



Media Termination Points

A Media Termination Point (MTP) software device allows the Cisco CallManager to extend supplementary services, such as hold and transfer, to calls routed through an H.323 endpoint or an H.323 gateway.

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Understanding Media Termination Points

The MTP accepts two full duplex G.711 Coder-Decoder (CODEC) stream connections. MTPs bridge the media streams between two connections. The streaming data received from the input stream on one connection is passed to the output stream on the other connection, and vice versa. In addition, the MTP transcodes A-law to Mu-law (and vice versa) and adjusts packet sizes as required by the two connections.

MTPs extend supplementary services, such as call hold, call transfer, call park, and conferencing, that are otherwise not available when a call is routed to an H.323 endpoint. Some H.323 gateways may require that calls use an MTP to enable supplementary call services, but normally, Cisco IOS gateways do not.

Each MTP belongs to a device pool, which specifies the list of Cisco CallManagers, in priority order, to which the devices that are members of the device pool should attempt to register. This list is called a Cisco CallManager group. The first Cisco CallManager in the list is a device's primary Cisco CallManager.

An MTP device always registers with its primary Cisco CallManager if that Cisco CallManager is available and informs the Cisco CallManager about how many MTP resources it supports. The Cisco CallManager controls MTP resources. Multiple MTPs may be registered with the same Cisco CallManager. When more than one MTP is registered with a given Cisco CallManager, that Cisco CallManager controls the set of resources for each of the MTPs. The MTPs can also be distributed across a networked system as desired.

For example, MTP server 1 is configured for 48 MTP resources. The MTP server 2 is configured for 24 resources. If both MTPs register with the same Cisco CallManager, that Cisco CallManager maintains both sets of resources for a total of 72 registered MTP resources.

When the Cisco CallManager determines that a call endpoint requires an MTP, it allocates an MTP resource from the MTP that has the least active streams. That MTP resource is inserted into the call on behalf of the endpoint. MTP resource use is invisible to both the users of the system, and the endpoint on whose behalf it was inserted. If an MTP resource is not available when it is needed, the call connects without using an MTP resource, and supplementary services are not available on that call.

Make sure the Cisco IP Voice Media Streaming application is installed and running on the server on which the MTP device is configured.

The Cisco IP Voice Media Streaming application is common to both the MTP, Conference Bridge, and Music On Hold applications. The application runs as a service within Windows 2000.

You can add an MTP device in two ways:

- An MTP device is automatically added if you choose to install the optional component called “Cisco IP Voice Media Streaming Application” during the automated installation of Cisco CallManager.
- You can manually install the Cisco IP Voice Media Streaming Application, on a networked server and configure an MTP device on that server through Cisco CallManager Administration.

Managing MTPs with the Media Resource Manager

The Media Resource Manager (MRM) is a software component in the Cisco CallManager system. The MRM primary functions are resource registration and resource reservation. Each MTP device defined in the database registers with the MRM. The MRM keeps track of the total available MTP devices in the system and which devices have available resources.

During resource reservation, the MRM determines the number of resources, identifies the media type (in this case, the MTP), and the location of the registered MTP device. The MRM updates its share resource table with the registration information and propagates the registered information to the other Cisco CallManagers within the cluster.

The MRM enhances the Cisco CallManager MTP, Music On Hold, Conference Bridge, and Transcoder devices by distributing the resources throughout the CallManager cluster, making the features more efficient and economical.

MRM also supports the co-existence of an MTP and transcoder within a Cisco CallManager.

Planning Your MTP Configuration

One of the most crucial aspects that need consideration when deploying MTP resources is provisioning, which requires attentive analysis of the call load patterns and the network topology.

Consider the following information when planning your MTP configuration:

- An improper setting can result in undesirable performance if the workload is too high.
- A single MTP provides a default of 48 MTP (user configurable) resources, depending on the speed of the network and the network interface card (NIC) card. For example, a 100 MB Network/NIC card can support 48 MTP resources, while a 10 MB NIC card cannot.
- For a 10 MB Network/NIC card, approximately 24 MTP resources can be provided, however, the exact number of MTP resources available depends on the amount of resources being consumed by other applications on that PC, the speed of the processor, network loading, and various other factors.

Consider the following formula to determine the approximate number of MTPs needed for your system, assuming that your server can handle 48 MTP resources (you can substitute 48 for the correct number of MTP resources supported by your system):

$A \text{ divided by } 48 = \text{number of MTP applications needed } (n/48 = \text{number of MTP applications}).$

where:

n represents the number of H.323 devices that require MTP support.

If a remainder exists, add another server with Cisco IP Voice Streaming Application server with MTP.

- If one H.323 endpoint requires an MTP, it consumes one MTP resource. Depending on the originating and terminating device type, more than one MTP resource might be consumed by a given call. The MTP resources assigned to the call are released when the call is terminated.

- Use Performance Monitor to monitor the usage of MTP resources. The Performance Monitor counter, Media TermPoints Out of Resources, increments for each H.323 call that has been connected without an MTP resource when one was required. This number can assist you in determining how many MTP resources are required for your callers, and whether you have adequate coverage.
- The system requirements for the Cisco IP Voice Media Streaming Application and MTP are the same as Cisco CallManager system requirements.

MTP Device Characteristics

The Full Streaming Endpoint Duplex Count, a number of MTP resources supported by a specific MTP, is a device characteristic that is specific to MTP device configuration. Refer to the “Media Termination Configuration Settings” section in the *Cisco CallManager Administration Guide* for a detailed description of all MTP device settings.

Avoiding Call Failure/User Alert

Avoid the following conditions to prevent call failure or user alert:

- Although the Cisco IP Voice Media Streaming Application service can be installed on the same PC as the Cisco CallManager, we strongly recommend against this. If the Cisco IP Voice Media Streaming Application is installed on the same PC as the Cisco CallManager, it can adversely affect the performance of the Cisco CallManager.
- When you configure the MTP, you are prompted to reset MTP before any changes can take effect. This does not result in disconnection of any calls connected to MTP resources. If you choose **Reset**, as soon as the MTP has no active calls, the changes take effect.



Note

When you make updates to the MTP and you choose **Restart**, all calls connected to the MTP are dropped.

MTP System Requirements and Limitations

The following system requirements and limitations apply to MTP devices:

- Only one Cisco IP Voice Streaming Application can be installed per server. To provide more MTP resources, you can install the Cisco IP Voice Streaming application on additional networked Windows NT servers.
- Each MTP can register with only one Cisco CallManager at a time. The system may have multiple MTPs, each of which may be registered to one Cisco CallManager, depending on how your system is configured.
- It is strongly recommended that the Cisco IP Voice Streaming Media Application *not* be installed on a Cisco CallManager with a high call processing load, because it can adversely affect the performance of the Cisco CallManager.

MTP Failover and Failback

This section describes how MTP devices failover and failback in the event that the Cisco CallManager to which they are registered becomes unreachable. Conditions that can affect calls associated with an MTP device, such as MTP reset or restart, are also explained.

Active Cisco CallManager Becomes Inactive

The following describes the MTP device recovery methods when the MTP is registered to a Cisco CallManager that goes inactive.

- If the primary Cisco CallManager fails, the MTP attempts to register with the next available Cisco CallManager in the Cisco CallManager Group specified for the device pool to which the MTP belongs.
- The MTP device re-registers with the primary Cisco CallManager as soon as it becomes available after a failure, and is currently not in use.

- An MTP device is registered to a Cisco CallManager that becomes unreachable. The calls or conferences that were on that Cisco CallManager will register with the next Cisco CallManager in the list.
- If an MTP attempts to register with a new Cisco CallManager and the register acknowledgment is never received, the MTP registers with the next Cisco CallManager.

Resetting Registered MTP Devices

The MTP devices will un-register and then disconnect after a hard or soft reset. After the reset completes, the devices re-register with the Cisco CallManager.

MTP Configuration Checklist

[Table 20-1](#) provides a checklist to configure MTP.

Table 20-1 MTP Configuration Checklist

Configuration Steps		Procedures and Related Topics
Step 1	Determine the number of MTP resources needed and the number of MTP devices needed to provide these resources.	Planning Your MTP Configuration, page 20-4
Step 2	Verify that the Cisco IP Voice Media Streaming Application service is installed and running on the server to which you are adding an MTP.	<i>Cisco CallManager Serviceability Administration Guide</i>
Step 3	Add and configure the MTPs.	Adding a Media Termination Point, Cisco CallManager Administration Guide
Step 4	Add the new MTPs to the appropriate Media Resource groups.	Chapter 16, “Media Resource Management” Media Resource Group Configuration Settings, Cisco CallManager Administration Guide
Step 5	Restart the MTP device.	

Where to Find More Information

Related Topics

- [Media Resource Management, page 16-1](#)
- [Transcoders, page 18-1](#)

Additional Cisco Documentation

- [Media Resource Group Configuration, *Cisco CallManager Administration Guide*](#)
- [Media Resource Group Configuration Settings, *Cisco CallManager Administration Guide*](#)
- [Cisco IP Telephony Network Design Guide](#)
http://www.cisco.com/univercd/cc/td/doc/product/voice/ip_tele/network/