Sun StorEdge™ D2 Array Installation, Operation, and Service Manual

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Preface

This *Sun StorEdge D2 Array Installation, Operation, and Service Manual* provides installation and configuration information and service procedures to customers and service personnel for the arrays. These instructions are designed for experienced system administrators.

How This Book Is Organized

Chapter 1, "Sun StorEdge D2 Array Overview," describes the array, its components, and supported configurations.

Chapter 2, "Setting Up and Configuring the Sun StorEdge D2 Array," contains the setup and configuration procedures.

Chapter 3, "Monitoring and Troubleshooting the Sun StorEdge D2 Array," contains procedures for using Network Storage Agent and SunVTS™ diagnostics software, and other techniques to monitor and troubleshoot the array.

Chapter 4, "Adding and Replacing FRUs," contains information and procedures about adding and replacing field replaceable units (FRUs).

Appendix A, "System Specifications," contains the array's physical, electrical, and environmental specifications.

Appendix B, "Declaration of Conformity, Regulatory Compliance, and Safety Statements," contains important information that you must read and understood before following any of the procedures in any of the documentation that applies to the array.

Before You Read This Book

You must read and understand the books listed in the following table in order to install and do the following:

- Install and use the Sun StorEdge D2 array
- Install the Sun StorEdge PCI dual Ultra3 SCSI host adapter that connects the array to a host and install the qus driver that enables the host adapter to work
- Monitor the array using SunVTS™ and Network Storage Agent diagnostic software as described in this manual

Topic	Title	Part Number	Notes
Release notes	*Sun StorEdge D2 Array Release Notes*	816-1892	May contain required information about procedures that must be performed in order to succeed during installation.
Release notes	*Sun StorEdge PCI Dual Ultra3 SCSI Host Adapter Release Notes*	816-2157	
Release notes	*Network Storage Agent 2.1 Release Notes*	806-7520	
Installation	*Sun StorEdge PCI Dual Ultra3 SCSI Host Adapter Installation Guide*	816-2156	
Diagnostics	*Network Storage Agent 2.1 User's Guide*	816-0769	
Diagnostics	*SunVTS 4.x User Guide*	Varies according to the SunVTS version being used, which varies according to which update release of the Solaris operating environment is installed	SunVTS is shipped on the Supplemental Software CD-ROM along with the Solaris operating environment CD-ROM.
Diagnostics	*SunVTS 4.x Test Reference Manual*		

See "To Access Sun StorEdge Documents Online" on page 15.

You must also read and understand the compliance, regulatory, and safety information described in Appendix B of this manual before using this or any other manual listed in the previous table for the Sun StorEdge D2 array.

Shell Prompts

Shell	Prompt
C shell	*machine-name*%
C shell superuser	*machine-name*#
Bourne shell and Korn shell	$
Bourne shell and Korn shell superuser	#

Typographic Conventions

Typeface or Symbol	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. Command-line variable; replace with a real name or value.	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be `root` to do this. To delete a file, type `rm` *filename*.

Using UNIX Commands

This document does not contain information on all the UNIX® commands and procedures needed to configure a new array, such as shutting down the host, booting the host, and formatting disks.

See one or more of the following for this information:

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

Related Documentation

Title	Part Number
Sun StorEdge A2 and D2 Array Cabinet Installation Guide	816-1696
Sun StorEdge D2 Array Release Notes	816-1892
VERITAS Volume Manager Administrator's Guide	varies by the version being used on the host

Accessing Sun Documentation Online

Sun's documentation is available for viewing and printing at Sun's web site.

To access the SunVTS document listed in "Before You Read This Book" on page 12," and the Solaris usage documents listed under "Using UNIX Commands" on page 14, go to: `docs.sun.com` and search for SunVTS and Solaris.

To access the release notes listed in "Before You Read This Book" on page 12 *and* the other manuals listed in "Related Documentation," do the steps in the following procedure.

▼ To Access Sun StorEdge Documents Online

1. **Go to:** `www.sun.com` **and navigate to the Storage documentation page.**

   a. **In the left navigation bar, click "Products."**

   b. **On the PRODUCTS page under "Related," click "Hardware Documentation."**

   c. **In the "PRODUCT DOCUMENTATION" table on the "HARDWARE/ Documentation" page, click "Storage."**

2. **Alternately, you can go directly to this address:**

www.sun.com/products-n-solutions/hardware/docs/Network_Storage_Solutions/

3. **To access the Sun StorEdge D2 array documentation, do the following substeps**

   a. **In the "PRODUCT DOCUMENTATION" table, on the "DOCUMENTATION/Storage" page, click "Workgroup Storage Arrays."**

   b. **In the "PRODUCT DOCUMENTATION" table on the "STORAGE/Workgroup Storage Arrays" page, click "Sun StorEdge D2 Arrays."**

   c. **Alternately, you can add** `Workgroup/D2` **to the end of the address in Step 2.**

/www.sun.com/products-n-solutions/hardware/docs/Network_Storage_Solutions/
Workgroup/D2

   d. **In the "Sun StorEdge D2 Array Documentation" table, click** `pdf` **in the row that lists the desired document.**

Note – The documents at the Sun's storage documentation website are in PDF format. Viewing and printing documents in Adobe Portable Document Format (PDF) requires Adobe® Acrobat Reader, which is on the Sun StorEdge D2 Array Documentation CD-ROM.

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. You can email your comments to Sun at:

```
docfeedback@sun.com
```

Please include the part number (816-2578) of this document in the subject line of the email.

Sun StorEdge D2 Array Overview

This overview chapter covers the following topics:

1.1 Description

The Sun StorEdge D2 array is a four rack unit (4 RU) JBOD (Just a Bunch of Disks), direct-attach, high-performance. storage subsystem containing up to twelve Ultra3 disks. The array can be used with storage management software, such as Solstice DiskSuite software or VERITAS Volume Manager on the host.
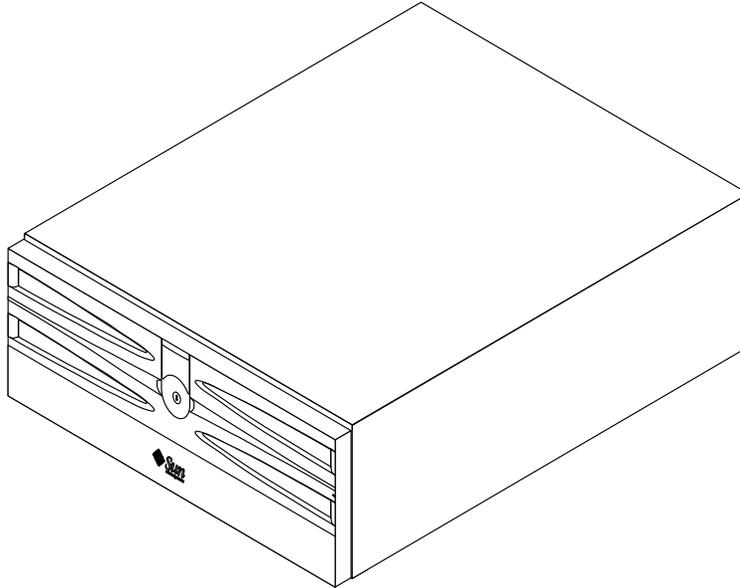
An environmental services module (ESM) monitors the status of the enclosure using light-emitting-diodes (LEDs) to display each component's health and activity.

Note – The terms "flashing" and "blinking" have slightly different meanings when they are used in the description of an LED. The rate of "flashing" varies according to the rate of occurrence of whatever events the LED is indicating, while the rate of "blinking" is fixed.

The ESM also enables remote environmental monitoring from a host by means of the SCSI Accessed Fault-tolerant Enclosure (SAF-TE) protocol through the low voltage differential (LVD) SCSI connection.

Each ESM has two independent Ultra3 160 MB SCSI bus connections. Daisy-chaining is not supported.

The Sun StorEdge D2 array can be connected to a host in one of the two following ways:

- By means of a Sun PCI Dual Ultra3 SCSI host adapter (160 MB/second) installed in a host or

- By means of an on-board single-ended, 40 MB/second SCSI port attachment in a Sun Solaris Workgroup Server. Supported Solaris Workgroup Servers with embedded SCSI port attachments are Sun Enterprise 220, 250, 420, 450, and Sun Fire 280R servers.

Sun StorEdge D2 arrays ship in one of two bus configurations:

- In a single-bus configuration (with one ESM)

  For details, see Section 1.8.1, "Single-Bus Configuration" on page 1-20.

- In a split-bus configuration (with two ESMs)

  For details, see" Section 1.8.2, "Split Bus Configuration" on page 1-21."

  In a split-bus configuration, the Sun StorEdge D2 array can be configured either as a high-availability storage subsystem or as two separate storage subsystems.

1.2 Mounting Options

You can mount Sun StorEdge D2 arrays in the following two ways:

- On the desktop

  Mounting on the desktop is described in "To Mount the Array on a Desktop or Tabletop" on page 2-6.

- As rack-mounted systems

  The arrays can be installed in qualified Sun cabinets. Mounting in cabinets is described in the *Sun StorEdge A2 and D2 Arrays Cabinet Installation Guide*.

You can purchase the hardware needed to install a Sun StorEdge D2 tabletop array in a qualified Sun cabinet by ordering the D2 rackmount upgrade kit.

1.3 Parts

TABLE 1-1 shows the parts for a Sun StorEdge D2 Array to be mounted on a tabletop or desktop. TABLE 1-2 shows the additional parts for a Sun StorEdge D2 Array that is to be mounted in a Sun cabinet.

TABLE 1-1 Parts for the Sun StorEdge D2 Tabletop Array

Quantity	Item
1	Sun StorEdge D2 array (with 1 or 2 ESMs)
2	Power cord
1	Disk drive manual
1 or 2	SCSI cable (one for each ESM)
2	Key (for the lockable front door)
1	*CD-ROM: Sun StorEdge D2 Documents* containing the following manuals in PDF format: • *Sun StorEdge A2 and D2 Arrays Cabinet Installation Manual* • *Sun StorEdge D2 Installation, Operation, and Service Manual* (this manual) The CD-ROM also includes: • Adobe Acrobat Reader

TABLE 1-2 Additional Parts for the Sun StorEdge D2 Cabinet-Mountable Array

Quantity	Item
2	4U trim strip (with 2 screws)
16	#10-32 x 1/2 in. screw
4	#10-14 x 7/16 in screw
2	Mounting bracket

1.4 Software Options

Contact your Sun sales representative for a list of qualified storage management products and revision levels that can be used with the Sun StorEdge D2 array.

1.5 Removable Components

The chassis of the Sun StorEdge D2 array houses the following field replaceable units (FRUs):

- One or two ESMs
- Two power supplies
- Two fan canisters with two fans each
- Up to twelve Ultra3 SCSI disk drives

Each FRU has a set of LEDs that indicate health and status. Descriptions of all the FRUs and LED's states are given later in this chapter.

See Chapter 4 for procedures to replace failed components.

Caution – Do not operate the Sun StorEdge D2 array for extended periods with any components missing. If the array has only one ESM or less than 12 disk drives, make sure that all empty slots are filled with fillers. The fillers act as air baffles that enable the system to maintain optimal cooling. If all slots are not filled, high temperatures can result, which can damage system components.

1.6 Components at the Front of the Array

This section describes the components accessed at the front of the array. Behind the lockable front door are:

- Slots containing disks and possibly fillers
- LEDs that indicate drive conditions
- LEDs that indicate overall system conditions

1.6.1 Disks

Only Ultra3 disks can be used. For information about specific disks, refer to the disk documents that come with the array.

1.6.2 Fillers

In a Sun StorEdge D2 array with less than the maximum number of disk drives, fillers fill up all the empty slots. The fillers are air baffles that enable the system to maintain maximum cooling. If you remove a disk from a slot, make sure you fill the slot with a dummy drive so the unit cools properly.

1.6.3   Front Door

The lockable front door (FIGURE 1-1) opens down to allow access to the disks. The keys to the lock are included with the array.
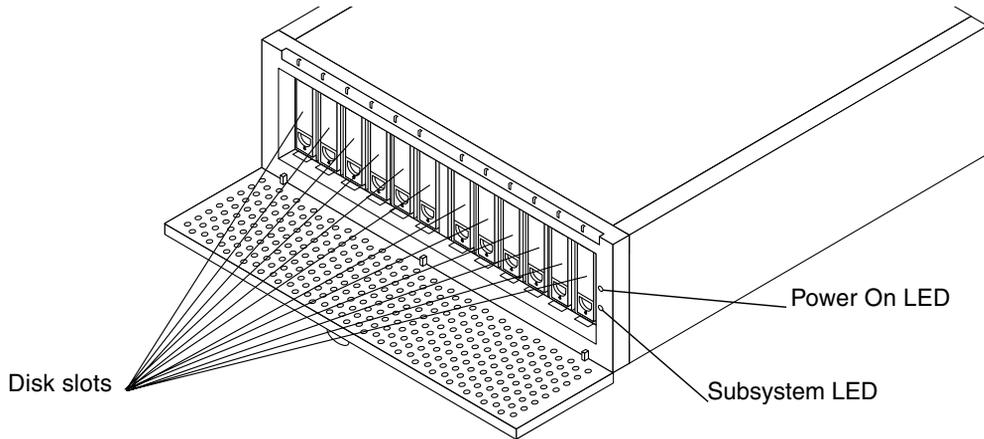
FIGURE 1-1   Array Front With Door Open and Disk Slots Accessible

1.6.4   Power and Subsystem LEDs

TABLE 1-3 describes two LEDs that are on the right front edge of the system (as shown in FIGURE 1-1). These LEDs are also visible when the front door is closed.

TABLE 1-3   Power and Subsystem LED Descriptions

LED Name	LED State	Description
Power On	Green	The system is powered on.
	Unlit	The system is powered off.
Subsystem	Amber	A drive, fan, power supply, or temperature error condition exists.
	Flashing amber	An application on the host (for example, Network Storage Agent) uses SAF-TE commands to cause this LED to flash amber to identify the enclosure.
	Green	No error condition exists.

1.6.5 Disk LEDs and Labels

FIGURE 1-2 shows the location of the disk LEDs. A label is positioned across the bottom rim of the chassis in front of the row of disk slots. As indicated in FIGURE 1-2, a rectangle on the label in front of each disk slot show the SCSI ID for the disk.
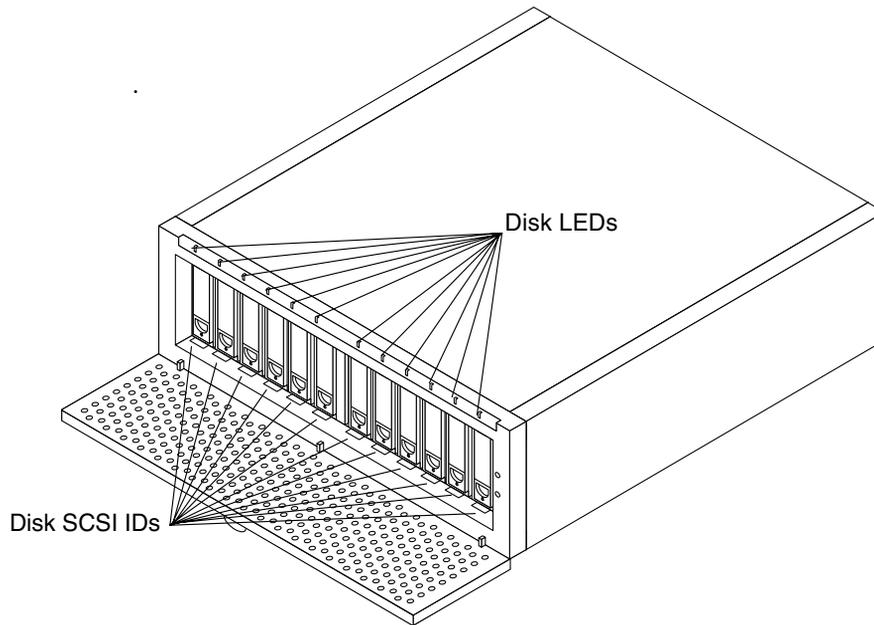
FIGURE 1-2   Array Back With Disk LEDs and SCSI IDs

1.6.5.1 Disk LEDs

A two-color LED is located above each disk slot. These disk LEDs are visible when the front door is closed. TABLE 1-4 describes the possible states of the disk LEDs.

TABLE 1-4   Disk LEDs' Descriptions

LED State	Description
Unlit	No disk drive is in the slot.
Green	A disk drive is present but not active.

TABLE 1-4   Disk LEDs' Descriptions *(Continued)*

LED State	Description
Flashing green	A disk drive in the slot is active.
Amber	An application running on the host identified an error and used SAF-TE commands to instruct this LED to display as solid amber. This can occur, for example, if the host cannot access the disk.
Blinking amber/green	An application running on the host used SAF-TE commands to instruct this LED to identify the disk drive by blinking amber and green.

1.6.5.2   Disk Labels

On the disk labels, split rectangles in front of each disk's slot are color-coded to show the SCSI IDs for the disk. The numbers in the left (blue) half apply to the disk in single bus mode. The numbers in the right (yellow) half apply to the disk in split-bus mode.

SCSI ID in single bus configuration   SCSI ID in split-bus configuration
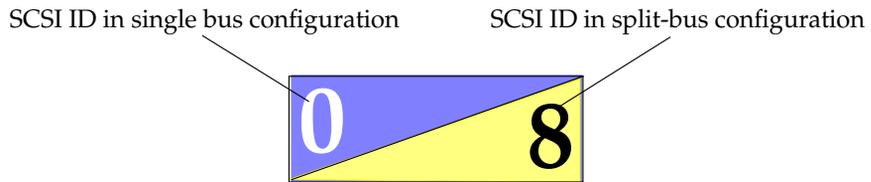
The left drive label also includes a color-coded graphic along with explanatory text to indicate which of the settings for switch 1 correspond with the SCSI IDs. (See "ESM" on page 1-11 and "Supported Configurations" on page 1-19 for details about single-bus and split-bus configuration.)

Left drive label

Right drive label
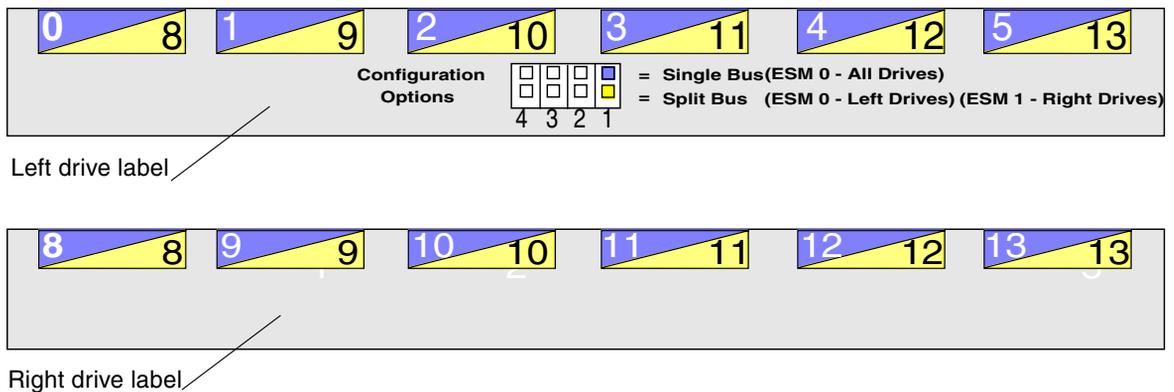
FIGURE 1-3   Disk Slot Labels Showing the SCSI IDs for Disks

1.7 Components at the Back of the Array

This section describes the components that are at the back of the Sun StorEdge D2 array as shown in FIGURE 1-4.

- One or two ESMs (labeled ESM 0 and ESM 1)

  If only one ESM is used, the ESM is in position 0, and a filler is inserted on the right (in position 1).

- Two power supply canisters (labeled PS 0 and PS 1)

- Two dual fan canisters (labeled FT 0 and FT 1)
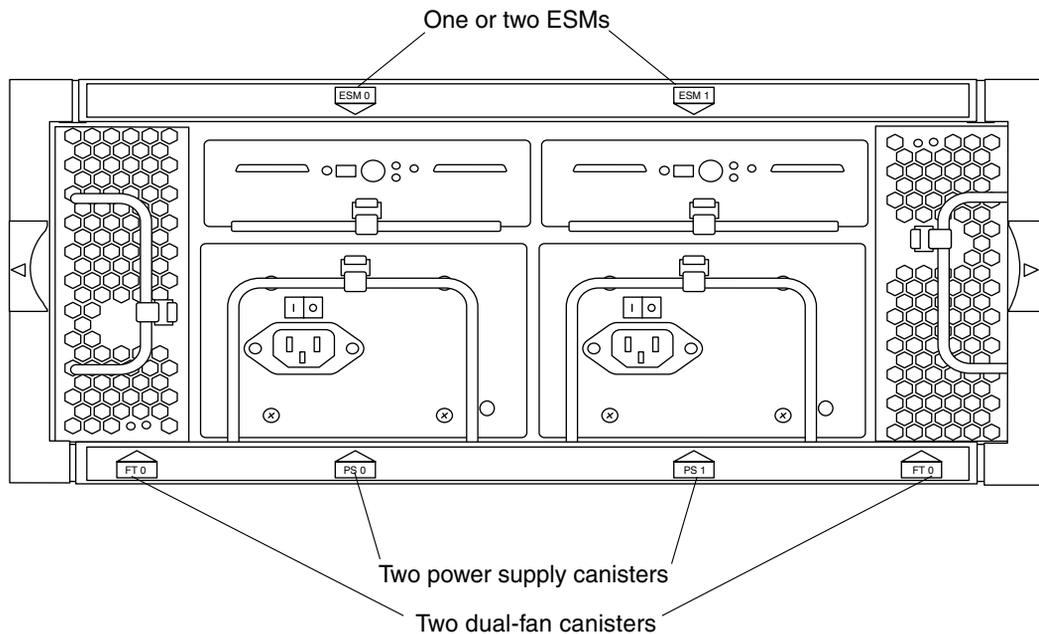
FIGURE 1-4 Array Back With ESMs, Power Supplies, and Fan Canisters

1.7.1 ESM

The Ultra3 SCSI Environmental Services Module (ESM) is shown in the following figure.

ESM Over Temperature/Code Download LED
Configuration Options switch bank
SCSI-A Termination Power LED
SCSI-A connector

Power On/SCSI Active LED
SCSI-B Termination Power LED
SCSI-B connector
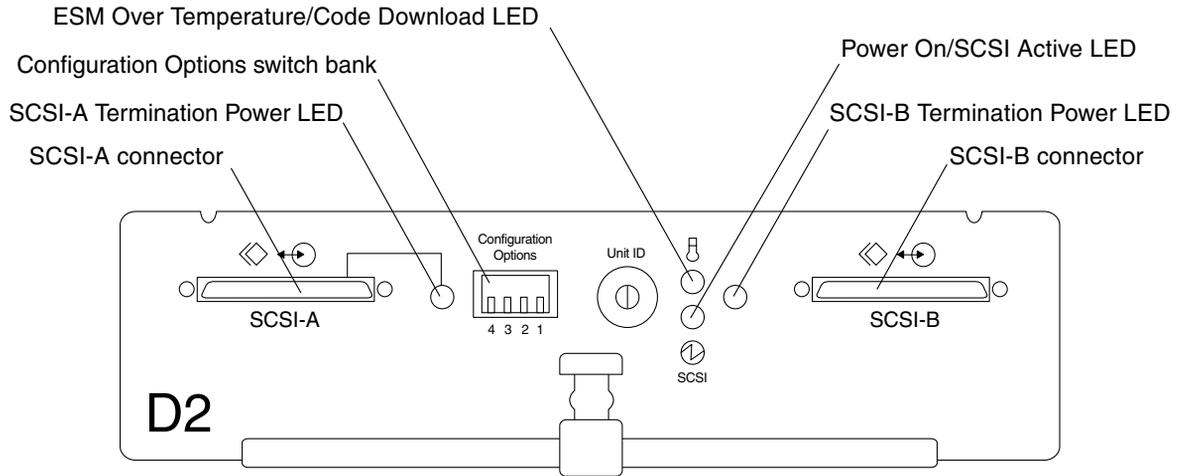
FIGURE 1-5   ESM Front (Viewed from the Back of the Array)

TABLE 1-5 describes the connectors, switches, and LEDs on the ESM.

TABLE 1-5   Connectors, Switches, and LEDs on the ESM

SCSI-*N* connector	The two host connectors on each ESM enable the array to connect to two separate hosts. External terminators are not required. Termination power is sensed through the SCSI *N* Termination Power LED.
SCSI-*N* Termination Power LED	Green: Termination power is being supplied from the host to the associated connector.
Configuration Options switch bank	Four-position, piano-style switches to set options described under "Configuration Options Switch Bank" on page 1-14.

TABLE 1-5   Connectors, Switches, and LEDs on the ESM

Unit ID	Ten-position switch for setting a unique ID for each ESM. When this switch is used to set an unit ID, an application (such as Network Storage Agent) can use SAF-TE SCSI commands to locate the ESM by its ID. See FIGURE 1-9 for a close-up.
ESM Over Temperature/Code Download LED	Yellow: Temperature exceeds the factory preset limits. When this LED is yellow, the Subsystem LED also turns amber. (See "Array Front With Door Open and Disk Slots Accessible" on page 1-7 for the location of the Subsystem LED.) Blinking: A code download is in progress. Off: Temperature is normal, and a code-download is not in progress.
Power ON/SCSI Active LED	Green: Power is applied. Blinking: SCSI activity is occurring through the ESM. Off: Controller is not receiving power.

Depending on the array's configuration, one or two ESMs monitor and report the status of the disk drives.
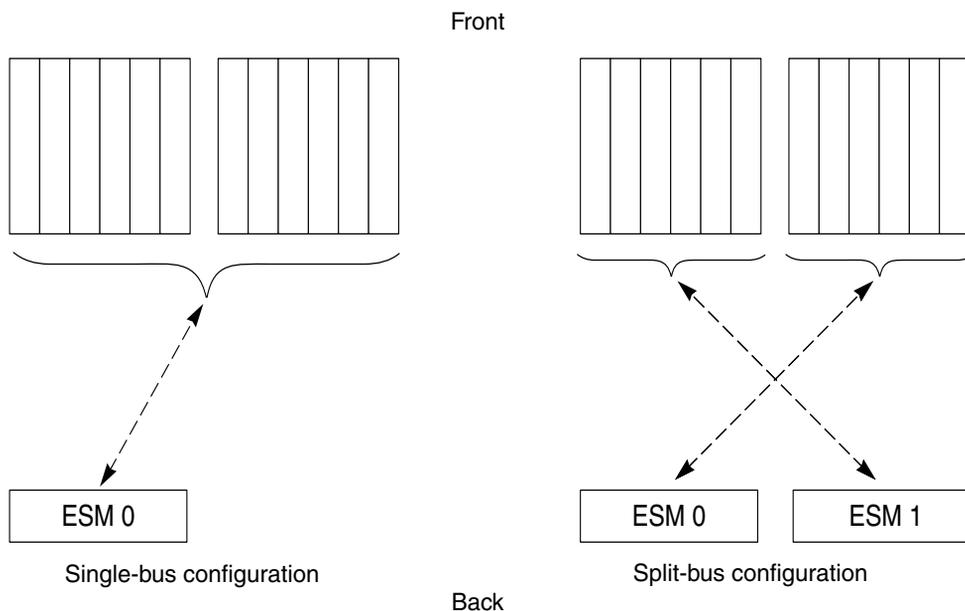
FIGURE 1-6   Disks Controlled by a Single ESM and by Two ESMs

In a *single-bus* configuration, as indicated on the left in FIGURE 1-6, the single ESM controls all disks. In a *split-bus* configuration, the array becomes two independent storage subsystems. Each ESM monitors half the disks (all disks in the six drive slots that are diagonally across from it).

FIGURE 1-7 shows the SCSI IDs that apply to the disks when a single ESM in position 0 controls all the disks (single-bus configuration).

All disks (both left and right bank of disks) controlled by ESM 0
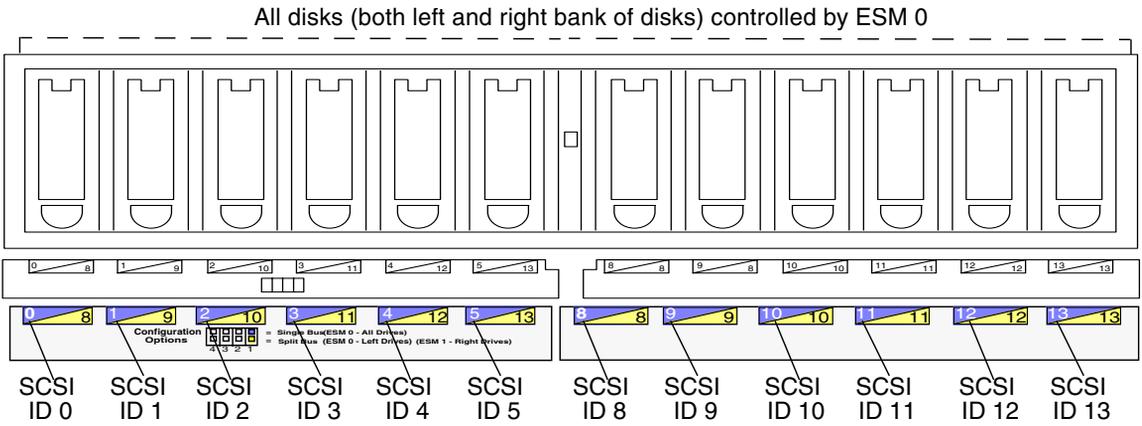
FIGURE 1-7   SCSI IDs for Disks Controlled by One ESM in Single-Bus Configuration

FIGURE 1-8 shows the SCSI IDs that apply to the left bank and to the right bank of disks. The figure also shows which ESM controls each half of the disks when there are two ESMs in a split-bus configuration.

Left bank of disks controlled by ESM 0   Right bank of disks controlled by ESM 1
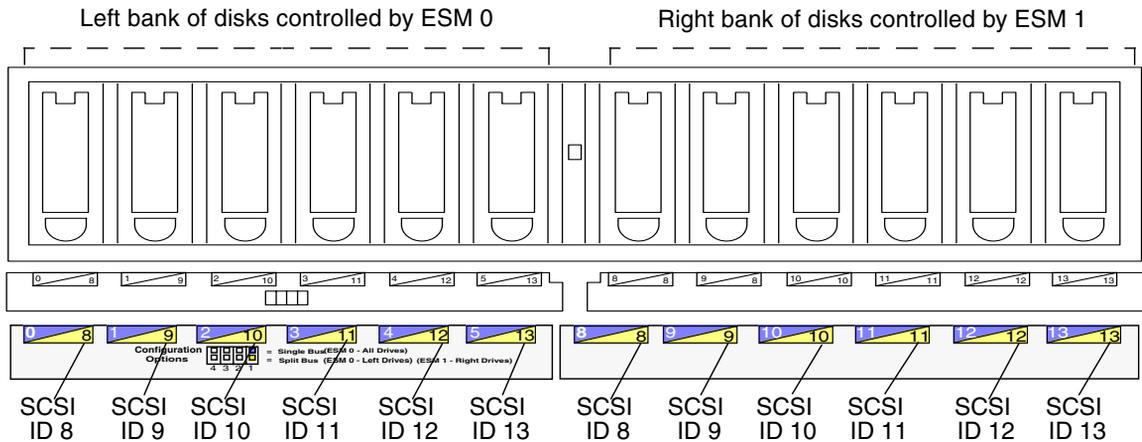
FIGURE 1-8   SCSI IDs for Disks Controlled by Two ESMs in Split-Bus Configuration

1.7.1.1　Configuration Options Switch Bank

FIGURE 1-9 shows the configuration options switch bank on the front of the ESM (along with the Unit ID mentioned in TABLE 1-5). The switch bank has four switches. The settings and the functions controlled by the configuration switches are described in the following table.
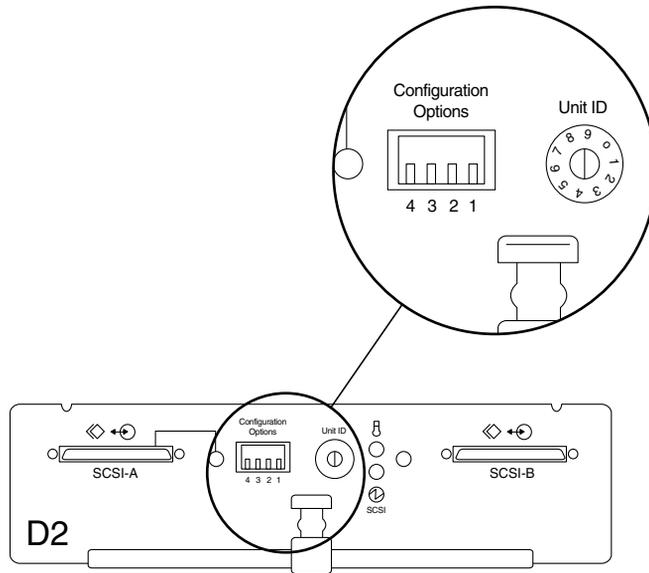
FIGURE 1-9　Configuration Options Switch Bank

Switch Number	Default Setting	Function
1	Varies by configuration	Up = single bus configuration
		Down = split bus configuration
2	Down	Up = Disable enclosure status reporting through the SAF-TE interface.
		Down = Enable enclosure status reporting through the SAF-TE interface.
3	Down	Reserved (no function)
4	Down	Reserved (no function)

TABLE 1-6 summarizes the relationship between the setting of switch 1 on the ESM, the number of ESMs, and the SCSI IDs for the disk in both single-bus and split-bus configurations.

TABLE 1-6 Summary of Switch 1 Settings and Disk SCSI IDs

Switch 1	Configuration	Left Disk Bank SCSI ID Numbers	Right Disk Bank SCSI ID Numbers
Up	Single-bus, single ESM (in position 0)	0, 1, 2, 3, 4, 5	8, 9, 10, 11, 12, 13
Down	Split-bus, two ESMs (in position 0 and position 1)	8, 9, 10, 11, 12, 13 Controlled by ESM 0	8, 9, 10, 11, 12, 13 Controlled by ESM 1

1.7.1.2 SCSI Connections

Each ESM has two independent Ultra3 SCSI bus connectors. Each ESM must be connected by at least one SCSI cable to at least one host.

You can connect the ESM to a host by means of either an embedded SCSI connector on the host, or a Sun StorEdge PCI Dual Ultra3 SCSI host adapter on the host. Supported Sun Solaris Workgroup Servers with embedded SCSI connectors are: Sun Enterprise ™220, 250, 420, 450, and Sun Fire 280R. You can connect any of these servers to the array using either the embedded connector or a Sun StorEdge PCI Dual Ultra3 SCSI host adapter that you would first install on the server.

The number and configuration of the host-to-array connections depends on your site's storage needs. See "Supported Configurations" on page 1-19.

If the cables needed for your configuration were not ordered with the Sun StorEdge D2 Array, contact your Sun sales representative. Supported tables are described in TABLE 1-7.

TABLE 1-7 Supported SCSI Cables

ESM Connected To:	Cable Type and Length	Part Number
Sun StorEdge PCI Dual Ultra3 SCSI host bus adapter	VHDCI/VHDCI .8 meter	X1136A
	VHDCI/VHDCI 1.2 meter	X1137A
	VHDCI/VHDCI 2 meter	X1138A
	VHDCI/VHDCI 4 meter	X3830B
	VHDCI/VHDCI 10 meter	X3831B
Embedded SCSI connector	HDC/VHDCI 2 meter	X3832A

The ESM has internal terminators for each SCSI bus connector. No external terminators are required. Daisy-chaining from one ESM to another is not supported. Only point-to-point SCSI connections from the host to the ESM are allowed.

1.7.2 Power Supplies

The Sun StorEdge D2 array has two hot-pluggable and interchangeable DC power supplies. They provide power to the internal components by converting incoming AC voltage to DC voltage. With these redundant power supplies, one power supply maintains electrical power to the system if the other power supply fails. Both power supplies are removable canisters that slide into one of two slots in the back of the system. Each canister has a locking handle, a power status LED, an AC power cord connector, and a power switch (FIGURE 1-10).

Locking handle

Power switch

Power cord connector   Power status LED
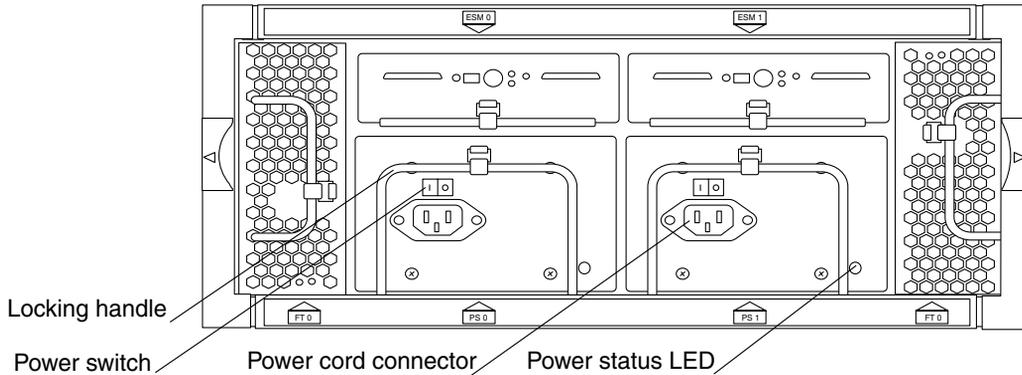
FIGURE 1-10 Power Supplies

As shown in the close-up of the power switch in FIGURE 1-11, left (with the **I** symbol) is On, and right (with the **O** symbol) is Off.

On   Off
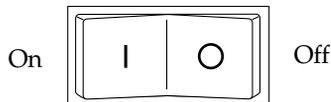
FIGURE 1-11 Close-up of Power Switch

1.7.3 Fans

The Sun StorEdge D2 array has two fan canisters. Each canister contains two fans. The fan canisters are hot-pluggable and interchangeable.

The array can operate fully cooled with three of the four fans functioning. If two fans fail, the remaining two fans can maintain the array in an 86° F (30° C) environment, but the reliability of the components may be affected.

⚠️ **Caution –** Do not operate the array for extended periods without both fan canisters installed. High temperatures can result, which can damage system components.

1.7.4 LEDs on the Power Supplies and Fan Canisters

FIGURE 1-12 shows the LEDs on power supplies and fan canisters.
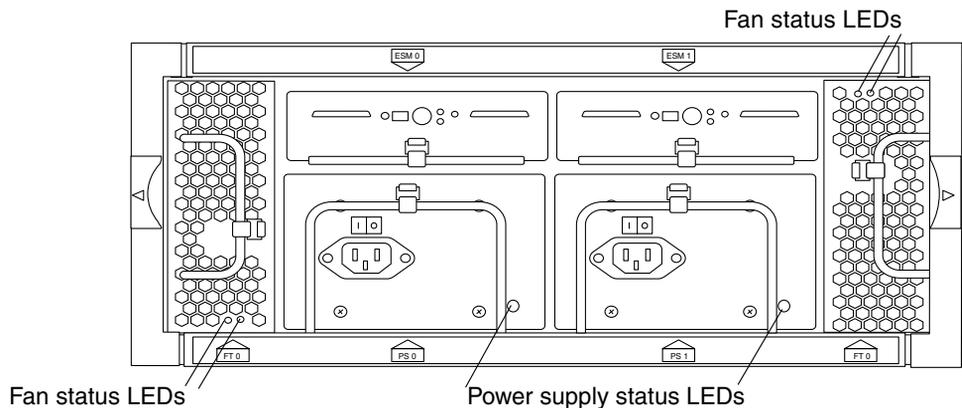
FIGURE 1-12 LEDs on Power Supplies and Fan Canisters

TABLE 1-8 describes the LEDs on the power supplies and fan canisters.

TABLE 1-8 Power Supply and Fan Canisters LED Descriptions

LED	Color	Description
Power Supply Status LED	Green	The power supply is operating properly.
	Amber	Either the power supply has failed while the other power supply is operating normally, or the power cord is unplugged.
	Off	Both power supplies either are not plugged in or have failed.

TABLE 1-8   Power Supply and Fan Canisters LED Descriptions

LED	Color	Description
Fan Status LEDs (one LED per fan)	Green	The fan is operating properly.
	Amber	The fan has failed.
	Off	The fan canister is not inserted or power is not supplied to the system.

1.8 Supported Configurations

TABLE 1-9 shows the maximums and minimums supported for the Sun StorEdge D2 array.

TABLE 1-9 Sun StorEdge D2 Array Supported Configurations

Number of ESMs	Number of hosts per ESM	Maximum	Termination	Disks
1 or 2 ESMs	1 or 2	2 ESMs, 4 hosts	Not required (automatic internal termination}	Up to 12 Ultra3 disks

1.8.1 Single-Bus Configuration

In a single-bus configuration, a single ESM controls all the disks. (FIGURE 1-7 shows how the disks are numbered.)

- A single ESM must be in position 0, which is the left slot as viewed from the rear of the enclosure.
- A filler must be in position 1, which is the right slot as viewed from the rear.
- Switch number 1 in the switch bank on the front of the ESM must be set Up.

FIGURE 1-13 shows a single ESM connected to a single host adapter on a single host. Another configuration that is not illustrated, but also supported is connecting the Sun StorEdge D2 array to an embedded SCSI connection in a supported Sun Solaris Workgroup Server. (The supported servers with embedded SCSI connections are listed on page 15.)
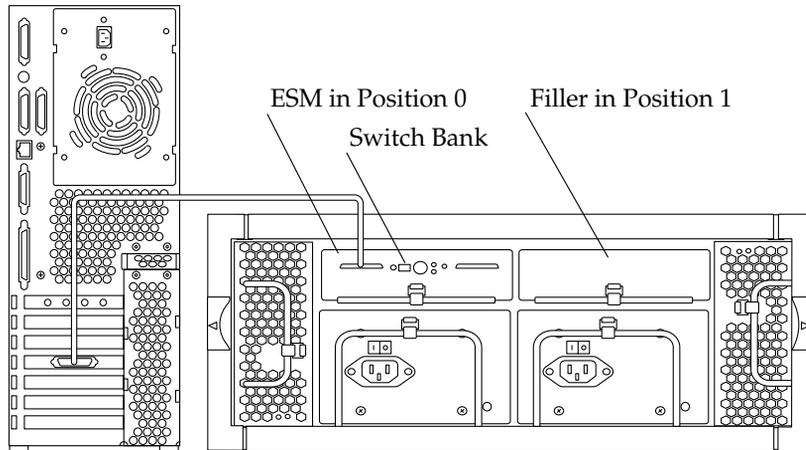
FIGURE 1-13 Single-Bus Configuration (With a Single ESM) Connected to a Host Adapter on a Single Host

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Note – The SCSI cable from a host can be connected to either the SCSI-A or SCSI-B connector on the ESM.

1.8.2 Split Bus Configuration

A split-bus configuration splits a single Sun StorEdge D2 array between two ESMs, with each ESM controlling half the disks. (FIGURE 1-8 shows how the disks are numbered.) The array can then be used either as two independent storage subsystems or as a single high-availability system.

- Two ESMs must be installed
- Switch number 1 in the switch bank on the front of both ESMs must be set Down.

FIGURE 1-14 shows the split-bus configuration with two ESMs connected to two different HBAs on a single host. The array is configured in this example for high availability. In this configuration, data is mirrored in the two separate sets of disks.
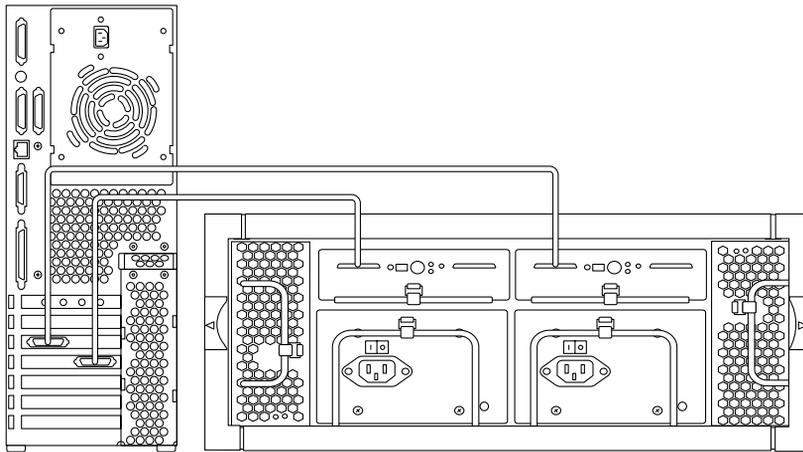
FIGURE 1-14 High-Availability Split-Bus Configuration (With Two ESMs), Two Host Adapters, and a Single Host

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Note – The SCSI cable from a host can be connected to either the SCSI-A or SCSI-B connector on the ESM.

FIGURE 1-15 shows a Sun StorEdge D2 array in a split-bus configuration with two ESMs connected to two hosts. Each host uses one half of the array independently.
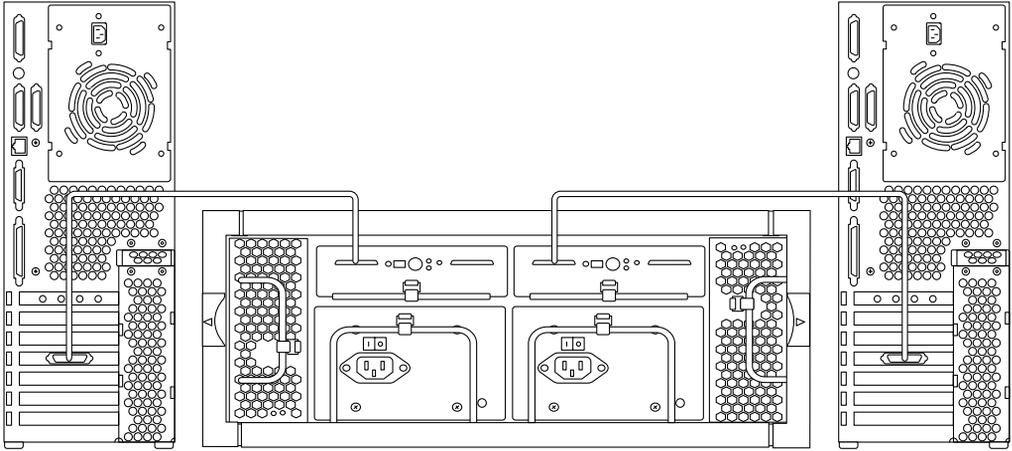
FIGURE 1-15 Split-Bus Configuration (With Two ESMs) and Two Hosts

1.8.3   Cluster Configuration

The Sun StorEdge D2 array supports clustering in its single enclosure with its high-availability, split-bus configuration capability. In a cluster configuration, the SCSI-A and SCSI-B ports of each ESM would be connected to a different host in the cluster. For specific guidelines, see the Sun Cluster system administration guide for the Sun Cluster version being used.

Setting Up and Configuring the Sun StorEdge D2 Array

This chapter describes the following procedures:

- "To Do Before You Begin" on page 2-2
- "To Mount the Array on a Desktop or Tabletop" on page 2-6
- "To Configure and Cable the Array" on page 2-7
- "To Configure the Array on the Host" on page 2-9

Caution – These procedures require two people to lift and move the array. Use care to avoid injury. An array can weigh up to 63 pounds.

▼ To Do Before You Begin

1. **Prepare the site for the installation according to the following requirements:**

   - Appendix A: "System Specifications" on page A-1
   - Appendix B: "Declaration of Conformity, Regulatory Compliance, and Safety Statements" on page B-1

2. **Unpack the array.**

   For an array to be installed on a desk or table top, the shipping box contains the following items:

   TABLE 2-1   Tabletop Array Inventory

Sun StorEdge D2 array
Two power cords
One disk drive manual
One or two SCSI cables (one for each ESM)
Two door keys
CD-ROM: Sun StorEdge D2 Array Documentation containing the following documents in PDF format along with the Adobe Acrobat reader: • *Sun StorEdge D2 Array Installation, Operation, and Service Manual (this manual)* • *Sun StorEdge A2 and D2 Arrays Cabinet Installation Guide*

   For an array to be installed in a cabinet, the shipping box contains the items in TABLE 2-2.

   TABLE 2-2   Rackmountable Array Inventory

Sun StorEdge D2 array with mounting tray
Two mounting brackets
16 #10-32 x 1/2 in screws
Two trim strips with four #10-14 x 7/16 in screws inserted
Four #10-14 x 7/16 in screws
Two power cords
One disk drive manual

TABLE 2-2   Rackmountable Array Inventory *(Continued)*

One or two SCSI cables (one for each ESM)
Two door keys
CD-ROM: Sun StorEdge D2 Documentation containing the following documents in PDF format along with the Adobe Acrobat reader: • *Sun StorEdge D2 Array Installation, Operation, and Service Manual* • *Sun StorEdge A2 and D2 Arrays Cabinet Installation Guide*

If you are converting a tabletop array to mounted the array in a cabinet, you need the Rackmount Upgrade Kit, which contains the following items:

TABLE 2-3   Rackmount Upgrade Kit Inventory

Two mounting brackets
16 10-32 x 1/2 in screws
Two trim strips with four 10-14 x 7/16 in screws inserted
Four 10-14 x 7/16 in screws

3. **Save the packing materials for possible future use.**

4. **Inspect the array for evidence of damage.**

   If the array is damaged, save all contents along with the packing materials for the shipping company's agent to inspect.

5. **Read the** *Sun StorEdge D2 Array Release Notes* **for updated product information that might be needed for a successful installation.**

6. **Make sure that you have the appropriate cables.**

   The SCSI cables you need should have been ordered with the Sun StorEdge D2 array. See TABLE 1-7 for supported SCSI cables.

   - If connecting to a supported Sun Solaris Workgroup Server with an embedded SCSI connector, use a cable with a HDC connector on the host end and a VHDCI connector on the array end.

   - If connecting to a host with a supported host bus adapter, use a cable with a VHDCI connector on both ends.

   See TABLE 1-7 for part numbers.

7. **Back up the file systems on the host that will be connected to the Sun StorEdge D2 array.**

8. **Prepare the connected host to be able to test and monitor the D2 array.**

   a. **Make sure both Network Storage Agent software and SunVTS are installed on the host that will be connected to the D2 array.**

      See Chapter 3 for details about the Network Storage Agent and SunVTS diagnostic software.

   b. **Make a map of the computer room that shows each array and assign a number to each ESM on the map.**

      FIGURE 2-1 shows an example map.

D2-9		D2-*N*		D2-32
D2-8		D2-*N*		D2-31
D2-7		D2-*N*		D2-30
D2-6		D2-*N*		D2-29
D2-5		D2-*N*		D2-28
D2-4		D2-*N*		D2-27
D2-3	D2-12	D2-*N*	D2-*N*	D2-26
D2-2	D2-11	D2-*N*	D2-*N*	D2-25
D2-1	D2-10	D2-*N*	D2-*N*	D2-24

Server and storage row 1

FIGURE 2-1   Example Map for One Row of Server and Storage Cabinets

You later assign the number you recorded on the map as the Unit ID for the ESM in Step 2 on page 7. When troubleshooting, you can go to Network Storage Agent Identity page to find the Unit ID of an array, and then you can use the number to find the location of the array on the map. (See "To Find a Array by a Unit ID assigned to the ESM(s)" on page 3-12.)

9. **If connecting the array to a host that needs a host bus adapter installed, or to a host that needs to be powered down for the installation, do the following substeps to start a cold installation.**

   a. **Halt operations and power off the host.**

      If disk management software is running on the host, consult the documentation for the software for how to halt operations. Refer to the Solaris system administration documentation, if necessary, for instructions on powering off the system.

   b. **Install the host adapter in the host, if needed.**

      For host adapter installation instructions, see the *Sun StorEdge PCI Dual Ultra3 SCSI Host Adapter Installation Guid*e and the *Sun StorEdge PCI Dual Ultra3 SCSI Host Adapter Release Notes*.

10. **Mount the array.**

    ■ On a desktop

      See "To Mount the Array on a Desktop or Tabletop" on page 2-6.

    ■ In a cabinet

      Follow the installation instructions in the *Sun StorEdge A2 and D2 Arrays Cabinet Installation Guide*.

11. **When you are finished mounting the array, go to "To Configure and Cable the Array" on page 2-7.**

▼ To Mount the Array on a Desktop or Tabletop

The array can be placed on a desk or table. Use the following guidelines to prepare a location for your system.

1. **Choose a desk or table that can support up to 63 pounds (28.6 kg)—which are the weights for one fully configured array.**

2. **Leave enough space in front and in back of the array to access components.**

Caution – Allow a minimum of 30 in (762 mm) of free space in front and in back of the array for fire safety reasons, adequate air flow, and access to parts for serviceability.

3. **Keep power and interface cables clear of foot traffic.**

   Route cables inside walls, under the floor, through the ceiling, or in protective channels. Route interface cables away from motors and other sources of magnetic or radio frequency interference.

4. **Make sure that the SCSI and power cable lengths do not exceed cable length limitations.**

   See the tables listing the supported cable lengths in TABLE 1-7.

5. **Ensure that the operating environment for the array does not exceed the specifications.**

   See Appendix A.1 for environmental specifications.

6. **Place the array horizontally in the designated location.**

Caution – Use two people to lift the array to avoid injury. It can weigh up to 63 pounds (28.6 kg).

Caution – Do not place the array in a vertical position.

7. **If you are installing a second array, you can stack it on top of the first array or place it next to the first one.**

   You are now ready to begin configuration. Go to "To Configure and Cable the Array" on page 2-7.

▼ To Configure and Cable the Array

1. **Make sure the option switch 1 is set properly for split-bus or single bus configuration.**

   - For single-bus configuration, make sure switch 1 is Up on the single ESM.

   - For a split-bus configuration (with two ESMs), make sure switch 1 is Down on both ESMs.
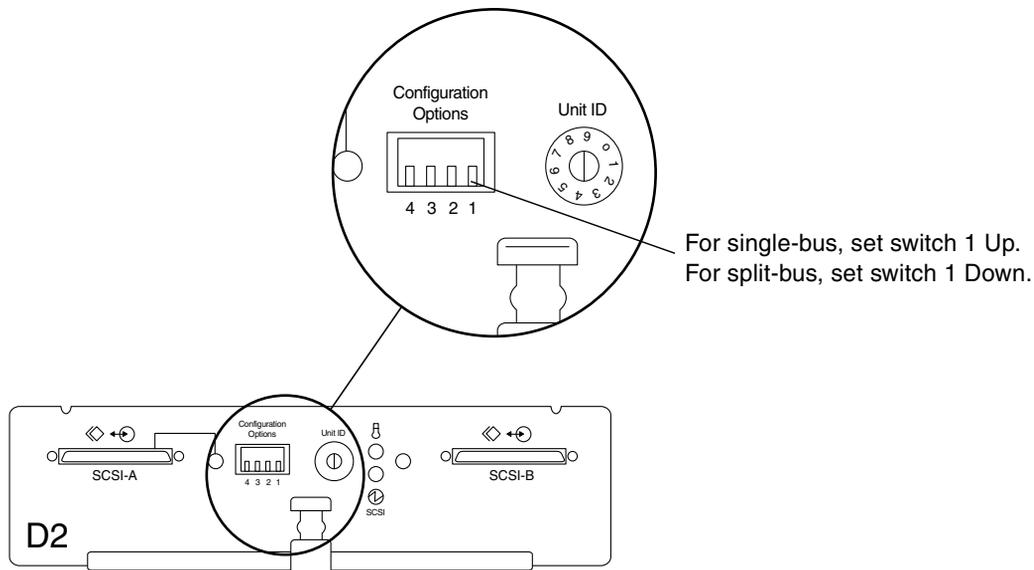
FIGURE 2-2 ESM With Configuration Options Switches

Caution – If you replace a failed ESM and the switch 1 is not set properly, data corruption can occur.

2. **Assign a number to the ESM using the Unit ID rotary switch.**

   See "Prepare the connected host to be able to test and monitor the D2 array." on page 2-4. Hint: When an array has two ESMs, assign the same number to both arrays,. The number is used for finding an array not for finding an individual ESM.

3. **Connect the SCSI cables between the host and the ESM.**

   See "Supported Configurations" on page 1-19, which shows where to connect the SCSI cables depending on the configuration.

4. Connect the power cords to the power cord connectors (FIGURE 2-3**).**

Power switch

Power cord connector
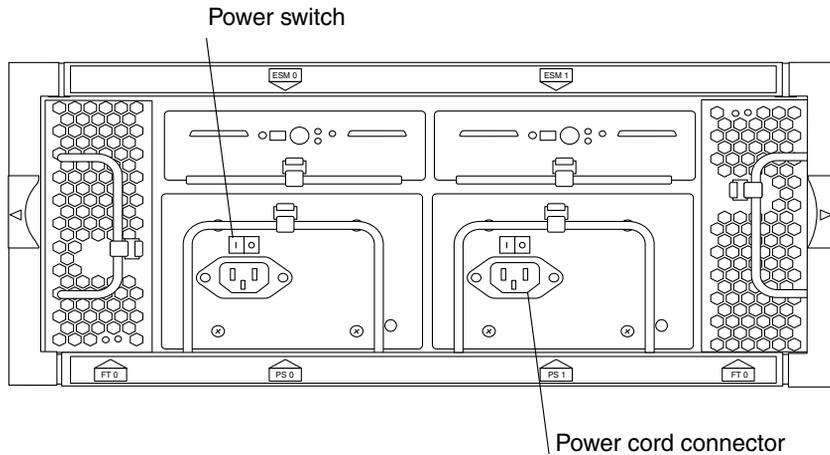
FIGURE 2-3   Power Switches and Power Cord Connector

5. Connect the other ends of the power cords into AC outlets.

Use independent power sources to ensure the highest availability.

6. Press the power switches on the power supplies to the On position (FIGURE 2-4**).**

On   Off

FIGURE 2-4   Close-up of Power Switch

The LEDs on the power supply and fan canisters are green when power is applied. For more information about the power supply and fan canister LEDs and for how to interpret them, see FIGURE 1-12, "LEDs on Power Supplies and Fan Canisters" on page 1-17.

7. Check the disk LEDs and the Subsystem LED at the front of the array to ensure that all components are receiving power and are functional.

The disks take up to one minute to spin up. When a disk has spun up, the disk's LED should be solid green, which indicates that the disk is receiving power and there is no disk activity.

For more information on the disk LEDs and the Subsystem LED and how to interpret them, see "Power and Subsystem LEDs" on page 1-7. If the Subsystem LED is amber, refer to "To Troubleshoot the Array When the Subsystem LED Is Amber" on page 3-5.

8. **If you powered off the connected host as described in Step 9a under "To Do Before You Begin" on page 2-2, power the host on again.**

▼ To Configure the Array on the Host

1. **Log into the connected host as root, entering the root password when prompted.**

2. **Use the `devfsadm` command to add new device entries in the `/dev/dsk` directory for the new disk drives:**

```
# devfsadm
```

See the `devfsadm`(1M) man page.

3. **Use the `format` command to check the disks and to label and partition them as required.**

See the `format`(1M) man page for more information.

a. **Enter the `format` command and check that all the disk drives in the new array are recognized by the host.**

CODE EXAMPLE 2-1 shows an example of output from the `format`(1) command when a Sun StorEdge D2 array is in split-bus mode (with two ESMs). The six disks associated with each ESM are identified as `t8` through `t13`. If needed, see "Device Naming Conventions" on page 4-4.

CODE EXAMPLE 2-1   Output From the `format` Command in Split-Bus Mode (with Two ESMs)

```
# format

AVAILABLE DISK SELECTIONS:
       0. c0t0d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
          /pci@1f,4000/scsi@3/sd@0,0
       1. c0t1d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
          /pci@1f,4000/scsi@3/sd@1,0
skipping ...

      10. c9t8d0 <SUN36G cyl 24619 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@4/sd@8,0
      11. c9t9d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@4/sd@9,0
      12. c9t10d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@4/sd@a,0
      13. c9t11d0 <SUN36G cyl 24619 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@4/sd@b,0
      14. c9t12d0 <SUN36G cyl 24619 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@4/sd@c,0
      15. c9t13d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@4/sd@d,0
      16. c10t8d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@5/sd@8,0
      17. c10t9d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@5/sd@9,0
      18. c10t10d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@5/sd@a,0
      19. c10t11d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@5/sd@b,0
      20. c10t12d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@5/sd@c,0
      21. c10t13d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@5/sd@d,0
Specify disk (enter its number):
```

CODE EXAMPLE 2-2 shows an example of output from the `format`(1) command when a Sun StorEdge D2 array is in single-bus mode. The disks would have targets `t0` through `t5` and `t8` through `t13`, as shown below.

CODE EXAMPLE 2-2 Output From the `format` Command in Single-Bus Mode (With One ESM)

```
# format

AVAILABLE DISK SELECTIONS:
       0. c0t0d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
          /pci@1f,4000/scsi@3/sd@0,0
       1. c0t1d0 <SUN9.0G cyl 4924 alt 2 hd 27 sec 133>
          /pci@1f,4000/scsi@3/sd@1,0
skipping ...

      10. c9t0d0 <SUN36G cyl 24619 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@4/sd@8,0
      11. c9t1d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@4/sd@9,0
      12. c9t2d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@4/sd@a,0
      13. c9t3d0 <SUN36G cyl 24619 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@4/sd@b,0
      14. c9t4d0 <SUN36G cyl 24619 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@4/sd@c,0
      15. c9t5d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@4/sd@d,0
      16. c9 t8d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@5/sd@8,0
      17. c9t9d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@5/sd@9,0
      18. c9t10d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@5/sd@a,0
      19. c9t11d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@5/sd@b,0
      20. c9t12d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@5/sd@c,0
      21. c9t13d0 <SUN36G cyl 24620 alt 2 hd 27 sec 107>
          /pci@1f,2000/pci@1/scsi@5/sd@d,0
Specify disk (enter its number):
```

b. Partition and label each disk if desired.

4. Use SunVTS `disktest` **to ensure all disk drives are operational.**

See the *SunVTS Test Reference Manual*.

5. **Use** `SunVTS enctest` **to test the enclosure services and to ensure that the enclosure power and temperature are optimal.**

   If the host is running a version of the SunVTS software without support for testing the enclosure, you can still validate the enclosure by using Network Storage Agent or by visual inspection to verify that the Subsystem LED is green. See "SunVTS Test Software" on page 3-2 and "Network Storage Agent" on page 3-3 for how to use these diagnostic tools. Also see the *SunVTS Test Reference Manual*.

6. **Use the** `newfs` **command to create file systems on the disks, as needed.**

   ```
   # newfs /dev/rdsk/cwtxdysz
   ```

   See "Device Naming Conventions" on page 4-4 for device naming conventions, if needed. Also see the `newfs`(1M) man page for complete filesystem-creation options.

7. **Mount new file systems using the** `mount` **command.**

   ```
   # mount mount_point
   ```

   where: *mount_point* is the directory on which the faulty disk was mounted.

   See the `mount`(1M) man page for complete mounting options.

Monitoring and Troubleshooting the Sun StorEdge D2 Array

This chapter contains the following sections and procedures:

- SunVTS Test Software
- To Install SunVTS Software
- Network Storage Agent
- To Install Network Storage Agent
- Task Overview for Monitoring the Health of the Array
- Troubleshooting
- To Troubleshoot the Array When the Subsystem LED Is Amber
- Task Overview for Using Network Storage Agent to Locate Faulty Disks
- To Find the Device Name of a Faulty Disk
- To Bring up the Network Storage Agent Maintain Devices Page
- To Bring up the Network Storage Agent Maintain Devices Page
- To Find a Disk's Device Name and SCSI ID on an Update D2 Page
- To Find a Drive or Enclosure
- To Find a Array by a Unit ID assigned to the ESM(s)

3.1 SunVTS Test Software

The SunVTS™ software application is the Sun Validation Test Suite. SunVTS software verifies the connectivity and functionality of hardware controllers and devices on Sun platforms.

SunVTS software and documentation is shipped with the Solaris operating environment on the Software Supplement CD-ROM.

Support for testing the enclosure of the Sun StorEdge D2 array was added starting with the SunVTS 4.5 release.

Earlier versions of SunVTS before 4.5 can be used for other functions, such as testing of disks in the Sun StorEdge D2 array.

▼ To Install SunVTS Software

● **See "Installing SunVTS" in the** *SunVTS 4.5 User's Guide* **for how to install SunVTS 4.5 from the** *Software Supplement for the Solaris 8 Operating Environment 11/01* **CD-ROM.**

If using another SunVTS version, see the user's guide for that version.

3.2 Network Storage Agent

The Network Storage Agent (also known as RAS Agent) is used to monitor storage devices and can be set up to send local email notifications of alerts to system administrators. The information gathered by the agent can be sent to the Network Storage Command Center (NSCC) using a Sun Microsystems-approved transport mechanism. The Network Storage Agent monitors message files for errors to generate alerts if problems are found.

▼ To Install Network Storage Agent

1. **Download and read the Sun StorEdge D2 Array** *Release Notes* **as described in "To Access Sun StorEdge Documents Online" on page -15.**

2. **Follow any supplementary installation instructions for Network Storage Agent found in the Sun StorEdge D2 Array** *Release Notes* **in addition to the following step.**

3. **Download the Network Storage Agent from Sun's download center.**

Note – Network Storage Agent must be installed in the `/opt` directory.

3.3 Task Overview for Monitoring the Health of the Array

TABLE 3-1 Tasks for Monitoring the Health of the Array

Task	Where Documented/Notes
Look for evidence of a disk failure in log files.	• Refer to the documentation that comes with the disk to find out where the device driver logs errors. • Also search for messages about disk failures in `/var/adm/messages`.
Invoke the SunVTS enctest (enclosure test) at any time to test the health of the enclosure (if you are using a version of SunVTS with D2 enctest support).	Support for the Sun StorEdge D2 array was added to enctest starting in SunVTS 4.5. SunVTS 4.5 is available with the Solaris 8 operating environment update 11/01. You can run SunVTS in either a CDE or an OpenWindows GUI or on the command line. See the *SunVTS Test Reference Manual* for how to access the enctest dialog box in the GUI and for command line options. See the *SunVTS User's Guide* for other information.
Use the Identify function of Network Storage Agent to cause the Subsystem LED to blink on the array where a problem is located.	See "Locate the Unit ID on the map created in Step 8 on page 4." on page 3-12.
Set up Network Storage Agent software periodically poll the enclosure and to send notifications of problems to your system administrator or to Sun's Network Storage Command Center (NSCC).	See the Network Storage Agent documents listed in "Before You Read This Book" on page -12.

3.4　Troubleshooting

If the Subsystem LED is amber when the Sun StorEdge D2 array is powered on, a fault has been detected in either a power supply or a fan, or an over-temperature condition exists.

Section 1.6.4, "Power and Subsystem LEDs" on page 1-7 describes which LED is the Subsystem LED.

▼ To Troubleshoot the Array When the Subsystem LED Is Amber

1. **Check the status LEDs on the power supplies and fan canisters in the rear of the D2 array.**

   Refer to FIGURE 1-12, "LEDs on Power Supplies and Fan Canisters" on page 1-17 for the location of the status LEDs.

2. **If there is a fault on one of the fan canisters, re-seat the canister by following the instructions for replacing a fan canister in "To Remove and Replace a Fan Canister" on page 4-14.**

3. **If there is a fault on one of the power supplies, check the following:**

   - Is the power cord properly seated and is power present?
   - Is the power switch turned on?
   - Re-seat the power supply by following the instructions for replacing a power supply. See "To Remove and Replace a Power Supply" on page 4-16.

3.5 Task Overview for Using Network Storage Agent to Locate Faulty Disks

The following tables lists the tasks to perform to locate a faulty disk or array. The tables also contain links to procedures for performing the listed tasks.

TABLE 3-2   Tasks for Using Network Storage Agent to Locate Faulty Disks

Task	Where Documented/Notes
1. Find the device name of the faulty disk.	"To Find the Device Name of a Faulty Disk" on page 3-7
2. Find the Network Storage Monitor HTML page that lists the faulty disk.	"To Bring up the Network Storage Agent Maintain Devices Page" on page 3-7 "To Find a Disk's Device Name and SCSI ID on an Update D2 Page" on page 3-8
3. Start the LED blinking on a disk's slot or on the array's enclosure.	"To Find a Drive or Enclosure" on page 3-10
4. Find the disk by locating a blinking LED on the front of the array (if the array's location is known).	Locating a disk by finding a blinking LED can only be done easily if you know the location of the array. If you have a large number of arrays, and if you do not already know the location of the array, you might be able to locate it by Unit ID as described in Task 5.
5. Find the array that contains the faulty disk by means of a Unit ID assigned to the ESM(s) and recorded in a map during installation of the array.	"To Find a Array by a Unit ID assigned to the ESM(s)" on page 3-12 **Note**: The above mentioned procedure works only if you assigned a Unit ID to the ESM(s) as described in Step 2 on page 7, and if you recorded the number in your storage unit map as described in Step 8 on page 4.

▼ To Find the Device Name of a Faulty Disk

Do this procedure to find the device name (c*w*t*x*d*y*) of the disk that failed. If needed, see "Device Naming Conventions" on page 4-4.

1. **If disk management software is being used on the host connected to the array, find the device name of the failed disk by following the applicable procedure in the documentation that came with the software.**

   Different applications provide various levels of error logging. In general, you can find messages about failing or failed disks in your system's console window.

2. **If no disk management software is being used, find the device name of the failed disk in** `/var/adm/messages`**.**

▼ To Bring up the Network Storage Agent Maintain Devices Page

1. **Bring up the Network Storage Agent Administration Page.**

   See the Network Storage Agent documentation if needed.

2. **Click the <u>Maintenance</u> link at the top of the page.**

Maintenance link
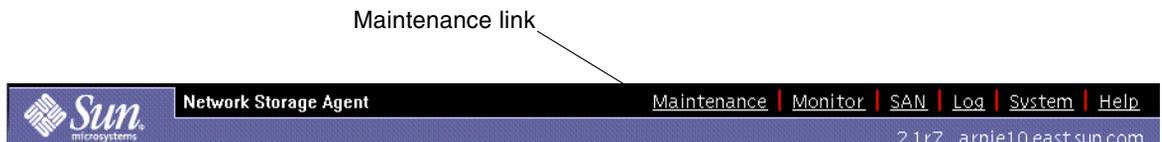
3. **Click the <u>Maintain Devices</u> link in the left navigation bar.**
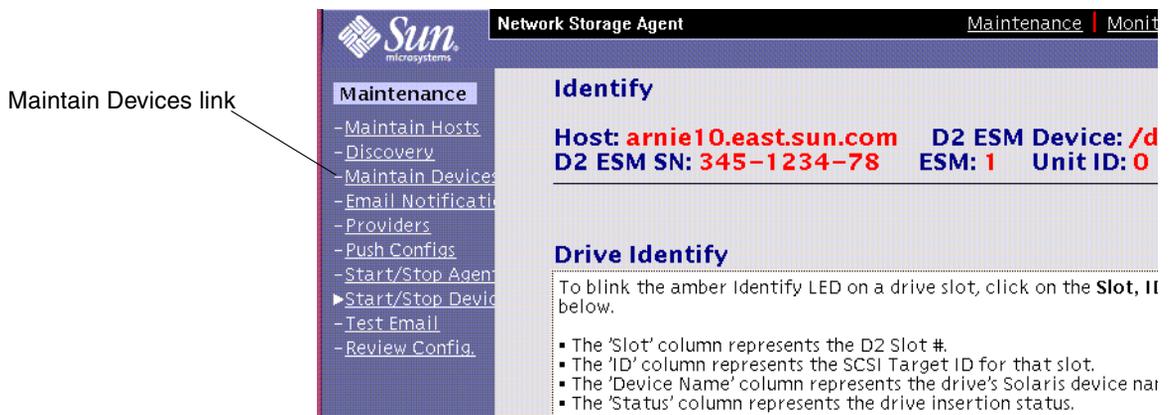
4. **When the Maintain Devices page displays, go to your next task in the** TABLE 3-2 **on page 6.**

▼ To Find a Disk's Device Name and SCSI ID on an Update D2 Page

This procedure shows how to click on the name of each device in turn on the Network Storage Agent Maintain Devices HTML page until you locate a disk listed by its device name on the Maintain Devices: Update D2 page.

Note – The name in this example are `ses1` and `ses3`, which are the names associated with the ESMs' SCSI device: `/dev/es/ses1` and `/dev/es/ses3` .

1. **On the Maintain Devices page, in the List Existing Devices table, click on the name of a device in the** <u>Name</u> **column.**

2. **On the Maintain Devices: Update D2 page, click the Identify button at the bottom of the table.**

3. **On the Identify page, in the Drive Identify section, look for the device name (*cwtxdysz*) of the failed drive in the Device Name column.**

Drive Identify

To blink the amber Identify LED on a drive slot, click on the **Slot, ID,** or **Device Name** link below.

- The 'Slot' column represents the D2 Slot #.
- The 'ID' column represents the SCSI Target ID for that slot.
- The 'Device Name' column represents the drive's Solaris device name.
- The 'Status' column represents the drive insertion status.

- **NOTE:** It is a good idea to turn off all identify LEDs before leaving this window.

Slot	ID	Device Name	Status
0	8	c2t8d0	Drive inserted.
1	9	c2t9d0	Drive inserted.
2	10	c2t10d0	Drive inserted.
3	11	c2t11d0	Drive inserted.
4	12	c2t12d0	Drive inserted.
5	13	c2t13d0	Drive inserted.
Turn off all Drive Identify LEDs @ /dev/es/ses1 (ESM: 1, Unit: 0)			

4. **Note the SCSI ID number shown in the ID column.**

As described under "ESM" on page 1-11, the physical disk label on the front of the chassis shows the relation between a drive's SCSI ID and slot number. See FIGURE 1-6, FIGURE 1-7, and FIGURE 1-8 starting on page 12 for how to identify which SCSI ID number corresponds to the disk, depending on whether the array is in split-bus or single-bus configuration. Alternately, you can cause the LED to blink on the drive by following the steps in "To Find a Drive or Enclosure" on page 3-10.

5. **If you do not find the device name of the disk drive you are looking for in the Device Name column, click the Back button and start again with Step 1 on page 8.**

6. **Once you find the disk drive's device name, go to the next applicable task in the** TABLE 3-2 **on page 6.**

▼ To Find a Drive or Enclosure

1. Go to the Identify D2 page.

If needed, see "To Bring up the Network Storage Agent Maintain Devices Page" on page 3-7 and "To Find a Disk's Device Name and SCSI ID on an Update D2 Page" on page 3-8.

2. Blink the amber Identify LED on a drive slot by clicking on the Slot, ID, or Device Name link associated with the drive.

Drive Identify

To blink the amber Identify LED on a drive slot, click on the **Slot, ID,** or **Device Name** link below.

- The 'Slot' column represents the D2 Slot #.
- The 'ID' column represents the SCSI Target ID for that slot.
- The 'Device Name' column represents the drive's Solaris device name.
- The 'Status' column represents the drive insertion status.

- **NOTE:** It is a good idea to turn off all identify LEDs before leaving this window.

Slot	ID	Device Name	Status
0	8	c2t8d0	Drive inserted.
1	9	c2t9d0	Drive inserted.
2	10	c2t10d0	Drive inserted.
3	11	c2t11d0	Drive inserted.
4	12	c2t12d0	Drive inserted.
5	13	c2t13d0	Drive inserted.
Turn off all Drive Identify LEDs @ /dev/es/ses1 (ESM: 1, Unit: 0)			

The following screen displays.

Turn on D2 Drive Identify LED: Slot 2, /dev/es/ses1

Slot 2: Drive Identify LED on.

Back

If needed, refer to FIGURE 1-2 for where the disk LEDs are located on the front of the array.

3. Click the Back button to return to the Identify page.

4. **Blink the amber Subsystem Fault LED.**

   a. **Scroll down to the D2 Identify section of the window.**

   b. **Click on the link for the D2 array enclosure as shown in the following screen.**

D2 Identify

To blink the amber Subsystem LED on a D2, click on the **Identify D2** link below.

- **NOTE:** If the D2 Subsystem LED is set solid amber, this is an indication of a fault in the D2 and clicking the **Identify D2** link below will not override it. The **Monitor –> Instrumentation** page should be checked to determine the cause of the fault.

- **NOTE:** In split–bus mode (6 slots per ESM), both ESMs in the D2 can blink the same D2 Subsystem LED, but only the ESM that turned on the D2 Subsystem LED can turn it off.

- **NOTE:** It is a good idea to turn off all identify LEDs before leaving this window.

Link for turning on the Subsystem LED

Identify D2 @ /dev/es/ses1 (ESM: 1, Unit: 0) via Subsystem LED

The following screen displays.

Turn on D2 Subsystem LED: /dev/es/ses1

D2 Subsystem LED on.

Back

If there are no existing subsystem faults, the Subsystem LED on the front of the enclosure starts blinking amber.

Note – If a failure previously occurred on the array, the Subsystem LED on the front of the array would already be solid amber. The enclosure Identify function cannot override this state of the LED.

---

5. **Click the Back button to return to the Identify page.**

6. **Refer to** FIGURE 1-1**, "Array Front With Door Open and Disk Slots Accessible" on page 1-7 (if needed) for the location of the Subsystem LED on the Sun StorEdge D2 array.**

7. **Before leaving the Identify page turn off the LED(s).**

   a. **Scroll to the bottom of the D2 Identify section.**

   b. **Click on the applicable link(s) as shown in the following screen example.**

> Turn off Subsystem LED @ /dev/es/ses1 (ESM: 1, Unit: 0)
>
> Turn off all Identify LEDs (Subsystem and Drive) @ /dev/es/ses1

▼ To Find a Array by a Unit ID assigned to the ESM(s)

1. **Go to the Network Storage Agent's Identify D2 page.**

   If needed, see "To Bring up the Network Storage Agent Maintain Devices Page" on page 3-7 and "To Find a Disk's Device Name and SCSI ID on an Update D2 Page" on page 3-8.

2. **Find the Unit ID in the information at the top of the page.**

> **Identify**
>
> **Host:** arnie10.east.sun.com   **D2 ESM Device:** /dev/es/ses1
> **D2 ESM SN:** 345−1234−78   **ESM:** 1   **Unit ID:** 3

Note – The Unit ID must be set as described in Step 2 on page 7.

3. **Locate the Unit ID on the map created in Step 8 on page 4.**

Adding and Replacing FRUs

This chapter describes how to remove and replace Field Replaceable Units (FRUs) and how to add more disk drives. This chapter contains the following sections:

This chapter contains the following procedures:

4.1 Hot- and Cold-Pluggable FRUs

The Sun StorEdge D2 Array 's FRUs are listed in TABLE 4-1. Hot-pluggable FRUs can be replaced while the system is running. Cold-pluggable parts can be replaced only when the power is off.

TABLE 4-1   Hot- and Cold-Pluggable FRUs

FRU Type	FRU	Instructions
Hot-pluggable	Disk drives	"Overview of Disk Drive Replacement Procedures" on page 4-4
	Fan canisters	See "To Remove and Replace a Fan Canister" on page 4-14.
	Power supplies	See "To Remove and Replace a Power Supply" on page 4-16.
	ESM	See "To Remove an ESM" on page 4-17 and "To Replace an ESM" on page 4-19.
Cold-pluggable	Chassis, front door, and midplane (replaced as a single unit)	See "Replacing the Chassis" on page 4-21 and: • "To Remove the Removable Components from the Chassis" on page 4-22 • "To Remove and Re-Attach the Mounting Tray" on page 4-23 • "To Replace the Removable Components in the Chassis" on page 4-24 • "To Reconfigure the Array on the Host" on page 4-25

4.2 ESD Precautions

To prevent damage while removing and replacing the static-sensitive parts, observe the following electrostatic discharge (ESD) precautions:

- Keep the power cords plugged into grounded power outlets except when someone is working with the array's electrical components.

Caution – Avoid contact with the power supplies and all other AC electrical components while the unit is connected to a power outlet.

- Use an antistatic wrist strap when touching the internal components of the array.
- Avoid direct contact with static-sensitive parts as far as possible. Avoid touching connectors and discrete components.
- Keep replacement parts in their shipping containers until you are ready to install them.
- Do not place static-sensitive parts on any metal surface. If you need to put down a static-sensitive part, put it back inside its protective shipping bag or put it on a grounded antistatic mat.
- Be especially careful when installing the array or when handling components in dry climates or where cold-weather heating is used. The low relative humidity in such environments provides greater potential for producing static electricity.

Note – In environments with high potential for static electricity, take additional precautions, such as using an antistatic smock or a grounded antistatic mat.

4.3 Replacing Disk Drives

The Sun StorEdge D2 Array hardware supports hot-plugging of disk drives as long as the software framework managing the disk drives is taken into account. The method you use to replace a faulty disk drive depends on the disk management application you are using. While the Solaris system software does not provide hot-plug functionality to shield the operating system from the physical removal and replacement of a disk drive, you can safely remove a disk drive or add it to the array's enclosure if you follow the guidelines and procedures in this section.

Caution – As with other high-RAS (reliability availability serviceability) products, do not pull drives out before stopping activity on the disk drive.

4.3.1 Device Naming Conventions

When formatting disks and looking for disk errors, you need to understand device naming conventions for disks in arrays. The naming convention for disks in an array is *cwtxdysz*, where:

- *w* corresponds to the SCSI controller
- *x* corresponds to the SCSI ID number of the disk
- *y* is the logical number for the disk drive
- *z* is the slice (or partition) on the disk

For example, if the array is connected to the second connector connected to controller c2 on the host adapter, the disk drive in the slot with SCSI ID 4 and with the logical number 2 has the following device names:
/dev/dsk/c2t4d2s[0-7] and /dev/rdsk/c2t4d2s[0-7].

4.3.2 Overview of Disk Drive Replacement Procedures

Hot plugging a disk drive involves the procedures listed below, which appear with cross-references to the pages where they are described

⚠ Caution – Only a qualified system administrator should perform these procedures. Performing hot-plug operations on an active disk drive without performing the proper procedures can result in data loss and/or data corruption.

TABLE 4-2   Disk Drive Replacement Tasks

Task	Where Documented
Determining which disk drive is failing or has failed	"To Find the Device Name of a Faulty Disk" on page 3-7 "To Bring up the Network Storage Agent Maintain Devices Page" on page 3-7 "To Find a Drive or Enclosure" on page 3-10 "To Find a Array by a Unit ID assigned to the ESM(s)" on page 3-12
Stopping disk activity	• If you are not using any disk management software, you must stop the activity on the disk and reconfigure it using UNIX filesystem-management commands in "To Prepare to Replace a Disk Drive (UNIX)" on page 4-6 • If you are using VERITAS Volume Manager (VxVM) disk management software, go to "To Prepare to Replace a Disk Drive (VxVM)" on page 4-8. • If you are using a disk management application other than VxVM, refer to the documentation for that software.
Removing the disk	"To Remove a Disk Drive" on page 4-9
Adding the replacement drive	"To Install a Disk Drive" on page 4-10
Reconfiguring the operating environment	Go to the instructions that apply: • "To Restore a File System (UNIX)" on page 4-12 • "To Re-Create a VxVM Configuration on the New Disk (VxVM)" on page 4-13

▼ To Prepare to Replace a Disk Drive (UNIX)

Do this procedure to stop activity on the disk using UNIX filesystem-management commands on the connected host.

1. **Perform this procedure as root (superuser).**

2. **Determine which file system(s) are on the disk:**

```
# mount | grep cwtxdysz
```

   For example, if the disk to be replaced is c1t3d0, you would type the following command line:

```
# mount | grep c1t3d0
/export/home   (/dev/dsk/c1t3d0s7):   98892 blocks   142713 files
/export/home2  (/dev/dsk/c1t3d0s5):  153424 blocks   112107 files
```

3. **Stop any application processes on the host where the disk array is connected.**

4. **Back up the file system(s) identified in Step 2.**

5. **Determine and save the partition table for the disk.**

   If the replacement disk is the same type as the faulty disk, use the save command in format to save a copy of the partition table for the faulty disk to the /etc/format.dat file. This enables you to configure the replacement disk later so that its layout matches the current disk.

   Refer to the format(1M) man page for more information.

6. **Unmount any file systems on the disk.**

   Note – If the file system(s) are on a disk that is failing or has failed, the umount operation may not complete. A large number of error messages might be displayed in the system console and in the /var directory during the umount operation. If the umount operation does not complete, you may have to restart the host.

   For each file system returned, type:

```
# umount filesystem
```

   where *filesystem* is the first field for each line returned in Step 2.

For example:

```
# umount /export/home
# umount /export/home
```

7. **Using the** `df` **command with the** `-k` **option, verify that the file system has been unmounted.**

   If it is unmounted, it no longer appears in the list.

8. **Remove the failed disk drive.**

   Go to "To Remove a Disk Drive" on page 4-9.

▼ To Prepare to Replace a Disk Drive (VxVM)

Do this procedure to stop activity on the disk using VxVM commands on the connected host. Before you start this procedure, terminate all user- and application-level processes on all volumes, plexes, and/or subdisks that are located on the drive.

1. **Back up your system.**

2. **Identify the disk media name for the disk you intend to replace.**

   ```
   # vxdisk list | grep cwtxdysz
   ```

   For example, if the disk to be replaced is c1t3d0, you would type:

   ```
   # vxdisk list | grep c0t3d0
   c1t3d0s2    sliced    disk01        rootdg        online
   ```

   The disk media name is the third field in the output above: disk01.

   You can use the vxdiskadm utility to prepare the disk for replacement.

3. **Use the vxdiskadm command to prepare the disk for replacement.**

   ```
   # vxdiskadm
   ```

   This operation is interactive and requires user confirmation of the operation. See the *VERITAS Volume Manager Administrator's Guide* for more information.

   a. **Select the "Remove a disk for replacement" option.**

      When prompted for a disk name to replace, type the disk media name from Step 2.

      vxdiskadm marks the disk to be replaced and saves the subdisk information to be rebuilt on the replacement disk.

      Redundant data is automatically recovered after the replacement disk has been reattached to VERITAS Volume Manager. Nonredundant data is identified as unusable and must be re-created from backups.

      Refer to the vxdiskadm(1M) man page for further details.

   b. **Quit the vxdiskadm utility.**

4. **Remove the failed disk drive.**

   Go to "To Remove a Disk Drive" on page 4-9.

▼ To Remove a Disk Drive

1. Go to the front of the Sun StorEdge D2 array.

2. Unlock and open the door at the front of the chassis.

Push down the button latch at the center of the door (FIGURE 4-1).
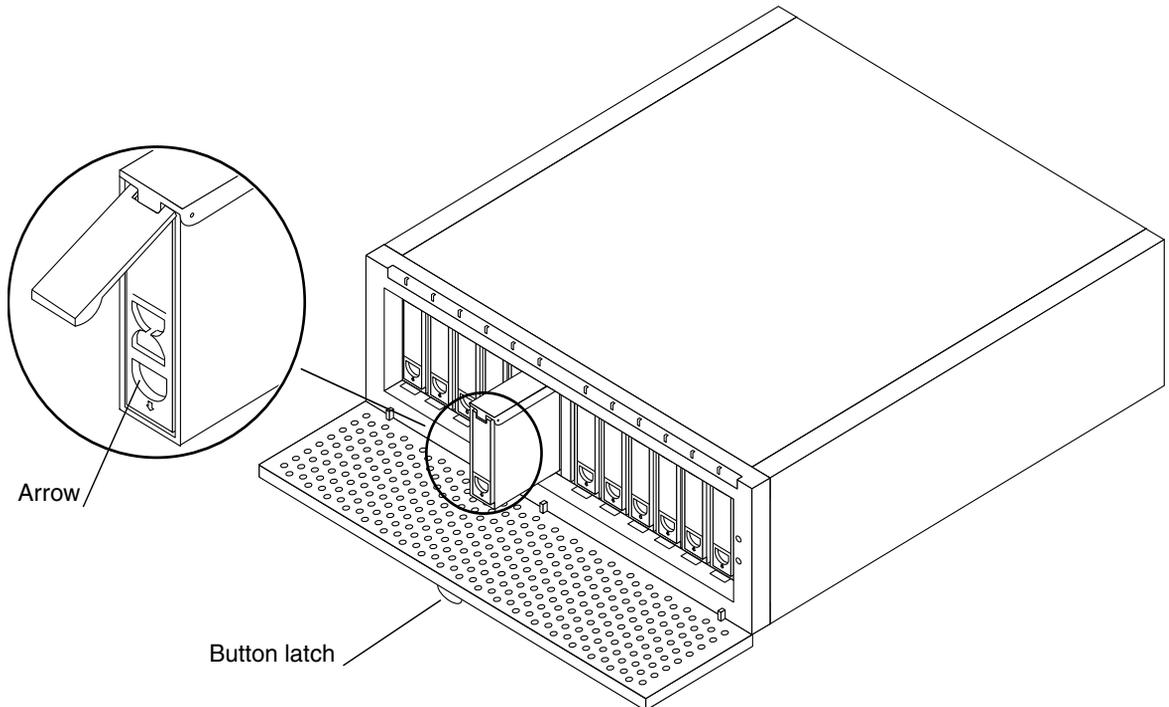
FIGURE 4-1   Removing and Replacing a Disk Drive

3. Unlatch the drive bracket handle to release it.

Press down on the finger slot on the front of the disk drive (the arrow indicates which direction to press). The handle pops out (FIGURE 4-1).

4. Continue to pivot the disk drive bracket handle against the chassis while pulling the disk out, until the disk disconnects.

⚠️ **Caution –** After disconnecting the disk, leave it in the drive bay for at least 30 seconds before removing it. After the disk has had time to spin down, you can remove it from the drive bay.

5. Place both hands under the drive for support, and pull the drive from the chassis.

6. Go to "To Install a Disk Drive" on page 4-10 for how to replace the drive.

▼ To Install a Disk Drive

1. **Go to the front of the Sun StorEdge D2 array.**

2. **Unlock and open the door at the front of the chassis.**

   Push down the button latch at the center of the door (FIGURE 4-1).

Arrow

Button latch
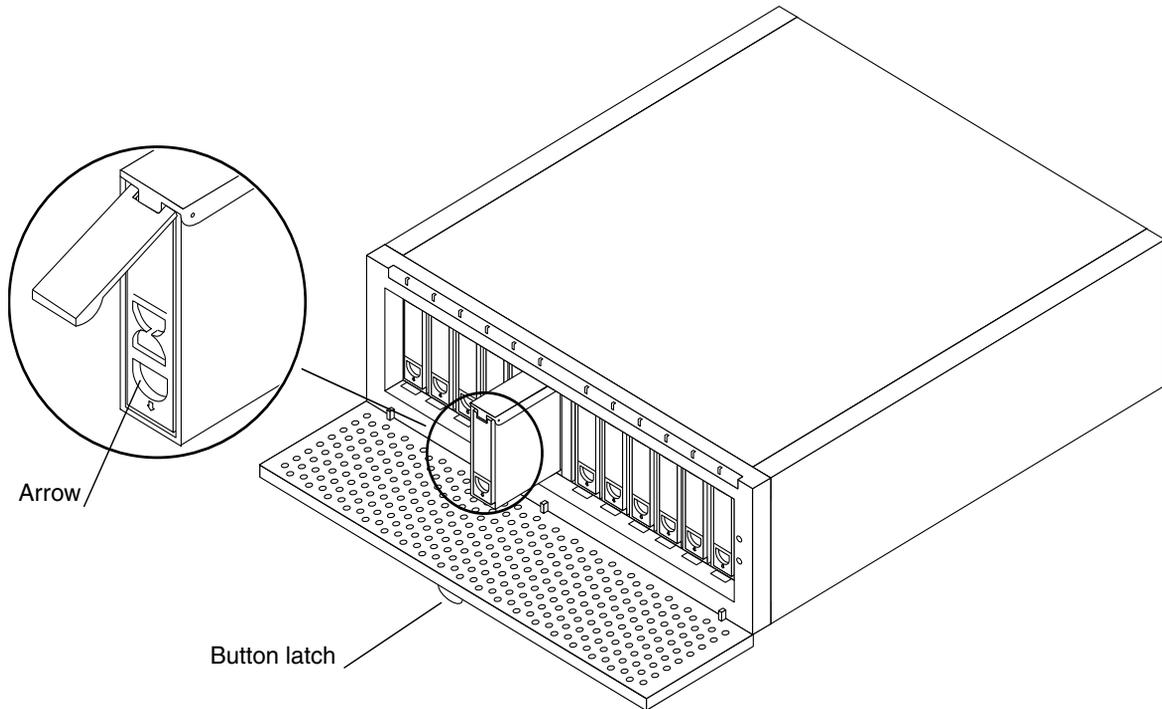
FIGURE 4-2   Removing and Replacing a Disk Drive

3. **Release the latch on the replacement disk drive.**

   Press down on the finger slot on the front of the disk drive (the arrow indicates which direction to press. The handle pops out (FIGURE 4-1).

4. **Support the replacement disk drive with both hands and align it with the appropriate slot.**

5. **Tilt the drive slightly downward to begin sliding it into the slot.**

6. **Slide the drive into the chassis until the drive clicks into place.**

7. **Press the handle down to secure the drive into position.**

Note – When the disk drive is firmly installed, it begins to spin up automatically. It can take up to a minute for a drive to start spinning up, depending on its SCSI ID. Once the drive is spun up and ready, the drive's LED lights solid green.

8. **Use the** `devfsadm` **command to add the new device:**

```
# devfsadm
```

9. **Use the** `ls`**(1) command to verify that the new disk has been created.**

For example, you would type the following where `c1t4d0s*` is the expected device name for the new drive with SCSI ID 4.

```
# ls -l /dev/dsk/c1t4d4s*
```

The new disk drive is now available for use as a block or character device. Refer to the `sd`(7) man pages for further details.

10. **Reconfigure the disk.**

Go to the instructions that apply:

- To Restore a File System (UNIX)
- To Re-Create a VxVM Configuration on the New Disk (VxVM)

If you are using another disk management application, refer to the documentation for that software.

▼ To Restore a File System (UNIX)

Use the following procedure to configure a slice (also known as a partition) on a disk.

1. **Verify that the device label meets your requirements.**

   You can use the `prtvtoc` command to inspect the label for your disk. To modify the label, use the `format` command. See the `prtvtoc`(1M) and `format`(1M) man pages for more information.

2. **Ensure that the disk's partitions match those of the file system(s) you intend to re-create.**

   You can use the `prtvtoc` command to inspect the label for your device. If you need to modify the disk layout, use the `format` command. Refer to the `prtvtoc`(1M) and `format`(1M) man pages for more information. For example:

   ```
   # prtvtoc /dev/rdsk/cwtxdysz
   ```

   If you have saved a copy of the disk's partition table using the `format` utility and if the replacement disk type matches the old disk type, then you can use the `format` utility's `partition` function to configure the partition table of the replacement disk. See the `select` and `label` commands in the partition menu.

   If the replacement disk is of a different type than the disk it replaced, you can use the partition size information from the previous disk as a guideline when formatting the partitions on the replacement disk.

3. **After you have partitioned the disk, identify the disk slice on which to build the file system.**

4. **Once you have selected a disk slice for the file system, use the `newfs` command to create a file system on the slice:**

   ```
   # newfs /dev/rdsk/cwtxdysz
   ```

5. **Mount the new file system using the `mount` command:**

   ```
   # mount mount-point
   ```

   where: *mount-point* is the directory on which the faulty disk was mounted.

   The new disk is ready to be used. You can now restore data onto the new disk from backups of the failed disk.

▼ To Re-Create a VxVM Configuration on the New Disk (VxVM)

1. Use the `vxdctl` **command to enable the VERITAS Volume Manager (VxVM) software to recognize the new disk.**

```
# vxdctl enable
```

2. Use the `vxdiskadm` **command to replace the failed disk.**

Select the "Replace a failed or removed disk" option.

This operation requires user confirmation. When prompted for a disk name to replace, use the disk media name from Step 2 on page 8.

`vxdiskadm` supplies a list of available disks to be used as replacements.

3. Select the replacement drive.

`vxdiskadm` automatically configures the replacement drive to match the failed drive.

Redundant data is recovered automatically. Space for nonredundant data is created and identified. Nonredundant data must be recovered from backing store.

See the `vxdiskadm` man pages for further details.

You have completed the replacement of the failed drive.

▼ To Remove and Replace a Fan Canister

If a fan fails, its LED on the back of the fan canister lights amber, indicating which fan has failed. To replace a fan, you must replace the entire canister.

Fan canister locking handles

Fan status LEDs

Fan status LEDs
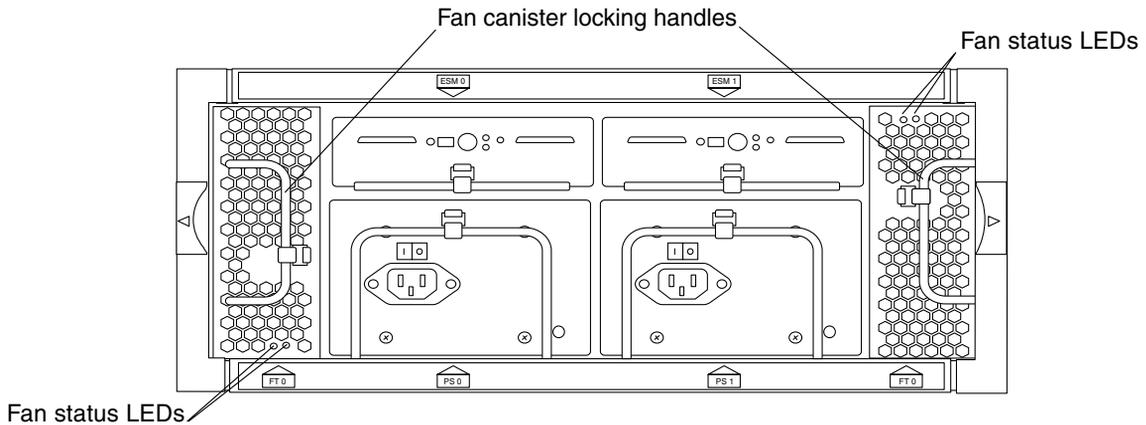
FIGURE 4-3 Fan Canisters

1. Release the locking handle and pull the fan canister out (FIGURE 4-4**).**
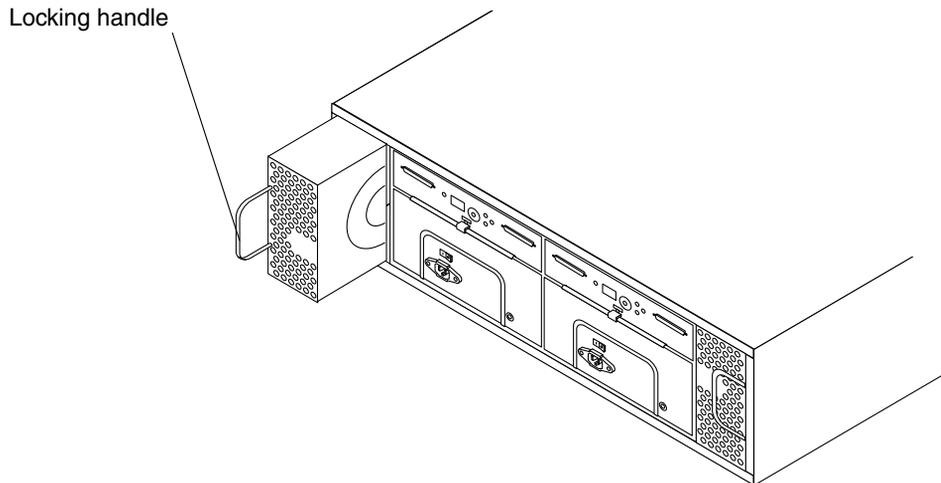
Locking handle

FIGURE 4-4 Removing and Replacing a Fan Canister

2. **Orient the new fan canister so that the round intake holes face inward and the locking handle is on the outside edge of the canister.**

   The locking handle should face inward when it is closed.

3. **Slide the new fan canister into the slot and push it until it engages.**

   The LEDs on the fan canister light green when the connector is properly engaged.

4. **Close the locking handle.**

▼ To Remove and Replace a Power Supply

As shown in TABLE 1-8, the amber LED on a power supply indicates that either the power supply has failed or that the power supply's power cord is disconnected. Although the system can run well with only one power supply, a faulty power supply should be replaced in case the remaining good one fails. You can replace a failed or failing power supply without turning the array off.

1. **Disconnect the power cord from the power supply you intend to replace.**

   You cannot remove the power supply without first disconnecting the power cord. See FIGURE 4-3 for the locations of the power connector and locking handle.
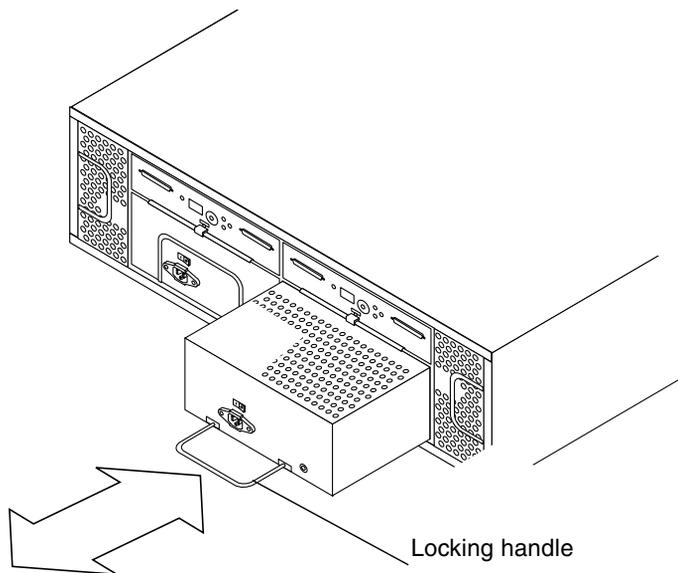
Locking handle

FIGURE 4-5   Removing and Replacing a Power Supply

2. **Pull the locking handle down and slide the power supply out of the bay (**FIGURE 4-5**).**

3. **Slide the new power supply into the bay.**

   Small rails on the power supply base fit into cut-outs in the chassis.

4. **Push firmly until the power supply connector engages.**

5. **Push the locking handle up into the closed position and connect the power cord.**

6. **Press the power switch on.**

   The LED for the power supply should light green.

▼ To Remove an ESM

> **Note –** With a dual ESM configuration, activity through the ESM that is not being replaced can continue during the following procedure.

1. **Stop any disk management software's communication with the ESM that is being removed.**

   See the documentation that came with the disk management software.

2. **Remove the SCSI cable(s) connected to the ESM.**

3. **Pull out the two metal locking bars at the bottom to release the ESM (**FIGURE 4-6**).**
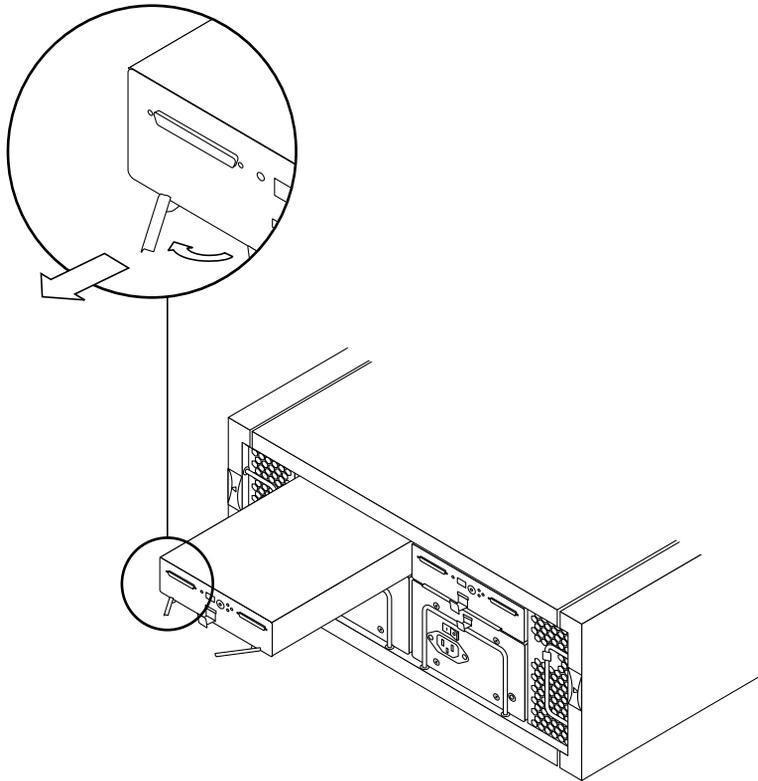
FIGURE 4-6   Pulling out the Metal Locking Bars to Release an ESM

4. **Grasp the metal bars and pull to slide out the ESM (**FIGURE 4-7**).**
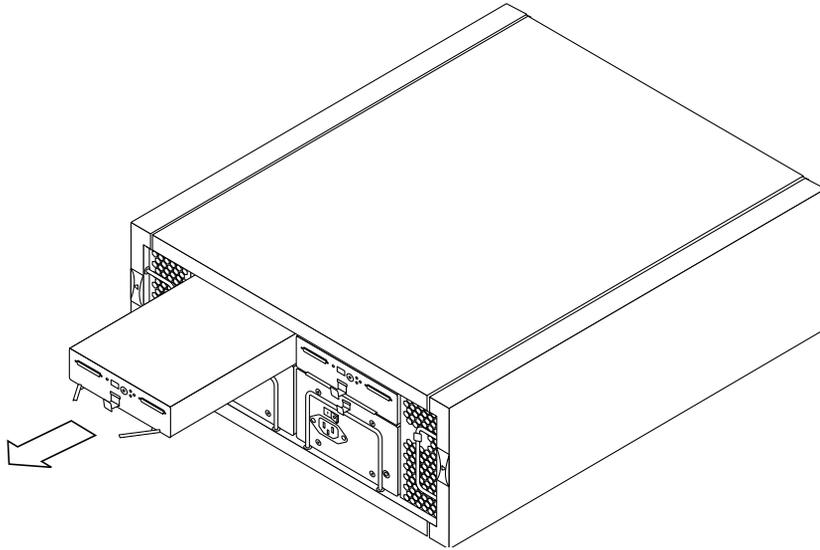
FIGURE 4-7   Removing the ESM

▼ To Replace an ESM

1. **Go to the back of the array or turn the array so that the back is facing you.**

2. **Remove the ESM from the antistatic bag.**

3. **Make sure the switch 1 is set properly on the ESM for split-bus or single bus configuration.**

   The following figure shows a close-up of the configuration options switches.

   - For a split-bus configuration, make sure switch 1 is Down on both ESMs.
   - For a single-bus configuration, make sure switch 1 is Up.
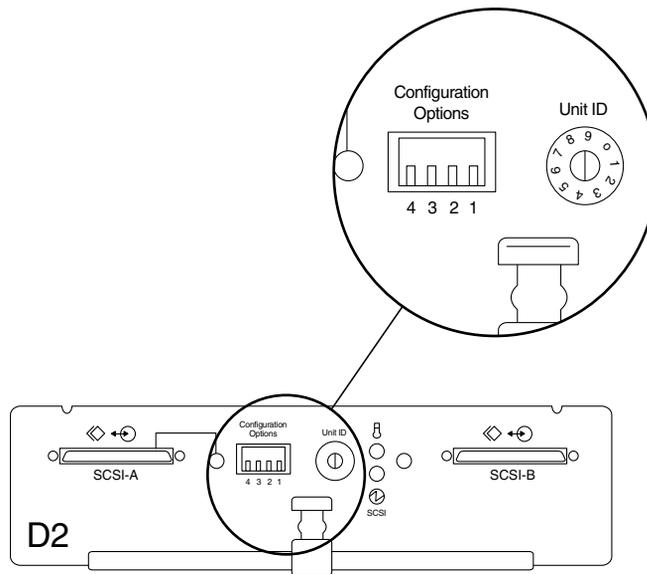
Caution – If you replace a failed ESM and the switch 1 is not set properly, data corruption can occur.

4. **Pull out the two metal locking bars located on the bottom front of the ESM.**

5. **Position the ESM in the appropriate chassis slot with the top side up.**

6. **With both hands, carefully slide the ESM into the slot, ensuring that the flange on the canister top rides on the guides in the chassis.**

7. **Push the ESM into the slot until the clips lock the metal locking bars in place.**

   The Power LED lights green.

8. **Connect the SCSI cable(s).**

   If the SCSI cables are attached to a host that is powered off, the Termination Power LED lights green.

9. **Use SunVTS** `enctest` **to ensure that the ESM is properly monitoring the enclosure's status.**

10. **Use SunVTS** `disktest` **to ensure that all disk drives are being accessed through the new ESM.**

4.4 Replacing the Chassis

Perform the following procedures to replace the chassis:

- "To Remove the Removable Components from the Chassis" on page 4-22
- "To Remove and Re-Attach the Mounting Tray" on page 4-23 (if the array is installed in a cabinet)
- "To Replace the Removable Components in the Chassis" on page 4-24
- "To Reconfigure the Array on the Host" on page 4-25

▼ To Remove the Removable Components from the Chassis

1. **Stop all disk activity.**

   - If you are not using any disk management software, you must stop the activity on the disk using UNIX filesystem-management commands in "To Prepare to Replace a Disk Drive (UNIX)" on page 4-6

   - If you are using VERITAS Volume Manager (VxVM) disk management software, use VxVM commands in "To Prepare to Replace a Disk Drive (VxVM)" on page 4-8.

   - If you are using a disk management application other than VxVM, refer to the documentation for that software.

2. **Go to the back of the array whose chassis is to be replaced or turn the array so that the back is facing you.**

3. **Turn off the power switches and disconnect the power cords from both power supplies.**

   See "To Remove an ESM" on page 4-17 for this and the following two steps.

4. **Remove and label the SCSI cable(s) connected to the ESM(s).**

5. **Remove the ESM(s).**

6. **Remove both fan canisters by releasing the locking handles and pulling the fan canisters out.**

   See "To Remove and Replace a Fan Canister" on page 4-14.

7. **Remove both power supplies by pulling the locking handles down and sliding the power supplies out of the bay.**

   See "To Remove and Replace a Power Supply" on page 4-16.

8. **Go to the front of the array being replaced, or turn the array so that the front is facing you.**

9. **Unlock and open the front door.**

10. **Remove each disk drive, putting a physical label on each drive to record the slot from which it was pulled.**

    See "To Remove a Disk Drive" on page 4-9.

▼ To Remove and Re-Attach the Mounting Tray

If the array is installed in a cabinet, after doing the procedure "To Remove the Removable Components from the Chassis" on page 4-22, perform the following steps.

1. **Remove the chassis and its connected tray from the cabinet.**

   a. **Remove the screws and the trim strip at the front of the chassis and the screws at the back of the tray and set the screws aside for later use.**

   b. **Slide the chassis in its tray out of the mounting bracket in the cabinet.**

   Note the array's location in the cabinet.

2. **Remove the tray from the chassis.**

   a. **Turn the chassis and tray upside down on a foam sheet or other protective surface to prevent scratches.**

   b. **Remove the four screws from the bottom of the tray and set the screws and the tray aside.**

   c. **Put the old chassis aside.**

3. **Install the tray on the replacement chassis.**

   a. **Turn the new chassis upside down on a foam sheet or other protective surface to prevent scratches.**

   b. **Place the tray onto the new chassis.**

   c. **Install the four screws set aside in Step 2 through the bottom of the tray into the bottom of the array.**

4. **Install the replacement chassis into the cabinet.**

   a. **Turn the chassis top side up.**

   b. **Slide the chassis in its tray onto the correct mounting bracket in the cabinet.**

   c. **Replace the screws and trim strip at the front and the screws at the back of the tray.**

▼ To Replace the Removable Components in the Chassis

1. **Go to the front of the replacement chassis, or turn the chassis so that the front is facing you.**

2. **Insert all disk drives taken from the old chassis into the same slot locations they were in the old chassis.**

   See "To Install a Disk Drive" on page 4-10.

3. **Go to the back of the replacement chassis, or turn the chassis so that the back is facing you.**

4. **Insert both fan canisters taken from the old chassis.**

   See "To Remove and Replace a Fan Canister" on page 4-14.

5. **Insert both power supply canisters taken from the old chassis, and reattach the power cords.**

   See "To Remove and Replace a Power Supply" on page 4-16.

6. **Insert the ESM(s) taken from the old chassis.**

   See "To Replace an ESM" on page 4-19.

7. **Connect the SCSI cable(s) to the ESM(s).**

8. **Turn on the power switches on the power supplies.**

9. **Check the disk LEDs and the Subsystem LED at the front of the array to ensure that all components are receiving power and are functional.**

10. **Close and lock the front door.**

11. **If you powered off the connected host, power the host on again.**

▼ To Reconfigure the Array on the Host

1. **Log into the connected host as root, entering the root password when prompted.**

2. **Use the** `devfsadm` **command to add new device entries in the** `/dev/dsk` **directory for the new disk drives.**

3. **Use the** `format` **command to check the disks, and to label and partition them if required.**

4. **Run SunVTS** `disktest` **to ensure that all disk drives are operational.**

5. **Run SunVTS** `enctest` **to test the enclosure's services and to ensure that the enclosure's power and temperature are optimal.**

6. **Use the** `newfs` **command to create file systems on the disks, as needed.**

7. **Mount new file systems using the** `mount` **command.**

System Specifications

This appendix includes the following specifications for the StorEdge D2 Array:

- "Air Flow and Other Clearance Requirements" on page 2
- "Physical Specifications" on page 3
- "Electrical Specifications" on page 3
- "Environmental Specifications" on page 4

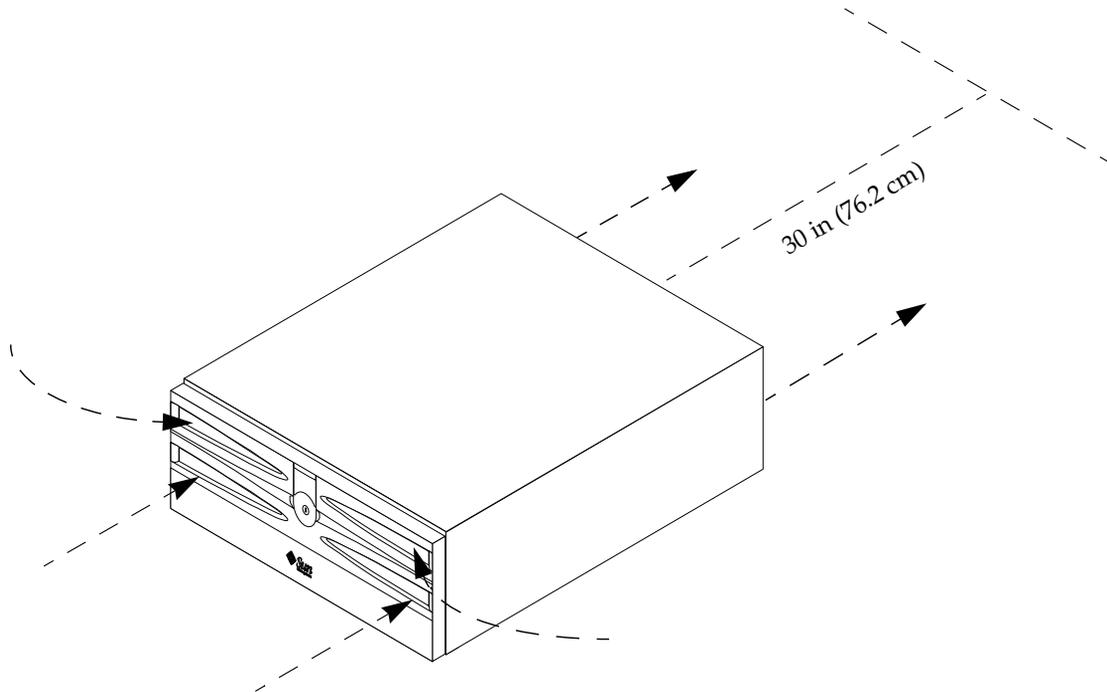# A.1 Air Flow and Other Clearance Requirements

30 in (76.2 cm)

FIGURE A-1 Sun StorEdge D2 Array Air Flow Clearance Requirements

Air is taken into the front of StorEdge D2 Array and is exhausted out the back, as shown in FIGURE A-1. Take care to protect adjacent systems from exposure to the heated air coming from the back of the array. Exposure to the exhausted air can damage the components of an exposed system and can weaken the mounting hardware of the cabinet in which the system may be mounted.

To avoid the above-stated risks, to meet fire safety standards, and to enable easy access to the components in the back for servicing, do not place any other systems within 30 in (76.2 cm) of the back of the array.

No side clearance is required.

A.2 Physical Specifications

TABLE A-2 and TABLE A-2 shows the width, depth, height, and weight of the array.

TABLE A-1   Measurements

Specification	U.S.	Metric
Width	21.0 in	53.34 cm
Depth	17.6 in	44.7 cm
Height	7.0 in	17.78 cm

TABLE A-2   Weights

Weight[1]	U.S.	Metric
Without disks	43.5 lbs	19.7 kg
Fully loaded	63 lbs	28.6 kg

1. The unit's total weight depends on the number of components installed in the chassis. The fully loaded weight includes two ESMs

A.3 Electrical Specifications

TABLE A-3 shows the AC power requirements.

TABLE A-3   AC Power Requirements

Electrical Element	Requirement
Voltage	100-120 VAC to 220-240 VAC
Frequency	47 - 63 Hz
Idle	1.64 amps at 120 VAC
Max. Operating	2.05 amps at 120 VAC
Max. Surge	22 amp peaks

A.4 Environmental Specifications

TABLE A-4   Environmental Specifications

Climate Control	Location	Farenheit	Celsius
Temperature (dry bulb)	Operating	41°F to 104°F	5° C to 40°C
	Storage	-4°F to 140°F	-20°C to 60°C
	Transit	-4°F to 140°F	-20°C to 60°C
Temperature Derating (max.)[1]	Operating	1.7°F per 1000 ft above sea level	3.3°C per 1000m
Relative humidity (non-condensing)	Operating	20% to 80%	20% to 80%
	Storage	10% to 93%	10% to 93%
	Transit	5% to 95%	5% to 95%
Altitude (based on drives)	Operating	100 ft below to 10,000 ft above sea level	3 Km below to 3,048m above sea level
	Storage	100 ft below to 10,000 ft above sea level	30.5m below to 10,000 ft above sea level
	Transit	100 ft below to 40,000 ft above sea level	30.5m below to 12,000m above sea level
Heat dissipation (maximum)	Operating	260 Watts, 1092 BTU per hour	260 Watts, 1092 BTU per hour
Sound power and pressure	Operating	6.6 bels (power), 63.7 dBA (pressure)	6.6 bels (power), 63.7 dBA (pressure)

1. If you plan to operate the array at altitudes between 1000m and 3000m (3280 ft and 9850 ft), you must lower the environmental temperature 1.7° F (3.3° C) for every 1000m (3280 ft) above sea level.

Declaration of Conformity, Regulatory Compliance, and Safety Statements

This appendix contains the following information that applies to the Sun StorEdge D2 array.

- "Declaration of Conformity" on page 3
- "Regulatory Compliance Statements" on page 5
- "Safety Agency Compliance Statements" on page 9

B.1 Declaration of Conformity

Compliance Model Number:	1630
Product Family Name:	Sun StorEdgeA1000 Array, Tabletop
	Sun StorEdge D1000 Array, Tabletop
	Sun StorEdge A2 Array
	Sun StorEdge D2 Array

EMC

USA - FCC Class B

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1) This equipment may not cause harmful interference.

2) This equipment must accept any interference that may cause undesired operation.

European Union

This equipment complies with the following requirements of the EMC Directive 89/336/EEC:

As Telecommunication Network Equipment (TNE) in both Telecom and Other Than Telecom Centers per:

EN300-386:2000   Required Limits (as applicable):

EN55022/CISPR22	Class B
EN300-386:2000	Subclause 6.2 (DC port Conducted Emissions 20 kHz - 30 MHz)
EN61000-3-2	Pass
EN61000-3-3	Pass
EN61000-4-2	Criteria B: 6 kV (Direct), 8 kV (Air)
	Criteria R: 8 kV (Direct), 15 kV (Air)
EN61000-4-3	3 V/m
EN61000-4-4	1 kV AC and DC Power Lines, 0.5 kV Signal Lines
EN61000-4-5	Criteria B: 2 kV AC Line-Gnd, 0.5 kV Indoor Signal Lines
	1 kV AC Line-Line and Outdoor Signal Lines
	Criteria R: 2 kV AC Line-Line, 4 kV AC Line-Gnd and
	Outdoor Signal Lines as applicable
EN61000-4-6	3 V
EN61000-4-11	Pass

As Information Technology Equipment (ITE) Class B per:

EN55022:1998/CISPR22:1997   Class B

EN55024:1998   Required Limits (as applicable):

EN61000-4-2	4 kV (Direct), 8 kV (Air)
EN61000-4-3	3 V/m
EN61000-4-4	1 kV AC Power Lines, 0.5 kV Signal and DC Power Lines
EN61000-4-5	1 kV AC Line-Line and Outdoor Signal Lines
	2 kV AC Line-Gnd, 0.5 kV DC Power Lines
EN61000-4-6	3 V
EN61000-4-8	1 A/m
EN61000-4-11	Pass

EN61000-3-2:1995 + A1, A2, A14   Pass

Safety
This equipment complies with the following requirements of Low Voltage Directive 73/23/EEC:
EC Type Examination Certificates:

EN60950:1992, 2nd Edition, Amendments 1, 2, 3, 4   TÜV Rheinland Certificate No. S 9772487
IEC 950:1991, 2nd Edition, Amendments 1, 2, 3   CB Scheme Certificate No. UL2108-138989/USA
Evaluated to all CB Countries

Supplementary Information
This product was tested and complies with all the requirements for the CE Mark.

/S/ _____   /S/ _____

Dennis P. Symanski   DATE   Peter Arkless   DA
Manager, Compliance Engineering   Quality Manager
Sun Microsystems, Inc.   Sun Microsystems Scotland, Limited
901 San Antonio Road, MPK15-102   Springfield, Linlithgow
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B.2 Regulatory Compliance Statements

Your Sun product is marked to indicate its compliance class:

- Federal Communications Commission (FCC) — USA
- Industry Canada Equipment Standard for Digital Equipment (ICES-003) — Canada
- Voluntary Control Council for Interference (VCCI) — Japan
- Bureau of Standards Metrology and Inspection (BSMI) — Taiwan

Please read the appropriate section that corresponds to the marking on your Sun product before attempting to install the product.

FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables to comply with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted-pair (UTP) cables.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

FCC Class B Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Shielded Cables: Connections between the workstation and peripherals must be made using shielded cables in order

to maintain compliance with FCC radio frequency emission limits. Networking connections can be made using unshielded twisted pair (UTP) cables.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

ICES-003 Class A Notice - Avis NMB-003, Classe A

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

ICES-003 Class B Notice - Avis NMB-003, Classe B

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

VCCI 基準について

クラス A VCCI 基準について

クラス A VCCI の表示があるワークステーションおよびオプション製品は、クラス A 情報技術装置です。これらの製品には、下記の項目が該当します。

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

クラス B VCCI 基準について

クラス B VCCI の表示 VCI があるワークステーションおよびオプション製品は、クラス B 情報技術装置です。これらの製品には、下記の項目が該当します。

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをしてください。

BSMI Class A Notice

The following statement is applicable to products shipped to Taiwan and marked as Class A on the product compliance
label.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用
時，可能會造成射頻 干擾，在這種情況下，
使用者會被要求採取某些適當的對策。

B.3　Safety Agency Compliance Statements

Read this section before beginning any procedure. The following text provides safety precautions to follow when installing a Sun Microsystems product.

Safety Precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions and instructions marked on the equipment.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

Symbols

The following symbols may appear in this book:

Caution – There is a risk of personal injury and equipment damage. Follow the instructions.

Caution – Hot surface. Avoid contact. Surfaces are hot and may cause personal injury if touched.

Caution – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

Caution – Applies AC power to the system.

Depending on the type of power switch your device has, one of the following symbols may be used:

Caution – Removes AC power from the system.

Caution – The On/Standby switch is in the standby position.

Modifications to Equipment

Do not make mechanical or electrical modifications to the equipment. Sun Microsystems is not responsible for regulatory compliance of a modified Sun product.

Placement of a Sun Product

Caution – Do not block or cover the openings of your Sun product. Never place a Sun product near a radiator or heat register. Failure to follow these guidelines can cause overheating and affect the reliability of your Sun product.

Caution – The workplace-dependent noise level defined in DIN 45 635 Part 1000 must be 70Db(A) or less.

SELV Compliance

Safety status of I/O connections comply to SELV requirements.

Power Cord Connection

Caution – Sun products are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electric shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

Caution – Not all power cords have the same current ratings. Household extension cords do not have overload protection and are not meant for use with computer systems. Do not use household extension cords with your Sun product.

Caution – Your Sun product is shipped with a grounding type (three-wire) power cord. To reduce the risk of electric shock, always plug the cord into a grounded power outlet

The following caution applies only to devices with a Standby power switch:

Caution – The power switch of this product functions as a standby type device only. The power cord serves as the primary disconnect device for the system. Be sure to plug the power cord into a grounded power outlet that is nearby the system and is readily accessible. Do not connect the power cord when the power supply has been removed from the system chassis.

System Unit Cover

You must remove the cover of your Sun computer system unit to add cards, memory, or internal storage devices. Be sure to replace the top cover before powering on your computer system.

Caution – Do not operate Sun products without the top cover in place. Failure to take this precaution may result in personal injury and system damage.

Laser Compliance Notice

Sun products that use laser technology comply with Class 1 laser requirements.

> Class 1 Laser Product
> Luokan 1 Laserlaite
> Klasse 1 Laser Apparat
> Laser KLasse 1
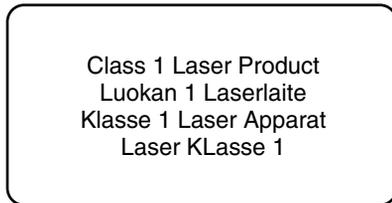
CD-ROM

⚠ **Caution –** Use of controls, adjustments, or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

Einhaltung sicherheitsbehördlicher Vorschriften

Auf dieser Seite werden Sicherheitsrichtlinien beschrieben, die bei der Installation von Sun-Produkten zu beachten sind.

Sicherheitsvorkehrungen

Treffen Sie zu Ihrem eigenen Schutz die folgenden Sicherheitsvorkehrungen, wenn Sie Ihr Gerät installieren:

- Beachten Sie alle auf den Geräten angebrachten Warnhinweise und Anweisungen.
- Vergewissern Sie sich, daß Spannung und Frequenz Ihrer Stromquelle mit der Spannung und Frequenz übereinstimmen, die auf dem Etikett mit den elektrischen Nennwerten des Geräts angegeben sind.
- Stecken Sie auf keinen Fall irgendwelche Gegenstände in Öffnungen in den Geräten. Leitfähige Gegenstände könnten aufgrund der möglicherweise vorliegenden gefährlichen Spannungen einen Kurzschluß verursachen, der einen Brand, Stromschlag oder Geräteschaden herbeiführen kann.

Symbole

Die Symbole in diesem Handbuch haben folgende Bedeutung:

⚠ **Achtung –** Gefahr von Verletzung und Geräteschaden. Befolgen Sie die Anweisungen

♨ **Achtung –** Hohe Temperatur. Nicht berühren, da Verletzungsgefahr durch heiße Oberfläche besteht.

⚡ **Achtung –** Gefährliche Spannungen. Anweisungen befolgen, um Stromschläge und Verletzungen zu vermeiden

| **Achtung –** Setzt das System unter Wechselstrom

Je nach Netzschaltertyp an Ihrem Gerät kann eines der folgenden Symbole benutzt werden:

◯ **Achtung –** Unterbricht die Wechselstromzufuhr zum Gerät.

⏻ **Achtung –** (Stand-by-Position) - Der Ein-/ Wartezustand-Schalter steht auf Wartezustand. Änderungen an Sun-Geräten.

Nehmen Sie keine mechanischen oder elektrischen Änderungen an den Geräten vor. Sun Microsystems, übernimmt bei einem Sun-Produkt, das geändert wurde, keine Verantwortung für die Einhaltung behördlicher Vorschriften

Aufstellung von Sun-Geräten

Achtung – Um den zuverlässigen Betrieb Ihres Sun-Geräts zu gewährleisten und es vor Überhitzung zu schützen, dürfen die Öffnungen im Gerät nicht blockiert oder verdeckt werden. Sun-Produkte sollten niemals in der Nähe von Heizkörpern oder Heizluftklappen aufgestellt werden

Achtung – Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70Db(A) oder weniger.

Einhaltung der SELV-Richtlinien

Die Sicherung der I/O-Verbindungen entspricht den Anforderungen der SELV-Spezifikation.

Anschluß des Netzkabels

Achtung – Sun-Produkte sind für den Betrieb an Einphasen-Stromnetzen mit geerdetem Nulleiter vorgesehen. Um die Stromschlaggefahr zu reduzieren, schließen Sie Sun-Produkte nicht an andere Stromquellen an. Ihr Betriebsleiter oder ein qualifizierter Elektriker kann Ihnen die Daten zur Stromversorgung in Ihrem Gebäude geben.

Achtung – Nicht alle Netzkabel haben die gleichen Nennwerte. Herkömmliche, im Haushalt verwendete Verlängerungskabel besitzen keinen Überlastungsschutz und sind daher für Computersysteme nicht geeignet.

Achtung – Ihr Sun-Gerät wird mit einem dreiadrigen Netzkabel für geerdete Netzsteckdosen geliefert. Um die Gefahr eines Stromschlags zu reduzieren, schließen Sie das Kabel nur an eine fachgerecht verlegte, geerdete Steckdose an.

Die folgende Warnung gilt nur für Geräte mit Wartezustand-Netzschalter:

Achtung – Der Ein/Aus-Schalter dieses Geräts schaltet nur auf Wartezustand (Stand-By-Modus). Um die Stromzufuhr zum Gerät vollständig zu unterbrechen, müssen Sie das Netzkabel von der Steckdose abziehen. Schließen Sie den Stecker des Netzkabels an eine in der Nähe befindliche, frei zugängliche, geerdete Netzsteckdose an. Schließen Sie das Netzkabel nicht an, wenn das Netzteil aus der Systemeinheit entfernt wurde.

Gehäuseabdeckung

Sie müssen die obere Abdeckung Ihres Sun-Systems entfernen, um interne Komponenten wie Karten, Speicherchips oder Massenspeicher hinzuzufügen. Bringen Sie die obere Gehäuseabdeckung wieder an, bevor Sie Ihr System einschalten.

Achtung – Bei Betrieb des Systems ohne obere Abdeckung besteht die Gefahr von Stromschlag und Systemschäden.

Einhaltung der Richtlinien für Laser

Sun-Produkte, die mit Laser-Technologie arbeiten, entsprechen den Anforderungen der Laser Klasse 1.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser KLasse 1

CD-ROM

Achtung – Die Verwendung von anderen Steuerungen und Einstellungen oder die Durchfhrung von Prozeduren, die von den hier beschriebenen abweichen, knnen gefhrliche Strahlungen zur Folge haben.

Conformité aux normes de sécurité

Ce texte traite des mesures de sécurité qu'il convient de prendre pour l'installation d'un produit Sun Microsystems.

Mesures de sécurité

Pour votre protection, veuillez prendre les précautions suivantes pendant l'installation du matériel :

- Suivre tous les avertissements et toutes les instructions inscrites sur le matériel.
- Vérifier que la tension et la fréquence de la source d'alimentation électrique correspondent à la tension et à la fréquence indiquées sur l'étiquette de classification de l'appareil.
- Ne jamais introduire d'objets quels qu'ils soient dans une des ouvertures de l'appareil. Vous pourriez vous trouver en présence de hautes tensions dangereuses. Tout objet conducteur introduit de la sorte pourrait produire un court-circuit qui entraînerait des flammes, des risques d'électrocution ou des dégâts matériels.

Symboles

Vous trouverez ci-dessous la signification des différents symboles utilisés :

Attention – risques de blessures corporelles et de dégâts matériels. Veuillez suivre les instructions.

Attention – surface à température élevée. Evitez le contact. La température des surfaces est élevée et leur contact peut provoquer des blessures corporelles.

Attention – présence de tensions dangereuses. Pour éviter les risques d'électrocution et de danger pour la santé physique, veuillez suivre les instructions.

Attention – Votre système est sous tension (courant alternatif).

Un des symboles suivants sera peut-être utilisé en fonction du type d'interrupteur de votre système:

Attention – Votre système est hors tension (courant alternatif).

Attention – L'interrupteur Marche/Veilleuse est en position « Veilleuse ».

Modification du matériel

Ne pas apporter de modification mécanique ou électrique au matériel. Sun Microsystems n'est pas responsable de la conformité réglementaire d'un produit Sun qui a été modifié.

Positionnement d'un produit Sun

Attention – pour assurer le bon fonctionnement de votre produit Sun et pour l'empêcher de surchauffer, il convient de ne pas obstruer ni recouvrir les ouvertures prévues dans l'appareil. Un produit Sun ne doit jamais être placé à proximité d'un radiateur ou d'une source de chaleur.

Attention – Le niveau de pression acoustique au poste de travail s'élève selon la norme DIN 45 635 section 1000, à 70 dB (A) ou moins.

Conformité SELV

Sécurité : les raccordements E/S sont conformes aux normes SELV.

Connexion du cordon d'alimentation

Attention – les produits Sun sont conçus pour fonctionner avec des alimentations monophasées munies d'un conducteur neutre mis à la terre. Pour écarter les risques d'électrocution, ne pas brancher de produit Sun dans un autre type d'alimentation secteur. En cas de doute quant au type d'alimentation électrique du local, veuillez vous adresser au directeur de l'exploitation ou à un électricien qualifié.

Attention – tous les cordons d'alimentation n'ont pas forcément la même puissance nominale en matière de courant. Les rallonges d'usage domestique n'offrent pas de protection contre les surcharges et ne sont pas prévues pour les systèmes d'ordinateurs. Ne pas utiliser de rallonge d'usage domestique avec votre produit Sun.

Attention – votre produit Sun a été livré équipé d'un cordon d'alimentation à trois fils (avec prise de terre). Pour écarter tout risque d'électrocution, branchez toujours ce cordon dans une prise mise à la terre.

L'avertissement suivant s'applique uniquement aux systèmes équipés d'un interrupteur VEILLEUSE:

Attention – Le commutateur d'alimentation de ce produit fonctionne comme un dispositif de mise en veille uniquement. C'est la prise d'alimentation qui sert à mettre le produit hors tension. Veillez donc à installer le produit à proximité d'une prise murale facilement accessible. Ne connectez pas la prise d'alimentation lorsque le châssis du système n'est plus alimenté.

Couvercle

Pour ajouter des cartes, de la mémoire, ou des unités de stockage internes, vous devrez démonter le couvercle de l'unité système Sun. Ne pas oublier de remettre ce couvercle en place avant de mettre le système sous tension.

Attention – il est dangereux de faire fonctionner un produit Sun sans le couvercle en place. Si l'on néglige cette précaution, on encourt des risques de blessures corporelles et de dégâts matériels.

Conformité aux certifications Laser

Les produits Sun qui font appel aux technologies lasers sont conformes aux normes de la classe 1 en la matière.

```
Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser KLasse 1
```

CD-ROM

Attention – L'utilisation de contrôles, de réglages ou de performances de procédures autre que celle spécifiée dans le présent document peut provoquer une exposition à des radiations dangereuses.

Normativas de seguridad

El siguiente texto incluye las medidas de seguridad que se deben seguir cuando se instale algún producto de Sun Microsystems.

Precauciones de seguridad

Para su protección observe las siguientes medidas de seguridad cuando manipule su equipo:

- Siga todas los avisos e instrucciones marcados en el equipo.
- Asegúrese de que el voltaje y la frecuencia de la red eléctrica concuerdan con las descritas en las etiquetas de especificaciones eléctricas del equipo.
- No introduzca nunca objetos de ningún tipo a través de los orificios del equipo. Pueden haber voltajes peligrosos. Los objetos extraños conductores de la electricidad pueden producir cortocircuitos que provoquen un incendio, descargas eléctricas o daños en el equipo.

Símbolos

En este libro aparecen los siguientes símbolos:

Precaución – Existe el riesgo de lesiones personales y daños al equipo. Siga las instrucciones.

Precaución – Superficie caliente. Evite el contacto. Las superficies están calientes y pueden causar daños personales si se tocan.

Precaución – Voltaje peligroso presente. Para reducir el riesgo de descarga y daños para la salud siga las instrucciones.

Precaución – Aplica la alimentación de CA al sistema.

Según el tipo de interruptor de encendido que su equipo tenga, es posible que se utilice uno de los siguientes símbolos:

Precaución – Elimina la alimentación de CA del sistema.

Precaución – El interruptor de Encendido/En espera se ha colocado en la posición de En espera.

Modificaciones en el equipo

No realice modificaciones de tipo mecánico o eléctrico en el equipo. Sun Microsystems no se hace responsable del cumplimiento de las normativas de seguridad en los equipos Sun modificados.

Ubicación de un producto Sun

Precaución – Para asegurar la fiabilidad de funcionamiento de su producto Sun y para protegerlo de sobrecalentamien-tos no deben obstruirse o taparse las rejillas del equipo. Los productos Sun nunca deben situarse cerca de radiadores o de fuentes de calor.

Precaución – De acuerdo con la norma DIN 45 635, Parte 1000, se admite un nivel de presión acústica para puestos de trabajo máximo de 70Db(A).

Cumplimiento de la normativa SELV

El estado de la seguridad de las conexiones de entrada/salida cumple los requisitos de la normativa SELV.

Conexión del cable de alimentación eléctrica

Precaución – Los productos Sun están diseñados para trabajar en una red eléctrica monofásica con toma de tierra. Para reducir el riesgo de descarga eléctrica, no conecte los productos Sun a otro tipo de sistema de alimentación eléctrica. Póngase en contacto con el responsable de mantenimiento o con un electricista cualificado si no está seguro del sistema de alimentación eléctrica del que se dispone en su edificio.

Precaución – No todos los cables de alimentación eléctrica tienen la misma capacidad. Los cables de tipo doméstico no están provistos de protecciones contra sobrecargas y por tanto no son apropiados para su uso con computadores. No utilice alargadores de tipo doméstico para conectar sus productos Sun.

Precaución – Con el producto Sun se proporciona un cable de alimentación con toma de tierra. Para reducir el riesgo de descargas eléctricas conéctelo siempre a un enchufe con toma de tierra.

La siguiente advertencia se aplica solamente a equipos con un interruptor de encendido que tenga una posición "En espera":

Precaución – El interruptor de encendido de este producto funciona exclusivamente como un dispositivo de puesta en espera. El enchufe de la fuente de alimentación está diseñado para ser el elemento primario de desconexión del equipo. El equipo debe instalarse cerca del enchufe de forma que este último pueda ser fácil y rápidamente accesible. No conecte el cable de alimentación cuando se ha retirado la fuente de alimentación del chasis del sistema.

Tapa de la unidad del sistema

Debe quitar la tapa del sistema cuando sea necesario añadir tarjetas, memoria o dispositivos de almacenamiento internos. Asegúrese de cerrar la tapa superior antes de volver a encender el equipo.

Precaución – Es peligroso hacer funcionar los productos Sun sin la tapa superior colocada. El hecho de no tener en cuenta esta precaución puede ocasionar daños personales o perjudicar el funcionamiento del equipo.

Aviso de cumplimiento con requisitos de láser

Los productos Sun que utilizan la tecnología de láser
cumplen con los requisitos de láser de Clase 1.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser KLasse 1
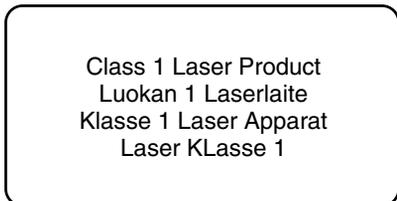
CD-ROM

 Precaución – El manejo de los controles, los
ajustes o la ejecución de procedimientos
distintos a los aquí especificados pueden
exponer al usuario a radiaciones peligrosas.

GOST-R Certification Mark

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