Sun StorEdge™ Media Central Installation and Configuration Guide

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Contents

Figures

Tables

Preface

The *Sun StorEdge Media Central Installation and Configuration Guide* is for the system administrator who is installing the Sun StorEdge™ Media Central software. This guide describes the hardware and software configurations that the Media Central software supports and provides instructions for installing the Media Central software. It also describes how the Media Central servers are started and stopped automatically and how to start and stop them manually.

Note – This guide does not describe how to install PCI cards, how to cable disk arrays, encoders, or decoders, or how to install the Solaris™ operating environment or disk array software and firmware. To perform those operations, refer to the manuals supplied with the equipment. The guide describes the required *configurations* of hardware and software components that the Media Central software depends on.

Before You Read This Book

Read the *Sun StorEdge Media Central Release Notes* in conjunction with this guide. Limitations and problems listed in the *Release Notes* override instructions and features described in this guide.

Using UNIX Commands

This document may not contain information on basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices.

See one or more of the following for this information:

- AnswerBook2™ online documentation for the Solaris operating environment
- Other software documentation that you received with your system

Typographic Conventions

TABLE P-1   Typographic Conventions

Typeface	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your `.login` file. Use `ls -a` to list all files. `% You have mail.`
AaBbCc123	What you type, when contrasted with on-screen computer output	`% `**`su`** `Password:`
AaBbCc123	Book titles, new words or terms, words to be emphasized	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this.
	Command-line variable; replace with a real name or value	To delete a file, type `rm` *filename*.

Shell Prompts

TABLE P-2   Shell Prompts

Shell	Prompt
C shell	*machine_name%*
C shell superuser	*machine_name#*
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Related Documentation

TABLE P-3   Related Documentation

Application	Title	Part Number
Client Programming	*Sun StorEdge Media Central Client Programmer's Guide*	806-1798-10
Using Client and Server Software	*Sun StorEdge Media Central User's Guide*	806-1799-10
All	*Sun StorEdge Media Central Release Notes*	806-1797-10

For the latest Media Central information, consult the product web site:

```
http://www.sun.com/storage/media-central
```

Accessing Sun Documentation Online

The `docs.sun.com`sm web site enables you to access Sun technical documentation on the Web. You can browse the `docs.sun.com` archive or search for a specific book title or subject at:

```
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docfeedback@sun.com
```

Please include the part number (806-1800-10) of your document in the subject line of your email.

Preparing for Installation

The Sun StorEdge™ Media Central system provides audio and video capture, storage, and streaming for studios, cable operators, and other audio/video service users. The system is based on standard Sun™ server hardware and provides open software interfaces for extension by Sun and other parties.

This chapter has these sections:

- Section 1.1 "Media Central Architecture" on page 1-1
- Section 1.2 "General Precautions" on page 1-3
- Section 1.3 "Video Server Hardware Configurations" on page 1-4
- Section 1.4 "Assembly Strategies" on page 1-6

1.1 Media Central Architecture

The Media Central software is divided into server and client components as illustrated in the following figure.
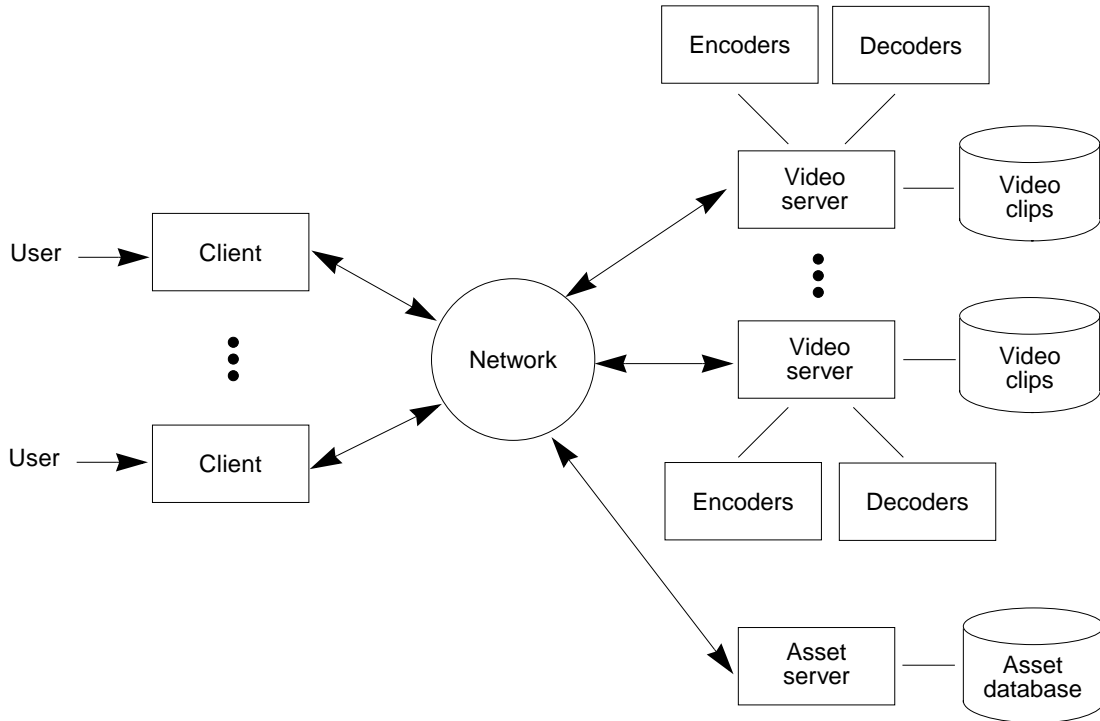
FIGURE 1-1   Media Central Client/Server Architecture

There are two kinds of Media Central servers. A *video server* (often called simply "a server") captures, stores, and streams video clips. A video server constitutes a dedicated, real-time system that runs on a general-purpose operating system (the Solaris™ operating environment) and hardware (Sun servers). The *asset server* cooperates with video servers to provide descriptive, searchable clip data (sometimes called metadata), such as title and creator. The asset server is an optional component; it can run on any Sun computer that is not also hosting a video server. The Media Central *clients* are Java™ programs that can run on Solaris or Microsoft Windows platforms. Video server, asset server, and client installation procedures are different, and client installation varies by platform.

1.2 General Precautions

For the Media Central video server software to perform as expected, the underlying hardware and software configurations must meet the requirements prescribed in this guide. If these requirements are not met, the software may perform poorly or not at all.

Configure your hardware and system software *exactly as described in this guide.* In particular:

- Install PCI cards in the prescribed slots. Not all PCI slots have the same bandwidth.
- Set up SCSI buses as specified.
- Do not install unspecified hardware in unoccupied PCI slots or make connections to rear panel connectors denoted as "vacant."
- Ensure that your operating system and drivers meet the specifications set forth in this guide.

Following these instructions and the others in this guide exactly will produce a standard configuration that performs optimally and can be readily diagnosed if problems arise.

Do not use a Media Central video server host for any purpose except running Media Central software; treat it as dedicated hardware. Running another program concurrently can make the real-time Media Central software perform incorrectly. In particular, do not use other applications to capture clips and store them in the video server host's UNIX® file system.

Installing and configuring a Media Central video server host requires multiple skills. No single person may have the knowledge of computer hardware, video hardware, and Solaris, video, and Sun StorEdge A1000 software that is required to successfully prepare a host for Media Central software installation. Installing the asset server requires database skills. You may need to assemble a team to bring together the requisite experience.

Consider dedicating one person to reading this guide aloud while others perform the assembly tasks. A dedicated reader will not lose his or her place as a person who both reads instructions and performs them, can. Skipping an important detail can produce a misconfigured system. Ideally, the reader should be thoroughly familiar with the guide before beginning installation.

Finally, beware of the experience you may have in setting up Sun servers. In some cases, assumptions that are valid for general-purpose servers are invalid for a Media Central video server. Faithful adherence to the instructions and requirements described in this guide provides the best assurance of success.

1.3 Video Server Hardware Configurations

As the following figure shows, a Media Central video server host may be configured with a variety of video and storage components. A minimal server host has a console, a Sun StorEdge A1000 disk array, an encoder, and a decoder. Medium-size servers have multiple disk arrays, encoders, and decoders. Large servers may be additionally equipped with one or more of the following: a timecode reader, a V-LAN device controller, or a Louth Automation device server. Some configurations may have more peripheral devices than the video server host has slots and ports. In such cases, connecting a PCI expander to the host, and optionally, a serial port expander to the host or to the PCI expander, provides additional slots and ports.
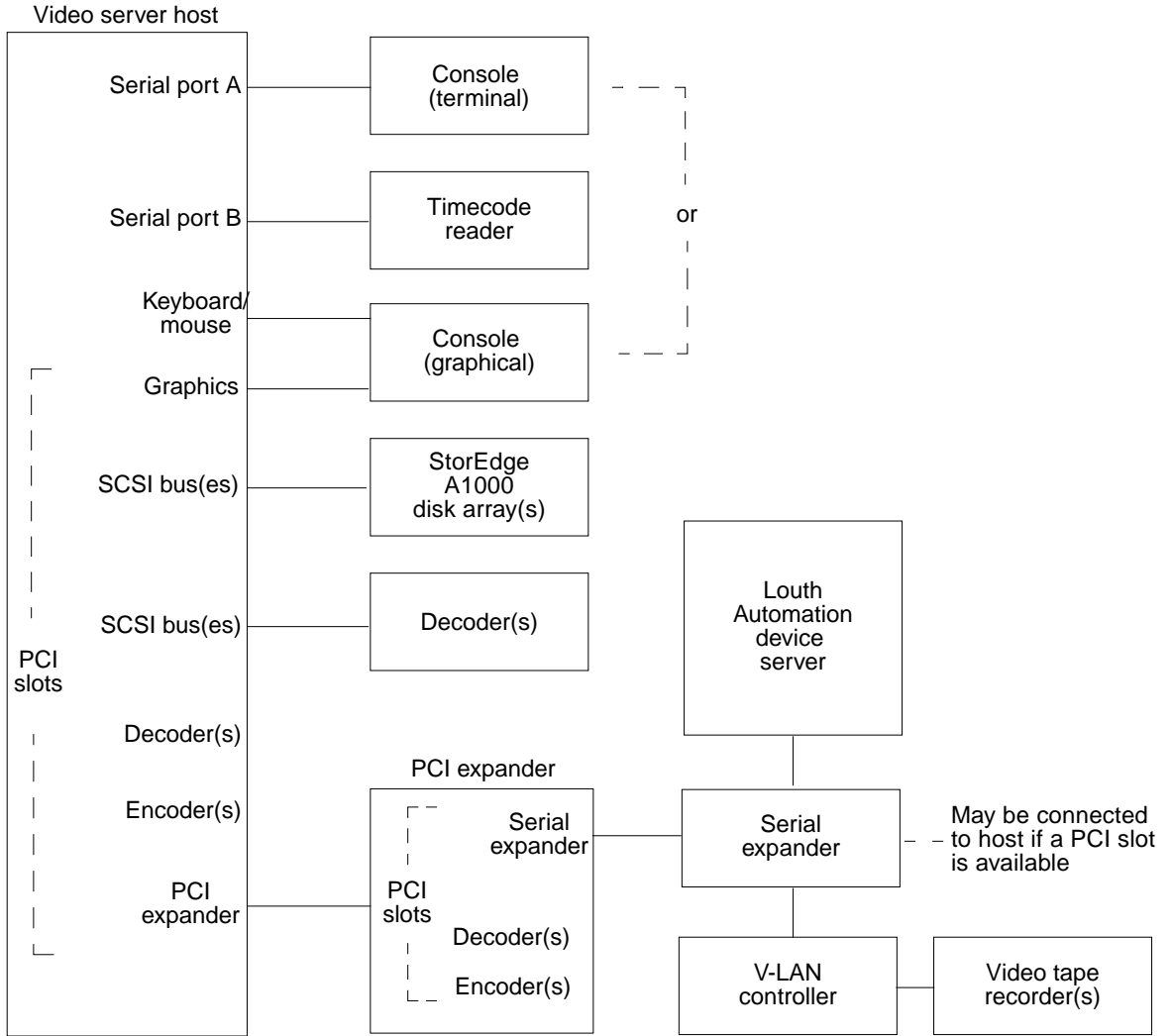
FIGURE 1-2   Large Media Central Video Server Host Configuration

1.4 Assembly Strategies

Because of the variety of components that may be connected to a Media Central video server host, this guide does not provide step-by-step hardware assembly instructions. Instead, the following sections describe two strategies for assembly; you may choose either or adopt a mixed approach.

1.4.1 Incremental Hardware Verification

Incremental verification builds one step at a time on a system that is known to work. It is practical for small configurations. For large configurations, repeatedly shutting down the computer, opening it, installing a card, and rebooting may take too much time. Moreover, every time you open the computer you expose parts to accidental damage.

To verify each assembly step before proceeding to the next, follow this strategy:

1. **Attach a console to the server host.**

   Chapter 2 and Chapter 3 describe the options for setting up a console for a Sun Enterprise™ 250 system and a Sun Enterprise 450 system, respectively.

2. **Start the host.**

   If the host does not boot the Solaris operating environment, install it from the Solaris CD.

3. **Verify the operating environment version, install the supported version if necessary, patch the operating environment if necessary, then verify that the host boots.**

   Chapter 5 describes the system software that the Media Central system requires.

4. **Install the Sun StorEdge A1000 systems and verify their firmware.**

   You can install and verify the StorEdge A1000 systems one at a time or in groups. Chapter 2 and Chapter 3 describe the configuration and connection of StorEdge A1000 systems for the Sun Enterprise 250 system and Sun Enterprise 450 system, respectively. Chapter 5 describes the StorEdge A1000 firmware and the RAID Manager utility.

5. **Install the Media Central server software, and then initialize the disk arrays.**

   Chapter 6 describes these subjects.

6. **Install one encoder and one decoder, including their drivers.**

   Chapter 2 and Chapter 3 describe the connection of encoders and decoders for the Sun Enterprise 250 system and Sun Enterprise 450 system, respectively. Consult the encoder and decoder documentation for driver installation instructions. Chapter 4 describes how to verify the hardware.

7. **Install the Media Central client software on a client host, then use the Administrator to verify client/server communication.**

   Chapter 6 describes client software installation. The *Sun StorEdge Media Central User's Guide* describes the Administrator.

8. **Use the Administrator to configure the encoder and decoder, and then use the Recorder and Player clients to verify that you can record and play clips.**

   The *Sun StorEdge Media Central User's Guide* describes the Recorder and Player clients.

9. **Install the remaining encoders and decoders and verify their operation.**

10. **Optionally, install one or more video tape recorders (VTRs) and verify their operation with the Recorder client.**

    Chapter 2 and Chapter 3 describe the connection of VTRs for the Sun Enterprise 250 system and Sun Enterprise 450 system, respectively.

11. **Optionally, install a timecode reader and verify its operation.**

    Chapter 2 and Chapter 3 describe the connection of a timecode reader for the Sun Enterprise 250 system and Sun Enterprise 450 system, respectively.

12. **Optionally, install a serial port expander and a Louth Automation device server, and verify its operation.**

    Chapter 2 and Chapter 3 describe the connection of these devices for the Sun Enterprise 250 system and Sun Enterprise 450 system, respectively.

1.4.2 Wholesale Hardware Verification

To assemble a complete system and then verify it, follow this approach:

1. **Install the hardware.**

   Host configuration varies by model; Chapter 2 covers the Sun Enterprise 250 system and Chapter 3 covers the Sun Enterprise 450 system. Chapter 4 describes how to verify the hardware.

2. **Install and configure the system software, including operating system and device drivers.**

   Chapter 5 covers this subject.

3. **Install the Media Central server and client software and initialize the disk arrays.**

   See Chapter 6.

4. **Verify the configuration and installation.**

   Chapter 4 and Chapter 6 describes how to do this.

Configuring a Sun Enterprise 250 System

This chapter describes the Sun Enterprise 250 hardware configurations supported by the Media Central video server software. It includes these sections:

- Section 2.1 "Required and Supported Hardware" on page 2-2
- Section 2.2 "Introducing the Sun Enterprise 250 Rear Panel and Main Logic Board" on page 2-3
- Section 2.4 "Connecting a Console" on page 2-5
- Section 2.5 "Configuring and Connecting Sun StorEdge A1000 Systems" on page 2-6
- Section 2.6 "Installing VisionTech Encoders" on page 2-10
- Section 2.7 "Installing Tektronix Encoders" on page 2-10
- Section 2.8 "Connecting Vela Decoders" on page 2-10
- Section 2.9 "Installing Tektronix Decoders" on page 2-11
- Section 2.10 "Connecting an AEC-BOX-20 Timecode Reader" on page 2-12
- Section 2.11 "Installing an SBS Technologies PCI Expander" on page 2-12
- Section 2.12 "Installing a Digi PORTS 16EM (Serial Port Expander)" on page 2-13
- Section 2.13 "Connecting a V-LAN Controller" on page 2-13
- Section 2.14 "Connecting a Louth Automation Device Server" on page 2-14
- Section 2.15 "Configuration Checklist" on page 2-15

Note – Whenever you add hardware, such as an encoder or a decoder, to a Media Central video server, you must reboot the server host with the `boot -r` command. If you do not, the server software will not recognize the new hardware.

2.1 Required and Supported Hardware

The following table summarizes the Sun Enterprise 250 configurations supported by the Media Central video server software. Before proceeding with configuration, make sure you have at least the minimum required hardware.

TABLE 2-1　Sun Enterprise 250 Hardware Requirements

Component	Requirement
Processors	Two UltraSPARC™ processors, 300 MHz (296 MHz) or faster
Memory	2 Gbytes DRAM
Internal storage	One 9 Gbyte, 7,200 rpm disk (larger or faster okay)
Console	ASCII terminal or virtual terminal (workstation running terminal emulator)
Video storage	• 1, 2, 4, 6, or 8 Sun StorEdge A1000 disk arrays • One dual UltraSCSI *differential* card

The following table lists optional equipment supported by the Media Central software.

TABLE 2-2　Sun Enterprise 250 Optional Hardware

Component	Description
VisionTech MVision Composite Real Time PCI Encoder Board • Model number MVision 10-PCI • Rev E or later	PCI-based encoder. One composite video cable with RCA jacks is required for the VisionTech encoder.
Tektronix M2FEC (digital video/ analog audio), M2FED (digital video/ digital audio), and M2FEA (analog video/analog audio)	PCI-based encoders
Vela MPEG2 DIFF SCSI 4CH DECODER W/GEN LOCK, 4-CH UNBALANCED AUDIO • Model number 2000-0402 • Part number 2000-0402-4SL4 • Firmware revision 4B37 • Audio cable RCA part number 6000-0325	SCSI-based decoder. This decoder requires one 75 ohm video cable with BNC-type connectors for video output. Vela decoders also require a dual UltraSCSI differential PCI card. One card supports up to six decoders; a second card supports an additional six decoders.

TABLE 2-2   Sun Enterprise 250 Optional Hardware *(Continued)*

Component	Description
Tektronix M2FDC (digital video/analog audio), M2FDD (digital video/digital audio), and M2FDA (analog video/analog audio)	PCI-based decoders
Adrienne Electronics AEC-BOX-20	VITC/LTC timecode reader; you can use AEC part number BOX232CBL to connect the timecode reader to the computer's serial port. Requires Louth Automation device server.
Digi PORTS/16EM 422	Serial port expander providing additional serial ports for Louth Automation device controller and V-LAN controller
SBS Technologies Model 2132 rack-mount 7- or 13-slot PCI Expansion Unit	Additional PCI slots for encoders, decoders, and a serial port expander
Louth Automation model ADC-50 device server	For controlling record and playback
Any V-LAN controller	For controlling video tape recorders with Media Central clients

2.2   Introducing the Sun Enterprise 250 Rear Panel and Main Logic Board

You connect a console, disk arrays, and video peripherals to a Sun Enterprise 250 system's rear panel, which is shown in the following figure. For detailed instructions on installing and connecting hardware, consult the *Owner's Guide* supplied with the Sun Enterprise 250 system.
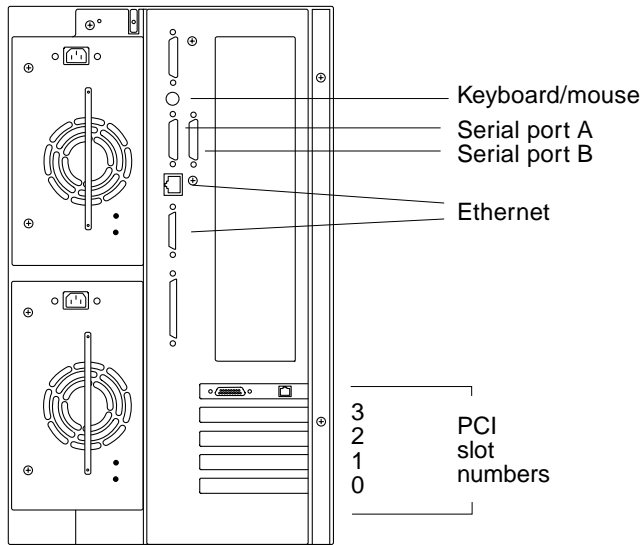
FIGURE 2-1   Sun Enterprise 250 Rear Panel

To connect some peripherals and encoders, you must install PCI cards in Sun Enterprise 250 PCI slots. PCI cards expose their peripheral connectors through the rear panel. The following figure shows the PCI slots on the Sun Enterprise 250 system's main logic board (viewed from the side). You gain access to the main logic board through the Sun Enterprise 250 side panel.
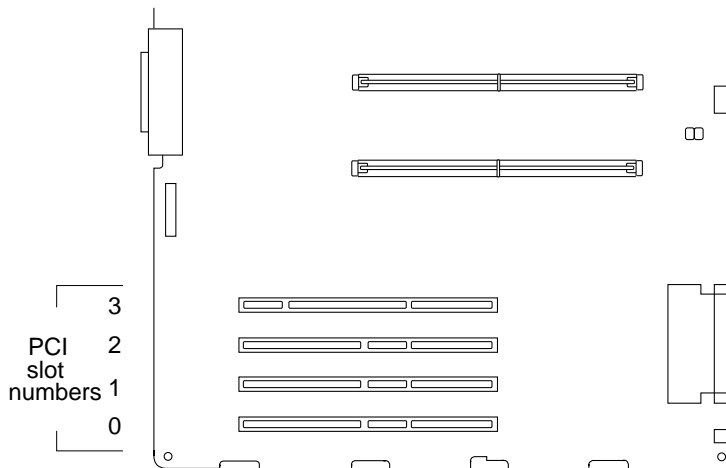
FIGURE 2-2   Sun Enterprise 250 PCI Slots

2.3   PCI Slot and Connector Assignments

The following table summarizes the assignments of PCI slots and rear panel
connections required by the Media Central software.

TABLE 2-3   Sun Enterprise 250 System Rear Panel and PCI Assignments

Back Panel	Connect/Install
PCI slot 0 (33 MHz)	PCI expander
PCI slot 1 (33 MHz)	Encoder
PCI slot 2 (33 MHz)	UltraSCSI (for SCSI-based decoders)
PCI slot 3 (66 Mhz)	UltraSCSI (for Sun StorEdge A1000 systems)
Serial port A	ASCII or virtual terminal console
Serial port B	Timecode reader (optional)
Keyboard/mouse	(vacant)
Parallel	(vacant)
Motherboard SCSI	(vacant)
Ethernet (2)	Ethernet (choose either connector)
RSC	(vacant)

2.4   Connecting a Console

As the following figure shows, there are two ways to set up a console for a Sun
Enterprise 250 video server host.
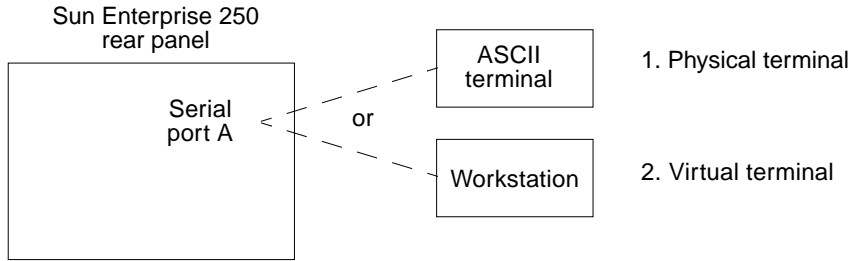
FIGURE 2-3 Sun Enterprise 250 Console Options

1. **Physical terminal**: A physical terminal console is an ASCII (TTY) terminal. To use this option, connect the terminal to serial port A. If you choose the physical terminal option, you must also have a workstation that can view programs run remotely on the server host. You need the workstation to view the Sun StorEdge A1000 RAID Manager software, which has a graphical user interface.

2. **Virtual terminal**: A virtual terminal console is a workstation running the `tip` command, which simulates a terminal. To use this option, connect either workstation serial port to the server host's serial port A with a null modem cable. Use the Solaris `admintool` program's Edit Serial Ports function to enable the workstation port. When the server host is running, use one of these commands to create a virtual terminal window connection to the server, depending on your choice of workstation serial ports (A or B):

```
% tip -9600 /dev/cua/a
% tip -9600 /dev/cua/b
```

2.5 Configuring and Connecting Sun StorEdge A1000 Systems

The Media Central software supports the Sun StorEdge A1000 disk array, part number SG-XARY144A-109G. The configuration of each array must meet specifications described in this section, as must the number and arrangement of drives.

2.5.1 Choosing the Number of Arrays

The following table characterizes the Sun StorEdge A1000 configurations supported by the Media Central software on a Sun Enterprise 250 system.

TABLE 2-4   Sun Enterprise 250 System StorEdge A1000 Configurations

Number of Sun StorEdge A1000 Systems	Data Rate (Mbits/sec.)	Extensible File System?
1	175	No
2	350	Yes
4	350	Yes
6	350	Yes
8	350	No (maximum configuration)

If you configure a Sun Enterprise 250 system with one Sun StorEdge A1000 array, your system will have less disk bandwidth than if you use two or more Sun StorEdge A1000 arrays. Bandwidth is a function of the number of SCSI buses. Multiple Sun StorEdge A1000 arrays must be allocated evenly among SCSI buses, thus, two Sun StorEdge A1000 arrays (two buses) give twice the bandwidth of a single Sun StorEdge A1000 array.

In addition to affecting bandwidth, your Sun StorEdge A1000 configuration determines whether your Media Central file system (clip folder) can be extended without erasing its contents. (Chapter 8 describes the file system extension utility.) If you configure one Sun StorEdge A1000 array, your Media Central file system cannot be extended without losing its contents. For example, if you upgrade your configuration from one Sun StorEdge A1000 system to four, you must copy your clips to another file system, create a new Media Central file system on the four Sun StorEdge A1000 systems, then copy your clips back to the new file system. By contrast, upgrading from two or more Sun StorEdge A1000 systems preserves the contents of the Media Central file system.

2.5.2 Configuring the Drives in an Array

A Sun StorEdge A1000 system can hold up to 12 drives. The Media Central software requires and uses 10 drives; if an 11th or 12th drive is installed it will not be used, but neither will it cause a problem.

The drives in each Sun StorEdge A1000 system must meet the requirements listed in the following table.

TABLE 2-5   Sun StorEdge A1000 Drive Requirements

Attribute	Requirement
Number	10–12 per array
Identity	Identical manufacturer, model, capacity, and firmware revision level
Capacity	9 Gbyte
Speed	10,000 rpm

The drives must be installed in the Sun StorEdge A1000 slots as shown in the following figure. Slot 2,5 and/or slot 1,5 may also be filled with a spare drive but the software will not use it.

FIGURE 2-4   Sun StorEdge A1000 Drive Population (Front View)

2.5.3   Configuring Array Firmware

Sun StorEdge A1000 arrays are controlled by firmware. Section 5.1.2 "Installing Sun StorEdge A1000 Firmware" on page 5-4 describes the firmware version that the Media Central software requires. The Media Central software sets several Sun StorEdge A1000 firmware parameters. Its correct operation relies on these parameter values. Observe the following precautions when using the RAID Manager (rm6) application:

- Do *not* enable Sun StorEdge A1000 auto parity checking.
- Do *not* change the Sun StorEdge A1000 reconstruction rate from "slow".

The Sun StorEdge A1000 write cache must be active for the Media Central video server to meet its specified performance levels. See Section 6.5 "Creating the Video Server File System" on page 6-9 for instructions on checking the state of write caches. If the Media Central video server reports stream underruns, verify that all Sun StorEdge A1000 write caches are active. If a write cache is not active, replace the Sun StorEdge A1000 write cache battery.

2.5.4　Connecting Disk Arrays

You connect Sun StorEdge A1000 disk arrays to the dual UltraSCSI card that you install in *PCI slot 3*. A SCSI bus is a cabled "daisy-chain" of one or more devices emanating from a rear panel connector on an SCSI card. The final device on each SCSI bus must be terminated. The dual UltraSCSI card implements two SCSI buses. The bus connectors are unlabeled, but in this section they are differentiated with the names SCSI1 and SCSI2.

The following figure summarizes the arrangement of one to eight Sun StorEdge A1000 disk arrays connected to a Sun Enterprise 250 system. TABLE 2-6 specifies how different complements of Sun StorEdge A1000 arrays must be allocated to SCSI buses.
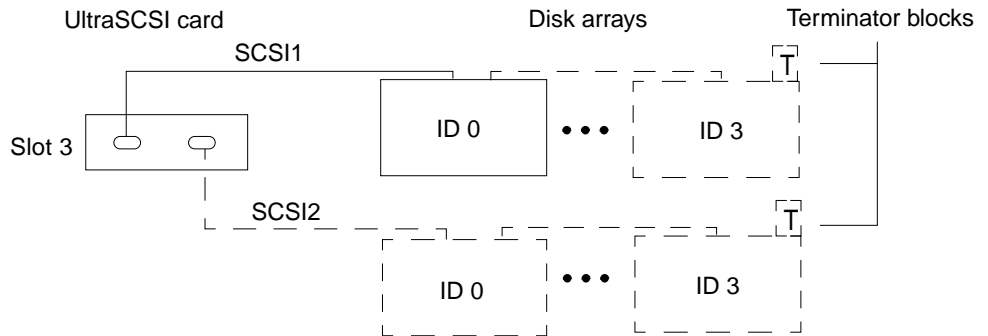
FIGURE 2-5　Sun StorEdge A1000 System Connections

When connecting Sun StorEdge A1000 arrays, observe the following:

■ Divide the Sun StorEdge A1000 systems among the two SCSI buses as specified in the following table.

TABLE 2-6 Allocation of Disk Arrays to SCSI Buses

Total Number of Disk Arrays	Arrays on SCSI1	Arrays on SCSI2
1	1	0
2	1	1
4	2	2
6	3	3
8	4	4

- On each SCSI bus, with all disk arrays powered off:
  - Give each Sun StorEdge A1000 system a unique SCSI ID (SCSI IDs are also called addresses or targets). Give the disk array nearest the computer SCSI ID 0, give the next array (if present) ID 1, and so on up through 3.
  - Set a Sun StorEdge A1000 system's SCSI ID by adjusting the rotary switch labeled SCSI ID; this switch is near the center of the Sun StorEdge A1000 back panel.
  - Terminate the final Sun StorEdge A1000 system on each bus by installing a *differential* terminator block (Sun part number 150-1890-02) in the array's unused SCSI connector.

2.6 Installing VisionTech Encoders

Install the first VisionTech encoder in *PCI slot 1*. You can install additional encoders in any slots of a PCI expander; see Section 2.11 "Installing an SBS Technologies PCI Expander" on page 2-12.

2.7 Installing Tektronix Encoders

You can install a Tektronix encoder in a Sun Enterprise 250 PCI slot or in a PCI expander. To install a Tektronix encoder in a Sun Enterprise 250 system, you must remove the U-shaped support bracket from the inboard end of the encoder card. Install the Tektronix encoder in *PCI slot 1*. (A Sun Enterprise 250 system supports only one encoder in its PCI slots.)

You can install additional Tektronix encoders in any slots of a PCI expander; see Section 2.11 "Installing an SBS Technologies PCI Expander" on page 2-12. You do not need to remove the support brackets from encoder cards you install in a PCI expander.

2.8 Connecting Vela Decoders

Connect Vela decoders to the dual UltraSCSI card that you install in *PCI slot 2*. You can install additional UltraSCSI card for Vela decoders in a PCI expander; see Section 2.11 "Installing an SBS Technologies PCI Expander" on page 2-12. A SCSI bus

is a cabled "daisy-chain" of one or more devices emanating from a rear panel connector on a SCSI card. The final device on each SCSI bus must be terminated. Each dual UltraSCSI card implements two SCSI buses. The bus connectors are unlabeled, but in this section they are called SCSI1 and SCSI2.
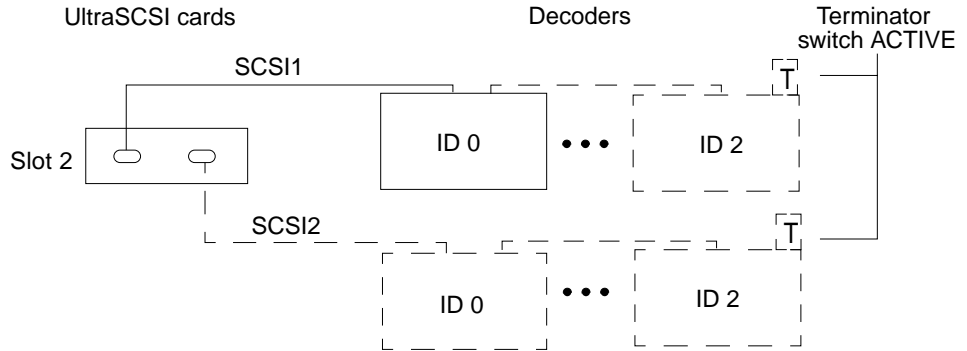
FIGURE 2-6   Vela Decoder Connections

For Vela decoder SCSI connections, observe the following:

- Put no more than three decoders on a SCSI bus.
- Distribute the decoders as evenly as possible among the buses.
- On each SCSI decoder bus:
  - Give the decoder nearest the computer SCSI ID (also called address or target) 0, and give the next decoder (if present) ID 1, and the final decoder (if present), ID 2.
  - Set a Vela decoder's SCSI ID by turning the dial labeled SCSI ID; this switch is near the right edge of the decoder's rear panel.
  - Terminate the final decoder on each bus by moving the switch labeled SCSI TERM to the ACTIVE (up) position; this switch is next to the SCSI ID switch.
  - Make sure that each decoder's HOT SWAP switch next to the SCSI TERM switch is in the down position.
  - Make sure that only the final decoder is terminated.

2.9   Installing Tektronix Decoders

You can install Tektronix decoders in any slots of a PCI expander; see Section 2.11 "Installing an SBS Technologies PCI Expander" on page 2-12. You do not need to remove the support brackets from decoder cards you install in a PCI expander.

2.10 Connecting an AEC-BOX-20 Timecode Reader

The Media Central video server software can use the Adrienne Electronics AEC-BOX-20 to synchronize itself with a timecode source. A synchronized Media Central host can also act as a time server for other hosts on the network using the network time protocol. In this way, all hosts can be synchronized with studio time. The timecode format must be SMPTE Drop Frame for NTSC (29.97 fps), or EBU for PAL(25 fps). The timecode input may be VITC or LTC. To use an AEC-BOX-20 with the Media Central software, you must also have a Louth Automation device server (see Section 2.14 "Connecting a Louth Automation Device Server" on page 2-14).

Connect the AEC-BOX-20 to a timecode source as described in the product's documentation. Connect the AEC-BOX-20's Serial I/O connector to the Sun Enterprise 250 system's serial port B, as shown in the following figure. You can make your own serial cable or use AEC part number BOX232CBL.
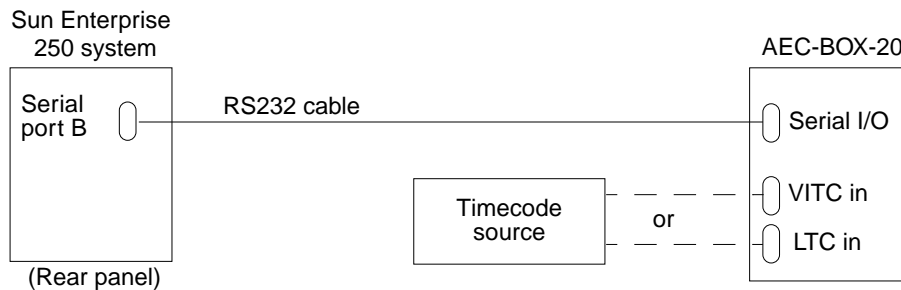
FIGURE 2-7   Sun Enterprise 250 AEC-BOX-20 Connection

Section 6.4 "Configuring the Media Central NTP Daemon" on page 6-8 describes the procedure for configuring the video server to use the timecode reader.

2.11 Installing an SBS Technologies PCI Expander

Installing a PCI expander gives you more PCI slots, which you can use for:

■ Encoders

- Decoders
- A serial port expander

Do not use a PCI expander slot for any other kind of equipment.

The Media Central software supports the SBS Technologies PCI Expansion Unit. Consult the manufacturer's documentation for detailed installation instructions. Install the PCI expander's host card in *PCI slot 0.* When powering up the Media Central host, apply power to the PCI expander first.

2.12   Installing a Digi PORTS 16EM (Serial Port Expander)

Installing a serial port expander (breakout box) gives you more serial ports which you can use for:

- V-LAN controller (see Section 2.13 "Connecting a V-LAN Controller" on page 2-13)
- Louth Automation device server Section 2.14 "Connecting a Louth Automation Device Server" on page 2-14)

Do not use expanded serial ports for other devices.

The Digi serial port expander connects to the Media Central host by means of a PCI card called a host card. Install the host card in any PCI expander slot (see Section 2.11 "Installing an SBS Technologies PCI Expander" on page 2-12.)

Consult the manufacturer's documentation for detailed installation instructions. Install the serial port expander driver software as described in the manufacturer's instructions. When powering up the Media Central server host, apply power to the serial port expander first.

2.13   Connecting a V-LAN Controller

You can control video tape recorders (VTRs) with the Media Central system by means of a V-LAN controller. To connect a V-LAN controller you must also install a a serial port expander. Connect the V-LAN controller to any port on the serial port expander.

If you are connecting a VTR to a VisionTech encoder, connect it to the encoder's Composite input. Do not use the encoder's S-video input.

The Media Central server software does not automatically detect VTRs; see the *Sun StorEdge Media Central User's Guide* for instructions on using the Administrator to create a VTR VideoBeans™ component.

2.14 Connecting a Louth Automation Device Server

To connect a Louth Automation ADC-50 device server to a Media Central system, you need a serial port expander (see Section 2.12 "Installing a Digi PORTS 16EM (Serial Port Expander)" on page 2-13). After installing the serial port expander, make eight RJ-12 to DB-25 converters as illustrated in the following figure.
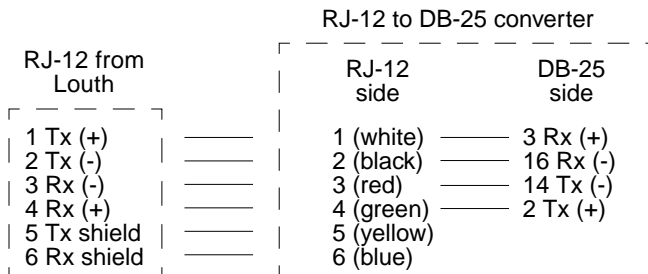
FIGURE 2-8   RJ-12 to DB-25 Converter

Install the converters in Digi ports 1–8, and connect Louth ports 1–8 to the converters. Consult the Louth documentation for connection details.

Before using the device server:

- Set the Encoder/Decoder and TTY properties in the Louth VideoBeans components that represent the Louth ports. The *Sun StorEdge Media Central User's Guide* describes the Administrator and Louth VideoBeans components.
- Restart the Media Central video server as described in Section 7.3.3 "Restarting a Video Server" on page 7-5.

2.15 Configuration Checklist

TABLE 2-7 expresses the Sun Enterprise 250 configuration requirements as a checklist. After verifying that your configuration meets the requirements, you can print the table and post it on the machine for reference.

TABLE 2-7   Sun Enterprise 250 Configuration Checklist

√	Component or Slot	Requirement
__	Processors	Two 300 MHz UltraSPARC processors (or better)
__	Memory	2 Gbytes DRAM
__	Internal storage	• Required: one 9 Gbyte, 7,200 rpm drive (larger/faster OK) • Optional: one 9 Gbyte, 7,200rpm drive (larger/faster OK)
__	PCI slot 0	Optional PCI expander
__	PCI slot 1	PCI-based encoder
__	PCI slot 2	Dual UltraSCSI differential card for SCSI-based decoders • Vela Model No. 2000-0402 decoders • No more than three decoders on each SCSI bus
__	PCI slot 3	Dual UltraSCSI differential card for video storage • 1, 2, 4, 6, or 8 Sun StorEdge A1000 arrays • Same number of Sun StorEdge A1000 arrays on each bus (except 1-array configuration)
__	RJ-45 or MII	Connect one to Ethernet
__	Serial port A	Physical or virtual terminal console
__	Serial port B	Optional AEC-BOX-20 timecode reader
__	Keyboard/mouse	Vacant
__	Parallel port	Vacant
__	Motherboard SCSI	Vacant
__	RSC	Vacant
__	SCSI buses	• Devices allocated as evenly as possible among buses • All buses properly terminated: final device (only) terminated, differential buses terminated with differential terminators • IDs (targets) assigned consecutively with 0 assigned to device nearest computer

Configuring a Sun Enterprise 450 System

This chapter describes the Sun Enterprise 450 configurations supported by the Media Central video server software. It includes these sections:

Note – Whenever you add hardware, such as an encoder or a decoder, to a Media Central video server, you must reboot the server host with the `boot -r` command. If you do not, the server software will not recognize the new hardware.

3.1 Required and Supported Hardware

The following table summarizes the Sun Enterprise 450 configurations supported by the Media Central video server software. Before proceeding with connections, make sure you have at least the minimum required hardware.

TABLE 3-1 Sun Enterprise 450 Hardware Requirements

Component	Requirement
Processors	Four UltraSPARC processors, 300 MHz (296 MHz) or faster
Memory	4 Gbytes DRAM
Internal Storage	One 9 Gbyte, 7,200 rpm disk (larger/faster OK)
Console	Graphics monitor and graphics card, or ASCII terminal, or virtual terminal (workstation running terminal emulator)
Video Storage	• 1, 2, 4, 8, 12, or 16 Sun StorEdge A1000 disk arrays • One or two dual UltraSCSI *differential* cards

The following table lists optional equipment supported by the Media Central software.

TABLE 3-2 Sun Enterprise 450 Optional Hardware

Component	Description
VisionTech MVision Composite Real Time PCI Encoder Board • Model number MVision 10-PCI • Rev E or later	PCI-based encoder. One composite video cable with RCA jacks is required for the encoder.
Tektronix M2FEC (digital video/ analog audio), M2FED (digital video/ digital audio), and M2FEA (analog video/analog audio)	PCI-based encoders
Vela MPEG2 DIFF SCSI 4CH DECODER W/GEN LOCK, 4-CH UNBALANCED AUDIO • Model number 2000-0402 • Part number 2000-0402-4SL4 • Firmware revision 4B37 • Audio cable RCA part number 6000-0325	SCSI-based decoder. One 75 ohm video cable with BNC-type connectors is required for the decoder video output. Vela decoders also require a dual UltraSCSI differential PCI card. One card supports up to six decoders; a second card supports an additional six decoders.

TABLE 3-2 Sun Enterprise 450 Optional Hardware *(Continued)*

Component	Description
Tektronix M2FDC (digital video/ analog audio), M2FDD (digital video/ digital audio), and M2FDA (analog video/analog audio)	PCI-based decoders
Adrienne Electronics AEC-BOX-20	VITC/LTC timecode reader; you can use AEC part number BOX232CBL to connect the timecode reader to the computer's serial port. Requires Louth Automation device server.
Digi PORTS/16EM 422	Serial port expander providing additional serial ports for Louth Automation device controller and V-LAN controller
SBS Technologies Model 2132 rack-mount 7- or 13-slot PCI Expansion Unit	Additional PCI slots for encoders, decoders, and a serial port expander
Louth Automation model ADC-50 device server	For controlling record and playback
Any V-LAN controller	For controlling video tape recorders with Media Central clients

3.2 Introducing the Sun Enterprise 450 Rear Panel and Main Logic Board

You connect a console, disk arrays, and video peripherals to a Sun Enterprise 450 system's rear panel, which is shown in the following figure. For detailed instructions on installing and connecting hardware, consult the *Owner's Guide* supplied with the Sun Enterprise 450 system.

Serial ports
A/B

Keyboard/
mouse

Ethernet

10
9
8
7
6
5
4
3
2
1

PCI
slot
numbers
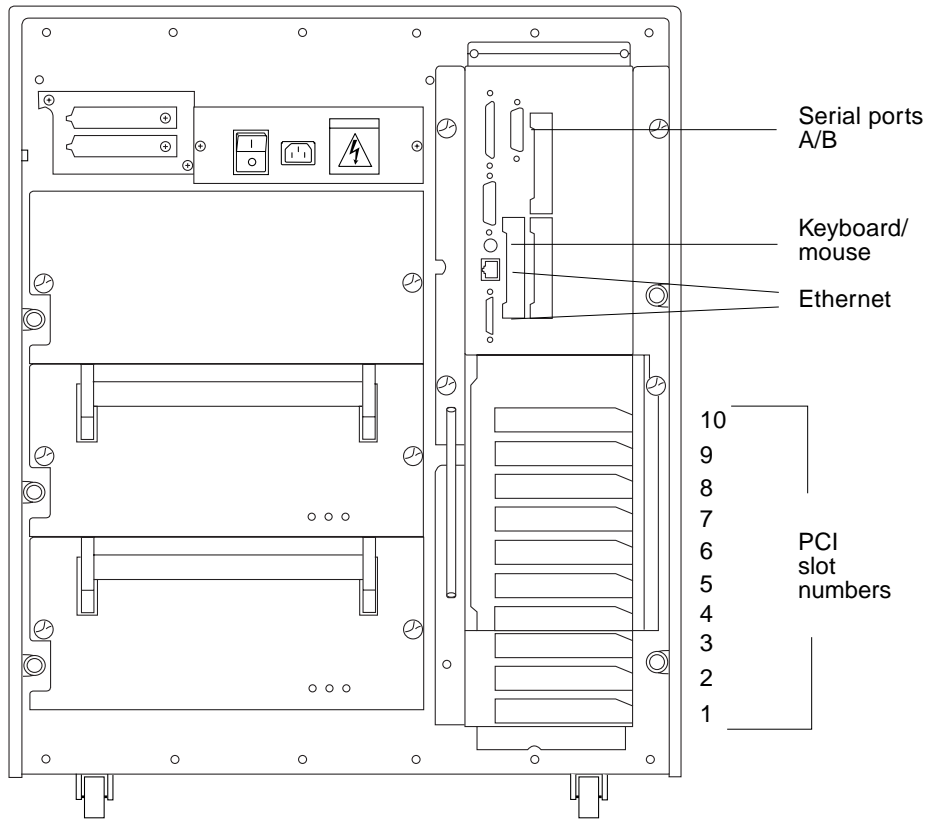
FIGURE 3-1   Sun Enterprise 450 Rear Panel

To connect some peripherals and encoders, you must install PCI cards in Sun
Enterprise 450 PCI slots. PCI cards expose their peripheral connectors through the
rear panel. The following figure shows the PCI slots on the Sun Enterprise 450
system's main logic board (viewed from the side). You gain access to the main logic
board through the Sun Enterprise 450 left side panel (viewed from the front of the
system).
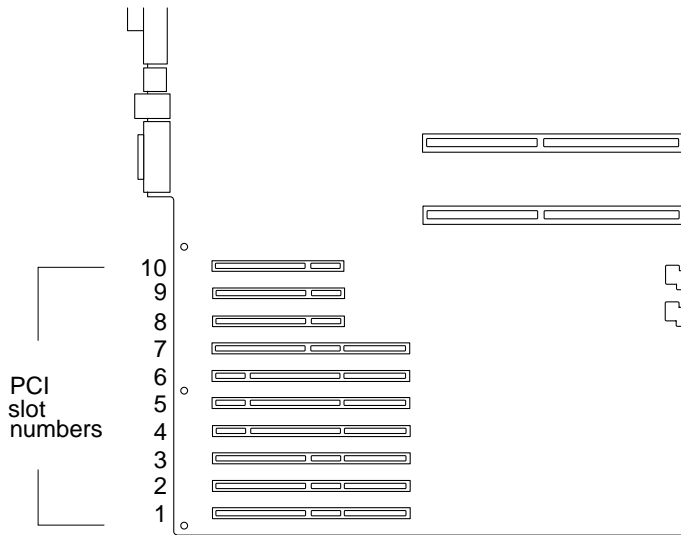
FIGURE 3-2   Sun Enterprise 450 PCI Slots

3.3   PCI Slot and Connector Assignments

The following table summarizes the assignments of PCI slots and rear panel connections required by the Media Central software. Note that the Sun Enterprise 450 system has no PCI slot 0. To use both serial ports, you need a splitter cable that divides the single DB25 serial port connector.

TABLE 3-3   Sun Enterprise 450 Rear Panel and PCI Assignments

Rear Panel	Connect/Install
PCI slot 1 (33 MHz)	Encoder, decoder, or PCI expander
PCI slot 2 (33 MHz)	UltraSCSI (for SCSI-based decoders)
PCI slot 3 (33 MHz)	Encoder, decoder, or PCI expander
PCI slot 4 (66 MHz)	UltraSCSI (for Sun StorEdge A1000 systems)
PCI slot 5 (66 MHz)	UltraSCSI (for Sun StorEdge A1000 systems)
PCI slot 6 (66 MHz)	UltraSCSI (for optional SCSI-based decoders)
PCI slot 7 (33 MHz)	Encoder, decoder, or PCI expander

TABLE 3-3   Sun Enterprise 450 Rear Panel and PCI Assignments *(Continued)*

Rear Panel	Connect/Install
PCI slot 8 (33 MHz)	Encoder, decoder, or PCI expander
PCI slot 9 (33 MHz)	Encoder, decoder, or PCI expander
PCI slot 10 (33 MHz)	Graphics card (optional graphics monitor console)
Serial port A	ASCII or virtual terminal console (optional)
Serial port B	Timecode reader (optional)
Keyboard/mouse	Keyboard/mouse (optional graphics console)
Parallel port	(vacant)
Motherboard SCSI	(vacant)
Ethernet (2)	Ethernet (choose either connector)

Notice in TABLE 3-3 that PCI slots 1, 3, 7, 8, and 9 may take PCI expander host cards, encoders or decoders. Assign devices to these slots as follows:

■ Fill the slots in this order: 1, 7, 3, 8, 9. This order balances the load across the computer's two PCI buses.

■ Install PCI expander host cards first.

■ Install PCI-based encoders and decoders in the remaining slots.

In other words, favor slot 1 over slot 7 (and slot 7 over slot 3, and so on), and favor PCI expanders over encoders and decoders.

3.4   Connecting a Console

As the following figure shows, there are three ways to set up a console for a Sun Enterprise 450 video server host.
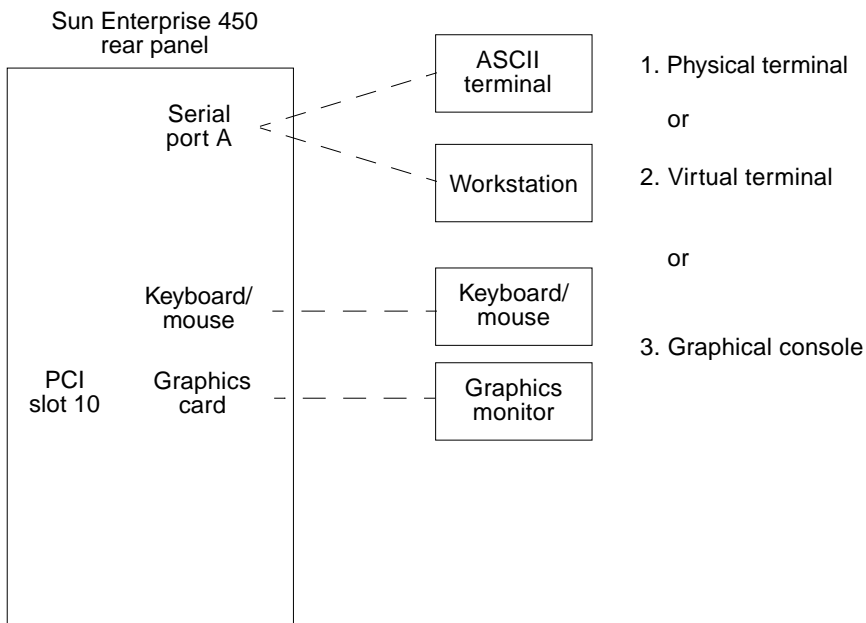
FIGURE 3-3   Sun Enterprise 450 Console Options

1. **Physical terminal**: A physical terminal console is an ASCII (TTY) terminal. To use this option, connect the terminal to serial port A. If you choose the physical terminal option, you must also have a workstation that can view programs run remotely on the server host. You need the workstation to view the Sun StorEdge A1000 RAID Manager software, which has a graphical user interface.

2. **Virtual terminal**: A virtual terminal console is a workstation running the `tip` command, which simulates a terminal. To use this option, connect either workstation serial port to the server host's serial port A with a null modem cable. Use the Solaris `admintool` program's Edit Serial Ports function to enable the workstation port. When the server host is running, use one of these commands to create a virtual terminal window connection to the server, depending on your choice of workstation serial ports (A or B):

```
% tip -9600 /dev/cua/a
% tip -9600 /dev/cua/b
```

3. **Graphical console**: A graphical console makes the server host operate like a workstation. To use this option, install a PCI graphics card in slot 10 to drive the monitor, and connect a keyboard and mouse to the keyboard/mouse connector on the server host's rear panel.

3.5 Configuring and Connecting Sun StorEdge A1000 Systems

The Media Central software supports the Sun StorEdge A1000 disk array, part number SG-XARY144A-109G. The configuration of each array must meet specifications described in this section, as must the number and arrangement of drives.

3.5.1 Choosing the Number of Arrays

The following table characterizes the Sun StorEdge A1000 configurations supported by the Media Central software on a Sun Enterprise 450 system.

TABLE 3-4   Sun Enterprise 450 System StorEdge A1000 Configurations

Number of Sun StorEdge A1000 Systems	Data Rate (Mbits/sec.)	Extensible File System?
1	175	No
2	350	No
4	700	Yes
8	700	Yes
12	700	Yes
16	700	No (maximum configuration)

If you configure a Sun Enterprise 450 system with one or two Sun StorEdge A1000 arrays, your system will have less disk bandwidth than if you use four or more Sun StorEdge A1000 arrays. Bandwidth is a function of the number of SCSI buses. Multiple Sun StorEdge A1000 arrays must be allocated evenly among SCSI buses, thus, two Sun StorEdge A1000 arrays (two buses) give twice the bandwidth of a single Sun StorEdge A1000 array, and four or more Sun StorEdge A1000 arrays (four buses) give twice the bandwidth of two Sun StorEdge A1000 arrays.

In addition to affecting bandwidth, your Sun StorEdge A1000 configuration determines whether your Media Central file system (clip folder) can be extended without erasing its contents. (Chapter 8 describes the file system extension utility.) If

you configure one or two Sun StorEdge A1000 arrays, your Media Central file system cannot be extended without losing its contents. For example, if you upgrade your configuration from one Sun StorEdge A1000 system to four, you must copy your clips to another file system, create a larger Media Central file system on the four Sun StorEdge A1000 systems, then copy your clips back to the new file system. By contrast, upgrading from four or more Sun StorEdge A1000 systems preserves the contents of the Media Central file system.

3.5.2   Configuring the Drives in an Array

A Sun StorEdge A1000 system can hold up to 12 drives. The Media Central software requires and uses 10 drives; if an 11th or 12th drive is installed it will not be used, but neither will it cause a problem.

The drives in each Sun StorEdge A1000 system must meet the requirements listed in the following table.

TABLE 3-5   Sun StorEdge A1000 Drive Requirements

Attribute	Requirement
Number	10–12 per array
Identity	Identical manufacturer, model, capacity, and firmware revision level
Capacity	9 Gbyte
Speed	10,000 rpm

The drives must be installed in the Sun StorEdge A1000 slots as shown in the following figure. Slot 2,5 and/or slot 1,5 may also be filled with a spare drive but the software will not use it.

FIGURE 3-4   Sun StorEdge A1000 Drive Population (Front View)

3.5.3　Configuring Array Firmware

Sun StorEdge A1000 arrays are controlled by firmware. Section 5.1.2 "Installing Sun StorEdge A1000 Firmware" on page 5-4 describes the firmware version that the Media Central software requires. The Media Central software sets several Sun StorEdge A1000 firmware parameters. Its correct operation relies on these parameter values. Observe the following when using the RAID Manager (rm6) application:

- Do *not* enable Sun StorEdge A1000 auto parity checking.

- Do *not* change the Sun StorEdge A1000 reconstruction rate from "slow".

The Sun StorEdge A1000 write cache must be active for the Media Central video server to meet its specified performance levels. See Section 6.5 "Creating the Video Server File System" on page 6-9 for instructions on checking the state of write caches. If the Media Central video server reports stream underruns, verify that all Sun StorEdge A1000 write caches are active. If a write cache is not active, replace the Sun StorEdge A1000 write cache battery.

3.5.4　Connecting Disk Arrays

You connect Sun StorEdge A1000 disk arrays to one or two dual UltraSCSI cards which you install in *PCI slots 4 and 5*. A SCSI bus is a cabled "daisy-chain" of one or more devices emanating from a rear panel connector on an SCSI card. The final device on each SCSI bus must be terminated. Each dual UltraSCSI card implements two SCSI buses. The bus connectors are unlabeled, but in this section they are differentiated with the names SCSI1 and SCSI2 (on the card in slot 4) and SCSI3 and SCSI3 (on the card in slot 5).

The following figure summarizes the arrangement of one to 16 Sun StorEdge A1000 disk arrays connected to a Sun Enterprise 450 system. TABLE 3-6 specifies how different complements of Sun StorEdge A1000 arrays must be allocated to SCSI buses.
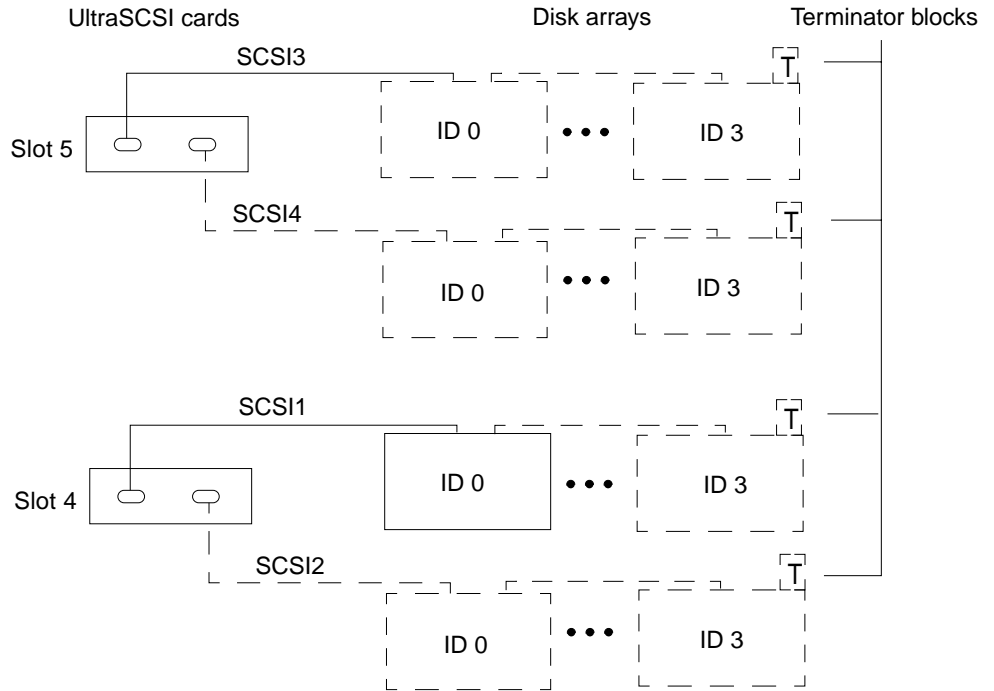
FIGURE 3-5   Sun StorEdge A1000 System Connections

When connecting Sun StorEdge A1000 arrays, observe the following:

- Divide the Sun StorEdge A1000 systems among the two or four SCSI buses as specified in the following table.

TABLE 3-6 Allocation of Disk Arrays to SCSI Buses

Total Number of Disk Arrays	Arrays on Slot 4, SCSI1	Arrays on Slot 4, SCSI2	Arrays on Slot 5, SCSI3	Arrays on slot 5, SCSI4
1	1	0	0	0
2	1	1	0	0
4	1	1	1	1
8	2	2	2	2
12	3	3	3	3
16	4	4	4	4

- On each SCSI bus, with all disk arrays powered off:
  - Give each Sun StorEdge A1000 system a unique SCSI ID (SCSI IDs are also called addresses or targets). Give the disk array nearest the computer SCSI ID 0, give the next array (if present) ID 1, and so on up through 3.
  - Set a Sun StorEdge A1000 system's SCSI ID by adjusting the rotary switch labeled SCSI ID; this switch is near the center of the Sun StorEdge A1000 back panel.
  - Terminate the final Sun StorEdge A1000 system on each bus by installing a *differential* terminator block (Sun part number 150-1890-02) in the array's unused SCSI connector.

3.6 Installing an SBS Technologies PCI Expander

Installing a PCI expander gives you more PCI slots which you can use for:

- Encoders
- Decoders
- A serial port expander

Do not use a PCI expander slot for any other kind of equipment.

The Media Central software supports the SBS Technologies PCI Expansion Unit. Consult the manufacturer's documentation for detailed installation instructions. When installing a PCI expander host card, observe the slot assignment algorithm described in Section 3.3 "PCI Slot and Connector Assignments" on page 3-5.

When powering up a Media Central video host, apply power to the PCI expander first.

3.7 Installing VisionTech Encoders

Install VisionTech encoders in Sun Enterprise 450 system PCI slots as prescribed in Section 3.3 "PCI Slot and Connector Assignments" on page 3-5.

You can install additional encoders in any slots of a PCI expander; see Section 3.6 "Installing an SBS Technologies PCI Expander" on page 3-12.

3.8 Installing Tektronix Encoders

You can install Tektronix encoders in Sun Enterprise 450 PCI slots or in a PCI expander. Install Tektronix encoders in Sun Enterprise 450 system PCI slots as prescribed in Section 3.3 "PCI Slot and Connector Assignments" on page 3-5. To install a Tektronix encoder in a Sun Enterprise 450 system, you must remove the U-shaped support bracket from the inboard end of the encoder card.

You can install additional Tektronix encoders in any slots of a PCI expander; see Section 3.6 "Installing an SBS Technologies PCI Expander" on page 3-12. You do not need to remove the support brackets from encoder cards you install in a PCI expander.

3.9 Connecting Vela Decoders

Connect Vela decoders to one or two dual UltraSCSI cards that you install in *PCI slots 2 and 6.* You can install additional UltraSCSI card for Vela decoders in a PCI expander; see Section 3.6 "Installing an SBS Technologies PCI Expander" on page 3-12. A SCSI bus is a cabled "daisy-chain" of one or more devices emanating from a rear panel connector on a SCSI card. The final device on each SCSI bus must be terminated. Each dual UltraSCSI card implements two SCSI buses. The bus connectors are unlabeled, but in this section they are called SCSI1 and SCSI2 (on the card in slot 2) and SCSI3 and SCSI4 (on the card in slot 6).
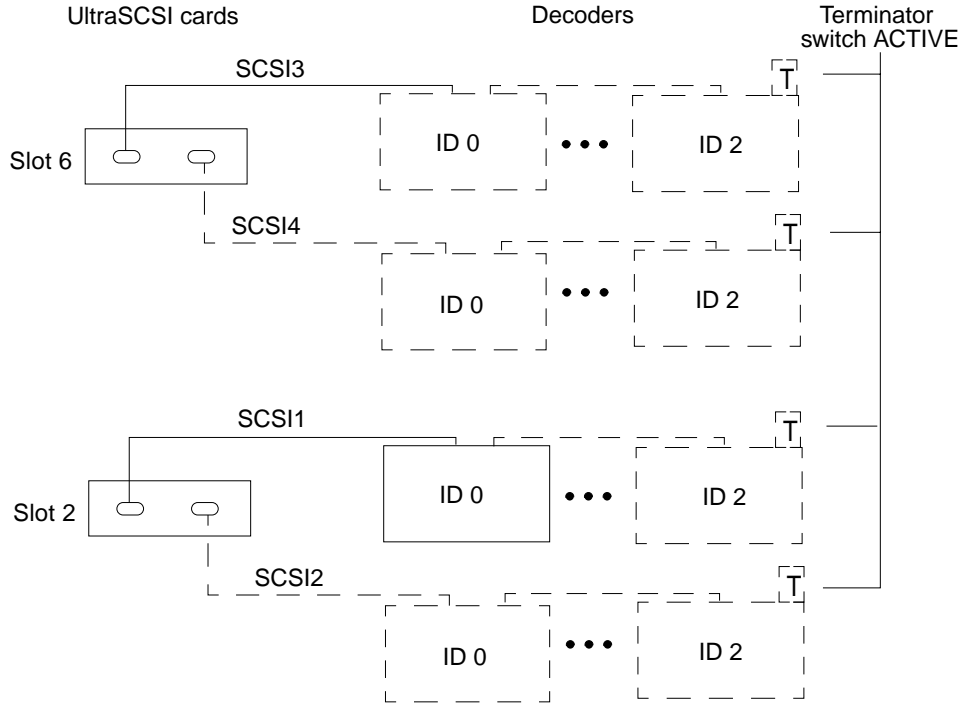
FIGURE 3-6 Vela Decoder Connections

For Vela decoder SCSI connections, observe the following:

- Put no more than three decoders on a SCSI bus.
- Distribute the decoders as evenly as possible among the buses.

On each SCSI decoder bus:

- Give the decoder nearest the computer SCSI ID (also called address or target) 0, and give the next decoder (if present) ID 1, and the final decoder (if present), ID 2.
- Set a Vela decoder's SCSI ID by turning the dial labeled SCSI ID; this switch is near the right edge of the decoder's rear panel.
- Terminate the final decoder on each bus by moving the switch labeled SCSI TERM to the ACTIVE (up) position; this switch is next to the SCSI ID switch.
- Make sure that each decoder's HOT SWAP switch next to the SCSI TERM switch is in the down position.
- Make sure that only the final decoder is terminated.

3.10 Installing Tektronix Decoders

You can install Tektronix decoders in Sun Enterprise 450 PCI slots or in a PCI expander. Install Tektronix decoders in Sun Enterprise 450 system PCI slots as prescribed in Section 3.3 "PCI Slot and Connector Assignments" on page 3-5. To install a Tektronix decoder in a Sun Enterprise 450 system, you must remove the U-shaped support bracket from the inboard end of the decoder card.

You can install additional Tektronix decoders in any slots of a PCI expander; see Section 3.6 "Installing an SBS Technologies PCI Expander" on page 3-12. You do not need to remove the support brackets from decoder cards you install in a PCI expander.

3.11 Connecting an AEC-BOX-20 Timecode Reader

The Media Central video server software can use the Adrienne Electronics AEC-BOX-20 to synchronize itself with a timecode source. A synchronized Media Central host can also act as a time server for other hosts on the network using the network time protocol. In this way, all hosts can be synchronized with studio time. The timecode format must be SMPTE Drop Frame for NTSC (29.97 fps), or EBU for PAL(25 fps). The timecode input may be VITC or LTC. To use an AEC-BOX-20 with the Media Central software, you must also have a Louth Automation device server (see Section 3.14 "Connecting a Louth Automation Device Server" on page 3-17).

Connect the AEC-BOX-20 to a timecode source as described in the product's documentation. Connect the AEC-BOX-20's Serial I/O connector to the Sun Enterprise 450 system's serial port B, as shown in the following figure. You can make your own serial cable or use AEC part number BOX232CBL.
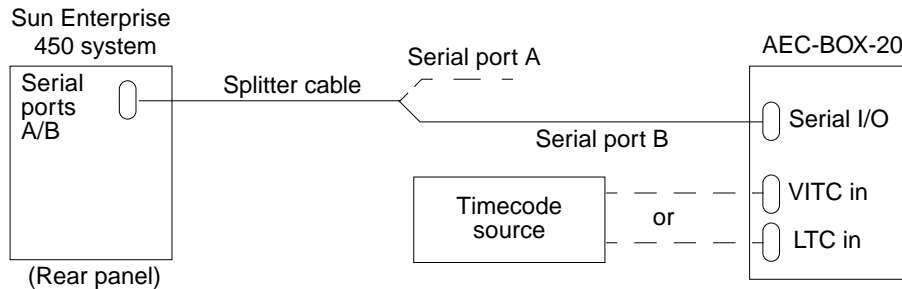
FIGURE 3-7   Sun Enterprise 450 AEC-BOX-20 Connection

Section 6.4 "Configuring the Media Central NTP Daemon" on page 6-8 describes the procedure for configuring the video server to use the timecode reader.

3.12   Installing a Digi PORTS 16EM (Serial Port Expander)

Installing a serial port expander (breakout box) gives you more serial ports which you can use for:

- V-LAN controller (see Section 3.13 "Connecting a V-LAN Controller" on page 3-17)
- Louth Automation device server Section 3.14 "Connecting a Louth Automation Device Server" on page 3-17)

Do not use expanded serial ports for other devices.

The Digi serial port expander connects to the Media Central host by means of a PCI card called a host card. You can install the host card in either of two places:

- Any unused 33 MHz PCI slot in the Sun Enterprise 450 host, that is, PCI slots 1, 3 or 7–9.
- Any unused slot in a PCI expander (see Section 3.6 "Installing an SBS Technologies PCI Expander" on page 3-12.

Consult the manufacturer's documentation for detailed installation instructions. Install the serial port expander driver software as described in the manufacturer's instructions. When powering up the Media Central host, apply power to the serial port expander first.

3.13 Connecting a V-LAN Controller

You can control video tape recorders (VTRs) with the Media Central system by means of a V-LAN controller. To connect a V-LAN controller you must also install a a serial port expander. Connect the V-LAN controller to any port on the serial port expander.

If you are connecting a VTR to a VisionTech encoder, connect it to the encoder's Composite input. Do not use the encoder's S-video input.

The Media Central server software does not automatically detect VTRs; see the *Sun StorEdge Media Central User's Guide* for instructions on using the Administrator to create a VTR instance.

3.14 Connecting a Louth Automation Device Server

To connect a Louth Automation ADC-50 device server to a Media Central system, you need a serial port expander (see "Installing a Digi PORTS 16EM (Serial Port Expander)" on page 16). After installing the serial port expander, make eight RJ-12 to DB-25 converters as illustrated in the following figure.
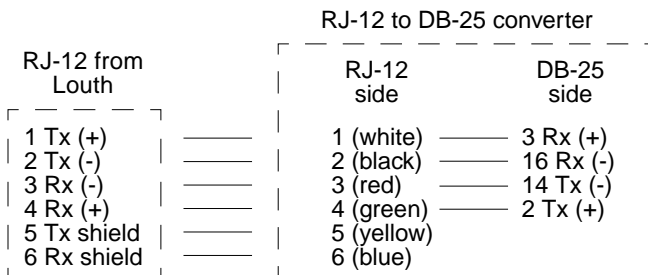
FIGURE 3-8   RJ-12 to DB-25 Converter

Install the converters in Digi ports 1–8, and connect Louth ports 1–8 to the converters. Consult the Louth documentation for connection details.

Before using the device server:

- Set the Encoder/Decoder and TTY properties in the Louth VideoBeans components that represent the Louth ports. The *Sun StorEdge Media Central User's Guide* describes the Administrator and Louth VideoBeans components.

- Restart the Media Central video server as described in Section 7.3.3 "Restarting a Video Server" on page 7-5.

3.15 Configuration Checklist

The following table expresses the Sun Enterprise 450 configuration requirements as a checklist. After verifying that your configuration meets the requirements, you can copy the table and post it on the machine for reference.

TABLE 3-7 Sun Enterprise 450 Configuration Checklist

√	Component or Slot	Requirement
__	Processors	Four 300 MHz UltraSPARC processors (or better)
__	Memory	4 Gbytes DRAM
__	Internal storage	• Required: one 9 Gbyte, 7,200 rpm drive (larger/faster OK) • Optional: one 9 GByte, 7,200 rpm drive (larger/faster OK)
__	PCI slot 1	Optional PCI expander or PCI-based encoder or decoder (see Section 3.3 "PCI Slot and Connector Assignments" on page 3-5 for slot assignment rule)
__	PCI slot 2	Dual UltraSCSI differential card for SCSI-based decoders • Vela model No. 2000-0402 decoders • No more than three decoders on each SCSI bus
__	PCI slot 3	Optional PCI expander or PCI-based encoder or decoder (see Section 3.3 "PCI Slot and Connector Assignments" on page 3-5 for slot assignment rule)
__	PCI slot 4	Dual UltraSCSI differential card for video storage • 1, 2, 4, 8, or 16 Sun StorEdge A1000 arrays (total across slots 4 and 5) • Same number of Sun StorEdge A1000 arrays on each bus (except 1-array configuration)
__	PCI slot 5	Optional dual UltraSCSI differential card for video storage (4-, 8-, and 16-array configurations)
__	PCI slot 6	Optional dual UltraSCSI differential Card for Vela decoders
__	PCI slot 7	Optional PCI expander or PCI-based encoder or decoder (see Section 3.3 "PCI Slot and Connector Assignments" on page 3-5 for slot assignment rule)
__	PCI slot 8	Optional PCI expander or PCI-based encoder or decoder (see Section 3.3 "PCI Slot and Connector Assignments" on page 3-5 for slot assignment rule)
__	PCI slot 9	Optional PCI expander or PCI-based encoder or decoder (see Section 3.3 "PCI Slot and Connector Assignments" on page 3-5 for slot assignment rule)

TABLE 3-7   Sun Enterprise 450 Configuration Checklist *(Continued)*

√	Component or Slot	Requirement
__	PCI slot 10	Optional graphics card for graphics console
__	RJ-45 or MII	Connect either to Ethernet
__	Serial port A	Optional ASCII terminal or virtual console
__	Serial port B	Optional AEC-BOX-20 timecode reader
__	Keyboard/mouse	Keyboard/mouse (graphics console) or vacant (ASCII or virtual console)
__	Parallel port	Vacant
__	Motherboard SCSI	Vacant
__	SCSI buses	• Devices allocated as evenly as possible among buses • All buses properly terminated: final device (only) terminated, differential buses terminated with differential terminators • IDs (targets) assigned consecutively with 0 assigned to device nearest computer

CHAPTER **4**

Verifying Media Central Hardware

This chapter describes how to verify a Media Central video server hardware installation. Follow these steps:

1. **Power on the system devices in this order:**

   a. **Power on the Sun StorEdge A1000 systems one at a time, waiting 10–15 seconds before powering on the next one.**

   Sun StorEdge A1000 systems draw considerable current when they are started.

   b. **Power on the encoders, decoders, and other peripherals and expanders.**

   c. **Power on the Media Central video server host.**

2. **If the video server host starts to boot, stop it.**

   a. **If your console is a physical terminal, press Ctrl-Break**

   b. **If your console is a virtual terminal, press ~#.**

   c. **If your console is a graphical console, press Stop-A.**

   You should see the OpenBoot™ prompt: `ok>`.

3. **Verify that all PCI devices are detectable:**

   ```
   ok> show-devs
   ```

4. **Verify that all SCSI devices are detectable:**

   ```
   ok> probe-scsi-all
   ```

5. **Resolve problems with undetected devices.**

a. Verify that all devices are powered on.

Power cycling a Sun StorEdge A1000 disk array will sometimes make it detectable. A disk array will not be detected if the computer was not booted with the `-r` option after the array was attached; reboot if necessary. As a last resort, try:

```
# rm -r /dev/osa/dev
# boot -r
```

b. Check that devices on differential SCSI buses are cabled with differential cables.

c. Check that differential SCSI devices are terminated with differential terminators.

d. Check each SCSI bus for ID (target or address) conflicts.

e. Check for loose contacts on SCSI devices and cables.

CHAPTER **5**

Configuring System Software

The Media Central client and server software depend on system software components and have been tested with particular versions of those components. This chapter describes the requirements for each of the Media Central components. This chapter is not a substitute for the manuals that are dedicated to each system software component. The chapter has these sections:

■ Section 5.1 "Video Server System Software" on page 5-2

■ Section 5.2 "Client System Software" on page 5-8

The Media Central asset server software requires a database server as described in Section 6.7 "Configuring the Asset Server" on page 6-22.

5.1 Video Server System Software

The following table lists the system software that the Media Central video server software requires or has been certified to work with. You must install this software before you install the Media Central server software. The Media Central software CD includes the Java components you need.

TABLE 5-1   Media Central Server Required System Software Components

Component	Release or Version	Notes
Solaris operating environment	2.6, May 1998 release or later, with recommended patches	Check with `uname -v`; result should be `Generic.105181-12` (or higher dash number, e.g., `-13`) Swap space must be 1.5x memory; check with `swap -l` (multiply the result by 512 to convert blocks to bytes)
Java runtime environment	1.1.7, release 04	Installed with the Media Central software
Vela decoder driver	1	
VisionTech encoder driver	1.60	
Tektronix encoder driver	5.2b	
Tektronix decoder driver	5.2b	
Digi serial port expander driver	1.2.0	Download from `http://support.digi.com/drivers/solaris/index.html#XEM`. The file is `4001794C.bin`; the release notes file is `9300286C.txt`. Use the `pkgadd` command to install.

Do not install other patches without checking first with Sun technical support.

Note – If you have any doubt about your Solaris configuration, you should install a fresh copy from the Solaris CD.

5.1.1 Installing Solaris Software and Patches

If you need to install the Solaris operating environment, follow these general steps. Consult the Solaris documentation for details.

1. **If the host has no operating system installed, start the host, and then go to Step 3.**

2. **Boot the host to the OpenBoot prompt.**

   a. **Power on the host.**

   b. **When you see the Sun logo:**

      i. **If you have a graphical console, press Stop-A (hold down the Stop key while pressing the A key).**

      ii. **If you have a physical terminal console, press Ctrl-Break.**

      iii. **If you have a virtual terminal console, press ~#.**

3. **Place the Solaris installation CD in the server host's CD-ROM drive, then boot from the CD:**

   ```
   ok> boot cdrom
   ```

4. **Install the Solaris software in the usual way, observing the following Media Central requirements:**

   a. **Specify swap space of 1.5x main memory size; for example, if your host has 2 Gbytes of memory, you need 3 Gbytes of swap space.**

   b. **Allocate the rest of the system disk to /.**

   The system asks if you want to reboot after installation.

5. **Reply Yes.**

   When installation is complete, the system reboots in multiuser mode and asks you for the root password.

   Note – Rebooting may take several minutes.

   ---

6. **Enter the root password.**

   A login dialog appears.

7. **Log in as root.**

   A password dialog appears.

8. **Enter the root password.**

9. **Open a terminal window.**

10. **Install the Solaris patches as follows:**

    a. **Download the file** `2.6_Recommended.tar.Z` **from** `http://sunsolve.sun.com`**.**

    b. **Uncompress and untar (**`tar -xvf`**) the file.**

    A subdirectory called `2.6Recommended` is created.

    c. **Install the patches:**

    ```
    # cd 2.6Recommended
    # install_cluster
    ```

    d. **Reboot.**

5.1.2 Installing Sun StorEdge A1000 Firmware

The following table shows the Sun StorEdge A1000 software and firmware required by the Media Central video server software.

TABLE 5-2   Media Central Server Required Sun StorEdge A1000 Software and Firmware

Component	Release or Version	Notes
RAID Manager	6.1.1 update 1 with patch 106513-02 or later	Supplied with the Sun StorEdge A1000 systems. Check with `showrev -p	grep 106513-02`
StorEdge A1000 Boot	02.05.01.00	Contained in patch 106513-02; download to all Sun StorEdge A1000 systems with `rm6`
StorEdge A1000 Firmware	02.05.02.14 or 02.05.06.32	Contained in patch 106513-02; download to all Sun StorEdge A1000 systems with `rm6`

Follow these general steps to ensure that the Sun StorEdge A1000 systems have the required firmware;. Consult the Sun StorEdge A1000 system and RAID Manager documentation for details.

1. **Install the RAID Manager software supplied with the Sun StorEdge A1000 systems (see** TABLE 5-1 **on page 5-2 for the required version).**

2. **Install the Raid Manager patch named in** TABLE 5-1 **on page 5-2.**

   a. **Download the patch from** `http://sunsolve.sun.com`.

   b. **Install the patch:**

      i. **Become superuser.**

      ii. **Uncompress and untar the file:**

```
# zcat 106513-02.tar.Z | tar xvf -
```

      iii. **Install the patch:**

```
# cd 106513-02
# ./installpatch .
```

3. **Verify that all Sun StorEdge A1000 systems are detected:**

```
% /usr/lib/osa/bin/lad
```

   The command should display one line for each Sun StorEdge A1000 system.

4. **Resolve any issues with Sun StorEdge A1000 detection.**

   See Chapter 4 for troubleshooting advice.

5. **Use the RAID Manager software to verify that the Sun StorEdge A1000 firmware version meets the specification in** TABLE 5-1 **on page 5-2.**

   See the RAID Manager documentation for detailed instructions. In brief:

   a. **As superuser, start** `rm6`**:**

```
# /usr/lib/osa/bin/rm6
```

   b. **Double-click Status.**

   c. **Choose a RAID module (disk array) from the drop-down list.**

   d. **Click Module Profile.**

   e. **Click Controllers.**

      The Firmware Level and Boot Level are displayed in the Detailed Controller information window.

f. Repeat from Step c for the remaining RAID modules.

6. **If necessary, use the RAID Manager software to download and update the Sun StorEdge A1000 firmware.**

   Consult the RAID Manager software for details. In brief:

   a. Become superuser, then start `rm6`**:**

   ```
   # /usr/lib/osa/bin/rm6
   ```

   b. Double-click Maintenance/Tuning.

   c. Choose a RAID module (disk array) from the drop-down list.

   d. Click Firmware Upgrade.

   A dialog box appears, advising you about NVRAM and the `nvutil` program. You can ignore those notes.

   e. Click OK.

   f. Click Offline.

   g. Chooose either of the following from the scrolling list of firmware versions (ignore characters corresponding to `x`**):**

   ```
   02.05.02.14 02.05.01.00 xx.xx.xx.xx.xx
   02.05.06.32 02.05.01.00 xx.xx.xx.xx.xx
   ```

   h. Click OK.

   Note – Firmware installation may take a few minutes per Sun StorEdge A1000 system.

   ---

7. **Shut down the system:**

   ```
   % init 0
   ```

8. **If you downloaded new Sun StorEdge A1000 firmware, power off all Sun StorEdge A1000 systems, then power on the Sun StorEdge A1000 systems one at a time, waiting 15 seconds before applying power to the next Sun StorEdge A1000 system.**

   This sequence loads the updated firmware.

9. **Reboot:**

```
ok> boot
```

Note – Rebooting may take several minutes.

---

10. **Become superuser.**

11. **Use the RAID Manager software to verify that each Sun StorEdge A1000 system's write cache is active.**

    Section 6.5 "Creating the Video Server File System" on page 6-9 describes how to perform this verification.

12. **If any Sun StorEdge A1000 system write cache is not active, wait 15 minutes for the cache battery to charge, then recheck.**

    If the write cache is still not active, replace the write cache battery.

5.1.3   Installing Drivers

To install encoder, decoder, and other drivers, consult the documentation supplied with the hardware. Ensure that the drivers meet the version requirements of TABLE 5-1 on page 5-2. Some drivers require several minutes to install. The mcinstall script described in Chapter 6 can install drivers that are included on the Media Central CD.

5.2 Client System Software

5.2.1 Solaris Clients

The following table shows the system software that must be installed on a host that runs the Media Central Solaris client software. Be sure the operating system is properly installed before installing the Media Central client software. The Media Central software includes the Java components you need. See Chapter 5.

TABLE 5-3   Media Central Client System Software

Component	Release or Version	Notes
Solaris operating environment	2.6, May 98 or later, with recommended patches	Check with `uname  -v`; result should be `Generic.105181-12` (or higher dash number, e.g., `-13`)
Java runtime environment	1.1.7	Installed with Media Central software
Java Swing	1.1	Installed with Media Central software

5.2.2 Microsoft Windows Clients

The Media Central client software runs on any version of Microsoft Windows 95, 98, or NT running on Intel x86 hardware.

CHAPTER **6**

Installing and Removing Media Central Software

This chapter describes how to install and remove Media Central server and client software. It has these sections:

- Section 6.1 "Installation Summary" on page 6-1
- Section 6.3 "Installing the Video Server Software" on page 6-5
- Section 6.4 "Configuring the Media Central NTP Daemon" on page 6-8
- Section 6.5 "Creating the Video Server File System" on page 6-9
- Section 6.6 "Installing the Asset Server Software" on page 6-19
- Section 6.7 "Configuring the Asset Server" on page 6-22
- Section 6.8 "Installing the Client Software" on page 6-25
- Section 6.9 "Installing Auxiliary Files, Drivers, and Patches" on page 6-40
- Section 6.10 "Verifying the Software Installation" on page 6-41
- Section 6.11 "Removing the Media Central Software" on page 6-42

6.1 Installation Summary

The Media Central software is distributed on one CD. This section summarizes the components you can install and how to install them.

6.1.1 Media Central Components

You can install any combination of four Media Central software components:

- **Media Central video server** – the software that stores video clips, often referred to as simply "the server." Install this software on a dedicated Solaris host. Do not install other software or files on the video server host; the server needs all host cycles to deliver full performance. After you install the video server software, you must create the video server file system before the server is ready to run. If you want the video server to use a studio time source, you must disable the default Solaris network time protocol (NTP) daemon and replace it with one supplied with the Media Central software.

- **Media Central asset server** – the software that supplements clips with asset data. Install this optional software on any Solaris host that is not a video server host. The asset server stores assets in a third-party database which you must install, if necessary, and configure for the asset server's use. Before running the asset server, you set properties with the Media Central Administrator that enable the asset server, database server, and video server to communicate.

- **Media Central Solaris client** – The client software for Solaris workstations.

- **The Media Central Microsoft Windows client** – The client software for Microsoft Windows computers.

6.1.2   Auxiliary Files

You can optionally install these complementary collections of files.

- **Sample video clips** – Install these sample clips on any Solaris host other than a video server host. You can use the Media Central Migrator client to import sample clips into a clip folder. See the *Sun StorEdge Media Central User's Guide* for instructions on using the Migrator.

- **Media Central documentation** – These files are:
  - The Media Central manuals in Adobe Portable Document Format; you need Adobe Acrobat reader to view or print them.
  - The Javadoc web pages that document the client application programming interfaces, supplementing the *Sun StorEdge Media Central Client Programmer's Guide.*

  Install the documentation on any Solaris host except a Media Central video server.

- **Drivers and Patches** – Drivers for some encoders and decoders, and a patch for the Sun StorEdge A1000 firmware, are included on the CD.

6.1.3 Installation Procedure

To install on Solaris platforms, use the `mcinstall.sh` script that is supplied on the CD. For Microsoft Windows installations, use the InstallShield program that is also supplied on the CD. The Solaris installation files are stored on the CD in the `MediaCentral/Solaris_2.6/sparc` directory. The Microsoft Windows installation files are stored on the CD in the `MediaCentral\Win32\x86` directory.

Before installing Media Central software:

- Read the `readme` file and the *Sun StorEdge Media Central Release Notes* (`release.pdf`), which are provided in the `MediaCentral/Solaris_2.6/sparc` and `MediaCentral\Win32\x86` CD directories.

- Make sure the video server hardware is properly configured, as described in Chapter 2 (Sun Enterprise 250 systems) and Chapter 3 (Sun Enterprise 450 systems).

- Make sure the video server system software, including device drivers, is properly installed and patched, as described in Chapter 5.

After you install software on a video server host, you must reboot the host before running the server software. Rebooting can take 15 minutes or more, depending on the video server host configuration. The installation script will offer to reboot the machine for you. In general, you should let the script reboot the machine. If you decide not to let the script reboot, be sure to execute this command before starting the video server:

```
# reboot -- -r
```

(There are two hyphens between `reboot` and `-r`.)

6.1.4 Media Central Packages

The Solaris client and server components are installed in units called packages. Usually, you do not need to know the names of a component's packages because the install script manages the packages for you.

Component packages use facilities that are contained in other packages called base packages. A base package must be installed before, and removed after, a package that depends on it. TABLE 6-1 lists each component's packages and required base packages. Interpret the notation "->" as "depends on." Thus, in the case of the video server, the following packages must be installed in this order: `SUNWbwr`, `SUNWbwv`,

`SUNWbws`, `SUNWbwsr`. The same packages must be removed in the reverse order. The install script observes package dependency requirements when it installs and removes Media Central components.

TABLE 6-1 Media Central Solaris Packages and Dependencies

Component	Constituent Packages	Base Packages
Video server	`SUNWbwsr -> SUNWbws ->`	`SUNWbwv -> SUNWbwr`
Asset server	`SUNWbwar -> SUNWbwa ->`	`SUNWbwv -> SUNWbwr`
Client	`SUNWbwc ->`	`SUNWbwr`
Documentation and Examples	`SUNWbwcd`	`(none)`

6.2 Disabling the Standard NTP Daemon

You can make a video server run on studio time by installing a timecode reader and configuring the Media Central network time protocol (NTP) daemon software. Chapter 2 and Chapter 3 describe timecode reader connection for the Sun Enterprise 250 and 450 systems, respectively. Note that Media Central NTP daemon requires a Louth Automation device server.

If you want to use a timecode reader, perform these steps *before* you install the video server software.

1. Determine if the standard NTP daemon is installed:

```
% pkginfo | grep ntp
```

If this command returns nothing, you are finished.

2. Determine if the standard NTP daemon is running:

```
% ps -ef | grep ntp
```

If this command returns nothing, you are finished.

3. **Become superuser, and kill the standard NTP daemon:**

```
# kill -9 pid
```

pid is the NTP process ID returned by the `ps` command.

4. **Rename the standard NTP configuration file if it exists:**

```
# ls /etc/inet/ntp.conf
file name or nothing
# mv /etc/inet/ntp.conf /etc/inet/ntp.conf.orig
```

Renaming this file prevents the standard NTP daemon from starting when you reboot the server host. You can choose a different name for the standard configuration file if you wish.

6.3　Installing the Video Server Software

To install the Media Central video server software, follow these steps on the server host:

1. **Become superuser.**

2. **Insert the Media Central CD in the host's CD-ROM drive.**

3. **Start the installation script:**

```
# cd /cdrom/cdrom0/MediaCentral/Solaris_2.6/sparc
# ./mcinstall.sh
```

The script displays its Main Menu:

```
        Sun StorEdge Media Central
             Main Menu

installed packages, if any

1) Install
2) Remove
3) Verify versions
4) Quit
Enter your choice:
```

4. **Type** 1.

   The script displays the first page of the README file followed by a colon prompt.

5. **To display the next page of the** README **file, press Return.**

   Continue pressing Return after reading each page.

   At the end of the last page, the script displays (EOF):.

6. **Press Return.**

   The following prompt appears:

```
Back/Next/Quit [bnq][n]:
```

7. **Type** n.

   The script displays the first page of the Media Central license agreement followed by a colon prompt.

8. **Page through the license agreement, as you did the** README **file, by pressing Return after the colon prompts.**

   At the end of the license file the script displays:

```
Do you agree to all the terms of the license agreement? [y/n/q]
```

9. **If you agree, type** `y`. **If you disagree, type** `q` **to quit the script.**

The script displays its Install Menu:

```
        Sun StorEdge Media Central
             Install Menu

installed packages, if any

Packages to install

1) Media Central Server
2) Media Central Client
3) AMS Server
4) Sample Video clips
5) Documentation
6) Vela driver
7) VisionTech driver
8) A1000 patch
9) Tektronix drivers
10) Done
Enter your choice:
```

10. **Type** `1`.

If no packages are already installed, the script asks you for an installation directory; all Media Central packages are installed in the same directory.

The script proposes the default installation directory, `/opt/MediaCentral`.

a. **If you want the default installation directory, type** `y`.

The script installs the video server packages in `/opt/MediaCentral`. If the script warns you of insufficient disk space, copy the message, exit the script, and consult your system administrator. The warning message is from the `pkgadd` command, which the install script calls.

b. **If you want to specify a different installation directory, type** `n`.

The script asks you to enter an installation directory.

c. **Type the name of the installation directory.**

The script installs the video server packages in the installation directory you have specified. If the script warns you of insufficient disk space, copy the message, exit the script, and consult your system administrator. The warning message is from the `pkgadd` command, which the install script calls.

The script asks if you have a Louth Automation device server.

d. Type y **or** n.

Typing y makes the script activate the Media Central NTP daemon.

The script asks you to press Return.

11. **Press Return.**

The script displays the Install Menu. You can install more packages if you wish.

12. **When you are finished installing, type** 10.

The script displays the Main Menu.

13. **Type** 4 **to quit the script.**

The script notifies you that the system must be rebooted and asks if you want to reboot now.

14. **Type** y.

The script reboots the system. Rebooting may take 15 minutes or longer.

15. **If the StorEdge A1000 disk arrays have not been initialized, do so as described in Section 6.5 "Creating the Video Server File System" on page 6-9."**

6.4 Configuring the Media Central NTP Daemon

The mcinstall.sh script installs the NTP daemon software as part of the video server. If you have connected a timecode reader, configure the daemon on a video server as follows.

1. **Use the Solaris** admintool **to enable serial port B, the port to which the timecode reader is connected.**

See Section 2.10 "Connecting an AEC-BOX-20 Timecode Reader" on page 2-12 or Section 3.11 "Connecting an AEC-BOX-20 Timecode Reader" on page 3-15, for the Sun Enterprise 250 and 450 systems, respectively.

a. **After launching the** admintool, **choose Serial Ports from the Browse menu.**

b. **In the scrolling list, select port B.**

c. **Choose Modify from the Edit menu.**

d. **Check Service Enable, and click Apply.**

2. **Create a link to serial port B:**

```
# ln /dev/cua/b /dev/aec0
```

The Media Central NTP daemon will be started automatically when you boot the video server host and will be stopped automatically when you shut it down.

6.5 Creating the Video Server File System

After installing the Media Central video server software for the first time, you must create a video file system on the server host's Sun StorEdge A1000 disk arrays. This initialization procedure takes a few hours for small configurations and several hours for large ones. You may want to run it overnight.

Note – Initialization destroys all data on the disk arrays. Initialize after first installing the server software, but do *not* initialize after installing an upgrade unless the upgrade instructions direct you to do so. If you must initialize for an upgrade, you can first save clips by exporting them with the Migrator client. After initializing, you can import the saved clips with the same client, which is described in the *Sun StorEdge Media Central User's Guide*.

Initialize the disk arrays as follows:

1. **Become superuser on the video server host.**

2. **Verify that the StorEdge A1000 write caches are active.**

   a. **Start the RAID Manager utility:**

      i. **If your console is a workstation:**

```
# /usr/lib/osa/bin/rm6
```

ii. If your console is a virtual terminal, and you are running the C shell, run the RAID Manager remotely:

```
% /usr/openwin/bin/xhost +
% rlogin server-hostname
% su
Password: root-password
# setenv DISPLAY client-hostname:0.0
# /usr/lib/osa/bin/rm6
```

iii. If your console is a virtual terminal, and you are running the Bourne shell, run the RAID Manager remotely:

```
% /usr/openwin/bin/xhost +
% rlogin server-hostname
% su
Password: root-password
# DISPLAY=client-hostname:0.0
# export DISPLAY
# /usr/lib/osa/bin/rm6
```

The RAID Manager Control window appears.
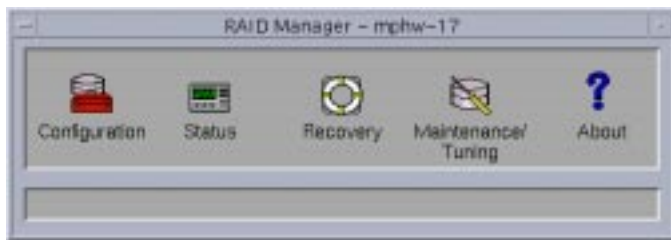
FIGURE 6-1   RAID Manager Control Window

b. Double-click the Status button.

The Status window appears.
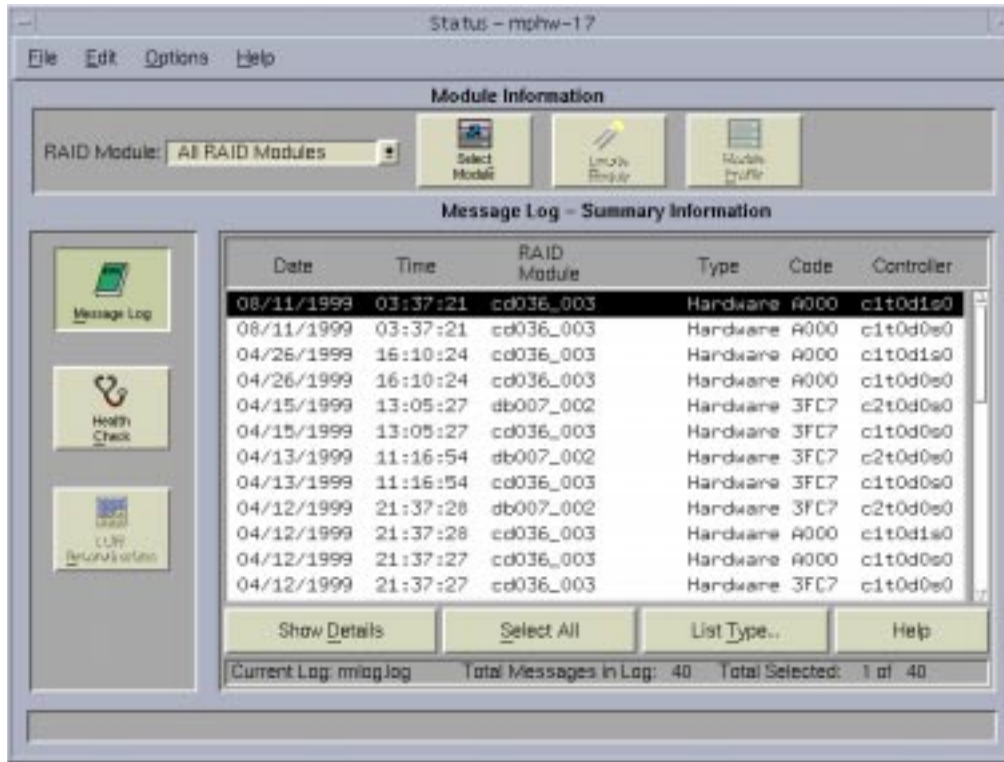
FIGURE 6-2   RAID Manager Status Window

For *each* Sun StorEdge A1000 system (RAID module), perform the following steps.

a. In the RAID Module combo box, choose a RAID module (a StorEdge A1000 system).

Do not click Select Module.

b. Click the Module Profile button.

The Module Profile window appears.
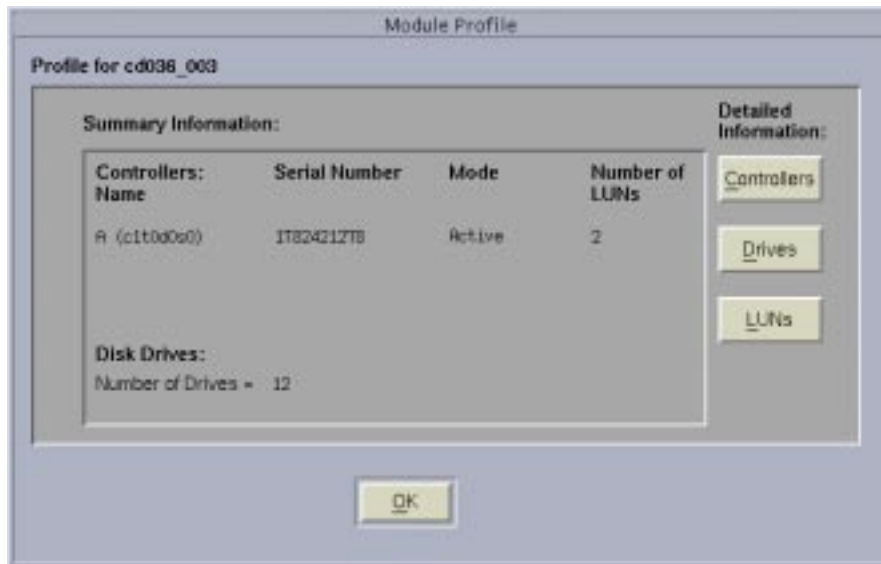
FIGURE 6-3 RAID Manager Module Profile Window

c. Click the LUNs button.

The Detailed LUN window appears:
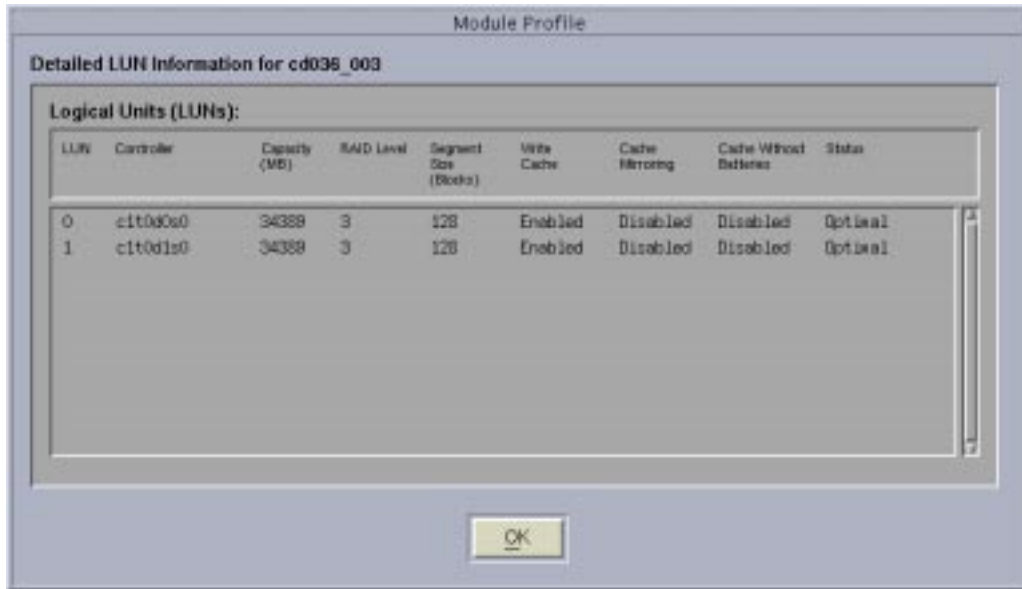
FIGURE 6-4   RAID Manager Detailed LUN Window

d. Examine the Write Cache field.

"Enabled" means the cache is active. "Enabled*" means the write cache is not active.

If the cache is not active, exit `rm6` as described in the next step, wait 15 minutes, then recheck the write cache with `rm6`. If the asterisk has not disappeared, replace the write cache battery.

e. Exit the RAID Manager as follows:

i. Click OK in the Detailed LUN window.

ii. Double-click the Status window's menu button.

iii. Double-click the Control windows menu button.

3. **Start the initialization program:**

```
# installdir/SUNWbws/sbin/vsmnewfs
```

Substitute your video server installation directory for *installdir*. The default installation directory is /opt/MediaCentral.

Note – Depending on the type of host you have and the number of Sun StorEdge A1000 systems and buses, this command may run for a few hours.

The vsmnewfs program checks many details of your hardware and software configuration before it initializes the StorEdge A1000 systems. If your configuration is incorrect, you will see one or more of the messages in the following table. Some messages may contain operating system identifiers for Sun StorEdge A1000 systems, such as /dev/rdsk/c0t1d3s2, sometimes abbreviated to the final name (for example, c0t1d3s2). If you encounter a message not shown in the table, save all of the command's output, including the message, and contact Sun technical support.

TABLE 6-2   `vsmnewfs` Diagnostic Messages

Message	Description and Response

`WARNING: /etc/system not modified`
`with Media Central mods`
`Install /etc/system mods now [y/`
`n]?`
	`/etc/system` needs to be modified for Media Central; enter y unless you want to defer initialization.

`WARNING/etc/osa/rmparams not`
`modified with Media Central mods`
`Install /etc/osa/rmparams mods`
`[y/n]?`
	`etc/osa/rmparams` needs to be modified for Media Central; enter y unless you want to defer initialization.

`NOTE: Unsupported platform`	You are not running on a Sun Enterprise 250 system or a Sun Enterprise 450 system.
`WARNING: OS Release not expected`	Wrong OS release. When the command terminates, install the correct release, then run `vsmnewfs` again.
`WARNING: OS Version not at` `expected level`	Wrong OS version. When the command terminates, install the correct version, then run `vsmnewfs` again.
`WARNING: Required patch not` `installed`	Missing OS patch. When the command terminates, install the correct patch, then run `vsmnewfs` again.
`WARNING: Patch n not at expected` `level`	Wrong patch level installed. When the command terminates, install the correct level, then run `vsmnewfs` again.
`WARNING: A1000 Bootware incorrect` `revision`	Wrong bootware revision. When the command terminates, install the correct revision, then run `vsmnewfs` again.
`WARNING: A1000 Firmware incorrect` `revision`	Wrong firmware revision. When the command terminates, install the correct revision, then run `vsmnewfs` again.
`NOTE: A1000 nvram parameters` `corrected`	Self-describing; no response
`NOTE: Updating nvram cache block` `size`	Self-describing; no response
`WARNING: A1000 Bootware Revision` `should be n`	Wrong bootware revision. When the command terminates, install the correct revision, then run `vsmnewfs` again.
`WARNING: A1000 Firmware Revision` `should be n`	Wrong firmware revision. When the command terminates, install the correct revision, then run `vsmnewfs` again.

TABLE 6-2 `vsmnewfs` Diagnostic Messages *(Continued)*

Message	Description and Response
`WARNING: Please update ALL A1000s with rm6 application`	Self-describing. Make the changes after `vsmnewfs` completes, then run the command again.
`FATAL: All drives in A1000 n not of same capacity`	All drives in a Sun StorEdge A1000 system must be the same capacity. Change the offending drives and run `vsmnewfs` again.
`FATAL: Drive a in A1000 b in state c`	The Sun StorEdge A1000 drive is not in "optimal" state; consult the StorEdge A1000 documentation to remedy the problem, then run `vsmnewfs` again.
`FATAL: A1000 n Drive m not present`	See Chapter 2 and Chapter 3 for Sun StorEdge A1000 drive population requirements; fix the problem, then run `vsmnewfs` again.
`FATAL: No A1000s found with target 0`	On each StorEdge A1000 chain, the Sun StorEdge A1000 system nearest the CPU must have SCSI target (ID) of 0. Correct the SCSI target numbers and run `vsmnewfs` again.
`FATAL: A1000s have invalid SCSI target numbers`	On each Sun StorEdge A1000 chain, SCSI targets (IDs) must be consecutive starting with 0. Each SCSI chain must have the same number of StorEdge A1000 systems. Correct the SCSI target numbers and run `vsmnewfs` again.
`WARNING: Expected n A1000s with target 0, found m` `WARNING: Devices found were o`	A Sun Enterprise 250 system must have 1 Sun StorEdge A1000 system with target 0; a Sun Enterprise 450 system must have 1 StorEdge A1000 system with target 0. Correct the configuration and run `vsmnewfs` again.
`FATAL: Incorrect number of A1000s at target n`	Each SCSI chain must have the same number of Sun StorEdge A1000 systems. Correct the configuration and run `vsmnewfs` again.
`FATAL: A1000 Target numbers not contiguously assigned`	The Sun StorEdge A1000 systems in each SCSI chain must have consecutive target (ID) numbers, starting with 0. Correct the target numbers and run `vsmnewfs` again.
`FATAL configuration errors detected` `Correct all FATAL errors before reattempting configuration`	`vsmnewfs` will not initialize the Sun StorEdge A1000 systems. Fix the problems and re-run it.

TABLE 6-2 `vsmnewfs` Diagnostic Messages *(Continued)*

Message	Description and Response

`Configuration errors detected`
`Recommend that errors be`
`corrected before proceeding`
	In general, you should terminate `vsmnewfs` when asked, but you can proceed with initialization if you want to.

`A1000 nvram updated.`
`You must now halt machine (init`
`0)`
`Then POWER CYCLE ALL A1000s.`
`Finally, reboot Solaris and rerun`
`this command`
`Do system halt now? [y/n]`
	The system must be halted, the Sun StorEdge A1000 systems must be power-cycled, and then the system must be rebooted. If you enter `y`, the program will halt the system. After you have power-cycled the StorEdge A1000 systems, type `boot` to reboot; when the system comes up, become superuser, and run `vsmnewfs` again. Enter `n` to terminate `vsmnewfs`

`System configuration files`
`modified`
`You MUST reboot the system before`
`resuming configuration.`
`After system reboots, rerun this`
`command.`
`Do reboot now? [y/n]`
	The system must be rebooted. Enter `y` to have `vsmnewfs` reboot for you; then become superuser and run `vsmnewfs` again. Enter `n` to terminate `vsmnewfs`.

If `vsmnewfs` finds that the Media Central server is running, it displays this message:

```
Media Central Server is currently operating.
Media Central Server must be shutdown to initialize storage.
Shutdown Media Central Server [y/n]?
```

a. **Type** `y` **unless you want to defer initialization, in which case type** `n`.

   `vsmnewfs` displays:

```
Found n A1000's, is that the expected number [y/n]?
```

b. **If *n* is correct, type** y. **If you have more Sun StorEdge A1000 systems than** vsmnewfs **found, type** n **to exit** vsmnewfs. **Then check your Sun StorEdge A1000 systems for power, cabling, SCSI IDs and termination.**

vsmnewfs displays:

```
WARNING: This will INITIALIZE AND ERASE the following A1000s.
list of disk arrays
ARE YOU SURE want to continue [y/n]?
```

c. **To continue with initialization type** y; **otherwise type** n **to make the program exit.**

For each Sun StorEdge A1000 system, vsmnewfs displays:

```
Starting initialization of disk array names
A1000 initialization may take up to 1 hour
```

When it has initialized all Sun StorEdge A1000 systems, vsmnewfs displays:

```
Starting characterization of A1000
Much characterization data
```

Characterizing means measuring the Sun StorEdge A1000 system complement's aggregate performance. The Media Central server uses the characterization data to compute how much bandwidth it can deliver. Characterization takes about an hour per "band" of identical SCSI IDs. For example, if your configuration has two A1000 arrays on two buses both will have a SCSI ID of 0, which means you have one band; characterization will take about an hour. If you have four arrays on two buses, you have two bands (SCSI ID 0 and SCSI ID 1), and initialization will take about two hours.

After characterizing the disks, vsmnewfs displays:

```
Creating empty Media Central file system
vsmnewfs Completed Successfully.
```

See Chapter 7 for server startup instructions.

6.6 Installing the Asset Server Software

The Media Central Asset Manager Server (AMS, or asset server) software is an optional component that maintains clip attributes in a searchable database. The Asset Manager client requires the asset server; other clients do not.

The asset server relies on a database server that complies with the Java Database Connection (JDBC) standard. You must have or install such a database server.

Note – Do not install the asset server software on a Media Central video server host. The video server needs all of the host's cycles to meet its performance specification.

Caution – A host with both asset and video server software installed will not boot correctly.

To install the Media Central asset server software, follow these steps on a host that is not a video server host:

1. **Become superuser.**

2. **Insert the Media Central CD in the host's CD-ROM drive.**

3. **Start the installation script:**

```
# cd /cdrom/cdrom0/MediaCentral/Solaris_2.6/sparc
# ./mcinstall.sh
```

The script displays its Main Menu:

```
        Sun StorEdge Media Central
            Main Menu

installed packages, if any

1) Install
2) Remove
3) Verify versions
4) Quit
Enter your choice:
```

4. **Type** 1.

   The script displays the first page of the README file followed by a colon prompt.

5. **To display the next page of the** README **file, press Return.**

   Continue pressing Return after reading each page.

   At the end of the last page, the script displays (EOF):.

6. **Press Return.**

   The following prompt appears:

   ```
   Back/Next/Quit [bnq][n]:
   ```

7. **Type** n.

   The script displays the first page of the Media Central license agreement followed by a colon prompt.

8. **Page through the license agreement, as you did the** README **file, by pressing Return after the colon prompts.**

   At the end of the license file the script displays:

   ```
   Do you agree to all the terms of the license agreement? [y/n/q]
   ```

9. **If you agree, type** `y`. **Otherwise type** `q` **to quit the script.**

    The script displays its Install Menu:

    ```
              Sun StorEdge Media Central
                   Install Menu

    installed packages, if any

    Packages to install

    1) Media Central Server
    2) Media Central Client
    3) AMS Server
    4) Sample Video clips
    5) Documentation
    6) Vela driver
    7) VisionTech driver
    8) A1000 patch
    9) Tektronix drivers
    10) Done
    Enter your choice:
    ```

10. **Type** `3`.

    If no packages are already installed, the script asks you for an installation directory; all Media Central packages are installed in the same directory.

    The script proposes the default installation directory, `/opt/MediaCentral`.

    a. **If you want the default installation directory type** `y`.

       The script installs the video server packages in `/opt/MediaCentral`. If the script warns you of insufficient disk space, copy the message, exit the script, and consult your system administrator. The warning message is from the `pkgadd` command, which the install script calls.

    b. **If you want to specify a different installation directory, type** `n`.

       The script asks you to enter an installation directory.

    c. **Type the name of the installation directory.**

       The script installs the video server packages in the installation directory you have specified. If the script warns you of insufficient disk space, copy the message, exit the script, and consult your system administrator. The warning message is from the `pkgadd` command, which the install script calls.

    The script asks you to press Return.

11. **Press Return.**

    The script displays the Install Menu.

12. **Type** 10.

The script displays the Main Menu.

13. **Type** 4 **to quit the script.**

The script notifies you that the system must be rebooted and asks if you want to reboot now.

14. **Type** y.

The script reboots the system. Rebooting may take 15 minutes or longer.

6.7 Configuring the Asset Server

The asset server uses a database, and video servers use the asset server. Before running the asset server, you must install and configure the database system and set some Media Central properties that identify the asset server and the database. The video server uses some of these properties and passes others to the asset server.

The procedures for setting up the database system vary according to the brand of database you have. The asset server can use any database system that supports the JDBC (Java database connection) protocol. This section gives only general guidelines for database setup; you must obtain the detailed procedures from a database administrator, the database system documentation, and ideally, a programmer who has used the database in a Java program.

To set asset server-related properties, you use the Media Central Administrator, which is described in the *Sun StorEdge Media Central User's Guide*.

6.7.1 Setting up an Asset Database

1. **Install a JDBC-compliant database system.**

If your database system is not already installed, its documentation will describe how to install it and whether it supports JDBC connections. For best performance and simplest administration, install the database server and the asset server on the same host.

2. **Create an empty database for the asset server to use for its tables.**

3. **Create a user name and password for the asset server to use to make a JDBC connection to the asset database.**

4. **Install a JDBC driver for the database system.**

The driver may come with the database system or you may have to obtain it separately, for example, from the database vendor's web site. If you wish, you can use the driver that is included in the Java Runtime Environment; it is called the JDBC-ODBC bridge. The bridge is simple to use but may not perform as well as a database vendor's JDBC driver. Consult your driver documentation for additional configuration steps that may be required. For example, some drivers require a symbolic link to a library.

5. **Make the driver accessible to the database.**

Each database system may have its own way to detect the driver. For example, the driver may be named in an environment variable or in a parameter passed to the database server. Consult your database driver documentation for particulars.

6. **Test the installation with a minimal Java program that connects to the new asset database.**

Verifying the installation will help you diagnose connection problems that may be reported later by the asset server.

7. **Optionally, write a script that starts up and shuts down the asset database server.**

The database server must be started before the asset server and must be shut down after the asset server. You can effect this ordering manually or automatically. Section 7.2 "Automatic Startup and Shutdown" on page 7-2 describes how the asset server is started and stopped automatically, and how your database server startup/ shutdown script can be made to run before and after the asset server script.

6.7.2   Setting up the Asset Server Host

The video server connects with the asset server to inform it when new clips are created. On the asset server host, create a username and password that the video server can use to login to the asset server.

6.7.3   Setting Asset Server Properties

1. **Manually start the database server, the asset server, and the video server, in that order.**

Chapter 7 describes how to start the asset server and the video server.

2. **On a client, start the Launcher, passing it the name of the video server host, then start the Administrator.**

   For client installation instructions, see Section 6.8 "Installing the Client Software" on page 6-25. The *Sun StorEdge Media Central User's Guide* describes the Administrator and the properties.

3. **In the Administrator, open the MetaDataManager folder, select the Synchronizer VideoBeans component, and click its Configure tab. Set the following properties:**

   a. **Set AMS Server Hostname to the name of the host running the asset server software.**

   b. **Set AMS Server Username to a login name that you created for the video server to use when connecting to the asset server.**

   c. **Set AMS Server Password to the password for AMS Server Username.**

4. **Click Apply.**

   In a few moments, a folder having the name of the AMS server host should appear in the Administrator's navigation pane.

5. **Open the AMS server host folder.**

   You should see an AMS VideoBeans component whose status indicator is red because it has not been able to log into its database server.

6. **Select the AMS VideoBeans component, and click its Configure tab. Set AMS properties as follows:**

   a. **Set Studio Name to a name that represents your assets; for example, Channel 10.**

   The asset server uses this name as the root of its asset folder hierarchy, and name the database tables it creates.

   b. **Set the Database Connection URL to the URL by which a Java program (such as the asset server) can connect with the database server.**

   Consult your database documentation or administrator to obtain this URL. Each database vendor may define the URL differently, but many of them begin with the letters jdbc:.

   c. **Set the Database User Name to the login name you established for the asset server.**

   d. **Set the Database User Password to the Database User Name password.**

e. **Set the JDBC Driver Class Name to the name of the Java class that implements the JDBC driver which the asset server uses to communicate with your database server.**

If you use the JDBC-ODBC bridge driver, the class name is `sun.jdbc.odbc.JdbcOdbcDriver`.

f. **Set the JDBC Driver Class Path to the fully qualified UNIX path to the directory that contains the JDBC driver class; the asset server uses the classpath to find the driver.**

If you use the JDBC-ODBC bridge driver, leave this value null.

7. **Click Apply.**

In a few moments, the AMS VideoBeans' indicator will turn green. If it does not, click its Event Log tab to see why the asset server could not connect to the database.

You can set the remaining Synchronizer properties now or later. You should set them before users create clips, so new clip assets have appropriate initial values and are stored in the folder you choose.

The properties you have set are persistent, so when you restart the asset server, it will automatically connect to the database server, and the video server will automatically connect to the asset server.

6.8 Installing the Client Software

Note – Do not install Media Central client software on a video server host. Running the client software (or any software) on the same machine can degrade recording and playback quality.

6.8.1 Installing the Solaris Client Software

To install the Media Central client software on a Solaris workstation, follow these steps on the client host:

1. **Become superuser.**

2. **Insert the Media Central CD in the host's CD-ROM drive.**

3. **Start the installation script:**

```
# cd /cdrom/cdrom0/MediaCentral/Solaris_2.6/sparc
# ./mcinstall.sh
```

The script displays its Main Menu:

```
        Sun StorEdge Media Central
             Main Menu

installed packages, if any

1) Install
2) Remove
3) Verify versions
4) Quit
Enter your choice:
```

4. **Type** 1.

   The script displays the first page of the README file followed by a colon prompt.

5. **To display the next page of the** README **file, press Return.**

   Continue pressing Return after reading each page.

   At the end of the last page, the script displays (EOF):.

6. **Press Return.**

   The following prompt appears:

```
Back/Next/Quit [bnq][n]:
```

7. **Type** n.

   The script displays the first page of the Media Central license agreement followed by a colon prompt.

8. **Page through the license agreement, as you did the** README **file, by pressing Return after the colon prompts.**

   At the end of the license file the script displays:

```
Do you agree to all the terms of the license agreement? [y/n/q]
```

9. **If you agree, type** y. **Otherwise type** q **to quit the script.**

   The script displays its Install Menu:

   ```
              Sun StorEdge Media Central
                   Install Menu

   installed packages, if any


   Packages to install

   1) Media Central Server
   2) Media Central Client
   3) AMS Server
   4) Sample Video clips
   5) Documentation
   6) Vela driver
   7) VisionTech driver
   8) A1000 patch
   9) Tektronix drivers
   10) Done
   Enter your choice:
   ```

10. **Type** 2.

    If no packages are already installed, the script asks you for an installation directory; all Media Central packages are installed in the same directory.

    The script proposes the default installation directory, /opt/MediaCentral.

    a. **If you want the default installation directory type** y.

       The script installs the video server packages in /opt/MediaCentral. If the script warns you of insufficient disk space, copy the message, exit the script, and consult your system administrator. The warning message is from the pkgadd command, which the install script calls.

    b. **If you want to specify a different installation directory, type** n.

       The script asks you to enter an installation directory.

    c. **Type the name of the installation directory.**

       The script installs the video server packages in the installation directory you have specified. If the script warns you of insufficient disk space, copy the message, exit the script, and consult your system administrator. The warning message is from the pkgadd command, which the install script calls.

    The script asks you to press Return.

11. **Press Return.**

    The script displays the Install Menu again.

12. Type 10.

The script displays the Main Menu again.

13. Type 4 **to quit the script.**

6.8.2 Installing the Microsoft Windows Client Software

The Microsoft Windows client software runs on any Microsoft Windows 95, 98, or NT computer.

6.8.2.1 Installing the Media Central Files

1. Insert the Media Central CD in the CD-ROM drive and open it in Windows Explorer.

2. Navigate to the MediaCentral\Win32\x86 **folder.**

You should see a file named setup.exe or setup.

3. **Double-click** `setup.exe` **or** `setup`**.**

If the InstallShield program cannot find a Java runtime environment, it displays the following dialog box. If, instead, you see a welcome screen, go to Step 4.

FIGURE 6-5   Java Runtime Environment Not Found Dialog Box

a. **Select "Run the installation with the VM from this location:".**

b. **In the text box type** `d:\MediaCentral\Win32\x86\jre\bin\jre.exe`

If your CD drive has a different letter designation, use it instead of `d`.

c. Click OK.

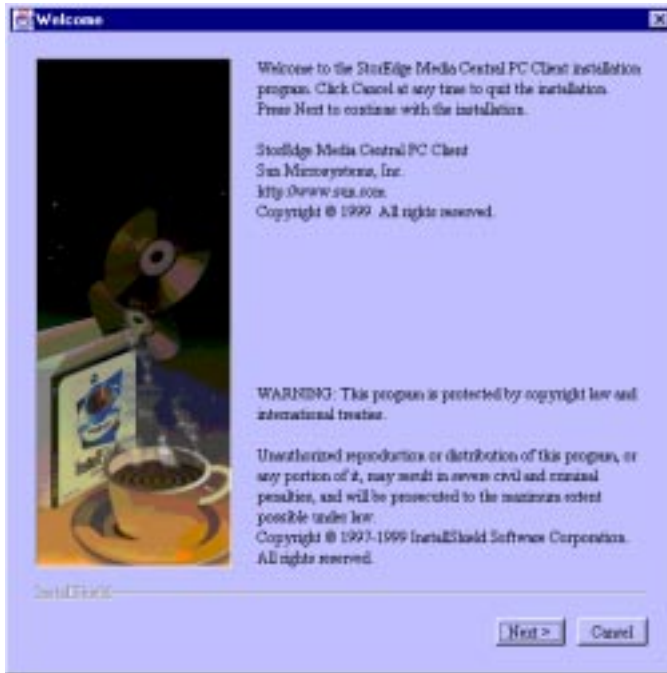In a few moments the InstallShield welcome screen appears.

FIGURE 6-6   InstallShield Welcome Screen

4. Click Next.

The Readme screen appears.

FIGURE 6-7 Readme Screen

5. Read the Readme file, then click Next.

The license agreement appears.

FIGURE 6-8 License Agreement Screen

6. **Read the License, check "Accept all terms of the license", and then click Next.**
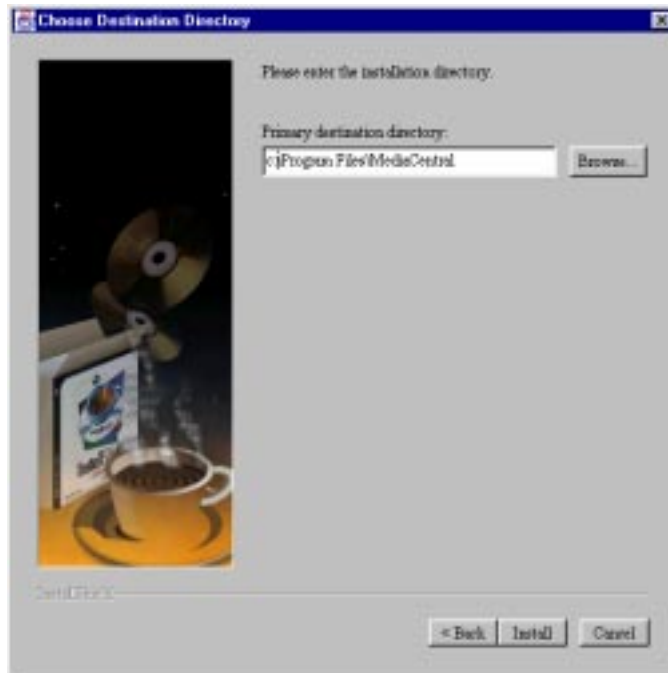
The Choose Destination Directory screen appears.

FIGURE 6-9 Choose Destination Directory Screen

7. **If you want the client files installed in a directory (folder) other than the default** `C:\Program Files\MediaCentral`, **type the directory name or click Browse to find it.**

8. Click Install.

If the destination directory does not exist, the InstallShield program will ask if you want to create it; click Yes.

The InstallShield program displays a progress bar as it extracts the files. Then the Installation Complete screen appears.
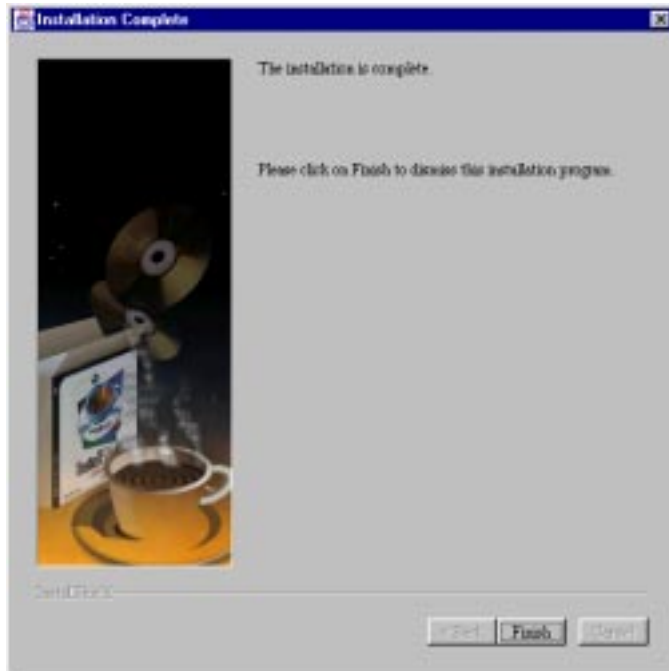

FIGURE 6-10 Installation Complete Screen

9. Click Finish.

The InstallShield program exits.

6.8.2.2   Creating a Shortcut for the Launcher

1. Using Windows Explorer, open the folder C:\Program Files\MediaCentral\bin **(or the destination folder you specified in Step 7).**

2. **In that folder, right-click on** `launcher.bat` **and choose Properties from the popup menu.**

A `launcher.bat` Properties dialog box appears.

FIGURE 6-11 `launcher.bat` Properties Dialog Box

3. **Click the Program tab.**

   The launcher.bat program properties appear.

FIGURE 6-12 launcher.bat Program Properties

4. **In the Run: text box, choose Minimized.**

5. **Check Close on exit.**

6. **Make the CmdLine field look as follows:**

   bin\launcher.bat ?

7. **Enter the installation folder in the Working field; by default:**

   "C:\Program Files\MediaCentral"

8. **Click the Change Icon button.**

   The Change Icon dialog box appears.

FIGURE 6-13 Change Icon Dialog Box

9. **Type** `C:\Windows\System\shell32.dll` **in the File name field, and then press Enter.**

10. **Select the gear-in-window icon in the second row, fourth from the right.**

    Or select the icon of your choice.

11. **Click OK in the Change Icon dialog.**

12. In the `launcher.bat` **Properties dialog, click the Memory tab.**

The memory properties appear.

FIGURE 6-14 `launcher.bat` Memory Properties

13. In the Initial Environment field, choose `2048`**.**

14. Click the Misc tab.

The miscellaneous properties appear.

FIGURE 6-15 `launcher.bat` Miscellaneous Properties

15. In the Other section, uncheck Fast Pasting.

16. In the Termination section, uncheck Warn if still active.

17. In the `launcher.bat` **Properties dialog, click OK.**

A shortcut file named `Launcher` is created in the `bin` directory.

18. Copy the `launcher` **shortcut to the desktop.**

6.8.2.3   Changing the `launcher.bat` Script

If you directed the InstallShield program to install the Media Central files in a folder other than `c:\Program Files\MediaCentral`, modify the `launcher.bat` script as follows.

1. Use the Windows Explorer to open the folder in which the InstallShield program installed the Media Central files.

You should see a folder called `bin`.

2. Open the `bin` **folder.**

You should see a file called `launcher.bat`.

3. **Open** `launcher.bat` **in an editor such as Notepad (right-click on** `launcher.bat`**, then choose Edit from the popup menu).**

4. **Find this line in** `launcher.bat`**:**

   ```
   set BWAY_DIR="c:\Progra~1\MediaCentral"
   ```

5. **Change "**`c:\Progra~1\MediaCentral`**" to the folder where the Media Central files have been installed.**

6. **Save the file and exit the editor.**

   For instructions on starting and using the Media Central Launcher, see the *StorEdge Media Central User's Guide.*

6.9 Installing Auxiliary Files, Drivers, and Patches

You can install sample video clips, the Media Central documentation, and various drivers and patches with the same `mcinstall.sh` script you used to install Solaris server and client software.

Install the samples and documentation on any Solaris host except a video file server. Import the video clips to the video file server with the Migrator client which is described in the *Sun StorEdge Media Central User's Guide.* Open the documentation files with Adobe Acrobat Reader.

Install drivers and patches on a video server host. When you install a driver or patch with the `mcinstall.sh` script, the script calls the `pkgadd` or `installpatch` command. These commands ask you several questions; in general it is best to accept the default response. After installing drivers or patches, the video server host must be rebooted. The script will offer to do this for you. Because rebooting can take 15 minutes or longer, if you are installing multiple drivers or patches, you may want to defer rebooting until the final installation. If you do not let the script reboot the host, do so manually before starting the video server:

```
# reboot -- -r
```

(There are two hyphens between `reboot` and `-r`.)

6.10 Verifying the Software Installation

To verify that the Media Central software has been correctly installed, follow these steps.

1. **Start the Media Central video server as described in Chapter 7**.

2. **On a Media Central client, start the Launcher.**

   ```
   % installdir/bin/launcher videoserverhost
   ```

   Substitute your client installation directory for *installdir*. The default is /opt/
   MediaCentral. Substitute the name of the video server host for *videoserverhost.*

3. **Click the Launcher's Administrator button.**

   The video server should appear in the Administrator's navigation pane. (See the *Sun
   StorEdge Media Central User's Guide* for a detailed description of the Administrator.)

4. **Use the Administrator to verify encoder and decoder installation.**

   The video server's encoders and decoders should appear in the Administrator's
   navigation window.

5. **Use the Administrator to set the properties in one or more encoders and decoders.**

   Set the properties, such as audio level and compression rate, to values you want to
   test.

6. **Use the Recorder client to create a test clip.**

   The *Sun StorEdge Media Central User's Guide* describes how to operate the Recorder
   client.

7. **Use the Player client to stream the test clip.**

   The *Sun StorEdge Media Central User's Guide* describes how to operate the Player
   client.

8. **Optionally, install a VTR and use the Recorder client to remotely control it while
   recording another test clip.**

   Before using a VTR, you must give the video server software the VTR's address. Do
   this with the Administrator's Add/Remove Device tab, as described in the *Sun
   StorEdge Media Central User's Guide*.

   The *Sun StorEdge Media Central User's Guide* describes how to operate the Recorder
   client with a VTR.

9. **If you have connected a Louth Automation device server, test it as follows:**

a. **Use the Administrator to configure the Louth properties as described in the** *Sun StorEdge Media Central User's Guide.*

b. **Restart the video server as described in Section 7.3.3 "Restarting a Video Server" on page 7-5**.

c. **Use the Louth system to record and play a clip.**

10. **Use the Migrator client to export a test clip to a UNIX file on another host.**

   The *Sun StorEdge Media Central User's Guide* describes how to operate the Migrator.

11. **If you have a SONY MAV70, use the Migrator to import a test clip from it.**

12. **If you have installed the asset server, start the asset server, and use the Asset Manager client to edit an asset for a test clip.**

   Chapter 7 describes how to start the asset server. The *Sun StorEdge Media Central User's Guide* describes the Asset Manager.

6.11 Removing the Media Central Software

Follow the procedures in this section to remove Media Central software from servers and clients.

6.11.1 Removing the Video Server Software

1. **Exit all clients and the Launcher.**

2. **Unmount the Media Central NFS file system on client hosts that have been using the server:**

```
% umount /tmp/vssm-vfs
```

3. **Become superuser on the server host.**

4. **Stop the server:**

```
# installdir/sbin/mcsinit stop
```

Substitute your installation directory for *installdir*. The default installation directory is /opt/MediaCentral.

5. **Insert the Media Central CD in the host's CD-ROM drive.**

6. **Start the installation script:**

```
# cd /cdrom/cdrom0/MediaCentral/Solaris_2.6/sparc
# ./mcinstall.sh
```

The script displays its Main Menu:

```
        Sun StorEdge Media Central
            Main Menu

installed packages, if any


1) Install
2) Remove
3) Verify versions
4) Quit
Enter your choice:
```

7. **Type** 2.

The script displays its Remove Menu:

```
        Sun StorEdge Media Central
            Remove Menu

installed packages, if any

Packages to remove

1) Media Central Server
2) Media Central Client
3) AMS Server
4) Sample Video clips
5) Documentation
6) Vela driver
7) VisionTech driver
8) A1000 patch
9) Tektronix drivers
10) Done
Enter your choice:
```

8. **Type** 1.

   For each video server package, the script asks you confirm that you want it removed, for example:

   ```
   Removing SUNWbwsr...
   The following package is currently installed:
       SUNWbwsr   StorEdge Media Central Server root
                  (sparc) 1.0, REV=1999.09.13.11.23
   Do you want to remove this package?
   ```

9. **Type** y.

   Depending on the package, the script may ask you to confirm that scripts in the package may be executed as superuser.

10. **Type** y.

11. **The script removes the package.**

    The script repeats these steps for each video server package. When it has removed all video server packages, it asks you to press Return.

12. **Press Return.**

    The script displays the Remove Menu again. You can remove more packages and files if you wish.

13. **When you are finished removing, type** 10.

    The script displays the Main Menu again.

14. **Type** 4 **to quit the script.**

6.11.2   Removing the Asset Manager Server Software

1. **Exit Asset Manager clients if any are running.**

2. **Become superuser on the asset server host.**

3. **Stop the server:**

   ```
   # installdir/sbin/mcainit stop
   ```

   Substitute your installation directory for *installdir*. The default installation directory is /opt/MediaCentral.

4. **Insert the Media Central CD in the host's CD-ROM drive.**

5. **Start the installation script:**

```
# cd /cdrom/cdrom0/MediaCentral/Solaris_2.6/sparc
# ./mcinstall.sh
```

The script displays its Main Menu:

```
        Sun StorEdge Media Central
             Main Menu

installed packages, if any

1) Install
2) Remove
3) Verify versions
4) Quit
Enter your choice:
```

6. **Type** 2.

The script displays its Remove Menu:

```
        Sun StorEdge Media Central
             Remove Menu

installed packages, if any

Packages to remove

1) Media Central Server
2) Media Central Client
3) AMS Server
4) Sample Video clips
5) Documentation
6) Vela driver
7) VisionTech driver
8) A1000 patch
9) Tektronix drivers
10) Done
Enter your choice:
```

7. **Type** 3.

   For each asset server package, the script asks you confirm that you want it removed, for example:

   ```
   Removing SUNWbwar...
   The following package is currently installed:
       SUNWbwar   StorEdge Media Central AMS Server (root)
                  (sparc) 1.0, REV=1999.09.13.11.23
   Do you want to remove this package?
   ```

8. **Type** y.

   Depending on the package, the script may ask you to confirm that scripts in the package may be executed as superuser.

9. **Type** y.

10. **The script removes the package.**

    The script repeats these steps for each asset server package. When it has removed all asset server packages, it asks you to press Return.

11. **Press Return.**

    The script displays the Remove Menu again. You can remove more packages and files if you wish.

12. **When you are finished removing, type** 10.

    The script displays its Main Menu again.

13. **Type** 4 **to quit the script.**

6.11.3   Removing the Solaris Client Software

1. **Exit all clients and the Launcher; you do not need to stop Media Central servers.**

2. **Become superuser on the client host.**

3. **Insert the Media Central CD in the host's CD-ROM drive.**

4. **Start the installation script:**

```
# cd /cdrom/cdrom0/MediaCentral/Solaris_2.6/sparc
# ./mcinstall.sh
```

The script displays its Main Menu:

```
        Sun StorEdge Media Central
             Main Menu

installed packages, if any

1) Install
2) Remove
3) Verify versions
4) Quit
Enter your choice:
```

5. **Type** 2.

The script displays its Remove Menu:

```
        Sun StorEdge Media Central
             Remove Menu

installed packages, if any

Packages to remove

1) Media Central Server
2) Media Central Client
3) AMS Server
4) Sample Video clips
5) Documentation
6) Vela driver
7) VisionTech driver
8) A1000 patch
9) Tektronix drivers
10) Done
Enter your choice:
```

6. **Type** 2.

For each client package, the script asks you confirm that you want it removed, for example:

```
Removing SUNWbwc...
The following package is currently installed:
    SUNWbwc    StorEdge Media Central Client
               (sparc) 1.0, REV=1999.09.13.11.23
Do you want to remove this package?
```

7. **Type** y.

Depending on the package, the script may ask you to confirm that scripts in the package may be executed as superuser.

8. **Type** y.

9. **The script removes the package.**

The script repeats these steps for each client package. When it has removed all client packages, it asks you to press Return.

10. **Press Return.**

The script displays the Remove Menu again. You can remove more packages and files if you wish.

11. **When you are finished removing, type** 10.

The script displays its Main Menu again.

12. **Type** 4 **to quit the script.**

6.11.4 Removing the Microsoft Windows Client Software

1. **Exit all clients and the Launcher; you do not need to stop Media Central servers.**

2. **Trash the installation folder, by default,** C:\Program Files\MediaCentral.

6.11.5 Removing Auxiliary Files

You can remove sample video clips and documentation with the same mcinstall.sh script you use to remove Media Central software from Solaris hosts.

CHAPTER **7**

Starting and Stopping Media Central Servers

This chapter describes how to start and stop video and asset servers, in these sections:

7.1 Introducing the Media Central Servers

A Media Central installation can have up to three kinds of servers:

- One or more Media Central video servers
- One optional Media Central asset server
- One database server, which is used by the asset server

The asset server depends on the database server, and video servers depend on the asset server, if it is installed. Therefore, the servers must be brought up in this order:

1. Database server (if the asset server is installed)

2. Asset server (if installed)

3. Video server(s)

Servers must be shut down in the reverse order.

For instructions on starting and stopping your database server, consult its documentation. The following sections describe startup and shutdown of Media Central servers.

7.2 Automatic Startup and Shutdown

The Media Central servers start automatically when their hosts boot and stop automatically when their hosts shut down. Three conditions can prevent a server from starting properly:

- A video server will not start if it cannot find a video file system, that is, if `vsmnewfs` (see Section 6.5 "Creating the Video Server File System" on page 6-9) has not been run. Instead it displays the following message and exits:

```
NOTE: No Media Central File system found
```

  To correct the condition, run `vsmnewfs`.

  If you try to start the video server but it is already running, it displays the following message and exits:

```
WARNING: vsminit aborted, vsmd already running
```

- The asset server will start, but will not operate, if it cannot connect to its database server. To correct the condition, start the database server or correct the AMS connection properties with the Administrator, then restart the asset server. The database connection properties are described in Section 6.7.3 "Setting Asset Server Properties" on page 6-23.

The Solaris operating environment uses the `init.d` facility to start and stop the Media Central servers; consult its man page for details. You can use the same facility to automate the startup and shutdown of the asset server database. When you install a Media Central server, the installation creates a startup/shutdown script in `/etc/init.d`. The video server script is called `mcsinit` and the asset server script is called `mcainit`. Installation also creates links to these scripts in `/etc/rc2.d` and `/etc/rc0.d`:

- asset server startup link: `/etc/rc2.d/S94mca`
- asset server shutdown link: `/etc/rc0.d/K19mca`
- video server startup link: `/etc/rc2.d/S94mcs`
- video server shutdown link: `/etc/rc0.d/K19mcs`

To automate asset database server startup and shutdown, create a startup/shutdown script in `/etc/init.d`, create a startup link to the script in `/etc/rc2.d`, and a shutdown link to the script in `/etc/rc0.d`. Your start link's name must be alphanumerically lower than `S94mca` so it will be run before the asset server start script. Your shutdown link's name must be alphanumerically higher than `K19mca` so it will be run after the asset server stop script.

7.3 Manually Controlling a Video Server

You control a video server with a script called `mcsinit`. This script is located in *installdir*`/sbin`. The default *installdir* is `/opt/MediaCentral`.

7.3.1 Starting a Video Server

1. **If you have installed the asset server software, make sure the database server and the asset server are running. If you have configured the Media Central NTP daemon, make sure it is running.**

2. **If the video server host or its peripherals are not running, power them on in this order:**

   a. **Start the Sun StorEdge A1000 systems; wait 30 seconds before starting each system.**

      Starting a Sun StorEdge A1000 draws considerable current.

   b. **Start the encoders and decoders.**

   c. **Start the server host.**

3. **Verify that the host's Sun StorEdge A1000 caches are active.**

   You do not need to verify the caches if you will not be recording for 15 minutes after startup. The caches are used for recording but not for playback.

   Verify by performing either of the following procedures.

   a. **Wait 15 minutes to give the cache backup batteries time to charge.**

      The caches are not active until the batteries are charged.

   b. **Use the `rm6` utility as described in Section 6.5 "Creating the Video Server File System" on page 6-9 to inspect the write cache states.**

4. **Become superuser on the server host and start the video server:**

```
# installdir/sbin/mcsinit start
```

Substitute your video server installation directory for *installdir*. The default installation directory is `/opt/MediaCentral`.

5. **Optionally, verify that all Media Central video server components are running:**

   a. **Type:**

```
# /usr/bin/ps -ef | grep vs
```

   This command should list two processes, `vsmd` and `vssmd`.

   b. **Type:**

```
# /usr/bin/ps -e | grep java
```

   This command should list one process, `java`.

   c. **Type:**

```
# /usr/bin/ps -e | grep vfra
```

   This command should list one process, `vfra-nfsd`.

   d. **Type:**

```
# ls /tmp
```

   This command should show the file `vssmfs`.

   e. **Type:**

```
# cat /tmp/vfra.log
```

   This command should display `Creating export directory /tmp/vssmfs`.

7.3.2   Shutting Down a Video Server

1. **Ask users to exit Media Central clients.**

   Clients, except for the Administrator, will report an exception if they are running when the server goes down.

2. **Unmount the Media Central NFS file system on client hosts that have been using the server:**

   ```
   % umount /tmp/vssm-vfs
   ```

3. **Become superuser on the server host and stop the video server:**

   ```
   # installdir/sbin/mcsinit stop
   ```

   Substitute your video server installation directory for *installdir*. The default installation directory is /opt/MediaCentral.

7.3.3   Restarting a Video Server

1. **Ask users to exit Media Central clients.**

   Clients, except for the Administrator, will report an exception if they are running when the server goes down.

2. **Unmount the Media Central NFS file system on client hosts that have been using the server:**

   ```
   % umount /tmp/vssm-vfs
   ```

3. **Become superuser on the video server host and restart the video server:**

   ```
   # installdir/sbin/mcsinit restart
   ```

   Substitute your video server installation directory for *installdir*. The default installation directory is /opt/MediaCentral.

7.3.4 Starting the NTP Daemon

● **Become superuser on the video server host, and start the daemon:**

```
# installdir/sbin/xntpdinit start
```

Substitute your video server installation directory for *installdir*; the default install directory is /opt/MediaCentral.

7.3.5 Shutting Down the NTP Daemon

● **Become superuser on the video server host, and stop the daemon:**

```
# installdir/sbin/xntpdinit stop
```

Substitute your video server installation directory for *installdir*; the default install directory is /opt/MediaCentral.

7.4 Manually Controlling the Asset Server

You operate the asset server with a script called mcainit. This script is located in *installdir*/sbin. The default *installdir* is /opt/MediaCentral.

7.4.1 Starting the Asset Server

1. **Make sure the asset server's database server is running.**

2. **Become superuser on the asset server host and start the asset server:**

```
# installdir/sbin/mcainit start
```

Substitute your asset server installation directory for *installdir*. The default installation directory is /opt/MediaCentral.

7.4.2   Stopping the Asset Server

1. **Make sure no video server is running.**

2. **Become superuser on the asset server host and stop the asset server:**

```
# installdir/sbin/mcainit stop
```

Substitute your asset server installation directory for *installdir*. The default installation directory is /opt/MediaCentral.

7.4.3   Restarting the Asset Server

1. **Become superuser on the asset server host and restart the asset server:**

```
# installdir/sbin/mcainit restart
```

Substitute your asset server installation directory for *installdir*. The default installation directory is /opt/MediaCentral.

You do not need to shut down video servers before restarting the asset server.

Extending a Video File System

This chapter describes file system extension and the `vsmextfs` program in these sections:

- Section 8.1 "Introducing File System Extension" on page 8-1
- Section 8.2 "Extending a Video File System" on page 8-2

8.1   Introducing File System Extension

To extend a video file system, you add disk arrays and associated hardware, and then run one of two programs that prepare the additional space. The prepared space is incorporated by the video server software the next time it runs.

The programs `vsmnewfs` and `vsmextfs` are similar; the former creates a file system, the latter extends one. The `vsmnewfs` program is described in Section 6.5 "Creating the Video Server File System" on page 6-9. Both programs run in three main phases:

1. Verifying the Sun StorEdge A1000 hardware and firmware.

2. Finding and initializing uninitialized disk arrays.

3. Characterizing initialized disk arrays. Characterizing means computing the performance of the arrays so the video server software knows how much bandwidth is available.

Initialization and characterization can take several hours to run.

8.2 Extending a Video File System

To extend a video file system, you first add Sun StorEdge A1000 disk arrays to your Media Central video server host, and then run either the `vsmnewfs` program to create a new file system or the `vsmextfs` to extend your existing file system. Which program you run depends on the configuration you start with, as the following procedures explain.

8.2.1 Adding Sun StorEdge A1000 Disk Arrays

1. **Compare your Sun Enterprise 250 configuration with** TABLE 2-4 **on page 2-7 or your Sun Enterprise 450 configuration with** TABLE 3-4 **on page 3-8.**

   If you already have the maximum configuration, you cannot extend the video file system.

2. **Look up your desired Sun Enterprise 250 configuration in** TABLE 2-6 **on page 2-9 or your desired Sun Enterprise 450 configuration in** TABLE 3-6 **on page 3-11.**

   You may need to obtain additional UltraSCSI cards to support the new configuration.

3. **Obtain the UltraSCSI cards, Sun StorEdge A1000 disk arrays, cables, and terminators that you need for your desired configuration.**

4. **If** TABLE 2-4 **on page 2-7 or** TABLE 3-4 **on page 3-8 reveals that your current configuration is not extensible, and you want to save clips stored in the video file system, use the Migrator client to export the clips to UNIX files.**

   The *Sun StorEdge Media Central User's Guide* describes the Migrator client.

5. **Shut down the video server host as described in Section 7.3.2 "Shutting Down a Video Server" on page 7-5.**

6. **As superuser, halt the Solaris operating environment:**

   ```
   # init 0
   ```

7. **Install the additional disk array hardware as described in Chapter 2 or Chapter 3.**

8. **Boot the Solaris operating environment:**

   ```
   ok> boot -r
   ```

9. **Verify that the new disk arrays are properly connected as described in Chapter 4.**

10. **Use the** `rm6` **utility to verify that the Sun StorEdge A1000 write caches are active as described in Section 6.5 "Creating the Video Server File System" on page 6-9.**

11. **If** TABLE 2-4 **on page 2-7 or** TABLE 3-4 **on page 3-8 reveals that your old configuration is not extensible, create a new video file system that includes the new disk arrays as described in Section 6.5 "Creating the Video Server File System" on page 6-9.**

    After creating the new file system, you can import the clips you saved in Step 4.

8.2.2   Extending the File System

1. **Start the file system extension utility:**

   ```
   # installdir/sbin/vsmextfs
   ```

   For *installdir* substitute the directory where your video server software is installed. The default installation directory is `/opt/MediaCentral`.

   Note – Depending on the type of host you have and the number of Sun StorEdge A1000 systems and buses, this command may run for a few or several hours.

   The `vsmextfs` program checks many details of your hardware and software configuration before it adds the Sun StorEdge A1000 systems to the video file system. If your configuration is incorrect, you will see one or more of the messages in TABLE 6-2 on page 6-15 (the `vsmnewfs` program can generate the same messages). Some messages may contain operating system identifiers for Sun StorEdge A1000 systems, such as `/dev/rdsk/c0t1d3s2`, sometimes abbreviated to the final name (for example, `c0t1d3s2`). If you encounter a message not shown in the table, save all of the command's output, including the message, and contact Sun technical support.

   If `vsmextfs` finds that the Media Central server is running, it displays this message:

   ```
   Media Central Server is currently operating.
   Media Central Server must be shutdown to initialize storage.
   Shutdown Media Central Server [y/n]?
   ```

2. **Type** y **unless you want to defer file system extension, in which case type** n.

vsmextfs displays:

```
Found n A1000's, is that the expected number [y/n]?
```

The number *n* should include the old and new disk arrays.

3. **If** *n* **is correct, type** y. **If you have more Sun StorEdge A1000 systems than** vsmextfs **found, type** n **to exit** vsmextfs. **Then check your Sun StorEdge A1000 systems for power, cabling, SCSI IDs and termination.**

vsmextfs displays:

```
A1000 performance characterization relies on A1000 write caches
being enabled. Write cache state must be checked each time this
program is run.

Have you verified write cache is enabled on ALL A1000s [y/n]?
```

4. **Type** y **(you verified the write caches in Step 10).**

If vsmextfs displays:

```
No Media Central file system found for extension,
```

it means that all disk arrays are already incorporated in the file system; the program exits.

If vsmextfs displays:

```
Targets n have been characterized but not yet added to file
system m. You may optionally redo the characterization of these
targets. In either case, they will be added to the file system
when Media Central is restarted.
Do you wish to redo characterization of these targets [y/n]?
```

it means that you have run vsmextfs twice without having started the video server. (The vsmextfs program characterizes, or tests the performance of, disk arrays; the Media Central video server software adds the characterized disks to the file system.)

a. **Type** y **if you want** vsmextfs **to re-characterize the arrays, for example, if you previously ran** vsmextfs **without enabling the write caches, or you added disk arrays after running** vsmextfs.

b. Type n **to skip re-characterization.**

vsmnewfs displays:

```
Found additional A1000s having target number(s) targets
```

The target numbers are the SCSI IDs (addresses) of the new StorEdge A1000 arrays.

vsmextfs displays:

```
Extending capacity of file system name
```

For each Sun StorEdge A1000 system, vsmextfs displays:

```
Starting initialization of A1000s
A1000 initialization may take up to 2 hours
```

When it has initialized all Sun StorEdge A1000 systems, vsmextfs displays:

```
Starting characterization of A1000 n
Characterization may take up to 5 hours per target set
Much characterization data
```

Characterizing means measuring the Sun StorEdge A1000 system complement's aggregate performance. The Media Central video server uses the characterization data to compute how much bandwidth it can deliver. Characterization can take an hour (or more) per "target set" of identical SCSI IDs. For example, if your configuration has two A1000 arrays on two buses both have a SCSI ID of 0, which means you have one target set; characterization will take about an hour. If you have four arrays on two buses, you have two target sets (SCSI ID 0 and SCSI ID 1), and initialization will take about two hours.

After characterizing the disks, vsmnewfs displays:

```
A1000 characterization complete
Media Central file system extension complete
vsmextfs Completed Successfully
```

5. **Start the Media Central video server as described in "Starting a Video Server" on page 3.**

The video server adds the space created by `vsmextfs` to its file system. The following message confirms that the file system has been extended:

```
VSM: Detected new storage band
Adding capacity to VSM File System filesystemname
```

Index

V