



## CHAPTER 8

# Capacity Planning and Call Admission Control

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## Overview

The Cisco TelePresence suite of virtual meeting solutions supports three different types of meetings which may be implemented within the Intra-Enterprise Deployment Model:

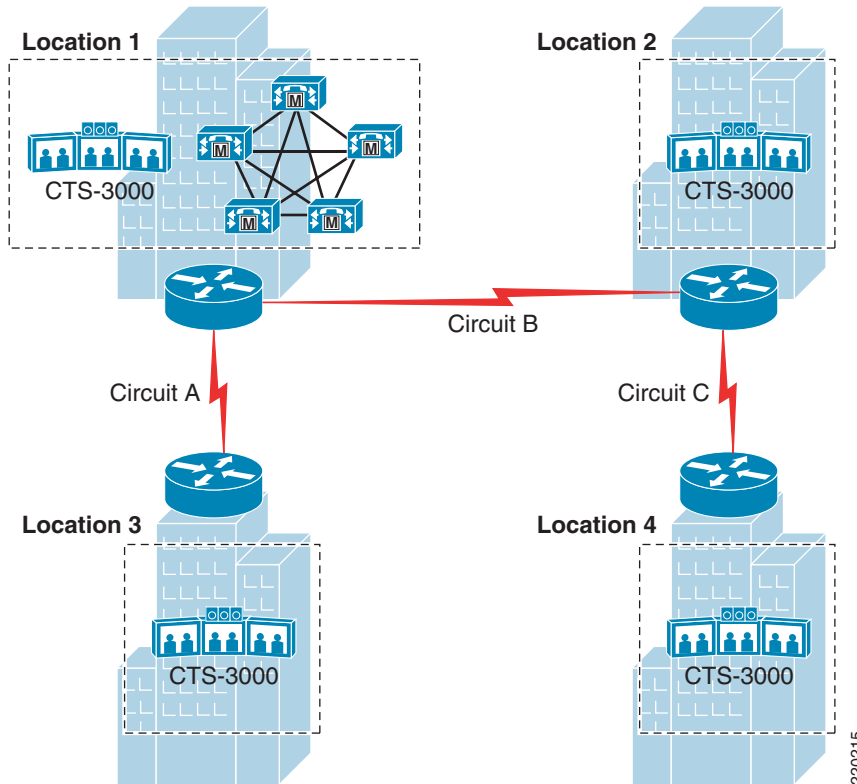
- **Ad hoc meetings**—An end-user simply dials the extension of the Cisco TelePresence system at the other end through the 7975G IP phone that functions as the user interface to the Cisco TelePresence system. There is no scheduling involved. Note that in a multipoint TelePresence meeting, static meetings function in this manner. Ad hoc multipoint meetings must be set up by a CTMS meeting scheduler or administrator.
- **Permanent meetings**—Remain up at all times. An example of a permanent TelePresence meeting is the use of a remote receptionist. Also, in scenarios where there are only two TelePresence systems deployed and they are heavily used, it may be desirable to simply leave the meeting up continuously.
- **Scheduled meetings**—Scheduled in advance of the meeting through the company's groupware application (e.g., Microsoft Exchange/Outlook).

With the current release of the Cisco TelePresence Solution, there is no automated mechanism for reserving network bandwidth or performing call-by-call Call Admission Control (CAC). Therefore, if the number of TelePresence rooms deployed at a given site exceeds the bandwidth available to/from that site, it is possible that too many TelePresence meetings could occur simultaneously and QoS policies in the network will begin dropping TelePresence packets, resulting in poor audio and video quality for all calls traversing that network link. Existing CAC techniques, which are Locations-based CAC or Resource ReserVation Protocol (RSVP), both of which are administered by Cisco Unified Communications Manager (CUCM), are not recommended or supported for Cisco TelePresence. Therefore, the current recommendation is to use manual capacity planning to provide sufficient bandwidth to support all possible TelePresence meetings simultaneously occurring across the network infrastructure. However, due to the limitations of this approach, more advanced CAC mechanisms for TelePresence are being developed and evaluated.

## Manual Capacity Planning

Manual capacity planning relies on having sufficient bandwidth within the network to support all possible TelePresence meetings occurring simultaneously and so guarantee 100% call completion. Since all TelePresence meetings are always allowed onto the network, this technique may also be referred to as having no CAC. The physical topology of the network infrastructure impacts how much and where bandwidth needs to be provisioned. [Figure 8-1](#) shows an example of this technique with four locations in a partially-meshed network topology.

Figure 8-1 Bandwidth Provisioning Example



One technique for determining the amount of bandwidth required across each circuit is to simply list all possible combinations of simultaneous TelePresence meetings between locations and the number of meetings each circuit must handle, as shown in Table 8-1.

Table 8-1 Circuit Requirements Example

Meetings Between Locations	Circuit Requirements
Location 1 to Location 2 and Location 3 to Location 4	Circuit A-1 Meeting Circuit B-2 Meetings Circuit C-1 Meeting
Location 1 to Location 3 and Location 2 to Location 4	Circuit A-1 Meeting Circuit B-0 Meetings Circuit C-1 Meeting
Location 1 to Location 4 and Location 2 to Location 3	Circuit A-1 Meeting Circuit B-2 Meetings Circuit C-1 Meetings

However, for the simple network topology shown in Figure 8-1, it is obvious by simply visualizing the network that circuit B must be provisioned with sufficient bandwidth to support two TelePresence meetings, while circuits A and C must be provisioned with sufficient bandwidth to support one TelePresence meeting. Note that for converged networks, this bandwidth is in addition to any other VoIP or video applications, as well as all data traffic. Also, for simplicity, all the devices in Figure 8-1 are

shown as CTS-3000 units. The amount of bandwidth required per Cisco TelePresence meeting depends on the Cisco TelePresence system models (CTS-500, CTS-1000, CTS-3000, or CTS-3200) involved in the call and the video mode (1080p or 720p) which the units are configured to use. The network administrator must take these issues into consideration when determining the amount of bandwidth that must be provisioned to support TelePresence meetings across the network infrastructure. See [Table 4-1](#) in [Chapter 4, “Quality of Service Design for TelePresence”](#) for a detailed list of bandwidth requirements per system type.

The design objective of 100% call completion for all scheduled, ad hoc, and permanent TelePresence meetings is feasible and desirable for current deployments consisting of dozens to hundreds to systems. However, as the number of TelePresence endpoints deployed increases into the hundreds or even thousands, the amount of bandwidth required to support it may become cost prohibitive. Cisco is in the process of addressing this concern by enhancing the CAC mechanisms provided by CUCM (Locations and RSVP) to support TelePresence. This functionality is scheduled for a future release of CUCM. As information about these enhancements becomes available, this document will be revised appropriately.

