CHAPTER 7

Administering the IP/TV Content Manager

This chapter describes how to administer IP/TV Content Manager. Topics include:

- IP/TV Content Manager components
- Stopping and starting IP/TV Content Manager servlets
- Sending and receiving session announcements
- Customer sites using multiple IP/TV Content Managers
- Setting up a secondary IP/TV Content Manager
- Backing up IP/TV Content Manager databases and files
- Monitoring server status
- Journaling

IP/TV Content Manager Components

The IP/TV Content Manager consists of the following integrated components:

- IP/TV Content Manager Administration (IptvCM servlet) runs under the Java Web Server, and uses Perl scripts and a Java servlet to create scheduled and on-demand programs, recordings, and FTP transfers, and to define servers, server clusters, proximity groups, subnets, and channels.
- IP/TV Content Manager service uses Perl scripts to send and receive scheduled **sdp** program announcements, manage questions received during scheduled programs from the users of IP/TV Viewer, and pass information to the Cisco FTP Server.

- OnDemand Publish (CMPublish servlet) is a Java servlet that runs under the Java Web Server, publishes information about IP/TV and Windows Media Technologies (WMT) on-demand programs and WMT scheduled programs, and updates on-demand journal records.
- OnDemand Manager (IptvOdMgr servlet) is a Java servlet that runs under the Java Web Server and manages on-demand programs and servers. This application uses the Real-Time Streaming Protocol (RTSP) for communication with IP/TV Viewer and IP/TV Server.
- OnDemand Manager and IP/TV Content Manager Administration use a Microsoft Access database to store information about on-demand programs and servers. A second database stores information about the journal records of OnDemand sessions.

Stopping and Starting IP/TV Content Manager Servlets

When you stop and start the Java Web Server, all IP/TV Content Manager servlets are also stopped and started.

Follow these steps to stop or start an individual IP/TV Content Manager servlet:

Step 1 Go to the URL http://<web-server>:9090 to access the main Administration page.

You can substitute **`localhost`** for <web-server> if you are running the browser on the same machine as the IP/TV Content Manager.

Step 2 Enter the user name and password.

Step 3 Select **Web Service** and click **Manage**.

Step 4 In the Web Service window, click **Servlets**.

Step 5 Select the servlet name.

Step 6 To stop a Servlet, click **Unload**.

Step 7 To start a Servlet, click **Load**.

Sending and Receiving Session Announcements

The Multicast Backbone (MBone) is the deployment of multicast in the global Internet. If your network has multicast connectivity to the MBone, the IP/TV Content Manager can be configured to include MBone sessions in its program listing. IP/TV Viewer users can then view these sessions.

IP/TV is compatible with MBone sessions that are multicast using the Lawrence Berkeley Labs (LBL) tools **vic** 2.7 and higher with H.261 encoding for the video portion of the multicast, and **vat** 4.0 with GSM, DVI, or PCM (μ-law) encoding for the audio portion. All other MBone sessions are ignored.

Many MBone session announcements are sent and received using **sdr**, a tool from University College London (UCL). The IP/TV Content Manager includes Cisco Systems' **sdr** listener utility, which uses the same format and addressing as the UCL **sdr** tool to send and receive announcements of scheduled programs.

Once **sdr** begins running, it sends out program announcements approximately every 5 minutes.

Each **sdr** announcement uses the TTL value assigned to the program being announced. Thus, the announcement is limited to the same geographic range as the program itself.

The multicast range specified for each program determines how far the **sdr** announcements are propagated. For example, if a program's multicast range is set to Local (a TTL of 1 by default), the program's **sdr** message will not go over the MBone. If the range is Worldwide (a TTL of 127 by default), the **sdr** announcement will propagate through all multicast-enabled routers.

If a program uses a multicast address starting with 224.*n.n.n*, the announcement uses the standard **sdr** announcement address, and all **sdr** tools and all other IP/TV Content Managers within the program's TTL limit will receive it.

However, if a program uses an administratively scoped IP multicast address (the range starting at 239.0.0.0), the program announcement uses the highest address of the administratively scoped address range set in Preferences. This means that **sdr** and other IP/TV Content Manager servers will only receive the announcement if they are configured to use the same address range and are within the program's TTL limit and administratively scoped boundary.

See the "Setting IP/TV Content Manager Defaults and Preferences" section in the "Setting Up IP/TV Content Manager" chapter for more information about IP multicast addresses.

Follow these steps if you want the IP/TV Content Manager to send or receive session announcements using **sdr**:

Step 1 To send session announcements, select the **Announce Local Programs** check box in the Scheduled Program Management section of the Preferences page.

Step 2 To configure the IP/TV Content Manager to receive session announcements, choose one of the options under "Listen for Program Announcements" in the Preferences page.

Step 3 Stop and restart the Cisco IP/TV Content Manager service to ensure that the IP/TV Content Manager begins sending and receiving session announcements immediately.

If you do not stop and restart, up to 10 minutes may elapse before incoming announcements are displayed in the IP/TV Content Manager's Programs page or outgoing IP/TV program announcements are sent to other servers.

Customer Sites Using Multiple IP/TV Content Managers

Multiple IP/TV Content Managers are used for the following reasons:

- To geographically localize network traffic and minimize global network traffic by having IP/TV Viewers point to their local IP/TV Content Manager and server cluster.
- To allow remote multicast environments to set up their own programs.

If your organization has multiple IP/TV Content Managers, you may want the scheduled program listings on all of them to contain the same information. You can configure each IP/TV Content Manager to send or receive IP/TV scheduled program announcements. configuring all IP/TV Content Managers in this way enables IP/TV Viewer to list all IP/TV scheduled programs on your network, not just the listings from the primary IP/TV Content Manager, and also ensures that the listings of the primary and secondary IP/TV Content Managers are the same.

Follow these steps to configure the IP/TV Content Manager:

Step 1 Set the IP/TV Content Manager to send, to receive, or to send and receive program announcements.

- To send program announcements, select the **Announce Local Programs** check box in the Scheduled Program Management section of the Preferences page.
- To receive program announcements, select the **Listen to these IP/TV Content Managers** check box in the Scheduled Program Management section of the Preferences page, and enter the IP/TV Content Manager host name.

Step 2 Repeat this procedure on every IP/TV Content Manager.

Setting Up a Secondary IP/TV Content Manager

Both IP/TV Viewer and IP/TV Server allow you to define a secondary IP/TV Content Manager from which IP/TV Viewer and IP/TV Server can fetch scheduled program listings if the primary IP/TV Content Manager does not respond. IP/TV Viewer allows multiple IP/TV Content Managers, and there can be a primary and secondary IP/TV Content Manager defined for each one. (Refer to the *IP/TV Viewer User Guide* for information.)

An IP/TV Viewer request for an on-demand program is directed only to the IP/TV Content Manager listed in the program information (the IP/TV Content Manager from which the listing was obtained). If that IP/TV Content Manager does not respond, the user can access the secondary IP/TV Content Manager by refreshing the IP/TV Viewer program listing. New requests for on-demand programs will succeed if all of the IP/TV Servers have been configured with information about the secondary IP/TV Content Manager (see the "Setting IP/TV Server Options" chapter), and if on-demand programs have been duplicated on the secondary IP/TV Content Manager.

Backing Up IP/TV Content Manager Databases and Files

It is important to back up your IP/TV Content Manager databases and files at regular intervals. If the databases or files become corrupted, you can then restore them from the backups.

Information about on-demand programs, clusters, servers, proximity groups, subnets, and preferences is saved in the following database:

<web server root directory>\iptvcm\database\iptvcm.mdb

Information about the journal records of on-demand sessions is saved in the following database:

<web server root directory>\iptvcm\database\odjournal.mdb

Information about scheduled programs is saved in files in the following location:

<web server root directory>\cgi-bin\iptv\[programs, channels, records, ftps, prefs, question]

Monitoring Server Status

The ServerWatch pages provide information on the current status of IP/TV Servers. The main ServerWatch pages include static information. To refresh the data, you must click your browser's **Reload** or **Refresh** button. The ServerWatch applet provides information that is dynamically updated (see the "ServerWatch Applet" section later in this chapter).

Using ServerWatch

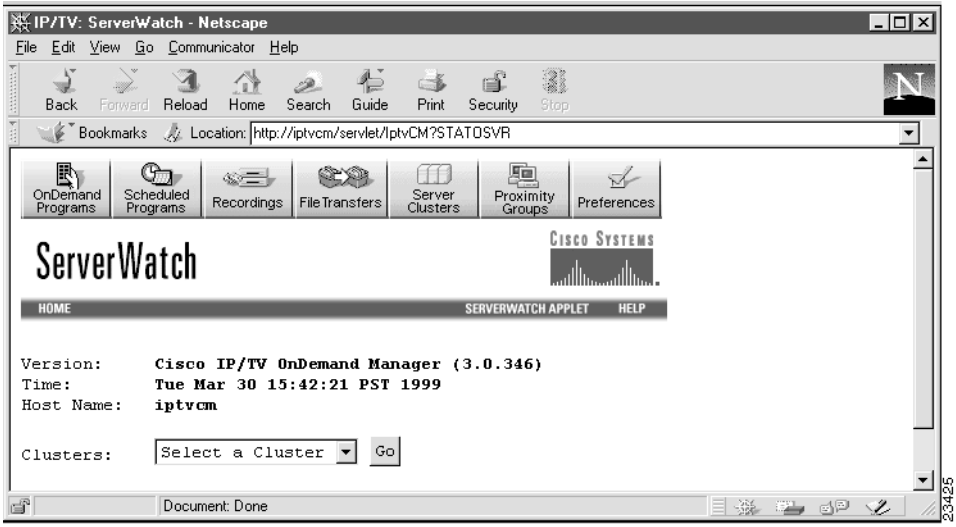
Follow these steps to access ServerWatch:

Step 1 Click **ServerWatch** on the IP/TV Content Manager main page, or click the **ServerWatch** link on the task bar on the Server Clusters page.

The ServerWatch main page appears (see Figure 7-1).

The page includes information about the current version of the OnDemand Manager component of the IP/TV Content Manager, the date and time at which the page was displayed, and the host name of the IP/TV Content Manager.

Figure 7-1 ServerWatch Page



Step 2 Select a server cluster or **All Clusters** and click **Go**.

The ServerWatch page is filled in with information about the selected cluster. See Figure 7-2 for an example.

Figure 7-2 Completed ServerWatch Page

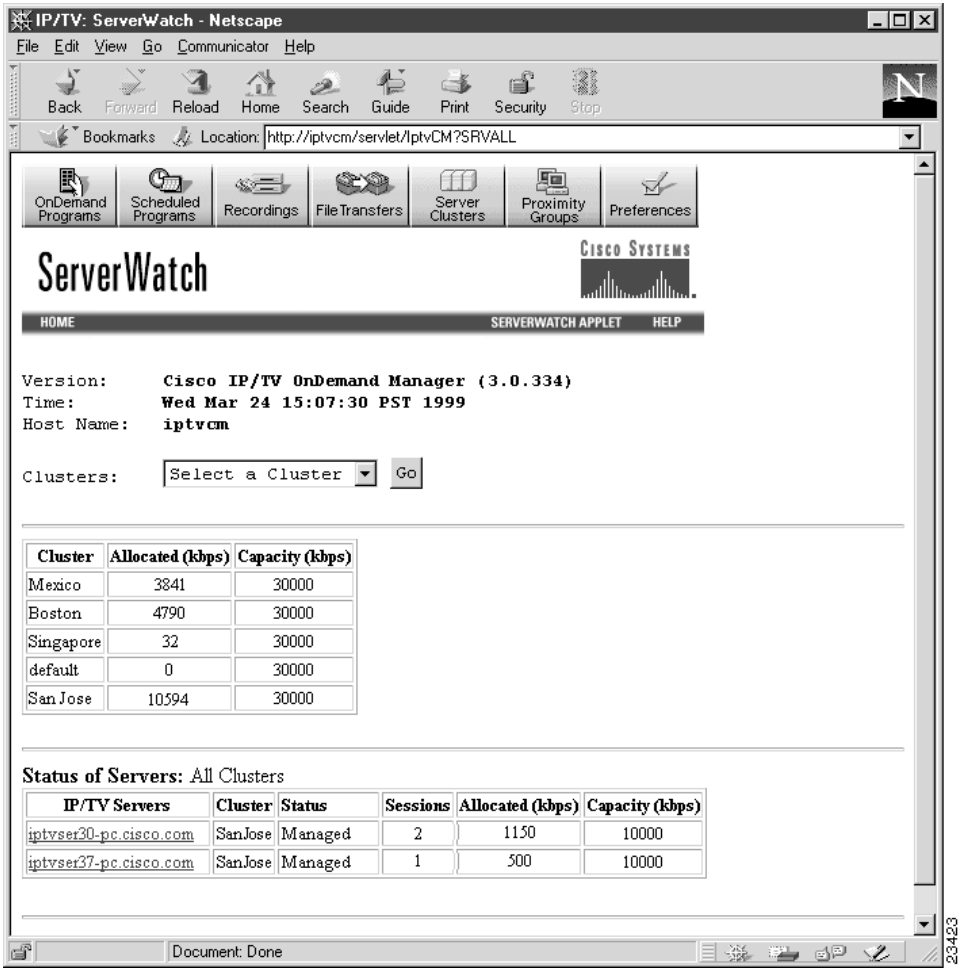


Table 7-1 describes the fields in the Cluster section. This section only appears if you selected All Clusters. Table 7-2 describes the fields in the Status of Servers section, and Table 7-3 describes the fields in the Active Sessions for Server section.

Table 7-1 Cluster Fields

Field	Description
Cluster	Displays the name of the cluster.
Allocated	Displays the currently used capacity of the cluster in kbps.
Capacity	Displays the maximum cluster capacity in kbps.

Table 7-2 Status of Servers Fields

Field	Description
IP/TV Servers	Displays the name of the server.
Cluster	Displays the name of the cluster to which the server belongs.
Status	Displays the status of the server. • *Managed* indicates that the server is up and being managed by the IP/TV Content Manager. • *Not Managed* indicates that the server is up but is being managed by another IP/TV Content Manager or is in maintenance mode. • *Down* indicates that the IP/TV Content Manager could not contact the server. • *Disabled* indicates that the server is not an IP/TV Server.
Sessions	Displays the number of currently active scheduled and on-demand sessions.
Allocated (kbps)	Displays the currently used capacity of the server in kbps.
Capacity (kbps)	Displays the maximum server capacity in kbps.

Table 7-3 Active Sessions for Server Fields

Field	Description
Title	Displays the name of the IP/TV programs being served by the server.[1]
Type	Indicates whether the program is scheduled or on-demand.
Client	For on-demand programs, displays the name of the client requesting the program. For scheduled programs, displays a dash (-).
Proximity Group	For on-demand programs, indicates the proximity group to which the client belongs. For scheduled programs, this field is blank.
Bandwidth	Displays the bandwidth required by the program.

1 Active scheduled programs containing MBCS characters in the title do not appear, and on-demand program titles containing MBCS characters display as questions marks.

Step 3 If you click a server name in the Status of Servers section, the Server Information window appears (see Figure 7-3). Table 7-4 describes the fields in the Server Information window.

Figure 7-3 Server Information Window

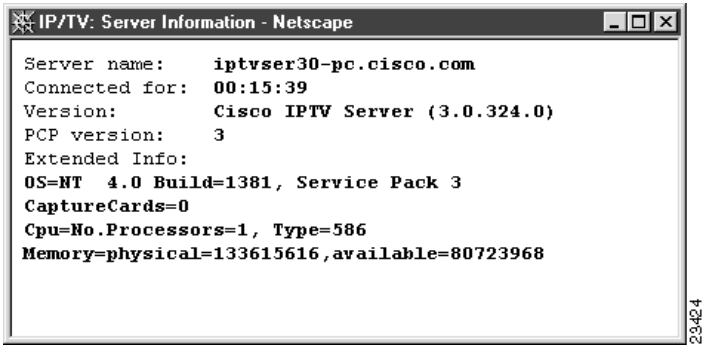


Table 7-4 Server Information Window Fields

Field	Description
Server name	Displays the name of the server.
Connected for	Displays the length of time the IP/TV Content Manager has been connected to the server.
Version	Displays the version number of IP/TV Server.
PCP version	Displays the version of the control protocol that is being used by the server.
Extended Info	Lists information about the server's operating system, build number, capture card, CPU, and system memory.

ServerWatch Applet

This section describes the ServerWatch Applet, which provides information similar to that available on the ServerWatch page. Unlike the ServerWatch page, the ServerWatch applet updates the information dynamically.

Installing the Java Plug-in

The ServerWatch Applet requires the Java Plug-in on the computer from which you access the IP/TV Content Manager. The installation procedure depends upon which browser you use.

If you use Microsoft Internet Explorer, follow these steps to install the Java Plug-in:

Step 1 Click the **ServerWatch Applet** link on the task bar on the ServerWatch page.

Step 2 If the browser detects that the Java Plug-in is not installed, a dialog box asks if you want to install the Java Plug-in. Click **Yes** to install the plug-in.

Step 3 The Setup window for Java Runtime Environment 1.2 appears. Follow the Setup instructions.

Step 4 When the installation is complete, restart your computer to initialize the Java Plug-in.

If you use Netscape Navigator, follow these steps to install the Java Plug-in:

Step 1 Click the **ServerWatch Applet** link on the task bar on the ServerWatch page. The ServerWatch Applet page appears.

Step 2 Click the **Download Java Runtime Environment 1.2 with Java Plug-in** link.

Step 3 The Setup window for Java Runtime Environment 1.2 appears. Follow the Setup instructions.

Step 4 When the installation is complete, restart your computer to initialize the Java Plug-in.

Using the ServerWatch Applet

Follow these steps to use the ServerWatch Applet:

Step 1 Click the **ServerWatch Applet** link on the task bar on the ServerWatch page. If you have installed the Java Plug-in, the ServerWatch Applet page appears (it may take a few moments to launch).

Note If you have not installed the Java Plug-in, the Applet does not launch, and the ServerWatch Applet page does not appear.

See Figure 7-4 for an example of the ServerWatch Applet page. Table 7-5 describes the fields at the top of the ServerWatch Applet window.

Figure 7-4 ServerWatch Applet Page

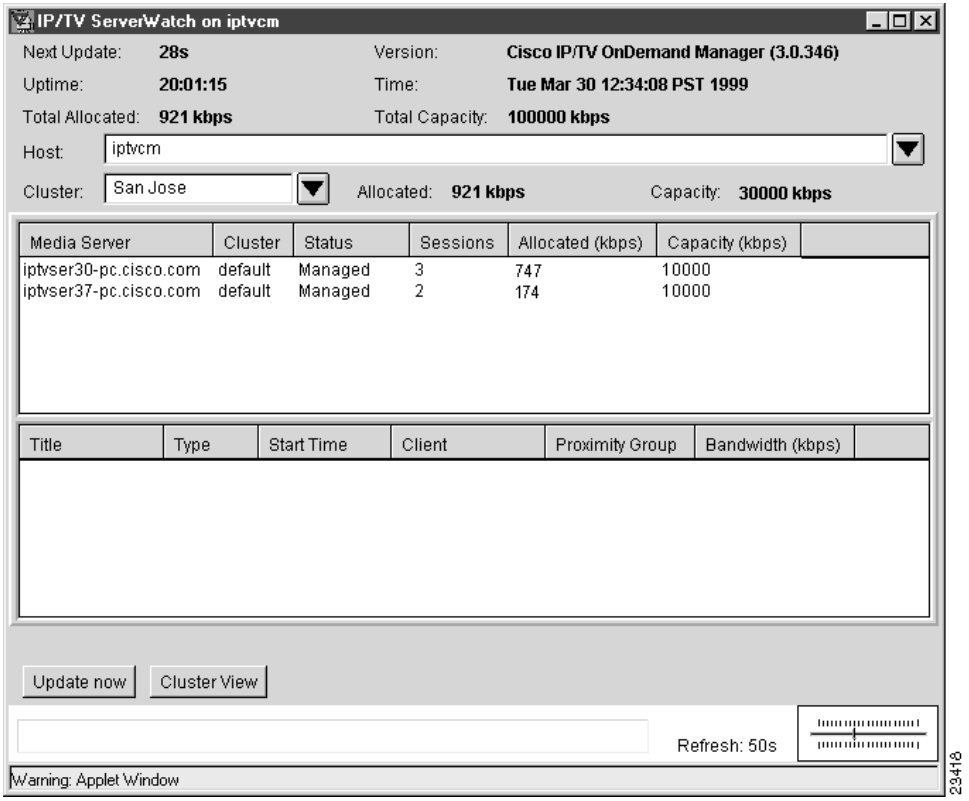


Table 7-5 ServerWatch Applet Information Fields

Field	Description
Next Update	Displays the number of seconds before server information is updated.
Version	Displays the current version number of the OnDemand Manager component of the IP/TV Content Manager.
Uptime	Displays the length of time the OnDemand Manager has been running.
Time	Displays the time at which the current status information was downloaded.
Total Allocated	Displays the total capacity (in kbps) currently allocated on all servers managed by this IP/TV Content Manager.
Total Capacity	Displays the capacity limit allowed for all servers together.
Host	Displays the name of the IP/TV Content Manager.
Cluster	Displays the list of server clusters in a pulldown menu.

Step 2 Select a cluster from the list.

The Media Server pane is populated with information about the server cluster. Table 7-6 describes the fields in the Media Server pane.

Table 7-6 Media Server Pane Information Fields

Field	Description
Media Server	Lists the video servers.
Cluster	Displays the name of the cluster to which the server belongs.
Status	Displays the status of the listed video server.
Sessions	Displays the number of sessions currently being served.
Allocated (kbps)	Displays the currently allocated capacity in kbps.
Capacity (kbps)	Displays the allowed server capacity in kbps.

Step 3 Select a server in the Media Server pane, and the Program Information pane is populated with information about the programs currently being served by the selected server. Table 7-7 describes the fields in the Program Information pane.

Table 7-7 Program Information Pane Fields

Field	Description
Title	Displays the titles of the IP/TV programs being served by the highlighted server.[1]
Type	Indicates whether the listed program is scheduled or on-demand.
Start Time	For on-demand programs, indicates the start time of the program. For scheduled programs, this field is blank.
Client	For on-demand programs, displays the name of the client requesting the program. For scheduled programs, displays a dash (-).
Proximity Group	For on-demand programs, displays the name of the Proximity Group to which the client belongs. For scheduled programs, this field is blank.
Bandwidth (kbps)	Displays the bandwidth required by the listed program.

1 Active scheduled programs containing MBCS characters in the title do not appear, and on-demand program titles containing MBCS characters display as questions marks.

Step 4 Double-click a server in the Media Server pane to display detailed information about the server. Figure 7-5 shows an example of the Server Details window. Table 7-8 describes the fields in the Server Details window.

Figure 7-5 Server Details Window

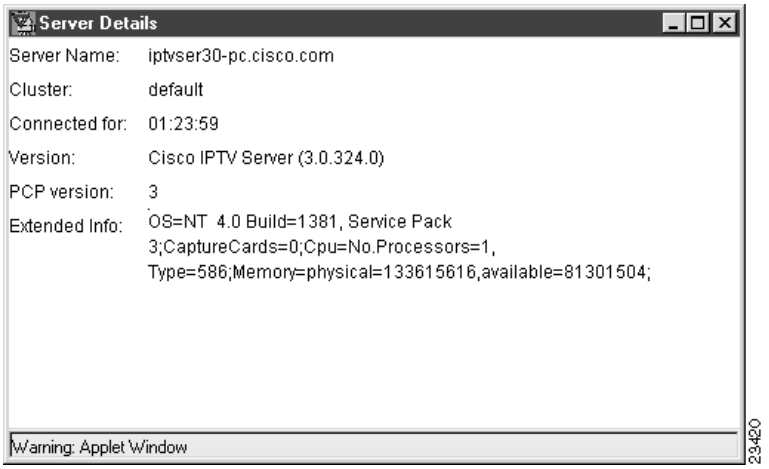


Table 7-8 Server Details Window Fields

Field	Description
Server Name	Displays the name of the server.
Cluster	Displays the name of the cluster to which the server belongs.
Connected for	Displays the length of time the IP/TV Content Manager has been connected to the server.
Version	Displays the current version number of IP/TV Server.
PCP version	Displays the version of the control protocol that is being used by the server.
Extended Info	Lists information for the operating system, build number, capture card, CPU, and memory.

Step 5 Double-click a program in the Program Information pane to display the Session Details window for that program. Figure 7-6 shows an example of a Session Details window. Table 7-9 describes the fields in the Sessions Details window.

Figure 7-6 Session Details Window

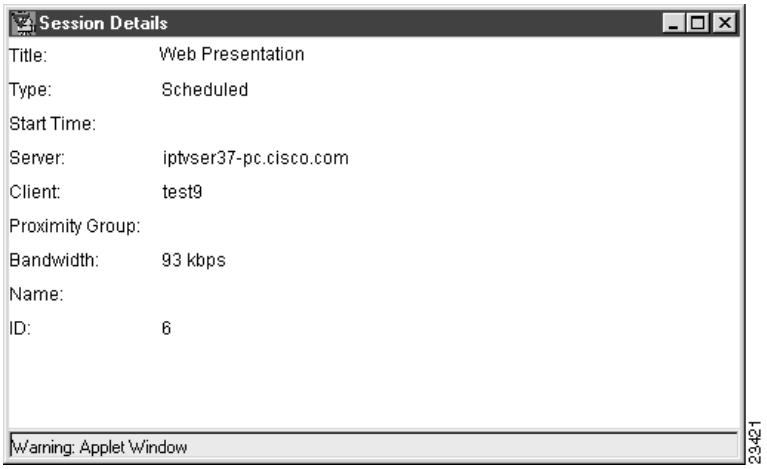


Table 7-9 Session Details Window Fields

Field	Description
Title	Displays the program name, as defined in the IP/TV Content Manager.[1]
Type	Indicates whether the program is scheduled or on-demand.
Start Time	For on-demand programs, indicates the start time of the program. For scheduled programs, this field is blank.
Server	Displays the name of the server serving the program.
Client	For on-demand programs, displays the name of the client requesting the program. For scheduled programs, displays a dash (-).
Proximity Group	Indicates the proximity group to which the client belongs.
Bandwidth	Displays the bandwidth required by the program.
Name	Displays the IP/TV Content Manager's internal filename for the program.
ID	Displays an internal identifier for the program.

1 Active scheduled programs containing MBCS characters in the title do not appear, and on-demand program titles containing MBCS characters display as questions marks.

Step 6 Click **Update Now** at the bottom of the ServerWatch Applet window to update the information in the display immediately instead of waiting for the refresh interval to elapse.

Step 7 Click **Cluster View** in the ServerWatch Applet window to display the Summary of Clusters window (see Figure 7-7). Table 7-10 describes the fields in the Summary of Clusters window.

Figure 7-7 Summary of Clusters Window

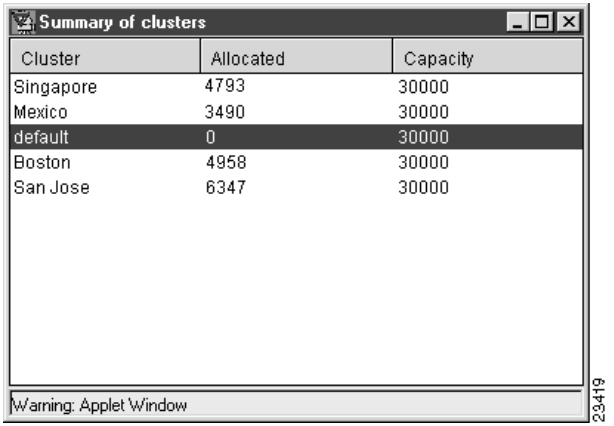


Table 7-10 Summary of Clusters Window Fields

Field	Description
Cluster	Displays the names of the clusters.
Allocated	Displays the currently allocated cluster capacity in kbps.
Capacity	Displays the allowed cluster capacity in kbps.

Journaling

You can configure the IP/TV Content Manager to maintain a journal record of each on-demand session. By default, journaling is disabled (journal records are kept for zero days).

Follow these steps to enable journaling:

Step 1 On the IP/TV Content Manager main page, click **Preferences**.

Step 2 Locate the Other Options section at the bottom of the Preferences page.

Step 3 Decide how many days you want the IP/TV Content Manager to save journaling records, and enter this number in the Save Journaling Records field. The IP/TV Content Manager automatically purges journal records after the number of days you specify.

Step 4 Click **Revise Preferences** at the bottom of the page to submit the change to the IP/TV Content Manager.

Caution Journaling uses reverse DNS lookups. If you enable journaling, be sure to configure your DNS system to allow reverse DNS lookups. Allowing reverse DNS lookups ensures that your journaling database is complete and accurate. If you do not enable reverse DNS lookups, viewer requests for on-demand programs may experience delays in the start of the program.

Organization of the Journaling Database

The IP/TV Content Manager uses a run-time version of Microsoft Access 97 to manage the journaling database. The journaling database contains the following tables:

- RequestLogs table. This table includes the name of the requesting user, the user's computer's name and IP address, the time of program request and end, a media list, and the bandwidth of the selected media.

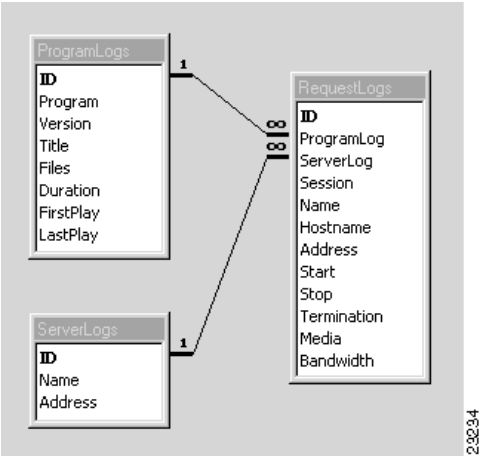
  The fields ProgramLogs and ServerLogs point to the other two tables, where information common to many sessions is recorded.

- ProgramLogs table. This table includes the program's ID and modification version, the program's full path name and duration, the list of files in the program's playlist, and the start time of the first and last time the program was played.

- ServerLogs table. This table includes the name of the media server and the server's IP address.

Figure 7-8 shows the relationship of the journaling database tables and the fields in each table.

Figure 7-8 Journaling Database Tables



Accessing the Journaling Database

You may use Microsoft Access 97 to create reports from the information in the journaling database. You can install Microsoft Access 97 either on the same machine as the IP/TV Content Manager, or on another machine that has network access to the IP/TV Content Manager.

Note The runtime version of Microsoft Access that is installed with IP/TV Content Manager creates and maintains the journaling database but does not permit access to queries and reports.

The journal records of on-demand sessions are saved in the following database file:

c:\JavaWebServer\iptvcm\database\odjournal.mdb

Viewing Queries and Reports

The journaling database includes six sample queries and six corresponding reports. There is one report for each query, and each report has the same title as its corresponding query. Administrators can either use the sample queries and reports as is, customize them, or create new queries and reports.

The database provides the following queries:

- Show All OnDemand Sessions by Program (all fields)

  This query contains one record for each on-demand session, with complete information about the program, the server playing the program, the user's host name, and the session. It is sorted by server, then by session start time, then by program title.

- Show All OnDemand Sessions by Server

  This query contains one record for each on-demand session. It contains the server name, session start time, session end time, session duration, on-demand program name, and user's host name. It is sorted by server.

- Show All OnDemand Sessions by User

  This query contains one record for each on-demand session. It contains the user name, host name, IP address, session start time, end time and duration, program title, and server name. It is sorted by user name, then by session start time, then by program title.

- Total OnDemand Sessions by Program

  This query contains one record per on-demand program played in a session. It contains the program title, filename and duration, date and time of the first and last sessions, and the total number of sessions. It is sorted by program title.

- Total OnDemand Sessions by Program, Date, and Server

  This query contains one record per on-demand program per day in which the program was played. It contains the program title, the date, the server name, and the total number of sessions. It is sorted by program title, then by date, then by server name.

- Total OnDemand Sessions by Server and Date

  This query contains one record per server per date in which there were active sessions. It contains the server name, the date, and the total number of sessions. It is sorted by server name and then by date.