

Administering IP/TV Server

This chapter describes how to administer IP/TV Server. Topics covered include:

- About IP/TV Server modes
- Starting IP/TV Server
- About the IP/TV Program Listings window
- Setting IP/TV Server options
- Viewing program information
- Monitoring Server program statistics
- About Capture Device configuration options
- Viewing diagnostic information
- Manually launching programs
- Pruning transmission of data

About IP/TV Server Modes

IP/TV Server multicasts, records, or transfers scheduled programs, and unicasts on-demand programs according to the schedules defined in the IP/TV Content Manager. In order for the IP/TV Content Manager to direct the IP/TV Server, you must set a few options. For information on this option, see the “Setting IP/TV Server Options” section in this chapter.

IP/TV Server has seven modes of operation:

- **Prerecorded file server mode.** In this mode, IP/TV Server reads from a prerecorded .mpg, .avi, .rtp, .wav, .dat, .mp3, or .asf file and multicasts the streams over the network. The file server can multicast files stored on any of its local drives, including CD-ROM drives. See Table A-5 for file format descriptions.
- **Live-capture mode.** In this mode, IP/TV Server multicasts live, compressed video, and audio streams. The capture server uses a video capture card to capture data from an analog source such as a video camera, video cassette recorder (VCR), or television broadcast, and digitizes the audio and video.
- **SlideCast mode.** In this mode, IP/TV Server captures slides in H.261 from the Server's desktop, which can then be multicast along with other video and audio. Refer to the "Setting Up Web Presenter and SlideCast" chapter.
- **RTP record mode.** In this mode, IP/TV Server records, multicasts or SmallCasts and stores them for future replay to the network.
- **SmallCast forward mode.** In this mode, IP/TV Server forwards a multimedia session across one or more nonmulticast-enabled routers (or across the Internet) as a unicast transmission, then multicasts to viewers on the remote network segment.
- **OnDemand mode.** In this mode, IP/TV Server unicasts prerecorded files to viewers at the time of their choosing.
- **Web Presenter mode.** In this mode, you create a live or prerecorded video or audio together with a slide presentation. Refer to the "Setting Up Web Presenter and SlideCast" chapter.

This chapter provides instructions for administering both prerecorded file and live-capture servers.

A given machine can operate both as a file server and as a live-capture server, subject to the following limits:

- Only one live-capture session per server is allowed at any given time. A live session includes such programs as live audio and video, live SlideCast, and live audio and video and web presentation.
- The number of concurrent prerecorded file server sessions your server can support depends on the hardware configuration of the server, CPU speed, memory, disk I/O performance, the network interface card, the network bandwidth, and the data rate of the files.

We also recommend that you run IP/TV Server on a dedicated machine, and experiment to determine how many sessions the server can handle with acceptable performance.

If you need to support a larger number of concurrent sessions of either type, configure multiple IP/TV Servers on different machines.

See the “Live Capture and File Format Reference” appendix which lists video formats, audio formats, recommended settings for audio and video codec parameters, and capture card settings.

Starting IP/TV Server

You can start IP/TV Server in the following ways:

- Automatically (the default)
- Manually

Automatically Starting and Operating IP/TV Server

By default, the IP/TV Server launches programs automatically according to the schedule set by the Content Manager.

Step 1 Click **Settings>Configure IP/TV Server** to view the default settings.

Step 2 Click the **Scheduler** tab. The following option is selected by default: Automatically Start IP/TV Server after system reboot. On Windows NT, you must login for the program listing to appear. If unchecked, the application will not restart automatically after a system reboot.

Note If you log out of the system, you must close the application first. However, the application will restart automatically after a system reboot or you may start the application manually upon user logon.

See the “About the IP/TV Program Listings Window” section later in this chapter for a description of the window that appears when IP/TV Server starts up.

Manually Starting IP/TV Server

To start IP/TV Server manually, locate and click the program icon for IP/TV Server.

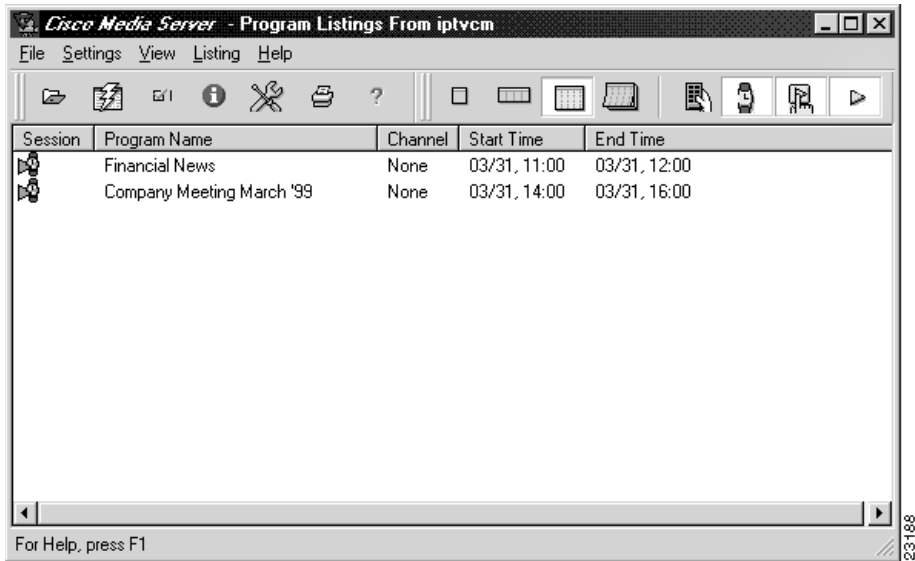
In most cases, the IP/TV Server icon is normally installed in the start menu program folder Cisco IP/TV Server, and on the desktop. If you specified other locations during installation, review the information you entered during the installation procedure. See the “Performing a CD-ROM Installation” section in the “Installing IP/TV Server” chapter.

About the IP/TV Program Listings Window

The Program Listings window, which appears when you start IP/TV Server, only displays programs for which this server is responsible. The program listing can include scheduled, on-demand, and manually launched programs. Programs served by WMS will not appear in the IP/TV Server Program Listings window.

Figure 6-1 shows an example of the Program Listings window with a listing of only scheduled programs.

Figure 6-1 Program Listings Window with Scheduled Programs



The listing is downloaded from the Content Manager each time IP/TV Server starts up and again at the interval specified in the IP/TV Server configuration options dialog box. The default interval is 30 minutes. See the “Setting IP/TV Server Options” section later in this chapter for information about setting the update interval.

The downloaded listing is contained in the file guide.tvg. If the Content Manager is not accessible for any reason (for example, if the system is down), IP/TV Server continues to use its local file.

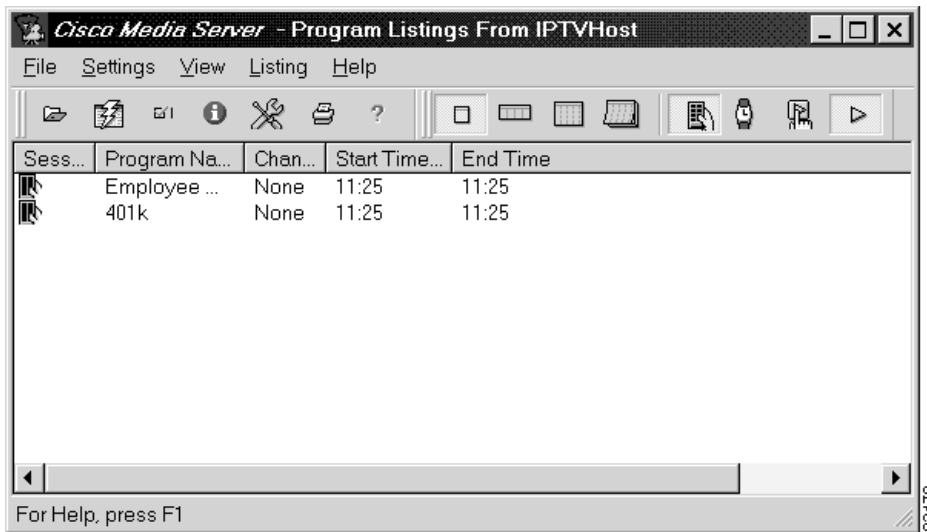
By default, all listed programs are enabled. The server will multicast the programs according to the schedule set by the Content Manager.

Note IP/TV channels allow a noncontinuous program to preempt a continuous program, and are invisible to users of IP/TV Viewer. Refer to the *IP/TV Content Manager User Guide* for more information on channels.

When IP/TV Viewer requests an on-demand program, the program listing appears in the Program Listings window.

Figure 6-2 shows an example of the Program Listings window with a listing of only on-demand programs.

Figure 6-2 Program Listings Window with On-Demand Programs



Note that the following options are set for on-demand programs in the Preferences page of the IP/TV Content Manager:

- Idle IP/TV Viewer Timeout
This option sets the number of minutes IP/TV Viewer can be paused or stopped before IP/TV Server terminates the connection.
- Scheduled Reservation and On-Demand Non-Preemption

This option sets the number of minutes ahead of time that bandwidth is allocated for scheduled programs. An on-demand program will not be assigned to the server during the allocated time if this would cause the capacity of the server to be exceeded when the scheduled program starts.

On-demand programs that are active longer than this number of minutes may be preempted when the scheduled program starts if the server capacity would be exceeded. Setting to zero disables preemption but may cause the server capacity to be exceeded.

Customizing the Program Listings Window

You can customize the Program Listings window. The Program Filter buttons toolbar and Program Listings window toolbar are dockable, and you can change the look of the toolbar buttons.

To set these toolbar options from the Program Listings window, click **Settings>Customize Toolbar**.

Table 6-1 describes the parameters and options you can set in the Customize dialog box:

Table 6-1 **Customize Dialog Fields**

Parameter	Description
Toolbar	Lists all the toolbars.
Toolbar name	Lists the selected toolbar.
Show Tooltips	If checked, displays a toolbar button's tool tip.

Note Any button you press remains selected until you unselect it.

Program Listings Menu Bar

Table 6-2 lists the commands on the Program Listings window menu bar.

Table 6-2 Program Listings Window Menu Bar Commands

Menu	Command	Description
File	Open (Ctrl+O)	Displays an Open dialog box that you can use to locate and select the session description file for the program you want to launch manually.
	Print	Prints the program listing as ASCII text. The printout includes the program name, start and stop date and time, description, and contact information as entered in the Content Manager.
	Print Setup	Configures the printer.
	Exit	Exits IP/TV Server.
Settings	Configure IP/TV Server	Sets IP/TV Server options. See the “Setting IP/TV Server Options” section later in this chapter.
	Maintenance Mode	Enables/disables IP/TV Server from serving upcoming or future scheduled programs or meeting new requests for on-demand programs. Existing programs will continue to play until completed.
	Customize Toolbar	Displays the Toolbar Customization dialog box.
View	Enable All	Enables all listed programs. Multiple programs can also be enabled by holding down the Shift or Ctrl keys while clicking to select the desired programs, then right clicking and selecting Enable Selected.
	Enable Selected	Enables the selected programs. Programs can also be enabled by double clicking on a program listing. Note that you can also enable programs by right clicking on a disabled program and selecting Enable/Disable Program.
	Disable All	Disables all listed programs. Programs that are active at the time of disabling are terminated, and do not launch at the next scheduled time. Programs that are not active at the time of disabling do not launch at the next scheduled session.

Table 6-2 Program Listings Window Menu Bar Commands (continued)

Menu	Command	Description
	Disable Selected	Disables the selected program. The selected program that is active at the time of disabling is terminated, and does not launch at the next scheduled time. A program that is not active at the time of disabling does not launch at the next scheduled session. Note that you can also disable programs by right clicking on an active program and selecting Enable/Disable Program.
	Program Information (Ctrl+I)	Displays the Program Information window. You can also access Program Information Windows by right clicking on an active program and choosing Program Info.
Listing	Show	Selects display of on-demand, scheduled, manual, or active programs, and their listings for today, this week, this month, or this year.
	Sort Listing	Sorts program by program name, channel, start or end times.
	Refresh Listing	Downloads a new copy of the program listing.
Help	Contents	Displays the table of contents of the online help.
	Using Help	Displays information about using Windows Help.
	About IP/TV Server	Displays IP/TV Server version information.

Program Listings Window Tools and Icons

Table 6-3 lists the tools and icons available on the Program Listings window. If you place your mouse pointer over a tool, a yellow box (a tool tip) pops up with a description of the tool.

Table 6-3 Program Listing Window Tools and Icons



















Icon	Tool	Description
	Scheduled Program icon	If present in the Session (left) column and green, indicates that the program is enabled and active. If gray, the program is enabled but not active. If red, the program is disabled.
	OnDemand Program icon	If present, indicates that an on-demand program is active.
	Launch Session button	Opens a dialog box that you can use to locate and select the session description file. See the “About Session Description Files” section in this chapter for the program you want to launch manually.
	Refresh Listings button	Downloads a new copy of the program listing from the Content Manager.
	Enable/Disable Program button	Enables or disables serving of the selected program. A program that is active at the time of disabling is terminated, and does not launch at the next scheduled time. A program that is not active at the time of disabling does not launch at the next scheduled session.
	Program Information button	Displays program information for the selected program. (Figure 6-4 shows an example of a Program Information window.)

Table 6-3 Program Listing Window Tools and Icons (continued)

Icon	Tool	Description
	Maintenance Mode	Enable or disables IP/TV Server from serving upcoming or future scheduled programs or meeting new requests for on-demand programs. Existing programs will continue to play until completed.
	Print Program Listings button	Prints the program listing as ASCII text. The printout includes the program name, start time, end time, description, and contact information as entered in the Content Manager.
	Display Help button	Displays online program listings help.
	Show Today's Listings button	Displays the program listings for today.
	Show This Week's Listings button	Displays the program listings for this week.
	Show This Month's Listings button	Displays the program listings for this month.
	Show This Year's Listings button	Displays the program listings for this year.
	Show OnDemand Programs button	Displays on-demand programs in the Program Listing Window.

Setting IP/TV Server Options

Table 6-3 Program Listing Window Tools and Icons (continued)

Icon	Tool	Description
	Show Scheduled Programs button	Displays scheduled programs in the Program Listing window.
	Show Manual Launch Programs button	Displays manually launched programs in the Program Listings window.
	Show Active Programs button	Displays active programs in the Program Listings window.
	Status bar	Displays messages reflecting the current status of the IP/TV Server Program Listings window.

Setting IP/TV Server Options

The Configure IP/TV Server dialog box allows you to configure server options. To set options from the Program Listing window, click **Settings>Configure IP/TV Server**.

The following subsections detail the options available on the Server, Scheduler, Windows, and OnDemand tabs.

Server Tab

Use the Server tab to set options for the Primary and Secondary Content Manager. Table 6-4 describes the options you can set in the Server tab dialog box.

Note The Secondary Content Manager is used only if the Primary Content Manager is down for service or stops operating.

Table 6-4 Server Tab Options

Option	Description
IP/TV CM Host (Primary and Secondary)	Specifies the IP address or hostname of the Content Manager from which the program listing is obtained, in addition to any proxy server data.
Port No.	Specifies the HTTP server port number. The default value is 80. For firewall purposes, this may be set to some number other than 80.
Use Proxy Server	Specifies the name and port number of the Proxy Server.
IP/TV Server RTSP Port	Specifies the RTSP port number. The default port setting is 8554 ¹ .
Use SDP Listener	If checked, IP/TV Server obtains program listings from the SDP listener or LocalHost.

¹ Because this is also the default setting for the server on the Content Manager, changing this setting will affect communication between the Content Manager and the Server, and will prevent operation if both are not the same.

Scheduler Tab

Use the Scheduler tab to set Server launch and polling options. Table 6-5 describes the options you can set in the Scheduler tab dialog box.

Table 6-5 Scheduler Tab Options

Option	Description
Automatically start IP/TV Server after system reboot	Automatically starts IP/TV Server after system reboots and before user login.
Enable Auto-launch	If checked, causes the server to launch programs automatically according to the schedule set by the Content Manager. The default is checked.
Poll for Auto-launch	Sets the interval (in seconds) after which IP/TV Server checks for programs it is scheduled to launch. The default is 10. The allowed range is 10 to 40.

Table 6-5 Scheduler Tab Options (continued)

Option	Description
Poll for Program Listing every	Sets the interval (in seconds) after which IP/TV Server downloads a new copy of the program listing. The default is 1800. The allowed range is 100 to 1,000,000.

Windows Tab

Use the Windows tab to customize headers in the Program Listings window, and to set Program Details windows to launch as hidden, minimized, or normal. Table 6-6 shows the options you can set in the Windows tab dialog box:

Table 6-6 Windows Tab Options

Option	Description
Select the Fields:	Displays the headers that currently appear in the Program Listing Window. To remove a header, select it and use the arrow to move it to the Available Fields panel.
Available Fields	Displays a list of the fields that are available to be used as headers in the Program Listings window. To add a header to the Program Listing window, select it and use the arrow to move it to the Select the Fields panel.
Show Program Details As	Use the radio buttons to set session windows to launch minimized, hidden, or normal. Specify hidden for optimal performance and an uncluttered desktop, and launch Program Details windows as needed by double clicking on the active program in the Program Listings window.

OnDemand Tab

Use the OnDemand Tab to set options for on-demand files. Figure 6-3 shows an example of the OnDemand tab dialog box.

Figure 6-3 OnDemand Tab Dialog Box

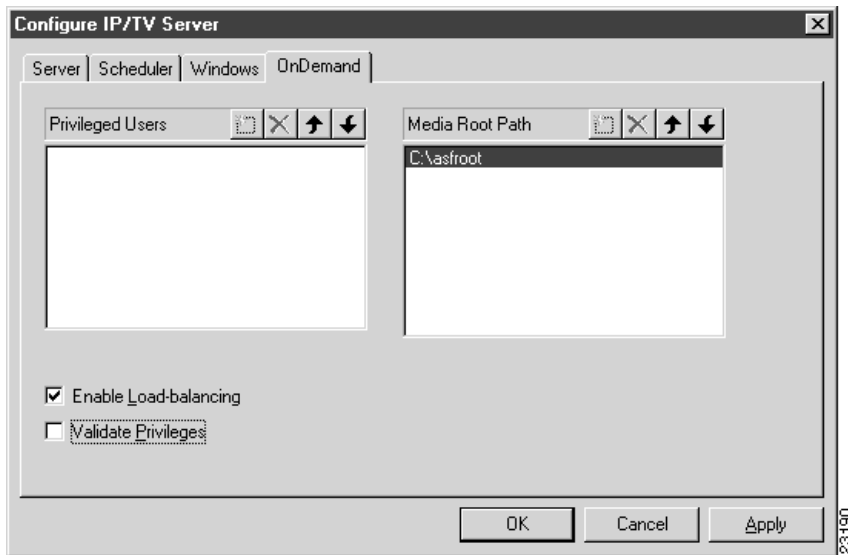


Table 6-7 shows the options you can set in the OnDemand tab dialog box.

Table 6-7 OnDemand Tab Options

Option	Description
MediaRoot Path	Indicates the path where the server manages media files for all programs.
Enable Load Balancing	If checked, defines the server as part of the on-demand cluster. If unchecked, IP/TV Server will not be able to received video on-demand requests from the Content Manager.

Viewing Program Information

Program Information windows display information about a selected program. You can access Program Information windows in four ways:

- Select a program in the program listing and click the **Show Program Information** icon on the toolbar.
- Select a program in the Program Listings window, right click, and select **Program Info**.
- Select a program in the Program Listings window, then click **View>Program Information**.
- Select a program on the Program Listings window and press the **Ctrl+I** keys.

Figure 6-4 shows an example of a Program Information Window.

Figure 6-4 Program Information Window

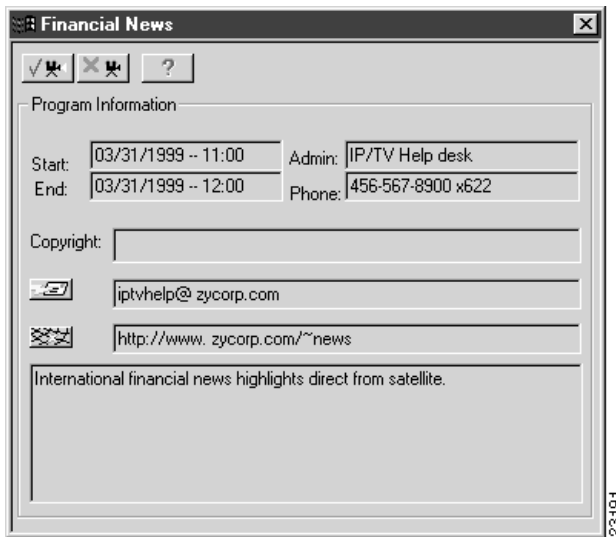




Table 6-8 lists the tools available on the Program Information window.

Table 6-8 Program Information Window Tools

Icon	Tool	Description
	Enable button	Enables serving of the elected program.
	Disable button	Disables serving of the selected program.

Monitoring Server Program Statistics

When IP/TV Server launches a scheduled or on-demand program, the Program Details window is either hidden, launched minimized, or launched in normal fashion. Click **Settings>Configure IP/TV Server>Windows** on the Program Listings window to set this option.

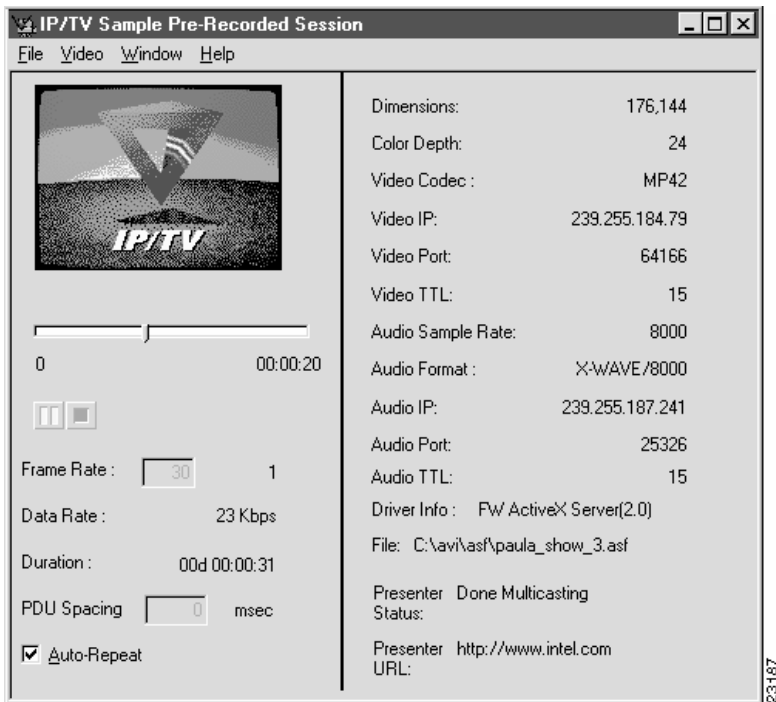
Scheduled programs can serve either prerecorded files or live-capture, but there are small differences in the Program Details window. The following sections describe the prerecorded file and live-capture Program Details windows, and the commands, tools, buttons, and indicators available on the windows.

Prerecorded File Program Details Window

The Program Details window can display information about the video, audio, and web presentation portions of the program. No video image is displayed.

Figure 6-5 shows an example of a Program Details window for a prerecorded file.

Figure 6-5 Program Details Window for a Prerecorded File



IP/TV Server Program Details Window Menu Bar

Table 6-9 lists the commands available on the Program Details window menu bar.




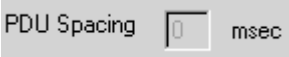

Table 6-9 Program Details Window Menu Commands

Menu	Command	Description
File	Switch to Program Listings (Ctrl+W)	Changes the active window from the Program Details window to the Program Listings window.
	Close (Ctrl+F4)	Closes the current window.
Video	Play (Ctrl+P)	Plays or resumes the current program.
	Pause (Ctrl+A)	Pauses the current program.
	Stop (Ctrl+S)	Stops the current program.
	Show Preview	Toggles between showing or hiding the preview window. (Live-capture only.)
Window	Always on Top	If checked, the Program Details window is always on top, even if it is not the active window.
	Stats Window	Displays video, audio, SlideCast, and Web Presenter information.
Help	Contents	Displays the table of contents of the online help.
	Using Help	Displays documentation about using Windows Help.

IP/TV Server Program Details Window Icon, Buttons, and Statistics

Table 6-10 lists the icons and button and indicators available on the Program Details window.

Table 6-10 Program Details Window Tools and Indicators

Icons	Button	Description
	Play/Pause button	Plays the current program. This button toggles to pause a program.
	Pause/Play button	Pauses the current program. This button toggles to resume playing a program.
	Stop button	Stops the current program.
	PDU Spacing field	An integer representing the number of milliseconds between each PDU transmit. ¹
	Auto-Repeat check box	Applies to prerecorded file server only. When checked, automatically repeats the current file. Overrides the repeat schedule set in the Content Manager.

¹ Do not alter this value except under the direction of Cisco Systems Technical Support.

Table 6-11 describes the program statistics displayed in the Program Details window. The display is the same for both prerecorded programs and live-capture programs.

Table 6-11 Program Details Window Program Statistics

Statistic	Description
Specify Frame Rate	Allows the maximum frame rate to be modified. (Only available on live-capture or MPEG file programs.)
Frame Rate	Indicates the frames per second of data being transmitted on the network.
Data Rate	Indicates the amount of data in kbps being transmitted on the network.
Duration	Indicates the elapsed time for the current program.
Dimensions	Indicates the video image size in pixels (width and height).
Color Depth	Indicates the color depth in bits.
Video Codec	Indicates the compression format of the video data.
Video IP	Shows the IP multicast or unicast address used by the video packet stream.
Video Port	Shows the UDP port number used by the video packet stream.
Video TTL	Indicates TTL setting for the video data.
Audio Sample Rate	Indicates sampling rate in Hz of audio data.
Audio Format	Indicates which audio codec has been used to compress audio data, or displays the audio format for uncompressed audio.
Audio IP	Indicates IP multicast address used by the audio packet stream.
Audio Port	Indicates the UDP port number used by the audio packet stream.
Audio TTL	Indicates the TTL setting for the audio data.
Driver Info	Indicates which Cisco driver is processing the video and audio data, and indicates the driver version number.

Table 6-11 **Program Details Window Program Statistics (continued)**

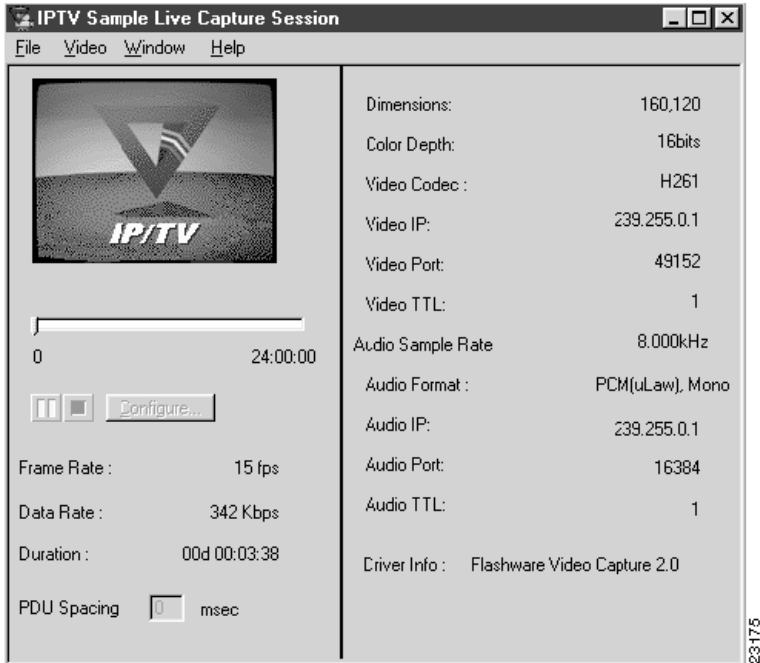
Statistic	Description
File	File path of media file being served (if applicable.)
Presenter Status	Current actions of Web Presenter.
Presenter URL	Current URL Web Presenter is using.

Capture Program Details Window

The video capture device configuration options are set in both the IP/TV Server using the Capture Program Details window and the video capture card. After using the IP/TV Content Manager to create a program, the IP/TV Server uses the default capture device settings, which can be adjusted during a session. The configuration options depend on the capture card you are using.

Figure 6-6 shows an example of the Capture Program Details window.

Figure 6-6 Program Details Window—Live-Capture Session



Capture Device Configuration Options

The Capture Program Details window displays information about the streams present in a program. Some capture devices will allow you to preview the audio/video source in the Video Image field when you click **Video>Show Preview**.

Note You should not change the value for protocol data units (PDUs) spacing without direction from Cisco Systems Technical Support.

Note For information on settings for the H.261, MPEG1, MPEG2, and MPEG4 codecs, see the “Live Capture and File Format Reference” appendix in this manual.

Note MPEG capture devices do not allow video preview.

Non-MPEG Capture Devices

For non-MPEG devices, IP/TV Server provides the following two sets of configuration options to let you finetune a live-capture program using an interface to the IP/TV multimedia networking software:

- Audio format options
- Capture settings

Note These options only apply to the capture server, and can only be changed if the current program is paused or stopped. While the program is playing, the Configure button is disabled.

Follow these steps to set audio format options (non-MPEG):

- Step 1** On the Capture Program Details window, click the **Pause** or **Stop** button to pause or stop the current program.
- Step 2** Click **Configure**. The Capture Device Configuration window appears.
- Step 3** In the Type list, select **Audio Format** and click **Configure**. The Audio Format Setting window appears.

Step 4 Adjust option values as appropriate, and click **OK**. Depending on the encoding, Sample Rate and Channels selected will vary.

Step 5 Click **Close** to save settings.

Step 6 On the Capture Program Details window, click **Play** to play the program.

See Table A-2 and Table A-3 for a list of available audio formats and their approximate bandwidth requirements and Realtime Transport Protocol (RTP) payloads. The default values for a given program are set when the program is defined in the Content Manager.

Follow these steps to override the default capture settings:

Step 1 On the Capture Program Details window, click **Pause** or **Stop** to pause or stop the current program.

Step 2 Click **Configure**. The Capture Device Configuration window appears.

Step 3 In the Type list box, select **Capture Settings** and click **Configure**.

Step 4 Adjust option values as appropriate, and click **OK**.

Table 6-12 describes the capture device configuration options.

Note Except for Audio Format and Capture Settings, the choices in the Type list box are set by the capture device itself and normally should not be modified.

Note Winnov Videum AVI capture card registers some configuration information per application. Therefore the configuration information set in IP/TV is specific for IP/TV and will not be able to change using other utilities, including Winnov's own configuration tools. The information is stored at
HKEY_CURRENT_USER\Software\Winnov\Videum\iptvserv.exe.

Monitoring Server Program Statistics

Table 6-12 **Capture Device Configuration Options**

Option	Default	Description
Maximum Frame Rate	30 (Content Manager setting)	Determines the maximum frame rate used by the IP/TV Server for this session. Higher values increase video quality but consume more bandwidth on the network. This option can be used to limit network bandwidth consumption.
Maximum Data Rate	1150 kbps (Content Manager setting)	Determines the maximum amount of data that the IP/TV Server will transmit on the network for this session (including both audio and video streams). This option can be used to limit network bandwidth consumption. ¹
Video Buffers	5	Determines the number of buffers used by the capture device. Low values improve synchronization. Some capture devices may require higher values.
Use DOS Memory	Unchecked	Determines whether the capture device uses DOS memory (when checked) or extended memory (when unchecked). For some capture devices, DOS memory may be faster; refer to the documentation shipped with the capture device.
Capture Audio	Checked	Determines whether the session includes both video and audio (when checked) or video only (when unchecked).
Standard NTSC	Checked	Tells the server whether the video device connected to the capture card uses U.S. and Japanese standard NTSC format (when checked) or European standard PAL format (when unchecked).
Cisco H.261 Compression Quality	8	Determines the H.261 compression quality level. Typically, users perceive very little difference between a value of 7 and higher values. High values consume more network bandwidth.
SlideCast Settings	—	Allows you to fine tune the SlideCast server settings.

¹ If you are sending the traffic over a link, you will need to compensate for the increase in data rate (up to 20 percent) caused by the overhead of different link layer framing.

MPEG1 Capture Devices

For MPEG1 live capture, the following configuration options are specific to the FutureTel card only. For the Optibase card configuration options, refer to the “MPEG2 Capture Devices” section later in this chapter.

We recommend that you use the default settings, except for the configuration settings described in Table 6-13.

Table 6-13 FutureTel MPEG Card Configuration Options

Option	Recommended Setting	Description
Multiplexer	System	On the System Stream Configuration window, choose the recommended setting from a list of multiplexer settings. This is a required setting.
Video Bit Rate	1,070,000	On the System Stream Configuration window, we recommend that you enter 1,070,000 for the video bit rate. This is a recommended setting. You may experiment with this setting and the audio setting. ¹
Audio Bit Rate	64,000	On the System Stream Configuration window, we recommend that you select 64,000 for the audio bit rate. This is a recommended setting. You may experiment with this setting and the video setting.
Total Bit Rate	1,150,000	Although the system will accept a bit stream of up to 2.5 million bits per second, this will not necessarily improve the quality of your session and may degrade the performance of this and other programs depending on your client/server machines and your network configuration.

¹ See the “Live Capture and File Format Reference” appendix for recommended settings.

On the capture card, specify whether the video source is either standard NTSC format or standard PAL format. Refer to the instructions provided with the specific capture card.

When you manually set the Format option on the PrimeView Video Configuration window, always set the Format option to standard NTSC Format option (checked) for both U.S. and Japanese devices and for the European standard PAL format.

MPEG2 Capture Devices

Install the Optibase encoder board in your computer and connect the audio and video signals to it according to the installation instructions that came with the Optibase card. You can install the card before or after installing IP/TV Server on your computer.

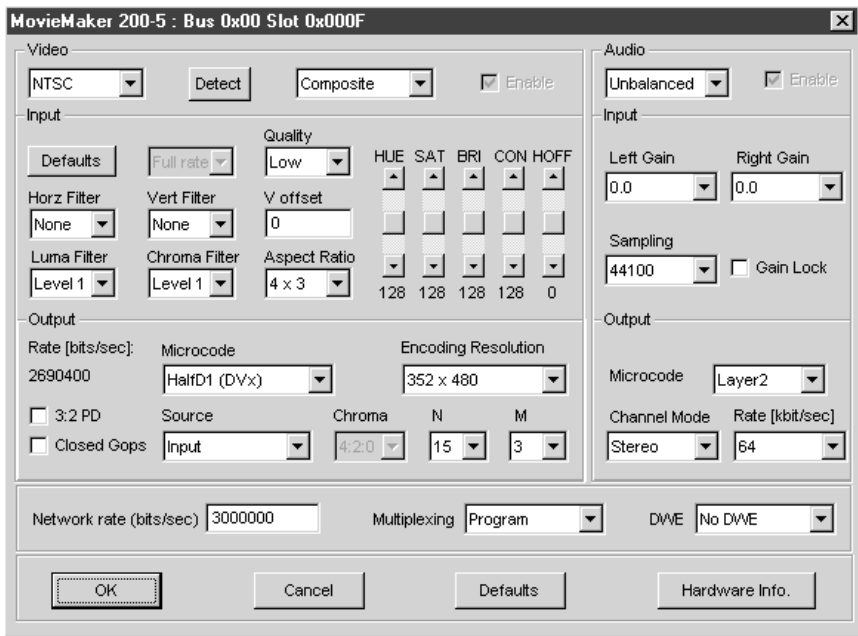


Caution Do not install any other separate software or drivers that came with the Optibase card.

To set the properties of an Optibase MPEG capture card, click **Configure** after stopping a capture session. The dialog box as shown in Figure 6-7 appears.

The title in the dialog box indicates the name of the capture card IP/TV is configuring. Table 6-14 describes the important capture card settings. All other settings are geared toward advanced users and should not be changed unless directed by a Cisco technical representative.

Figure 6-7 Optibase Capture Card



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Table 6-14 Optibase Capture Card Settings

Option	Default	Description
Video Detect	—	Detects the color system (NTSC/PAL) of the video signal at the selected video input connector (composite/svideo).
Video Input options	—	Indicates settings for properties of the video input signal and for any processing that needs to be completed on the video input signal before it is encoded.
Video Output Rate	—	Indicates the target bitrate for just the video stream. This value is computed from the specified network and audio bitrates.
Video Output Rate Microcode, Encoding Resolution	—	The Microcode along with the encoding resolution determines whether the video is encoded to MPEG1, MPEG2 Full D1, or MPEG2 Half D1.
Audio	—	Indicates the type of audio source. For example, Unbalanced, Digital, or Balanced.
Left and Right Gain	—	Determines the gain applied to the left and right channel of the input audio signal before it is encoded.
Gain Lock	—	If checked, locks the Left and Right Gain values so that if the value is changed, the other one also changes.
Audio Rate	224 kbps	Selects the target bit rate for the audio stream. This rate is used along with the specified network bit rate to compute the target bitrate for the video stream. ^{1 2}

- 1 The network bit rate, multiplexing, video output microcode, and video output encoding resolution values that are determined by Content Manager settings. Any changes you make to these parameters using these dialog boxes apply only until the next time the program is automatically launched by IP/TV. This applies to all live and file sessions.
- 2 The default audio rate, 224 kbps, may leave too little bandwidth for video. When network bandwidth definition is low, IP/TV Server needs to reset the audio rate so there is enough left for video. We recommend to manually lower the local Optibase audio rate.

Temporarily Disabling a Program

By default, all programs listed in the Program Listings window are enabled, that is, IP/TV Server will launch the programs and multicast the streams, SmallCast forward, and record according to the schedule set by the Content Manager.

If you need to prevent a program from being launched for some reason (for example, if a capture device fails, or a prerecorded file is deleted by accident and must be restored from backup), you can prevent the server from trying to multicast a scheduled program by disabling the program.

When a program is disabled, the session icon in the left-most column of the listing for the program changes from green to a red box.

To disable a program, use one of these procedures from the Program Listings window:

- Select the program and click **Enable/Disable** on the toolbar.
- Select program and click **View>Disable Selected**.
- Right click the program and click **Enable/Disable** program.
- Right click the program and select the **Program Info**. option in the Program Information window. Click **Disable** to disable the program.

Viewing Diagnostic Information

System administrators may diagnose problems with IP/TV on the client computer, network, Mbone, or elsewhere using IP/TV Event Log Viewer and diagnostics windows in conjunction with Cisco Systems Technical Support.

IP/TV Event Log Viewer ships with all three IP/TV components: IP/TV Server, IP/TV Viewer, and IP/TV Content Manager. This is an advanced diagnostics tool and is hidden from the user of IP/TV Viewer. For IP/TV Server, you can access it by clicking the shortcut from the Start menu or by clicking psreport.exe in the Program File directory.

For information on solving a problem using IP/TV Event Log Viewer, contact Cisco's Technical Assistance Center (TAC).

Manually Launching Programs

In most cases, you will want IP/TV Server to operate automatically so that the server multicasts programs according to the schedules set by the Content Manager. However, there might be circumstances under which you want to launch a program manually.

The following sections describe the procedures for launching prerecorded .avi, .rtp, and MPEG1 files and live-capture programs manually.

If no session description has been created, you must create one before it can be selected. See the "About Session Description Files" section later in this chapter.

Manually Launching Prerecorded Files

Follow these steps to manually launch a prerecorded file:

- Step 1** On the Program Listing window, click **File>Open**, or click **Launch Session**. The File Open dialog box appears.
- Step 2** In the Files of Type list, click **File Server Session**. A list of all available prerecorded file session description files (.svr) appears in the File Name list. See the “About Session Description Files” section later in this chapter.
- Step 3** Locate and select the session description file for the program you want to launch.
- Step 4** Click **OK** to launch the program.

Manually Launching Live-Capture Programs

Follow these steps to manually launch a live-capture program:

- Step 1** On the Program Listings window, click **File>Open**, or click **Launch Session**. The File Open dialog box appears.
- Step 2** In the Files of Type list, click **Capture Session**. A list of all available live-capture session description files (.cap) appears in the File Name list box. See the “Creating and Editing Capture Server Session Description Files” section later in this chapter.
- Step 3** Locate and select the session description file for the program you want to launch.
- Step 4** Click **OK** to launch the program.

About Session Description Files

Session description files contain all the information about a program that IP/TV Server needs to know in order to multicast the program.

For any program that is set up by the Content Manager, the session description file for the program is created automatically by the Content Manager, and you need not create or modify the file.

For any program that you want to launch manually, without scheduling it through the Content Manager, you need to create either a prerecorded or live-capture server session description file for the program.

Creating and Editing Prerecorded File Server Session Description Files

When you installed IP/TV Server, a file named `sample.svr` was installed in the IP/TV Server directory, `c:\Program Files\Cisco Systems\IPTV Server`. This is the name of the default directory during installation. The name of your directory may be different. The format of this file is based on the draft specification for the IETF Session Description Protocol (SDP).

Use this file as a template when you need to create a `.svr` file for a new session. You can simply copy `sample.svr` to a new filename and edit fields in the new file. These fields supply IP/TV Server with the IP addresses and UDP port numbers associated with the session, the IP Multicast Range of the session, the pathname of the file to be multicast, and the action to be taken by the server.

Pay particular attention to the IP Multicast Range fields, which specify the TTL for multicast packets. These fields (one for the video packet stream, one for the audio packet stream, and one for the SlideCast stream) determine how far multicast session packets will be forwarded by routers on the network. You can use these fields to limit traffic loads on the network, or to prevent multicast session traffic from reaching the Internet.

For a discussion of IP multicast addresses, see the “Choosing IP Multicast Addresses and UDP Port Numbers” section later in this chapter.

Example 6-1 shows an annotated copy of `sample.svr`, and identifies the fields you may edit. Lines beginning with a semicolon (;) are comments referring to the subsequent line of the file. Do not modify any fields in the file except those indicated.

Note Microsoft Notepad is the recommended editing tool.

Example 6-1 MPEG and .avi Server Session Description File (sample.svr)

```

[programs]
SamplesVREntry=1
; Do not change any field except those indicated.

[SamplesVREntry]
; In the a1= line, change the path to the full pathname of the file
; MPEG files must have filetype .mpg
; All other Video for Windows files have filetype .avi
a1=file:c:\avi\sample.avi
;For servers with multihomed hosts, the o= field is used to specify
;which interface should be used. If the server system is set up with
;multiple IP addresses, this field (when filled in with the correct IP
;address and the semicolon removed) will determine the source
;machine's IP address for the multicast session.
o=- 0 0 IN IP4 001.002.003.004
; In the mvideo= line, change 49152 to the UDP
; port to be used for the video packet stream.
mvideo=video 49152 RTP/AVP 31 32 96
; In the cvideo= line, change 239.255.0.1 to the IP
; address to be used for the video packet stream.
; Change the final 1 to the IP multicast range for the session.
cvideo=IN IP4 239.255.0.1/1
a2=video rtpmap:96 WBIF/90000
; In the maudio= line, change 16384 to the UDP
; port to be used for the audio packet stream.
maudio=audio 16384 RTP/AVP 0 3 5 14 96 97 98 99 100 101 102 103 104 105 106
; In the caudio= line, change 239.255.0.1 to the IP
; address to be used for the audio packet stream.
; Change the final 1 to the IP multicast range for the session.
caudio=IN IP4 239.255.0.1/1
a3=audio rtpmap:96 X-WAVE/8000
a4=audio rtpmap:97 X-WAVE/11025
a5=audio rtpmap:98 L8/22050/2
a6=audio rtpmap:99 L8/22050
a7=audio rtpmap:100 L8/11025/2
a8=audio rtpmap:101 L8/11025
a9=audio rtpmap:102 L16/22050/2
a10=audio rtpmap:103 L16/22050
a11=audio rtpmap:104 L16/11025/2
a12=audio rtpmap:105 L16/11025
a13=audio rtpmap:106 L8/8000
a14=framerate:30
;
;Use the following line to set up SmallCast. W.X.Y.Z should be the
;local interface IP address of the SmallCast server. A.B.C.D and E.F.G.H
;are the SmallCast IP address list. You can append to the address list up
;to seven unicast addresses. The word 'only' in this line indicates that
;the packets are to be sent to the SmallCast addresses but not the
;multicast addresses in the cvideo and caudio lines.
a15=forward:W.X.Y.Z only A.B.C.D E.F.G.H

```

Creating and Editing Capture Server Session Description Files

When you installed IP/TV Server, a file named `sample.cap` was installed in the IP/TV Server directory, `c:\Program Files\Cisco Systems\IPTV Server`. This is the name of the default directory during installation. The name of your directory may be different. The format of this file is based on the draft specification for the IETF SDP.

Use this file as a template when you need to create a `.cap` file for a new session. You can simply copy `sample.cap` to a new filename and edit fields in the new file. These fields supply IP/TV Server with the IP addresses and UDP port numbers associated with the session and the IP Multicast Range of the session.

Pay particular attention to the IP Multicast Range field which specify the TTL for multicast packets. These two fields (one for the video packet stream, the other for the audio packet stream and SlideCast) determine how far multicast session packets will be forwarded by routers on the network. You can use these fields to limit traffic loads on the network, or to prevent multicast session traffic from reaching the Internet.

Example 6-2 shows an annotated copy of `sample.cap`, and identifies the fields you must edit. Lines beginning with a semicolon (;) are comments referring to the subsequent line of the file. Do not modify any fields in the file except those indicated.

For information on IP multicast addresses and ranges, and guidelines on limiting traffic on networks, see the “Administering the IP/TV Content Manager” chapter. You can also refer to the *Multimedia Networking Concepts Guide*, which is located at <http://www.cisco.com/iptv/>. This guide is available in PDF format.

Example 6-2 Capture Server Session Description File (sample.cap)

```

[programs]
SampleCAPEntry=1
; Do not change any field except those indicated.

[SampleCAPEntry]
s=IPTV Sample Live Capture Session
a=live
;For servers with multihomed hosts, the o= field is used to specify
;which interface should be used. If the server system is set up with
;multiple IP addresses, this field (when filled in with the correct IP
;address and the semicolon removed) will determine the source
;machine's IP address for the multicast session.
o=- 0 0 IN IP4 001.002.003.004
; In the mvideo= line, change 49152 to the UDP
; port to be used for the video packet stream.
; For MPEG, reorder to put the MPEG video(=32) payload type first
; For all other video for Windows codecs, leave as is
mvideo=video 49152 RTP/AVP 32 31 96
; In the cvideo= line, change 239.255.0.1 to the IP
; address to be used for the video packet stream.
; Change the final 1 to the IP multicast range for the session.
cvideo=IN IP4 239.255.0.1/1
; in the a2=line, change 15 to the frame rate in frames/second
a2=framerate:30
a3=video rtpmap:96 WBIF/90000
; In the maudio= line, change 16384 to the UDP
; port to be used for the audio packet stream.
; For MPEG, reorder to put the MPEG audio(=14) payload type first
; For all other video for Windows codecs, leave as is
maudio=audio 16384 RTP/AVP 14 0 3 5 96 97 98 99 100 101 102 103
; In the caudio= line, change 239.255.0.1 to the IP
; address to be used for the audio packet stream.
; Change the final 1 to the IP multicast range for the session.
caudio=IN IP4 239.255.0.1/1
a4=audio rtpmap:96 L8/11025
a5=audio rtpmap:97 L8/11025/2
a6=audio rtpmap:98 L8/22050
a7=audio rtpmap:99 L8/22050/2
a8=audio rtpmap:100 L16/11025
a9=audio rtpmap:101 L16/11025/2
a10=audio rtpmap:102 L16/22050
a11=audio rtpmap:103 L16/22050/2
a12=bandwidth:1150
;
;Use the following line to set up SmallCast. W.X.Y.Z should be the
;local interface IP address of the SmallCast server. A.B.C.D and E.F.G.H
;are the SmallCast IP address list. You can append to the address list up
;to seven unicast addresses. The word 'only' in this line indicates that
;the packets are to be sent to the SmallCast addresses but not the
;multicast addresses in the cvideo and caudio lines.
a13=forward:W.X.Y.Z only A.B.C.D E.F.G.H

```

Choosing IP Multicast Addresses and UDP Port Numbers

This section provides some guidelines to use when choosing IP addresses and UDP port numbers for multicast sessions.

- IP multicast addresses

IP multicast addresses are Class D addresses in the range 224.0.0.0 through 239.255.255.255.

Some Class D addresses are permanently or dynamically assigned to specific functions such as routing and conferencing. To prevent conflicts, you should not choose addresses in the range 224.0.0.0 through 224.255.255.255.

A subset of Class D, the range from 239.0.0.0 to 239.255.255.255, is set aside as “administratively scoped IP multicast addresses.” These addresses are set aside for local/administrative use. We recommend that when you assign IP multicast addresses to sessions, you choose addresses in this range.

Administratively scoped IP multicast addresses are described in more detail in the “Setting Up IP/TV Content Manager” chapter. You can also refer to the *Multimedia Networking Concepts Guide* which is located at <http://www.cisco.com/iptv/>. This guide is available in PDF format.

- UDP port numbers

A UDP port number can be any number in the range from 0 through 65535. However, as with IP multicast addresses, some addresses in this range are permanently or dynamically assigned to specific protocols or functions.

In session description files, we recommend that you use UDP port numbers in the following ranges: 16,384 to 32,766 for audio and 49,152 to 65,534 for video. Note that the numbers must be even.

Setting Up Audio-Only and Video-Only Programs

Programs can include an audio stream or a video stream. Setting up the prerecorded file server or the capture server to multicast only audio or video is one way to reduce traffic on the network.

These procedures apply to both prerecorded file and capture server session description files. See Example 6-1 and Example 6-2 for sample server session description files.

Follow these steps to set up a session description file that multicasts only a video packet stream:

- Step 1** Fill in the UDP port field in the mvideo line.
- Step 2** Fill in the IP address field in the cvideo line.
- Step 3** Set the UDP port field in the maudio line to zero.
- Step 4** Set the IP address field in the caudio line to zero.

Follow these steps to set up a session description file that multicasts only an audio packet stream:

- Step 1** Fill in the UDP port field in the maudio line.
- Step 2** Fill in the IP address field in the caudio line.
- Step 3** Set the UDP port field in the mvideo line to zero.
- Step 4** Set the IP address field in the cvideo line to zero.

When only one prerecorded media (audio or video) are presented, the session will be an audio only or video only session.

Pruning Transmission of Data

The IP/TV Server can automatically prune transmission of data based on whether there are any clients tuned in to a particular program. This feature saves network bandwidth by allowing more programs to be transmitted simultaneously whenever it is likely that one or more of the programs will not have any listeners at a given point in time. It works on a “per destination” basis where a destination is either the multicast address for the session or one of the unicast destinations.

You must disable this feature if a server is being used to send to one or more destinations that do not have a backchannel, for example, a one-way satellite broadcast. To disable this feature, comment in (delete the semicolon preceding the entry) the following entry in the iptv.ini file:

```
[msock]
RTPSourcePruning=off
```

Pruning Transmission of Data

By default this feature is turned on. You can reenable it by changing off to on, or by removing the entry entirely. The feature is either on or off for a particular server for all programs (and, therefore, all destinations) at once.

If you need some programs pruned and others not, we recommend two separate servers.