selected users** and **Add new user** buttons.
- Page 1 2 3 4** navigation.
- User ID**, **Name**, **Privilege**, **E.164**, **Video endpoint**, and **Picture** columns.
- Data table rows:
 - admin**: <system-created>, administrator, <not present>
 - guest**: <system-created>, conference list only, <not present>
- Delete selected users** and **Add new user** buttons at the bottom.
- Page 1 2 3 4** navigation at the bottom right.

2. Click **Add new user**.

The screenshot shows the 'Add user' page with the following fields:

- Add user** header.
- User information** section.
- User ID**, **Name**, **Password**, and **Re-enter password** input fields.
- Disable user account** and **Lock password** checkboxes.
- Force user to change password on next login** checkbox (checked).
- Privilege level** dropdown set to **conference list only**.
- E.164 phone number** input field.
- Associated video endpoint** dropdown set to **<none>**.
- Add user** button.

- Type in the *User ID* and *Name* for the new user. (The *User ID* is used to log in; the *Name* is the preferred name for that user.)
- If this user account needs to be password-protected, type in the password twice.
- Select the *Lock password* check box if you would like to prevent the user from changing their password.

This is useful where you want multiple users to be able to use the same *User ID*. If you do not lock the password, one person could change it and then everyone else who uses this *User ID* would be unable to log in.

6. Set the *Privilege level* from the drop down list.

It is possible to associate audio-only endpoints (via the *E.164 phone number*) with a user.

- ▶ If this audio only endpoint calls the MCU (or is called by the MCU), the MCU can either display a static picture of the user which can be uploaded after the user has been created, or
- ▶ The MCU can call out to an associated video endpoint so the user has audio on their audio device and video on their video device.

7. If required, set up the *E.164 phone number* and *Associated video endpoint*.

8. Click **Add user**.

The new user appears in the Users list.

Editing the guest user's configuration

By changing the configuration of the default *guest* user, you can limit what a guest user may do.

1. Click the **guest** link.
2. Change the access rights as required by changing the privilege level and click **Update guest settings**.

Entering a password for the admin user

When you logged in as the *admin* user at the start of this tutorial there was a blank password. This is not secure and you should change the password to something secret.

1. Click the **admin** link.
2. Type in the password that you want to use to gain access to this MCU as the admin user from now on.
3. Re-type the password.
4. Click **Update password**.

If the admin password is lost, you can use the `reset_config` command at the serial console to reset the system configuration. You can only issue this command during the first 30 seconds of startup. This will reset the admin password and all user passwords.

Note: `reset_config` will also reset your local configuration including any feature keys you may have installed.

Closing the MCU browser

You have completed the tutorial.

Click **Log out** to exit from the MCU web interface. The MCU is designed to be left powered on at all times; therefore you can then simply close the browser window.

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