METREOS

IP Communications Applications for Business Advantage

METREOS MANAGEMENT CONSOLE USER GUIDE

Metreos Communications Environment 2.2

www.metreos.com **Part Number M-2400-MCUG-01**
10/2005

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Contents

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About This Guide

This document explains how to administer and maintain the Metreos Communications Environment (MCE) using the Metreos Management Console.

Intended Audience

This guide is intended for system administrators who are familiar with the Windows operating system and have a basic understanding of IP telephony. This guide does not provide information about IP telephony systems. For information about basic telephony and IP telephony Metreos recommends the following Internet Web sites:

http://en.wikipedia.org/wiki/Voip

http://www.voip-info.org/tiki-index.php

http://www.packetizer.com/voip/

The MCE works with Cisco CallManager as a Voice over IP provider. If you need to manage and configure CallManager, the following sites provide useful information:

http://www.cisco.com/en/US/tech/tk652/tsd_technology_support_category_home.html

http://www.cisco.com/en/US/products/sw/voicesw/ps556/

http://www.cisco.com/en/US/products/sw/voicesw/

Organization of the Guide

The *Metreos Communication Environment Management Console User Guide* is organized into the following chapters:

- About This Guide — Describes the notational and typographical conventions used in the guide, and provides the terms of the End User License Agreement (EULA).
- Chapter 1: Introduction — Provides basic information about the MCE architecture.
- Chapter 2: Metreos Communications Environment — Describes the Metreos Application Runtime Environment and its components.
- Chapter 3: The Metreos Management Console — Describes the Metreos Management Console user interface and provides administrative procedures for the Metreos Communications Environment.

Notational Conventions

The following section summarizes the notational conventions used in the Metreos guide.

Notes, Cautions, and Warnings

NOTE: *A note provides important information, helpful suggestions, or reference material.*

CAUTION: *A Caution indicates a potential risk for damage to hardware or loss of data, and describes how to avoid the problem.*

WARNING: A Warning indicates a potential hazardous risk that could result in serious bodily harm or death.

Typographical Conventions

This section defines the *general* typographical conventions followed in this Metreos guide.

- **Bold** typeface — Represents:
  - Information and controls displayed on screen, including menu options, windows dialogs and field names
  - Commands, file names, and directories
  - In-line programming elements such as class names and XML elements when referenced in the main text
- *Italics* typeface — Represents:
  - New concepts
  - A variable element such as *filename*.**mca**
  - A reference to a chapter or section heading
- Courier typeface — Represents code or code fragments, or text that you enter. For example: Type xxxxxx
- ... (ellipsis) — Represents omitted content in code fragments
- <UPPERCASE> typeface enclosed in angle brackets — Represents keys and keystroke combinations you would type. For example: <CTRL + ALT + DEL>

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Introduction 1

The Metreos Communications Environment (MCE) is a feature-rich platform for developing and hosting IP telephony applications. The MCE includes an Application Runtime Environment, controlling media and external resources under the direction of custom telephony applications. The Application Runtime Environment also works with one or more media servers to process, mix, analyze, and route digital audio data.

Applications hosted on the MCE are developed using a GUI-based design tool, the Metreos Visual Designer. The power and flexibility of the Visual Designer helps you build IP telephony applications quickly. System administrators manage the MCE through a Web browser-based interface, the Management Console.

Figure 1 depicts a simplified view of the MCE Architecture.

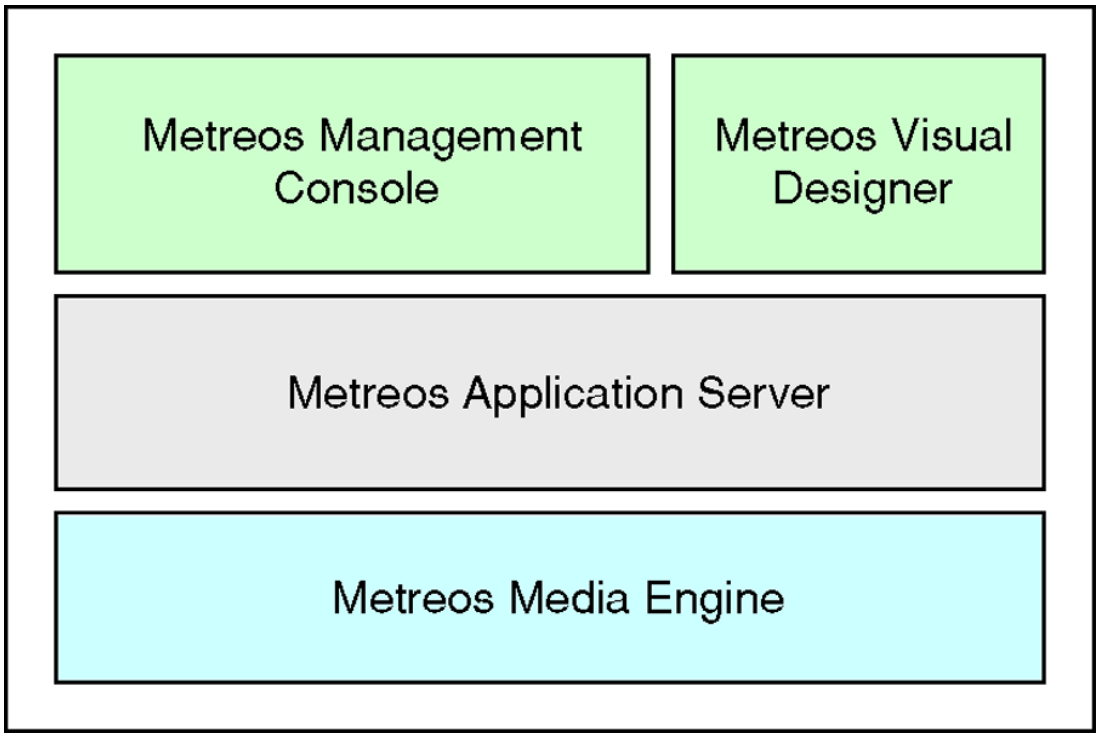

Figure 1. MCE Architecture

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Metreos Communications Environment 2

Metreos Management Console

The Metreos Management Console allows you to administer the MCE for IP telephony systems. The following diagram depicts the components of the environment, their relationship with each other, and with other components in a telephony system.

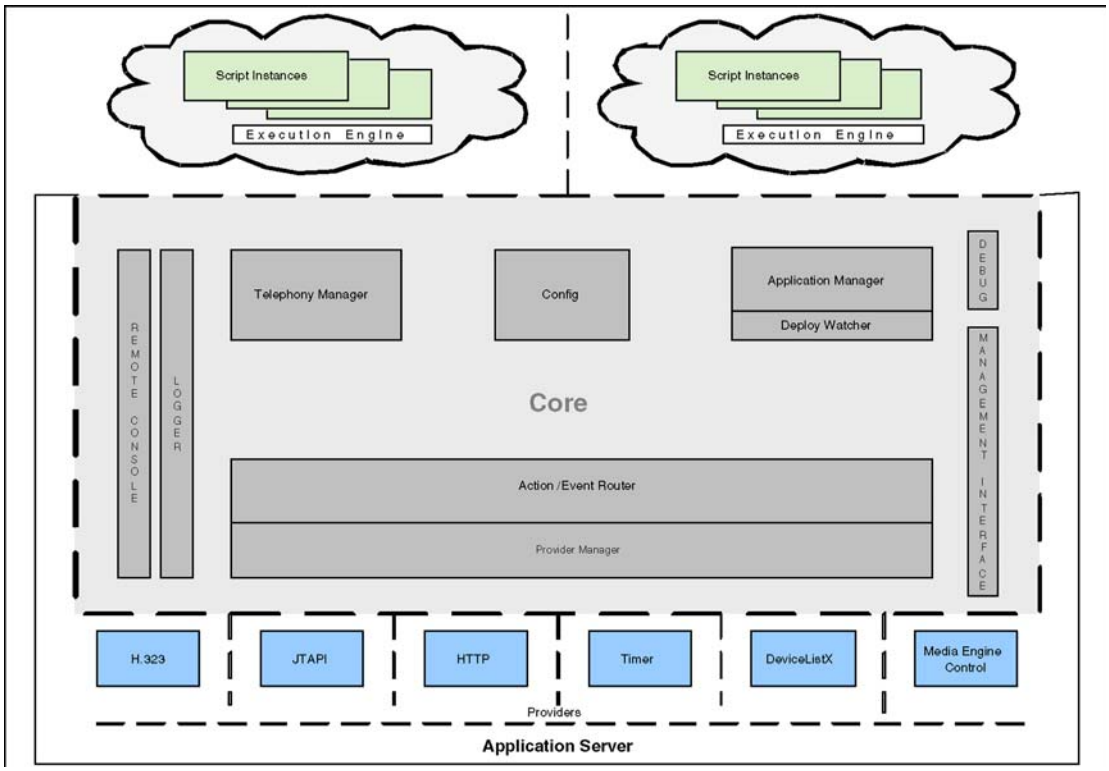

Figure 2. Metreos Communications Environment

The diagram depicts the applications and providers outside the core as separated by broken lines, which represent process boundaries. Isolating the processes prevents external components from affecting the system, in the unlikely event of failure.

You can access, manage, and configure the core components as well as applications and providers through the Management Console. Each core component manages some aspect of the IP telephony system, and the management console enables the configuration of those components.

The core components managed by the console include:

- Application server — Contains all core components and serves as a bootstrap loader for the other core elements.
- Provider Manager — Manages loading and unloading of providers.

- Router — Routes actions and events between providers and applications.
- Telephony Manager — Manages the details of establishing and terminating calls.
- Application Manager — Manages the installation and uninstallation of applications.
- Management Interface — Notifies the core engine of changes to the application server configuration.
- Application environment — A virtual machine providing a runtime environment in which IP telephony applications can be executed.
- Logger — Manages log messages.

The following sections provide details on of the core components.

Application Server

The Application Server starts, executes, terminates, and manages application script execution. Each application runs in its own runtime environment; for every application there is a separate virtual machine on which the application scripts run.

Provider Manager

The Provider Manager is responsible for instantiating and managing providers. Similar to a system process or daemon, a provider opens network ports and allows the Application Runtime Environment to communicate with other devices on a network.

Providers can be loaded or unloaded at any time through the management console. The Provider Manager also manages basic administrative tasks. For example, it monitors providers to ensure that they are running.

Router

In the Metreos system, applications specify sets of triggering criteria. After an instance of an application is triggered, the Router retains the state of that instance and routes subsequent events until the instance terminates.

Telephony Manager

IP telephony applications require complex protocols to establish connections between devices, exchange messages among them, and disconnect them when appropriate. Telephony Manager abstracts implementation details so that you aren’t exposed to them.

The Telephony Manager also allows you to enable and disable *sandboxing*. Sandboxing is a system-level, fail-safe capability that ensures system resources do not remain in use after a script ends.

If a script stops prematurely, it might not be able to terminate outstanding calls and the media resources for those calls would remain in use. In such an event, sandboxing permits the Telephony Manager to release the media resources.

Sandboxing is globally disabled by default, but can be enabled on the Telephony Manager Configuration page. You should ensure that sandboxing is disabled if you have an application in which control of the call is transferred from one script to another.

In that case, the media resources are retained after the original script instance terminates because the call is still in progress. The Telephony Manager detects that the original script has terminated but the media has not been released. If sandboxing is enabled, the Telephony Manager releases the media on behalf of the original script and terminates the call.

Refer to “Configuring the Telephony Manager” on page 14 for instructions on enabling and disabling sandboxing.

Application Manager

The Application Manager’s primary responsibility is to manage applications as they progress through the application lifecycle. The Application Manager unpackages applications and creates the application runtime environment on behalf of applications. It also routes debugger commands to the appropriate application.

Using the Application Manager, you can install an application by uploading a Metreos installation package through the management console. The system automatically unpackages it and performs the installation process.

Each application instance has one or more *partitions* associated with it. A partition comprises a set of configuration data applied to an application. All application-defined configuration information and required call control and media resource settings are contained in the application partitions.

A partition is a template that determines the behavior of an application. It specifies parameter values such as triggering criteria. The MCE supports multiple partitions for each application, and each application can specify different triggering criteria and other parameter values. When multiple partitions are defined, multiple user groups can execute concurrent instances of a given application, each running in a uniquely-configured partition.

When an application is installed a default partition is created, which the application uses if multiple partitions are not required. Refer to “Managing Applications” on page 31 for instructions to create and edit application partitions.

Management Interface

The Management Interface listens on a socket (3120 by default) and accepts TCP connections from the management console. The console uses this interface to notify the core engine of changes to the Application Runtime Environment configuration. The management interface exposes the following functions:

- Execute provider extensions (special actions exposed by the provider for management purposes).
- Enable and disable applications.
- Install and uninstall applications.
- Enable and disable providers.
- Install/uninstall providers.
- Add and remove media servers.
- Add and remove CallManager clusters.

Application Environment

When an application script is executed it runs in its own environment segregated from all other components and applications by virtue of process boundaries provided by the MCE.

Logger

The Logger manages log messages. The Metreos Logger uses trace listeners to route log messages to various log sinks based on configurable criteria. The standard logs packaged with the Application Runtime Environment are:

- Debug Logger — Writes logs to the Windows debug queue. A third-party application, DebugView. available from SysInternals is required to view it. (http://www.sysinternals.com/ntw2k/freeware/debugview.shtml).
- Console Logger — Writes logs to the console (stdout).
- Event Logger — Writes logs to the Windows event log.
- File Logger — Writes logs to a file.
- Remote Console Logger — Writes logs to any number of TCP connections.
- Log Server Logger — Centralized repository for all logs in a production environment.

Metreos Management Console 3

The Metreos Management Console is a browser-based interface used to administer the MCE. Its purpose is to simplify the management of applications and media servers. You can use the management console to add new applications, monitor the performance of existing applications, and troubleshoot any problem that might occur. When you launch the Management Console a login screen is displayed.

Figure 3: Management Console Login Screen

After logging in, the system displays the Main Control Panel screen.

Figure 4: Metreos Management Console

The Main Control Panel screen is divided into four groups of related management activities:

- Environment
- System
- Components
- Logs

The Metreos Environment

The Environment group contains links to the following MCE configuration pages.

- Console Configuration — An interface that allows you to set basic system attributes.
- Core Components — An interface for configuring the core components described in *Metreos Communications Environment* on page 3.
- User Management — A display of all users and a field for adding new users.

Configuring the Console

You use the Console Configuration page to set system name and time zone parameters and to restart the internal Web server.

Figure 5: Console Configuration Display

To set or reset System Name and Time Zone:

1. Under **Configuration**, enter or select the appropriate parameters.

2. Click the **Update** button.

NOTE: *Metreos recommends you leave the Time Zone setting at Greenwich Mean Time (GMT) unless you have a specific requirement to change it.*

To restart the Web server:

1. Under **Console Restart**, click the **Restart Web server** button.

2. After restarting, you may have to wait about a minute before using the console.

Configuring Core Components

You use the Core Components page to configure the MCE core components as shown in the following figure.

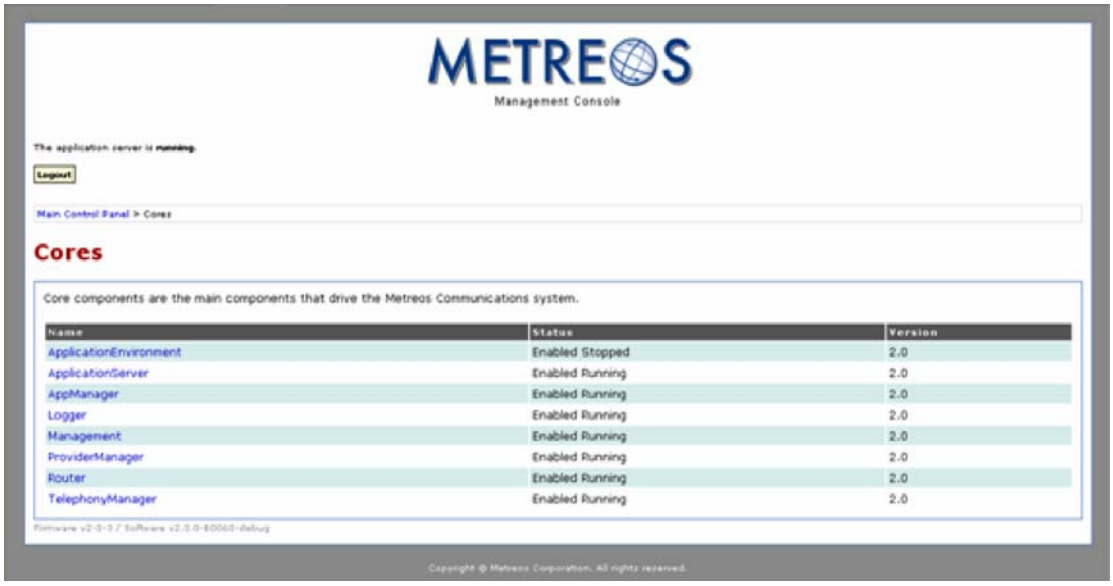

Figure 6: Core Components Management Interface

To configure core components:

1. Click on the desired component link in the **Cores** page.

2. The configurable parameters for that component are displayed.

3. Enter or select the values for the desired parameters.

4. Click the **Update** button.

The procedure for configuring other components in the Environment Group is similar:

1. Select the component you wish to configure.

2. Enter or select the desired parameters.

3. Click the **Update** button.

Configuring the Application Environment

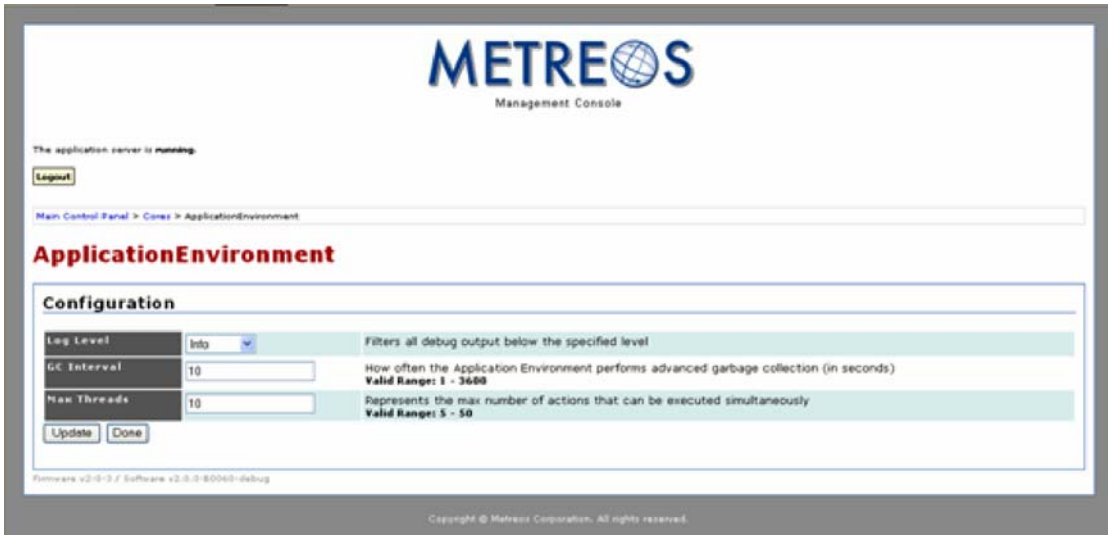

Figure 7: Application Environment Configuration Interface

Application environment parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels.
- **GC Interval** — *Garbage collection* interval. Periodically, the system searches the runtime environment for objects that are no longer being used by the application, but have not released memory. It removes those objects and any associated resources. The **GC Interval** field specifies the time interval in seconds between garbage collection events.
- **Max Threads** — The size of the thread pool used for concurrent execution of actions.

Configuring the Application Server

Figure 8: Application Runtime Environment Configuration Interface

Application server parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels.
- **Server Name** — Identifier for the application server.

Configuring the Application Manager

Figure 9: Application Manager Configuration Interface

Application Manager parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels.
- **Debug Listen Port** — The port number on which the debugger is to listen for debug commands.

Configuring the Logger

Figure 10: Logger Configuration Interface

Logger parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 supported levels.
- **Max File Log Lines** — The maximum number of lines any log file can contain. When the log is full, a new log file is created with a timestamp as the file name.
- **TCP Logger Port** — The port number for the TCP connection of the Remote Console Logger.

Configuring the Management Interface

Figure 11: Management Interface Configuration Page

You set the Log Level in the Management Interface Configuration page. **Log Level** refers to the type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels. The **Management Port** field is read only.

Configuring the Provider Manager

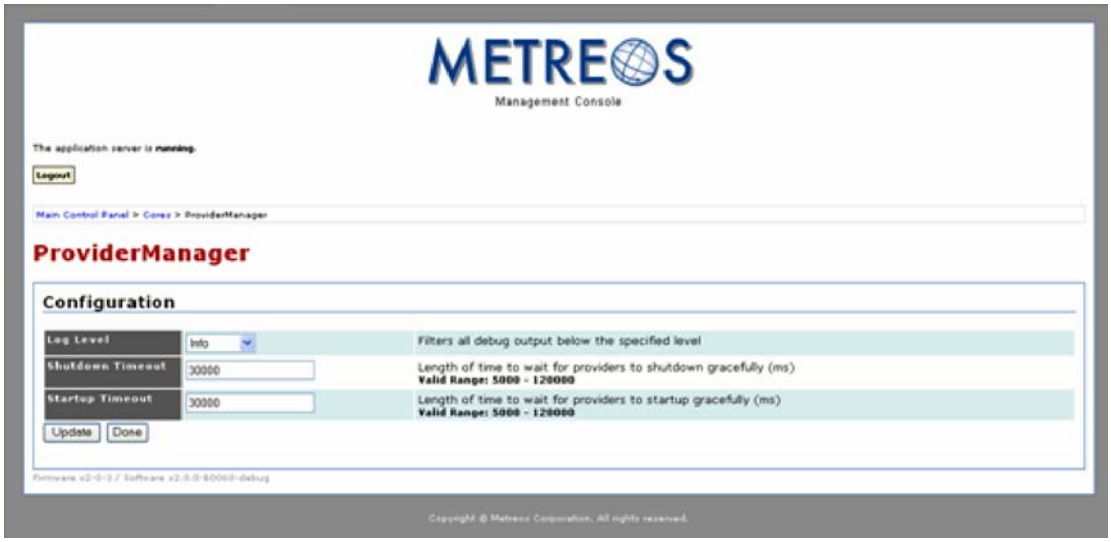

Figure 12: Provider Manager Configuration Interface

Provider Manager parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels.
- **Shutdown Timeout** — The length of time in milliseconds the system will wait for a provider to shut down before forcing a shutdown.
- **Startup Timeout** — The length of time in milliseconds the system will wait for a provider to start before considering it unloadable.

Configuring the Router

Figure 13: Router Configuration Interface

Router parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels.
- **Default Action Timeout** — The maximum length of time in milliseconds the system will wait for a provider to respond to an Action.

Configuring the Telephony Manager

Figure 14: Telephony Manager Configuration Interface

Telephony Manager parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels.

- **Enable Call/Connection Sandboxing** — When enabled, the system clears any remaining calls and media connections when the controlling script exits. Refer to "Telephony Manager" on page 4 for information about sandboxing.

Managing Users

Use the User Management page to add users and to list all existing users and their access levels.

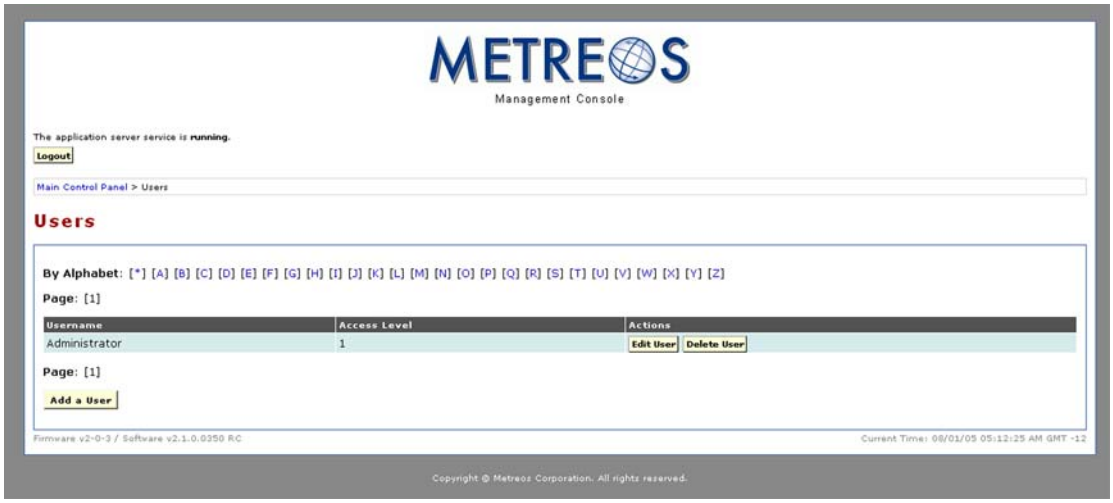

Figure 15: User Management Interface

To add a user:

1. On the Users page, click the **Add a User** button located in the lower left corner.

Figure 16: Add User Interface

2. Enter user's name in the **Username** field.

3. Enter an initial password in **Password** field.

4. Select either **Normal User** or **Administrator** from the **Access Level** pull-down menu. Users who are assigned the **Administrator** role are allowed full access to the management console. Users who are assigned the **Normal User** role are allowed to manage only the following system components:
   - Core Components
   - Applications
   - Media servers
   - Providers
   - Telephony Servers

5. Click the **Add User** button.

Figure 17: User Added

The Users page is displayed and the system lists all users.

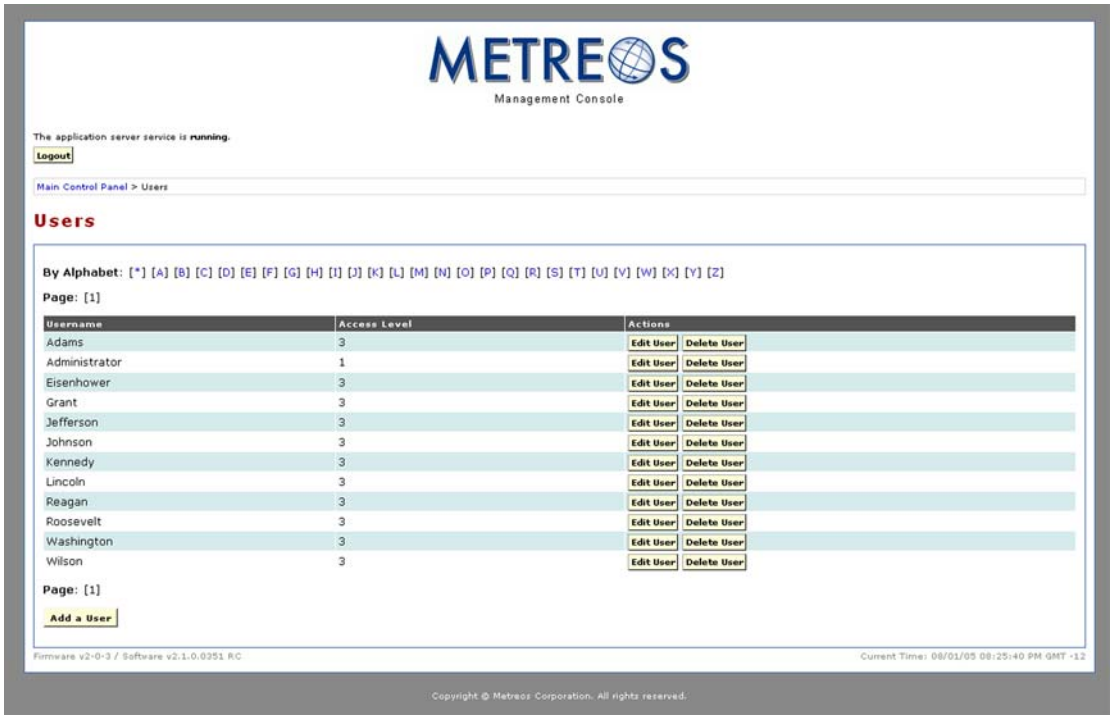

Figure 18: Updated User List — Default View

On the Users page you can view all users, or view only users whose names begin with a specified letter of the alphabet.

To view users whose names begin with a specified letter in the alphabet:

1. Click a letter in the alphabet string above the user list.

2. Click the asterisk (*****) next to the **A** in the alphabet string to return to the default view (all users).

To edit a user's username, password, or access level, or to delete a user:

1. Click the **Edit User** button associated with the user, or

2. Click the **Delete User** button associated with the user.

System Configuration and Control

The System group contains links to interfaces that help you manage system-level components. These include:

- **Network Configuration** — View and edit your network configuration.
- **Service Control** — Direct services on which Metreos relies.
- **Media Firmware** — Activate a new media server license.
- **System Update** — Upload new system firmware and software.
- **System Backup / System Restore** — Back up and restore MCE system settings.

Network Configuration

From the Main Control Panel, click the **Network Configuration** link to open the Network Configuration page and display the current network configuration.

Figure 19: Network Configuration Page

If you know your network configuration has changed you can update the console settings by clicking the **Synchronize Console with System** button.

You can also statically configure your network configuration, as follows:

1. Click the **Edit** button.
   The Edit Interface Local Area Connection page is displayed.

Figure 20: Network Configuration Page

2. Click the **Disable DHCP** button.

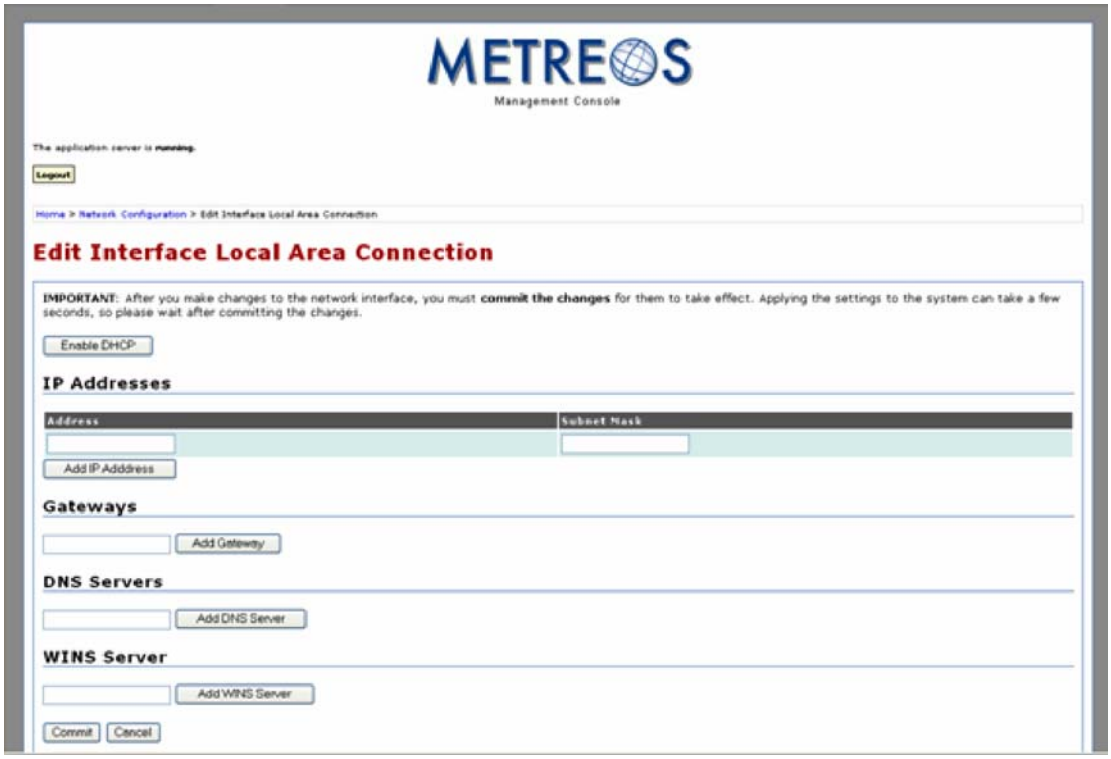

Figure 21: DHCP Configuration Page

3. For each field on the page, enter the configuration information and click the **Add** *information* button next to the field.

4. Click the **Commit** button. The page displays the new configuration information.

Service Control

The service control interface page displays a table containing system-level services required by the runtime.

Figure 22: Service Control Interface

For each service, the table displays the following:

- **Service NameSelect a Backup** — Name of the service.
- **Description** — A short description of the service.
- **Enabled** — **Yes** or **No**.
- **Status**:
  - **Running** — Service is available.
  - **Stop Pending** — Service is shutting down.
  - **Stopped** — Service is not available.
  - **Start Pending** — Service is starting up.
- **Action**:
  - **Disable** — Make service unavailable; disallow automatic start at reboot.
  - **Restart** — Stop and restart.
  - **Stop** — Make service unavailable.
  - **Enable** — Allow automatic start at reboot.
  - **Start** — Make service available.

An *enabled* service automatically starts when the system is rebooted; a *disabled* service does not automatically start when the system is rebooted. If you disable a service, the system automatically stops the service. When you take some action on a service, click the **Refresh** button located at the bottom left of the page to update the current status display.

Uploading a Media Firmware License

MCE requires a Host Media Processor (HMP) license, and you will occasionally be required to upload a new license.

To upload a new license:

1. Click the **Media Firmware** link on the Main Control Panel to view the Activate Media Firmware page.

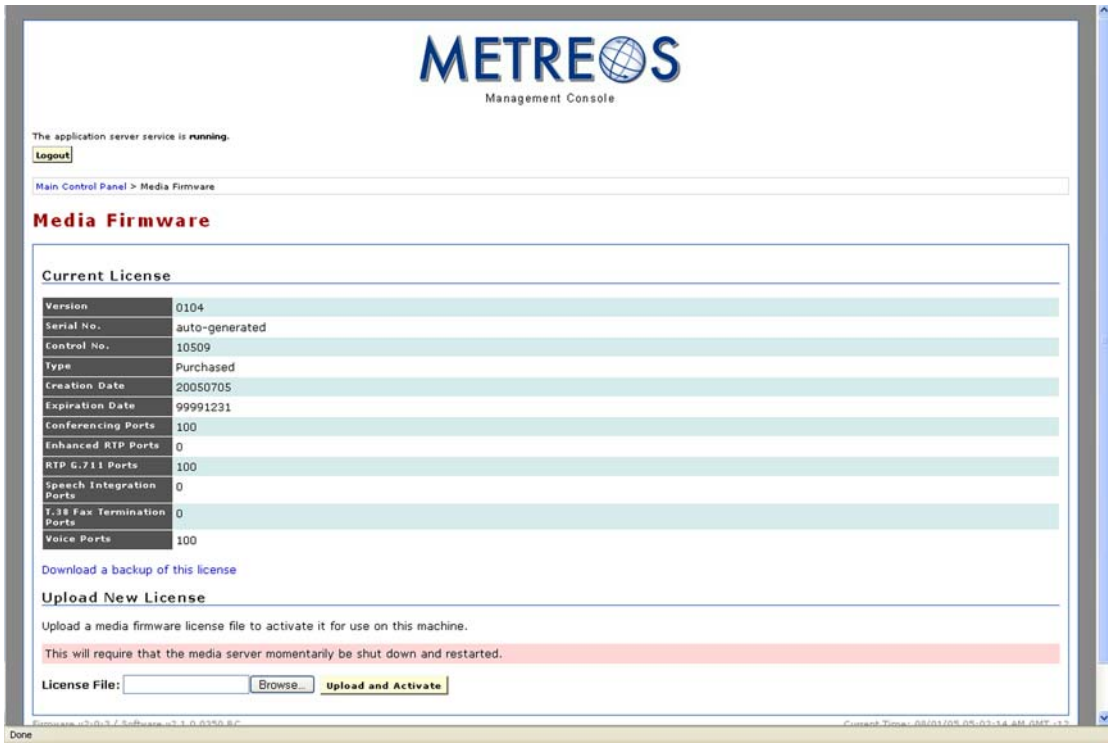

Figure 23: Activate Media Firmware Page

The Media Firmware page displays the current license information.

2. Type the local path of the license file in the **License File** field, or click the **Browse** button to locate the license on the hard drive.

3. Click the **Upload & Activate** button.
   The media server will be restarted.

Configuring Date and Time

To set the current date and time:

1. Click the **System Date and Time** link on the Main Control Panel to view the Activate Media Firmware page.

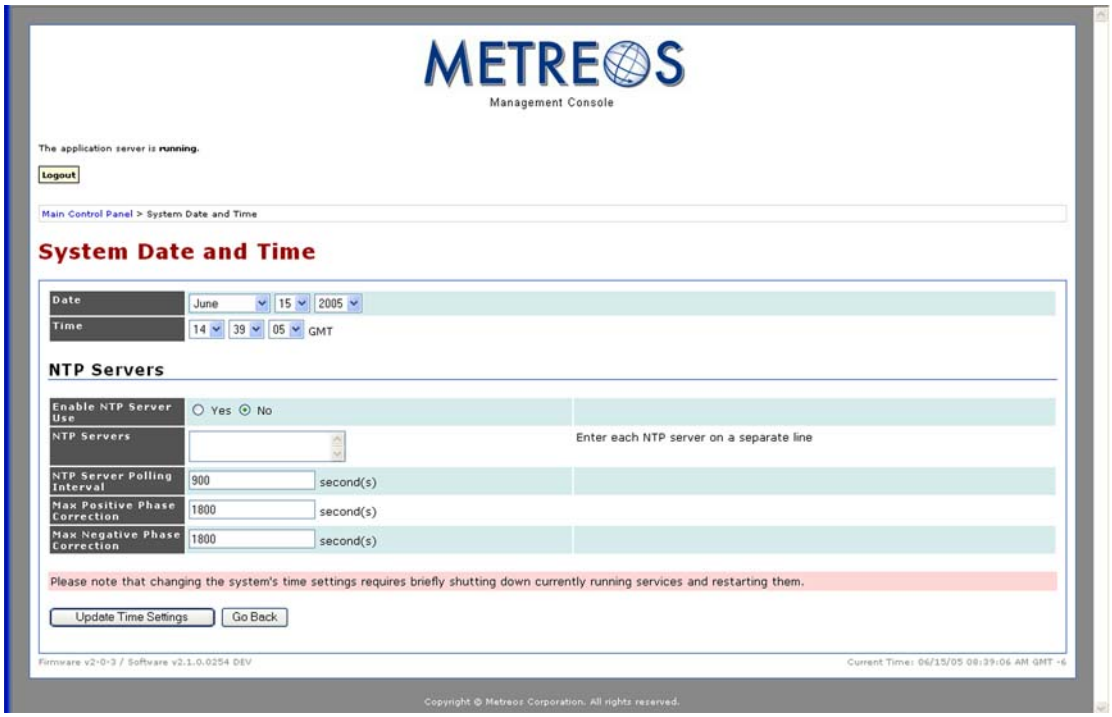

Figure 24: Date and Time Page

2. Set the correct time (GMT) and date.

3. Set the information in the **NTP Servers** section.
   Information about NTP servers can be found at http://support.microsoft.com/kb/816042.

System Update

To update your application:

1. Click the **System Update** link on the Main Control Panel to view the Activate System Update page.

Figure 25: System Update Page

2. Type the local path of the update package file in the text field, or click the **Browse** button to browse the hard drive.

3. Click the **Upload** button. The update package will be validated and release notes displayed, as shown in the following figure.

Figure 26: System Update release notes

4. After reading the release notes, click the **Continue** button at the bottom of the release notes. After the package is uncompressed, the system displays a self-refreshing **In Progress...** page.

Figure 27: System Update In Progress

5. When the update is complete, the system displays a page indicating whether the update succeeded.

Figure 28: System Update Complete

6. Click the **Done** button.

System Backup and System Restore

Metreos recommends you back up your system regularly to prevent data loss in the event of system failure.

To back up your system:

1. Click the **System Backup** link to launch the System Backup page, which displays the application databases currently in use.

Figure 29: System Backup Page

2. Configure the system backup by clicking in the check box of each application database you want to back up, as shown in the following figure.

Figure 30: Selected Backup Configuration

NOTE: *You can perform a system database backup without backing up application databases. To do so, leave the application databases unchecked and skip to step four. The system database is always backed up when you perform the backup process.A note provides important information, helpful suggestions, or reference material.*

3. Click the **Submit** button to submit the backup configuration.
   The page is updated to indicate the new backup configuration is now available, as shown in the following figure.

Figure 31: Backup Configuration Set

4. Click the **Perform a Backup** button to launch the **Performing a Backup** page.

Figure 32: Start Backup

5. Click the **Start** button to start the backup.
   The system indicates that the backup is in progress.

Figure 33: Backup in Progress

6. Click the **Next Step** button. If the backup was successful the system notifies you with the following page.

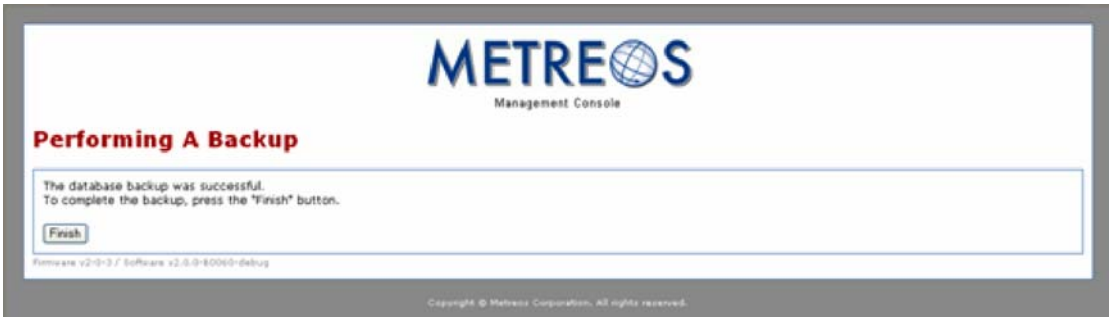

Figure 34: Finish Backup

7. Click the **Finish** button to complete the process. The system indicates the backup is complete.

Figure 35: Complete Backup

8. Click the **Done** button to view the list of backup files, which you can store.

Figure 36: System Backup Page with Downloadable Backup File Complete

You can download the backup file or delete it.

9. To download the backup file, click **Download**.

10. To delete the backup file, click **Delete**.

11. To view a history of all backups click the **All Backups** link.

Figure 37: System Backup History

After backing up the system you can restore it if necessary.

To restore the system:

1. From the Main Control Panel, click the **System Restore** link.

Figure 38: System Restore Page

2. You can select a backup file currently stored on the system or upload it from a local drive. If you choose to use a system file, select the file from the **Select a Backup** drop-down list, then click the **Restore from Backup** button.

Figure 39: System Restore — File Selection

If you choose to restore from a file on a local drive, either type the full path in the **Upload Restore File** field, or use the **Browse** button to locate the file, then click the **Upload File** button.

Working with Components

The management console provides access to the system components you use to manage IP telephony applications. These include:

- **Applications** — Deploy and uninstall applications.
- **Media servers** — Add and remove media servers.

- **Providers** — An interface for adding and removing Providers.
- **Telephony Servers** — An interface for adding and removing Telephony Servers.

Managing Applications

The primary task you perform on the Applications interface page is installing and uninstalling applications.

To install an application:

1. Click the **Applications** link on the Main Control Panel.

Figure 40: Application Manager Main Page

2. Type the full path of the install file or click the **Browse** button to locate the file.

3. Click the **Upload File** button.
   The Application Manager processes the file and installs the application, then updates the Applications page to list the application.

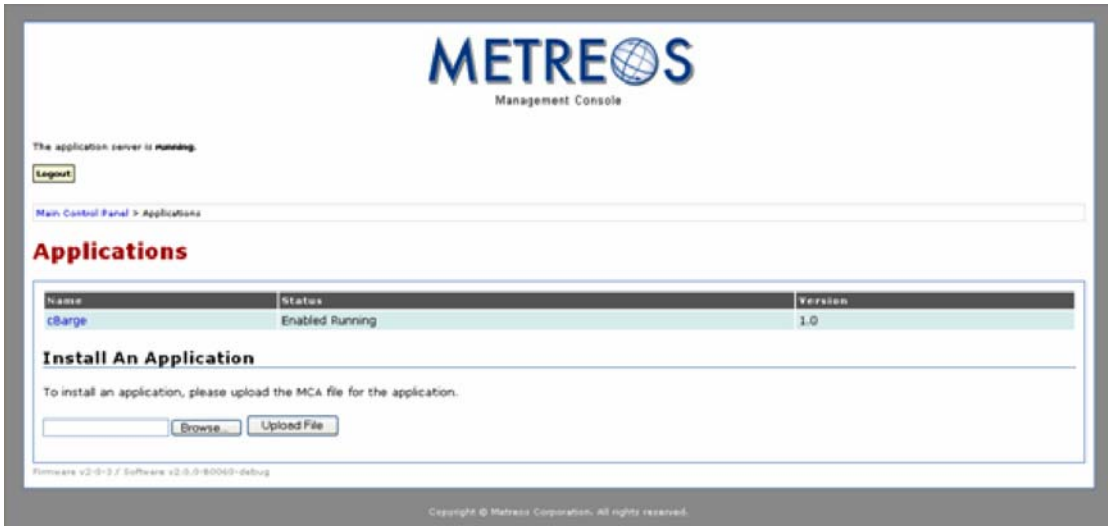

Figure 41: Application Manager with MCE Application

The page displays the application name (**CBarge**) the status (**Enabled Running**) and the version (**1.0**). The application name is displayed as a link.

4. Click the link to launch a page for managing the application.

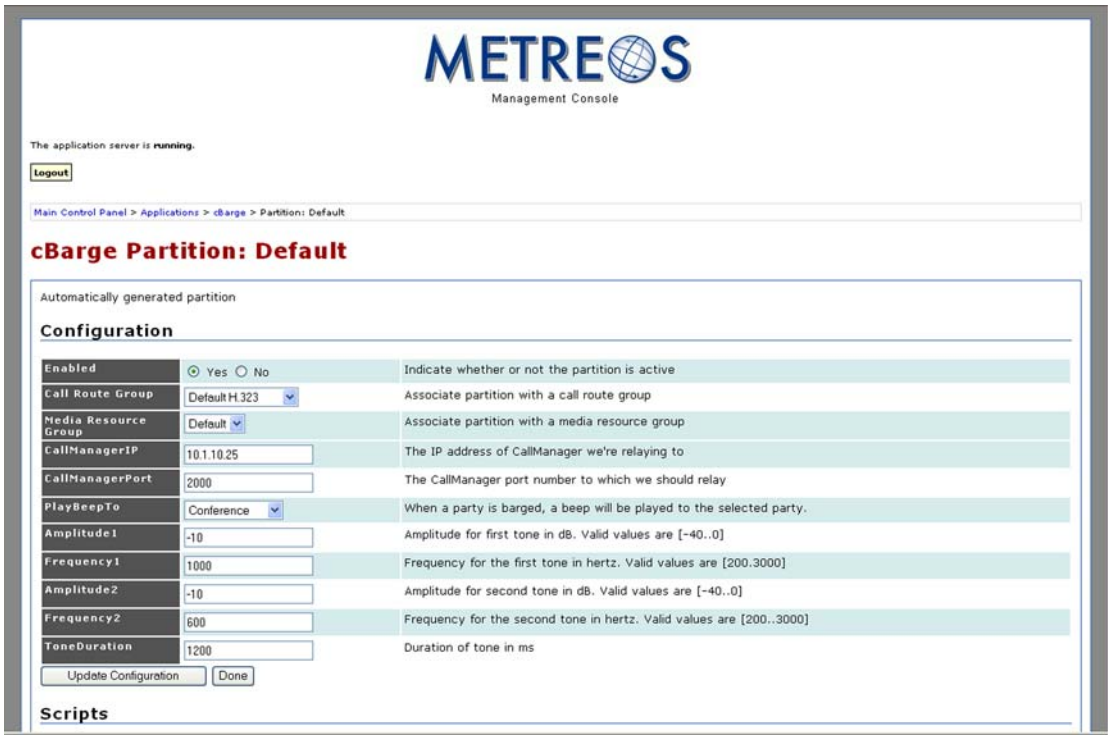

Figure 42: Application Manager with MCE Application

After the application is installed you can create additional partitions for it. Refer to “Application Manager” on page 5 on page 14 for an explanation of partitions. The parameters on all partitions are application specific. A default Metreos partition is assigned to the application as shown in the following figure.

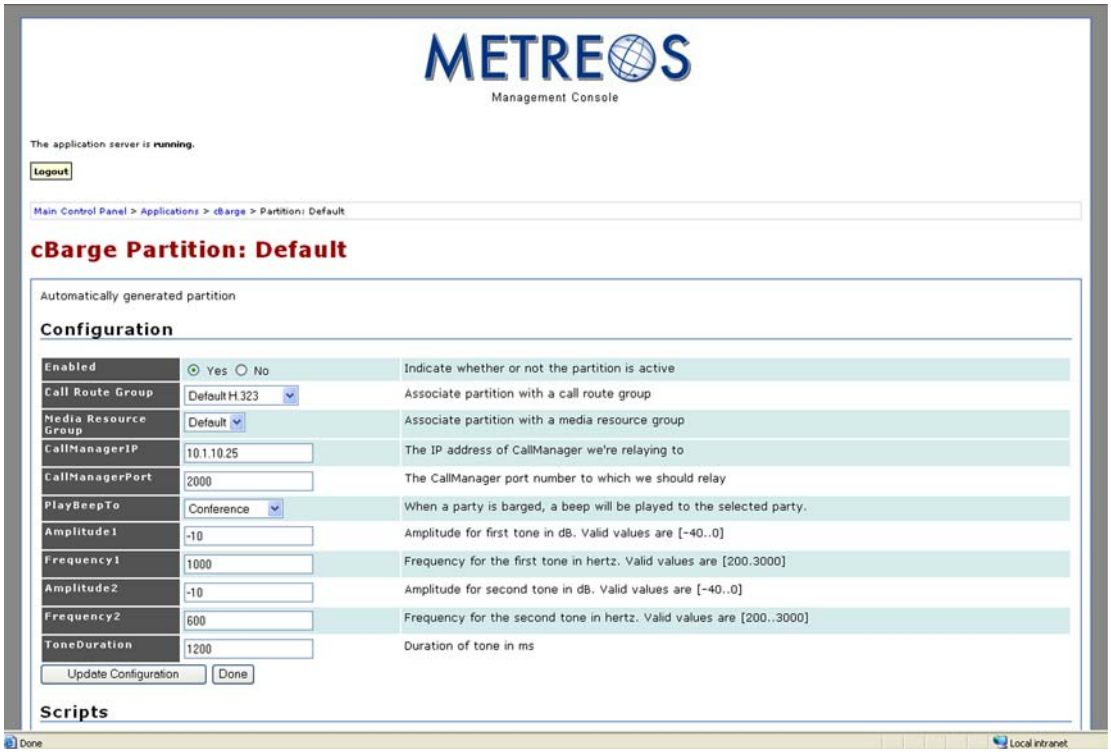

Figure 43: Default Partition

- **Enabled** (**Yes/No**) — Activates or inactivates the partition.
- **Call Route Group** (*call_route_group_name*) — Designates a call route group for the partition.
- **Media Resource Group (***media_resource_group***)** — Designates a media resource group for the partition. Refer to “Managing Media Servers” on page 37 for details.

5. Click the **Done** button to return to the application page.

To create a new partition:

1. Click the **Create Partition** button to launch the Create Partition page.

Figure 44: Application Partition Page

2. Give the partition a name and enter it in the **Name** field.

3. Provide a description in the **Description** field.

4. If you want to immediately enable the application partition, click the **Yes** radio button next to **Enabled**, if not click the **No** radio button.

5. Change any configuration parameters as needed for the partition you want to create.

6. Click the **Create Partition** button.

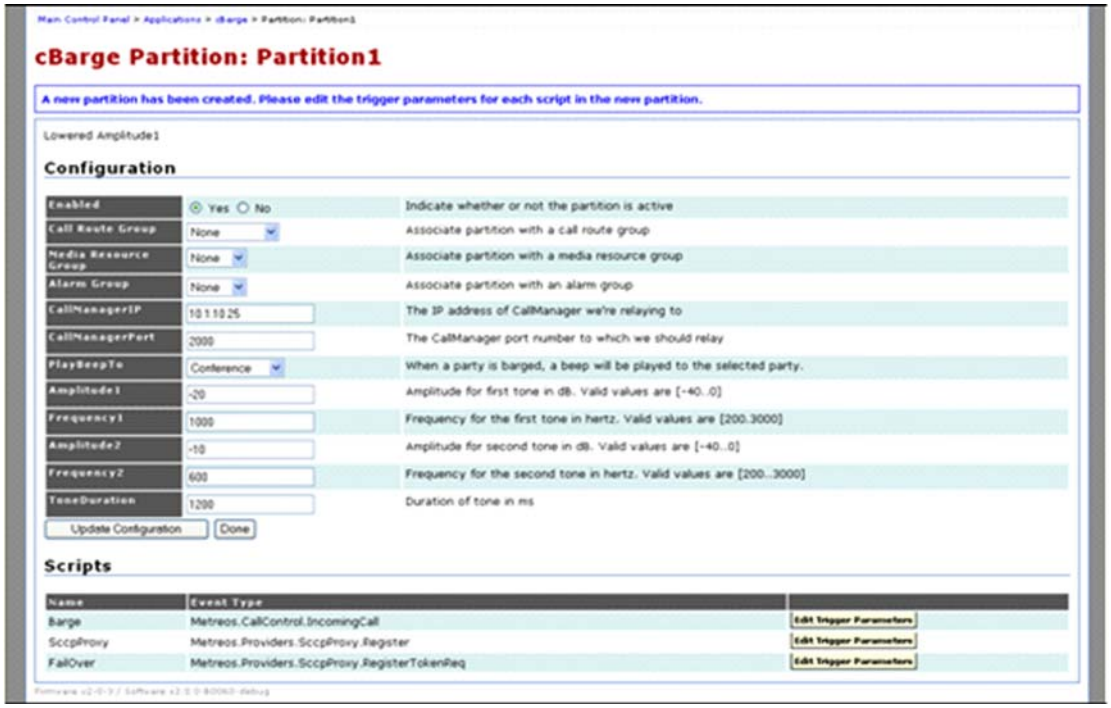

Figure 45: New Partition Added

CAUTION: *Parameter values are inherited from the default partition and all unchanged parameters in the new partition remain linked to parameters in the default partition. These parameter values will be updated in the new partition to match any changes made to them in the default partition.*

7. Click the **Done** button to return to the application page.

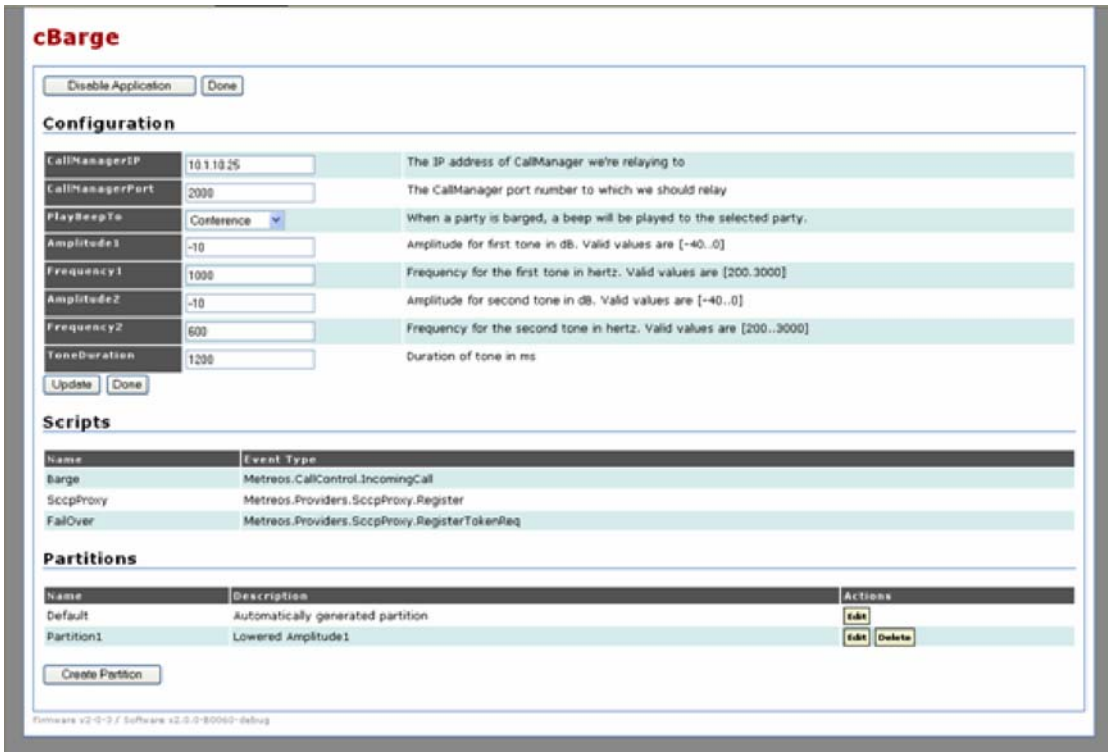

Figure 46: Example Partition Configuration

- To disable an enabled application, click the **Disable Application** button.
- To enable a disabled application, click the **Enable Application** button.

8. To uninstall the application, first disable it then click the **Uninstall Application** button. The uninstall confirmation page is displayed.

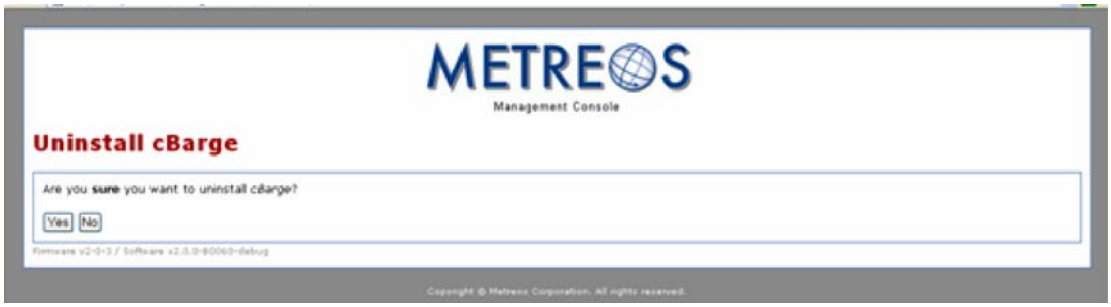

Figure 47: Application Manager Uninstall Page

9. Click the **Yes** button to proceed with the uninstallation.
   The system uninstalls your application.

Managing Media Servers

The management console lets you create and configure media server groups and media servers. A media server group is a container for a collection of media servers. Each media server must be associated with one or more groups. Although you can create media server groups, it is not necessary to do so. The system provides a default media server group you can use if multiple groups are not needed.

To create a new media group:

1. Click the **Media Servers** link on the Main Control Panel.

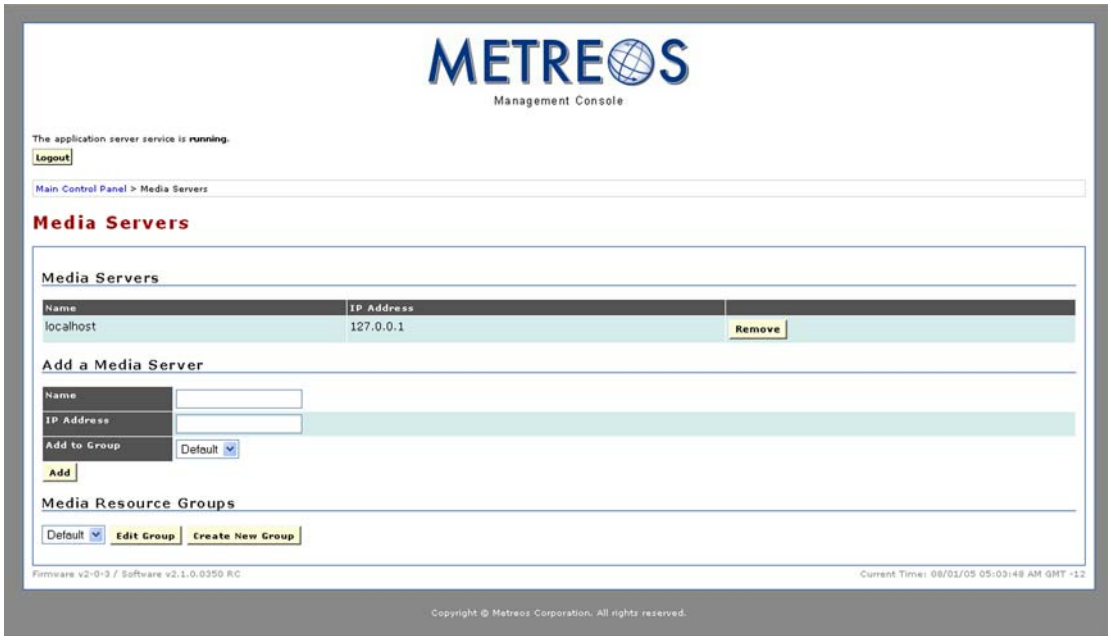

Figure 48: Media Servers Page

2. Click on the **Create New Group** button located at the bottom of the Media Servers page.

Figure 49: FigureMedia Servers Group Page

3. Enter the group name in the **Name** field.

4. Enter a description of the group in the **Description** field.

5. If you want to designate a failover group select the appropriate group from the **Failover Group** drop-down list.

6. Click the **Create Group** button to proceed. Clicking the **Create Group** button creates the group and displays the **Edit Groups** page.

7. Click the **Done** button to return to the Media Servers page.

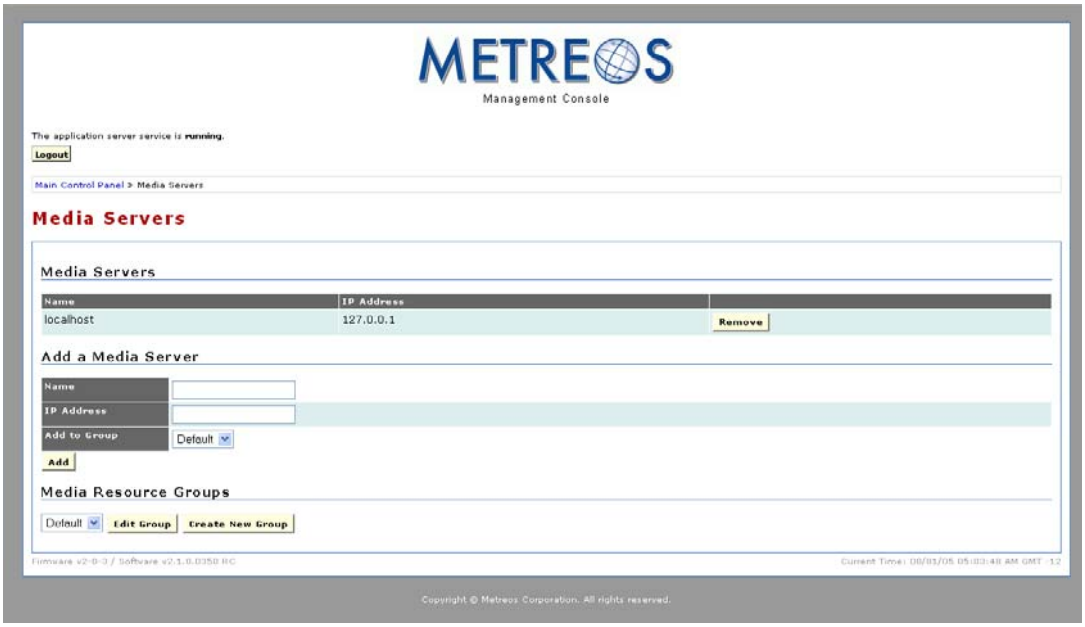

Figure 50: Add Media Server

You can now add a media server:

1. Type the name of the media server in the **Name** field.

2. Type the IP address for the media server in the **IP Address** field.

3. Select the media server group for the media server from the **Add to Group** drop-down list.

4. Click the **Add** button to add the server. The system adds the server and displays it in the **Media Servers** list.

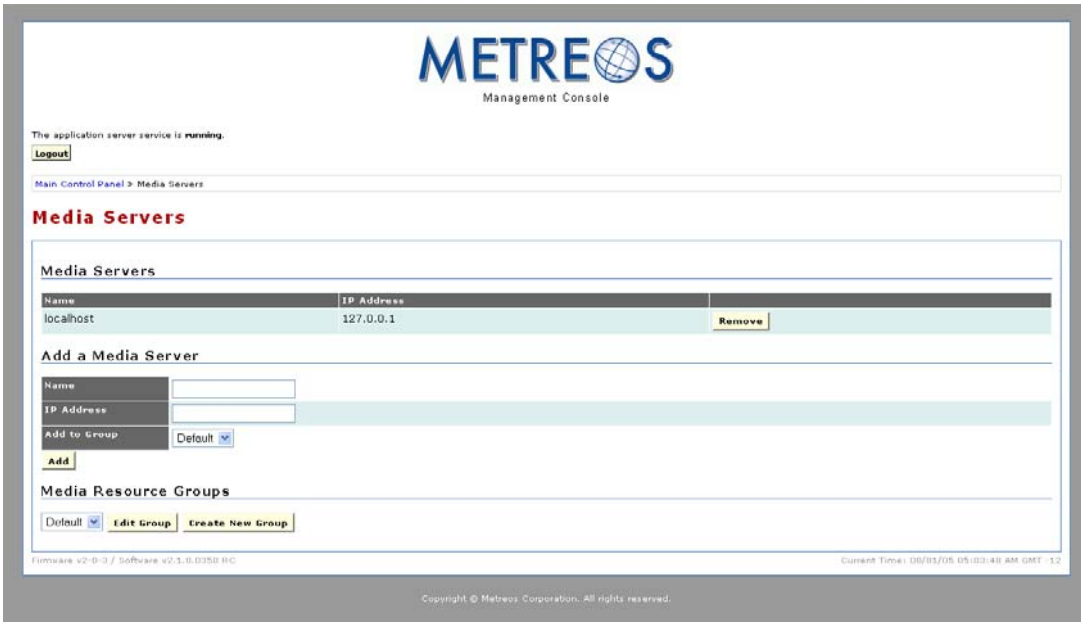

Figure 51: Media Server Added

You can confirm that the **Media Server** was added to the correct group by selecting the group from the drop-down list at the bottom of the page and clicking the **Edit Group** button.

Figure 52: Media Server Displayed in Group

You can remove the media server from the group without removing it from the system by clicking the **Remove** button on the right hand side of the page.

The system confirms that the group has been removed.

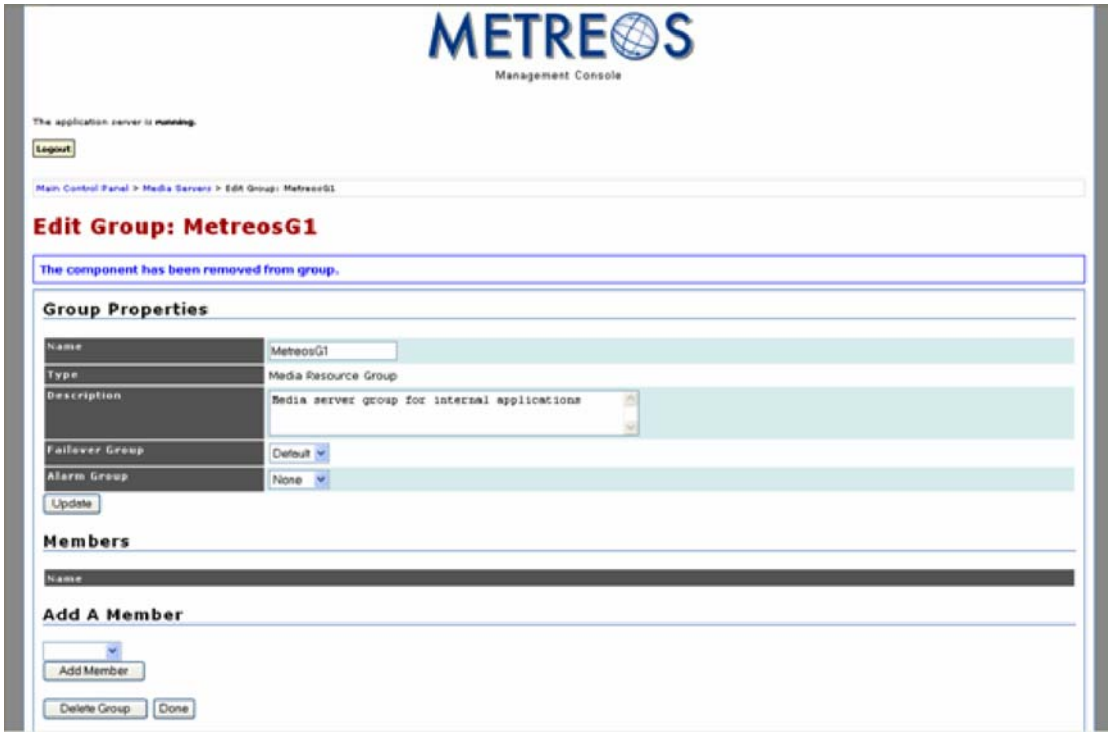

Figure 53: Media Server Deleted from Group

CAUTION: *A media server cannot be used unless it is associated with a group. If you remove a media server from a group you must reassign it to a group before an application can access it. It remains unusable by the application server until you explicitly add it to a media server group.*

To remove a media server from the system:

1. Go to the Media Servers page.

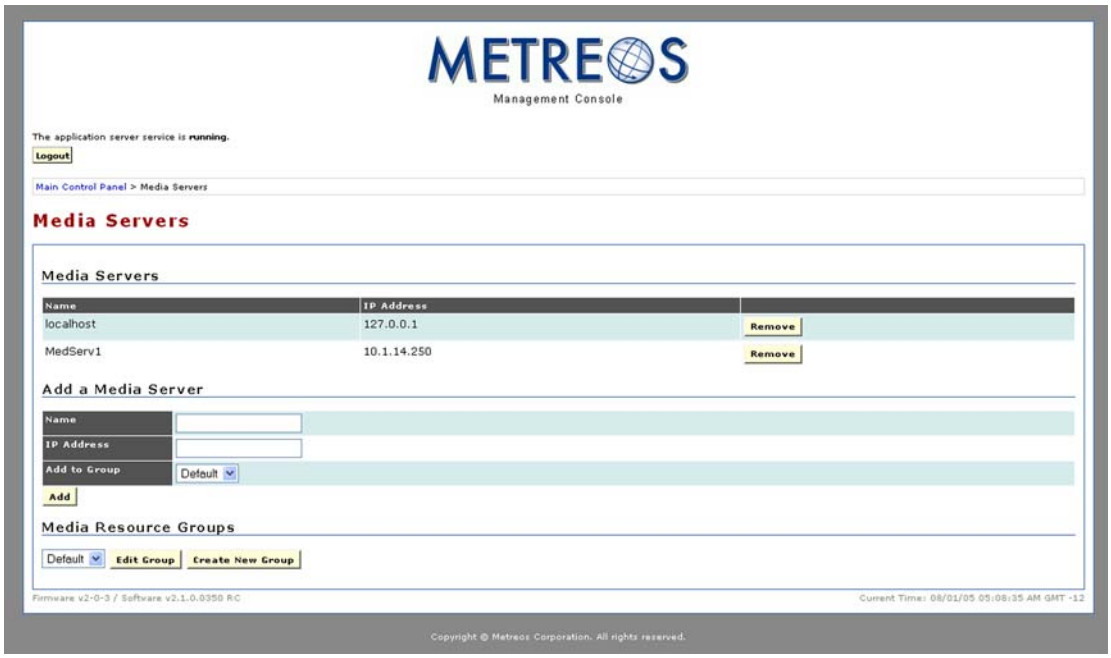

Figure 54: Remove Media Server

2. Click the **Remove** button.

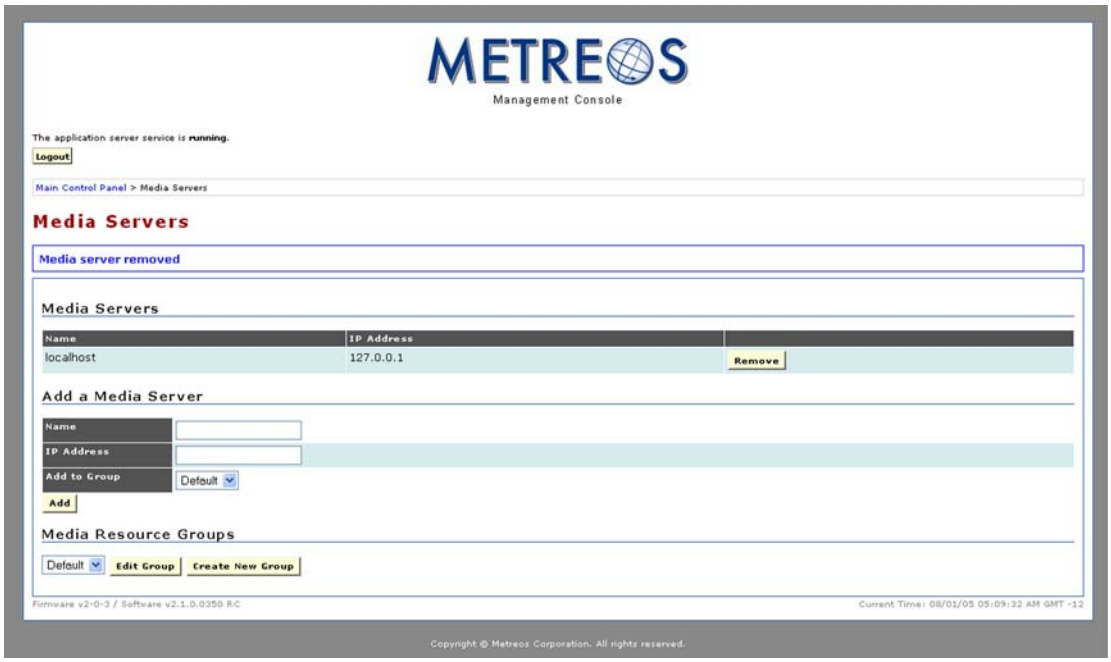

Figure 55: Media Server Removed from System

Managing Providers

Using the management console, you can configure, disable, and uninstall providers.

Clicking on the **Providers** link in the **Components** group of the Main Control Panel launches the Providers page.

Figure 56: Provider Management Page

The page displays the list of providers shipping with the Metreos 2400 system, the status of each provider (**Enabled Running** or **Disabled**), and the version number. Clicking on the provider name launches the configuration page for that provider. From there you can disable the provider or edit the configuration.

Provider Configuration

The following page depicts a typical Provider configuration page.

Figure 57: Sample Provider Configuration Page

Every provider configuration page is divided into three sections.

- **Enable** or **Disable Provider** — Enable and disable switch.

NOTE: *Disabling the provider allows you to subsequently uninstall the provider. Uninstalling a provider resets it back to its default configuration settings and makes it unavailable. To restart the provider, restart the application server; the provider will be restarted automatically.*

- **Configuration** — Configurable parameters for the provider.
- **Extensions** — Special actions exposed by the provider that are invoked only through the Management Console rather than by a script. Not all providers have extensions.

To invoke the extension:

Click the **Invoke Extension** button.

Configuring CiscoDeviceListX

1. Click the **CiscoDeviceListX** link to display the CiscoDeviceListX configuration page. Refer to Figure 56 *Provider Management Page* previously presented.

   The CiscoDeviceListX parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels.
- **PollInterval** — The interval in minutes between requests sent to CallManager to refresh device information (cache refresh).

2. To put configuration changes into effect, Click the **Update** button.

3. Click **Done** to return to the providers page.

Configuring H323Provider

Click the **H323Provider** link on the Providers page to configure the H323Provider.

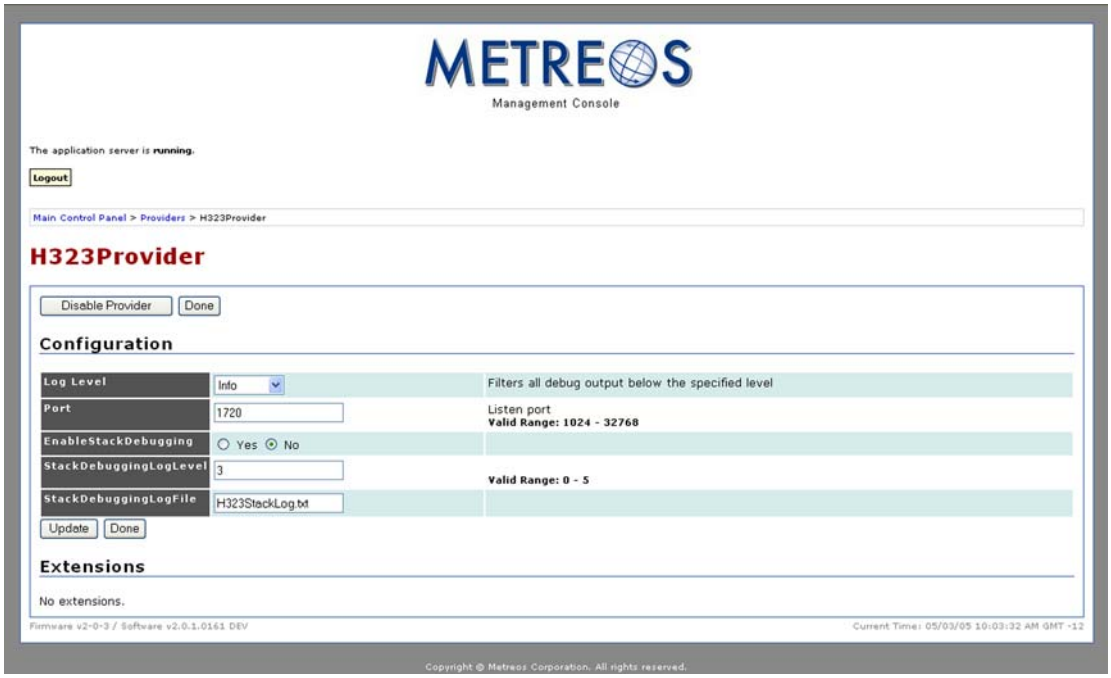

Figure 58: H323Provider Configuration Page

H323Provider parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels.
- **Port** — The number of the port on which H323 listens.
- **EnableStackDebugging** — Enables the StackDebugger, a tool that writes logs to a file for H.323 diagnostics.
- **StackDebuggingLogLevel** — Log level specifying the detail of logs written by the StackDebugger. Valid values are 0 – 5; 0 is no debugging, and 5 is maximum debugging.
- **StackDebuggingLogFile** — The name of the log file for the StackDebuggingLog function.

- **EnableProcessWindow** — Configures H323 to write debug output to a window rather than a log file.

1. To put configuration changes into effect, Click the **Update** button.

2. Click **Done** to return to the Providers page.

Configuring the HTTP Provider

Click the **HTTP** link on the Providers page to configure the HTTP Provider.

Figure 59: HTTP Provider Configuration Page

HTTP Provider parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels.
- **Name** — The name of the HTTP provider.
- **Port** — The number of the port on which the provider listens.
- **Session Expiration Minutes** — The number of inactive minutes before the session is automatically terminated.
- **Session Cleanup Minutes** — The interval between clean-up of resources for terminated sessions in minutes.

1. To put configuration changes into effect, click the **Update** button.

2. Click **Done** to return to the providers page.

Configuring JTapiProvider

JTAPI can use CTI ports and route points for first party calls. The devices configured in this section, however, are exclusively for monitoring third party calls.

Click the **JTapiProvider** link on the Providers page to configure JTapiProvider.

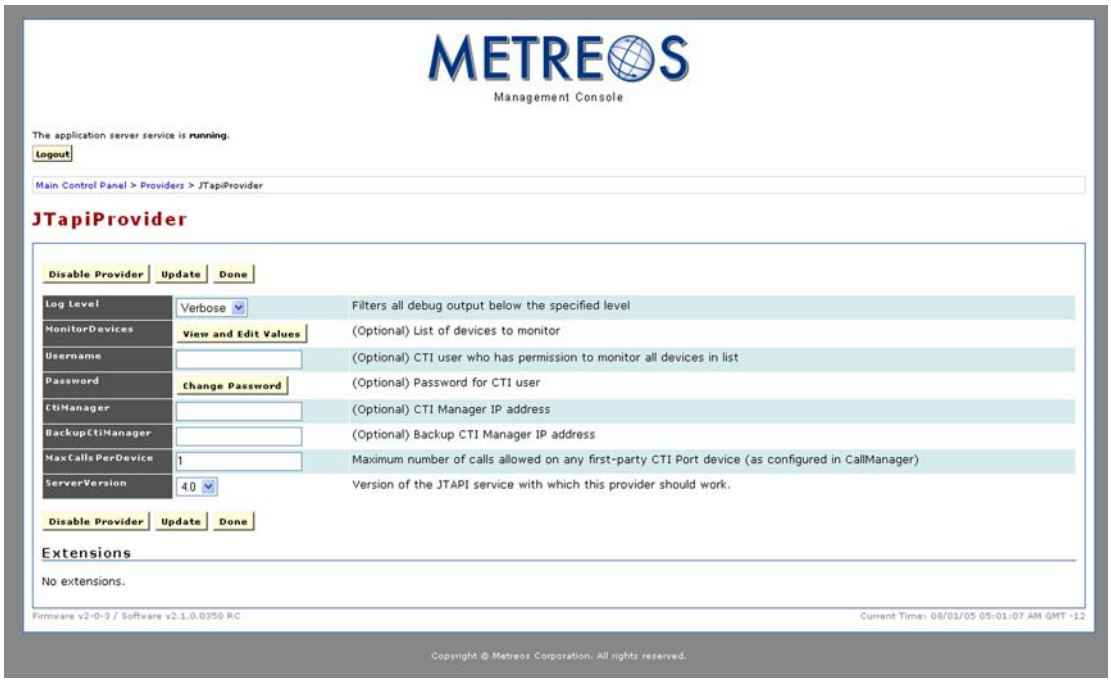

Figure 60: JTapi Provider Configuration Page

JTapiProvider parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels.
- **Monitor Devices** — Devices to monitor.

Clicking the **View & Edit Values** button launches the Monitor Devices page.

Figure 61: JTapi Provider Configuration Page

The value you specify in the **Values** field is the exact device name registered in CallManager for the devices you want to monitor.

- **Username** — Username having permission to monitor the specified devices.
- **Password** — Account password for user having permission to monitor the specified devices.

Clicking the **Change Password** button launches the Change Password page.

Figure 62: JTapi Provider Change Password Page

To change the password:

1. Enter the current password in the **Current Password** field.
2. Enter the new password in the **New Password** field.
3. Re-enter the new password in the **Re-enter New Password** field.

- **CtiManager** — The IP address for CTI Manager.
- **BackupCtiManager** — The backup IP address for CTI Manager.
- **MaxCallsPerDevice** — The maximum number of calls allowed on any first-party CTI Port device. This value must match the equivalent value in Cisco CallManager.

NOTE: *Route Points are not affected by this value.*

1. To put configuration changes into effect, Click the **Update** button.
2. Click the **Done** button to return to the Providers page.

Configuring MediaControlProvider

Click the **MediaControlProvider** link to configure the MediaControlProvider Provider.

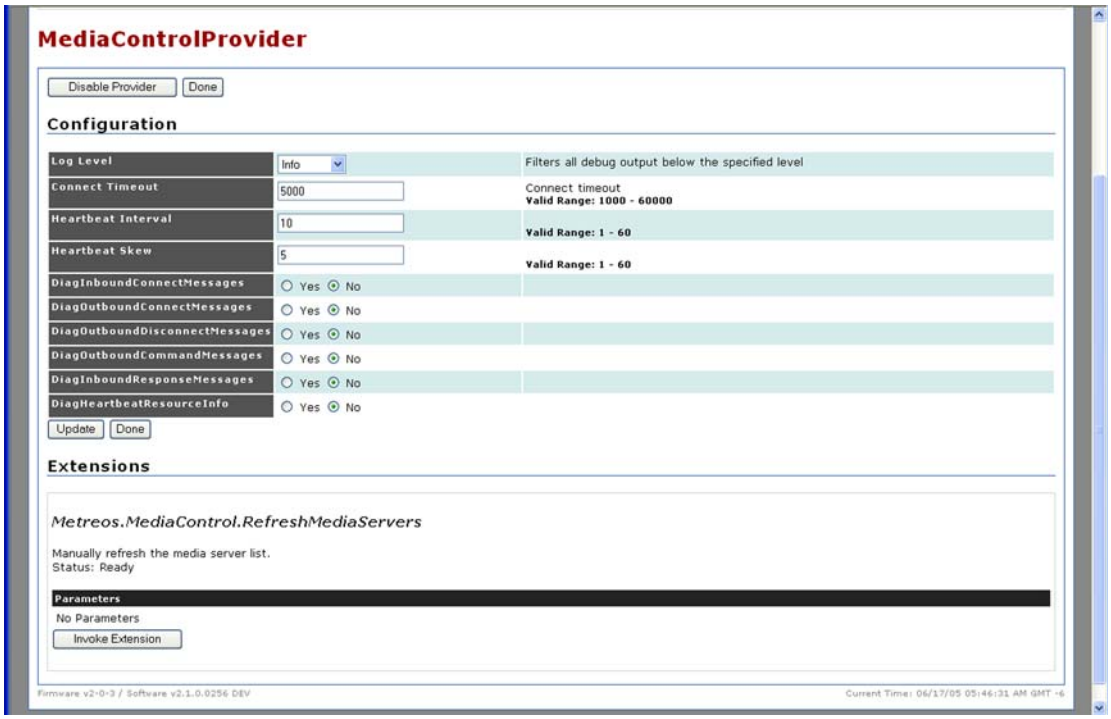

Figure 63: MediaControlProvider Page

MediaControlProvider parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels.
- **Connect Timeout** — The interval in milliseconds before a connection is deemed unsuccessful and the system attempts to retry the connection.
- **Heartbeat Interval** — The interval in seconds between heartbeat signals to a media server.
- **Heartbeat Skew** — The interval in seconds MediaControlProvider waits for a response to the heartbeat signal.
- **DiagInboundConnectMessages** — Writes inbound connect messages to the Log Server.
- **DiagOutboundConnectMessages** — Writes outbound connect messages to the Log Server.
- **DiagOutboundDisconnectMessages** — Writes outbound disconnect messages to the Log Server.
- **DiagOutboundCommandMessages** — Writes outbound command messages to the Log Server.
- **DiagInboundResponseMessages** — Writes responses to the Log Server.
- **DiagHeartbeatResourceInfo** — Writes heartbeat signal information to the Log Server.

Configuring TimerFacility

Click the **TimerFacility** link to configure the TimerFacility Provider.

Figure 64: TimerFacility Configuration Page

TimerFacility parameters are:

- **Log Level** — The type and amount of information you want the system to write to the log for each component. Refer to the *MCE Logs* in Table 1 on page 73 for supported levels.
- **TimerEventsEveryMinute** — Select **Yes** to generate a timer event every minute.
- **TimerEventsEveryHour** — Select **Yes** to generate a timer event every hour.
- **TimerEventsEveryDay** — Select **Yes** to generate a timer event every day.

Configuring Telephony Servers

Every IP telephony system must contain at least one telephony server. The Management Console provides a telephony server configuration page for adding and configuring telephony servers and devices on those servers. When you add a telephony server however, you must associate all of its devices with one or more *call route* groups.

Just as a media server group functions as a container for media servers, a call route group functions as a container for telephony devices. Each telephony device must belong to one or more groups.

NOTE: *Creating a call route group is optional because the system provides a default call route group you can use if multiple groups are not needed.*

To view the Telephony Servers page:

Click the **Telephony Servers** link on the Main Control Panel.

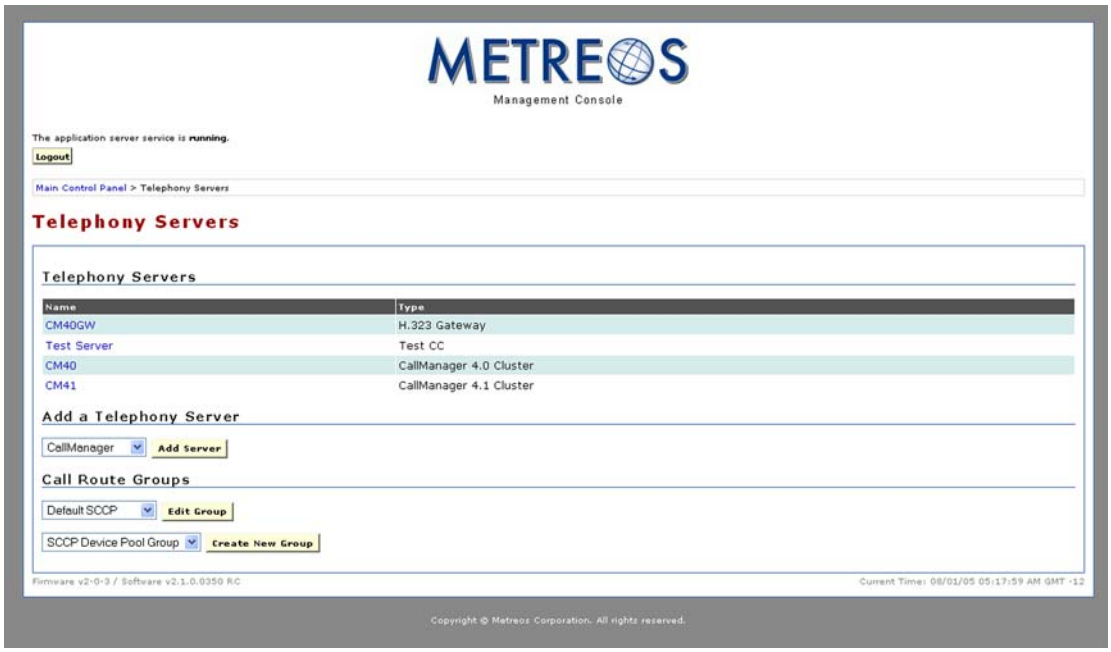

Figure 65: Telephony Servers Page

The application server currently supports three call control protocols:

- H.323
- CTI
- SCCP

It also supports two types of telephony servers:

- H.323 gateways — Telephony servers, which are used exclusively with H.323.
- CallManager — Multipurpose telephony server devices supporting SCCP and CTI in the Metreos system.

Creating H.323 Call Route Groups and Gateways

The following procedures describe the creation and configuration of H.323 call route groups and gateways. If a call route group other than the default group is required, you can create a new H.323 call route group using the following procedure.

1. Click the **Telephony Servers** link on the Management Console Main Control Panel. The system presents the **Telephony Servers** page.

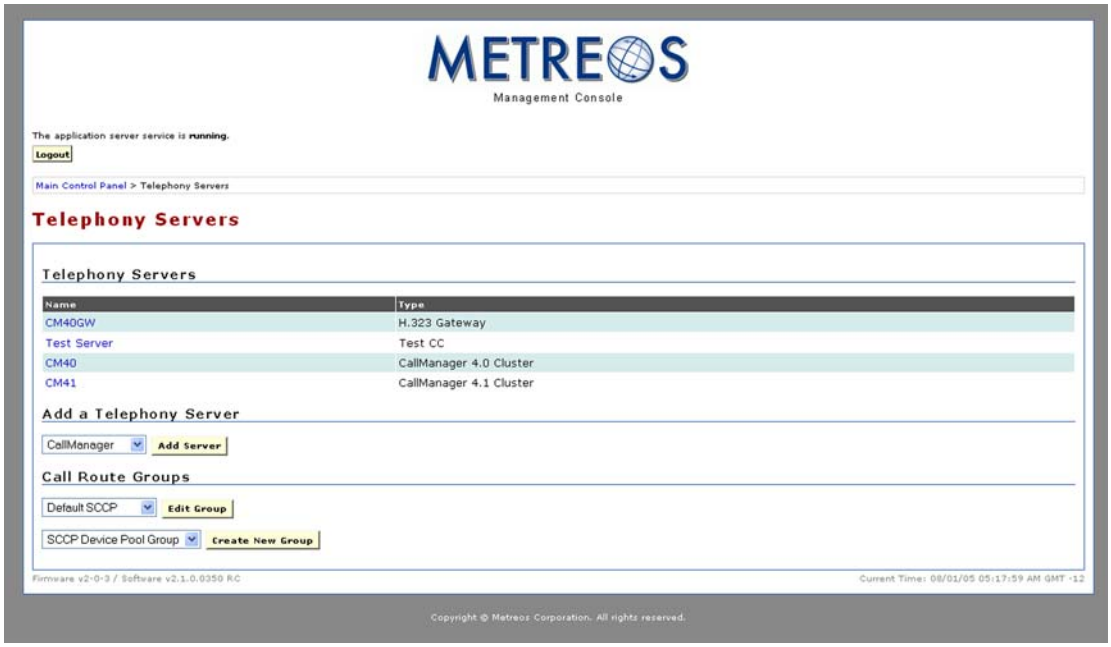

Figure 66: Telephony Servers Page

2. Select **H.323** from the **Create New Group** drop-down list.

3. Click the **Create New Group** button.

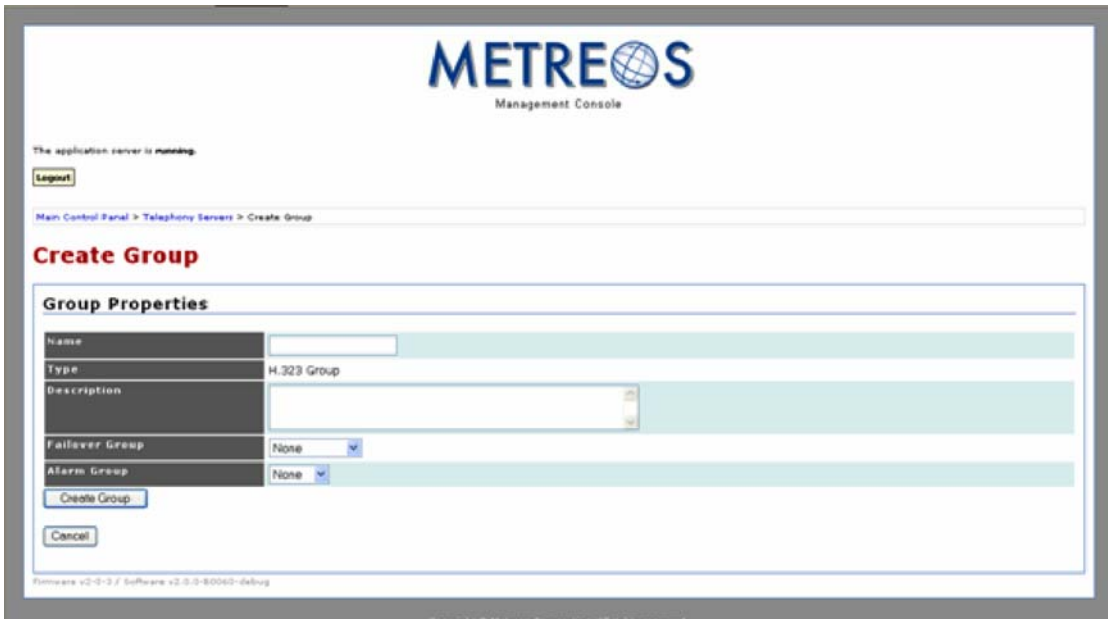

Figure 67: Configuring a New H323 Telephony Group

4. Enter the name of the group in the **Name** field.

5. Enter a description in the **Description** field.

6. If you want to specify a previously created failover group, select the group from the **Failover Group** drop-down list.

7. Select **Create Group**.

To create a H.323 Gateway:

1. Click the Telephony Servers link on the Main Control Panel.

Figure 68: Added H323 Telephony Group

Before adding a H.323 telephony server to a group, you must create a H.323 gateway. Because H.323 does not require static configuration of devices, the gateway is added to a call route group. All logical devices created during runtime will automatically be part of that same group.

To add a H.323 Gateway:

1. Select **H.323 Gateway** from the **Add Server** drop-down list on the Telephony Servers configuration page.

2. Click the **Add Server** button. The system displays the Add H.323 Gateway.

Figure 69: Configuring H323 Telephony Server

3. Enter the server name in the **Name** field.

4. Type the CallManager version in the **Version** field.

Note: *The MCE supports 3.3, 4.0, and 4.1. Enter only the first two digits of the version number, for example 4.0 not 4.0.1. If the gateway is not part of a CallManager installation, enter 1.0.*

5. Enter the IP address in the **IP Address** field.

6. Select the appropriate group from the **Add to Group** drop-down list.

7. Click the **Add H.323 Gateway** to create the server.

Figure 70: H323 Telephony Server Added

Creating CTI Telephony Devices

Computer Telephony Integration (CTI), unlike H.323, is an IP telephony protocol based on the notion of line-oriented telephony devices. This section describes how to set up and administer CTI ports and Route Points that are configured on a CTI Manager.

A CTI Route Point is a group unto itself. CTI ports are grouped into *Device Pools*. Both CTI ports and Route Points must have at least one CTI manager associated with them. Call route groups should contain exactly one Route Point or one Device Pool. Further, the application server will not allow a call route group containing a combination of Route Points and Device Pools.

CTI Route Points and Device Pools are contained within a CTI Manager and are associated with CTI Groups. The following procedures describe how to create:

- CTI Groups
- CTI Managers
  - CTI Route Points
  - CTI Device Pools

To create a CTI route group:

1. Click the **Telephony Servers** link on the Management Console Main Control Panel. The system displays the **Telephony Servers** page.

Figure 71: Telephony Servers Page

2. Select **CTI Server Group** from the **Create New Group** drop-down list.

3. Click the **Create New Group** button.

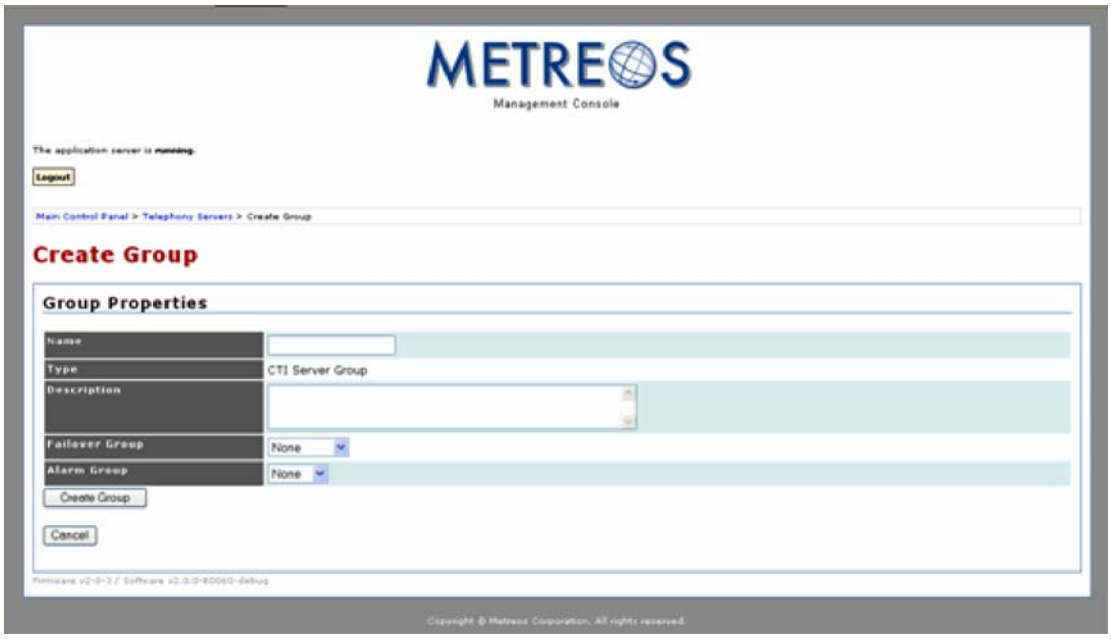

Figure 72: Configuring a New CTI Telephony Group

4. Enter the name of the group in the **Name** field.

5. Enter a description in the **Description** field.

6. If you want to specify a previously created failover group, select the group from the **Failover Group** drop-down list.

7. Click the **Create Group** button.

Figure 73: New CTI Telephony Group Created

8. Click the **Done** button.

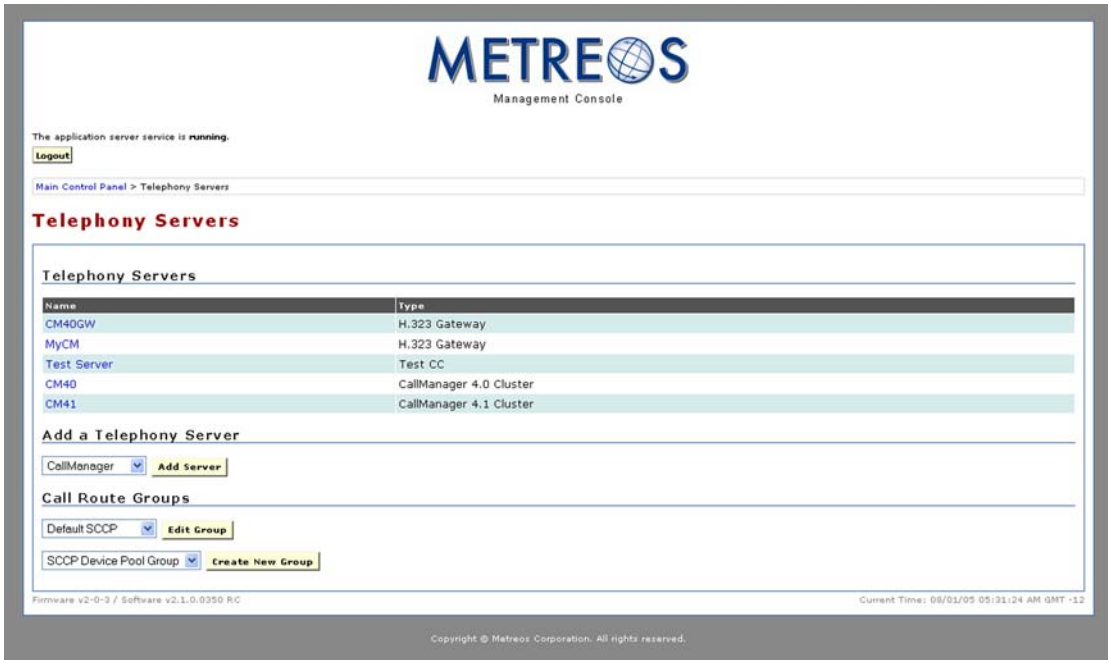

Figure 74: New CTI Telephony Group Added

Metreos CTI clusters are known as *CallManager clusters*. You can create a CallManager cluster and associate it with the new group.

1. Ensure **CallManager** is displayed in the **Add Server** drop-down menu and click the **Add Server** button:

Figure 75: Configuring a New CallManager

2. Enter the server name in the **Name** field.

3. Type the CallManager version in the **Version** field.

NOTE: *The MCE supports 3.3, 4.0, and 4.1. Enter only the first two digits of the version number, for example 4.0 not 4.0.1. If the gateway is not part of a CallManager installation, enter 1.0.*

4. Enter the IP address in the **Publisher IP Address** field.

5. Enter the password for the Publisher Administrator.

6. Click the **Create CallManager Cluster**.

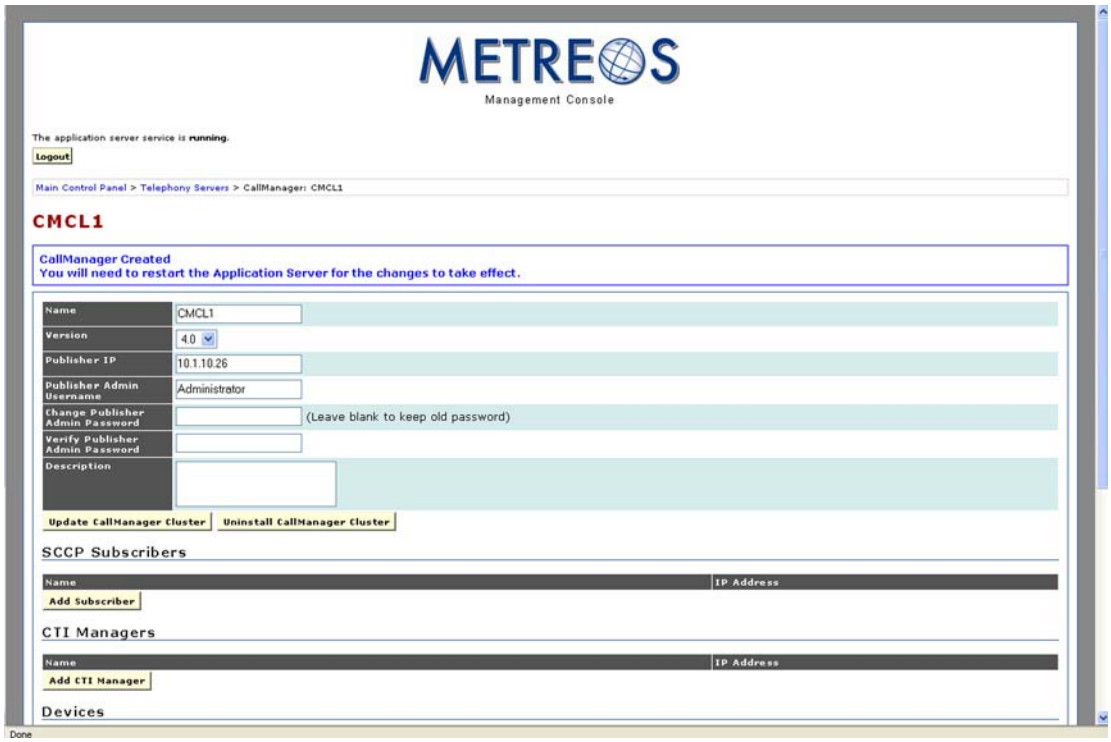

Figure 76: New CallManager Created

You can now create CTI devices.

To create a CTI manager:

1. Click the **Add CTI Manager** button.

Figure 77: Configuring a New CTI Manager

2. Enter the manager name in the **Name** field.

3. Enter the IP address in the **IP Address** field.

4. Click the **Add CTI Manager**.

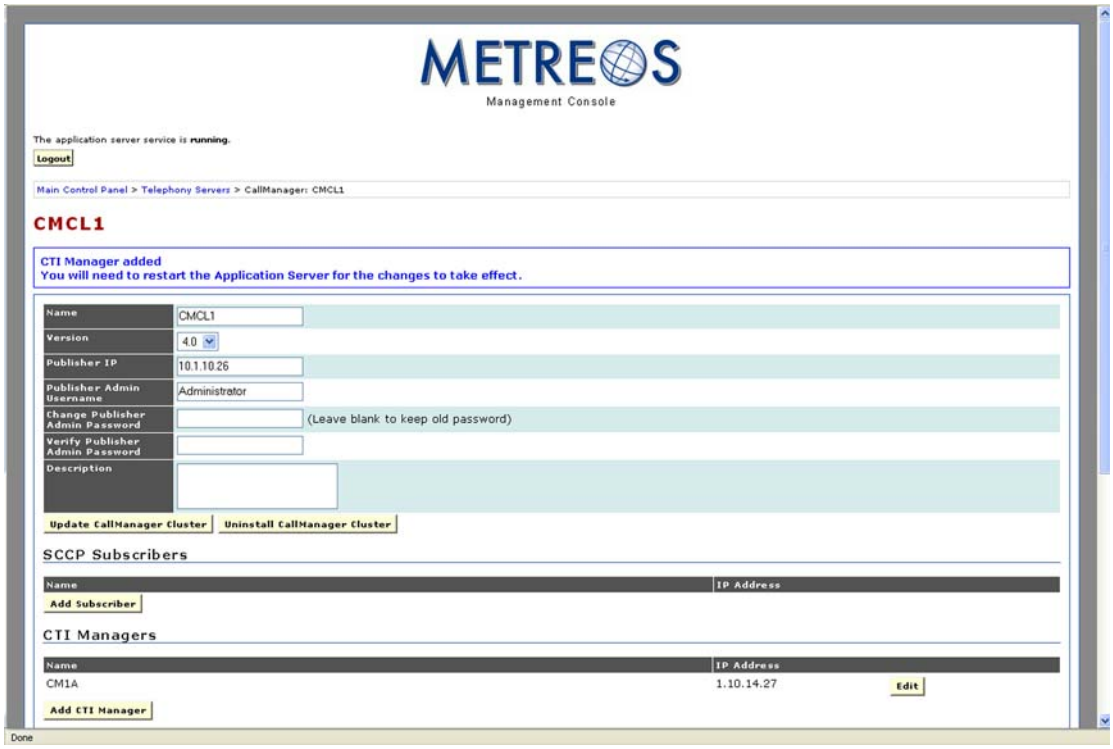

Figure 78: New CTI Manager Added

You can now create devices the manager will contain.

To create a Device Pool:

1. Click the **Create CTI Device Pool** button.

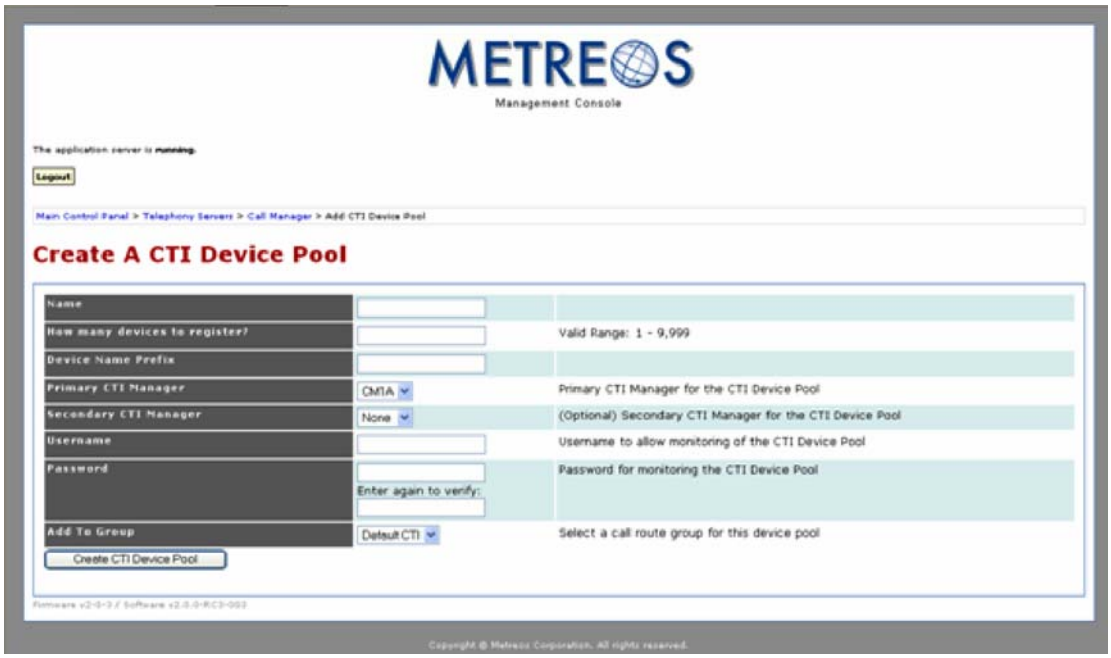

Figure 79: Configuring a New CTI Device Pool

2. Enter the name of the pool in the **Name** field.

3. Enter the number of devices in the pool in the **How Many Devices to Register?** field.

4. For every device created within the Device Pool, the runtime will assign a name constructed by concatenating a prefix you designate with a sequentially assigned number. For example, designating a prefix of MyDevice results in a name of MyDevice1 for the first device and MyDevice2 for the second device. Enter a designated prefix for the devices in your pool in the **Device Name Prefix** field.

5. Select the CTI manager you previously created from the **Primary CTI Manager** pull-down menu.

6. If you want a secondary CTI manager to be available for the Device Pool, create a new CTI manager and select it from the Secondary **CTI Manager** pull-down menu.

7. Enter the name of a user with permission to control the all of the CTI devices in the pool in the **Username** field.

8. In the **Password** field, enter the password for the user account in the **Username** field.

9. Select the group you created from the **Add To Group** pull-down menu.

10. Click the Create CTI Device Pool.

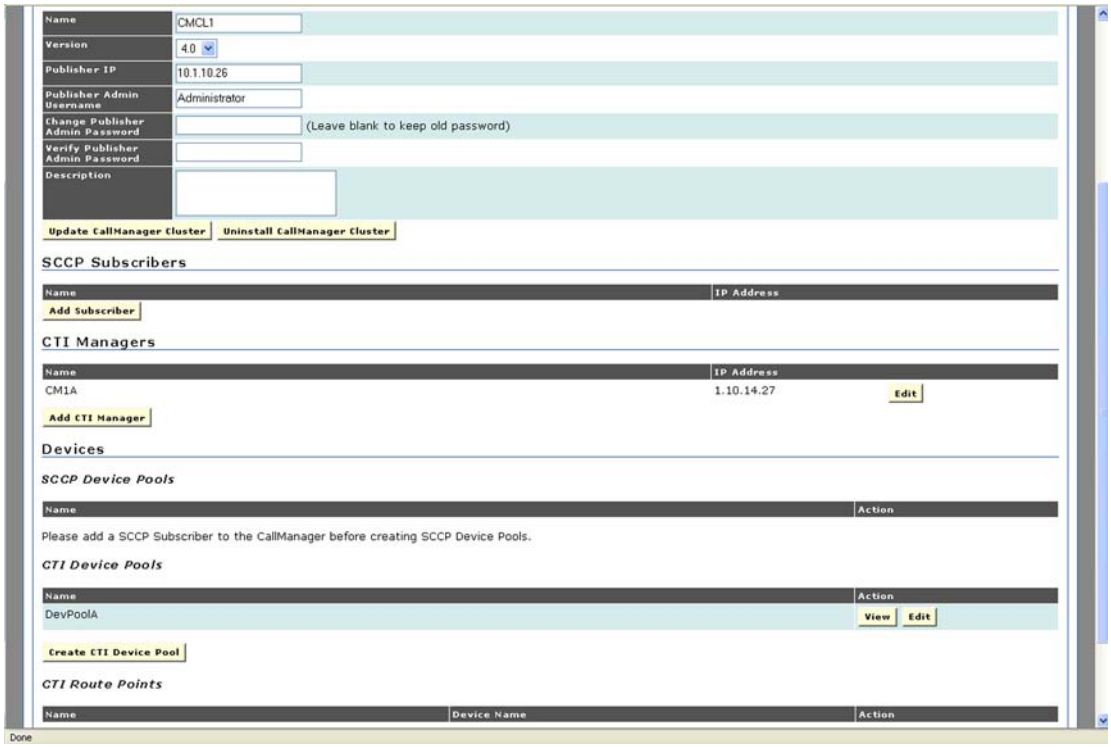

Figure 80: New CTI Device Pool Created

You can also create a Route Point, as follows:

1. Click the **Create CTI Route Point** button.

Figure 81: Configuring a New CTI Route Point

2. Enter the name of the Route Point in the **Name** field.

3. Enter the device name from Cisco CallManager in the **Device Name** field.

4. Ensure that the CTI Manager you previously created is selected from the **Primary CTI Manager** pull-down menu.

5. If you want a secondary CTI manager, create a new CTI Manager and select it from the **Secondary CTI Manager** pull-down menu.

6. In the **Username** field, enter the name of a user with permission to control the individual responsible for monitoring the Route Point.

7. In the **Password** field, enter the password for the user account in the previous **Username** field.

8. Select the group you created from the **Add To Group** pull-down menu.

9. Click the **Create CTI Route Point** button.

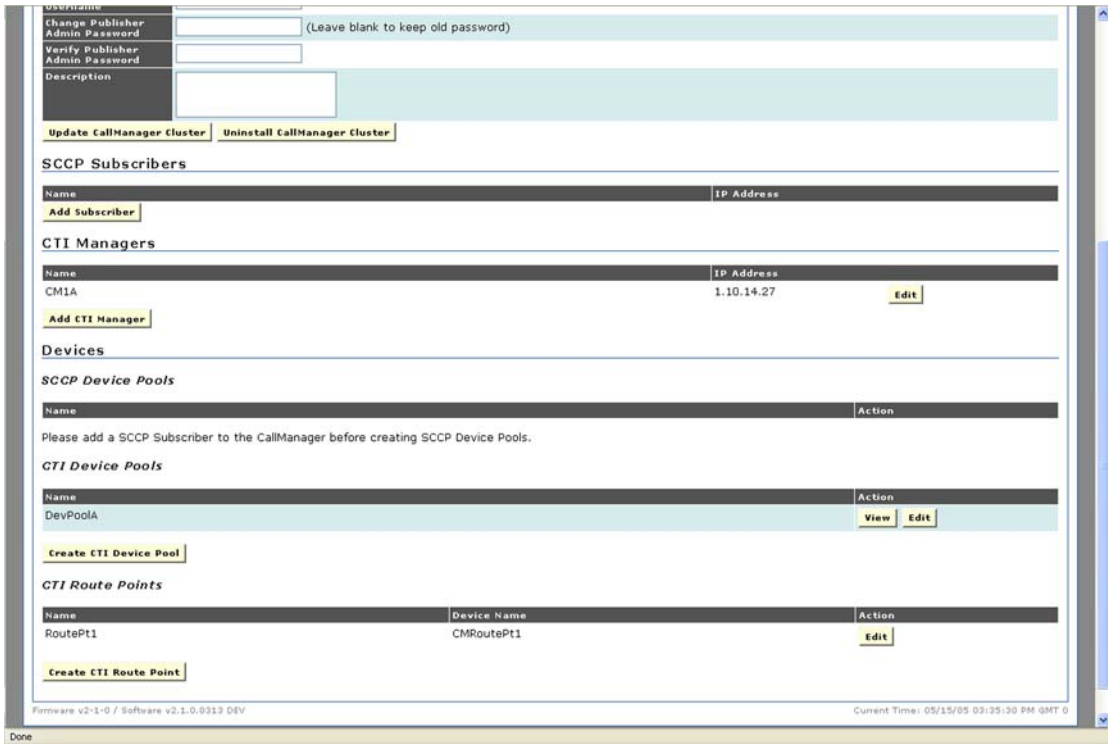

Figure 82: New CTI Route Point Created

You can view and edit any of these devices by clicking any of the **View** and **Edit** buttons associated with them.

Configuring SCCP Devices

If you have applications that require the use of SCCP devices, you must create and configure at least one SCCP device pool to contain your SCCP devices. To create a device pool you must first add a subscriber to CallManager, as follows:

1. Click the **Telephony Servers** link on the Management Console Main Control Panel. The system displays the **Telephony Servers** page.

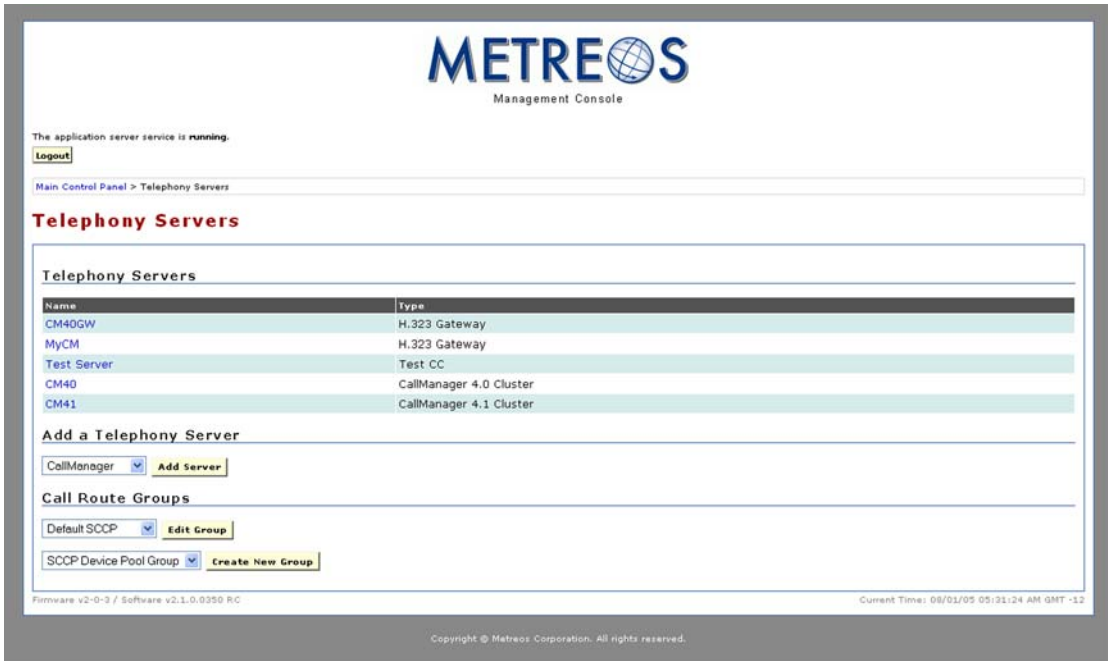

Figure 83: Telephony Servers Page

2. In the Telephony Servers section click the telephony server link you want to add as a SCCP subscriber.

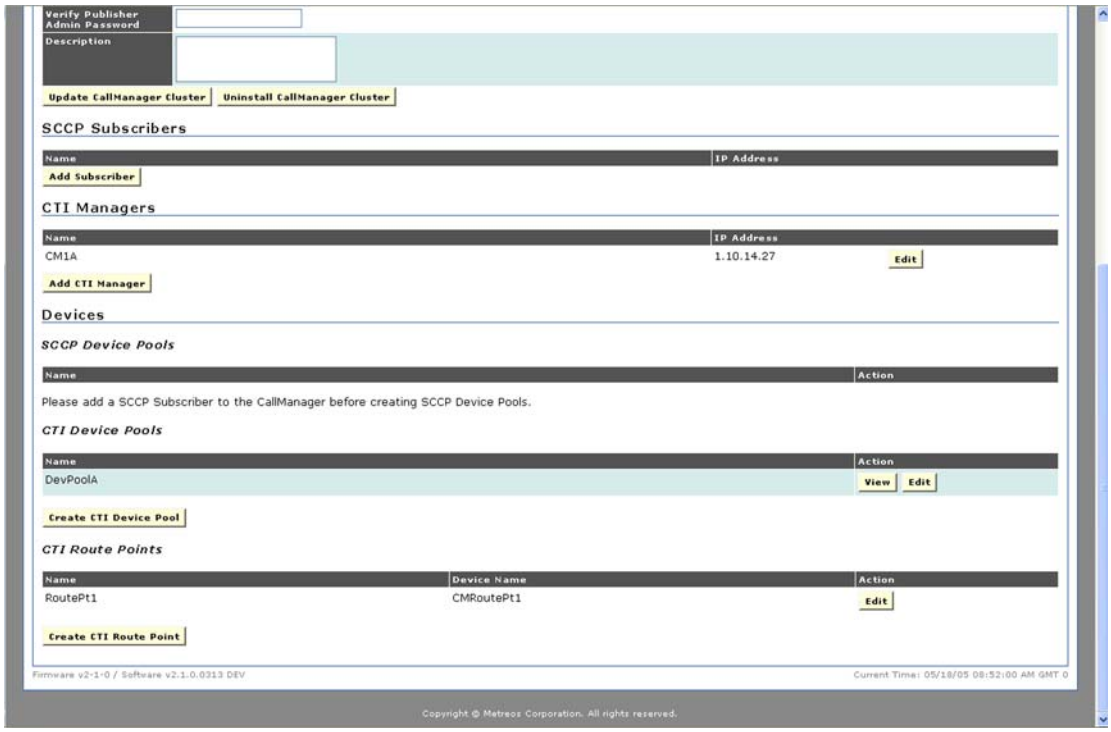

Figure 84: Telephony Server Configuration Page

3. Click the **Add Subscriber** button located in the SCCP Subscribers section.

Figure 85: Create a Subscriber Page

4. Enter the subscriber Name in the **Name** field.

NOTE: *You must create a subscriber on an existing CallManager cluster.*

5. Enter the Subscriber IP address in the **IP Address** field.

6. Enter the Subscriber password in the **Password** field.

7. Re-enter the Subscriber password in the **Verify Password** field.

8. Click the **Add Subscriber** button. The system return the Telephony Server Configuration page for the subscriber you created.

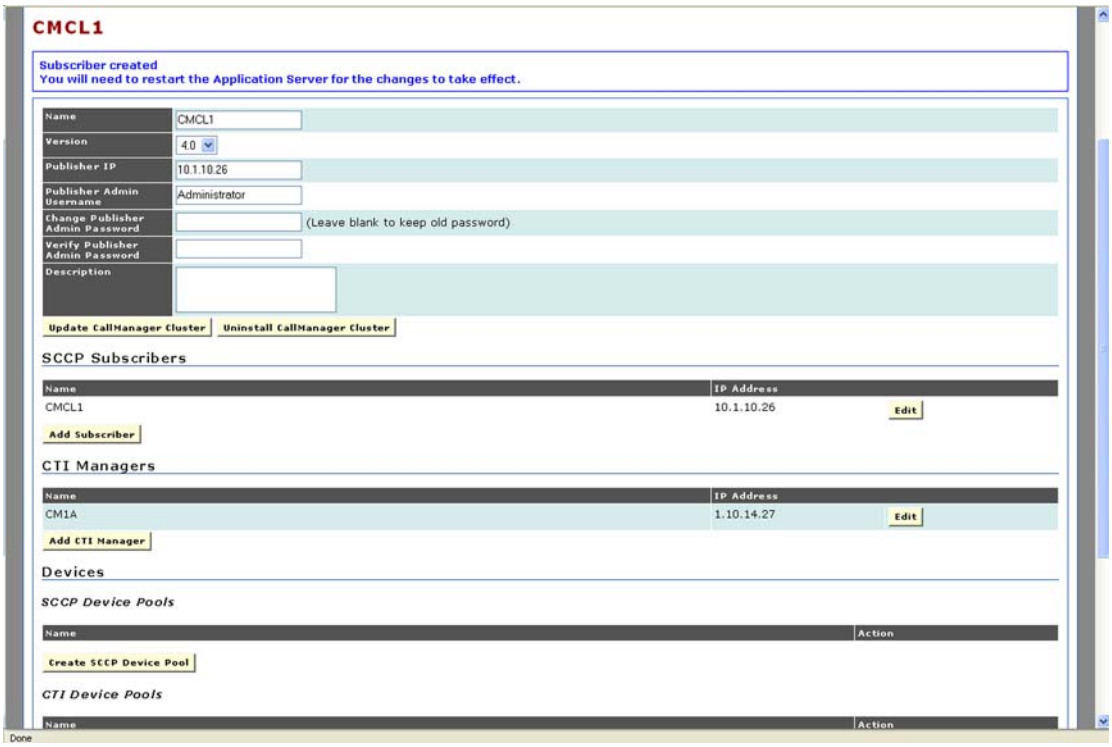

Figure 86: Telephony Server Configuration Page With Newly created Subscriber

You can now create a device pool on the subscriber you created to contain your SCCP devices.

To create the device pool:

1. Click the **Create SCCP Device Pool** button in the SCCP Device Pools section.

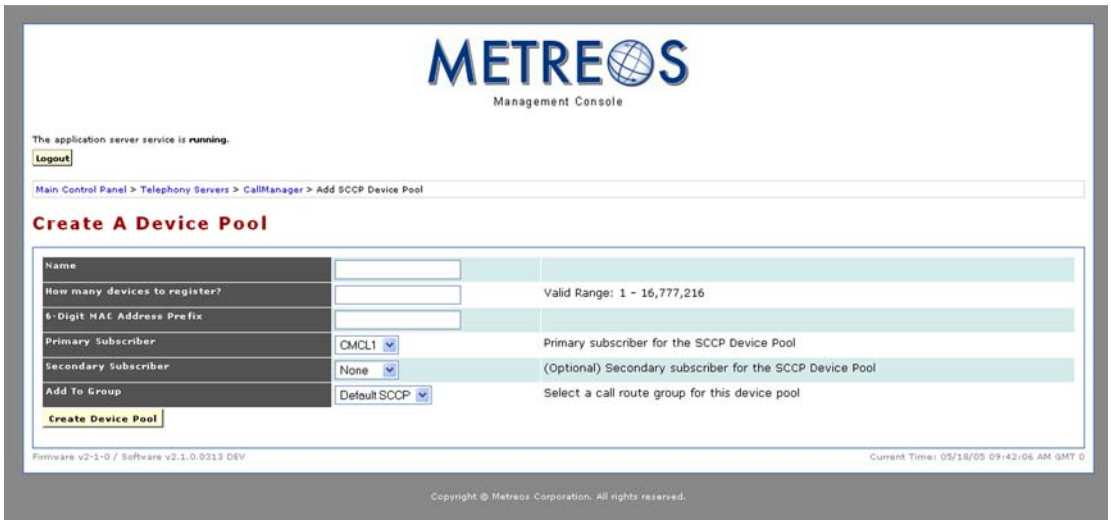

Figure 87: Create Device Pool Page

2. Enter the device pool name in the **Name** field.

3. Enter the number of devices the device pool will contain in the **How many devices to register?** field.

   Each device contains a 12 digit MAC address to uniquely identify it. The Create a Device Pool page allows you to specify the first six digits of the MAC address for every device in the pool.

   The application server registers all of the devices in the device pool with the specified CallManager subscriber, assigning the last six digits of the MAC address for each device sequentially beginning with **000000**.

   The device is then identified by a 12 digit MAC address constructed by the concatenation of the 6 digits you assigned, and the sequential number appended automatically by the application server.

4. Add the MAC address prefix you want to designate for this device pool.

5. Select the subscriber you created using the previous procedure from the **Primary Subscriber** drop-down list.

6. If you want to associate the device pool with a second subscriber select the subscriber from the **Secondary Subscriber** drop-down list.

7. Select the group to which you want to add this device pool from the **Add to Group** drop-down list.

8. Click the **Create Device Pool** button.

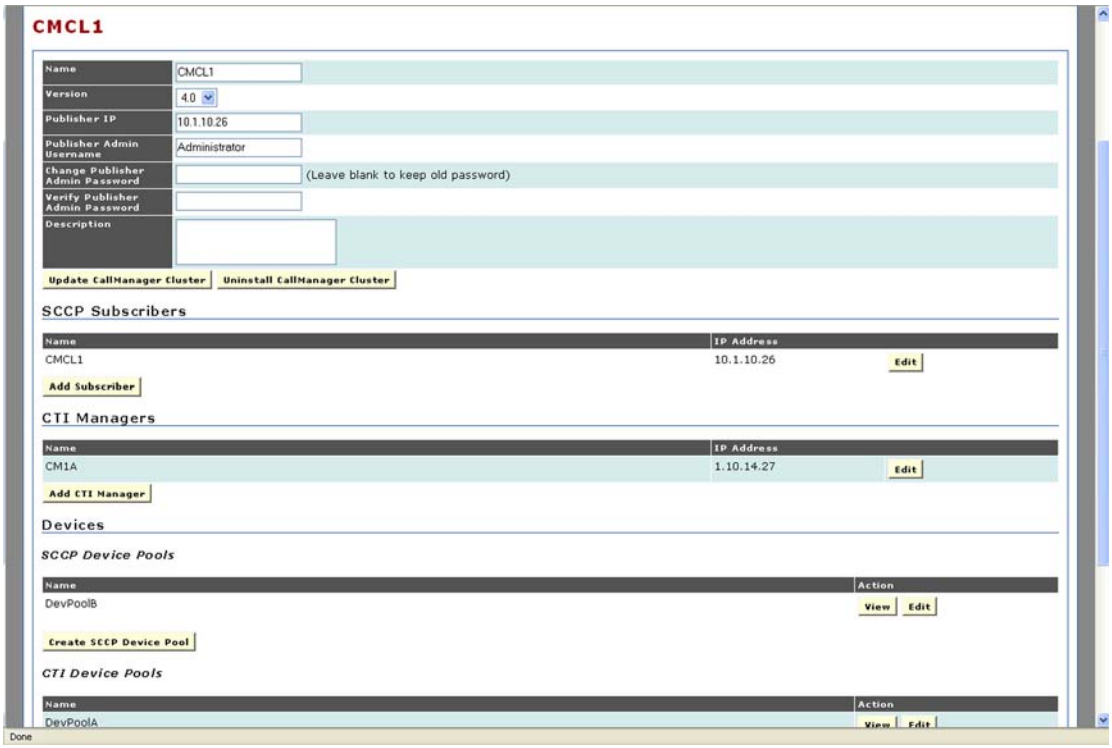

Figure 88: Telephony Server Configuration Page with Newly Created SCCP Device Pool

Configuring RTP Relay

With the release of MCE 2.2 you can more securely extend your IP network beyond your firewall to remote locations as shown in the following diagram.

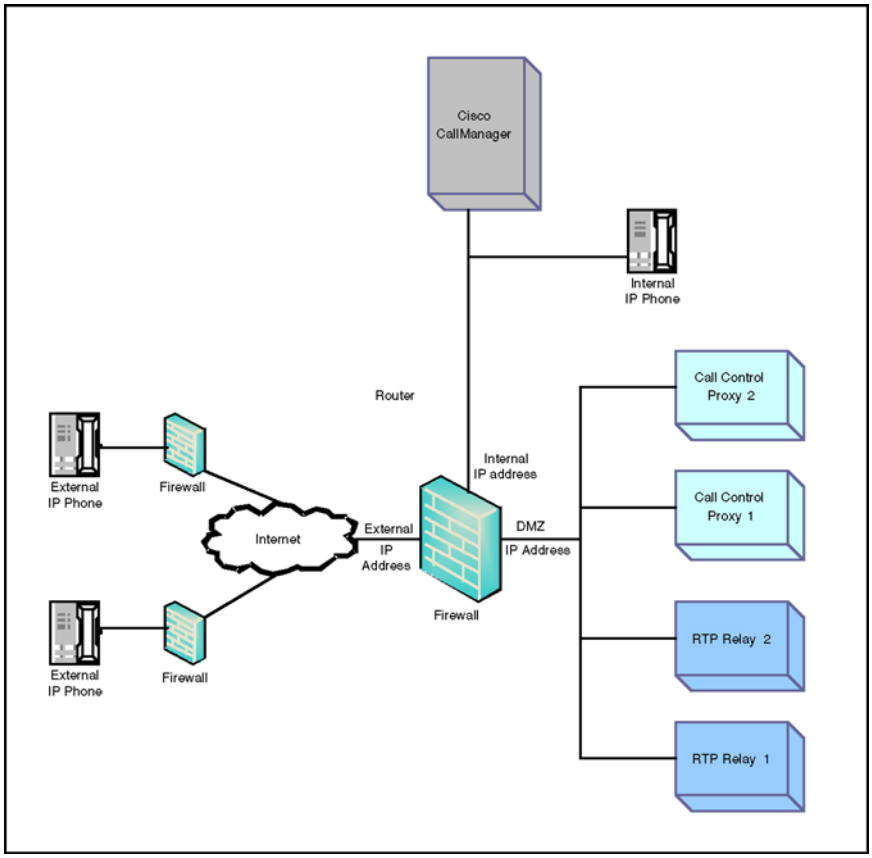

Figure 89: RTP Relay Network Diagram

When a call is received through a SCCP connection, the call is noted by SccpProxyProvider. SccpProxyProvider then defers authentication of the call to Cisco CallManager and seamlessly proxies the device registration and the response.

The *only* SCCP messages that SccpProxyProvider modifies are those related to media. In such cases it replaces the endpoint media addresses with media addresses on the RTP relay server. The RTP relay server then relays media information between the call endpoints.

Click the **RTP Relay** link from the Main Control Panel to configure the RTP relay server.

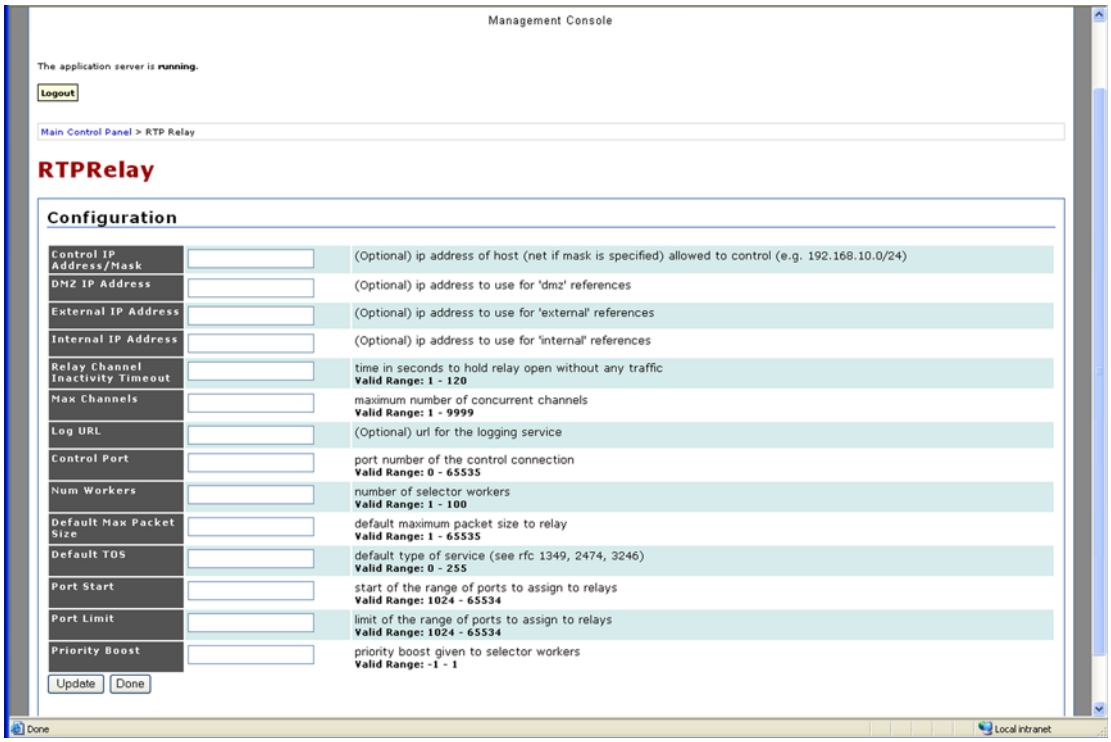

Figure 90: RTP Relay Configuration Page

The **Control IP Address** field allows increased security by adding a bit mask to the DMZ IP address. To add the bit mask, append a forward slash (/) followed by the bit mask number to the DMZ address as shown in the following example: 12.1.10.0/32.

All parameters on the configuration page are initially set to a default value except for the IP addresses, which you provide. Metreos recommends using these default values.

Metreos Logs

The MCE provides three logs containing diagnostic information:

- Server Logs — Containing information about server activity.
- Event Log — Containing information about system events (e.g. H.323 stack is unavailable).
- Audit Log — All MCE activity.

MCE supports the concept of log level filtering. The log level determines the amount of recorded detail about logged events. The following table describes the supported Log Levels.

Log Level	Description
Off	No logging
Error	Writes only error messages to the log
Warning	Writes only warning and error messages to the log
Information	Writes warning, error, and terse information messages about events to the log
Verbose	Writes warning, error, and detailed information messages about events to the log

Table 1: Log Level Settings

METREOS

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