



CHAPTER 4

Protocols and the Cisco Unified Videoconferencing 3545 MCU

This section describes the following topics:

- [Configuring H.323 Gatekeeper Settings for the Cisco Unified Videoconferencing 3545 MCU, page 4-1](#)
- [Integrating SIP with the Cisco Unified Videoconferencing 3545 MCU, page 4-3](#)
- [Configuring the Cisco Unified Videoconferencing 3545 MCU to Use Cisco Unified Communications Manager, page 4-7](#)

Configuring H.323 Gatekeeper Settings for the Cisco Unified Videoconferencing 3545 MCU

In the Protocols tab, you can view and configure settings for H.323 gatekeeper and SIP call routing devices. The following sections detail the tasks you can perform in the Protocols tab:

- [Configuring H.323 Gatekeeper Protocol Configuration, page 4-1](#)
- [Configuring Advanced H.323 Gatekeeper Protocol Settings, page 4-2](#)

Configuring H.323 Gatekeeper Protocol Configuration

In the Protocols tab, you can configure the protocol settings of an H.323 gatekeeper to set how the MCU and the gatekeeper interact.

Procedure

- Step 1** In the Administrator interface, on the sidebar, click **MCU** (if not already selected).
- Step 2** Click the **Protocols** tab.
- Step 3** Make sure the H.323 button is selected.
The H.323 Protocol Configurations dialog box appears.
- Step 4** Select **Enable H.323 protocol** to enable the MCU to operate with the H.323 protocol.
- Step 5** In the Gatekeeper Address field, enter the IP address of the gatekeeper.

- Step 6** In the Gatekeeper Port field, enter the port number of the gatekeeper. The default port is 1719.
- Step 7** Select **Strip local gatekeeper zone prefix if it appears in incoming cells** if you want the MCU to strip the gatekeeper zone prefix from the dialed string of an incoming call. For example, if the zone prefix is 01 and you have selected this option, the MCU removes 01 from every dial string beginning 01. Do not use this feature if the gatekeeper is already set to perform zone stripping.
- Step 8** If you did not perform step 7, skip to step 9. Otherwise, in the Local Zone Prefix field, enter the gatekeeper zone you want to strip.
- Step 9** Click **Upload**.



Warning

Changing gatekeeper settings does not reset the MCU, but might disconnect active calls.

Configuring Advanced H.323 Gatekeeper Protocol Settings

In the Protocols tab, you can configure advanced settings for MCU communication with an H.323 gatekeeper.

Before You Begin

Make sure the basic H.323 gatekeeper protocol settings are correct. See the [“Configuring H.323 Gatekeeper Protocol Configuration” section on page 4-1](#) for more information.

Procedure

- Step 1** In the H.323 Protocol Configurations dialog box click **Advanced H.323 Settings**.
The Advanced H.323 Setting dialog box appears.
- Step 2** In the RAS Port field, enter the port on which the MCU conducts RAS registration messaging with the gatekeeper. The default port is 2719.
- Step 3** In the Signaling Port field, enter the port on which the MCU carries call signaling messages to and from the gatekeeper. The default port is 2720.
- Step 4** In the Registration refresh every field, enter the interval (in seconds) between registrations of the MCU to the gatekeeper. The default value is 60 seconds.
- Step 5** In the MCU Registration Mode field, choose the mode of registration with the H.323 gatekeeper.
- **MCU**—Use this setting to connect H.323 calls via the MCU.
 - **Gateway**—Use this setting to register the MCU as a gateway. This option enables the MCU to work with a Cisco MCM Gatekeeper. This is the default setting.
- Step 6** Select **Enable Fast Start** to speed up the connection time between the MCU and incoming calls received through the gatekeeper. Channel setup messages are encapsulated within Q.931 setup messages. When you enable this option, the MCU offers Fast Start channels to any outgoing call and attempts to select from channels offered in incoming calls.
- Step 7** Select **Enable H.245 tunneling** to enable H.245 tunneling during call setup and connection between the MCU and incoming calls received through the gatekeeper.



Note The H.245 tunneling feature works only with endpoints and gatekeepers that support H.245.

Step 8 Click **OK**.

Integrating SIP with the Cisco Unified Videoconferencing 3545 MCU

This section describes how to configure the MCU and use different dialing plans for working in a Session Initiation Protocol (SIP) environment. The section describes the following topics:

- [Configuring SIP Proxy Settings, page 4-3](#)
- [Configuring Advanced SIP Proxy Settings, page 4-4](#)
- [About the MCU Dial Plan, page 4-5](#)

Configuring SIP Proxy Settings

You can configure settings for SIP registrar profiles which set how the MCU and the registrar interact.

Procedure

- Step 1** In the Administrator interface, on the sidebar, click **MCU** (if not already selected).
- Step 2** Click the **Protocols** tab.
- Step 3** Make sure the **SIP** button is selected.
The SIP Protocol Configurations dialog box appears.
- Step 4** Select **Enable SIP protocol** to enable MCU communication with the SIP proxy.
- Step 5** In the Default SIP domain field enter the SIP domain of the MCU as defined in the SIP server. An example of a SIP domain is company.com.
- Step 6** Select **Using Microsoft LCS** to enable the MCU to work with Microsoft Office Live Communication Server (LCS).
- Step 7** In the SIP Server section, choose one of the following options:
 - Select **Locate server automatically (using DNS)** if you wish the MCU to automatically locate one of the SIP proxy servers that are present in the domain.



Note The Locate servers automatically (using DNS) option will only work if you have configured a valid IP address in the Board | Addressing | Preferred DNS server or Alternate DNS server field.

- Select **Specify address** and enter the following:
 - An IP address or host name of the SIP proxy, for example proxy.company.com.
 - In the port field enter the communication port number of the SIP proxy address.

- In the type field select the transport connection type for sending messages to the SIP proxy according to the type supported by the SIP proxy—UDP or TCP. This field is mandatory. The default is UDP.
- Step 8** Select **Treat as outbound proxy** if you wish the MCU to send all the SIP messages to the configured SIP proxy server. This is optional. The default is unchecked.
- Step 9** Select **Use Registrar** if you wish the MCU to register with the SIP registrar using the name defined in the Registration name field, and to send service information to the registrar.
- Step 10** If you selected Use Registrar in step 9, enter the following information:
- In the Address field enter the IP address or the host name of the SIP registrar. This field is mandatory.
 - In the port field enter the communication port number of the SIP registrar address.
 - In the type field select the transport connection type for sending registration requests to the registrar according to the type supported by the SIP registrar—UDP or TCP. This field is mandatory. The default is UDP.
- Step 11** In the Local signaling port field enter the number of the signaling port on which the MCU communicates with the SIP proxy. The default is 5060.
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Configuring Advanced SIP Proxy Settings

In the Protocols tab, you can configure advanced settings for MCU communication with a SIP Proxy.

Before You Begin

Make sure the basic SIP proxy settings are correct. See the [“Configuring SIP Proxy Settings”](#) section on page 4-3 for more information.

Procedure

- Step 1** In the SIP Protocol Configurations dialog box, click **Advanced SIP Settings**.
The Advanced SIP Setting dialog box appears.
- Step 2** In the “From” header field select an addressing format that the MCU will use for the information sent in the “From” header of messages for outgoing calls.
- Select **Use local signaling IP address** if you wish the MCU to use its local signaling IP address.
 - Select **Use fully qualified domain name (FQDN)** if you wish the MCU to use the FQDN. Enter the fully qualified domain name of the MCU, for example, mcu.company.com.
- Step 3** In the “Contact” header field select the addressing format that the MCU will use for the information sent in the “Contact” header of messages for outgoing calls.
- Select **Use local signaling IP address** if you wish the MCU to use its local signaling IP address.
 - Select **Use fully qualified domain name (FQDN)** if you wish the MCU to use the FQDN. Enter the fully qualified domain name of the MCU, for example, mcu.company.com.
- Step 4** Select **Use proxy digest authentication** to enable MCU authentication with a SIP proxy server using user name and password. Authentication is performed as defined in RFC 2617. This field is disabled by default.
- Step 5** If you selected Use proxy digest authentication in step 4, enter the following:

- In the User name field enter the MCU user name. The user name must match the name defined on the SIP proxy server.
 - In the Password field enter the MCU user password. The user password must match the password defined on the SIP proxy server.
- Step 6** Select **Use registrar digest authentication** to enable MCU authentication with a SIP registrar server using user name and password. Authentication is performed as defined in RFC 2617. This field is disabled by default.
- Step 7** If you selected Use registrar digest authentication in step 6, enter the following:
- In the User name field enter the MCU user name. The user name must match the name defined on the SIP registrar server.
 - In the Password field enter the MCU user password. The user password must match the password defined on the SIP registrar server.
- Step 8** Select **Enable Video Fast Update** to enable transport of Video Fast Update (VFU) requests to SIP endpoints.
- Step 9** Select **Support reliable provisional response (RFC 3262)** to enable the remote endpoint to request that the source endpoint sends an acknowledgment on receipt of 10x SIP messages.
- Step 10** Select Use **'Empty Invite'** when sending Invite messages to endpoints to enable the remote endpoint to indicate preferred audio and video channels.
- Step 11** Click **OK**.
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About the MCU Dial Plan

You can configure the MCU on a SIP network in one of the following two ways:

- The MCU functions as a User Agent Client (UAC) which provides video, voice and data conference services.
- The MCU is defined as a separate domain that provides conferences services.

The following sections describe these configurations:

- [About Outgoing Calls from the MCU, page 4-5](#)
- [About Incoming Calls to the MCU, page 4-6](#)
- [Configuring the MCU as a UAC, page 4-6](#)
- [Configuring the MCU to Perform as a Separate SIP Domain, page 4-7](#)

About Outgoing Calls from the MCU

Making outgoing calls from the MCU is the same whether it operates as a UAC or as a separate SIP domain. All MCU outgoing SIP messages are sent through the proxy. The proxy activates an address resolution algorithm by consulting with a registrar or a DNS server or any other location server and routes the message to the correct destination.



Note

If the user does not specify a domain in the dialing string, the MCU appends the default domain to the dialed string. You can configure the default domain in the SIP section of the Protocols tab. See the [“Configuring SIP Proxy Settings” section on page 4-3](#) for more information.

About Incoming Calls to the MCU

The MCU dial plan for incoming calls varies according to whether the MCU is configured as a UAC registered to the domain registrar or as a separate SIP domain.

**Note**

Whether working as a UAC or separate SIP domain, you can dial into the MCU from a UAC by dialing a conference.id@mcu.ip.address URI and the call should always reach the MCU.

Configuring the MCU as a UAC

In the Protocols tab, you can configure the MCU to function as a UAC. When configured as a UAC, the MCU registers all services and conferences with a registrar. We recommend that you configure the MCU as a UAC when working with a scheduler or in an environment that does not require ad hoc conference creation. In this configuration, the UAC can only dial directly into the MCU by using a conference ID that has previously registered with the registrar.

Ad hoc conference creation using conference services, familiar in an H.323 environment, is not supported in a SIP environment. When a SIP UAC dials into the MCU to a conference that does not yet exist, the proxy cannot resolve the MCU address because the dialed conference ID is not registered with a registrar.

The MCU registers each MCU service and conference using the default domain defined in the MCU SIP configuration and SIP proxy server as follows:

- Service: 60@company.com
- 60—MCU service prefix
- @company.com—MCU default domain
- Conference: 601234@company.com
- 601234—MCU conference ID (service prefix + unique conference identifier)
- @company.com—MCU default domain on which the conference is hosted.

Procedure

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- Step 1** In the Administrator interface, on the sidebar, click **MCU** (if not already selected).
 - Step 2** Click the **Protocols** tab.
 - Step 3** Make sure the **SIP** button is selected.
The SIP Protocol Configurations dialog box appears.
 - Step 4** Select **Use registrar**.
 - Step 5** In the Default Domain field, enter the default domain name as defined in the SIP proxy server.
 - Step 6** Click the **Settings** tab and then click **Advanced**.
 - Step 7** Make sure that the Register conference ID check box is selected.

**Note**

The MCU must use the registrar to register conference IDs. Conferences cannot be found if the registrar has no record that they exist, causing all calls to conferences to fail.

Configuring the MCU to Perform as a Separate SIP Domain

You can configure the MCU to perform as a separate domain within the default domain. The default domain is the domain in which the MCU operates as defined in the SIP proxy server. Every SIP request that the proxy receives that ends with the unique domain name of the MCU routes directly to the MCU. The MCU then directs the call to the appropriate conference. Pre-registering the conference IDs with the registrar is not required.

Procedure

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- Step 1** In the Administrator interface, on the sidebar, click **MCU** (if not already selected).
- Step 2** Click the **Protocols** tab.
- Step 3** Make sure the SIP button is selected.
The SIP Protocol Configurations dialog box appears.
- Step 4** In the Default Domain field, enter the name of the domain in which the MCU operates.
For example, company.com.
- Step 5** Configure the unique domain name of the MCU in the proxy internal routing tables (if supported) or in the relevant DNS server:
- For proxy internal routing tables, configure a rule such as:
Every URI of type *(any number)@mcu.company.com should be routed to the MCU IP address.
 - For a DNS server, define a new rule entry of mcu.company.com. The address of this entry is the MCU IP.
 - Make sure that the MCU domain configured in the proxy is different from the default domain. If the MCU default domain is company.com, then configure the MCU domain as mcu.company.com.
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Configuring the Cisco Unified Videoconferencing 3545 MCU to Use Cisco Unified Communications Manager

To set up the Cisco Unified Videoconferencing 3545 MCU to use Cisco Unified Communications Manager which uses the Skinny Client Control Protocol (SCCP), you must enable the MCU to support SCCP. Then you must identify the Trivial File Transfer Protocol (TFTP) server that you want the MCU to use. This allows the MCU to contact the Cisco Unified Communications Manager and obtain configuration information specific to that Cisco Unified Communications Manager. You must also set pertinent MCU parameters for proper operation. You set the MCU-based parameters in the Administrator interface and you can set Cisco Unified Communications Manager-based parameters in the Cisco Unified Communications Manager. The Cisco Unified Communications Manager-based parameters upload to the MCU and appear in the Administrator interface after contact is made.



Note

When you boot up, the Cisco Unified Videoconferencing 3545 MCU reports EMP resources associated with SCCP conferences to the Cisco Unified Communications Manager. These resources are reserved and subtracted from the remaining MCU resources available to H.323 conferences.

- [Viewing SCCP Protocol Configurations, page 4-8](#)
- [Configuring the SCCP Protocol, page 4-8](#)
- [Configuring a TFTP Server, page 4-9](#)[Adding a Cisco Unified Communications Manager, page 4-9](#)
- [Viewing Advanced SCCP Protocol Settings, page 4-10](#)
- [Configuring Advanced SCCP Protocol Settings, page 4-11](#)

Viewing SCCP Protocol Configurations

In the Protocols tab, you can view existing SCCP protocol configurations.

Procedure

- Step 1** In the Administrator interface, on the sidebar, click **MCU** (if not already selected).
- Step 2** Click the Protocols tab.
- Step 3** Click **SCCP**.

The SCCP Protocol Configurations dialog box displays the following settings:

- **Enable SCCP protocol**—Indicates whether or not the SCCP protocol is enabled.
 - **Active SCCP service prefix**—Indicates the current prefix for SCCP services.
 - **Ports allocated to SCCP**—Indicates the number of ports currently available for SCCP use.
 - **TFTP Servers**—The IP address of the primary TFTP server that the MCU uses.
 - **CallManagers**—The IP address of the Cisco Unified Communications Manager that the MCU uses.
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Configuring the SCCP Protocol

In the Protocols tab, you can configure the Cisco Unified Videoconferencing 3545 MCU to support SCCP in Cisco Unified Communications Manager.

Procedure

- Step 1** In the Administrator interface, on the sidebar, click **MCU** (if not already selected).
- Step 2** Click the Protocols tab.
- Step 3** Click **SCCP**.

The SCCP Protocol Configurations dialog box appears.

- Step 4** Select **Enable SCCP protocol** to allow the MCU to support the SCCP protocol.
- Step 5** In the Active SCCP service prefix field, enter the prefix assigned to the MCU service that you want the Cisco Unified Communications Manager to use.

**Note**

A default service prefix is automatically entered in this field. If you want to use this service, make sure that this is a valid service prefix for your network environment. See the [Cisco Unified Videoconferencing 3545 MCU Services](#) for more information about creating MCU services.

- Step 6** In the Ports allocated to SCCP, enter the number of ports you want to make available for SCCP use.

Configuring a TFTP Server

In the Protocols tab, you can configure the TFTP server that you want the MCU to use.

Procedure

- Step 1** In the Administrator interface, on the sidebar, click **MCU** (if not already selected).

- Step 2** Click the **Protocols** tab.

- Step 3** Click **SCCP**.

The SCCP Protocol Configurations dialog box appears.

- Step 4** In the TFTP Servers section, identify the TFTP server that you want the MCU to use.

**Note**

This information appears automatically when you use the terminal emulator to set a TFTP server address. You can edit this information or add a different TFTP server.

- Step 5** In the TFTP Servers section, click **Add** (or **Edit**).

The Add (or Edit) TFTP Server dialog box appears.

- Step 6** In the IP address field, enter the IP address of the TFTP server you want the MCU to use to contact the Cisco Unified Communications Manager.

- Step 7** In the Port field, enter the port number that you want the MCU to use to communicate with the TFTP server.

- Step 8** Click **OK** to save these changes and close the Add (or Edit) TFTP server dialog box.

Adding a Cisco Unified Communications Manager

In the Protocols tab, you can manually add Cisco Unified Communications Manager.

Procedure

- Step 1** In the Administrator interface, on the sidebar, click **MCU** (if not already selected).

- Step 2** Click the **Protocols** tab.

- Step 3** Click **SCCP**.

The SCCP Protocol Configurations dialog box appears.

- Step 4** Select **Change configuration locally to manually add another** Cisco Unified Communications Manager **and configure SCCP settings for this** Cisco Unified Communications Manager.
- The Add button is activated.
- Step 5** Click **Add**.
- The Add CallManager dialog box appears.
- Step 6** Set the required IP address and port number for the Cisco Unified Communications Manager and click **OK**.
- The new Cisco Unified Communications Manager appears in the CallManagers section.
- Step 7** Click OK to save your changes.

Viewing Advanced SCCP Protocol Settings

In the Advanced SCCP Settings dialog box, you can view parameters controlling the communication between the MCU and the Cisco Unified Communications Manager.

[Table 4-1](#) describes the elements that appear in the Edit SCCP Protocol Configuration dialog box.

Table 4-1 Edit SCCP Protocol Configuration Dialog Box

Field	Description
Control Channel	
Local port base	Indicates the communication port that you want the MCU to use to communicate with the Cisco Unified Communications Manager.
Priority (0-63)	Indicates the Differentiated Services Code Point (DSCP) value the Cisco Unified Communications Manager specifies that the MCU use for Quality of Service (QoS).
Registration	
Retries	Indicates the number of times the MCU will attempt to register with the Cisco Unified Communications Manager.
Initial timeout (sec)	Indicates the length of time the MCU waits for a response from the Cisco Unified Communications Manager before timing out on the first attempt to register.
Consequent timeout (sec)	Indicates the length of time the MCU waits for a response from the Cisco Unified Communications Manager before timing out on subsequent attempt to register.
Keep Alive	
Retries	Indicates the number of times the MCU will send the Keep Alive message to the Cisco Unified Communications Manager before acknowledging that the connection has failed.
Timeout (sec)	Indicates the interval at which the MCU sends Keep Alive messages.
Fail Over	


Table 4-1 Edit SCCP Protocol Configuration Dialog Box (continued)

Field	Description
Recovery mode	Indicates the mode with which the MCU terminates calls when the connection to the Cisco Unified Communications Manager fails: <ul style="list-style-type: none"> gracefully—Allows completion of current calls. immediately—Terminates conference immediately. timeout—Allows all conferences to continue for the interval specified in the Recovery timeout (sec) field.
Recovery timeout (sec)	Indicates the length of time the MCU allows calls to continue after the connection with the Cisco Unified Communications Manager fails.

Configuring Advanced SCCP Protocol Settings

In the Advanced SCCP Settings dialog box, you can configure parameters controlling the communication between the MCU and the Cisco Unified Communications Manager.

Procedure

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- Step 1** In the Administrator interface, on the sidebar, click MCU (if not already selected).
- Step 2** Click the **Protocols** tab.
- Step 3** Click **Advanced SCCP Settings**.
- The Advanced SCCP Settings dialog box appears.
- Step 4** In the Local port base field, enter a value for the communication port that you want the MCU to use to communicate with the Cisco Unified Communications Manager.
- You can use values between 11000 and 16000. The default value is 11000.
-  **Note** You must also set this value in the Cisco Unified Communications Manager.
-
- Step 5** In the Priority (0-63) field, enter the Differentiated Services Code Point (DSCP) value the Cisco Unified Communications Manager specifies that the MCU use for Quality of Service (QoS). You must convert the value to decimal notation.
- Step 6** In the Retries field of the Registration section, enter a value setting the number of times you want the MCU to attempt to register with the Cisco Unified Communications Manager.
- Step 7** In the Initial timeout (sec) field, enter a value in seconds setting the length of time the MCU waits for a response from the Cisco Unified Communications Manager before timing out on the first attempt to register.
- Step 8** In the Consequent timeout (sec) field, enter a value in seconds setting the length of time the MCU waits for a response from the Cisco Unified Communications Manager before timing out on subsequent attempt to register.

- Step 9** In the Retries field of the Keep Alive section, enter a value setting the number of times you want the MCU to send the Keep Alive message to the Cisco Unified Communications Manager before acknowledging that the connection has failed.
- Step 10** In the Timeout (sec) field, enter a value in seconds setting the interval at which the MCU sends Keep Alive messages.
- Step 11** In the Recovery mode field, choose the mode with which you want the MCU to terminate calls when the connection to the Cisco Unified Communications Manager fails:
- gracefully—Allow completion of current calls.
 - immediately—Terminate conference immediately.
 - timeout—Allow all conferences to continue for the interval specified in the Recovery timeout (sec) field.
- Step 12** If you select timeout in the Recovery mode field, enter a value in seconds in the Recovery timeout (sec) field to set the length of time the MCU allows calls to continue after the connection with the Cisco Unified Communications Manager fails.
- Step 13** Click **OK** to save your changes.
- Step 14** Click **Cancel** to close the Advanced SCCP Settings dialog box without saving changes.
-