

CHAPTER 2

Network Multipoint Design for Scheduled Meetings

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Setting Up Network Multipoint for Scheduled Meetings

You do not need to perform any network multipoint-specific configuration of the CTMS devices or Unified CM. However, we assume that you have configured the supported endpoint types on each CTMS that, which are required for multipoint and network multipoint meetings. For more information on this parameter, see the [“Understanding How Supported Endpoint Types Affect Network Multipoint Meetings”](#) section on page 2-12.

[Table 2-1](#) provides a high-level summary of the setup tasks required for scheduled network multipoint meetings.

Table 2-1 High-Level Summary of Network Multipoint for Scheduled Meetings Setup Tasks

Task	Task	Who Should Handle Task	Where to Find Information
1	Deploy the CTMS devices in the Cisco TelePresence topology.	CTMS administrator and network administrator	Deploying CTMS Devices in the Cisco TelePresence Topology, page -xv
2	<p>Note Perform this task only if your Cisco TelePresence topology includes TC version 5.0 endpoints registered with VCS Control.</p> <p>Set up communication between VCS and a CTMS.</p>	CTMS administrator and Unified CM administrator	Additional Setup for Cisco TelePresence TC 5.0 or later Endpoints Registered with VCS, page 1-18

Table 2-1 High-Level Summary of Network Multipoint for Scheduled Meetings Setup Tasks

Task	Task	Who Should Handle Task	Where to Find Information
3	Enable Network Multipoint in CTS-Manager	CTS-Manager administrator	Enabling CTMS Network Multipoint in CTS-Manager, page 2-2
4	Group endpoints with CTMSs.	CTS-Manager administrator	Grouping Endpoints with CTMS Devices, page 2-3
5	Schedule a network multipoint meeting	CTS-Manager administrator	Scheduling a Network Multipoint Meeting, page 2-5
6	Verify that scheduled network multipoint is functioning properly by starting a test meeting.	CTS-Manager administrator	Verifying that Scheduled Network Multipoint is Functioning Properly, page 2-6 For troubleshooting of Network Multipoint issues, refer to Troubleshooting, page 3-1
7	<p>Optional: Set up Event Recording by routing calls from a CTRS directly to the CTMS functioning as the rendezvous point by setting up Event Recording-specific partitions, CSS, and route patterns.</p> <p>Note Perform this task only if planning to use the Event Recording feature during a network multipoint meeting.</p>	CTMS administrator and network administrator	Creating Event Recording-Specific Unified CM Setup for Network Multipoint Meetings, page 1-22

Enabling CTMS Network Multipoint in CTS-Manager

Before you can schedule network multipoint meetings, you must enable the CTMS network multipoint feature in CTS-Manager.

To enable CTMS network multipoint, do the following:

-
- Step 1** Log into the CTS-Manager Administrative UI.
 - Step 2** Go to **Configure > Application Settings > Bridges and Servers** tab.
 - Step 3** In the CTMS Network Multipoint section, select **Yes** to enable the feature.
 - Step 4** Click **Apply**.

After clicking Apply, a confirmation message appears informing you that Intergroup Scheduling will automatically be enabled.



Note For more information about Intergroup Scheduling, refer to [Intergroup Scheduling, page 2-5](#).

- Step 5** Click **OK**.
-

Grouping Endpoints with CTMS Devices

You can group endpoints with CTMS devices, so that when a meeting is scheduled, CTS-Manager reserves devices from the same group as the endpoint(s). Grouping is especially useful for large geographically-dispersed companies with many endpoints and CTMS devices.

WebEx and Collaboration Manager cannot be grouped and are not listed in the 'Ungrouped' group. TS and MXE are listed in 'Ungrouped' but cannot be part of any other group.



Note After upgrade to CTMS release 1.9, a default device group called 'Ungrouped' is created. All devices are part of the 'Ungrouped' group until they are moved to a new device group.

To create a new device group:

- Step 1** Log into the CTS-Manager Administrative UI.
- Step 2** Go to **Configure > Device Groups**.
- Step 3** Click **New**.
The New Group page appears.
- Step 4** In the List of Device Groups section, click **New**.
- Step 5** The New Group window appears.
- Step 6** In the Name field, enter a name for your device group.



Tip Cisco recommends creating a meaningful name such as one based on geographical location.

- Step 7** To add CTMS devices to the group, select the Bridges and Servers tab. To add Endpoints, select the Endpoints tab.
- Step 8** From the Available devices list on the left, select devices and click the right-pointing single arrow to move them to the Selected list on the right.



Note To add all available devices, click the right-pointing double arrow. To remove devices from the group, select the device and click the left-pointing single arrow.

- Step 9** When adding CTMS devices, you can specify the scheduling order for each CTMS by selecting it in the Selected list and clicking one of the up or down arrows at the right side of the window.



Tip The scheduling order allows you to prioritize the order in which CTS-Manager attempts to schedule CTMS resources. The CTMS at the top of the Selected list will be used first, followed by each CTMS in order from top to bottom. Scheduling order is followed on a best effort basis.



Note If no groups are created, selection order is based on time zone.

- Step 10** When you are finished adding devices, click **Apply**.

Figure 2-1 displays a sample New Group window.



Note

CTMS Devices can also be added to an existing group when they are configured in the Configure > Bridges and Servers page. Endpoints can also be added to an existing group when they are configured in the Configure > Endpoints page.

Figure 2-1 Creating a New Device Group—Sample New Device Group Window

New Group

Group Name:

Bridges and Servers | Endpoints

Find

Set the scheduling order using the arrows at the right.

Available					Selected				
Name	Description	Schedulable Segments	Time Zone	Device Group	Name	Description	Schedulable Segments	Time Zone	Device Group
CTMS-01	10.195.51.50	0	America/Los_Angeles	ungrouped					
CTMS-02	10.195.51.50	0	America/Los_Angeles	ungrouped					
CTMS-03	10.195.51.50	0	America/Los_Angeles	ungrouped					
CTMS-04	10.195.51.50	0	America/Los_Angeles	ungrouped					
CTMS-05	10.195.51.50	0	America/Los_Angeles	ungrouped					
CTMS-06	10.195.51.50	0	America/Los_Angeles	ungrouped					
CTMS-07	10.195.51.50	0	America/Los_Angeles	ungrouped					
CTMS-08	10.195.51.50	0	America/Los_Angeles	ungrouped					
CTMS-09	10.195.51.50	0	America/Los_Angeles	ungrouped					
CTMS-10	10.195.51.50	0	America/Los_Angeles	ungrouped					

Apply Close

Editing Groups

You can edit groups, so as you expand or modify your device deployment you can easily modify groups without having to delete and recreate them.

To edit a device group, do the following:

- Step 1** Log into the CTS-Manager Administrative UI.
- Step 2** Go to **Configure > Device Groups**.
- Step 3** In the List of Device Groups section, select the group that you want to edit.
The list of devices in the selected group appears in the bottom half of the page.
- Step 4** Click **Edit**.
The Edit Group window appears.
- Step 5** Modify the name, add, remove or order devices following the steps in [Grouping Endpoints with CTMS Devices](#), page 2-3.

Deleting Groups

To delete a device group, do the following:

-
- Step 1** Log into the CTS-Manager Administrative UI.
- Step 2** Go to **Configure > Device Groups**.
- Step 3** In the List of Device Groups section, select the group that you want to delete.
The list of devices in the selected group appears in the bottom half of the page.
- Step 4** Click **Delete**.
- Step 5** A confirmation message appears, telling you that devices in the group you are about to delete will be moved to the 'Ungrouped' group.

**Note**

Deleting a group does not delete any CTMS devices or endpoints. It only moves them to the 'Ungrouped' group. Deleting or editing a group does not affect existing scheduled meetings.

Intergroup Scheduling

This allows resources from another device group to be allocated if the first device group used for scheduling has insufficient resources for a multipoint meeting. Device groups are configured on the **Configure > Device Groups** page.

This feature is automatically enabled, when CTMS Network Multipoint is enabled, but can be disabled later.

To enable this feature, click the checkbox for 'Allocate resources from another group if the first group used for scheduling has insufficient resources for a multipoint meeting.'

**Caution**

If you disable Intergroup Scheduling, network multipoint meetings will go into error if CTMS resources are depleted for endpoints outside of the group containing the rendezvous point CTMS or if the rendezvous point CTMS does not have enough resources to support endpoints from the other group(s).

For more information about Device Groups, go to [Grouping Endpoints with CTMS Devices, page 2-3](#).

Scheduling a Network Multipoint Meeting

Scheduling and starting a network multipoint meeting follow the same process as scheduling a non-network multipoint meeting. After the meeting organizer creates a meeting and invites endpoints, CTS-Manager determines if the meeting can be served using a single CTMS. If the CTMS is in a group created by the Admin, CTS-Manager will attempt to schedule resources based on the scheduling order of the group. If the number of resources required exceeds the available resources of a single CTMS and additional CTMS devices have available resources, the meeting becomes a network multipoint meeting.

The CTMS from the group with the most endpoint segments invited to the meeting becomes the Rendezvous Point (RP) for the meeting. If more than one group has the same number of endpoint segments invited to the meeting, the CTMS with the maximum available schedulable segments becomes the RP.

If TelePresence Call-In number is selected for the meeting, CTS-Manager designates one of the CTMSs (RP or leaf) as the call-in number CTMS and this number is provided in the email to the meeting organizer. To maximize the segments available for call-in users, CTS-Manager chooses the CTMS that has the lowest number of schedulable segments as the call-in number CTMS as call-in users use the ad-hoc segment pool.

CTMS scheduling order is set for each device group. For more information, see [Grouping Endpoints with CTMS Devices, page 2-3](#).

Updating a Network Multipoint Meeting

If updates are made to the meeting after initial scheduling, the following process occurs:

- CTS-Manager attempts to keep the original RP and TelePresence Call-In number.
- If the original RP cannot be used, CTS-Manager selects the CTMS with most available schedulable resources at the time of the meeting.
- If TelePresence Call-In number cannot be kept on the original CTMS, CTS-Manager chooses the CTMS that has the lowest number of schedulable segments.



Note

RP and TelePresence Call-In Number are mutually exclusive.

For details on how a scheduled network multipoint works, see “[Understanding How Scheduled Network Multipoint Meetings Work](#)” section on page 2-8.

Verifying that Scheduled Network Multipoint is Functioning Properly

You can verify that scheduled network multipoint is functioning properly by scheduling a test network multipoint meeting. After scheduling or starting the meeting, you can access the Meeting Details window for the meeting from CTS-Manager.

Use the following procedure:

- Step 1** After scheduling and/or starting the meeting, log into the CTS-Manager Administrative UI.
- Step 2** Go to **Monitor > Meetings** in the left navigation.
- Step 3** In the Meetings page, click the radio button next to the meeting you want to verify, and click **Details**. The Meeting Details window appears.



Note

Network multipoint meetings are indicated by an ‘(RP)’ displayed next to the scheduling device name in the Scheduling Device column.

- Step 4** In the Meeting Details window, click the **CTMS Network** tab. The CTMS Network page appears, displaying all devices used for the meeting. At the top of the list is displayed the Rendezvous Point (RP) CTMS.

[Figure 2-2](#) displays a sample Meeting Details window.

Figure 2-2 Verifying Scheduled Network Multipoint—Sample Meeting Details > CTMS Network Window

Meeting Details

The meeting is properly scheduled.

Summary Bridges and Servers **CTMS Network** Intercompany Meeting Options

10 CTMS Segments

Name	Type	Device Group	Description	Time Zone
▼ tsbu-ucs-196	CTMS (RP)	San Jose	tsbu-ucs-194	America/Los_Angeles
Room900003	CTS 1000	ungrouped		TIMEZONE_AMERICA_NEW_YORK
Room900210	Cisco TelePresence EX90	ungrouped		TIMEZONE_AMERICA_LOS_ANGELES
TPSysRoom2	CTS 1000	ungrouped		TIMEZONE_AMERICA_LOS_ANGELES
IndioRoom87000	CTS 1000	San Jose		TIMEZONE_AMERICA_LOS_ANGELES
Room900085	CTS 1000	ungrouped		TIMEZONE_AMERICA_LOS_ANGELES
Room900095	CTS 1000	ungrouped		TIMEZONE_AMERICA_LOS_ANGELES
▼ tsbu-ucs-197	CTMS	New York	tsbu-ucs-194	Etc/GMT+11
Room900091	CTS 1000	New York		TIMEZONE_AMERICA_LOS_ANGELES
TPScaleRoom1	CTS 1000	ungrouped		TIMEZONE_AMERICA_LOS_ANGELES
Room900005	CTS 1000	ungrouped		TIMEZONE_AMERICA_NEW_YORK
Room900093	CTS 1000	ungrouped		TIMEZONE_AMERICA_LOS_ANGELES
Room900087	CTS 1000	ungrouped		TIMEZONE_AMERICA_LOS_ANGELES

Apply Cancel Close



Note If the CTMS Network tab does not appear in the Meeting Details window, the meeting is not a network multipoint meeting.

- Step 5** Click the arrow to the left of the RP CTMS to reveal all of the CTMS devices used for the meeting. Underneath each CTMS is displayed the devices that are assigned to (or connect through) that CTMS for the meeting.
- Step 6** If the CTMS Network tab does not appear or there are issues with the CTMS devices or endpoints, go to the “[Troubleshooting Network Multipoint Issues](#)” section on page 3-1.



Note Another way to verify that scheduled network multipoint is functioning correctly is to go to the Bridges and Servers tab.

For a description of the fields in the Monitor > Meetings page and Meeting Details window, see the “Managing CTMS Meetings” chapter in the *Cisco TelePresence Manager Release 1.9 Administration and Installation Guide*, which you can access at this location:

http://www.cisco.com/en/US/products/ps7074/prod_maintenance_guides_list.html

Understanding How Scheduled Network Multipoint Meetings Work

These topics provide more information about what happens during network multipoint meetings:

- [Scheduling, Starting and Joining Network Multipoint Meetings, page 2-8](#)
- [Resources, page 2-8](#)
- [CTS-Manager and CTMS Roles in a Scheduled Network Multipoint Meeting, page 2-10](#)
- [Understanding How Supported Endpoint Types Affect Network Multipoint Meetings, page 2-12](#)
- [How Event Controls Work in Scheduled Network Multipoint Meetings, page 2-14](#)

Scheduling, Starting and Joining Network Multipoint Meetings

Scheduling and starting a network multipoint meeting is the same process as with a non-network multipoint meeting. As with joining any scheduled meeting, meeting participants must either use One-Button-to-Push or dial the call-in number from their endpoints.

The transition from a non-network multipoint meeting to a network multipoint meeting occurs during the scheduling process. If the meeting organizer schedules a meeting that requires more resources than a single CTMS can provide, CTS-Manager reserves as many additional CTMS devices with available resources as are needed for the meeting. It designates one CTMS as the *rendezvous point* (RP) and additional CTMSs as *leaves*. CTS-Manager determines the endpoints that will connect to each CTMS, based on the device grouping in CTS-Manager.

The transition to and from a network multipoint meeting is dynamic, and meeting participants are unaware of the transition.



Note

If the total segments used for the network multipoint link is greater than or equal to the segments required by the endpoints of a leaf CTMS, the link between the leaf and RP is removed and the endpoints dial directly in to the RP.

Resources

Scheduled meetings are best-effort and rely on available schedulable segments on the CTMS. This functionality is the same whether the meeting is a non-network multipoint or network multipoint meeting. However, in a network multipoint meeting, resources must be available on all participating CTMS devices.

If the rendezvous point CTMS does not have sufficient resources, endpoints that try to join the meeting after the resources are depleted are not allowed to join.

Another consequence of the participating CTMS devices running out of resources is that no additional scheduled meetings can be initiated on those devices.

[Figure 2-3](#) shows an example of how resources are allocated for a scheduled network multipoint meeting between San Jose and New York. In this example, the network multipoint link for each CTMS requires four segments because 30 fps presentation is being used. 30 fps presentation requires a Cisco TelePresence Presentation Codec.

Figure 2-4 shows an example of how resources are allocated for a scheduled multipoint meeting where the network multipoint link for each CTMS requires three segments because 1 or 5 fps presentation is being used. 1 or 5 fps presentation does not require a Cisco TelePresence Presentation Codec.

Figure 2-3 Example of a Network Multipoint Meeting - 30 fps Presentation

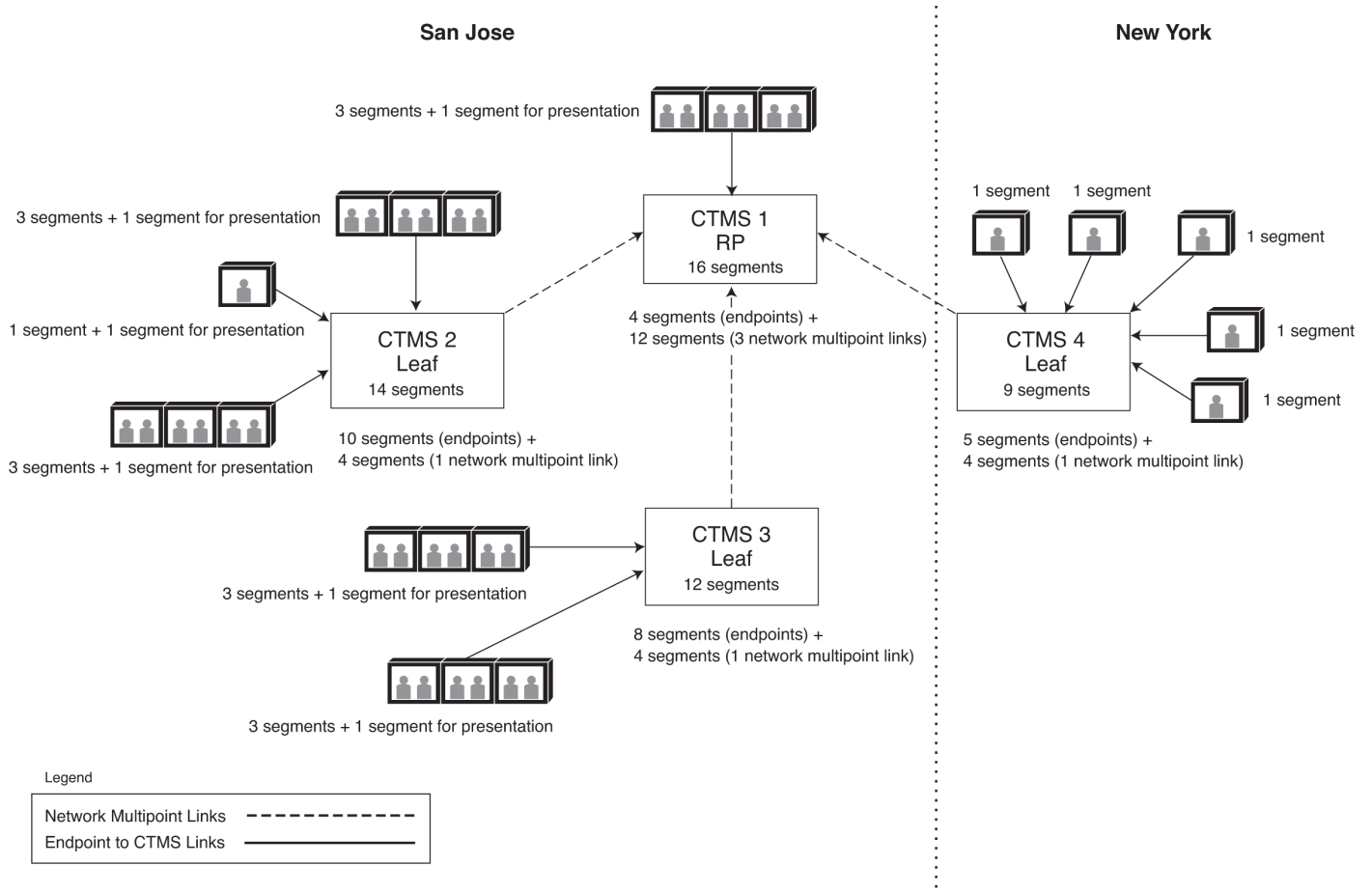
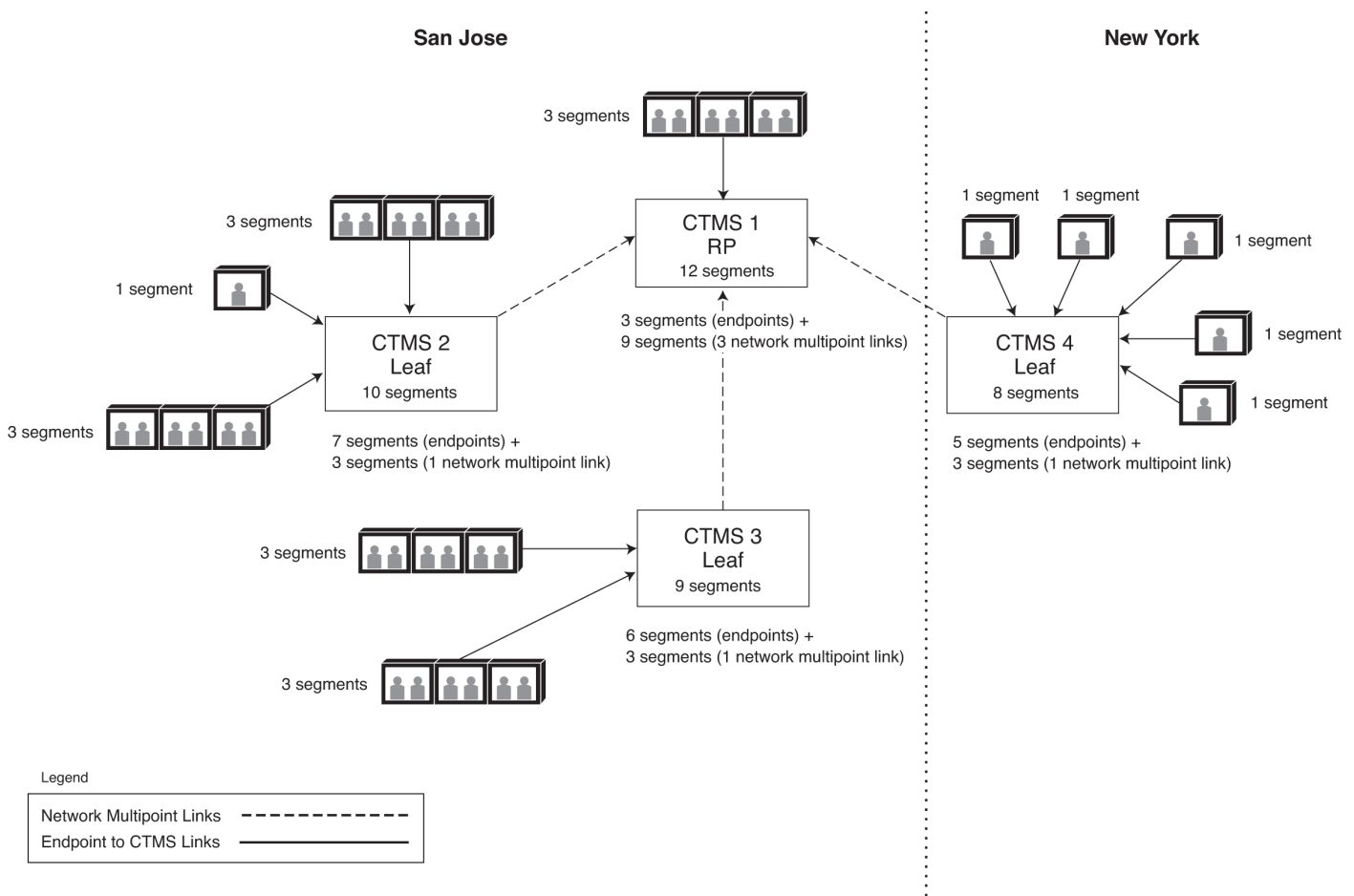


Figure 2-4 Example of a Network Multipoint Meeting - 1 or 5 fps Presentation



CTS-Manager and CTMS Roles in a Scheduled Network Multipoint Meeting

During a network multipoint meeting, one of the CTMS devices that supports the meeting functions as a *rendezvous point*, while the others function as the *leaf* CTMSs. The rendezvous point is the CTMS into which all leaf CTMSs dial to establish the network multipoint link. When a network multipoint meeting is scheduled, CTS-Manager schedules the CTMS devices and determines the RP and leaf CTMSs. CTS-Manager provides the meeting ID to the RP and provides the meeting ID and call-in number of the RP to each leaf. When the first endpoint assigned to a leaf CTMS joins the network multipoint meeting, the leaf CTMS dials into the RP to establish the network multipoint link. Additional leaf CTMSs establish network multipoint links to the RP, as their first endpoints join the meeting.

Viewing Device Information for a Network Multipoint Meeting

After a network multipoint meeting is scheduled, you can view the following information about a Network Multipoint Meeting:

- RP CTMS
- TelePresence Call-In Number CTMS
- Endpoints assigned to each CTMS

To view this information, do the following:

- Step 1** Log into the CTS-Manager Administrative UI.
- Step 2** Go to **Monitor > Meetings** in the left navigation.
- Step 3** In the Meetings page, click the radio button next to the meeting for which you want information, and click **Details**.

The Meeting Details window appears.

- Step 4** In the Meeting Details window, click the **Bridges and Servers** tab.

The Bridges and Servers page appears, displaying all CTMS devices used for the meeting and the endpoints assigned to them. The Rendezvous Point CTMS is designated with an “(RP)” and the TelePresence call-in number CTMS is indicated with a phone icon. The call-in number is listed at the top of the page.



Note

If no call-in number is requested for the meeting, the call-in number is still shown, but is not provided to the meeting organizer in the confirmation email for the meeting.

Figure 2-5 displays a sample Meeting Details > Bridges and Server window.

Figure 2-5 Viewing Device Information – Sample Meeting Details > Bridges and Servers Window

The screenshot shows the 'Meeting Details' window for a meeting on 2009-Oct-26 Monday, 10:00 – 11:00 PST. The 'Bridges and Servers' tab is active. The window displays the following information:

- Call-In Number: 463 654 7
- Meeting Number: 000 029 344 4
- MXE Associated: 10.194.60.69

The 'Device Information' section contains a table with the following data:

Scheduling Device	Endpoint
(RP) CTMS-1 (Group1)	Room-1
CTMS-2 (Group2)	Room-32
	Room-33
CTMS-0	Room-4
CTMS-3 (Group2)	Room-5
	Room-6

At the bottom of the window are buttons for 'Apply', 'Cancel', and 'Close'.

Understanding How Supported Endpoint Types Affect Network Multipoint Meetings

In CTMS release 1.8, Supported Endpoint Types in the Manage > Default Meeting Settings page as shown in [Figure 2-6](#) was introduced. With Supported Endpoint Types, you can control the endpoint types that are supported in Cisco TelePresence multipoint and network multipoint meetings managed by a particular CTMS. With the default setting (CTS endpoints only), only these endpoints are supported:

- CTS 1.6.x, 1.7.x and 1.8 endpoints, where *x* is the latest maintenance release
- Video conferencing endpoints supported by Cisco MXE version 1.3.101 (and later)

For information about the latest maintenance releases, see the *Cisco TelePresence System Software Compatibility Matrix*, which you can access at this location:

http://www.cisco.com/en/US/products/ps8332/products_device_support_tables_list.html

Figure 2-6 Default Meeting Settings Page—Supported Endpoint Types

Default Meeting Settings

✱ = Required fields

Switching Policy: Room Speaker

Supported Endpoint Types: CTS endpoints only
 Cisco TelePresence TC 5.0 (and later) and CTS 1.8 (and later) endpoints

✱ Maximum Endpoints:

Video Announce: Yes No

Video Quality

High Definition: Standard Definition:

Allow Downspeed: Yes No

Idle Meeting Termination Enabled: Yes No

✱ Idle Meeting Termination Time (minutes):

Dial Suffix for HD Interoperability:

Apply Cancel

Optionally, you can select “Cisco TelePresence TC 5.0 (and later) and CTS 1.8 (and later) endpoints,” which supports the following endpoints:

- Cisco TelePresence EX Series, C Series, and MX200 endpoints running TC software version 5.0 (and later)
- CTS 1.8 (and later) endpoints
- Video conferencing endpoints supported by the Cisco MXE version 1.3.101 (and later)

**Note**

To interoperate with Cisco TelePresence endpoints running version TC 5.0 (and later) in network multipoint meetings, CTS 1.8 is the minimum required endpoint version. CTS 1.7.x and earlier endpoints are not supported in this scenario and must be upgraded to CTS 1.8 or later.

While interoperating with Cisco TelePresence TC 5.0 (and later) endpoints in multipoint and network multipoint meetings, all supported endpoint types have full audio and video capabilities.

We provide these guidelines for setting this parameter to support network multipoint meetings:

- The two CTMS devices that support the network multipoint meeting must have the same Supported Endpoint Types setting. If they have different settings, the network multipoint link between the devices cannot be established. As a result, the endpoints supported by their respective CTMS devices remain in separate meetings.
- To support Cisco TelePresence TC release 5.0 (and later) endpoints in network multipoint meetings, the following are required:
 - If the endpoints that interoperate in these network multipoint meetings are registered to Unified CM, the Unified CM version must be 8.6.1 (or later).
 - The Supported Endpoint Types on both CTMS devices supporting the meetings must be set to “Cisco TelePresence TC 5.0 (and later) and CTS 1.8 (and later) endpoints.”

For CTMS release 1.9, the following endpoints running TC release 5.0 (and later) software are supported in network multipoint meetings: Cisco TelePresence C Series, Cisco TelePresence EX Series, Cisco TelePresence MX200, Cisco Unified 7900 and 9900-series IP phones.

- If your network multipoint topology implements Unified CM version 8.5.1, the network multipoint meetings can support only CTS 1.6.x, 1.7.x and 1.8 endpoints and video conferencing endpoints supported by Cisco MXE version 1.3.101. Therefore, the Supported Endpoint Types must be set to “CTS endpoints only.” In this configuration, TC5 endpoints can only be used if they are manually registered in the Configure > Endpoints page.
- Changing the parameter setting can impact active meetings. To minimize any impact, we recommend changing the setting when there are few or no active meetings.

The Supported Endpoint Types setting has the following effect on endpoint video quality during a network multipoint meeting:

- If Supported Endpoint Types is set to “CTS endpoints only” on each CTMS, all CTS endpoints participate with the video quality of 1080p.
- If Supported Endpoint Types is set to “Cisco TelePresence TC 5.0 (and later) and CTS 1.8 (and later) endpoints” on each CTMS and only CTS 1.8 endpoints participate, the video quality is 1080p.
- If Supported Endpoint Types is set to “Cisco TelePresence TC 5.0 (and later) and CTS 1.8 (and later) endpoints” on each CTMS and both Cisco TelePresence TC 5.0 (and later) and CTS 1.8 endpoints participate, the video quality of all endpoints is 720p.

For more information on the impact of changing the Supported Endpoint Types setting as well as what happens when multiple CTMS devices have different settings, see the *Cisco TelePresence Multipoint Switch Release 1.9 Administration Guide*, which you can access at this location:

http://www.cisco.com/en/US/products/ps7315/prod_maintenance_guides_list.html

How Event Controls Work in Scheduled Network Multipoint Meetings

Event controls operate the same way for scheduled network multipoint meetings as they do for static network multipoint meetings.

For more information about how Event Controls work in network multipoint meetings, refer to: [How Event Controls Work in Network Multipoint Meetings, page xviii](#).