

Integrating the Cisco IP/TV Broadcast Server with the Cisco ECDN Solution

Abstract

This white paper describes how captured broadcasts created via the Cisco IP/TV[®] Broadcast Server can be imported into the Cisco Content Distribution Manager (Cisco CDM) for distribution to remote content engines (CEs) for video-on-demand (VoD) playback. This paper will help customers understand how to use the two products together for both live and on-demand learning, corporate communications, events, and more.

Overview of Cisco IP/TV Solution

A member of the Cisco Content Networking family, the Cisco IP/TV solution delivers live, high-quality video content to desktops, classrooms, and meeting rooms over today's enterprise networks. The Cisco IP/TV solution enables organizations to provide high-impact instruction, communications, seminars, and more directly to the desktops of employees, partners, and students. Viewers can watch subject matter experts, see synchronized PowerPoint presentations, and even ask questions. Because the Cisco IP/TV solution is based on network-efficient multicast technology, enterprises can take advantage of a quality streaming solution that offers total control over bandwidth and network performance.

Overview of Cisco ECDN

A Cisco CDN solution, the Enterprise Content-Delivery Network (Cisco ECDN) enables intelligent delivery of content-rich media from a corporate headquarters to low-bandwidth branch offices. Cisco ECDN components include a Cisco CDM for centralized distribution of media and redirecting client requests to the closest media source, and Cisco CEs, which poll the Cisco CDM for new content and ultimately fulfill the client browser requests. Benefits of the Cisco ECDN include:

- Reduced bandwidth costs by distributing rich on-demand media during off hours
- Higher quality—Switched LANs offer 10 to 100 times more bandwidth than T1 Internet connections, enabling enterprises to offer TV-quality media to tens or hundreds of users without having to make major WAN upgrades

Why Use Cisco IP/TV with Cisco ECDN?

CDN technology is a superset of the Cisco ECDN and Cisco IP/TV solutions. Although both solutions can be used for VoD, Cisco ECDN provides more granular control over content distribution to the remote network edge, and offers a powerful delivery vehicle for static media files such as images, software or documents from any Web page. By contrast, the Cisco IP/TV Broadcast Server fulfills the need for live multicast media distribution, live media capture, and scheduled broadcasting. Synergy is created in using the Cisco IP/TV Broadcast Server for live capture and importing the media to the Cisco CDM for distribution of the live capture for VoD playback.



One particularly useful scenario is to deliver a live event over IP/TV with low bit rate stream (e.g., MPEG-4 at 300 kbps) and using a second Cisco Broadcast Server for simultaneously encoding and recording at a higher bit rate (e.g., MPEG-1 at 1 Mbps) for later on-demand use via the ECDN. High bandwidth, rich media for VOD becomes viable because the ECDN delivers files from a CE located on the same LAN segment as the end user, and offers bandwidth-sensitive techniques to distribute those files during off-peak hours. For the live event, which might travel over low capacity WAN links, IP/TV delivers the stream with high quality and low latency. In addition, the IP/TV StreamWatch tool enables live monitoring of end-user quality, and the Program Listing offers an easy, automatic way to publish a link to the event.

Hardware Requirements

Equipment requirements for the integration of the Cisco IP/TV Broadcast Server with the Cisco ECDN solution include the following:

- Media source (camera, DVD player, etc.)—To provide media to be captured by the Cisco IP/TV Broadcast Server
- Cisco IP/TV Broadcast Server 3400 Series—For capturing of live broadcast media and transfer to the Cisco CDM
- Cisco CDM 4630 or 4650—To distribute media to the edge CEs
- Cisco Content Engine[®]—The device that sits at the network edge and polls and pulls media files from the Cisco CDM for local delivery

Cisco IP/TV 3424 and 3425 Broadcast Servers

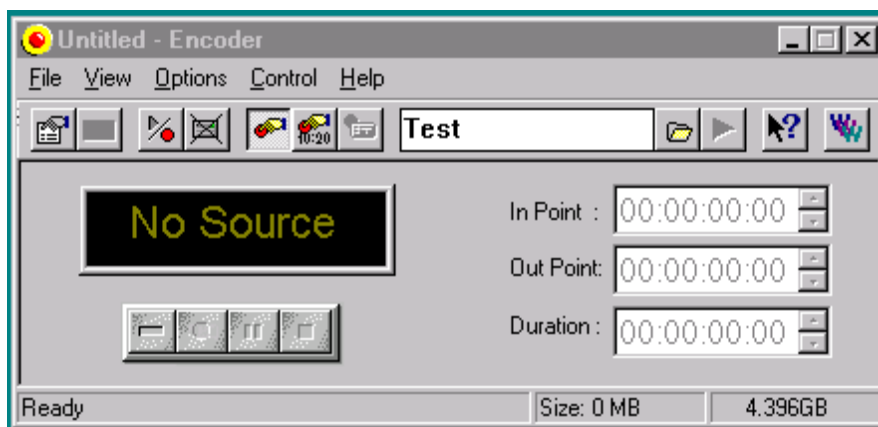
The Cisco IP/TV Broadcast Server has two versions: the Cisco IP/TV 3424 for low-bandwidth formats such as Microsoft Windows Media and the Cisco IP/TV 3425 for Motion Picture Experts Group (MPEG)-1 and MPEG-2. Both support one capture card for encoding and transmitting programs according to the directions they receive from the Cisco IP/TV Control Server. Cisco IP/TV broadcast servers are used primarily for multicasting live or prerecorded programs from devices such as video cameras, VCRs, DVDs, satellite and cable feeds, or prerecorded Windows Media, AVI, MP3, and MPEG files.

Integration of a Cisco IP/TV Broadcast Server and Cisco CDM

The Cisco IP/TV broadcast servers have a standard hardware configuration of one video capture card. The Cisco IP/TV 3424 includes the Winnov Videum capture card, and the Cisco IP/TV 3425 includes the Optibase capture card. Live streams can be simultaneously broadcast and captured if they are encoded in the same bit rate. If a live stream is to be captured at a different bit rate, then two Cisco IP/TV broadcast servers is required, with an audio/video splitter (distribution amplifier).

When a recording or a multicast is to be performed, the video capture card application needs to be started to record the stream as a MPEG file. This MPEG file is saved on the Cisco IP/TV server for export onto the Cisco CDM.

Figure 1 Figure 1: Optibase Application Graphical User Interface (GUI)





Importing Captured Media to the Cisco CDM

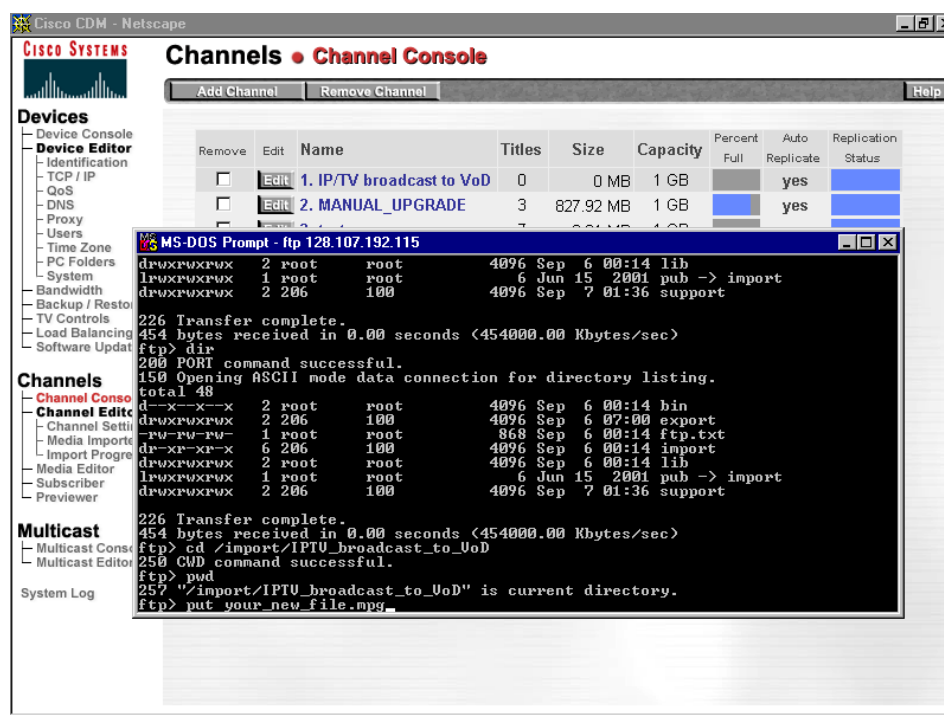
Media can be imported to the Cisco CDM in several ways:

- File Transfer Protocol (FTP)
- Importing from a Web site
- Windows drag and drop
- Application programming interfaces (APIs)
- Scheduled FTP from broadcast server to Cisco CDM

This document covers FTP, Windows drag and drop, and scheduled FTP from the broadcast server to the Cisco CDM.

FTP to Cisco CDM

Figure 2 Figure 2: FTP from IP/TV Broadcast Server to CDM



The Cisco IP/TV solution prompts the administrator for the path to save the captured Cisco IP/TV broadcast. The administrator must know the name of the desired channel on the Cisco CDM side, so that he/she can send the captured file via FTP into its corresponding directory.

The following describes the FTP method of importing the file into the Cisco CDM.

1. Before recording, execute the MPEG capture application (Optibase).
2. Select Browse and identify the directory located on the Cisco IP/TV server for where the video is to be saved.
3. When the broadcast is completed and there is a MPEG encoded file on the broadcast server hard drive, then use FTP to import the file into the Cisco CDM.



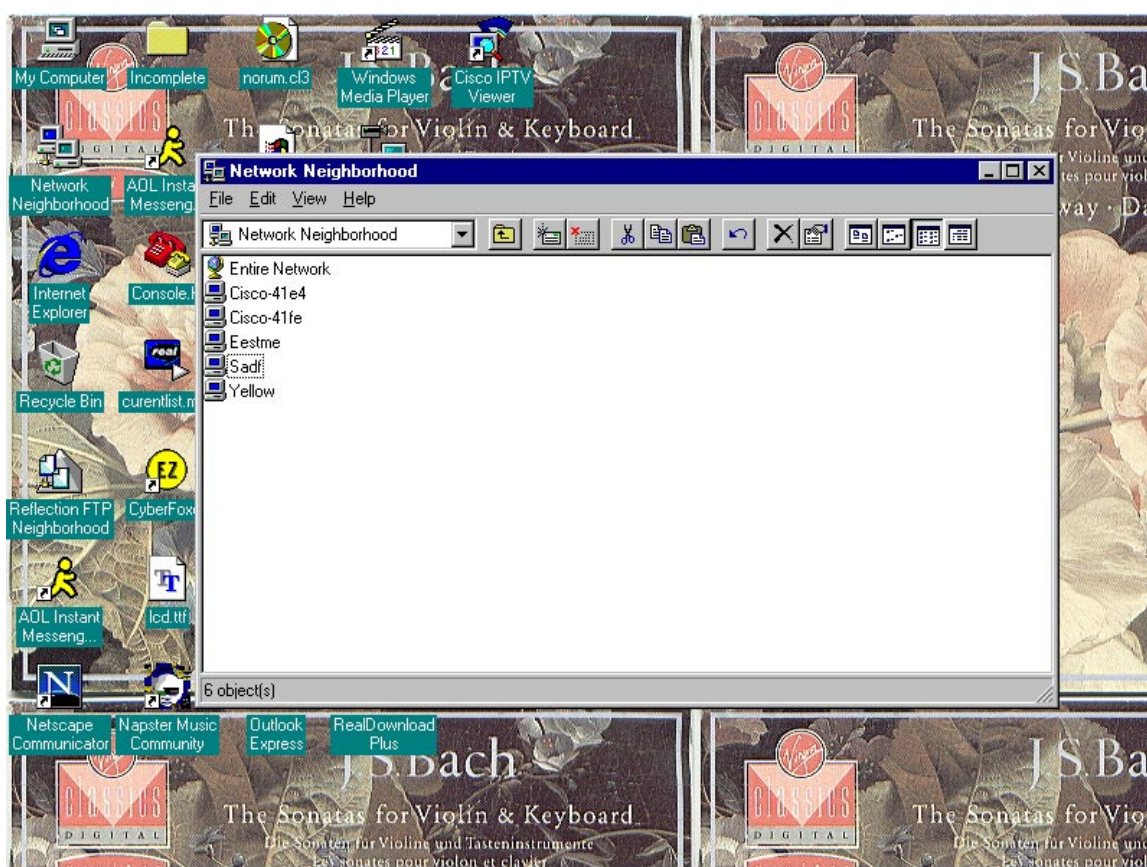
Any FTP program can be used to import the media to the Cisco CDM. Figure 2 shows an example of a CLI based FTP session exporting media to a Cisco CDM. This procedure is also described in the Cisco CDM Media Importer option.

In the above example, the background Web browser is on the Channel Console Web page, verifying the existing channels. The administrator used a DOS FTP session to put the file into the Cisco CDM. In this example, the new channel is *IPTV_broadcast_to_VoD*. This channel is located under the Import directory off the file system root.

Windows Drag and Drop

The administrator can also transfer files onto the Cisco CDM via drag and drop or copy and paste by clicking Network Neighborhood on Windows NT or My Network Places on the Windows 2000 Server.

Figure 3 Identifying the Cisco CDM with Windows Network Neighborhood

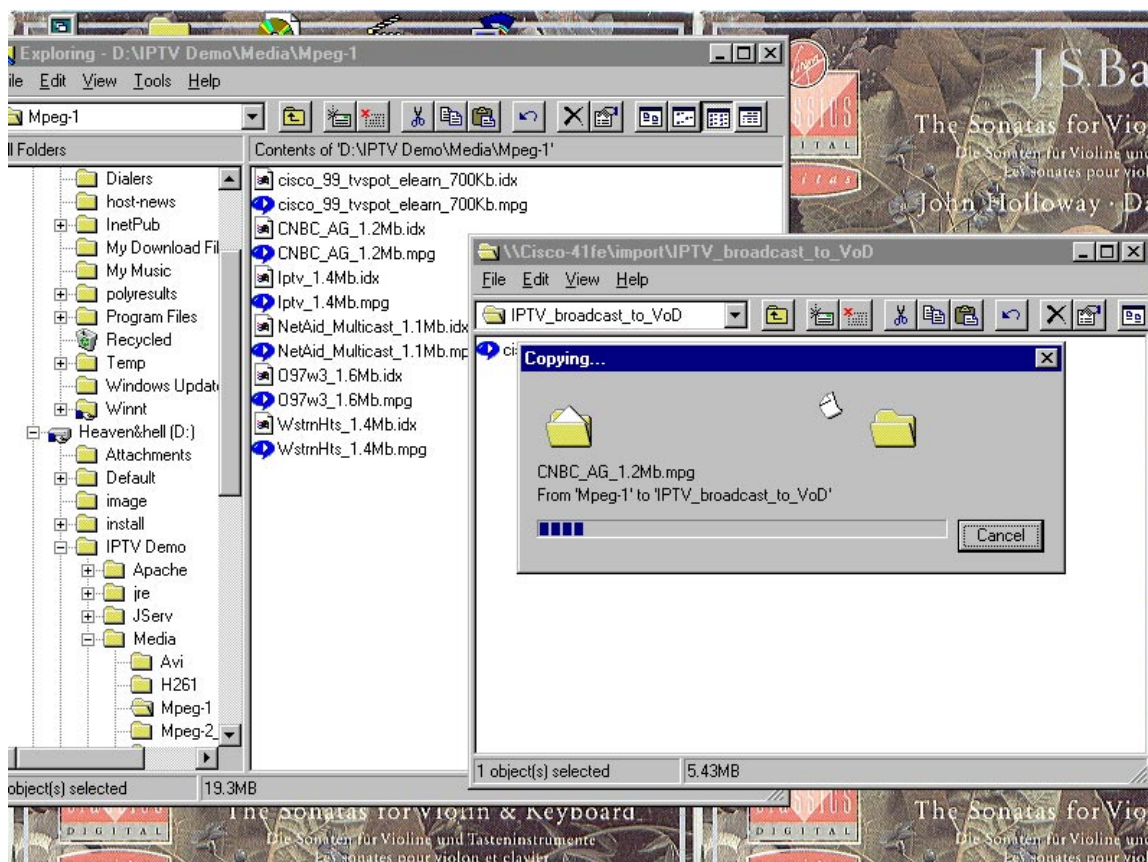


The last four digits of its Media-Access-Control (MAC) address identify the Cisco CDM. Double-clicking on the Cisco CDM opens the file system. Clicking on the Import folder prompts the user for authentication. Entering a valid username/password with administrator rights allows write to the directory. Windows NT users must create a user *nobody* on the Cisco CDM to allow access to any folders on the Cisco CDM. Windows NT passes a username of *nobody* regardless of the entered username/password. Figure 3 shows how the Cisco CDM may appear in a Windows Network Neighborhood session.

When authentication is established, drag and drop the files into the appropriate channel folder under Import. The directory can also be mapped to a drive letter for easy access.



Figure 4 File copying with Windows Drag and Drop



Scheduled FTP from Broadcast Server to Cisco CDM

The Cisco CDM can be configured as an FTP export server on the Cisco IP/TV Content Manager. After scheduling the encoding of a live broadcast to disk, configure the exporting of the encoded broadcast to the directory on the Cisco CDM that maps to the desired content channel.

Figure 5 shows configuration of the Cisco CDM as an FTP export server on the Cisco IP/TV Content Manager. To configure this, click on Server Clusters and then click on New Server to get the server configuration screen. Note that the server name must be the Domain Name System (DNS) name, or IP address. Be sure to select Other Server (*File Transfer Server*) for the server type.



Figure 5 Figure 5: Configuring a file transfer

IP/TV: New Server - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Real.com

Address <http://128.107.192.102/servlet/lptvCM?ADSVR=default> Go Links

OnDemand Programs Scheduled Programs Recordings Media Files File Transfers Server Clusters Proximity Groups Preferences

New Server

HOME HELP

Server Name:

Server Information

Description: (Optional)

Cluster:

☐ IP/TV Server

RTSP Port: (Default: 8554)

Capacity: (Kbits/Sec)

☐ Interoperate with Windows Media Services

Internet

After the server is configured, next configure the file transfer. Figure 5 shows the screen to configure a new file transfer server. Click on the File Transfers icon at the top of the Content Manager GUI, and then click New File Transfer. (See Figure 6.)



Figure 6 Configuring a file transfer via the IP/TV Content Manager

IP/TV: New/Edit File Transfer - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Real.com

Address <http://128.107.192.102/cgi-bin/iptv/newftp.pl> Go Links

New File Transfer

CISCO SYSTEMS

HOME HELP

Description: (Optional)

File transfer of recorded broadcast to the Cisco CDM.

Source Server

Server Name: IPTV3425

Source File: e:\IPTVMedia\test.mpg Browse

Destination Servers

Server Names: (CTRL+Click selects multiple server names)

128.12.34.43
IPTV3425

Destination File: (Optional, default: destination FTP Root directory + source filename)

Done Internet

Select the Cisco CDM from the list of destination servers, and then configure the destination file (on the Cisco CDM) and the transfer time. (See Figure 7.)



Figure 7 Configuring a file transfer destination server

IP/TV: New/Edit File Transfer - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Real.com

Address <http://128.107.192.102/cgi-bin/iptv/newftp.pl> Go Links

Destination Servers

Server Names: (CTRL+Click selects multiple server names)

128.12.34.43
IPTV3425

Destination File: (Optional, default: destination FTP Root directory + source filename)

/import/CIO_Demo/test.mpg

☐ Generate Unique Filename on Every Transfer

Schedule

The local time is **Friday Oct 12, 2001 15:36**. Timezone: **GMT Daylight Time**.
Note: All times use a 24-hour clock (hh:mm) and are in local time.

☐ Transfer File now (FTP will start within the next 5 minutes)

☒ Transfer File once on Oct 12 01 at 16:00

☒ Do not repeat it

☐ Repeat it every Minutes (minimum value 5 minutes)

Done Internet

After clicking Schedule File Transfer, the scheduled transfer list will be displayed. The action will report "complete" after the file has transferred to the Cisco CDM. (See Figure 8.)



Figure 8 File transfer status window

IP/TV: Schedule File Transfers - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Real.com

Address <http://128.107.192.102/cgi-bin/iptv/delftp1.pl> Go Links

OnDemand Programs Scheduled Programs Recordings Media Files File Transfers Server Clusters Proximity Groups Preferences

File Transfers

CISCO SYSTEMS

HOME VIEW LOG CLEAR LOG NEW FILE TRANSFER HELP

Source	Destination(s)	Action	Date & Time
IPTV3425 e:\IPTVMedia\test.mpg Review Delete Edit	128.12.34.43 /import/CIO_Demo/test.mpg	transfer	Oct/12/01 16:00

Done Internet



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