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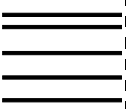
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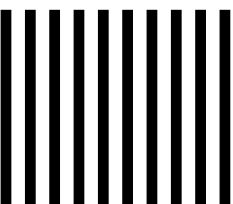
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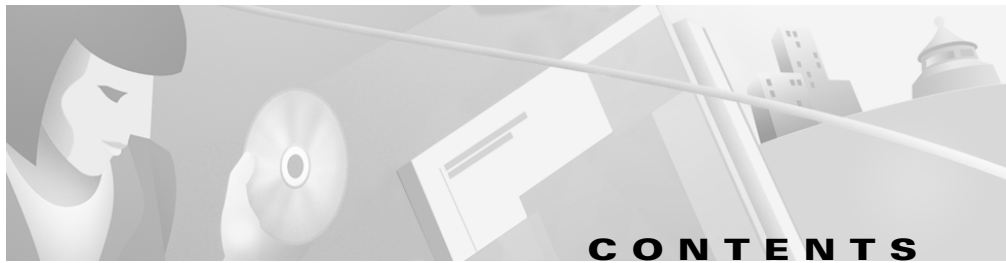
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Preface

This preface describes who should read the *Cisco CDN Software Enterprise Solution User Guide*, how it is organized, and its document conventions.

The chapter contains the following sections:

- Document Objectives, page x
- Audience, page x
- Organization, page xi
- Conventions, page xi
- Related Documentation, page xiii
- Obtaining Documentation, page xiii
- Obtaining Technical Assistance, page xv

Document Objectives

This user guide provides detailed information about the Cisco Content Delivery Network (CDN) for network administrators and media managers. The document is designed to be used as a reference in your everyday work. The person responsible for managing the CDN Content Distribution Manager (CDM) and Content Engines (CEs) should be experienced with the following topics:

- PC operating systems and conventions
- LAN environments
- TCP/IP
- Media formats

This user guide provides step-by-step instructions for using the CDN software. It assumes that the CDM and CEs are physically present and have been installed and activated, as outlined in the *Cisco CDN Software Enterprise Solution Configuration Guide*.

Audience

This guide is intended for system administrators who are going to install and configure the Cisco Content Delivery Network. Administrators should be familiar with the following topics:

- Hardware installation and configuration
- Internet browsers
- Media players

Organization

This document is organized in the following manner:

Chapter	Title	Description
Chapter 1	Introducing the Cisco Content Delivery Network Software	Contains an overview of the Cisco Content Delivery Network.
Chapter 2	Configuring Cisco Content Delivery Network Devices	Describes how to use the CDM to configure and maintain devices on your CDN.
Chapter 3	Working with the Content Delivery Network	Describes how to use the CDM interface to establish, populate, and maintain content channels.
Chapter 4	Maintaining the System Software	Introduces basic system maintenance procedures such as resetting devices, updating software, and consulting system logs.
Appendix A	Error Messages	Documents CDM error messages and workarounds for common problems.

Conventions

This document uses the following conventions:

Convention	Description
boldface font	Commands and keywords are in boldface .
<i>italic font</i>	Arguments for which you supply values are in <i>italics</i> .
[]	Elements in square brackets are optional.
{ x y z }	Alternative keywords are grouped in braces and separated by vertical bars.

Convention	Description
[x y z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	An unquoted set of characters. Do not use quotation marks around the string, or the string will include the quotation marks.
screen font	Terminal sessions and information the system displays are in <i>screen font</i> .
boldface screen font	Information you must enter is in boldface screen font .
<i>italic screen font</i>	Arguments for which you supply values are in <i>italic screen font</i> .
→	This pointer highlights an important line of text in an example.
^	The symbol ^ represents the key labeled Control—for example, the key combination ^D in a screen display means hold down the Control key while you press the D key.
< >	Nonprinting characters, such as passwords, are in angle brackets.

Notes use the following conventions:



Note

Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the publication.

Related Documentation

The Cisco Content Delivery Network software comes with both printed documentation and online help to assist you in learning to use the features of the CDN. Refer to the following documents when you have questions regarding the CDN software:

- *Cisco CDN Software Enterprise Solution Configuration Guide*
- *Release Notes for the Cisco CDN Software Enterprise Edition*
- *SightPath to Cisco Hardware Migration Procedure*
- Cisco CDN online help system

In addition, you can find information related to the installation, configuration, and maintenance of your CDN hardware in the following Cisco Systems documents:

- *Cisco Content Engine 500 Series Hardware Installation Guide*
- *Cisco Content Networking Hardware Installation Guide for the Seven-Rack Unit Chassis*
- *Regulatory Compliance and Safety Information for the Cisco Content Networking Product Series*
- *Cisco Content Distribution Manager 4630 Hardware Installation Guide*
- *Cisco Content Distribution Manager 4650 (Product Description Notes)*

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following sites:

- <http://www.cisco.com>
- <http://www-china.cisco.com>

- <http://www-europe.cisco.com>

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

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Cisco documentation is available in the following ways:

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We appreciate your comments.

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Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools. For Cisco.com registered users, additional troubleshooting tools are available from the TAC website.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information and resources at anytime, from anywhere in the world. This highly integrated Internet application is a powerful, easy-to-use tool for doing business with Cisco.

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Customers and partners can self-register on Cisco.com to obtain additional personalized information and services. Registered users can order products, check on the status of an order, access technical support, and view benefits specific to their relationships with Cisco.

To access Cisco.com, go to the following website:

<http://www.cisco.com>

Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

<http://www.cisco.com/tac>

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

<http://www.cisco.com/register/>

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

<http://www.cisco.com/tac/caseopen>

Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.

P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.



Introducing the Cisco Content Delivery Network Software

The Cisco Content Delivery Network (CDN) allows organizations to maximize the impact of Web communications by making possible the rapid delivery of high-quality video, rich audio, large graphics, presentations and documents over corporate wide-area and local-area networks.

This document provides instructions on the use and administration of your CDN, including the Content Distribution Manager (CDM), a Web-based interface that is the main conduit to the network for users and administrators. The CDM includes features for configuring new devices and users on the CDN, creating and populating content channels, allocating bandwidth, viewing media over the CDN, and more.

This chapter provides a basic conceptual and functional overview of the CDN, including the CDM and Content Engines (CEs) that make up the CDN, as well as the architecture (SODA) that enables the CDN to efficiently route content.

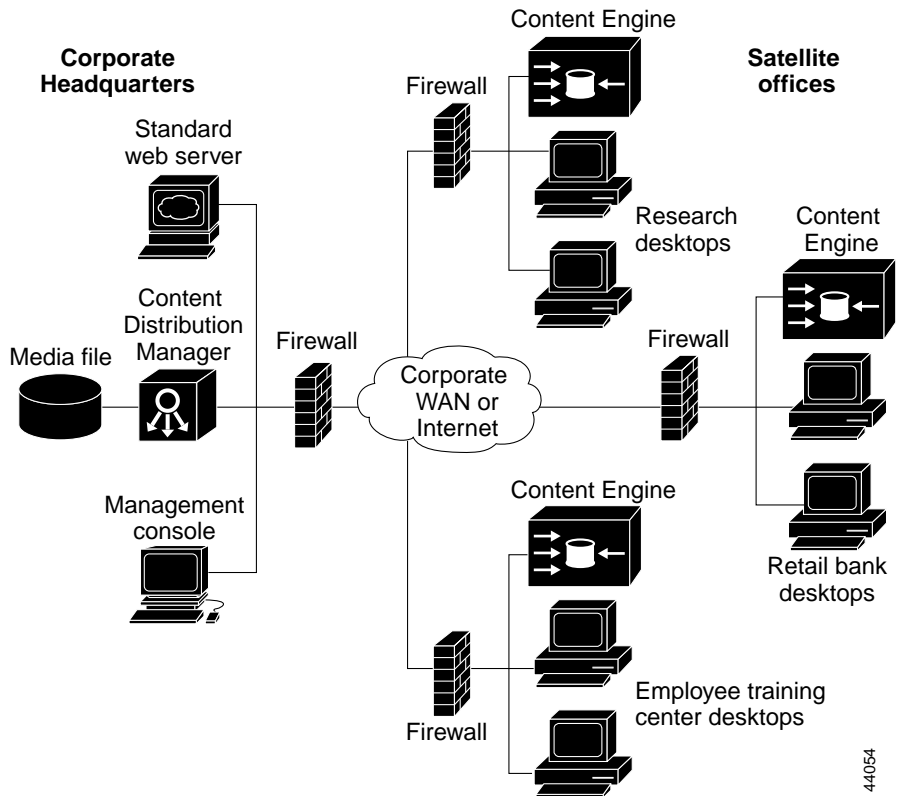
This chapter contains the following sections:

- CDN Software Overview, page 1-2
- CDN-Supported Media, page 1-5
- Media Distribution, page 1-5

CDN Software Overview

Using the CDN (See Figure 1-1), Internet devices take advantage of the Self-Organizing Distributed Architecture (SODA) to efficiently route high bandwidth content. SODA enables your organization to leverage existing bandwidth to deliver high-quality media to the desktops of target audiences within your organization.

Figure 1-1 Cisco Content Delivery Network



Self-Organizing Distributed Architecture Overview

The Self-Organizing Distributed Architecture (SODA) is a proprietary technology that utilizes sophisticated algorithms to efficiently route high-bandwidth media over office networks or even over the Internet. The foundation of the Cisco CDN software, SODA eliminates network bottlenecks that often accompany large multimedia streaming products.

From your Web browser, you select the media you wish to review. CEs deliver the media to your desktop without the typical delays and latency associated with high-bandwidth media streaming through a data network. All you need is a standard Web browser and media player, such as Internet Explorer and Windows Media Player.

To take advantage of the SODA technology, you must have established a CDM and at least one CE on your office LAN. The CDN is scalable to multiple sites through the addition of CEs to the network.

Content Distribution Manager Overview

The Content Distribution Manager (CDM) connects to your corporate data network and replicates media to the connected CEs located across your LAN. The CDM:

- Controls devices
- Manages media
- Controls redirection of media requests

The CDM provides control of media replication. Through a browser-based interface, you specify how much bandwidth is to be used for media replication. With the content channels feature, content can be organized into manageable channels that replicate media to distribution lists.

Through the interface you can:

- Configure network settings for the CDM and CEs
- Specify bandwidth parameters for replicating media to the CEs and streaming media from the CEs
- Import media files to the CDM
- Set replication guidelines

Access the CDM interface from your browser by typing the CDM URL or IP address.

Content Engine Overview

A plug-and-play device, the Content Engine (CE) supports many concurrent streams of MPEG video or other rich media types. As a remote device attached to your company's LAN, the CE identifies itself to the CDM and is subscribed to one or more content channels using the CDM's Subscriber feature. Once subscribed, CEs begin receiving media files for each channel from the CDM. Media files are stored locally on the CE and streamed to end user desktops on demand.

When end users request a media file from the CDM, the CE receives redirection commands from the CDM and streams media on request to the desktop locally. Using the SODA technology, CEs are able to calculate the fastest route for distributing media to viewers, and to optimize the allocation of network bandwidth for content replication.

Coverage Zones

Decisions about which devices on your CDN serve a particular request for content are made by the CDN software using a powerful organizing model. In the simplest scenario, requests from workstations on the CDN are routed to the nearest CE on their network. However, CDN administrators can also override the CDNs default settings and influence content routing through the deployment of "preferred coverage zones" and "regular coverage zones" for your CEs and CDM.

Preferred coverage zones are ranges of IP addresses assigned to CEs or the CDM. When a request for content originates from an address within the preferred coverage zone of a device, that device (which could be a CE or the CDM) is directed to serve that request.

All requests originating from outside the preferred coverage zones for your CDN devices are processed by the nearest device. The "nearness" of a device is derived from the local network segment each device is on, as determined by its IP address and network mask.

When content requests originate from addresses that are covered by more than one preferred coverage zone or regular coverage zone, the CDM chooses from among the qualified CEs in serving the request.

CDN-Supported Media

The CDN supports standard media file types, including:

- Motion Picture Experts Group (MPEG-1)
- MPEG-2
- RealMedia
- Apple QuickTime
- Graphics Interchange Format (GIF)
- Shockwave
- ASF/ASX (Windows media)
- Joint Photographic Experts Group (JPEG)
- HTML
- Synchronized Multimedia Integration Language (SMIL)

Any standard media format can be imported and distributed using the CDN.

Media Distribution

From a CDM, you can import and replicate, or distribute, your media files through the CDN to CEs. The network uses standard Internet TCP/IP protocols for all communication.

Media is imported to the CDM in an efficient manner and is downloaded to CEs according to bandwidth constraints you set. Using a Web browser, your users can view these media files on their PCs.

All transfers are fault-tolerant. This means that if a file transfer is interrupted, the replication process picks up where it left off, rather than resending the entire channel.



Configuring Cisco Content Delivery Network Devices

This chapter provides information on configuring your CDN devices, including the CDM and CE, as well as creating user accounts and setting parameters for media replication and playback.



Note

You should have already unpacked your CDM and CE hardware, as well as activated your CDM. Refer to the *Cisco CDN Software Enterprise Solution Configuration Guide* for more information on completing these preliminary steps before continuing with this chapter.

This chapter contains the following sections:

- Verifying Content Distribution Manager Configuration, page 2-2
- Configuring Content Delivery Network Devices, page 2-3
- Adding, Removing, and Modifying Users, page 2-27

Verifying Content Distribution Manager Configuration

Before attempting to log on to your CDM, you must have first activated the CDM by following the procedure outlined in Chapter 2 of the *Cisco CDN Software Enterprise Solution Configuration Guide*.

Directions for logging on to your CDM, verifying configuration settings, and if necessary, modifying configuration settings follow.

-
- Step 1** Open the CDM user interface from your Web browser by entering the URL or IP address for the CDM. For example, from your browser, enter:

```
http://name_of_Content_Distribution_Manager
```

or

```
http://IP_address_of_Content_Distribution_Manager
```

If a dialog box appears requesting your username and password, the CDM was successfully activated and is up and running on your network.

- Step 2** Enter the default administrator username and password as follows, and then click **OK**:

```
User name: admin
```

```
Password: default
```

The Cisco CDM window appears.

- Step 3** Click **Device Console** and verify that the CDM is listed as an online device.

A green circle appears in the Online column. Any other active CDN devices should also be listed here. (See Figure 2-1.)

- Step 4** You can now proceed with the configuration of your other CDN devices such as CEs. See the “Configuring Content Delivery Network Devices” section on page 2-3.
-

Configuring Content Delivery Network Devices

Once you have verified that your CDM is up and running, you can configure your CEs. This step is necessary in order for you to begin distributing media files to users on the CDN.

Initially, all CDN devices are configured using the CDN Installation Wizard, a utility that ships with your CDN product. The Installation Wizard is required to bring both CDM and CE devices online in network environments where DHCP is not being used. When DHCP is used, the Installation Wizard is required only to bring CE devices online for the first time.

After devices have been configured for the first time using the Installation Wizard, the CDM Device Editor can be used to modify configuration settings independently.

Figure 2-1 Device Console Dialog Box



To configure your CDN devices including the CDM and any CEs, follow the sequence of steps for activating the CDM and CEs outlined in Chapter 2 of the *Cisco CDN Software Enterprise Solution Configuration Guide*.

**Note**

It is important that the CDM be activated prior to the CEs, and that the CEs be configured initially using the CDN Installation Wizard utility even when DHCP is being used.

Once initial configuration is complete, use the information that follows in this chapter to edit the configuration of your CDN devices using the CDM's Device Editor feature.

Editing Network and CDN Settings

You use the Devices menu to manage your CDN devices in your network. From the Devices menu you can configure the CDM and CEs and edit device properties.

**Note**

Only users with administrator privileges have access to the Devices menu.

The CDN device properties that can be edited include the device configuration properties described in Table 2-1.

Table 2-1 *Device Configuration Properties*

Device Property	Description
Identification	Name and description.
TCP/IP	Indicate whether to use DHCP or manually configure static IP addresses for your CDN devices.
DNS	Indicate whether to use a Domain Name Server (DNS).
Proxy	Indicate whether to use a proxy server.
Users	Change the system administration password, and add or modify CDN user accounts.
System	Update the CDN software or reboot a device.

Table 2-1 Device Configuration Properties (continued)

Time Zone	Set the geographical region and time zone for each device.
PC Folders	Configure your device to import media files from your for Windows network.

Editing the Device Name and Description

Although changing the name of a device and adding a description for it are optional, we recommend that you change the default name of each device to something more meaningful to you and that you add some descriptive information, such as location, for each device. See Figure 2-2 and Table 2-2 for more information on the Identification dialog and its options.

The default name of a device is the device's system ID, which is:

```
MAC_address.box.provider.sn
```

To enter an identifying name and description for a device:

Step 1 From the Devices menu, choose **Identification**. (See Figure 2-2.)

Figure 2-2 Identification Dialog Box

The screenshot shows the 'Identification' dialog box in the Cisco Content Delivery Network configuration interface. The left sidebar contains a tree view with 'Devices' expanded to 'Device Editor' and 'Identification'. The main area displays a table of online devices and configuration options for the selected device.

Online Device Name	Type	Uptime	Subscribed Channels	IP Address
● 00:90:27:df:ee:c9:box....	CDM	2.1 days	Default_Channel	10.89.1.141

Name

 Optional. Use this field to assign a meaningful name to each device.

Description

 Optional. Add descriptive information for this device, for example, its location or contact information.

System Time
 Date: / /
 Time: : :
WARNING! Your CDM will automatically reboot. When your CEs next reboot, they will adjust their clocks to match the CDM's.

44992

- Step 2** From the Device Selector list, choose the device you wish to edit. Some general information about the selected device is displayed.
- Step 3** Enter a new name and description, as needed. The default name is listed in the Name field.
- Step 4** Click **Save Changes**.
- Clicking **Cancel Changes** returns all values to their previous settings when you last clicked **Save Changes**.

Table 2-2 Device Identification Properties


Device Identification	Description
Online	<p>Indicates whether a device is online or not.</p> <p>A solid green circle shows that the device is online.</p> <p>A red circle shows that the device is not online.</p> <p>A yellow triangle indicates that the device has not yet been configured on the CDM.</p> <p>See the “Configuring Content Delivery Network Devices” section on page 2-3.</p>
Device Name	Displays the name of the selected device.
Type	Identifies the device as either a CDM or a CE.
Uptime	Specifies how long the device has been running since it was last rebooted.
Subscribed Channels	Identifies channels, or content groups, to which the device is subscribed. See the “Creating Channels” section on page 3-2 and the “Subscribing a Content Engine to a Channel” section on page 3-5 for more information.
IP Address	Displays the Internet Protocol (IP) address assigned to the device.

Editing the System Time

All devices on your CDN set their time based on two settings:

- **System Time**—This setting defines the date in MM/DD/YYYY format and time in HH:MM:SS format using a 24-hour clock for the CDM and all associated CEs.
- **Time Zone**—This setting is configured for each device separately, allowing devices that are geographically dispersed to coordinate with each other and to apply the appropriate local time settings, based on the system time, when changing bandwidth settings or activating playlists. See the “Setting Time Zones” section on page 2-22 for more information on setting the time zone for each of your CDN devices.

To set the System Time for your CDN:

-
- Step 1** From the Devices menu, choose **Identification**.
The Identification dialog box appears.
- Step 2** From the Device Selector list, choose the CDM.
Some general information about the CDM is displayed, including its name and a short text description.
- Step 3** Next to the System Time heading, place your cursor in the first Date field and enter the month in MM/DD/YYYY format. Press the Tab key to move between fields when filling in the date.
- Step 4** Move your cursor to the first Time field and enter the time in HH:MM:SS format. Press the Tab key to move between fields when filling in the time.
- Step 5** Click **Set**. You are prompted to confirm your decision to reset your system time.
-  **Note** Setting or changing the System Time parameter causes your CDM to reboot immediately. CEs begin using the new system time settings following their next reboot.
-
- Step 6** Click **OK** to confirm your decision. Your CDM will reboot immediately. Clicking **Cancel** returns the system time values to their previous settings.
-

Editing TCP/IP Settings

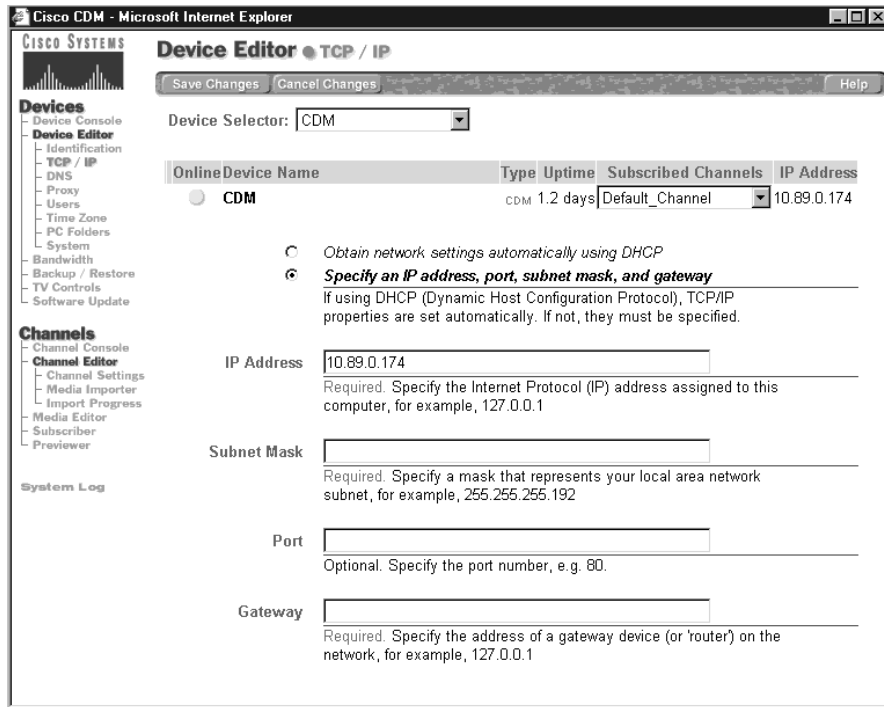
If you are using DHCP, TCP/IP properties are set automatically by the DHCP server. If you are not using DHCP, TCP/IP properties must be specified.

To specify a DHCP server or to enter IP address information:

Step 1 From the Devices menu, choose **TCP/IP**.

The TCP/IP dialog box appears. (See Figure 2-3.)

Figure 2-3 TCP/IP Dialog Box



Step 2 Make sure that the correct device is displayed in the Device Selector field. If it is not, click the correct device in the list.

General information about the selected device is displayed.

- If the network your device is running on uses DHCP, go to Step 3.
- If the network that your device is running on does not use DHCP, go to Step 4.

Step 3 Click **Obtain Network Settings Automatically Using DHCP** and go to Step 5.

Step 4 Click **Specify an IP address, port, subnet mask, and gateway** to set an IP address, port, subnet mask, and gateway.

Enter the information as required for the network.

- IP Address—Specify the IP address assigned to the computer (required).
- Subnet Mask—Specify a mask that represents your local area network subnet (required).
- Port—Specify a port number (optional). The default port is 80.
- Gateway—Specify the address of a gateway device (or router) on the network (required).

Step 5 Click **Save Changes**.

Clicking **Cancel Changes** returns all values to their previous settings when you last clicked **Save Changes**.

Changing the CDM IP Address

Changing the IP address of your CDM can have ramifications throughout your entire CDN. When changing the address of your CDM, it is important to remember to:

- Make sure that you configure the CDM *before* it is moved, rather than attempting to change the CDM IP settings after the move has taken place.
- Point your CEs to the new CDM IP address and verify that all CEs are able to reach the CDM at its new address.

Use the procedure outlined below, or use the procedures in Chapter 2, “Configuring and Activating Content Delivery Devices” in the *Cisco CDN Software Enterprise Solution Configuration Guide Version 2.1* to reset your CDM IP address and point your CEs to the new location of your CDM.

Step 1 From the Device Editor, click **TCP/IP**. The TCP/IP dialog box appears.

Step 2 Verify that the CDM appears in the Device Selector drop down list. If the CDM does not appear, expand the list and select the CDM.

Step 3 Click the **Specify an IP address, port, subnet mask, and gateway** option. The current IP address of the CDM appears in the IP address field.

- Step 4** Without changing any of the information presented, place the cursor in the Alternate IP Address field and enter the IP address to which the CDM will be moving in valid “dotted quad” format. For example:
- ```
209.165.200.0
```
- Step 5** Click **Save Changes** to save the address.
- Step 6** Wait approximately one hour before moving the CDM to the address you entered in the Alternate Address field.
- Step 7** Once an hour has passed, you can change the CDM’s actual IP address using either the CDM Device Editor, the CDN Installation Wizard, or by reconfiguring your DHCP server. Enter the new IP address of the CDM into the IP Address field on the TCP/IP dialog box. This address should match the address in the Alternate IP Address field.
- Refer to Chapter 2, “Configuring Cisco Content Delivery Network Devices” in the *Cisco CDN Enterprise Solution User Guide* for more instructions on changing the IP address of CDN devices.
- Step 8** Click **Save Changes**.
- Step 9** Click **System**.
- The System dialog box will appear.
- Step 10** Make sure that the CDM is listed in the Device Selector drop down list. If it is not, expand the list and select your CDM from the devices listed.
- Step 11** Click **System Reboot** to reboot your CDM and reconnect it to your network using the new IP address.
- Step 12** Wait for your CE devices to reconfigure themselves to point to the CDMs new address.
- Approximately 45 minutes after your CDM comes back online at its new address, your CEs will begin going offline, as they realize that the CDM is no longer at its prior address. They will then automatically use the Alternate IP Address to connect to the CDMs new IP address.
- Step 13** Click **Device Console**. Monitor your CEs and verify that each CE is able to locate the CDM and come back online.

If one or more CEs are not able to resolve the CDMs new address, use the Installation Wizard to manually point them to the location of the CDM. Refer to the “Installation Wizard-based Reconfiguration” section on page 4-6 or the *Cisco CDN Software Enterprise Solution Configuration Guide Version 2.1* for more information.

---

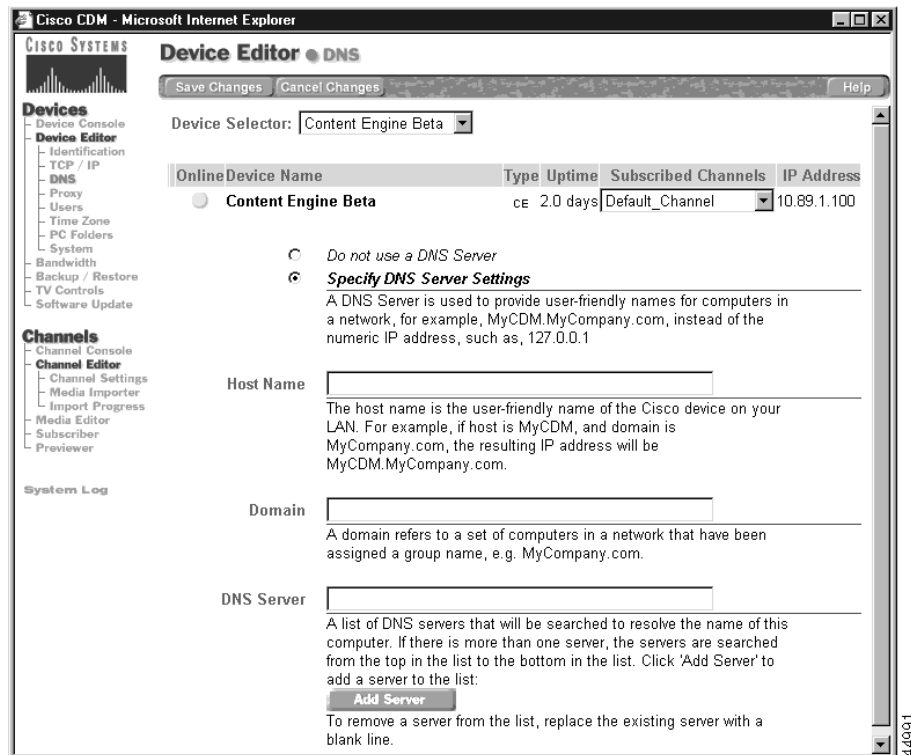
## Editing DNS Server Settings

A DNS server is used to provide user-friendly names for computers in a network. If a DNS server is not used, the numerical value of the IP address is used.

To enter DNS server settings:

- 
- Step 1** From the Devices menu, choose **DNS**.  
The DNS dialog box appears. (See Figure 2-4.)
- Step 2** Make sure that the correct device is displayed in the Device Selector field. If it is not displayed, choose the correct device in the list.  
General information about the selected device is displayed.
- If you do not use a DNS server, click **Do not use a DNS Server** and go to Step 6.
  - If you use a DNS server, click **Specify DNS Server Settings** and go to Step 3.

Figure 2-4 DNS Dialog Box




- Step 3** Enter the following information to identify your DNS server:
- Host Name—DNS name of the CDN device on your LAN (assigned by your network administrator).
  - Domain—Name assigned to the group of computers on your network to which the device belongs, for example: acme.com.
- Step 4** In the field labeled DNS Server, enter the network address of your Domain Name Server.
- Step 5** If your network is using more than one DNS server, click **Add Server** to add another DNS server to the list, and then repeat Step 4.
- Step 6** Click **Save Changes**.

## Editing Proxy Server Settings

A Web or HTTP proxy server might be required by your site administrator to access the Internet. The following definitions should help you configure your proxy server for use with the CDN. See Table 2-3 for information and default proxy server settings.

After saving changes to your proxy server settings, you must reboot all affected CDN devices, including your CDM and any affected CEs, before resuming use of the Cisco CDN product. Rebooting affected devices ensures that changes to your proxy server settings are communicated to all devices in your CDN system.

**Table 2-3 Proxy Server Configuration Settings**

| Device Setting          | Description                                                                                                                                                                                             |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HTTP Address and Port   | IP address and port number of the proxy server used to access the Internet using HTTP protocol (required). The default HTTP port is 80.                                                                 |
| Secure Address and Port | IP address and port number of the proxy server used to access the Internet using secure HTTP protocol. The default secure address port number is 443.                                                   |
| Exceptions              | Addresses for which the proxy server is not used so that data transmission occurs directly over the LAN or Internet (optional).                                                                         |
|                         |  <p><b>Note</b> The format for the Exceptions address is <i>IP_address/subnet_mask</i>, for example: 127.0.0.0/8.</p> |



To enter the proxy server settings:

**Step 1** From the Devices menu, choose **Proxy**.

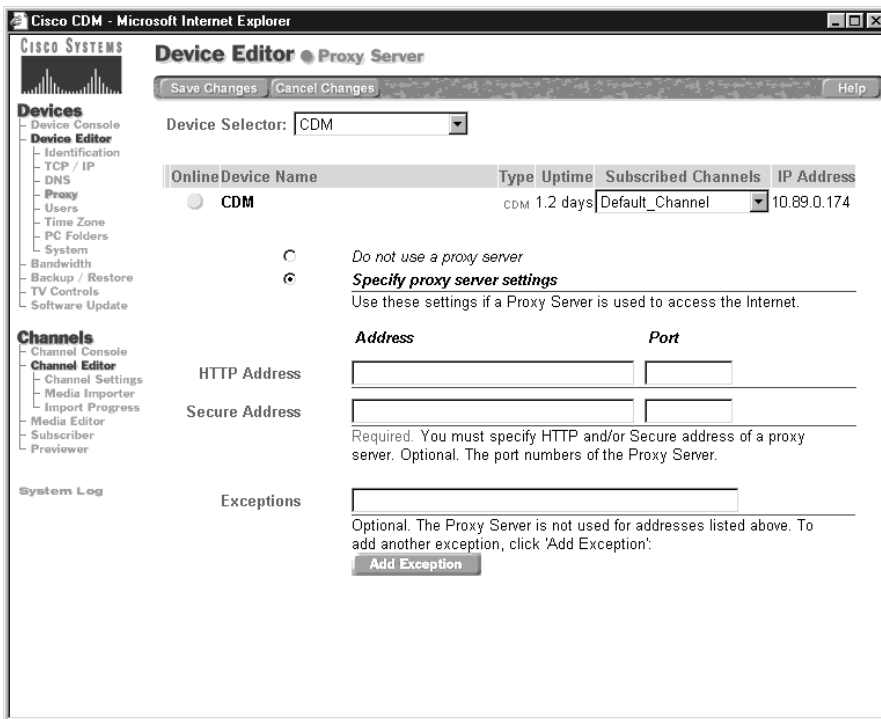
The Proxy Server dialog box appears. (See Figure 2-5.)


**Step 2** Make sure that the correct device is displayed in the Device Selector field. If it is not, click the correct device in the list.

General information about the selected device is displayed.

- If you do not use a proxy server, click **Do not use a proxy server** and proceed to Step 6.
- If you do use a proxy server or secure proxy server, click **Specify Proxy Server Settings** and proceed to Step 3.

**Figure 2-5 Proxy Server Dialog Box**



- Step 3** Enter the proxy server configuration settings.  
See Table 2-3 for a description of each setting.  
If you are using a secure proxy server, the address and port for the server will appear in the fields labeled Secure Address.
-  **Note** You must also provide a valid user name and password that will be used to access the proxy server. Refer to Chapter 2 of the *Cisco CDN Enterprise Solution Configuration Guide* for instructions on defining the user name and password for your secure proxy server on the CDN.
- Step 4** If there are certain IP addresses you wish to exempt from using the proxy server, add them at this time. Enter the first exception IP address into the Exceptions field provided.
- Step 5** If there are multiple exception addresses, click **Add Exception** to add another field for entering an exception address, and then enter the proxy exception address.  
Repeat this step for each exception address.
- Step 6** Click **Save Changes**.
- Step 7** Repeat Step 1 through Step 6 for each device that requires changes to its proxy server settings.
- Step 8** From the Devices menu, choose **System** to reboot each device with changes to its proxy settings, beginning with any affected CEs.  
The System screen appears.
- Step 9** Choose a CE from the Device Selector list.  
The Device Editor System screen displays the CE system information.
- Step 10** Click **System Reboot**.
- Step 11** Repeat Step 8 through Step 10 for each affected CE and the CDM.
- 

You are ready to resume use of the CDN with new proxy settings when your CDM finishes rebooting.

## Creating Coverage Zones

Coverage zones are ranges of IP addresses on your CDN that are associated with specific devices. You can specify two types of coverage zones:

- Preferred coverage zones

Preferred coverage zones are groupings of IP addresses served by a single CE or group of CEs. Requests originating from within the range of preferred addresses are served by one of a small group of designated CEs, ideally devices that are in close physical proximity, ensuring optimal performance. By default, all CEs serve a preferred coverage zone that is defined by their local network segment (determined by the IP address and the netmask configured for the device).

- Regular coverage zones

Regular coverage zones are broader groupings of IP addresses served generally by a CDM and pool of CEs on the CDN. By default, all CDN devices (both CEs and the CDM) serve a regular coverage zone that is defined by their CDN network.

Coverage zones that override the network defaults can be defined separately for each CE and, optionally, for the CDM. When devices are not assigned a particular coverage zone, they use default “preferred” and “regular” coverage zones (see above).

To create a preferred coverage zone or regular coverage zone for a CE:

- 
- Step 1** From the Devices menu, choose **System**.
- The System dialog box appears. (See Figure 4-1.)
- Step 2** Make sure that the correct CE is displayed in the Device Selector field. If it is not, choose the correct device in the list.
- General information about the selected device is displayed.
- Step 3** In the section labeled CE Coverage Zones, choose the **Specify coverage zone settings** option.
- Fields for configuring your coverage zones appear.
- Step 4** If you are specifying a preferred coverage zone for the device, place the cursor in the Preferred field, enter the address range in the proper format.

The format for the coverage zone address is *IP\_address/netmask*, for example:

209.165.200.0/24

You can also specify a series of specific addresses in this field separated by semicolons. For example:

209.165.200.222; 209.165.200.223; 209.165.200.224

- Step 5** Repeat Step 4 for the regular coverage zone by entering the address range in the Regular field using the proper format.

As with the preferred coverage zone address field, you can also enter a range of addresses in the Regular field.

- Step 6** Click **Save Changes** to assign the preferred and regular coverage zones you specified to the selected device.
- 

## Specifying Bandwidth

You use the CDM Bandwidth feature to set the maximum bandwidth to be used by each device for replicating media to the CEs and for streaming media to enduser desktops. Bandwidth controls limit the bandwidth consumed by your CDM and CEs. Bandwidth can be limited in megabytes per second (Mbps) for both replication and playback.

- Playback bandwidth sets the maximum bandwidth to stream media from a CDM or CE to enduser desktops for playback, typically based on the LAN bandwidth between the device and the desktops.
- Replication bandwidth sets the maximum bandwidth to move media files imported to a channel from the CDM to subscribed CEs.

Intelligent bandwidth management provides the ability to limit the maximum bandwidth allowed for replication between CDN devices to particular days of the week and hours of the day.

## Setting Playback Bandwidth

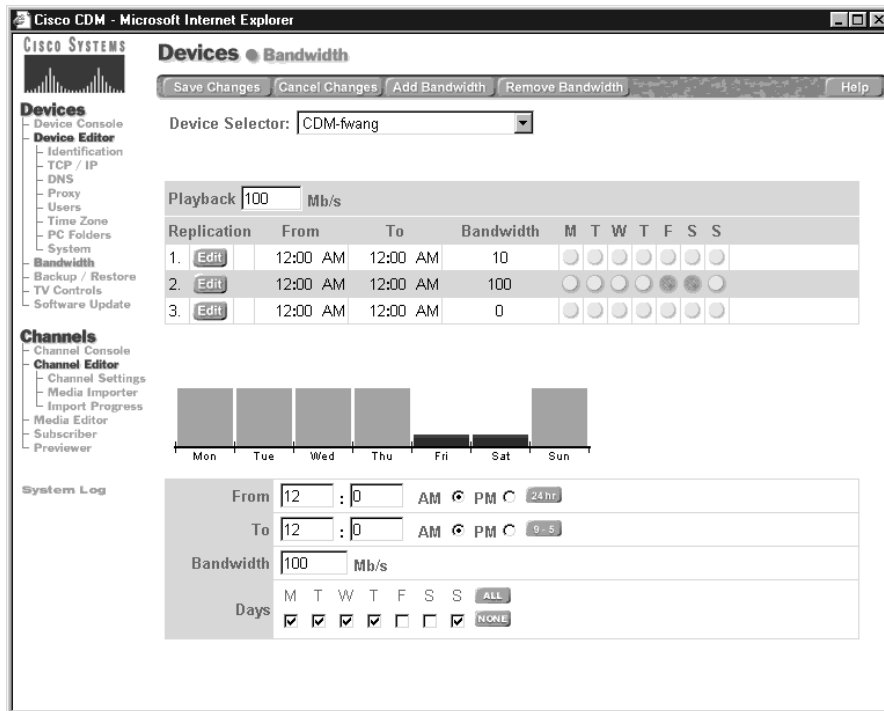
Each device has a specific playback bandwidth that it uses when streaming media to users desktops. Although this bandwidth value can be changed, it is not possible to schedule changes to the playback bandwidth, as it is with replication bandwidth.

To set the playback bandwidth for a device from the CDM:

**Step 1** From the Devices menu, choose **Bandwidth**.

The Bandwidth dialog box appears. (See Figure 2-6.)

**Figure 2-6** Bandwidth Dialog Box



**Step 2** Make sure the correct device is displayed in the Device Selector field. If it is not, choose the correct device in the list.

- Step 3** In the Playback field, enter a bandwidth value in megabytes per second (Mb/s).
- Step 4** Click **Save Changes** to store the new playback bandwidth setting for the selected device.
- Clicking **Cancel Changes** returns all values to their previous settings when you last clicked **Save Changes**.
- 

## Setting Replication Bandwidth

All CDN devices ship with a default replication bandwidth set. This bandwidth setting is enabled from 12:00 a.m. to 11:59 p.m. (24 hours) for each day of the week. Although the default replication bandwidth can be changed, its operating schedule cannot. Instead, you use the Bandwidth feature to create additional replication settings to take effect at certain times during the week.

To add a replication bandwidth setting for moving media files over the network:

---

- Step 1** From the Devices menu, choose **Bandwidth**.
- The Bandwidth dialog box appears. (See Figure 2-6.)
- Step 2** Make sure the correct device is displayed in the Device Selector field. If it is not, enter the correct device in the list.
- Step 3** Click **Add Bandwidth**.
- A new bandwidth setting is added to the bottom of the bandwidth list, and options appear for configuring the new bandwidth setting.
- Step 4** In the Bandwidth field, enter the replication bandwidth value for this setting in megabytes per second (Mb/s).
- Step 5** Above the Bandwidth field, set the time at which the device will begin to replicate media using this bandwidth by entering a time in the From field and clicking **AM** or **PM**.



**Note** Replication times are in local time for each device.

---

Alternatively, click the **24 hour** or **9-5** buttons to set the interval from 12:00 a.m. to 11:59 p.m. (24 hours), or 9:00 a.m. to 5:00 p.m.

- Step 6** Next, set the time at which the device will cease replicating media at this bandwidth by entering a time in the To field and clicking **AM** or **PM**.



**Note** New time-of-day settings take precedence over previous settings if the intervals overlap.

- Step 7** In the area beneath the Bandwidth field, check the appropriate **Days** check boxes to set which days of the week the device will use the replication bandwidth you are configuring.

You can click **ALL** to choose every day or click **NONE** to clear your selections.

- Step 8** Click **Save Changes**. Clicking **Cancel Changes** returns all values to their previous settings when you last clicked **Save Changes**.

The screen refreshes, updating the replication bandwidth schedule for the device.

---

On those days you specified, the device replicates media at the bandwidth you set during the hours you specified. Remember that the device operates according to its local time zone. See the “Setting Time Zones” section on page 2-22 for information on establishing time zones for your CDN.

## Removing Replication Bandwidth

To remove a replication bandwidth setting:

---

- Step 1** From the Devices menu, choose **Bandwidth**.  
The Bandwidth dialog box appears. (See Figure 2-6.)
- Step 2** Make sure the correct device is displayed in the Device Selector field. If it is not, choose the correct device in the list.
- Step 3** Click **Edit** next to the interval setting that you want to remove.
- Step 4** Click **Remove Bandwidth** at the top of the screen.
-

## Editing Replication Bandwidth

To edit a replication bandwidth setting:

- 
- Step 1** From the Devices menu, choose **Bandwidth**.  
The Bandwidth dialog box appears. (See Figure 2-6.)
  - Step 2** Make sure the correct device is displayed in the Device Selector field. If it is not, click the correct device in the list.
  - Step 3** Click **Edit** next to the interval setting that you would like to change.
  - Step 4** Modify the playback and replication bandwidths, time intervals, and days of the week.
  - Step 5** Click **Save Changes**.
- 

## Setting Time Zones

Use this option to set the region and time zone for each device.

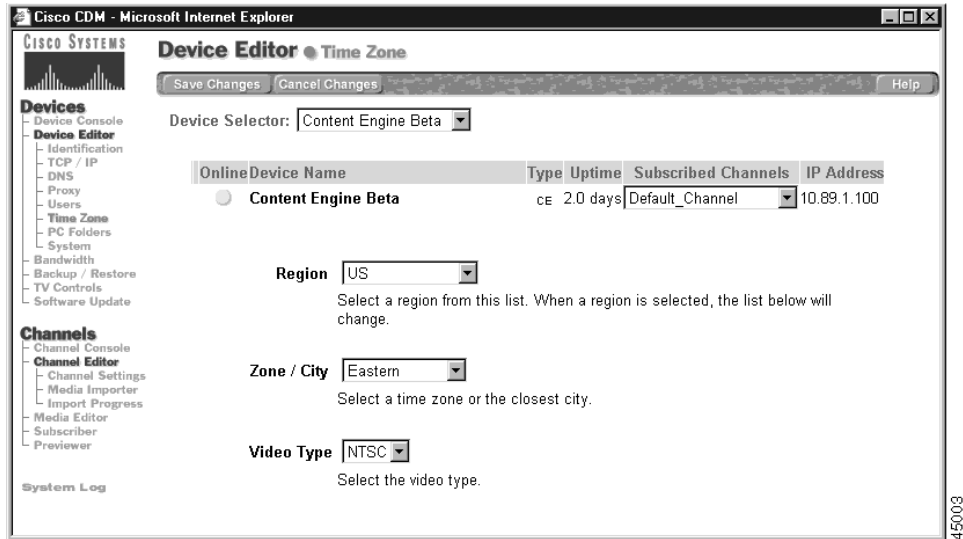


To set the time zone for a device:

**Step 1** From the Devices menu, choose **Time Zone**.

The Time Zone dialog box appears. (See Figure 2-7.)

**Figure 2-7 Time Zone Dialog Box**



**Step 2** Make sure the correct device is displayed in the Device Selector field. If it is not, click the correct device in the list. Some general information about the selected device is displayed.

**Step 3** Click a region in the Region list. When you have selected a region, the zone/city settings change correspondingly.

**Step 4** Choose a time zone or city in the Zone/City list.

**Step 5** Click **Save Changes**.

Clicking **Cancel Changes** returns all values to their previous settings when you last clicked **Save Changes**.

## Configuring PC Folders

Use the PC Folders option to configure your devices so that they appear in your Network Neighborhood.



### Note

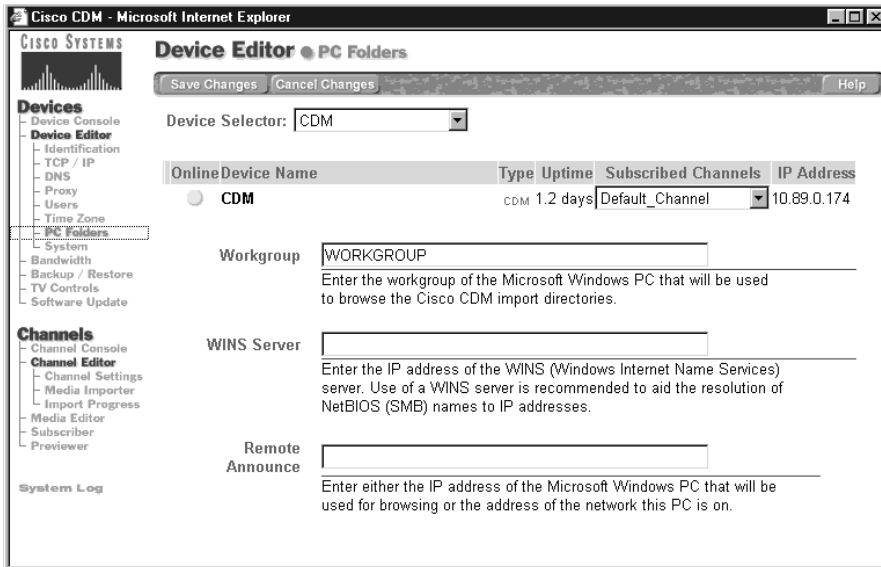
Your office network must be running the Windows 95/98 or Windows NT operating system in order to use the PC Folders option to import media files.

To configure PC Folders:

**Step 1** From the Devices menu, choose **PC Folders**.

The PC Folders dialog box appears. (See Figure 2-8.)

**Figure 2-8** PC Folders Dialog Box



**Step 2** Make sure the correct device is displayed in the Device Selector field. If it is not, click the correct device in the list.

General information about the selected device is displayed.

- Step 3** In the Workgroup field, enter the workgroup of the Microsoft Windows PC that will be used to browse the CDM media import directories.
  - Step 4** In the WINS Server field, enter the IP address of the Windows Internet Name Services (WINS) server.
  - Step 5** In the Remote Announce field, enter either the IP address of the PC that will be used for Web browsing or the address of the network that the PC is on.
  - Step 6** Click **Save Changes**.
- 

## Enabling CDN Back-Channel Multicasting on a LAN

The Cisco CDN includes support for LAN-based back-channel multicasting of media as part of its support for RealNetworks' RealServer version 7. This feature, which is built into the RealServer 7 release, enables CDN installations to conserve network bandwidth by sending a single media stream to multiple clients on a LAN, rather than streaming media to each requesting client individually.


Back-channel multicasting streams content between the RealServer and clients while maintaining a simultaneous accounting control channel between each client and the RealServer. This extra control channel is used to transmit authentication information as well as client commands like "start" and "stop." Back-channel multicasting enables the RealServer to track client behavior and display statistics during viewing, including real-time data on the number of clients receiving a presentation. Data collected can be reviewed and analyzed using the Java Monitor or RealSystem Administrator.

Once enabled, back-channel multicasting is applied to all streams broadcast from your RealServer. Clients that have been preconfigured to use multicasting will do so, maximizing the bandwidth available to multicasting and unicasting clients alike.

## Enabling Multicasting on the CDM

Although you typically use the built-in administrative features of RealServer to configure multicasting, it is possible to enable multicasting remotely from your CDM interface.

To use the CDM to enable multicasting:

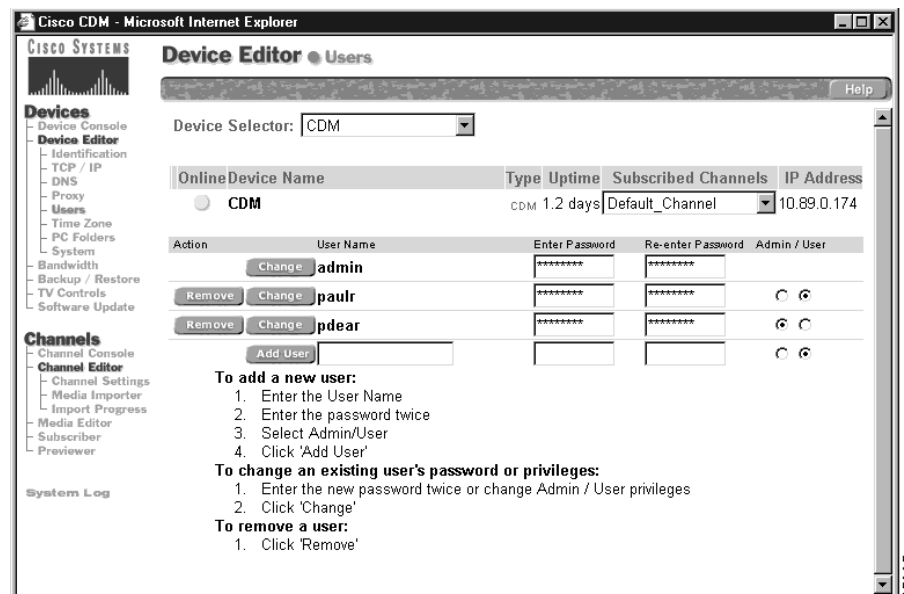
- 
- Step 1** Launch your Web browser and navigate to the Enable Multicast interface at the following address:
- ```
http://your_Content_Distribution_Manager_ip_address/cgi-bin/mc
```
- where *your_Content_Distribution_Manager_ip_address* represents the IP address or DNS domain name of your CDM.
- Step 2** With the Enable Multicast options displayed in your browser window, click the **Enable Multicast** drop-down list and choose **Yes**.
- This enables the multicasting feature on the RealServer used by your CDM.
- Step 3** Enter the range of addresses to which you will be sending multicast streams in the IP Address Range fields.
- Remember that broadcasts of video content require two addresses—one for video content and one for audio content. Refer to “Calculating Addresses for Back-Channel Multicasts” in the *RealServer Version 7 Administration Guide* for more information. The RealServer uses the first available address in the range you specify.
- Step 4** Set the maximum distance that streamed packets can travel over a network, as measured in hops from one multicast-enabled router to another, by entering a Time To Live value in the Time to Live field provided.
- Each time a multicast data packet passes through a multicast-enabled router, its Time To Live value is decreased by 1. Once the value reaches 0, the RealServer discards the packet.
-  **Note** For typical networks, a Time To Live value of 16 is adequate to keep packets within the network.
-
- Step 5** Click **Set** when you are finished.
- The multicast settings are saved back to the RealServer used by your CDM.
-

Adding, Removing, and Modifying Users

Users can be assigned either administrator-level or user-level privileges.

- Administrator-level privileges—Access to modify device attributes, add users, change user passwords, create channels, change channel sizes, subscribe channels to CEs, and view or preview all channels.
- User-level privileges—Access to assigned channels to add and remove content, mark content for replication, and view or preview content.

Figure 2-9 Users Dialog Box



Adding a New User

Users are added using the CDM interface. To add a user:

-
- Step 1** From the Devices menu, choose **Users**.
The Users dialog box appears. (See Figure 2-9.)
 - Step 2** From the Device Selector field, choose the name of the CDM.
Options for editing user accounts appear. Accounts are listed alphabetically.
 - Step 3** Enter the new username in the field next to the Add User button.
 - Step 4** Enter a new password for the user in the Enter Password field.
 - Step 5** Enter the new password a second time in the Re-enter Password field.
 - Step 6** Click the **Admin** or **User** button to designate the access level of the account, and then click **Add User**.
The new user is added to the user list.
-

Removing a User

Users accounts are removed using the CDM Users feature.

**Note**

It is not possible to remove the admin account, nor is it possible to remove the current user's account.

To remove a user:

-
- Step 1** From the Devices menu, choose **Users**.
The Users dialog box appears. (See Figure 2-9.)
 - Step 2** From the Device Selector field, choose the name of the CDM.
Options for editing user accounts appear. Accounts are listed alphabetically.
 - Step 3** Locate the name of the user you wish to remove.

Step 4 Click **Remove** next to the username that you want to remove.

If you are attempting to remove the current account (the account you used to log on), you will be prompted to log on again using another administrator account before you are allowed to delete the account you were using.

Editing User Privileges

User privileges can be modified using the CDM Users feature. To change user privileges:

Step 1 From the Devices menu, choose **Users**.

The Users dialog box appears. (See Figure 2-9.)

Step 2 From the Device Selector field, choose the name of the CDM.

Options for editing user accounts appear. Accounts are listed alphabetically.

Step 3 Locate the account you wish to edit.

Step 4 Click the **Admin** or **User** button to change the designation of the account.

Step 5 Click **Change**.

Changing a User Password

Change the password of a user or administrator through the Users feature. Passwords can only be changed from the CDM interface.

To change a user password:

Step 1 From the Devices menu, choose **Users**.

The Users dialog box appears. (See Figure 2-9.)

Step 2 From the Device Selector, choose the name of the CDM.

Options for editing user accounts appear. Accounts are listed alphabetically.

- Step 3** Locate the user or administrator account for which you wish to change passwords.
- Step 4** Enter the new password in the Enter Password field.
- Step 5** Enter the new password again in the Re-enter Password field.
- Step 6** Click **Change**.

If the screen refreshes without error, you have successfully changed your password. If you encounter an error, see Appendix A, “Error Messages.”

Changing the Default Administrator Password

The CDN system ships with a default administrator account already configured. This account, which uses the admin username, gives administrators full access to the CDM graphical interface.

The admin account can be accessed and edited in the same manner as other user or administrative accounts:

- Step 1** From the Devices menu, choose **Users**.
The Users dialog box appears. (See Figure 2-9.)
- Step 2** From the Device Selector field, choose the name of the CDM.
Options for editing user accounts appear. Accounts are alphabetically listed.
- Step 3** Locate the **admin** account.
- Step 4** Enter the new password in the Enter Password field.
- Step 5** Enter the new password again in the Re-enter Password field.
- Step 6** Click **Change**.
The Enter Network Password dialog box appears.
- Step 7** Enter the *new* admin password a third time in the Password field provided and click **OK**.

If the screen refreshes successfully, you have changed the password. If you encounter an error, see Appendix A, “Error Messages.”

Resetting the Default Administrator Password

Ordinarily, CDN administrators change the admin account password in the same manner as any other account password. See the “Changing a User Password” section on page 2-29 for details on changing passwords for accounts.

However, if you lose track of the password for the admin account and accidentally lock yourself out of the CDM administrative interface, you must manually reset the password for the admin account before regaining access to the CDM and the Users feature.

Resetting the admin account password restores the factory-configured password to the account. After resetting this password and rebooting the CDM, administrators can again log on using the admin account and configure the password for the account, as well as for other user and administrative accounts.



Note

In order to reset the password for the admin default administrator account, you must have physical access to the CDM device and have sufficient permissions to be able to log on to that device.

Use the following procedure to reset your default administrator password:

-
- Step 1** Ask any users currently using the CDM to exit the system. In order to reset the default administrator password, you will be required to reboot the CDM twice.
- Step 2** Terminate any active Linux sessions by entering **exit** at the prompt.
- Step 3** Reboot the CDM machine by powering the machine off, and then on again.
- Step 4** Wait for the following prompt:
- ```
LILO Boot:
```
- Step 5** If your CDN devices are using Cisco hardware, enter the following command to log on to the CDM as a single user, then press **Enter**:

```
LILO Boot# linux single
```

If your CDN devices are installed on hardware that was not manufactured by Cisco Systems, enter the following command to log on to the CDM as a single user, instead of the command listed above. Press **Enter** to initiate log in.

```
LILO Boot# linux single console=tty0
```

**Step 6** Enter the path for the reset password script, `resetpass`, as follows at the `bash#` prompt:

```
bash# source /sonoma/sys/bin/resetpass
```

The script executes, resetting the password for the admin account and rebooting the CDM machine. Once the CDM has completed its reboot, you can log on using the default administrator account by entering the user name, **admin**, and the factory-configured password.

---



# Working with the Content Delivery Network

---

Through the Content Distribution Manager (CDM) user interface, you have complete control over media distribution on your CDN. This chapter provides information on the basic procedures that apply to working with the CDN, including how to import media, how to preview and edit media, how to replicate and manage media, and how to play video directly to a TV monitor.

This chapter contains the following sections:

- Creating Channels, page 3-2
- Subscribing a Content Engine to a Channel, page 3-5
- Importing Media, page 3-7
- Monitoring Progress, page 3-15
- Previewing Imported Media, page 3-16
- Editing Media, page 3-19
- Copying Media Between Channels, page 3-21
- Replicating Media, page 3-25
- Removing Media from a Content Engine, page 3-26
- Linking to Media from Web Pages, page 3-27
- Playing Video Directly to a TV Monitor, page 3-28

# Creating Channels

Channels allow content to be organized into logical content groups. The content groups or channels can be individually assigned to Content Engines (CEs).

## Adding a Channel

To add a channel:

---

**Step 1** From the Channels menu, choose **Channel Console**.

The Channel Console dialog box appears.

**Step 2** Click **Add Channel**.

A new channel, with the default name “Channel#,” is added to the Channel Console list.

---

## Removing a Channel

To remove a channel:

---

**Step 1** From the Channels menu, choose **Channel Console**.

The Channel Console dialog box appears.

**Step 2** Check the **Remove** check box next to the channel that you want to remove.



**Step 3** Click **Remove Channel**.

---

## Editing a Channel

If you are unclear about the meaning of a channel setting, see Table 3-1.

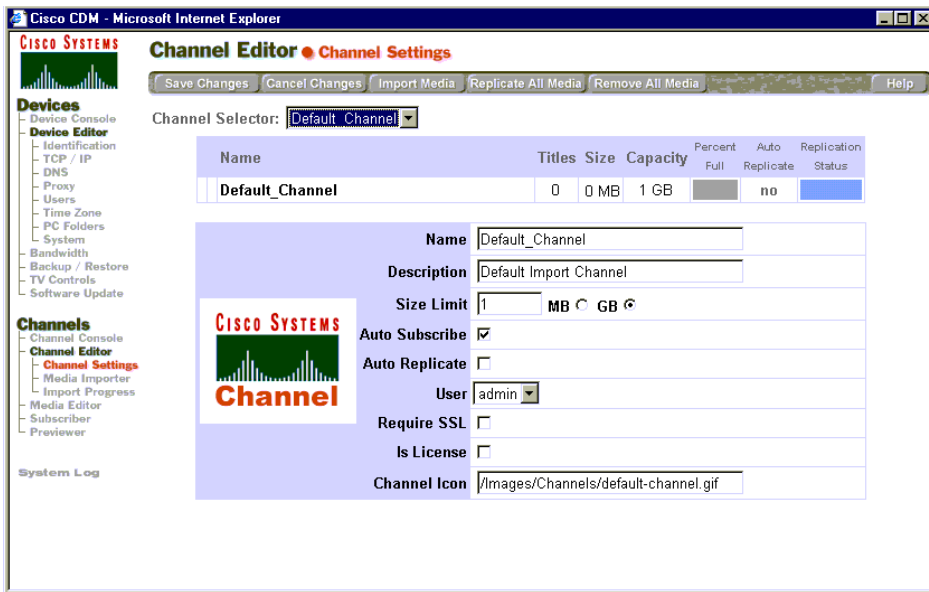
**Table 3-1 Channel Properties**

| Channel Property | Description                                                                                                                                                                                                                                                                                     |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name             | Name of the channel.                                                                                                                                                                                                                                                                            |
| Description      | Channel description.                                                                                                                                                                                                                                                                            |
| Size Limit       | Maximum amount of media a channel can hold in megabytes (MB) or gigabytes (GB).                                                                                                                                                                                                                 |
| Auto Subscribe   | <p>CEs added after this option is selected will be automatically subscribed to the current channel.</p> <p> <b>Note</b> Auto Subscribe does not apply to CEs or content already subscribed to the channel.</p> |
| Auto Replicate   | <p>Future content imported into the channel will automatically be replicated to subscribed CEs.</p> <p> <b>Note</b> Auto Replicate does not apply to CEs or content already subscribed to the channel.</p>     |
| User             | Assigns a user to the channel by selecting the username from the user list.                                                                                                                                                                                                                     |
| Require SSL      | Requires Secure Socket Layer (SSL) encryption when transferring media from the CDM to CEs.                                                                                                                                                                                                      |
| Is License       | When selected, turns the selected channel into a license distribution channel. See the “Updating Software Licenses” section on page 4-21 for more information.                                                                                                                                  |
| Channel Icon     | Path and filenames for the image are displayed in the CDN Channel Previewer.                                                                                                                                                                                                                    |

To edit a channel, follow these steps:

- Step 1** From the Channels menu, choose **Channel Console**.  
The Channel Console dialog box appears.
- Step 2** Click **Edit** next to the channel that you want to edit.  
The Channel Settings dialog box appears. (See Figure 3-1.)

**Figure 3-1 Channel Settings Dialog Box**



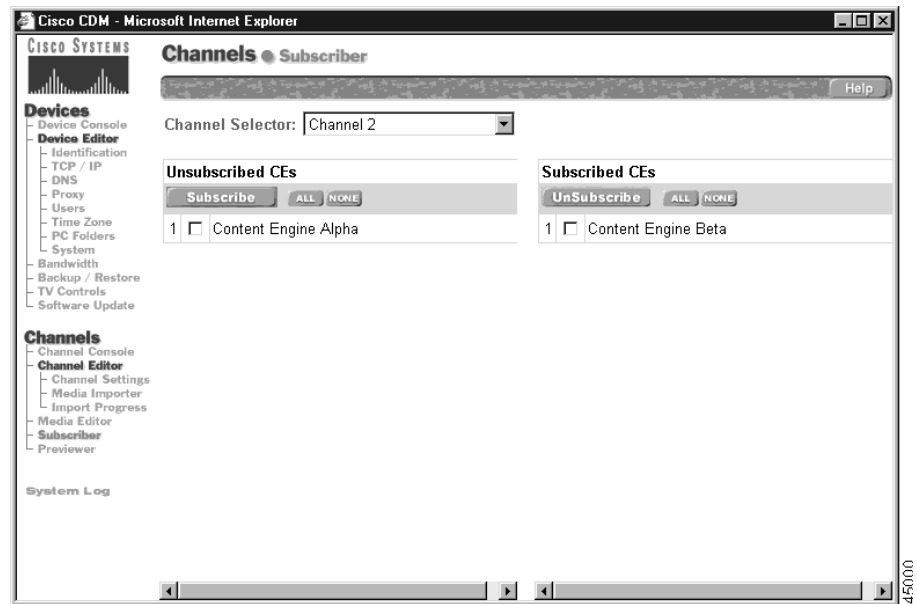
- Step 3** Enter or modify the channel settings as required. See Table 3-1 for descriptions of the channel settings.
- Step 4** Click **Save Changes**.

# Subscribing a Content Engine to a Channel

To assign a channel to a CE:

- Step 1** From the Channels menu, choose **Subscriber**. The Subscriber dialog box appears. (See Figure 3-2.)

**Figure 3-2 Subscriber Dialog Box**



- Step 2** Make sure the correct channel is displayed in the Channel Selector field. If it is not, click the correct channel in the list.
- Step 3** Under the heading Unsubscribed CEs, check the check box next to each available CE that you want to subscribe, or click **All** to select all of the available CEs; click **None** to clear your selections.

- Step 4** Click **Subscribe** to add the selected CEs to the list of those subscribed to the channel displayed in the Channel Selector. Your selection is displayed in the list of subscribed CEs.
- 

## Removing a Content Engine from a Subscribed Devices List

To remove a CE from the subscribed list:

---

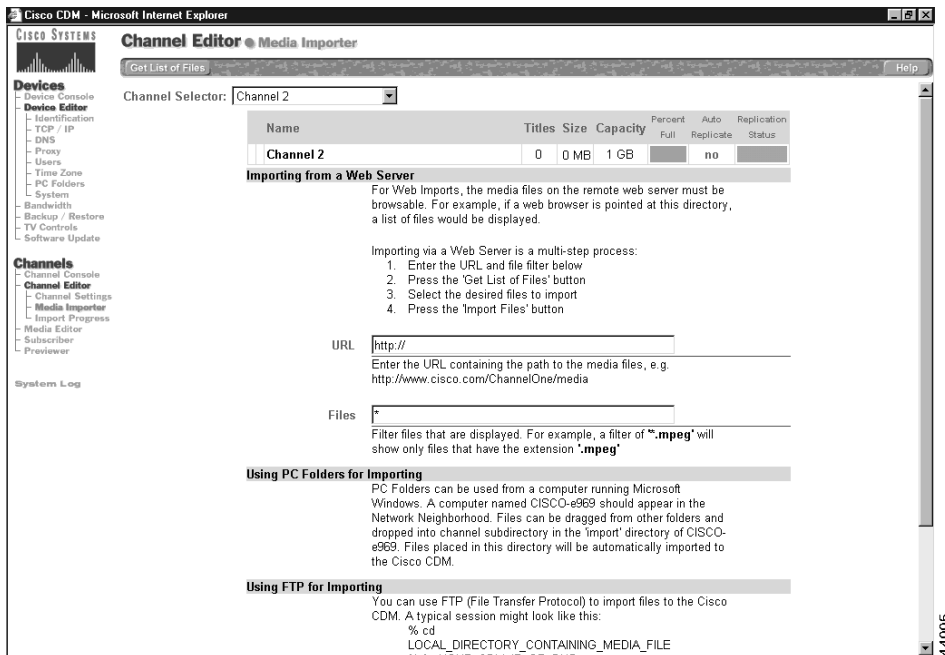
- Step 1** From the Channels menu, choose **Subscriber**.  
The Subscriber dialog box appears. (See Figure 3-2.)
- Step 2** Make sure the correct channel is displayed in the Channel Selector field. If it is not, click the correct channel in the list.
- Step 3** Under the heading Subscribed CEs, select the check box next to each CE that you want to remove, or click **All** to choose all CEs on the list; click **None** to clear your selections.
- Step 4** Click **Unsubscribe**.  
The CE is removed from the list of CEs subscribed to the selected channel and moved back to the Unsubscribed CEs list.
-



# Importing Media

The process of importing new media to your CDN is simple. New media files and folders are copied to a predetermined channel directory. Channel directories are named to correspond to the channel they represent, and are located within the Import directory on your CDM machine. (See Figure 3-3.)

**Figure 3-3** Media Importer Dialog Box



Periodically, the CDM polls the Import directory. Media files placed in channel directories since the CDM's last polling are marked for import to the appropriate CDM channel. Once they are marked for import, the status of these media files can be viewed using the Import Progress feature accessible from the Channels menu.

Once you have imported a file, you can preview the transferred file using the Previewer feature.

There are a number of ways to transfer media to your CDM for import to the CDN. Among the approved methods for transferring media files and folders are:

- FTP
- Drag and drop (PC Folders feature)
- Web server
- Programmatic transfer using remoteCmd program

## Importing Directories to the Content Distribution Manager

When preparing your CDM to import media files that rely on nested directories of supporting files, all directory structures and supporting files must be copied to, or re-created in, the appropriate channel directory on the CDM. This ensures that during import, the CDM properly imports and stores both the media file and any supporting files required for proper playback.

**Note**

---

Following import, all directories you created remain in the channel directory. These can either be left in place or deleted without affecting playback of the imported media.

---

For example, if you are importing a Synchronized Multimedia Integration Language (SMIL) media file called myfile.smi, the home directory of the files might contain the media file (myfile.smi) at the root level as well as one or more nested folders containing sound, text, and video. Your channel directory must re-create this structure exactly.

## Using FTP to Import Files and Directories

You can use FTP to copy or move files and file directories to the designated channel directory within your CDMs Import directory.

Before you transfer files and directories for import using FTP, you need to know the following:

- IP address or DNS name of your CDM machine
- Administrative logon and password for your CDM machine

- Name of the channel to which your files will be imported

To move or copy files using FTP:

---

**Step 1** Begin by locating the local or network directory that contains the media files and directories that you wish to import.

**Step 2** Connect to your CDM device.



---

**Note** If you are using a dedicated FTP application, create a new profile and fill in the CDM connection information, including the IP address, administrative username, and password. If your FTP application permits, enter **/import** as the initial directory.

---

For example:

```
ftp://ftp.mycompany.com
%ftp 255.255.255.255
```

**Step 3** When prompted, log on to your CDM using your administrative username and password.

**Step 4** Navigate to the Import directory on your CDM and then to the channel directory for the channel into which you will be importing your media files. For example:

```
ftp> cd import
ftp> cd channel_directory
```

**Step 5** If you are importing media that relies on nested directories for playback (such as SMIL files or Macromedia Director files), re-create the directory structure used by the files within your channel directory. You can accomplish this using your FTP clients “new folder” feature or you can create a folder manually, for example:

```
%mkd /import/channel_folder_name/new_folder_name
```

**Step 6** Before transferring media files to your channel directory, verify that you are in “binary transfer” mode rather than ASCII. Many FTP applications use an “auto-detect” feature to determine how to send files. However, if you are provided with transfer options, make sure the “binary” option is selected, or manually type the command:

```
ftp> binary
```

- Step 7** Copy media files from their original location to the channel-specific import directory on your CDM machine. If the media files you copied rely on nested directories, make sure that you have accurately re-created the nested directory structure in your channel import directory and that all dependent files are also copied to the appropriate subdirectory in your channel's import directory.
- 

Once you have copied media to your channel directory, wait for the CDM to detect the files and then begin the import process. You can view the progress of file imports by launching the CDM and clicking Import Progress on the Channels menu.

## Using Drag and Drop to Import Files and Directories

If your workstation is running Microsoft Windows and you can see the CDM device in the Windows Network Neighborhood, you can transfer files to the appropriate channel directory for import simply by dragging and dropping them using Windows Explorer. Files placed in a channel directory in this manner will automatically be imported to the appropriate CDM channel.

**Note**

You must be using Microsoft Windows to drag and drop a file with Windows Explorer, and you must log on to the CDM using a CDN administrator account with the same login name as the account used to access your corporate LAN. This will enable you to access the import directory when prompted.

---

To drag and drop media files to your import folder:

---

- Step 1** Open the CDM and from the Channels menu, choose **Media Importer**. The instructions for importing media appear.
- Under the heading “Using PC Folders for Importing,” locate the name of the CDM machine on your network. The name appears in the format CISCO-[xxxx], where [xxxx] refers to the last four characters of the MAC address of the machine.
- Step 2** Use Windows Explorer to navigate to the local or network directory containing the media files and directories that you wish to import.

- Step 3** Choose the media files and any nested directories that you wish to import.
- Step 4** Copy or cut the files you wish to import from their current location.
- Step 5** Use Windows Explorer to locate the CDM machine on your LAN and navigate to the `\import\channel_name` directory, where *channel\_name* is the name of the channel to which you will be importing your media files. If you are prompted to log in, enter the username and password for the CDN administrator account. Remember, the administrative username must match your network login in order to gain access to the import directory.
- Step 6** Paste the files you cut or copied into the channel-specific import directory. Verify that all files you wish to import were copied. If you are importing directories, make sure that the full directory structure was copied along with its content.
- Step 7** Log on to the CDM and click **Import Progress** from the Channels menu to view the status of the files that you are importing.
- 

Once you have copied media to your channels import directory, wait for the CDM to detect the files and then begin the import process. You can view the progress of file imports by launching the CDM and clicking Import Progress on the Channels menu.

## Using a Web Server to Import Files

From the Media Importer dialog box, you can copy media files from a Web server on the Internet. You must be able to browse and get a directory listing of the media files through the Web server.



### Note

---

It is not possible to import directories to the CDM using the CDM “Importing from a Web Server” method outlined in the Media Importer feature.

---

To access the Media Importer and initiate a Web server transfer:

- 
- Step 1** From the Channels menu, choose **Media Importer**.
- The Media Importer dialog box appears. (See Figure 3-2.)
- Step 2** Make sure the correct channel is displayed in the Channel Selector field. If it is not, click the correct channel in the list. Some general information about the selected channel is displayed.
- Step 3** In the URL field, enter the URL containing the path to the media files.
- Step 4** In the Files field, specify the name or type of files you want to import. What you enter here is used to build a list of files from which you select files to import.
- Choose all media files by using the asterisk (\*) in the Files field, or enter a filter for file types. For example: \*.mpg will return all MPEG files in the directory you specified.
- Step 5** Click **Get List of Files**.
- A list of files matching the criteria you entered in the Files field appears.
- Step 6** Choose the files you want to import, and then click **Import Files**.
- Step 7** From the Channels menu, choose **Import Progress** to follow the file transfer progress. See the “Monitoring Progress” section on page 3-15 for more detailed information.
- 

## Importing Files Programmatically

In addition to the methods for importing media files outlined above, it is possible to edit channel content programmatically using simple scripts and HTML commands passed to a Common Gateway Interface (CGI) program named `remoteCmd`.

In order to take advantage of this feature, you must have the `remoteCmd` program installed in the `/cgi-bin` directory on the machine serving as your CDM, and observe the syntax guidelines explained in the following sections when sending requests to the program.

When requests are received by the `remoteCmd` program, the program calls the Web-based CDN import mechanism to handle the media.

## Adding New Media to a Channel

Use the following syntax when creating an add-new-media request to programmatically place content in a channel import directory for upload to your CDM.

```
http://Content_Distribution_Manager/cgi-bin/remoteCmd?OP=CONTENT&CMD=IMPORT&CHANNEL-NAME=mychannel&URL=media_file_URL
```

- *Content\_Distribution\_Manager*—Replace this with the DNS name or numeric IP address of the CDM hosting the channel to which you will be uploading new content.
- *mychannel*—Replace this with the name of the CDM content channel to which the new media file will be imported.
- *media\_file\_URL*—Replace this with the Web location and full filename of the media file that is being imported, for example:

```
http://www.anywho.com/training/intro.mpg
```

## Removing Media from a Channel

The procedure for removing content from a channel using the remoteCmd program is similar to that for adding new media to a channel.

Use the following syntax when creating a remove-media request:

```
http://Content_Distribution_Manager/cgi-bin/remoteCmd?OP=CONTENT&CMD=REMOVE&CHANNEL-NAME=mychannel&FILENAME=media_file_name
```

- *Content\_Distribution\_Manager*—Replace this with the DNS name or numeric IP address of the CDM hosting the channel from which you will be deleting content.

- *mychannel*—Replace this with the name of the CDM content channel from which the media file will be deleted.
- *media\_file\_name*—Replace this with the name of the file to delete from the specified channel.
  - If the file is at the root level of the channel directory on the CDM machine, the filename with extension is required, for example, intro.mpg.
  - If the file is located in a recursive directory or nested in a directory, the full path name is required, for example:

```
&FILENAME=/foo/bar/intro.mpg
```

## Evaluating the Status of Your Add or Remove Request

User requests to add media to a channel or remove media from a channel will result in either a success or an error message. The result of each request you make is captured in a STATUS field and can be displayed in one of three formats:

- JavaScript (JS)—Default display format. Status information is presented using JavaScript.
- HTML (HTML)—Status information is embedded within HTML tags.
- Cisco CDN (MX)—Proprietary format that makes it easy to parse information.

To display the status of your request, add the following statement onto the end of your request URL, where *format* is replaced by one of the three format abbreviations outlined above:

```
&DISPLAY=format
```

For example, a sample delete request asking for results displayed using JavaScript might read:

```
http://CDM_Address/cgi-bin/remoteCmd?OP=CONTENT&CMD=
REMOVE&CHANNEL-NAME=mychannel&FILENAME=media_file_name &DISPLAY=JS
```

The following message is returned if the request has been posted without error:

```
Status_Success
```

If an error is encountered, the error condition is returned in the STATUS field, along with other error message text.

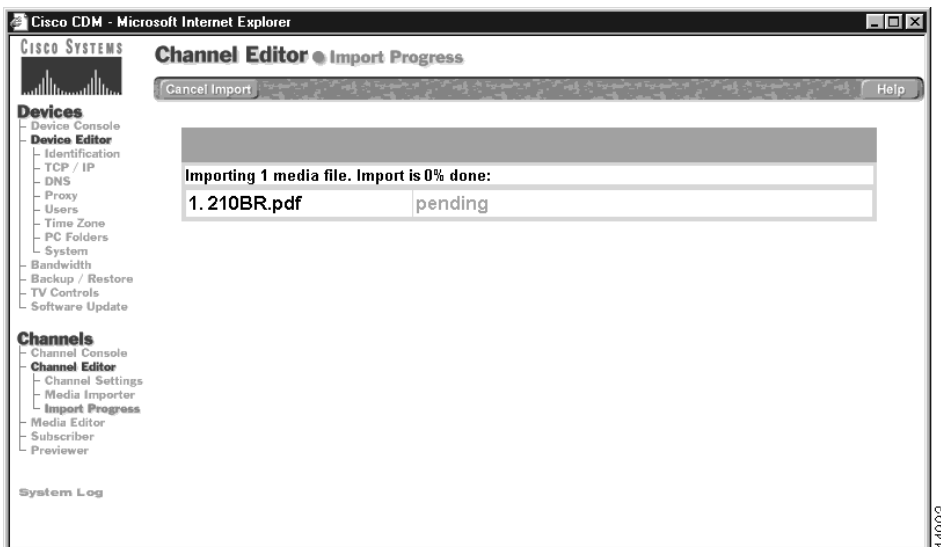


# Monitoring Progress

To monitor the progress of a file transfer:

- 
- Step 1** From the Channels menu, choose **Import Progress**.  
The Import Progress screen appears. (See Figure 3-4.)
- Step 2** Files are automatically updated every 10 seconds. Clicking **Cancel Import** cancels imports currently in progress.
- 

**Figure 3-4** Import Progress Dialog Box



# Previewing Imported Media

You use the CDM Channel Previewer to preview your imported media before distributing these files throughout the CDN.

By clicking the thumbnail image representing a media file, you can play the file from your CDM to verify correct media content and quality before replicating the media file.

After replicating a media file, you can also play the file from a CE. By clicking a thumbnail image or the CE Play link, media is streamed directly from the CE.

For RealServer playback, a RealServer G2 on the CE streams the media. The RealServer G2 combined with the RealPlayer client on the desktop for playback provides the additional ability to fast-forward and rewind the file while viewing.

## Previewing Media Before Replication

To access the Cisco Systems Channel Previewer and preview media directly from the CDM:

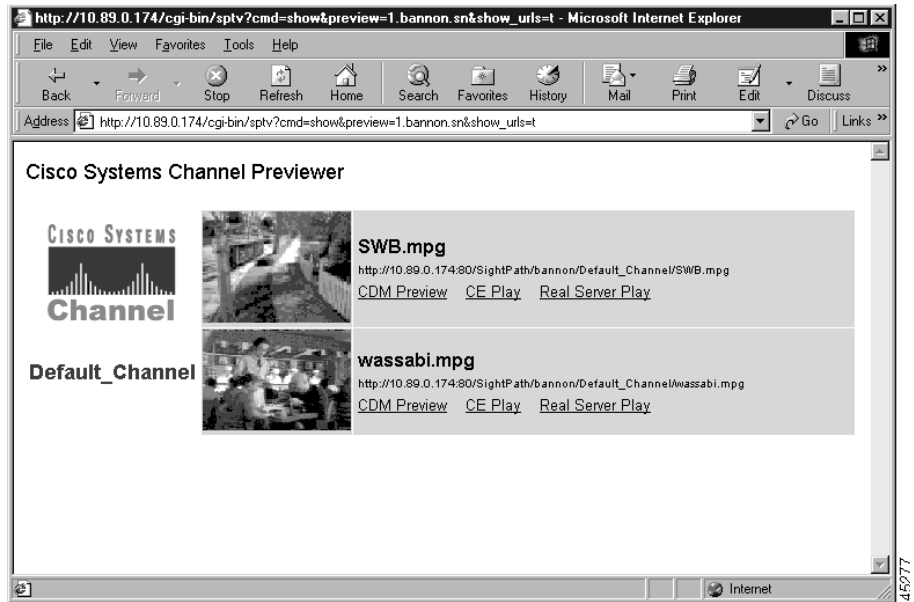
---

**Step 1** From the Channels menu, choose **Previewer**.

The Cisco Systems Channel Previewer window appears, listing your CDN channels.

**Step 2** Click a channel icon to view the selected channel's media files in a separate window. (See Figure 3-5.)

Figure 3-5 Channel Previewer



**Step 3** Locate the media file you wish to preview and click the **CDM Preview** link beneath the media thumbnail image.

You are prompted for your username and password.

**Step 4** Enter this information and click **OK**.

Media begins to play on your workstation's designated media player.

If an error message appears, see Appendix A, "Error Messages."

## Viewing Media After Replication

To view a media file after replication:

---

**Step 1** From the Channels menu, choose **Previewer**.

The Cisco Systems Channel Previewer window listing channel icons appears.

**Step 2** Click a channel icon to view the list of media file thumbnail images for the selected channel.



---

**Note** You must have a CE in the coverage zone for CE and RealServer playback. A coverage zone is the area that a CE is authorized to serve based upon IP address, typically the local portion of your intranet or subnet.

---

**Step 3** A new window opens, displaying the media files in the selected channel. (See Figure 3-5.). Choose one of the three options for viewing media files:

- To play a media file before replication from the CDM, click the **CDM Preview** link that appears below the media file thumbnail image.
- To view the media file from the CE after replication, click the **CE Play** link, or simply click the thumbnail image for the media file you wish to play.
- To view the media file from the CE after replication using the RealServer, click the **RealServer Play** link.

If an error message appears, see Appendix A, “Error Messages.”

---

# Editing Media

From the Media Editor dialog box (see Figure 3-6), you can edit the data for your imported media before distributing these files throughout the CDN. You can change media names, descriptions, bit rates, and thumbnail images; control media replication; and copy, move, and remove media files. See the “Replicating Media” section on page 3-25 for more information. Table 3-2 provides details on the media file properties that can be modified when you edit media.

**Table 3-2 Media File Properties**

| Media Property          | Description                                                                                                                                                                                                                                                                                           |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Name                    | Name assigned to the media file.                                                                                                                                                                                                                                                                      |
| Description             | Description of the content of the media file.                                                                                                                                                                                                                                                         |
| Replicate               | Indicates that the media file is marked for replication to a CE.                                                                                                                                                                                                                                      |
| Bit rate                | Rate at which the media file will be streamed during playback in bits per second (bps). The default is 1.5 megabytes per second (Mb/s).                                                                                                                                                               |
| Size                    | The size of the media file, in bytes.                                                                                                                                                                                                                                                                 |
| Duration                | The total length of the media file playback in h:mm:ss format.                                                                                                                                                                                                                                        |
| Thumbnail               | Path and filename for the thumbnail image that represents the media file.                                                                                                                                                                                                                             |
| Custom HTML Error Pages | Path and filename for customized error pages:<br><b>Coverage</b> —Not in the coverage zone of a CE.<br><b>Content</b> —Content not available on the CE. The CE could be offline.<br><b>Publish</b> —Content not yet available from the CDM.<br><b>Bandwidth</b> —Maximum bandwidth reached on the CE. |

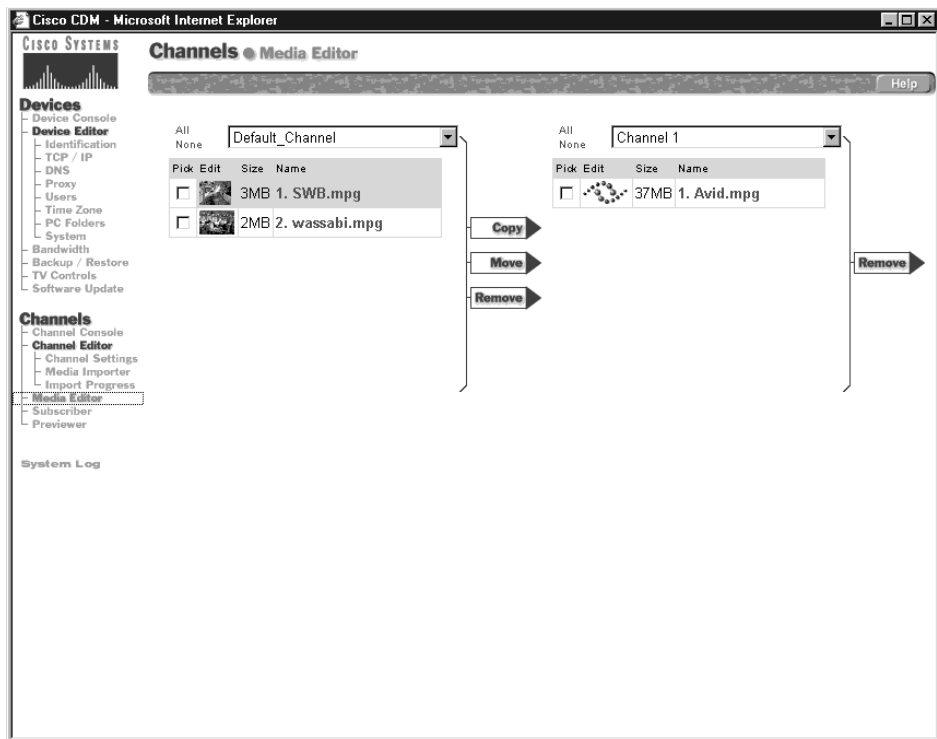
## Editing Media Files

To edit a media name and description, bit rate, or thumbnail:

**Step 1** From the Channels menu, choose **Media Editor**.

The Media Editor dialog box appears. (See Figure 3-6.)

**Figure 3-6 Media Editor Dialog Box**



**Step 2** Click the Edit thumbnail for the media file you want to change or edit. Fields for the media files properties appear. (See Table 3-2.)

**Step 3** Enter the new name, description, bit rate, or thumbnail.



---

**Note** Changing the name also changes the playback URL and invalidates existing Web pages that use the old name.

---

**Step 4** Click **Save Changes**.

Clicking **Cancel Changes** returns all values to their previous settings when you last clicked **Save Changes**.

---

## Copying Media Between Channels

To copy media from channel to channel:

---

**Step 1** From the Channels menu, choose **Media Editor**.

The Media Editor dialog box appears. (See Figure 3-6.)

**Step 2** From the left drop-down list choose the channel from which you want to copy media.

**Step 3** Check the **Pick** check box next to each file that you want to copy.

**Step 4** Click **All** to choose all of the files or **None** to clear your selections.

**Step 5** Choose the channel in the drop-down list on the right into which you want to copy media.

**Step 6** Click **Copy**.

---

## Moving Media from One Channel to Another

To move media from channel to channel:

---

- Step 1** From the Channels menu, choose **Media Editor**.  
The Media Editor dialog box appears. (See Figure 3-6.)
  - Step 2** From the drop-down list on the left, choose the channel from which you want to move media.
  - Step 3** Check the **Pick** check box next to each file that you want to move. Click **All** to choose all of the files or **None** to clear your selections.
  - Step 4** Choose the channel in the drop-down list on the right into which you want to move media.
  - Step 5** Click **Move**.
- 

## Removing Media from a Channel

To remove media from a channel:

---

- Step 1** From the Channels menu, choose **Media Editor**.  
The Media Editor dialog box appears. (See Figure 3-6.)
  - Step 2** Make sure the correct channel is displayed in the appropriate drop-down list box. If it is not, click the correct channel in the list.
  - Step 3** Check the **Pick** check box next to each file that you want to remove. Click **All** to select all of the files or **None** to clear your selections.
  - Step 4** Click **Remove**. You are prompted to confirm that you want to remove the selected media.
-



## Programmatically Removing Media from a Channel

The procedure for removing content from a channel using the `remoteCmd` program is similar to that for adding new media to a channel, detailed in the “Importing Files Programmatically” section on page 3-12.

Use the following syntax when creating a remove-media request:

```
http://Content_Distribution_Manager/cgi-bin/remoteCmd?OP=CONTENT&CMD=REMOVE&CHANNEL-NAME=
mychannel&FILENAME=media_file_name
```

- *Content\_Distribution\_Manager*—Replace this with the DNS name or numeric IP address of the CDM hosting the channel from which you will be deleting content.
- *mychannel*—Replace this with the name of the CDM content channel from which the media file will be deleted.
- *media\_file\_name*—Replace this with the name of the file to delete from the channel you named. If the file can be found at the root level of the channel’s designated directory on the CDM device, only the filename is required (with the file extension). If the file is located in a recursive directory or nested within the channel’s home directory, a filename specifying the full path of the file is required, for example, **&FILENAME=/foo/bar/intro.mpg**.

For instructions on evaluating your remove-media request after it has been sent, see the “Evaluating the Status of Your Add or Remove Request” section on page 3-14.

## Alternative Media Delivery

For any given media file, the CDM administrator has the ability to define custom HTML error pages for the following error conditions:

- Media file is not in a coverage zone (Coverage)



---

**Note** A coverage zone is the area that a CE is authorized to serve based upon IP address, typically the local portion of your intranet or subnet.

---

- Content not available from the CDM (Publish)
- Content not available on the CE (Content)
- CE maximum bandwidth limit reached (Bandwidth)

Before defining custom HTML error messages for the above conditions, create the HTML pages that will be displayed.

To select a file for each of the above conditions:

- 
- Step 1** From the Channels menu, choose **Media Editor**.  
The Media Editor dialog box appears. (See Figure 3-6.)
- Step 2** Make sure the correct channel is displayed in the drop-down list box. If it is not, click the correct channel in the list.
- Step 3** Click **Edit** for the file you want to edit.  
Fields displaying the media file properties are displayed.  
See Table 3-2 for a description of each option.
- Step 4** Go to the section labeled Custom HTML Error Pages and enter the necessary alternative URL in the text fields provided.
-

# Replicating Media

Using a process called replication, the CDM distributes media to each CE in the network. Once accessed in the Media Editor, individual media files can be replicated from the CDM to a selected CE device.

**Note**

---

To mark content within a channel for replication, the channel must be subscribed to a CE.

---

## Replicating Selected Media Files from a Channel

To replicate individual media files from a CDN channel to subscribed CEs:

- 
- Step 1** From the Channels menu, choose **Media Editor**.  
The Media Editor dialog box appears. (See Figure 3-6.)
  - Step 2** Make sure the correct channel is displayed in the appropriate drop-down list. If it is not, click the correct channel in the list.
  - Step 3** Click the **Edit** thumbnail image for the file you want to edit.  
Fields displaying the media file properties are displayed.  
See Table 3-2 for a description of each option.
  - Step 4** Select the **Replicate** check box.
  - Step 5** Click **Save Changes**.  
Clicking **Cancel Changes** returns all values to their previous settings when you last clicked **Save Changes**.  
The selected file is replicated to all CEs subscribed to that channel.
-

## Replicating All Media Files from a Channel

To replicate all media currently in a channel to subscribed CEs:

---

- Step 1** From the Channels menu, choose **Channel Settings**.  
The Channel Settings dialog box appears. (See Figure 3-1.)
- Step 2** Make sure the correct channel is displayed in the Channel Selector field. If it is not, click the correct channel in the list.  
Some general information about the selected channel is displayed.
- Step 3** Click **Replicate All Media**.
- 

## Removing Media from a Content Engine

To remove all media currently in a channel from subscribed CEs:

---

- Step 1** From the Channels menu, choose **Channel Settings**.  
The Channel Settings dialog box appears. (See Figure 3-1.)
- Step 2** Make sure the correct channel is displayed in the Channel Selector field. If it is not, click the correct channel in the list.  
Some general information about the selected channel is displayed.
- Step 3** Click **Remove All Media**.  
You are prompted to confirm your decision to remove all media files from this channel.
- Step 4** Click **OK**.
-

# Linking to Media from Web Pages

Once you have successfully imported media files to the channels established on the CDM, you are ready to link that content to your Web site or corporate LAN.

**Note**

---

To import media files to the CDM, click **Import Media** or click **Media Importer** on the Channels menu and see the “Importing Media” section on page 3-7 for more information.

---

To embed CDN media URLs in Web pages:

- 
- Step 1** From the Channels menu, choose **Previewer**.
- The Cisco Systems Channel Previewer window appears, listing the channels on the CDM.
- Step 2** Click a channel thumbnail image to view the media files that have been added to that channel.
- A separate browser window opens, listing all media files subscribed to that channel.
- Step 3** Highlight the URL that appears just below the filename for the media.
- Step 4** Right-click and choose **Copy**. Alternatively, right-click the **CDM Preview** hypertext link for the media file, and choose the **Copy Shortcut** option from the menu that appears.
- Step 5** With the URL for the media copied to your clipboard, open the HTML editor used to maintain your Web pages.
- Step 6** Locate the position on the Web page where you wish the link to the CDN media to appear.

- Step 7** Create a new HTML anchor link at the proper location that points to the CDN media. Your link should be in the format:
- ```
<A HREF="URL">image_or_text_file_name</A>
```
- URL—URL you copied from the Channel Previewer.
 - IMAGE_or_TEXT—Content the user clicks to activate the CDN media link.
- Step 8** Paste the URL you copied into the tag so that the link points to the CDN media. Then save the changes you made to the Web page and post the page to the Internet or your intranet.
-

Playing Video Directly to a TV Monitor

CEs equipped with an integrated Motion Picture Experts Group 1 (MPEG1) decoder can play media files using National Television Standards Committee (NTSC) or Phase Alternation Line (PAL) video signals. This enables the CE to play video directly to a TV monitor in applications such as kiosks, cable TV systems, and video walls. Playback is controlled from any Web browser and has VCR-like controls, including the ability to create looping playlists.

**Note**

To use the video-out feature, you must have a device with an integrated MPEG decoder card.

Configuring Content Engines for NTSC or PAL Video Output

CEs can be configured to output video using either the NTSC or PAL standard.

To designate the video format that will be used when delivering content from a CE to a video device:

-
- Step 1** From the Devices menu, choose **Time Zone**.
The Time Zone dialog box appears.
 - Step 2** Choose the name of the CE you wish to modify from the Device Selector list.
 - Step 3** Click **Video Type** and choose the correct video output format for the device you are using. Your options are NTSC or PAL. NTSC is the default.
 - Step 4** Click **Save Changes**.
-

Building a Media Playlist for the TV Controller

Playlists enable you to pull together series of media files from different channels and play them in a defined order on any video-out enabled device.

To access the TV controller from the CDM user interface and add media to a playlist:

-
- Step 1** From the Devices menu, choose **TV Controls**.
The TV Controls dialog box appears. (See Figure 2-7.)
 - Step 2** Click the name of the CE you wish to access. Each CE's name is a link.
 - Step 3** Enter your username and password.
The CDM's TV controller appears.
 - Step 4** Make sure the correct channel is displayed in the Channel Selector field. If it is not, click the correct channel in the list.
 - Step 5** Under the heading Available Media, check the check box next to each available media file that you want to add to the playlist. Click **All** to choose all of the files or **None** to clear the selections.

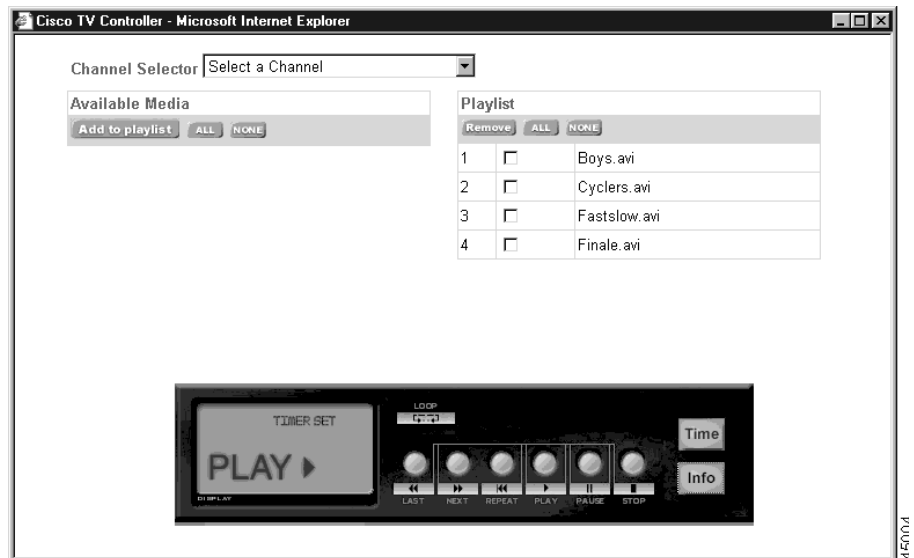
Step 6 Click **Add to Playlist**.

Step 7 To add media from another channel to the playlist, click the **Channel Selector** drop down list and choose a different channel, and then repeat Step 5 through Step 6.

Once you have created your playlist, click the **PLAY** button on the TV controller to play the media files on the playlist. Use the **NEXT**, **LAST**, and **REPEAT** buttons to move from file to file within the playlist.

See the next section, “Scheduling Playback Times for Playlists” for information on setting a schedule for your media playlist.

Figure 3-7 TV Controller Dialog Box



Scheduling Playback Times for Playlists

To access the playlist time controls and set a schedule of dates on which to play back your media playlist:

Step 1 Follow the instructions given in the “Building a Media Playlist for the TV Controller” section on page 3-29 to access the TV controller dialog box and create a media playlist.

Step 2 Once you have created your playlist, click the **Time** button on the TV Controller console.

The Playlist time list appears and, below it, controls for scheduling new play back times.

Step 3 On the time controls, place the cursor in the Month field in the row labeled Start time and enter the number of the month on which the scheduled media playback begins.

Step 4 Press the Tab key to move the cursor forward and fill in the remaining playback information.

All information should be in numeric format, though it is not necessary to use leading zeros. Select the **AM** or **PM** button to indicate what time of day you wish the playlist to start. For example, a start time of 6:20 p.m. on October 5, 2000, would appear as:

Month	Day	Year	Hour	Minute	AM	PM
10	5	2000	6	20	—	X

Step 5 Repeat Step 3 and Step 4 for the row labeled Stop time to set the time at which the playlist will discontinue playback.

Step 6 Click **Save Changes** to add the start time and stop time you specified to the playlist time list. The times will appear on the list at the top of the TV controller dialog box.

Clicking **Cancel Changes** resets the start time and stop time without adding any new playback times to the playlist time list.

Editing Playlist Playback Times

Playlist playback times cannot be edited once they are created. To modify a playlist playback time, simply delete the time setting you wish to change and add a new setting with the correct times specified.

To modify the playlist time list:

-
- Step 1** With the playlist time list displayed, check the check box next to the playback time setting you wish to change. Click **ALL** to select all playback time settings on the playlist time list, or **NONE** to deselect any time settings that have already been selected.
 - Step 2** With your time settings selected, click **Remove** to remove the time settings from the playlist time list. Click **Remove All** to delete all time settings from the playlist time list regardless of whether they are selected or not.
You are prompted to confirm your decision to remove playback time settings.
 - Step 3** Click **OK** to confirm your choice or **Cancel** to return to the TV controller without removing any time settings.
 - Step 4** Follow the instructions in the “Scheduling Playback Times for Playlists” section on page 3-31 to create a time setting with the correct Start time and Stop time.
-

Removing Media from a Playlist Using the TV Controller

To access the TV controller from the CDM and remove media from a playlist:

-
- Step 1** From the Devices menu, choose **TV Controls**.
The TV Controls dialog box appears.
 - Step 2** Choose a CE name. If multiple TV out-enabled CEs are available, make sure to choose the correct CE.
The CDM TV Controller appears.
 - Step 3** Make sure the correct channel is displayed in the Channel Selector field. If it is not, click the correct channel in the list.

- Step 4** Under the heading **Playlist**, check the check box next to each playlist file that you want to remove from the playlist. Click **All** to select all of the files or **None** to clear your selections.
- Step 5** Click **Remove**.
-

Playing Media on TV-Out Enabled Devices

Once you have created a media playlist using the TV controller feature, you can play that list of media at any time or schedule playback to occur on specific days and predetermined times. See the “Scheduling Playback Times for Playlists” section on page 3-31 for information on scheduling playback.

To display media from your playlist on a TV-out enabled device:

-
- Step 1** Follow the instructions in the “Building a Media Playlist for the TV Controller” section on page 3-29 to access the TV Controller dialog box and create a media playlist.
- Step 2** Using the TV controller console, click the **Play** button. If you wish the TV controller to loop through the playlist without stopping, click the **Loop** button on the console.

The TV Controller will play all media files on the playlist in succession. To view information about each file as it is played, see the next section, “Viewing Information About a Media File That Is Playing”.

- Step 3** To prevent a media file from being played, check the check box next to the filename on the playlist and click **Remove**.

The file will be removed from the playlist.

Viewing Information About a Media File That Is Playing

To view information about a media file that is playing:

-
- Step 1** Follow the instructions in the “Playing Media on TV-Out Enabled Devices” section on page 3-33 to launch the CDMs TV controller and play media subscribed to a channel.
- Step 2** While a media file from the playlist is playing, click **Info** on the TV controller. Information on the file that is currently playing appears in the Cisco TV Controller window.
-



Maintaining the System Software

This chapter provides information on the Content Distribution Manager (CDM) features that enable Content Delivery Network (CDN) administrators to conduct system maintenance functions such as rebooting system devices, backing up, and restoring devices.

This chapter contains the following sections:

- Rebooting CDN Devices, page 4-2
- Reconfiguring CDN Devices following CDM IP Address Change, page 4-3
- Backing Up and Restoring CDN Data, page 4-11
- Working with the System Log, page 4-12
- Updating the CDN Software, page 4-14
- Updating Software Licenses, page 4-21

Rebooting CDN Devices

The System dialog box provides options for rebooting your device and reconfigure your system. (See Figure 4-1.) To reboot a CDN device:

- Step 1** From the Devices menu, choose **System**. The System dialog box appears. (See Figure 4-1.)

Figure 4-1 System Dialog Box (CDM Device Selected)

The screenshot shows the 'System' dialog box for a CDM device. The left sidebar contains the following menus:

- Devices**
 - Device Console
 - Device Editor**
 - Identification
 - TCP / IP
 - DNS
 - Proxy
 - Users
 - Time Zone
 - PC Folders
 - System**
 - Bandwidth
 - Backup / Restore
 - TV Controls
 - Software Update
- Channels**
 - Channel Console
 - Channel Editor**
 - Channel Settings
 - Media Importer
 - Import Progress
 - Media Editor
 - Subscriber
 - Previewer
- System Log

The main content area is titled 'System Dialog Box' and includes the following sections:

- Device Selector:** [00:90:27:df:ee:c9.box.009027dfec9.sn ▼]
- Online Device Name:** 00:90:27:df:ee:c9.box....
- Type:** CDM
- Uptime:** 1.1 days
- Subscribed Channels:** Default_Channel ▼
- IP Address:** 10.89.1.141
- System Information**
 - Uptime:** 1.1 days
 - Last Booted:** Tuesday, December 05, 2000 10:49:53 AM
 - Software Version:** V2-1-rc16
 - System ID:** 00:90:27:df:ee:c9.box.009027dfec9.sn
 - MAC Address:** 00:90:27:df:ee:c9
- Device Reboot**
 - Click 'System Reboot' to reboot this CDM. *NOTE: The reboot process can take up to 10 minutes during which time this web-based interface may not function correctly.*
 - System Reboot** [Button]
- CE Coverage Zones**
 - Select coverage zones automatically
 - Specify coverage zone settings**
 - Preferred** [Text Input Field]
 - Required.** A list of preferred zones. A value of 0.0.0.0/0 selects ALL possible IP addresses. A value of 127.0.0.0/8 selects only those IP addresses beginning with 127. You may enter several addresses separated by semicolon ';'.
 - Regular** [Text Input Field]
 - Optional.** A list of regular zones. A value of 0.0.0.0/0 selects ALL possible IP addresses. A value of 127.0.0.0/8 selects only those IP addresses beginning with 127. You may enter several addresses separated by semicolon ';'.

- Step 2** Make sure that the correct device is displayed in the Device Selector field. If it is not, choose the correct device in the list. General information about the selected device is displayed.

- Step 3** To reboot the selected device, click **System Reboot**. It may take up to 10 minutes for your device to reboot.
-

Reconfiguring CDN Devices following CDM IP Address Change

Use any of the following procedures to reconfigure your CDM and your Content Engines (CEs) when the CDM IP address has changed. It is critical that you have some plan for re-pointing your CEs to your CDM prior to changing the CDM IP address, and that you monitor the status of your CEs throughout the transition period to confirm that all CEs are ultimately able to connect to the CDM at its new address.

The three approved methods for reconfiguring your CDN devices following a CDM change of address are:

- DNS-based reconfiguration
- CDM-based reconfiguration
- Installation Wizard-based reconfiguration

DNS-based Reconfiguration

This reconfiguration option is available to any customer using DNS to connect to their CDN devices.



Note

If you are using DNS, reconfiguring your CEs and CDM using the DNS-based solution is preferable to the other methods discussed here, as it is simpler to implement and requires little or no administrative intervention.

To reconfigure your CEs if you are using DNS:

-
- Step 1** Change the IP address of the CDM to the new IP address. You can change the CDM IP address using either the CDM Device Editor or the CDN Installation Wizard. Refer to Chapter 2, “Configuring Cisco Content Delivery Network Devices” in the *Cisco CDN Enterprise Solution User Guide*.
- Step 2** Access the administrative interface of your DNS server software and change the IP address of the CDM’s DNS name to match the new IP address of the CDM.
- Step 3** Return to the CDM and click **System**.
The System dialog box will appear.
- Step 4** Make sure that the CDM is listed in the Device Selector drop down list. If it is not, expand the list and select your CDM from the devices listed.
- Step 5** Click **System Reboot** to reboot your CDM and reconnect it to your network using the new IP address.
- Step 6** Wait for your CE devices to reconfigure themselves to point to the CDMs new address.
Approximately 45 minutes after your CDM comes back online at its new address, your CEs will begin going offline, as they realize that the CDM is no longer at its prior address. They will then automatically use the DNS name of the server to resolve the address of the CDM to its new IP address.
- Step 7** Click **Device Console**. Monitor your CEs and verify that each CE is able to locate the CDM and come back online.
- Step 8** If one or more CEs are not able to resolve the CDMs new address, use the Installation Wizard to manually point them to the location of the CDM. Refer to the “Installation Wizard-based Reconfiguration” section on page 4-6 or the *Cisco CDN Software Enterprise Solution Configuration Guide Version 2.1* for more information.
-

CDM-based Reconfiguration

If you are not using DNS on your network, you can provide your CEs with the new address of the CDM using the Alternate IP Address field on the TCP/IP dialog box. This field stores the new address of the CDM in advance of the CDM has

changed addresses. CEs that are unable to connect to the CDM at its original address look for the Alternate IP Address, then try to reach the CDM at that location.

To configure the Alternate IP Address for your CDM:

-
- Step 1** From the Device Editor, click **TCP/IP**. The TCP/IP dialog box appears.
 - Step 2** Verify that the CDM appears in the Device Selector drop down list. If the CDM does not appear, expand the list and select the CDM.
 - Step 3** Click the **Specify an IP address, port, subnet mask, and gateway** option. The current IP address of the CDM appears in the IP address field.
 - Step 4** Without changing any of the information presented, place the cursor in the Alternate IP Address field and enter the IP address to which the CDM will be moving in valid “dotted quad” format. For example:

```
209.165.200.0
```
 - Step 5** Click **Save Changes** to save the address.
 - Step 6** Wait approximately one hour before moving the CDM to the address you entered in the Alternate Address field.
 - Step 7** Once an hour has passed, you can change the CDM’s actual IP address using either the CDM Device Editor, the CDN Installation Wizard, or by reconfiguring your DHCP server. Enter the new IP address of the CDM into the IP Address field on the TCP/IP dialog box. This address should match the address in the Alternate IP Address field.

Refer to Chapter 2, “Configuring Cisco Content Delivery Network Devices” in the *Cisco CDN Enterprise Solution User Guide* for more instructions on changing the IP address of CDN devices.
 - Step 8** Click **Save Changes**.
 - Step 9** Click **System**.
The System dialog box will appear.
 - Step 10** Make sure that the CDM is listed in the Device Selector drop down list. If it is not, expand the list and select your CDM from the devices listed.
 - Step 11** Click **System Reboot** to reboot your CDM and reconnect it to your network using the new IP address.
 - Step 12** Wait for your CE devices to reconfigure themselves to point to the CDMs new address.

Approximately 45 minutes after your CDM comes back online at its new address, your CEs will begin going offline, as they realize that the CDM is no longer at its prior address. They will then automatically use the Alternate IP Address to connect to the CDMs new IP address.

- Step 13** Click **Device Console**. Monitor your CEs and verify that each CE is able to locate the CDM and come back online.
- Step 14** If one or more CEs are not able to resolve the CDMs new address, use the Installation Wizard to manually point them to the location of the CDM. Refer to the “Installation Wizard-based Reconfiguration” section on page 4-6 or the *Cisco CDN Software Enterprise Solution Configuration Guide Version 2.1* for more information.
-

Installation Wizard-based Reconfiguration

The CDN Installation Wizard can be used to reconfigure your CDM or CEs. Use the Installation Wizard in the event that you were unable to successfully move your CDM to a new IP address using the CDM interface, or have one or more CEs that failed to locate the CDM at its new address after you followed the instructions in the “DNS-based Reconfiguration” section on page 4-3 or “CDM-based Reconfiguration” section on page 4-4.

To manually reconfigure a CDM or CE using the Installation Wizard:

- Step 1** Launch the CDN Installation Wizard. Refer to Chapter 1, “Overview” in the *Cisco CDN Software Enterprise Solution Configuration Guide* for instructions on activating the Installation Wizard.

The Cisco Content Delivery Network Installation Wizard screen appears.

- Step 2** Click **Next** to advance to the next step in the Installation Wizard.
- The Select a Device dialog box lists all CDN devices on the subnet by their device ID or by a user-friendly name previously assigned using the Installation Wizard.
- Step 3** Choose the first CE or CDM device you want to configure and click **Next** to advance to the next step in the Installation Wizard.

The Name dialog box appears.

- Step 4** If you have not already done so, enter a user-friendly name in the field provided.

This name supplements the alphanumeric device ID or MAC address and makes it easier to identify the device when you use the Installation Wizard or CDM user interface.

Step 5 Click **Next** to advance to the next step in the wizard.

If the device you selected is a CE proceed to Step 6 The Content Distribution Manager dialog box appears.

If the device you selected is a CDM, go to Step 8.

Step 6 Use the fields provided to point your CE to the CDM's new IP address on your network. You must complete this step in order for your CE to be able to communicate with the rest of the CDN and begin receiving media.

- Choose **Name** to identify the CDM by its DNS name and fill in the DNS name in the field provided.
- Choose **IP address** to identify the CDM by its IP address, and fill in the IP address in the field provided in valid "dotted quad" format. For example:

209.165.200.223

Step 7 Click **Next** to advance to the next step in the Installation Wizard: indicating whether or not you are using a DHCP server.

The Obtain network settings automatically (DHCP) dialog box appears.

Step 8 Perform one of the following actions:

- If you are using DHCP, choose **Yes** and then click **Next** to proceed to the next step in the Installation Wizard: configuring a Domain Name Server.
- If you are not using DHCP and are configuring CDN devices manually, choose **No** and then click **Next**.

The Network Settings dialog box appears.

- Place your cursor in the IP address field and enter the network IP address, using the arrow key to move from block to block.
- Press the Tab key to advance to the following fields and enter the subnet mask, if one is being used, as well as the gateway address used by the selected CE or CDM.

The DNS-Domain Name Server dialog box appears.

Step 9 Perform one of the following actions:

- If you are using a DNS server, choose **Yes** and then click **Next** to advance to the DNS Servers dialog box and provide the IP addresses of DNS servers referenced by your CDN devices.

Click **Next** to advance to the next step in the Installation Wizard: identifying your proxy server (if one exists).

- If you are not using DNS, choose **No** and then click **Next** to advance to the next step in the Installation Wizard: identifying your proxy server (if one exists).

The Proxy Server dialog box appears.

Step 10 Perform one of the following actions:

- If you are using a proxy server, choose **Yes** and then click **Next** to advance to the next step in the Installation Wizard, Proxy Settings. The Proxy Settings dialog box appears.
 - In the fields provided, enter the IP address of the proxy server and the number of the designated port through which traffic will pass (usually 80).
 - Click **Next** to advance to the next step in the Installation Wizard: identifying a secure proxy server (if one exists).
- If you are not using a proxy server, choose **No** and then click **Next** to advance to the next step in the Installation Wizard: identifying a secure proxy server (if one exists).

The Secure Proxy Server dialog box appears.

Step 11 Perform one of the following actions:

- If you are using a secure proxy server, choose **Yes**, then click **Next**. The Secure Proxy Settings dialog box appears.
 - Using the fields provided, enter the IP address, port number, proxy server user name and password.
 - Click **Next** to advance to the next step in the Installation Wizard: specifying addresses that will be treated as proxy exceptions.
- If you are not using a secure proxy server, choose **No** and click **Next** to advance to the next step in the Installation Wizard: specifying any addresses that will be treated as proxy exceptions.

The Proxy Exceptions List dialog box appears.

Step 12 Perform one of the following actions:

- If you do not have addresses you wish to treat as proxy exceptions, choose **No**, and then click **Next** to advance to the next step in the Installation Wizard: reviewing the configuration settings for your selected device.
- If you have addresses that you do not want to connect through your proxy or secure proxy server, choose **Yes** and then click **Next**.

The Proxy Exceptions dialog box appears.

- Enter the IP address of your first exception in the field provided, and then click **Add** to add it to the list of exceptions immediately below.
- Repeat this step for each exception. If you make a mistake, click the exception address in the list of exceptions, and then click **Remove** to remove the address from the list.
- When you have finished adding exceptions, click **Next** to advance to the next step in the Installation Wizard: reviewing the configuration settings for your CDN device.

The Settings dialog box appears.

Step 13 Review the configuration settings for your CDN device.

- If the information is not accurate, click **Back** to step back in the Installation Wizard and change the configuration information.
- Otherwise, click **Finish** to configure the CE or CDM using the settings displayed and advance to the next step in the Installation Wizard: confirming configuration of the CDN device.



Tips

If you want to copy the information for use in another application, document, or e-mail, click **Copy info** to copy the configuration settings to your Windows clipboard. You can then paste the information into another Windows application.

The Configuring... dialog box appears.

Step 14 Perform one of the following actions:

- If this is a CDM or is not a new CE, proceed to Step 15 and wait for the device status to change to “online” before exiting the Installation Wizard.

- If this is a new CE, the device is reconfigured using the settings provided with the Installation Wizard, and then awaits approval from the CDM. You must manually approve the new CE:
 - Log on to the CDM and click **Device Console**. The CDM lists all associated CDN devices. The new CE appears with a caution status indicator in the online column.
 - Click **Edit** to edit the CE settings. From the Identification dialog box, check the **Approve** check box.
 - Click **Save Changes**. Return to the Installation Wizard and wait for the CDM approval to register.



Note It may take a few moments for the CE to integrate the new configuration settings and come back online. Monitor the status messages provided in the Configuring dialog box and verify that your CE device is able to come online properly.

The machine status indicator located beneath the Copy info button will turn green and read “online.”

Step 15 Once the device’s status is “online,” click **More** to return to the Select a Device dialog box and configure another of your CDN devices, or click **Exit** to close the Installation Wizard.

If the device fails to come online, click **Back** to step backward in the Installation Wizard and review your configuration settings.

After initial device configuration, the CDM user interface can be used to modify the configuration settings on any of your devices. Refer to Chapter 2, “Configuring Cisco Content Delivery Network Devices,” in the *Cisco CDN Software Enterprise Solution User Guide* for detailed instructions on configuring your CDM or CEs using the CDM user interface.

Backing Up and Restoring CDN Data

The CDM provides the capability for tape backup and restoration to protect against lost data and to provide service recovery.

We recommend that you do a backup before performing any software upgrades.



Note

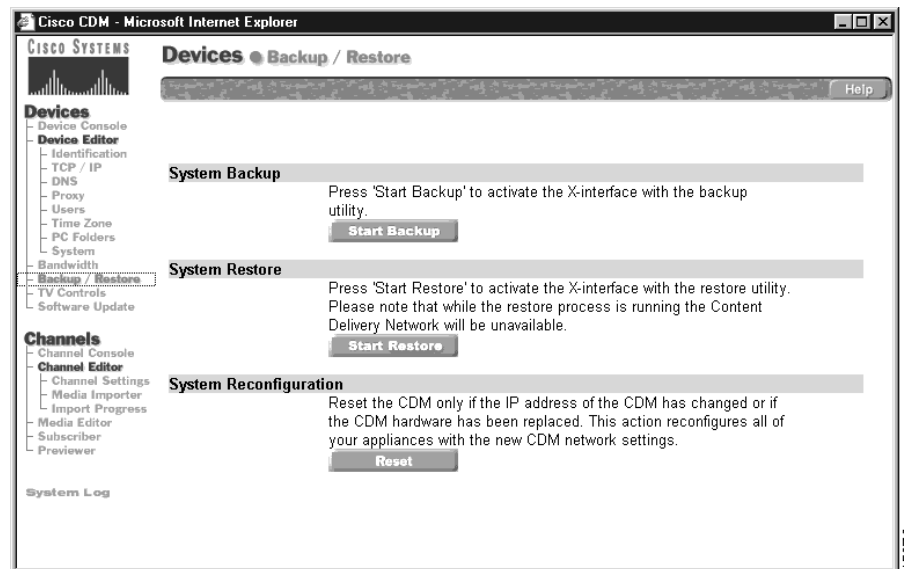
You must be running an X server on your PC client to use the backup and restore utilities.

To use the backup option:

Step 1 From the Devices menu, click **Backup/Restore**.

The Backup/Restore dialog box appears. (See Figure 4-2.)

Figure 4-2 Backup/Restore Dialog Box



Step 2 Click **Start Backup** to back up CDM data: configuration settings, media, URLs, and database. You are prompted to confirm your decision to back up the device.

- Step 3** Click **OK**.
An X-interface window with the backup utility appears.
- Step 4** Follow the instructions included separately for the BRU backup utility.
-

To use the restore option:

- Step 1** From the Devices menu, click **Backup/Restore**.
The Backup/Restore dialog box appears. (See Figure 4-2.)
- Step 2** Click **Start Restore**.
You are prompted to confirm your decision to do a restore.
- Step 3** Click **OK**.
An X-interface window with the restore utility appears.



Note The restore process overwrites any user data on the system. While the restore process is running, the CDN is unavailable.

- Step 4** Follow the instructions included separately for the BRU restore utility.
-

Working with the System Log

You can view system error messages from the System Log dialog box. (See Figure 4-3.) If you perform an operation that fails, a file import for example, a message appears in the system log explaining why the import failed.

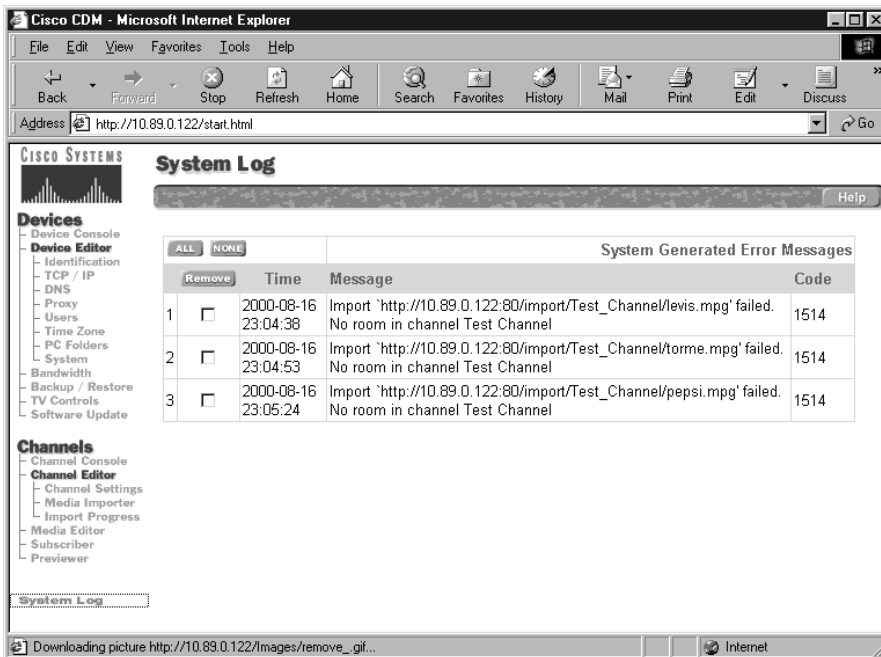
Once viewed, messages can be removed from the system log.

To view and remove system log error messages:

Step 1 Click **System Log**.

The system-generated error messages are displayed in the System Log dialog box. (See Figure 4-3.)

Figure 4-3 System Log Dialog Box



Step 2 Check the check box next to error messages that you want to remove from the system log. Check **All** to choose all of the files or **None** to clear your selections.

Step 3 Click **Remove**.

Updating the CDN Software

The two supported methods for updating your CDN software are:

- Downloading updated CDN software from Cisco.com, and then using the CDM manual upgrade process to install the downloaded software
- Using the CDM Software Update feature to download and automatically install CDN software updates from the CDN support server

Updating Software from Cisco.com

Updates of the CDN software are available from Cisco.com, the Cisco customer support portal. Once you have downloaded the appropriate software from Cisco.com, use the manual upgrade procedure described in the “Performing a Manual CDN Software Upgrade” section on page 4-17 to distribute the update files to all your CDN devices.



Note

In order to access Cisco.com and download your CDN software update, you need a registered username and password for the site. If you are a Cisco customer and service contract owner, a Cisco reseller, Premier Certified Partner, the customer of a Cisco certified Partner Initiated Customer Access (PICA) partner, or a Cisco consultant, you can acquire a Cisco.com login from the Cisco web site.

CDN software can be downloaded from Cisco.com using either a browser pointed to www.cisco.com, or an FTP application connected to the Cisco FTP site. Use the appropriate directions that follow to connect to Cisco.com.

Downloading Software from Cisco.com

To connect to the Cisco.com web site:

-
- Step 1** Launch your Web browser and point it to the following URL:
`http://www.cisco.com/cgi-bin/tablebuild.pl/cdn-ent`
- Step 2** You will be prompted to log on to Cisco.com. Enter your username and password.



Note You need to have a username and password before attempting to download a software update from Cisco.com. In order to acquire a Cisco.com login, you will need a service contract number, Cisco.com registration number and verification key, PICA registration number and verification key, or packaged service registration number.

- Step 3** In the download area, locate the upgrade file or files for the version of the CDN software that you need. Version numbers are listed in the column labeled Release.
- Step 4** For each upgrade file you need to download, click on the file name to initiate download.
- Step 5** If you are prompted to open the file or save it to a disk, choose **Save** to save the file to a disk. Locate a directory on your hard drive or LAN to temporarily hold the upgrade file and click **OK**.



Note You will later import upgrade files to the CDN, so be sure to place the files in a location that is easy to remember and which you will be able to access later.

- Step 6** Proceed to the “Performing a Manual CDN Software Upgrade” section on page 4-17 for instructions on using the upgrade file to upgrade the software on your CDN devices.
-

Downloading Software from the Cisco.com FTP Server

In addition to downloading software upgrades for the CDN product from Cisco.com, you can also use your web browser to download CDN software from Cisco's designated FTP site, `ftp://ftp.cisco.com`.

Step 1 Launch your Web browser (either Microsoft Internet Explorer version 4.x or later, or Netscape Navigator version 4.x or later).

Step 2 Log in to the Cisco FTP server as a registered user or as a guest.

- To enter as a registered user, enter your user ID and password in the Location field in the following format:

```
ftp://userid:password@ftp.cisco.com
```

- To enter as a guest user, the URL is:

```
ftp://ftp.cisco.com
```

You will be prompted to log on. If you were given a special access code by e-mail or through a customer support representative, enter the special access code as a user ID and enter your e-mail address as a password in the format `user@host.domain`. It should appear similar to:

```
ftp://access_code:userid@host.domain/coded
```

Step 3 Navigate to the following download directory:

```
cisco/content-delivery/cdn/enterprise/
```



Note Guest users will only be able to see images that are located under the `/pub` directory.

Step 4 Click on the filename for each upgrade file to download the file to your local machine, or right mouse click on the file name and choose the **Save Link As** or **Save Target As** options to save the target file to your local machine.

If you are prompted to open the file or save it to a disk, choose to save the file to a disk. Locate a directory on your hard drive or LAN to temporarily hold the upgrade file and click **OK**.



Note You will later import these files to the CDN, so be sure to place them in a location from which they are easy to retrieve for import later.

Step 5 Proceed to the “Performing a Manual CDN Software Upgrade” section on page 4-17 for instructions on using the upgrade file to upgrade the software on your CDN devices.

Performing a Manual CDN Software Upgrade

In order to manually upgrade your CDN software, you must:

1. Create a manual upgrade channel that will distribute the updated license.
2. Subscribe any CDN devices requiring a software update to the manual upgrade channel.
3. Import software update files to the manual upgrade channel.
4. Distribute software update files to all devices marked for upgrade.

Once these steps are complete, you can use the Software Update feature to install the software upgrade files to subscribed devices. See the following sections for more details on completing each step.



Note It is imperative that you upgrade the software on your Content Engines (CEs) before upgrading the software on your CDM. Once your CDM software has been upgraded, any remaining CEs that have not also been upgraded will be unable to connect to it. Contact Cisco Technical Support if you have any questions regarding the proper procedure for upgrading your CDN devices.

Creating a Manual Upgrade Channel

To create a manual upgrade channel:

-
- Step 1** Launch your Web browser and point it to the CDM.
 - Step 2** Log on using your administrator logon.
 - Step 3** From the Channels menu, click **Channel Console**.
 - Step 4** Click **Add Channel**.
 - Step 5** Select the check box next to the channel name *Channel #* and click **Edit**.



Note “*Channel #*” is the default channel name. If you have added other channels and have not renamed them, the channel that you added will be named “*Channel #*” (# being the next incremental number).

- Step 6** In the Name field, change the name of the channel to **MANUAL_UPGRADE**. The channel must use this name (and letter case, as well) in order for it to function as an upgrade channel.
 - Step 7** In the **Size Limit** field, enter a value that will accommodate your upgrade files. For example, entering **100** in the field provided and then clicking the **MB** button sets the size limit of the **MANUAL_UPGRADE** channel to 100 MB.
 - Step 8** Select both the **Auto Subscribe** and **Auto Replicate** check boxes.
 - Step 9** Click **Save Changes**.
-

Subscribing Devices to the Manual Upgrade Channel

Once you have created your upgrade channel, subscribe all the devices requiring a software update to that channel.

-
- Step 1** From the Channels menu, click **Subscriber**.
 - Step 2** From the Channel Selector, choose the **MANUAL_UPGRADE** channel.
 - Step 3** In the Unsubscribed CEs column, click **All** to select all of the unsubscribed devices for subscription to the upgrade channel.
 - Step 4** Click **Subscribe**.

The selected CEs will be subscribed to the **MANUAL_UPGRADE** channel and will receive upgrade files once they are imported to the channel.

Importing the Software Update Files

To import the software update files to the manual upgrade channel:

-
- Step 1** From the Channels menu, click **Media Importer** and follow the directions for importing the files you downloaded from Cisco.com using the Web Server, PC folders or FTP option.
 - Step 2** From the Channels menu, click **Import Progress** to monitor the progress of your import.

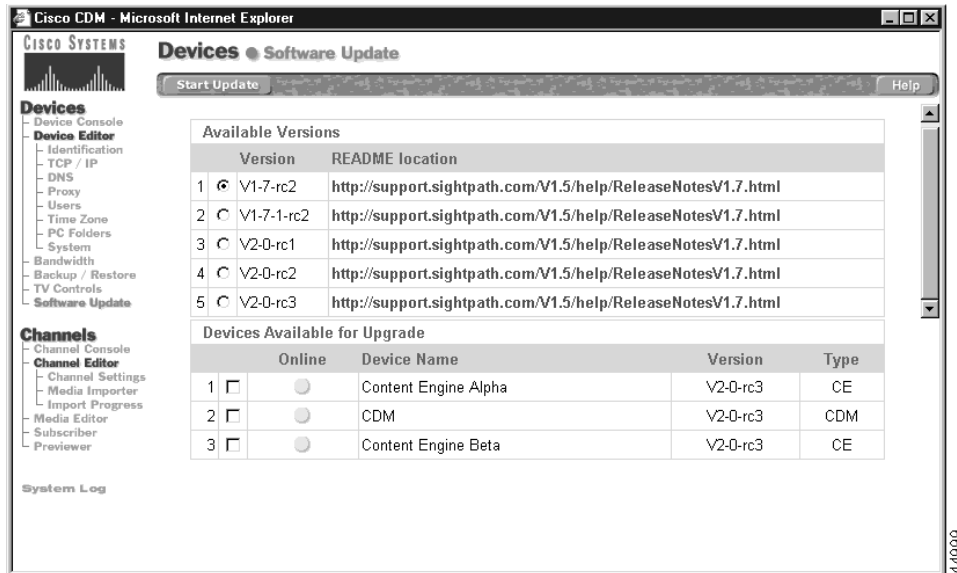
When the import is finished, the import status will be “complete.”
 - Step 3** Once you have imported your software upgrade to the manual upgrade channel, refer to the “Updating Software Using the CDM Software Update Feature” section on page 4-20 to complete the upgrade process.
-

Updating Software Using the CDM Software Update Feature

From the Software Update dialog box, you can update the system software. To update the system software:

- Step 1** From the Devices menu, choose **Software Update**. The Software Update dialog box appears. (See Figure 4-4.)
- Step 2** Under the heading Available Version, click the appropriate version available for upgrade. If there is only one upgrade available, a check box is not displayed. The upgrade is selected automatically.
- Step 3** Under the heading Devices Available for Upgrade, check the check box for each available device that you want to upgrade.
- Step 4** Click **Start Update**. The selected devices reboot when the upgrade is finished.

Figure 4-4 Software Update Dialog Box



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Updating Software Licenses

The Cisco CDN is made up of a number of different hardware and software components, some of which require separate licensing. Periodically, you may need to expand or update license information for one or more of the CDN components, for example, RealServer.

To facilitate licensing upgrades for the components of the CDN, Cisco has developed a procedure that uses the CDN to make the distribution of license upgrade files seamless and centrally organized. Using a specially designated CDN channel, you can initiate license upgrades for certain CDN components from the CDM to any subscribed CEs.

In order to use the license distribution feature, you must first do the following:

1. Obtain license update files from Cisco. These files typically are installed on your CDN hardware and shipped with your CDN product.
2. Create a license distribution channel on your CDM.
3. Subscribe any CEs requiring license upgrades to your license distribution channel.
4. Import a license update file to your license distribution channel.
5. Replicate the license update file to subscribed CEs, automatically initiating the license upgrade process on each CE.

See the sections that follow for instructions on completing each of these steps.

Identifying License Update Files

Software license update files are distributed to you from Cisco on your CE and CDM hardware.

The directory provided to store license update files on your CDM and CE machines is `\Sonoma\State\Real\License`.

All license update materials are placed in this location during the manufacturing process. Update files should not be moved from this location because the CDN license update feature looks specifically to the `\Sonoma\State\Real\License` directory on the CDM and CEs when it is activated.

Creating a License Distribution Channel

The first step in distributing license updates to your CDN devices is to create a channel through which licenses will be distributed.

To create a license distribution channel:

Step 1 From the Channels menu, choose **Channel Console**.

The Channel Console dialog box appears.

Step 2 Click **Add Channel**.

A new channel with the default name “Channel#” is added to the Channel Console list, where # is a sequential number assigned to the CDM.

Step 3 Click **Edit** for the newly created channel. Using the options provided, rename your channel accordingly. For example:

License Distribution Channel



Note Unlike the MANUAL_UPGRADE channel, there are no requirements for the name of the license distribution channel.

A description for the channel is optional.

Step 4 Verify that the Auto Subscribe and Auto Replicate options are not selected. You will be distributing license updates to selected CEs at specified times, so you do not want these features enabled.

Step 5 Activate the license distribution feature by clicking the **Is License**.

Step 6 Click **Save Changes**.

Once you have created your license distribution channel, you are ready to begin updating your CDM and CEs with updated license information. In order to do this, however, you must first prepare the channel to distribute licenses by completing the following tasks.

Subscribing Devices to the License Distribution Channel

In order for designated devices to receive the **update license** command, they must be subscribed to the license distribution channel. When subscribed devices receive the replicated “trigger” file from the license update channel, they activate an update script stored locally in the \Sonoma\State\Real\License directory.

To subscribe devices to your license distribution channel, follow the steps in the “Subscribing a Content Engine to a Channel” section on page 3-5.

Importing the License Update Trigger File

The license update process for a device is triggered by the replication of a file from a designated license distribution channel. This file replication creates a link in the CDN system to stored license update files and starts the update process.

Any file can serve as a trigger file for the software update, providing it can be safely imported to the CDN system and replicated to subscribed devices. Although many software updates come with “license key” files containing information on enabled and disabled features particular to your installation and your license agreement, such files do not need to serve as the trigger file for your update through the CDN product.

Regardless of its name or format, you need to import the license update trigger file to the channel you designated as your license distribution channel before the license update process can begin. Follow the instructions in the “Importing Media” section on page 3-7 to successfully import the trigger file to your license distribution channel.

Initiating the License Update Process

Once you have imported the license update trigger file to your license distribution channel and have subscribed all devices for which you wish to update software licenses, you are ready to begin the update process.

To initiate a software license update for your subscribed CDN devices:

Step 1 From the Channels menu, choose **Media Editor**.

The Media Editor dialog box appears. (See Figure 3-6.)

Step 2 Make sure that the designated license distribution channel name is displayed in the drop-down list on the left side of the dialog box. If it is not, click to expand the list and select the license distribution channel.

Step 3 Click the thumbnail image for the license update trigger file you imported to the channel to edit its properties.

Fields displaying the media file properties appear.

Step 4 Check the **Replicate** check box.

Step 5 Click **Save Changes**.

Clicking **Cancel Changes** returns all values to their previous settings when you last clicked **Save Changes**.

The selected file is replicated to all CEs subscribed to the license update channel, initiating the license update process.



Error Messages

This appendix describes error messages that you may encounter when using the Content Distribution Manager (CDM). These messages may appear as popup windows, or be listed in the system log.

Each message corresponds to an error condition encountered by the CDM or Content Engine (CE) in attempting to carry out a requested action.

The same error message may be produced by more than one action. The exact message text may differ slightly in your system log as a result of system-supplied variables inserted into the message text that are specific to your installation.

Error in bandwidth specification.

Explanation This error occurs when administrators, using the Bandwidth feature of the CDM, attempt to add a new replication bandwidth value for a CE. An incorrect (usually nonnumeric) value has been entered in the Bandwidth field.

Action In the Bandwidth field, enter the bandwidth value that you want the CE to use when replicating media. This value must be a nonnegative integer (for example, 0, 10, 323, and so on). Click **Save Changes** when you have finished.

Error in time specification.

Explanation This error occurs when administrators, using the Bandwidth feature of the CDM, attempt to set the start time (From) and end time (To) for replication at a particular bandwidth on a selected CE. An unacceptable time value has been entered in the From or To field. Invalid values may be nonnumeric or an invalid hour or minute based on the 12-hour clock.

Action In the From and To fields, enter correct start and end times with hour and minute specifications, based on a 12-hour clock. Valid start and end times are between 12:00 a.m. and 11:59 p.m. Click **Save Changes** to save your work when you are finished.

Gateway not specified. Gateway should be in dotted quad format, for example: 127.0.0.1.

Explanation This error occurs when administrators, using the TCP/IP feature of the CDM, attempt to specify a TCP/IP address for a selected CE or CDM (in lieu of obtaining the TCP/IP settings using DHCP). A valid IP address has not been entered in the Gateway field, which identifies the network gateway device (or router) through which traffic must pass to reach the selected device.

Action Enter an IP address for the gateway device in the Gateway field. IP addresses must be numeric, nonnegative integers and must be entered in “dotted quad” format, for example, 127.0.0.1. Click **Save Changes** when you have finished.

Improper DNS domain name specified. The name can contain only alphanumeric characters, periods, dashes, and underscores, e.g., ‘My-DNS-Server.MyCompany.com’.

Explanation This error occurs when administrators, using the DNS feature of the CDM, attempt to identify a device (CDM or CE) on the network with a user-friendly “alias” provided by a domain name server (DNS). A name has

been entered in the Domain field that cannot be validated by the DNS servers listed. Domain names are typically alphanumeric and must reference an existing domain that has been established by the network administrator.

Action Enter a correct name for the defined network domain. Domain names are normally alphanumeric but can also contain periods, dashes, or underscore characters. Other nonstandard characters are not accepted.

If the name is entered correctly, make sure you have properly identified the domain name server in the DNS Server fields that contain the alias information for the domain you specified. You can add DNS names by clicking **Add Server**, entering the full name or IP address (in “dotted quad” format) of the DNS server that will validate the device name you entered, and clicking **Save Changes**.

Improper DNS host name specified. The name can contain only alphanumeric characters, e.g., 'MyCDM'.

Explanation This error occurs when administrators, using the DNS feature of the CDM, attempt to identify a CDN device (CDM or CE) on the network with a user-friendly “alias” provided by a domain name server (DNS). A name has been entered in the Host field that cannot be validated by the DNS servers you listed. Host names are typically alphanumeric and must reference an existing device name listed on one of the network domain name servers.

Action Enter a correct host name for the device in the Host field. Host names must be made up of alphanumeric characters.

If the host name is entered correctly, make sure you have properly identified the domain name server in the DNS Server field that contains the alias information for the host you specified. You can add DNS names by clicking **Add Server**, entering the full name or IP address (in “dotted quad” format) of the DNS server that will validate the device name you entered, and then clicking **Save Changes**.

Improper DNS server address specified. The address must be in dotted quad format, for example: 127.0.0.1.

Explanation This error occurs when administrators, using the DNS feature of the CDM, attempt to identify a domain name server (DNS) that stores “alias” information for one or more CDN devices. A name has been entered in the DNS Server field that is invalid. Incorrect values are nonnumeric or may have been entered in the incorrect format.

Action Enter a correct IP address for the machine acting as your DNS server in the DNS Server field. IP addresses must be numeric, nonnegative integers, and must be entered in “dotted quad” format, for example, 127.0.0.1. Click **Save Changes**.

Improper gateway specified. Gateway should be in dotted quad format, for example: 127.0.0.1.

Explanation This error occurs when administrators, using the TCP/IP feature of the CDM, attempt to specify a TCP/IP address for a selected CE or CDM (in lieu of obtaining the TCP/IP settings using DHCP). An invalid number has been entered in the Gateway field, which identifies the network gateway device (or router) through which traffic must pass to reach the selected device. Incorrect values entered are nonnumeric, or may have been entered in the incorrect format.

Action Enter a correct IP address for the gateway device in the Gateway field. IP addresses must be numeric, nonnegative integers, and must be entered in “dotted quad” format, for example, 127.0.0.1. Click **Save Changes** when you have finished.

Improper IP address specified. The address should be in dotted quad format, for example: 127.0.0.1.

Explanation This error occurs when administrators, using the TCP/IP feature of the CDM, attempt to specify a TCP/IP address for a selected CE or CDM (in lieu of obtaining the TCP/IP settings using DHCP). An invalid number has

been entered in the IP Address field, which identifies the network address of the selected device. Incorrect values are nonnumeric, or may have been entered in the incorrect format.

Action Enter a correct IP address for the device in the IP Address field. IP addresses must be numeric, nonnegative integers, and must be entered in “dotted quad” format, for example: 127.0.0.1. Click **Save Changes** when you have finished.

Improper media name specified. The following characters are not allowed: (,), +, =, }, {, [,], ", \, |, :

Explanation This error occurs when administrators, using the Media Importer feature of the CDM, attempt to import a media file with an invalid name to a CDM. Filenames cannot contain the following characters: (,), +, =, }, {, [,], ", \, |, :

Action Verify that the filename is correct. If not, enter the correct name for the media files you are trying to import in the Files field.

If the files are named correctly, but have filenames that include invalid characters, you need to rename the media files you are attempting to import, replacing any nonsupported characters with alphanumeric characters or other supported characters, such as the underscore (_) character. An asterisk (*) character in the Files field returns all files in the destination specified by the URL. Click **Get List of Files** when you have finished to display the matching filenames and begin the import process.

Improper proxy exception specified. The exception should be in the following format: 127.0.0.0/8.

Explanation This error occurs when administrators, using the Proxy Server feature of the CDM, attempt to specify the TCP/IP address for a selected CE or CDM that does not use the established proxy server to access the Internet. An invalid number has been entered in the Exceptions field. Incorrect values may be nonnumeric, or may have been entered in the incorrect format.

Action Enter a correct IP address for the device in the Exceptions field, and click **Save Changes**. IP addresses must be numeric, nonnegative integers and must be entered in “dotted quad” format, for example, 127.0.0.1.

Improper proxy port specified. The port should be a numerical value, for example: 8086.

Explanation This error occurs when administrators, using the Proxy Server or TCP/IP features of the CDM, attempt to specify the port number used by the proxy server or by the selected device. Traffic sent to and from the device passes through this port. An invalid number has been entered in the Port field. Incorrect values are nonnumeric, or may have been entered in the incorrect format, or may point to a nonexistent port number.

Action Enter a correct port number for the selected device, or the HTTP or secure address for the proxy server in the Port field, for example: 80 or 8086. A colon is not required before the port number. Click **Save Changes** when you are finished.

Improper subnet mask specified. The mask should be in dotted quad format, for example: 255.255.0.0.

Explanation This error occurs when administrators, using the TCP/IP feature of the CDM, attempt to specify an address for the local-area network subnet. An invalid number has been entered in the Subnet Mask field, which identifies the subnet address. Incorrect values are nonnumeric, or may have been entered in the incorrect format.

Action Enter a correct address for your network subnet in the Subnet Mask field. Subnet addresses must be numeric, nonnegative integers and must be entered in “dotted quad” format, for example, 127.0.0.1. Click **Save Changes** when you have finished.

No DNS domain name specified.

Explanation This error occurs when administrators, using the DNS feature of the CDM, forget to identify a domain name server (DNS). The DNS stores “alias” information for one or more CDN devices so that they may be referred to and “called” with user-friendly names, rather than numeric IP addresses. A name has not been entered in the DNS Server field.

Action Enter an IP address for the machine acting as your DNS server in the DNS Server field. IP addresses must be numeric, nonnegative integers and must be entered in “dotted quad” format, for example, 127.0.0.1. Click **Save Changes** when you have finished.

No DNS host name specified.

Explanation This error occurs when administrators, using the DNS feature of the CDM, attempt to identify a CDN device (CDM or CE) on the network with a user-friendly “alias” provided by a domain name server (DNS). A name has not been entered in the Host field. Host names are typically alphanumeric and must reference an existing device name that is being tracked by a network domain name server.

Action Enter a correct name for the device in the Host Name field, and then click **Save Changes**. Host names must be made up of alphanumeric characters.

No DNS server specified.

Explanation This error occurs when administrators, using the DNS feature of the CDM, attempt to identify a domain name server (DNS) that stores “alias” information for one or more CDN devices. A name has not been entered in the DNS Server field.

Action Enter a correct IP address for the machine acting as your DNS server in the DNS Server field. IP addresses must be numeric, nonnegative integers and must be entered in “dotted quad” format, for example, 127.0.0.1. Click **Save Changes** when you have finished.

No STUDIO-ADDRESS-INFO record found.

Explanation This error occurs if one or more of your CDMs has lost contact with your network. Loss of contact may be due to media failure on the machine hosting your CDM, power loss, or some other event.

Action Try rebooting your CDM manually, or using the System Reboot feature found in the System dialog box. If rebooting the CDM fails to resolve the problem, contact the Cisco Systems Technical Assistance Center.

Passwords do not match. Please try again.

Explanation This error occurs when users or administrators, working with the Users feature of the CDM, attempt to add or edit a password for an existing user. The CDN requires that the new password be entered twice to confirm its correct spelling. The two passwords entered do not match each other.

Action Reenter the password in both the Enter Password and Re-Enter Password fields to ensure that you have spelled the intended password correctly. When you have entered it correctly in each column, click **Add User** (if this password is for a new CDN user), or click **Change** (if this is an update to an existing user password).

Please enter password in both text boxes.

Explanation This error occurs when users or administrators, working with the Users feature of the CDM, attempt to edit a password for an existing user. The CDN requires that the new password be entered twice to confirm its spelling. The password was entered into only one of the two required fields.

Action Reenter the password in both the Enter Password and Re-Enter Password fields to ensure that you have spelled the intended password correctly. When you have entered it correctly in each column, click **Change**.

Please enter the new user password in both text boxes.

Explanation This error occurs when administrators, working with the Users feature of the CDM, attempt to register a password for a new user. The CDN requires that the new password be entered twice to confirm its spelling. The password was entered in only one of the two required fields.

Action Reenter the password in both the Enter Password and Re-Enter Password fields to ensure that you have spelled the intended password correctly. When you have entered it correctly in each column, click **Add User**.

Please specify a User Name.

Explanation This error occurs when users or administrators, working with the Users feature of the CDM, attempt to create a new user. The CDN requires that all new users be assigned a username consisting of alphanumeric characters. A username has not been entered in the User Name field.

Action Enter a name for your new user in the field adjacent to the Add User button. The name cannot contain any spaces, though most other characters (alphanumeric and otherwise) are acceptable. After you have entered a name for the new user, enter the password in both the Enter Password and Re-Enter Password fields and click **Add User**.

Please specify a User Name other than 'admin'.

Explanation This error occurs when users or administrators, working with the Users feature of the CDM, attempt to create a new user with the name “admin.” The CDN requires that all new users have unique names. The “admin” username is already used as the default login.

Action Enter a unique name for your new user in the field adjacent to the Add User button. The name cannot contain any spaces, though most other characters (alphanumeric and otherwise) are acceptable. After you have entered a name for the new user, enter the password in both the Enter Password and Re-Enter Password fields and click **Add User**.

Please verify that you have entered a correct bandwidth value.

Explanation This error occurs when administrators, using the Bandwidth feature of the CDM, attempt to modify the default replication bandwidth for a CE. The default bandwidth is the first listed replication setting for any CE. An incorrect (usually nonnumeric) value has been entered in the Bandwidth field.

Action With the correct device selected, click the **Edit** button for the device default replication setting (the first listed setting). Enter an acceptable bandwidth value in the Bandwidth field. Bandwidth values must be nonnegative integers. Click **Save Changes** when you have finished.

Please verify that you have entered a correct playback bandwidth value.

Explanation This error occurs when administrators, using the Bandwidth feature of the CDM, attempt to add a new default playback bandwidth value for a CE. An incorrect (usually nonnumeric) value has been entered in the Playback field.

Action In the Playback field, enter the bandwidth value that you want the CE to use when streaming media for playback. This value must be a nonnegative integer. Click **Save Changes** when you have finished.

Start and stop time must be different.

Explanation This error occurs when administrators, using the Bandwidth feature of the CDM, attempt to set the start time (From) and end time (To) for replication at a particular bandwidth on a selected CE. An identical time value has been entered into the From and To fields. You must designate a valid duration using the From and To fields, in which the start time (From) value is earlier than the end time (To). Replication jobs cannot span days (that is, run later than 11:59 p.m.).

Action Enter a valid start and end time in the From and To fields provided, with a start time earlier than the end time, and all times specified between 12:00 a.m. and 11:59 p.m. Click **Save Changes** when you have finished.

Start time must be before stop time.

Explanation This error occurs when administrators, using the Bandwidth feature of the CDM, attempt to set the start time (From) and end time (To) for replication at a particular bandwidth on a selected CE. A start time value has been entered in the From field that is later than the value entered for the end time in the To field. You must designate a valid duration using the From and To fields, with the start time earlier than the end time. Replication jobs cannot span days (that is, run later than 11:59 p.m.).

Action Enter a valid start and end time in the From and To fields provided, with the start time earlier than the end time, and all times specified between 12:00 a.m. and 11:59 p.m. Click **Save Changes** when you have finished.

User Name cannot contain spaces.

Explanation This error occurs when administrators, working with the Users feature of the CDM, attempt to create a new user. The CDN requires that all new users be assigned a username consisting of alphanumeric characters. Blank spaces are not allowed. A username has been entered in the User Name field that contains spaces.

Action Enter a name for your new user in the field adjacent to the Add User button. The name cannot contain any spaces, though most other characters (alphanumeric and otherwise) are acceptable. After you have entered a name for the new user, type the password in both the Enter Password and Re-Enter Password columns and click **Add User**.

You have to specify Remote Announce address in the dotted quad format, for example: 127.0.0.1.

Explanation This error occurs when administrators, working with the PC Folders feature, attempt to specify the network address of the remote announce machine or the subnet on which it resides. The remote announce option guarantees that machines in a different subnet from the CDN devices can communicate with the CDN server to coordinate media import. An address for the machine or the subnet that it was on was not specified.

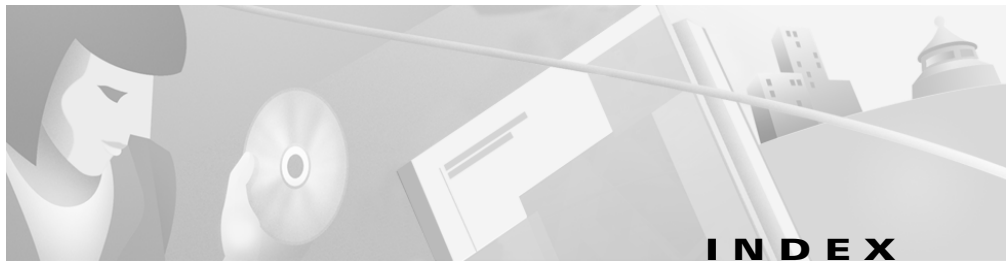
Action Enter a correct address for the machine that will be serving as your remote announce machine, or enter the address of the subnet in the Remote Announce field. Addresses must be numeric, nonnegative integers and must be entered in “dotted quad” format, for example, 127.0.0.1. Click **Save Changes** when you have finished.

You have to specify WINS server address in the dotted quad format, for example: 127.0.0.1.

Explanation This error occurs when administrators, working with the PC Folders feature, attempt to specify the network address of the WINS server that is used to match IP addresses with NetBIOS names. Either an address was not specified for the WINS server, or the address that was specified is invalid.

Action Enter a correct IP address for the machine that will be serving as your WINS server in the WINS Server field. Addresses must be numeric, nonnegative integers and must be entered in “dotted quad” format, for example, 10.10.10.1. Click **Save Changes** when you have finished.





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