Sun microsystems

Sun StorEdge™ 3900 and 6900 Series Installation and Service Manual

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Safety Agency Compliance

You must read the *Sun StorEdge 3900 and 6900 Series Regulatory and Safety Compliance Manual* before beginning any procedure in this manual.

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Preface

The *Sun StorEdge 3900 and 6900 Series Installation and Service Manual* provides procedures for installing and servicing the Sun StorEdge™ 3900 and 6900 series storage systems. It also includes procedures to remove and replace the field replaceable units (FRUs) in the storage systems. Only a qualified service provider should perform the tasks in this manual.

Caution – You must read the *Sun StorEdge 3900 and 6900 Series Regulatory and Safety Compliance Manual* before beginning any procedure in this manual.

How This Book is Organized

Chapter 1 contains an introduction and an overview of the manual.

Chapter 2 describes the steps to install the Sun StorEdge 3900 and 6900 series storage systems.

Chapter 3 describes how to cable the power cord, the ground strap, and how to connect the storage systems to the host.

Chapter 4 describes how to power the storage systems on and off.

Chapter 5 describes the steps to prepare the storage systems for service.

Chapter 6 describes how to remove and install each field-replaceable unit in the storage systems.

Appendix A contains the physical specifications of the storage systems.

Appendix B contains the part numbers for each field-replaceable unit and each storage system.

Using UNIX Commands

This document does not contain information about basic UNIX® commands and procedures such as shutting down the subsystem, booting the subsystem, and configuring devices.

See one or more of the following for this information:

- *Solaris Handbook for Sun Peripherals*
- AnswerBook™ online documentation for the Solaris™ software environment
- Other software documentation that you received

Typographic Conventions

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

Shell Prompts

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

Related Documentation

Product	Title	Part Number
Late-breaking News	• *Sun StorEdge 3900 and 6900 Series Release Notes*	816-3247-10
Sun StorEdge 3900 and 6900 series hardware information	• *Sun StorEdge 3900 and 6900 Series Site Preparation Guide*	816-3242-10
	• *Sun StorEdge 3900 and 6900 Series Regulatory and Safety Compliance Manual*	816-3243-10
	• *Sun StorEdge 3900 and 6900 Series Reference Manual*	816-3245-10
	• *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide*	816-4290-10
Sun StorEdge T3 and T3+ array	• *Sun StorEdge T3 and T3+ Array Start Here*	816-0772-10
	• *Sun StorEdge T3 and T3+ Array Installation, Operation, and Service Manual*	816-0773-10
	• *Sun StorEdge T3 and T3+ Array Administrator's Guide*	816-0776-10
	• *Sun StorEdge T3 and T3+ Array Configuration Guide*	816-0777-10
	• *Sun StorEdge T3 and T3+ Array Site Preparation Guide*	816-0778-10
	• *Sun StorEdge T3 and T3+ Field Service Manual*	816-0779-10
	• *Sun StorEdge T3 and T3+ Array Release Notes*	816-0781-12
Diagnostics	• *Storage Automated Diagnostics Environment User's Guide*	816-3142-10
Sun StorEdge network FC switch-8 and switch-16	• *Sun StorEdge Network FC Switch-8 and Switch-16 Release Notes*	816-0842-10
	• *Sun StorEdge Network FC Switch-8 and Switch-16 Installation and Configuration Guide*	816-0830-12
	• *Sun StorEdge Network FC Switch-8 and Switch-16 Best Practices Manual*	816-2688-10
	• *Sun StorEdge Network FC Switch-8 and Switch-16 Operations Guide*	816-1986-10
	• *Sun StorEdge Network FC Switch-8 and Switch-16 Field Troubleshooting Guide*	816-0252-10
SANbox switch management using SANsurfer	• *SANbox 8/16 Segmented Loop Switch Management User's Manual*	875-3060-10
	• *SANbox-8 Segmented Loop Fibre Channel Switch Installer's/User's Manual*	875-1881-11
	• *SANbox-16 Segmented Loop Fibre Channel Switch Installer's/User's Manual*	875-3059-10
Expansion cabinet	• *Sun StorEdge Expansion Cabinet Installation and Service Manual*	805-3067-12
Service processor	• *Netra X1 Server User's Guide*	806-5980-10
	• *Netra X1 Server Hard Disk Drive Installation Guide*	806-7670-10
Solaris	• *Solaris Handbook for Sun Peripherals*	816-4468-10

Accessing Sun Documentation Online

A broad selection of Sun system documentation is located at:

`http://www.sun.com/products-n-solutions/hardware/docs`

A complete set of Solaris documentation and many other titles are located at:

`http://docs.sun.com`

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`docfeedback@sun.com`

Please include the part number (816-3244-10) of this document in the subject line of your email.

Introduction

The Sun StorEdge 3900 and 6900 series storage systems are complete preconfigured storage solutions. The Sun StorEdge 3900 series storage systems provide two different configurations for the direct attach (DAS) environment. The Sun StorEdge 6900 series storage systems also has two configurations for the Storage Area Network (SAN) environment.

An introduction and an overview of the software associated with the Sun StorEdge 3900 and 6900 series storage systems is given in the *Sun StorEdge 3900 and 6900 Series Reference Manual.*

1.1 Overview of this Manual

Because the Sun StorEdge 3900 and 6900 series storage systems are shipped to the customer as complete configurations, this manual describes only the initial setup of the storage system, including the power on and off procedures, the general procedures to connect the storage system to the host, and the removal and replacement of the field replaceable units (FRUs) within the storage system. When there is a software component that must be used to define the configuration of a FRU, the initial settings of the configuration are given for the FRU.

To determine the status of a FRU before removing and replacing it, see the information in the *Sun Automated Diagnostic Environment User's Guide.* To modify the basic configuration of a FRU that has a configuration, see the *Sun StorEdge 3900 and 6900 Series Reference Manual.*

Installing the Storage System

This chapter describes how to unpack and install the Sun StorEdge 3900 and 6900 series storage system.

This chapter contains the following sections:

■ Section 2.1 "System Field-Replacable Units
■ Section 2.2 "Unpacking the Storage System" on page 2-2
■ Section 2.3 "Moving and Placing the Storage System" on page 2-3
■ Section 2.4 "Adjusting the Leveling Pads" on page 2-4
■ Section 2.5 "Installing the Stabilizer Legs" on page 2-5
■ Section 2.6 "Installing the Floor Brackets" on page 2-7

2.1 System Field-Replacable Units

The storage system contains the following:

■ Two power sequencer assemblies
■ Four floor mounting brackets
■ Two stabilizer legs
■ Associated mounting hardware
■ Any additional subassemblies ordered

The floor mounting brackets enable you to bolt the storage system to the floor. If you are not installing the floor mounting brackets, you should install the stabilizer legs. The stabilizer legs are extended to prevent the storage system from tipping over when FRUs are installed, removed, or serviced.

2.2 Unpacking the Storage System

If the storage system is already unpacked, proceed to Section 2.3 "Moving and Placing the Storage System" on page 2-3.

1. **Inspect all shipping containers for evidence of physical damage.**

   If a shipping carton is damaged, request that the carrier's agent be present when the carton is opened. Keep all of the contents and packing material for the agent's inspection.

   Caution – Use three or more people to unpack and set up the storage system. The shipping weight of the unit varies, depending on the number of FRUs that are shipped with the unit. A typical Sun StorEdge 3910 or 6910 storage system can weigh up to 1465 pounds (547 kg). A typical Sun StorEdge 3960 or 6960 subsystem with two cabinets can weigh up to 2895 pounds (1660 kg).
   ---

2. **Unpack the storage system.**

   Refer to the unpacking instructions printed on the shipping carton.

   Note – The stabilizer legs, floor mounting brackets, and associated hardware are packed in the side pockets of the packing material that encase the storage system.
   ---

3. **Verify that the items you received match the shipping list.**

4. **Reassemble the packing materials and save them for future use.**

   To prepare the storage system for shipment or storage, follow (in reverse order) the unpacking instructions attached to or printed on the panels of each shipping container.

   If you cannot store the shipping materials, recycle or dispose of the materials properly. Your local recycling authority can supply specific information.

2.3 Moving and Placing the Storage System

Leave enough space to situate the storage system near the system cabinet. The ground strap between the storage system and the system cabinet is 6.5 feet (2 meters) long. (The procedure for connecting the ground strap is covered in detail in Section 3.3 "Connecting the Ground Strap" on page 3-6.)

Refer to the specifications in Appendix A when you are determining where to place the storage system.

Caution – Never lift the storage system by the cosmetic panel surfaces or pull by the back door. Use three or more people to move the storage system safely. Two people must restrain the front of the storage system to control the movement. One person should be behind the storage system. To prevent the storage system from tipping as you move it, push or pull only on the middle section of the storage system.

For mobility, allow 3 inches (76 mm) clearance on both sides of the storage system.

2.4 Adjusting the Leveling Pads

If you want to attach the storage system to the floor, skip to Section 2.6 "Installing the Floor Brackets" on page 2-7.

Leveling pads (screws) are located at each corner of the base of the storage system (FIGURE 2-1).

> **Caution –** If you are not using the four floor mounting brackets, the four leveling pads mounted on the bottom plate of the rack must be lowered to the floor for the storage system to meet Underwriters' Laboratories physical stability requirements.

1. **Open the rear door.**

2. **Remove the leveling wrench by unlocking the plastic strap that holds it to the inside of the frame, near the top of the storage system.**

   Do not cut the strap. Press the plastic tab to unlock the strap around the wrench, and then slide part of the strap through the lock to loosen the wrench.

3. **Adjust the four leveling pads on the storage system frame using the leveling wrench.**

   The four pads should press against the floor so that the storage system does not move or rock in any direction.
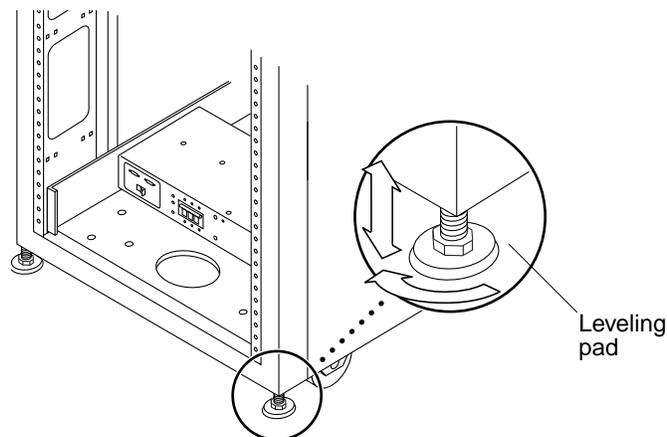
Leveling pad

FIGURE 2-1 Leveling Pad

2.5 Installing the Stabilizer Legs

If you want to attach the storage system to the floor, skip to Section 2.6 "Installing the Floor Brackets" on page 2-7.

The stabilizer legs help prevent the storage system from tipping over when FRUs are taken out of the storage system. The stabilizer legs must be properly installed and set to be effective.

Caution – Always extend the stabilizer legs before you attempt to install new FRUs or service FRUs in the storage system.

1. **Loosen the securing screw on the right stabilizer leg (**FIGURE 2-2**).**

Left stabilizer leg

Securing screw

Right stabilizer leg
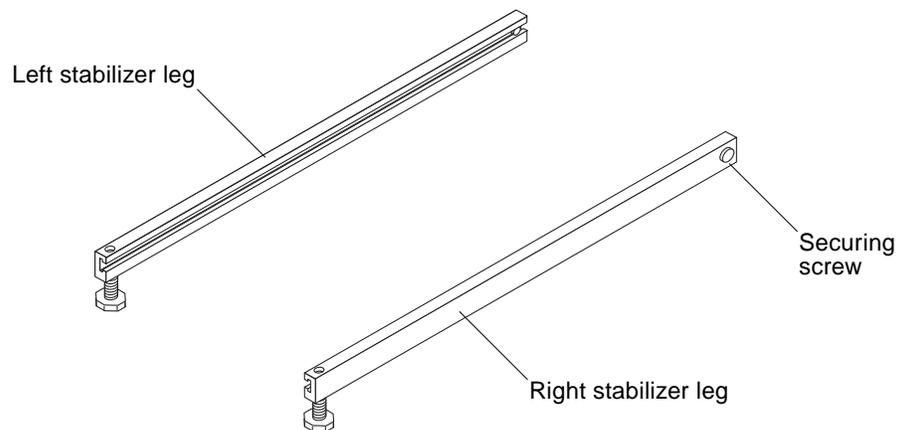
FIGURE 2-2 Stabilizer Legs

2. **Slide the right stabilizer leg over the three mounting screws at the bottom of the storage system (**FIGURE 2-3**).**
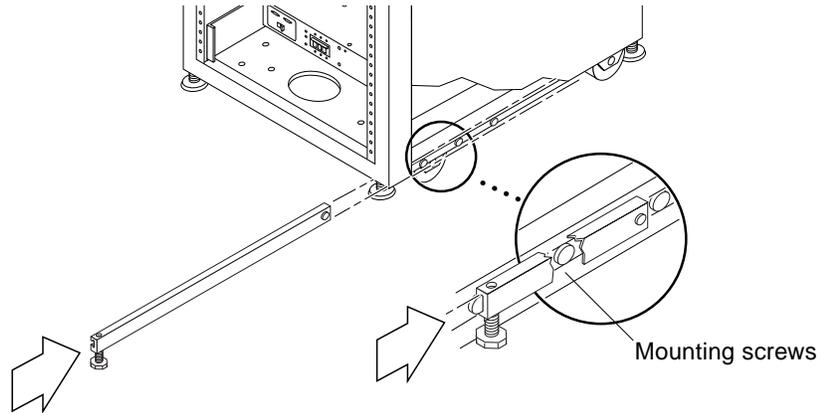
Mounting screws

FIGURE 2-3 Installing the Right Stabilizer Leg

3. **Tighten the securing screw.**

   This prevents the stabilizer leg from falling off the mounting screws when it is extended.

4. **Fully extend the right stabilizer leg.**

5. **Repeat Step 1 through Step 4 for the left stabilizer leg.**

6. **Use the leveling wrench and adjust the feet on both stabilizer legs so that they touch the floor (**FIGURE 2-4**).**
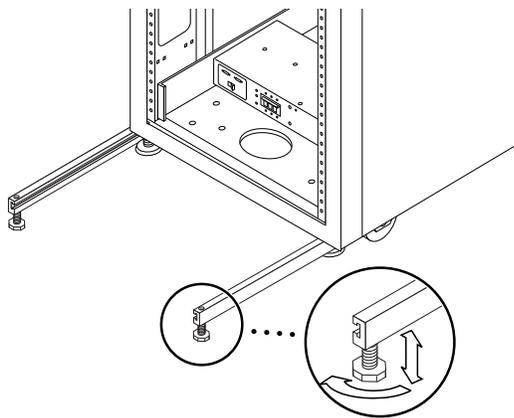
FIGURE 2-4 Adjusting the Leveling Pads on the Stabilizer Leg

7. **Slide both stabilizer legs under the storage system.**

8. **Secure the leveling wrench inside the storage system.**

9. **Close the door.**

2.6 Installing the Floor Brackets

Skip this section if you have installed the stabilizer legs.

Use the four floor brackets in place of the stabilizer legs if you want to attach the storage system to the floor.

Caution – Do not bolt the floor mounting brackets to the deck plating of a raised (computer) floor.

Note – If you are installing the floor brackets over previously installed threaded rods, you should loosely install the floor brackets to the rods and then to the storage system.

1. **Remove the three mounting screws on the bottom right of the storage system (**FIGURE 2-5**).**
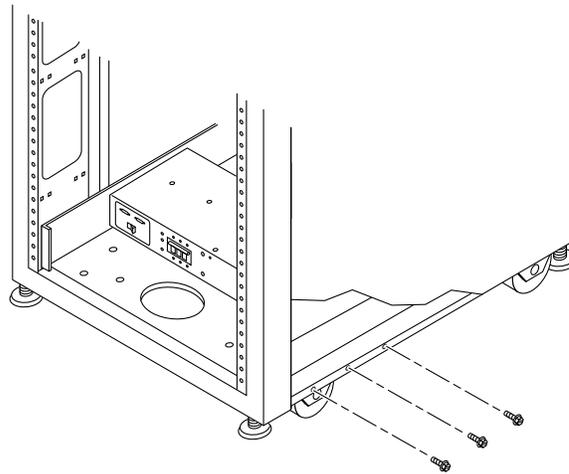
FIGURE 2-5   Removing the Mounting Screws

2. **Using a 7/16-inch wrench, attach the right floor brackets to the front and back of the storage system (**FIGURE 2-6**).**
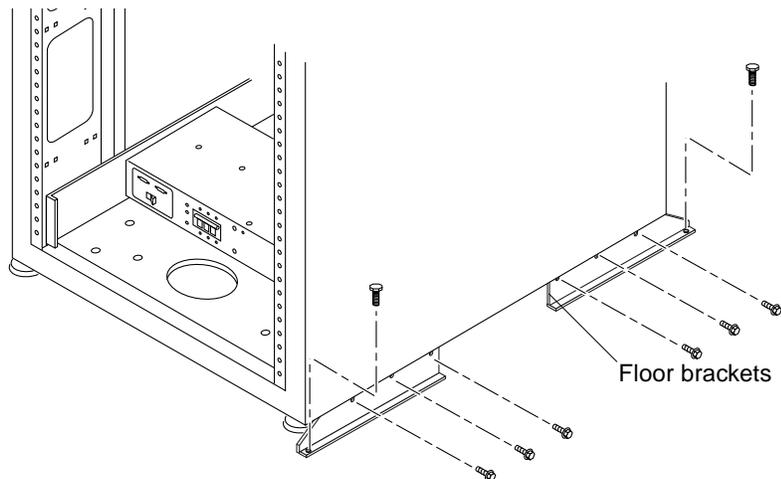
FIGURE 2-6 Attaching the Floor Brackets

3. **Bolt the right floor brackets to the floor.**

The bolts to secure the floor brackets to the floor are not included.

4. **Repeat Step 1 through Step 3 for the left floor brackets.**

Cabling the Storage System

This chapter describes how to connect the power cord to the storage system power sequencer, how to connect the ground strap from the storage system to the server and other cabinets, and how to connect the storage system to the host.

This chapter contains the following sections:

- Section 3.1 "Preparing the Storage System for Cabling
- Section 3.2 "Connecting the AC Power Cord" on page 3-3
- Section 3.3 "Connecting the Ground Strap" on page 3-6
- Section 3.4 "Connecting the Storage System to the Host" on page 3-8
- Section 3.5 "Reassembling the Storage System" on page 3-14

3.1 Preparing the Storage System for Cabling

1. **Verify that the key switch located at the bottom front of the storage system is in the Standby position (**FIGURE 3-1**).**

   Keys for this switch are packed in the kit that was shipped with your storage system.
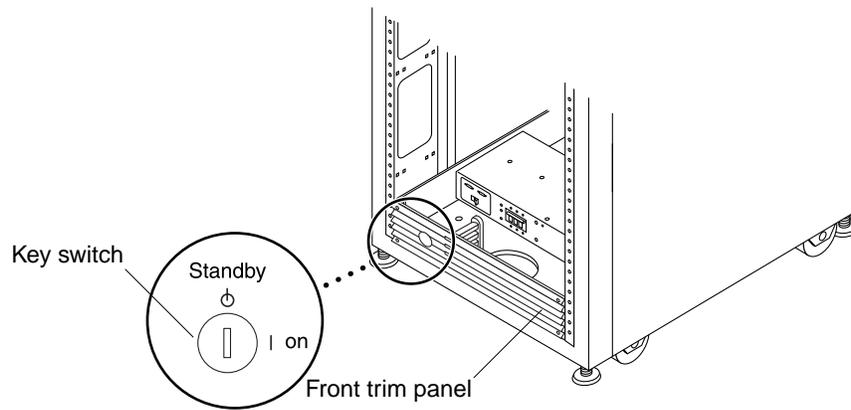
FIGURE 3-1   Location of Key Switch on Bottom Front Panel

2. **Open the back door of the storage system.**

   See Section 5.4.3 "Opening the Back Door of the Storage System" on page 5-4.

3. **Loosen the four screws on the front and back trim panels and remove the panels.**

   Set the panels aside.

3.2 Connecting the AC Power Cord

Caution – The storage system is designed to work with single-phase power systems that have a grounded neutral conductor. To reduce the risk of electric shock, do not connect the storage system into any other type of power system.

1. **Open the back door.**

2. **Loosen the four screws on the front and back trim panels, remove the panels, and set the panels aside.**

3. **Verify that each AC power sequencer circuit breaker is in the Off position and that the Local/Remote switch is in the Local position (**FIGURE 3-2**).**
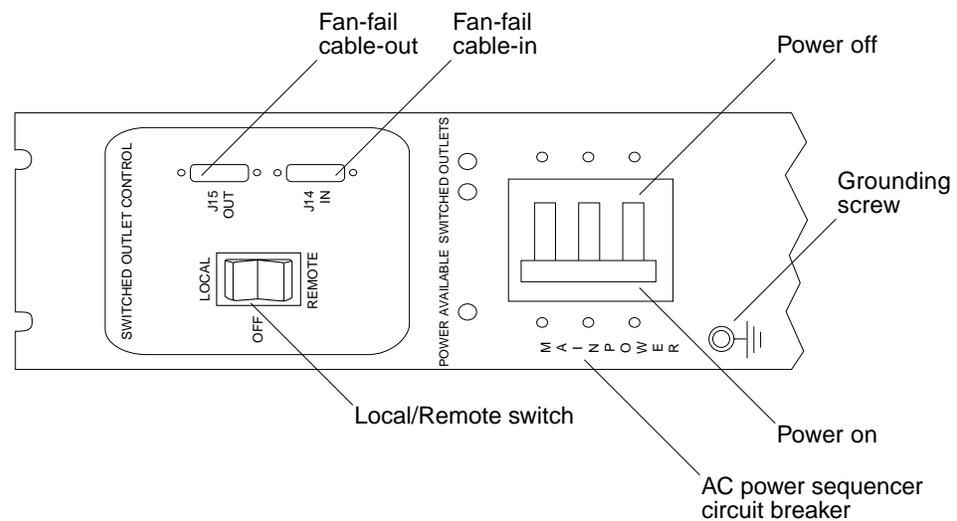
FIGURE 3-2   Power Sequencer Control Panel

4. **Verify that the stated rating matches the AC input voltage to the system (**TABLE 3-1 **and** TABLE 3-2**)**

   Check the electrical ratings label on the serial number label attached to the power sequencer.

   TABLE 3-1   Voltage Requirements for Maximum Operating Voltage and Frequency Ranges

Voltage and Frequency Range	Requirement
AC voltage rating	200 to 240 VAC
AC voltage range	180 to 264 VAC
Frequency range	47 to 63 Hz

   TABLE 3-2   Current Requirements at Nominal Line Voltage for a storage system in Maximum Configuration

Nominal and Maximum Voltage and Current	Requirement
Nominal AC input voltage rating single phase	200 to 240 VAC
Maximum current requirement	24A at 240 VAC
Maximum current per power sequencer outlet	10A

5. **Connect the female end of each AC power cord to the power sequencer connectors (**FIGURE 3-3**).**

   Flip the cover latch open to access the connectors.

6. **Pull the latch cover over the power cord to secure it to the power socket.**

   Note – Route the power cord directly through the opening in the storage system base.
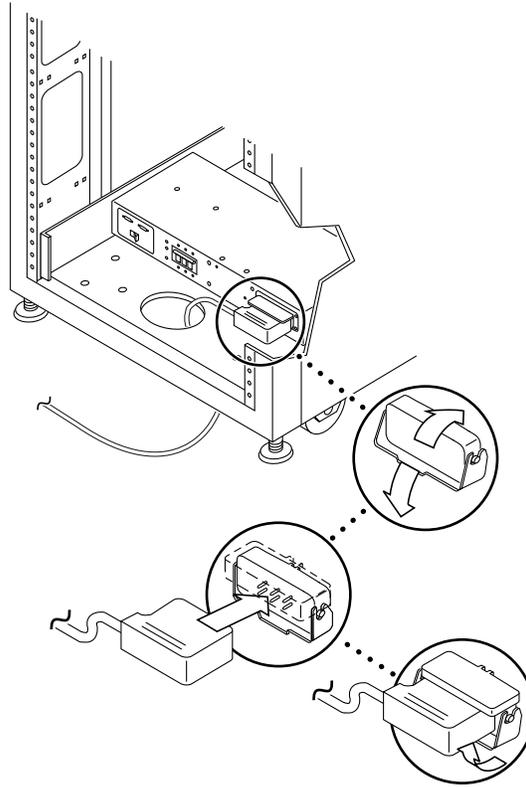
FIGURE 3-3 Connecting the AC Power Cord

7. Connect the other end of the AC power cord to a grounded outlet.

The following connector types are provided on the power cord:

- NEMA L6-30P for 200-240V North American operation
- 32A, single-phase, IEC 309 connector for 220–240V international operation

Caution – There is a risk of electric shock. Do NOT apply AC power to the unit yet.

Caution – The storage system has a high leakage current to ground. Strictly observe all caution and note statements to reduce the risk of electric shock.

Note – If the appropriate mating receptacle is not available, you can remove the connector from the cord. The cord can then be permanently connected to a dedicated branch circuit by a qualified electrician. Check local electrical codes for proper installation requirements.

Note – You can use the cable ties provided with the storage system as cable restraints. For each cable, pass a cable tie through one of the slits located along the base of the storage system. Secure the cable in the cable tie.

8. **Repeat Step 3 through Step 7 for the other power sequencer.**

3.3   Connecting the Ground Strap

Caution – You must install an insulated grounding conductor as part of the circuit supplying power to the unit or system. This conductor must be of identical size, insulation material, and thickness to the neutral grounded and hot ungrounded branch-circuit supply conductors, but green (with or without yellow stripe[s]).

The grounding conductor described in the above caution statement must be grounded to either of the following:

■ Earth at service equipment
■ Supply transformer or motor-generator set (if supplied by a separately derived system)

The outlets in the vicinity of the unit must be of the grounding type, and the grounding conductors for these outlets must be connected to earth ground.

Connecting the ground strap between the storage system and the cabinet nearest to it prevents ground loops between the two and keeps data errors from occurring.

1. **Locate the 2-meter grounding strap from the kit that was shipped with your storage system.**

2. **Screw one end of the ground strap to the power sequencer on the system cabinet or on a cabinet nearest to the storage system (**FIGURE 3-4**).**
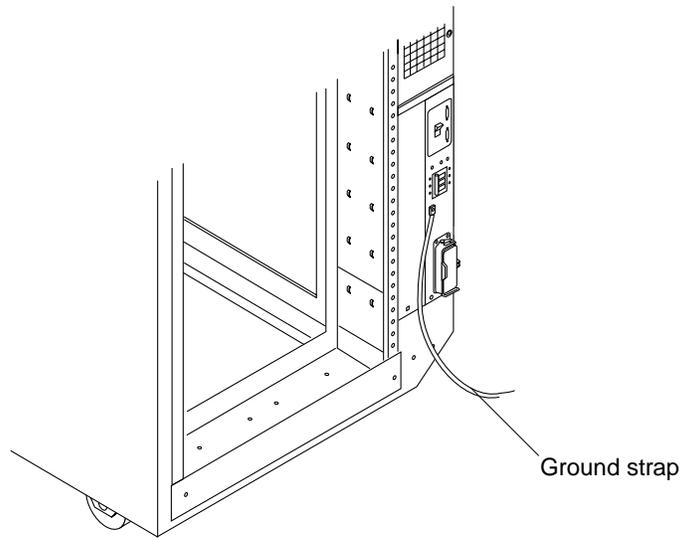
Ground strap

FIGURE 3-4 Connecting the Ground Strap to the System Cabinet Power Sequencer

3. Screw the other end of the ground strap the front power sequencer in the storage system (FIGURE 3-5**).**
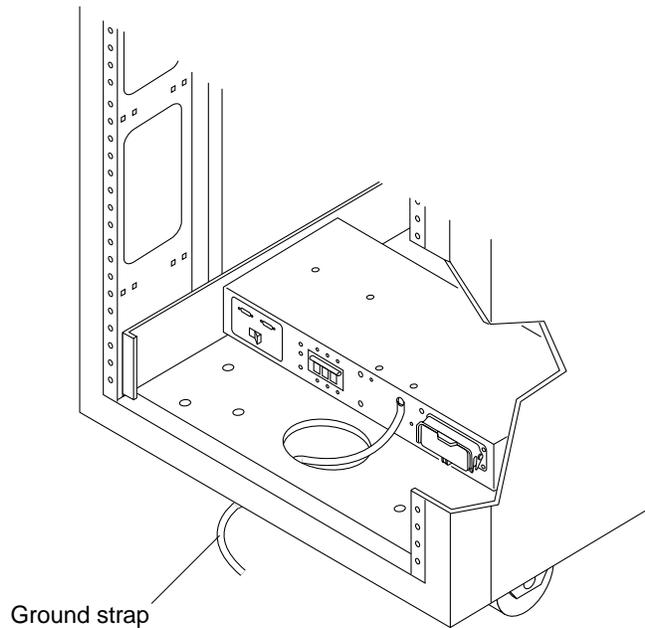
Ground strap

FIGURE 3-5   Connecting the Ground Strap to the Front Power Sequencer

3.4   Connecting the Storage System to the Host

Note – See www.sunsolve.sun.com and *Sun StorEdge 3900 and 6900 Series Release Notes* for the software requirements for the host.

In the Sun StorEdge 3910 and 6910 storage systems, the Sun StorEdge network Fibre Channel switch-8 switches (hereafter referred to as the 8-port Fibre Channel switch) connect to the host through the Fibre Channel I/O ports on the switches. The Sun StorEdge 3910 and 6910 storage systems can provide from 1 to 7 HBA connections per switch (minimum of two connections per host). See FIGURE 3-6 and FIGURE 3-7 for diagrams of this cabling.

Service Modem
Port   Out   Fibre Channel Ports

Sun StorEdge Network
Fiber Channel Switch-8
Switches

Service Processor

Ethernet Hub

Sun StorEdge T3+ arrays

Power Grid 1 and 2

Sun StorEdge Base Cabinet
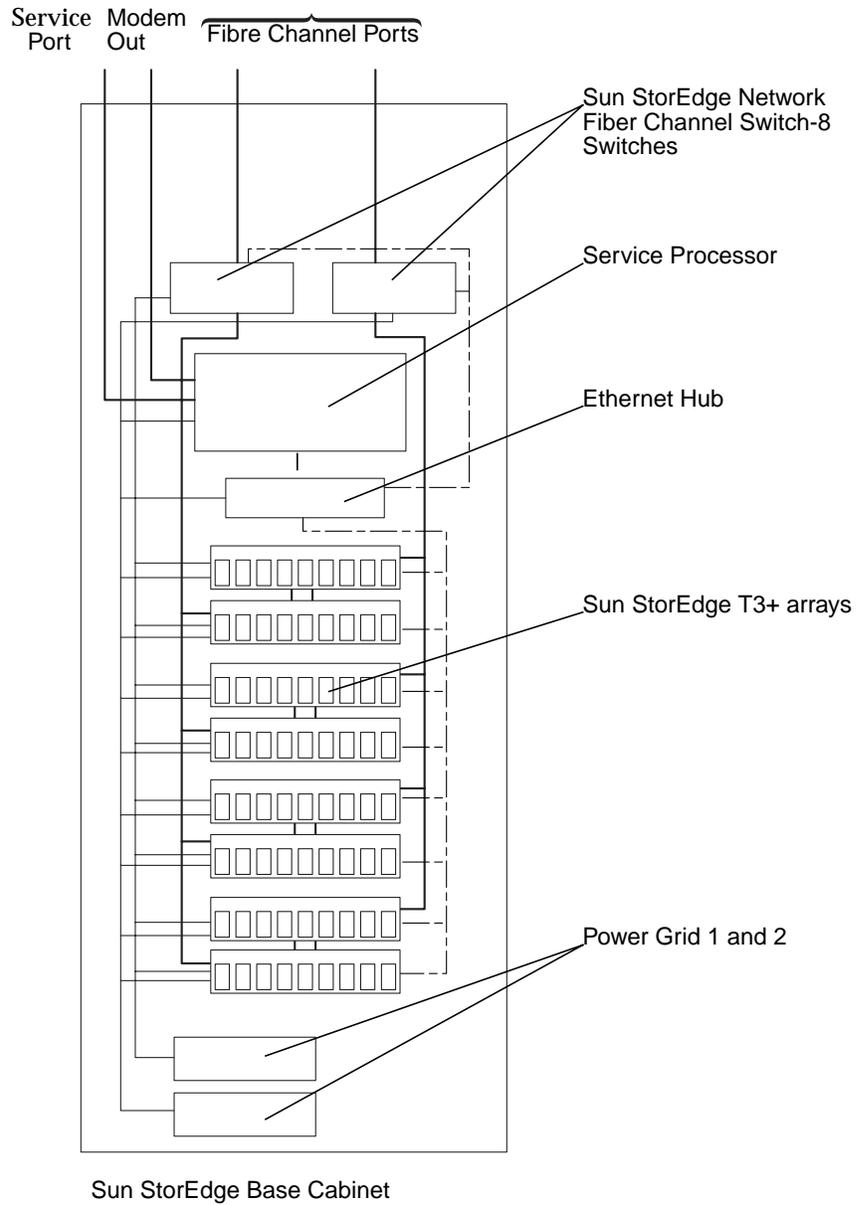
FIGURE 3-6   Sun StorEdge 3910 Storage System Cabling

Service
Port

Modem
Out

Fibre Channel Ports

Sun StorEdge Network
Fibre Channel Switch-8
Switches

Virtualization Engines

Sun StorEdge Network
Fibre Channel Switch-8
Switches

Service Processor

Ethernet Hub

Sun StorEdge T3+ arrays

Power Grid 1 and 2

Sun StorEdge Base Cabinet
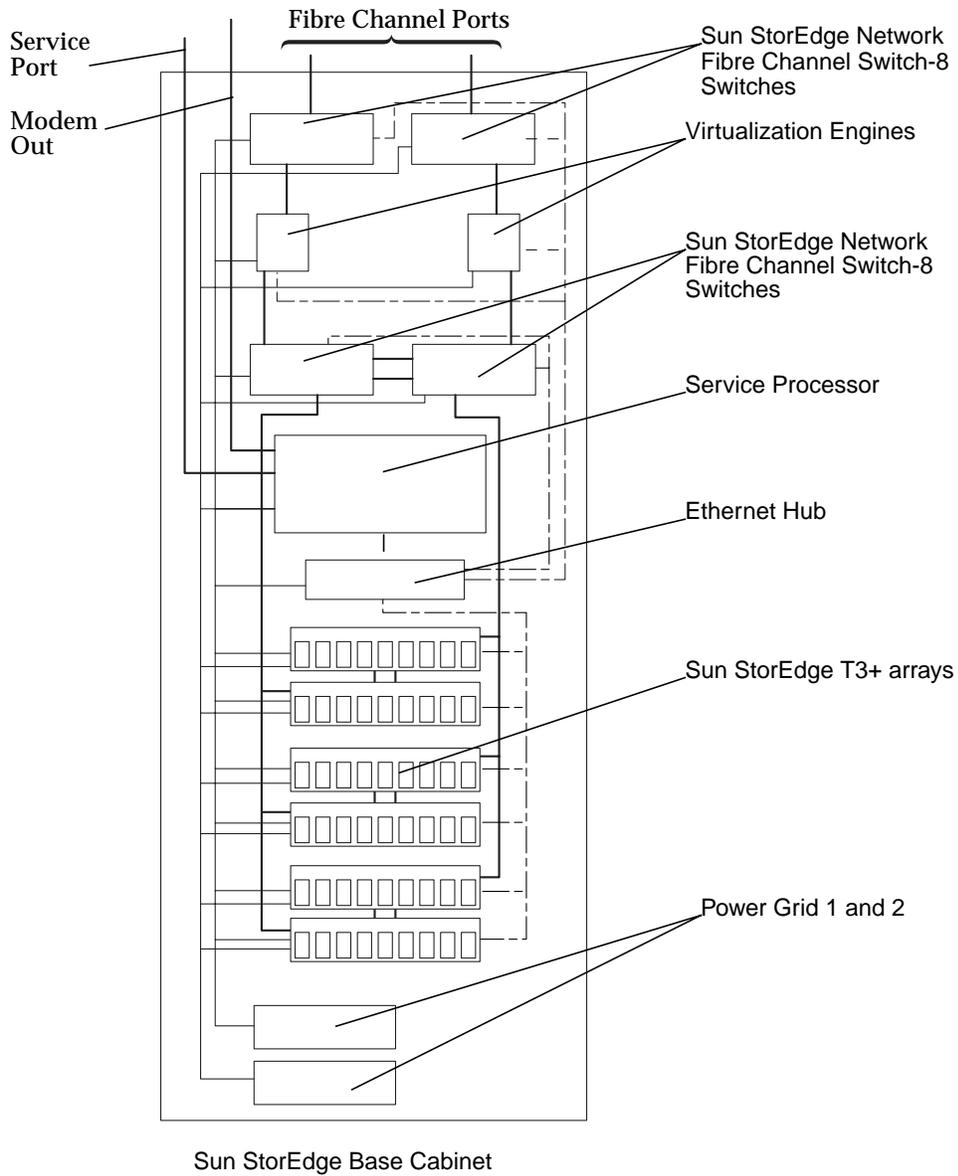
FIGURE 3-7 Sun StorEdge 6910 Storage System Cabling

In the Sun StorEdge 3960 and 6960 storage systems, the Sun StorEdge network Fibre Channel switch-16 switches (hereafter referred to as the 16-port Fibre Channel switch) connect to the host through the Fibre Channel I/O ports on the switches. The Sun StorEdge 3960 storage systems provide 1 to 7 HBA connections per switch (minimum of two connections per host) and Sun StorEdge 6960 storage systems provide from 1 to 14 HBA connections per switch (minimum of two connections per host).

In a Sun StorEdge 3960 storage system that has the second (expansion) cabinet installed or a Sun StorEdge 6960 subsystem that has the second (expansion) cabinet installed, the second cabinet must have one of each of the Sun StorEdge T3+ array partner pairs cabled into one of the 16-port Fibre Channel switches.

In a two cabinet configuration, the Ethernet hubs in both cabinets must be interconnected. The 10m, shielded, Ethernet cross-over cable connects into either port 12 or 24 of the hub in the initial cabinet. The MDI switch on the hub in the initial cabinet is set to the In position. The other end of the cable connects into either port 12 or 24 of the hub in the expansion cabinet. The MDI switch is set to the In position on that hub as well.

See FIGURE 3-8 and FIGURE 3-9 for diagrams of this cabling.

After the Sun StorEdge 3960 storage system with the second cabinet or the Sun StorEdge 6960 storage system with the second (expansion) cabinet is cabled, see the *Sun StorEdge 3900 and 6900 Series Reference Manual* for the procedure to configure the Sun StorEdge T3+ arrays in the second cabinet.

MODEM OUT

SERVICE
PORT

Fibre Channel Ports

Sun StorEdge
Network Fibre
Channel Switch-16
Switches

Ethernet Hub
(Expansion Cabinet)

Service Processor

Ethernet Hub
(Base Cabinet)

Sun StorEdge T3+
arrays

Power Grids

Base Cabinet

Extension Cabinet
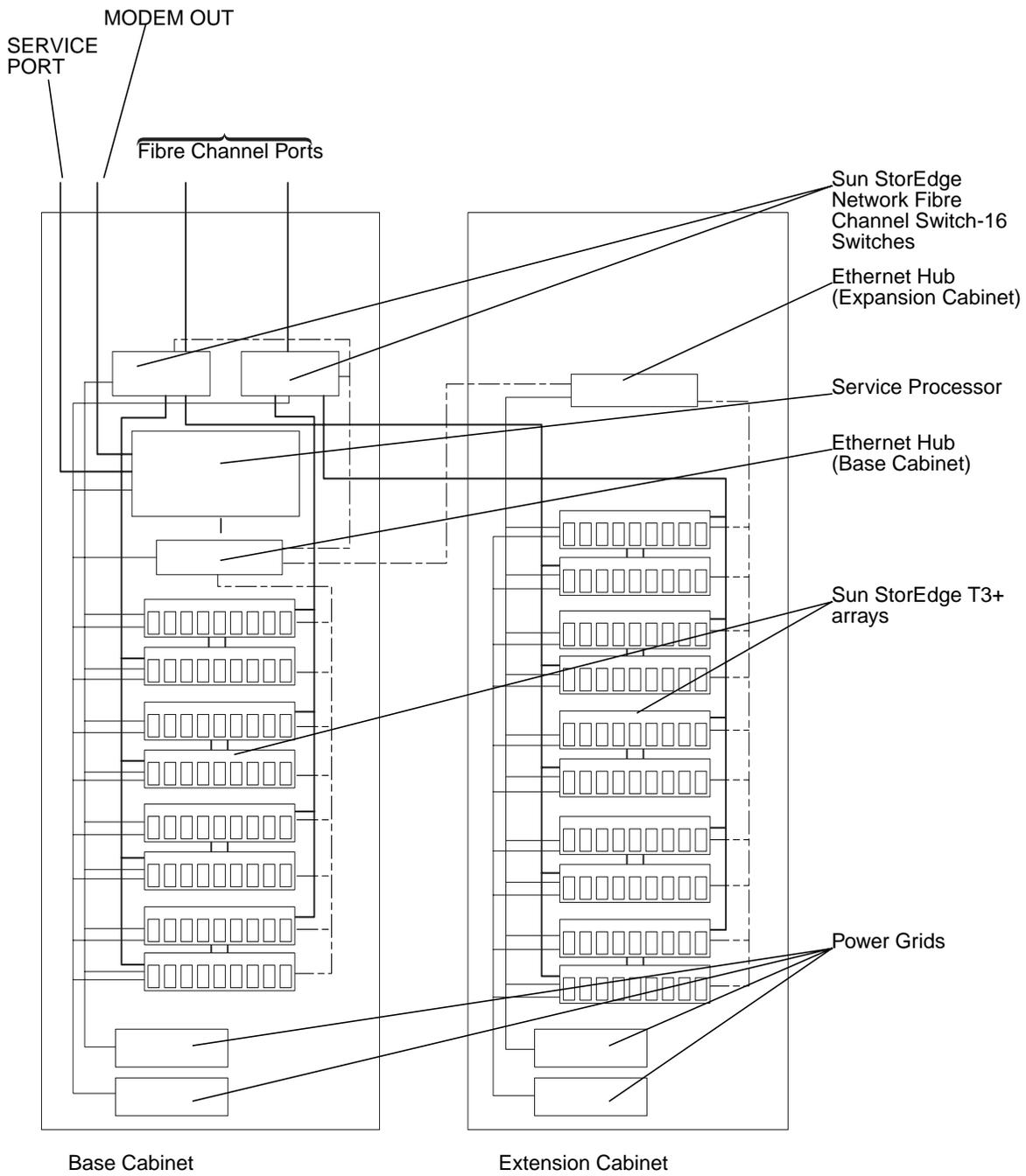
FIGURE 3-8   Sun StorEdge 3960 Storage System Cabling

Service Port

Modem Out

Fibre Channel Ports

Sun StorEdge Network
Fibre Channel Switch-16
Switches

Virtualization Engines

Sun StorEdge Network
Fiber Channel Switch-16
Switches

Ethernet Hub
(Expansion Cabinet)

Service Processor

Ethernet Hub
(Base Cabinet)

Sun StorEdge T3+ arrays

Power Grids

Base Cabinet

Expansion Cabinet
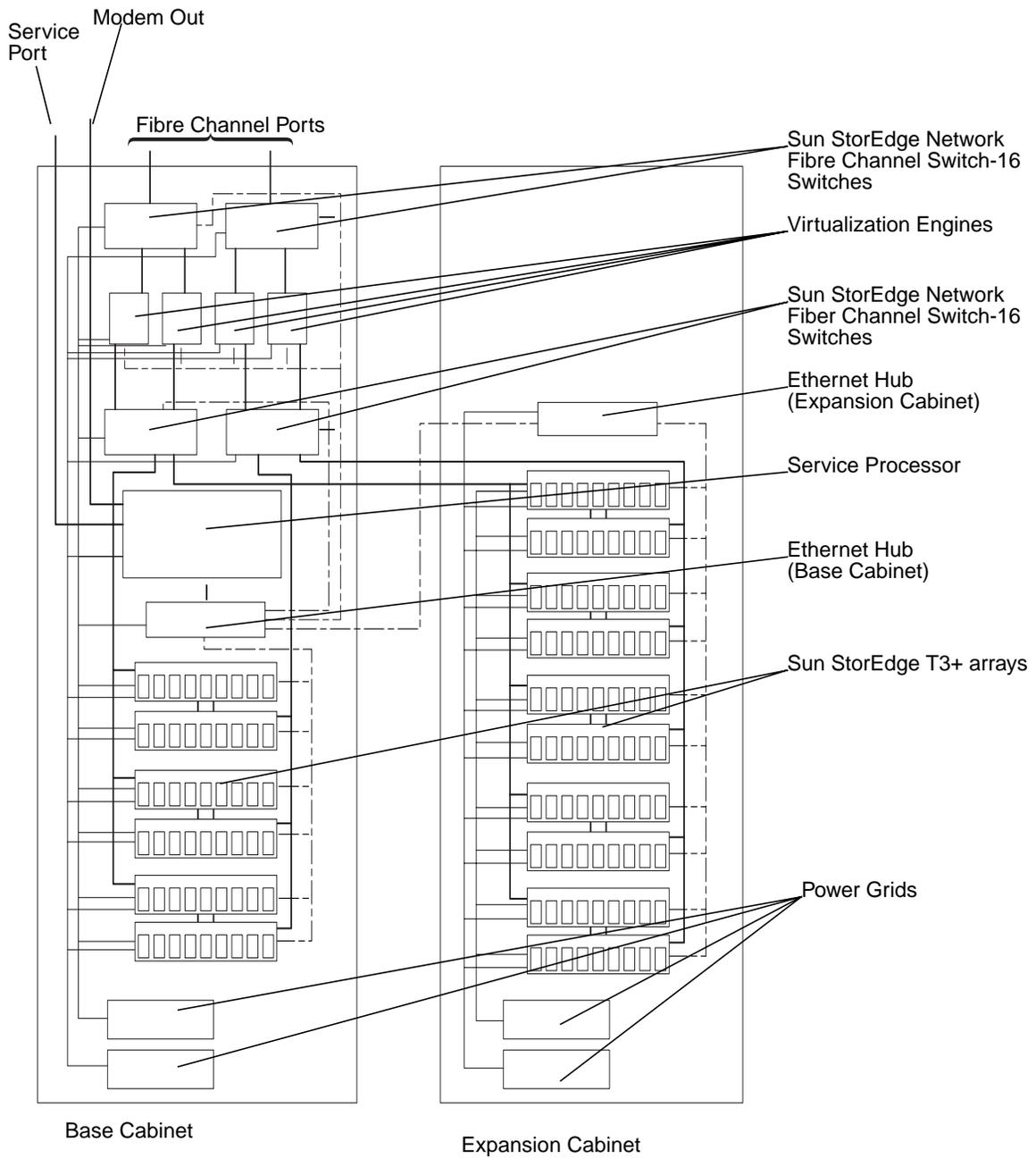
FIGURE 3-9   Sun StorEdge 6960 Subsystem Cabling

3.5 Reassembling the Storage System

1. **Replace the trim panels.**

   Tighten the four screws to secure the front and back trim panels to the storage system.

   Note – If you are routing cables under the floor, route the cables between the bottom panel and the kick panel.

   ---

2. **Close the back door.**

   If you have a preconfigured storage system and you won't be adding more devices to it, go to Section 4.1 "Powering On the Storage System" on page 4-1 for power on instructions.

   If you are installing a FRU in the storage system, go to Chapter 6.

Powering the Storage System On and Off

Use the information in this chapter to power the storage system on and off.

Note – If you are powering on and off a Sun StorEdge 3960 or 6960 storage system with the second cabinet attached, perform the power on and power off sequence for both cabinets.

Caution – To avoid damage to internal circuits, do not connect or disconnect any cable while the FRU associated with the cable is powered on.

This chapter contains the following sections:

Section 4.1 "Powering On the Storage System

Section 4.2 "Powering Off the Storage System" on page 4-5

4.1 Powering On the Storage System

1. **Verify that the key switch located at the bottom front of the storage system is in the Standby position (**FIGURE 4-1**).**
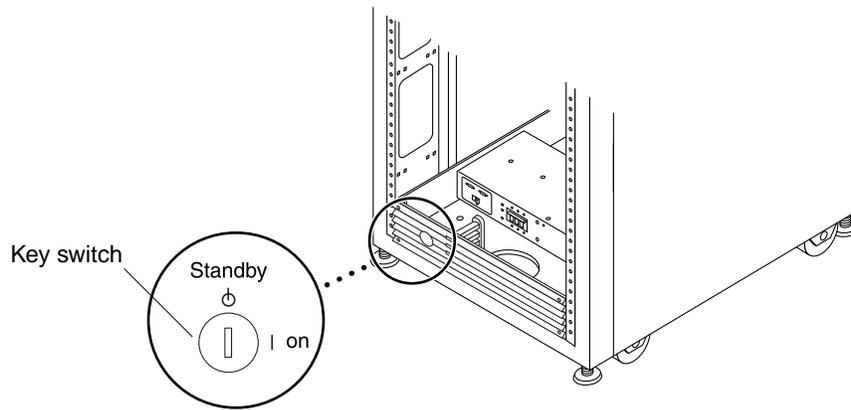
FIGURE 4-1   Location of Key Switch on Bottom Front Panel

2. **Push the AC power sequencer circuit breakers at the bottom front and bottom back of the storage system to Off (**FIGURE 4-2**).**
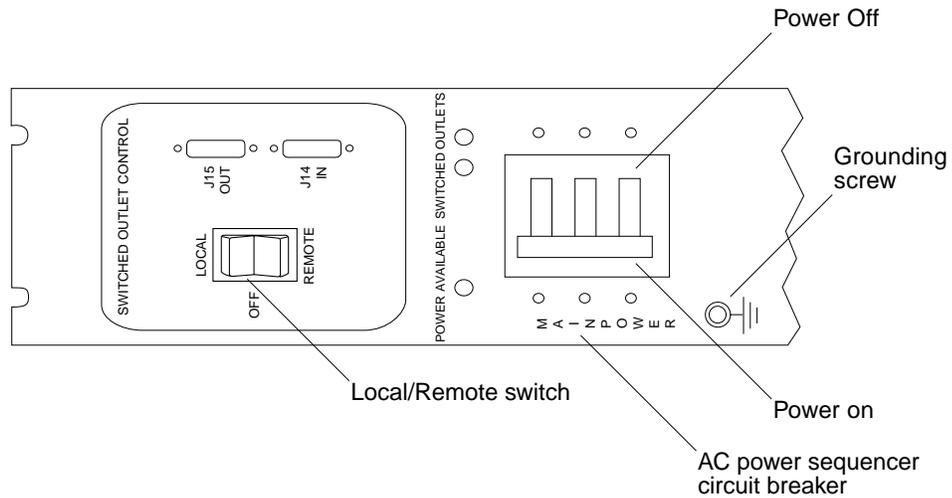
FIGURE 4-2   AC Power Sequencer Control Panel

3. **Verify that the AC power cord of the storage system is connected to an AC outlet.**

Caution – Do not disconnect the AC power cord from the outlet when you work on or in the storage system. This connection provides a ground path that prevents damage from electrostatic discharge.

Caution – Never move storage systems when system power is on. Excessive movement can cause catastrophic disk drive failure. Always power the storage system off before moving it.

4. **Push the Local/Remote switch on the storage system to Local (**FIGURE 4-2**).**

5. **Press the AC power sequencer circuit breakers on the storage system to On (**FIGURE 4-2**).**

6. **Turn the key switch at the front of the storage system to the On position (**FIGURE 4-3**).**

   The storage system will power on approximately 20 seconds after you turn the key switch to On. This delay minimizes power surges.
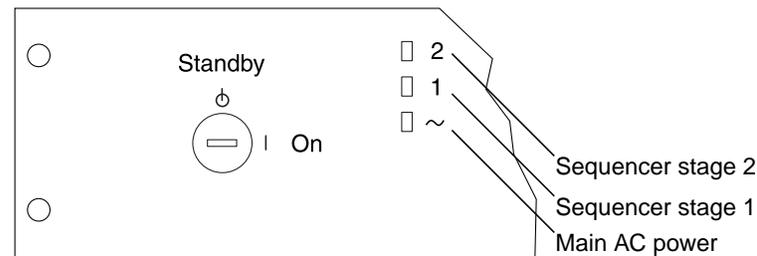
FIGURE 4-3 Front Sequencer Status Lights

The three power status indicators on the front panel show the status of the front power sequencer. The main AC power LED lights when power is applied to the storage system. The LED for sequencer stage 1 lights next, followed by the LED for sequencer stage 2.

Note – The bottom LED lights only when the AC power sequencer circuit breakers for the front power supply are on.

Note – To check the status of the back power sequencer, open the back door of the storage system and look for the three green LEDs on the back power sequencer.

7. **Power on the FRUs in this order:**

   ■ Sun StorEdge 3900 series:

   a. **Power on the service processor.**

   b. **Power on the Ethernet hub.**

   If you are powering on a Sun StorEdge 3960 subsystem with the second cabinet, power on the Ethernet hub in the second cabinet.

   c. **Allow time for the service processor to boot.**

   d. **Power on the Sun StorEdge Fibre Channel switches.**

   e. **Turn the power on to the Sun StorEdge T3+ Arrays.**

   If you are powering on a Sun StorEdge 3960 subsystem with the second cabinet, power on the Sun StorEdge T3+ arrays in the second cabinet.

   ■ Sun StorEdge 6900 series:

   a. **Power on the service processor.**

   b. **Power on the Ethernet hub.**

   If you are powering on a Sun StorEdge 6960 storage system with the second cabinet, power on the Ethernet hub in the second cabinet.

   c. **Allow time for the service processor to boot.**

   d. **Power on the Fibre Channel switches.**

   e. **Power the virtualization engines.**

   f. **Power on the Sun StorEdge T3+ Arrays.**

   If you are powering on a Sun StorEdge 6960 storage system with the second cabinet, power on the Sun StorEdge T3+ arrays in the second cabinet.

8. **Power on the host system(s).**

   You might have to enter a specific software command when booting the host system so that the host system will recognize the storage system.

   See the software documentation for your host system for more information.

   You might need to edit the configuration file for your FRUs. See Chapter 6 for a description of the base configuration for a FRU. See the *Sun StorEdge 3900 and 6900 Series Reference Manual* for a description of how to modify the base configuration. Also see the *Solaris Handbook for Sun Peripherals* for software instructions.

4.2 Powering Off the Storage System

Before you power off the storage system, you must halt any I/O between host system(s) and the storage system.

Depending upon the type of FRUs in the storage system, the type of host system(s), and the software running on the host system(s), you might need to:

- Stop software from accessing FRUs in the subsystem
- Exit the Solaris operating environment
- Power off the host system(s).

Refer to the following for specific instructions:

- *Solaris Handbook for Sun Peripherals*
- System administration guides that correspond to your operating system
- Documentation that came with your host system(s)

Caution – Failure to stop I/O between host system(s) and FRUs in the storage system can result in the loss of data.

Note – If you are powering off a Sun StorEdge 3960 or 6960 subsystems with the second cabinet attached, perform the power off sequence for both cabinets.

1. **Power off the storage systems in this order:**

   - Sun StorEdge 3900 series:

   a. **Stop I/O to FRUs in the storage system.**

   b. **Power off the Sun StorEdge T3+ arrays.**

      If you are powering off a Sun StorEdge 3960 storage system with the second cabinet, power off the Sun StorEdge T3+ arrays in the second cabinet.

   c. **Power off the Sun StorEdge Fibre Channel switches.**

   d. **Power off the Ethernet Hub.**

      If you are powering off a Sun StorEdge 3960 storage system with the second cabinet, power off the Ethernet Hub in the second cabinet.

   e. **Bring down the service processor.**

      See Section 6.13 "Service Processor" on page 6-41 for the procedure to power off the service processor.

   - Sun StorEdge 6900 series:

a. **Stop I/O to FRUs in the storage system.**

b. **Power off the Sun StorEdge T3+ arrays.**

If you are powering off a Sun StorEdge 6960 storage system with the second cabinet, power off the Sun StorEdge T3+ arrays in the second cabinet.

c. **Power off the virtualization engines.**

d. **Power off the Sun StorEdge Fibre Channel switches.**

e. **Power off the Ethernet Hub.**

If you are powering off a Sun StorEdge 6960 storage system with the second cabinet, power off the Ethernet Hub in the second cabinet.

f. **Bring down the service processor.**

See Section 6.13 "Service Processor" on page 6-41 for the procedure to power off the service processor.

2. **Turn the key switch located at the front of the storage system(s) to the Standby position (**FIGURE 4-1**).**

3. **At the bottom of the storage system(s), remove the trim panels and push the AC power sequencer circuit breakers to Off (**FIGURE 4-2**).**

4. **If you are servicing FRUs other than Sun StorEdge T3+ arrays (such as the power sequencer), disconnect the storage system(s) power cords from the grounded outlets.**

Caution – When you service Sun StorEdge T3+ arrays, do not disconnect the power cords from the power sequencer in the storage system or the storage system's power cord from the outlet. These connections provide the ground paths necessary to prevent any damage caused by electrostatic discharge to the Sun StorEdge T3+ arrays installed in the storage system.

Caution – If you want to stop all AC power input to the storage system, you must disconnect the power cables to both power sequencers.

Preparing for Service

The Sun StorEdge 3900 and 6900 series storage systems are preconfigured with all the FRUs installed in the configuration the customer specified. This chapter describes the preparation to service the FRUs in the storage system.

This chapter contains the following sections:

- Section 5.1 "Tools Required" on page 5-1
- Section 5.2 "Safety Requirements" on page 5-1
- Section 5.3 "Removing and Replacing the Front Door" on page 5-2
- Section 5.4 "Removing and Replacing the Side Panel" on page 5-3

5.1   Tools Required

- Phillips screwdriver, No. 2
- Slotted screwdriver, 1/4-inch
- Allen wrench

5.2   Safety Requirements

- Ensure that the voltage and frequency of the power outlet to be used matches the electrical rating labels on the subsystem.
- Wear an antistatic wrist strap when handling any magnetic storage FRUs or system boards.
- Use only properly grounded power outlets.

Caution – You must read the *Sun StorEdge 3900 and 6900 Series Regulatory and Safety Compliance Manual* before beginning any procedure in this manual.

Caution – *Do not* make mechanical or electrical modifications to the storage system. Sun Microsystems is not responsible for regulatory compliance of modified cabinets.

5.3 Removing and Replacing the Front Door

In the process of removing and replacing a FRU, it might be necessary to remove the front door of the Sun StorEdge 3900 and 6900 series storage system. This section describes how to remove and replace the front door of the storage system.

5.3.1 Removing the Front Door

1. **open the front screen door.**

2. **Reach inside of the door and push down on the lever attached to the spring of the top hinge pin.**

   This causes the hinge pin to retract into the door.

3. **Tilt the door out from the top mounting bracket.**

4. **Remove the door and set it aside.**

5.3.2 Replacing the Front Door

1. **Tilt the door and insert the bottom hinge pin with outside hole of the bottom-left mounting bracket.**

2. **Reach inside of the door and push down on the lever attached to the spring of the top hinge pin.**

   This causes the hinge pin to retract into the door.

3. **Align the top hinge pin with the outside hole of the top-left mounting bracket.**

4. **Release the lever.**

   The hinge pin extends into the mounting bracket.

5.4 Removing and Replacing the Side Panel

5.4.1 Removing the Side Panel

● **Use an Allen wrench to loosen the four 1/4-inch shoulder screws that fasten the panel to the storage system, and then remove the panel from the storage system** (FIGURE 5-1)**.**
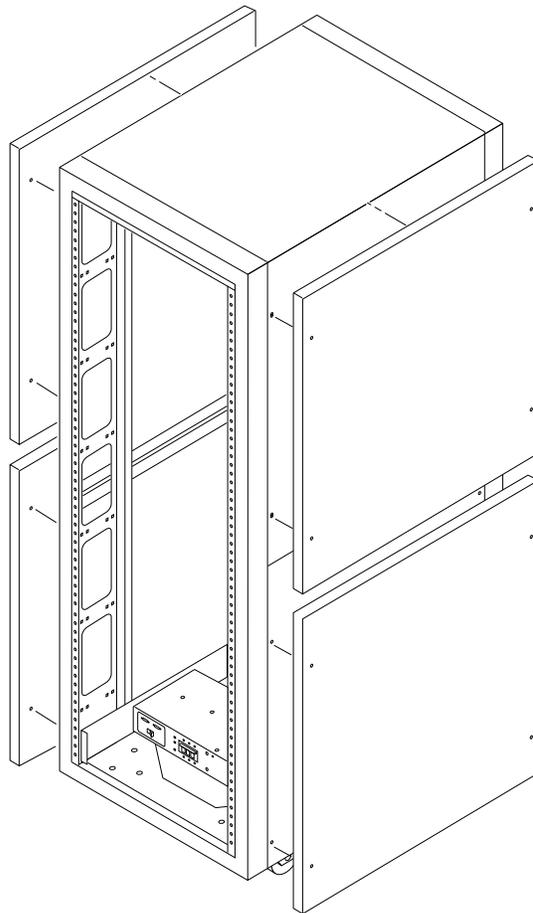
FIGURE 5-1 Removing and Replacing the Side Panels

5.4.2　Replacing the Side Panel

1. **Align the panel screw holes to the storage system screw holes.**

2. **Use an Allen wrench to tighten the four 1/4-inch shoulder screws to fasten the panel to the storage system (**FIGURE 5-1**).**

5.4.3　Opening the Back Door of the Storage System
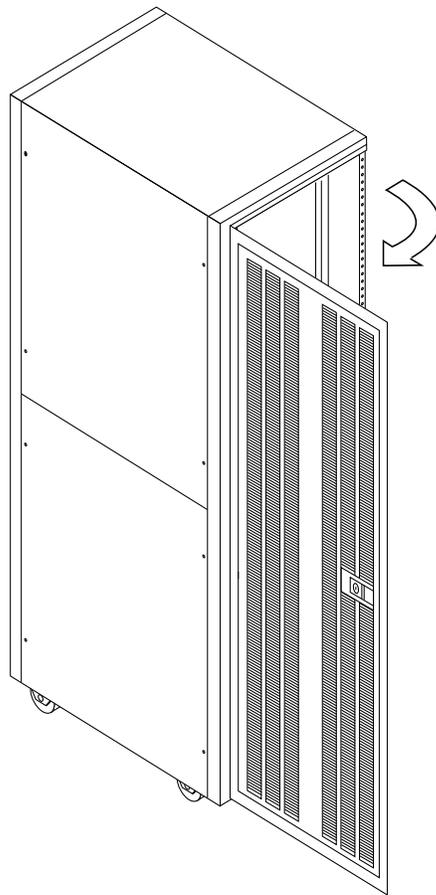
FIGURE 5-2　Opening the Back Door of the Storage System

Installing and Removing FRUs and FRU Default Configuration Settings

The Sun StorEdge 3900 and 6900 series storage systems are preconfigured with all the FRUs installed in the configuration the customer specified. This chapter describes how to install a FRU, remove a FRU, and the default configuration settings for the FRUs that have a software component.

The procedures to test the FRUs before they are removed and after they are replaced are in the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide*. The procedures to configure the FRUs that have a software component are described in *Sun StorEdge 3900 and 6900 Series Reference Manual*.

Caution – FRUs in the storage system must be loaded from the bottom to the top to keep the storage system center of gravity as low as possible. When servicing the storage system, remove only one FRU from the storage system at a time. If possible, remove FRUs from top to bottom to prevent raising the center of gravity of the storage system. Use extra caution when moving the storage system onto ramps.

Note – See FIGURE 6-1 on page 6-10 through FIGURE 6-4 on page 6-13 for the naming conventions and the placement of FRUs in the storage system.

This chapter contains the following sections:

- Section 6.1 "Tools Required" on page 6-2
- Section 6.2 "Safety Requirements" on page 6-2
- Section 6.3 "Sun StorEdge 3900 and 6900 Series Storage System Default Configuration" on page 6-3
- Section 6.6 "Removing a FRU" on page 6-17
- Section 6.18 "Troubleshooting the Installation" on page 6-66
- Section 6.4 "FRU Placement" on page 6-9
- Section 6.7 "Key Switch" on page 6-18
- Section 6.8 "AC Input Cable Assembly" on page 6-20

6.1 Tools Required

- Phillips screwdriver, No. 2
- Slotted screwdriver, 1/4-inch
- Needle-nose pliers
- Allen wrench
- A laptop or a work station to verify the condition of a FRU before removal and after replacement and to configure the FRUs that have a software component.

6.2 Safety Requirements

- Ensure that the voltage and frequency of the power outlet to be used matches the electrical rating labels on the storage system.

- Wear an antistatic wrist strap when handling any magnetic storage FRUs or system boards.

- Use only properly grounded power outlets.

Caution – You must read the *Sun StorEdge 3900 and 6900 Series Regulatory and Safety Compliance Manual* before beginning any procedure in this manual.

Caution – *Do not* make mechanical or electrical modifications to the storage system. Sun Microsystems is not responsible for regulatory compliance of modified cabinets.

6.3 Sun StorEdge 3900 and 6900 Series Storage System Default Configuration

The default configurations for the Sun StorEdge 3900 and 6900 series storage systems are shown in the following tables.

TABLE 6-1   Sun StorEdge 3910 Storage System Configuration Defaults

Item	Configuration	
Basic	2 switches, same configuration 8 port switch IP addresses (192.168.0.30, 192.168.0.31) Gateway IP address (192.168.0.1) Associated switch names (sw1a, sw1b) Associated chassis identifications (1, 2)	
Port or Zone Settings	**sw1a**	**sw1b**
	Four Hard Zones	Four Hard Zones
	Zone 1	**Zone 1**
	Port 1 = TL (t3b0)	Port 1 = TL (t3b0 altmaster)
	Port 2 = F (Host 1a)	Port 2 = F (Host 1b)
	Zone 2	**Zone 2**
	Port 3 = TL (t3b1)	Port 3 = TL (t3b1 altmaster)
	Port 4 = F (Host 2a)	Port 4 = F (Host 2b)
	Zone 3	**Zone 3**
	Port 5 = TL (t3b2)	Port 5 = TL (t3b2 altmaster)
	Port 6 = F (Host 3a)	Port 6 = F (Host 3b)
	Zone 4	**Zone 4**
	Port 7 = TL (t3b3)	Port 7 = TL (t3b3 altmaster)
	Port 8 = F (Host 4a)	Port 8 = F (Host 4b)

TABLE 6-2 Sun StorEdge 3960 Storage System Configuration Defaults

Item	Configuration	
Basic	2 switches, same configuration 16 port switch IP addresses (192.168.0.30, 192.168.0.31) Gateway IP address (192.168.0.1) Associated switch names (sw1a, sw1b) Associated chassis identifications (1, 2)	
Port or Zone Settings	**sw1a**	**sw1b**
	Seven Hard Zones	Seven Hard Zones
	Zone 1	**Zone 1**
	Port 1 = TL (t3b0)	Port 1 = TL (t3b0 altmaster)
	Port 2 = F (Host 1a)	Port 2 = F (Host 1b)
	Zone 2	**Zone 2**
	Port 3 = TL (t3b1)	Port 3 = TL (t3b1 altmaster)
	Port 4 = F (Host 2a)	Port 4 = F (Host 2b)
	Zone 3	**Zone 3**
	Port 5 = TL (t3b2)	Port 5 = TL (t3b2 altmaster)
	Port 6 = F (Host 3a)	Port 6 = F (Host 3b)
	Zone 4	**Zone 4**
	Port 7 = TL (t3b3)	Port 7 = TL (t3b3 altmaster)
	Port 8 = F (Host 4a)	Port 8 = F (Host 4b)
	Zone 5	**Zone 5**
	Port 9 = TL (t3be0)	Port 9 = TL (t3be0 altmaster)
	Port 10 = F (Host 4a)	Port 10 = F (Host 4b)
	Zone 6	**Zone 6**

TABLE 6-2 Sun StorEdge 3960 Storage System Configuration Defaults *(Continued)*

Item	Configuration	
	Port 11 = TL (t3be1)	Port 11 = TL (t3be1 altmaster)
	Port 13 = TL (t3be3)	Port 13 = TL (t3be3 altmaster)
	Port 12 = F (Host 5a)	Port 12 = F (Host 5b)
	Zone 7	**Zone 7**
	Port 15 = TL (t3be2)	Port 15 = TL (t3be2 altmaster)
	Port 16 = TL (t3be4)	Port 16 = TL (t3be4 altmaster)
	Port 14 = F (Host 7a)	Port 14 = F (Host 7b)

TABLE 6-3 Sun StorEdge 6910 Storage System Configuration Defaults

Item	Configuration	
Basic	4 switches, 2 different configurations (top and bottom switches match) Gateway IP address for all (192.168.0.1) Top switches - 8 port, IP addresses (192.168.0.30, 192.168.0,31) Associated switch names (sw1a, sw1b) Associated chassis identifications (1, 2) Bottom switches - 8 port, IP addresses (192.168.0.32, 192.168.0.33) Associated switch names (sw2a, sw2b) Associated chassis identifications (3, 4)	
Port or Zone Settings	**sw1a**	**sw1b**
	Single Hard Zone	Single Hard Zone

TABLE 6-3   Sun StorEdge 6910 Storage System Configuration Defaults *(Continued)*

Item	Configuration	
	Port 1 = F (v1a host side)	Port 1 = F (v1b host side)
	Port 2 = F (Host 1a)	Port 2 = F (Host 1b)
	Port 3 = F (Host 2a)	Port 3 = F (Host 2b)
	Port 4 = F (Host 3a)	Port 4 = F (Host 3b)
	Port 5 = F (Host 4a)	Port 5 = F (Host 4b)
	Port 6 = F (Host 5a)	Port 6 = F (Host 5b)
	Port 7 = F (Host 6a)	Port 7 = F (Host 6b)
	Port 8 = F (Host 7a)	Port 8 = F (Host 7b)
	sw2a	**sw2b**
	Single Hard Zone	Single Hard Zone
	Port 1 = F (v1a FRU side)	Port 1 = F (v1b FRU side)
	Port 2 = TL (t3b0)	Port 2 = TL (t3b0 altmaster)
	Port 3 = TL (t3b1)	Port 3 = TL (t3b1altmaster)
	Port 4 = TL (t3b2)	Port 4 = TL (t3b2 altmaster)
	Ports 5 and 6 = Unused	Ports 5 and 6 = Unused
	Port 7 = T (sw2b port7)	Port 7 = T (sw2a port7)
	Port 8 = T (sw2b port 8)	Port 8 = T (sw2a port 8)

TABLE 6-4   Sun StorEdge 6960 Storage System Configuration Defaults

Item	Configuration	
Basic	4 switches, 2 different configurations (top and bottom switches match) Gateway IP address for all (192.168.0.1) Top switches - 16 port addresses (192.168.0.30, 192.168.0.31) Associated switch names (sw1a, sw1b) Associated chassis identifications (1, 2) Bottom switches - 16 port IP addresses (192.168.0.32, 192.168.0.33) Associated switch names (sw2a, sw2b) Associated chassis identifications (3, 4)	
Port or Zone Settings	**sw1a**	**sw1b**
	Single Hard Zone	Single Hard Zone
	Port 1 = F (v1a host side)	Port 1 = F (v1b host side)
	Port 2 = F (Host 1a)	Port 2 = F (Host 1b)
	Port 3 = F (Host 2a)	Port 3 = F (Host 2b)
	Port 4 = F (Host 3a)	Port 4 = F (Host 3b)
	Post 5 = F (Host 4a)	Post 5 = F (Host 4b)
	Post 6 = F (Host 5a)	Post 6 = F (Host 5b)
	Post 7 = F (Host 6a)	Post 7 = F (Host 6b)
	Port 8 = F (Host 7a)	Port 8 = F (Host 7b)
	Port 9 = F (v2a host side)	Port 9 = F (v2b host side)
	Port 10 = F (Host 8a)	Port 10 = F (Host 8b)
	Port 11 = F (Host 9a)	Port 11 = F (Host 9b)

TABLE 6-4   Sun StorEdge 6960 Storage System Configuration Defaults *(Continued)*

Item	Configuration	
	Port 12 = F (Host 10a)	Port 12 = F (Host 10b)
	Port 13 = F (Host 11a)	Port 13 = F (Host 11b)
	Port 14 = F (Host 12a)	Port 14 = F (Host 12b)
	Port 15 = F (Host 13a)	Port 15 = F (Host 13b)
	Port 16 = F (Host 14a)	Port 16 = F (Host 14b)
	sw2a	**sw2b**
	Two Hard Zones	Two Hard Zones
	Zone 1	**Zone 1**
	Port 1 = F (v1a FRU side)	Port 1 = F (v1b FRU side)
	Port 2 = TL (t3b0)	Port 2 = TL (t3b0 altmaster)
	Port 3 = TL (t3b2)	Port 3 = TL (t3b2 altmaster)
	Port 4 = TL (t3be1)	Port 4 = TL (t3be1)
	Port 5 = TL (t3be3)	Port 5 = TL (t3be3 altmaster)
	Port 6 = Unused	Port 6 = Unused
	Port 7 = T (sw2b port 7)	Port 7 = T (sw2a port 7)
	Port 8 = T (sw2b port 8)	Port 8 = T (sw2a port 8)
	Zone 2	**Zone 2**
	Port 9 = F (v2a FRU side)	Port 9 = F (v2b FRU side)
	Port 10 = TL (t3b1)	Port 10 = TL (t3b1 altmaster)
	Port 11 = TL (t3be0)	Port 11 = TL (t3be0 altmaster)
	Port 12 = TL (t3be2)	Port 12 = TL (t3be2 altmaster)

Item	Configuration	
	Port 13 = TL (t3be4)	Port 13 = TL (t3be4 altmaster)
	Port 14 = Unused	Port 14 = Unused
	Port 15 = T (sw2b port 15)	Port 15 = T (sw2a port 15)
	Port 16 = T (sw2b port 16)	Port 16 = T (sw2a port 16)

6.4   FRU Placement

The location where FRUs can be mounted in the Sun StorEdge 3900 and 6900 series storage systems is show in FIGURE 6-1, FIGURE 6-2, FIGURE 6-3, and FIGURE 6-4. The locations are defined by the number of rack units (RU) occupied by a FRU or blank panel.

FIGURE 6-1   Sun StorEdge 3910 Storage system FRU Placement

1 RU 24 Port
Ethernet Hub

1 RU Blank Panel

2 RU Sun StorEdge Network
Fibre Channel Switch-16

1 RU Blank Panel

1 RU Service Processor

7 RU each
Sun StorEdge T3+ arrays

Power Distribution Unit

Base Cabinet

Expansion Cabinet

FIGURE 6-2   Sun StorEdge 3960 Storage System FRU Placement

1 RU 24 Port Ehternet Hub

2 RU Blank Panel

1 RU each
Sun StorEdge Network Fibre
Channel Switch-8

2 RU Blank Panel

2 RU Virtualization Engine (2 units)

1 RU each
Sun StorEdge Network Fibre
Channel Switch-8

3 RU Blank Panel

1 RU Service Processor

7 RU each
Sun StorEdge T3+ arrays

Power Distribution Unit

Base Cabinet

FIGURE 6-3   Sun StorEdge 6910 Storage System FRU Placement

1 RU 24 Port Ethernet Hub

2 RU Blank Panel

2 RU each
Sun StorEdge Network Fibre
Channel Switch-16

2 RU Virtualization Engine
(4 units)

2 RU each
Sun StorEdge Network Fibre
Channel Switch-16

1 RU Blank Panel

1 RU Service Processor

7 RU each
Sun StorEdge
T3+ arrays

Power Distribution Unit

Base Cabinet

Expansion Cabinet
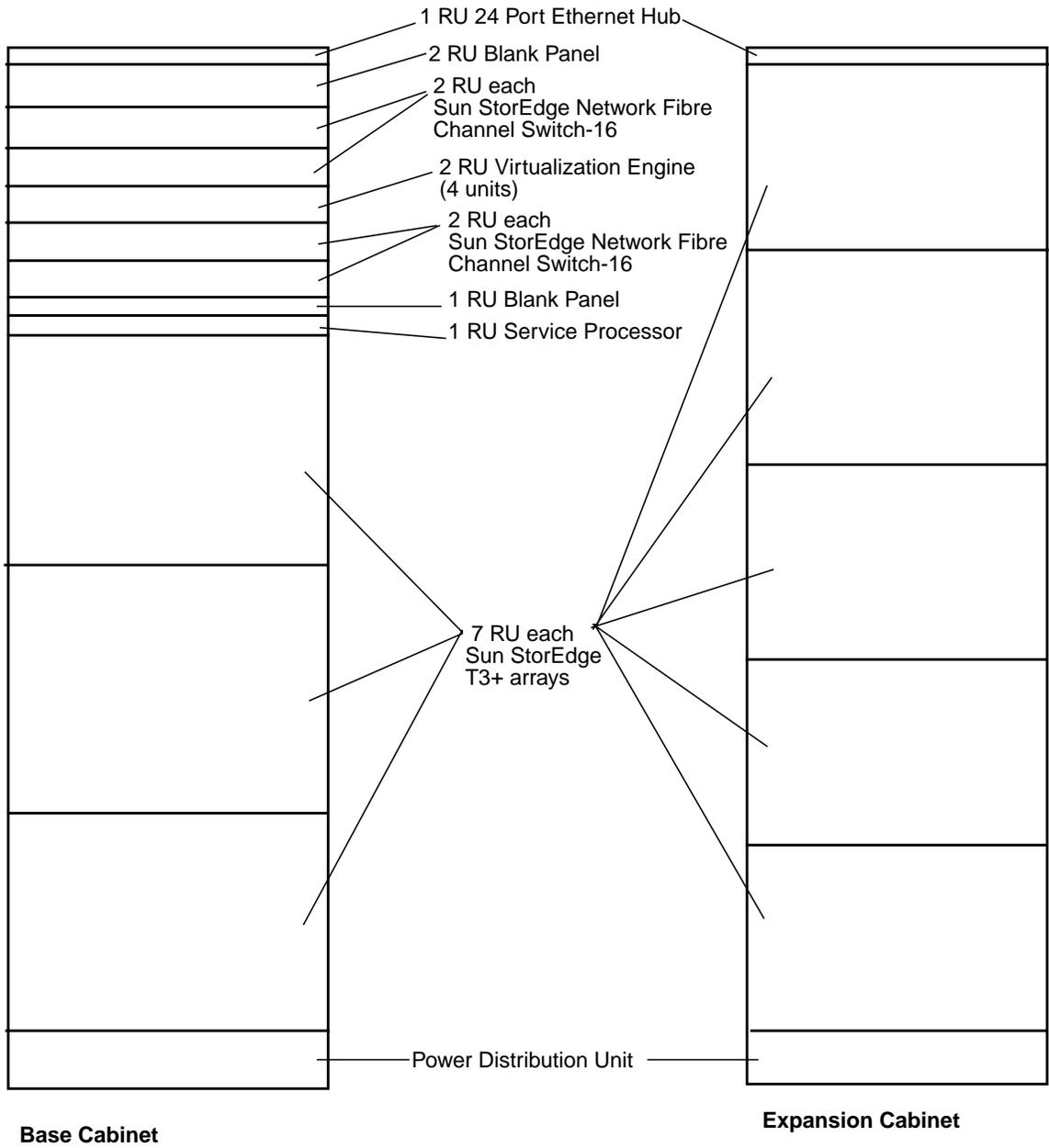
FIGURE 6-4   Sun StorEdge 6960 Storage System FRU Placement

6.5 Installing a FRU

This section contains a general description of installing a FRU. The steps to install a particular FRU are contained in the description of that FRU.

1. **Remove the side panels, if necessary.**

   Refer to Section 5.4 "Removing and Replacing the Side Panel" on page 5-3 for a description of removing the side panels.

2. **Determine where you are going to install the FRU.**

   Refer to the storage system Section 6.4 "FRU Placement" on page 6-9.

3. **Open the back door.**

4. **Remove the front door to install a FRU, if necessary.**

   Refer to Section 5.3 "Removing and Replacing the Front Door" on page 5-2.

5. **Remove the filler panel that covers the space where you will install the FRU (**FIGURE 6-5**).**

   a. **Use a No. 2 Phillips screwdriver and loosen the captive screws that fasten the panel to the storage system. Do not expect the screws to be completely removed from the panel.**

   b. **Remove the filler panel and save it for future use.**

   Note – To maintain proper airflow, make sure you install filler panels over locations that do not have FRUs mounted.
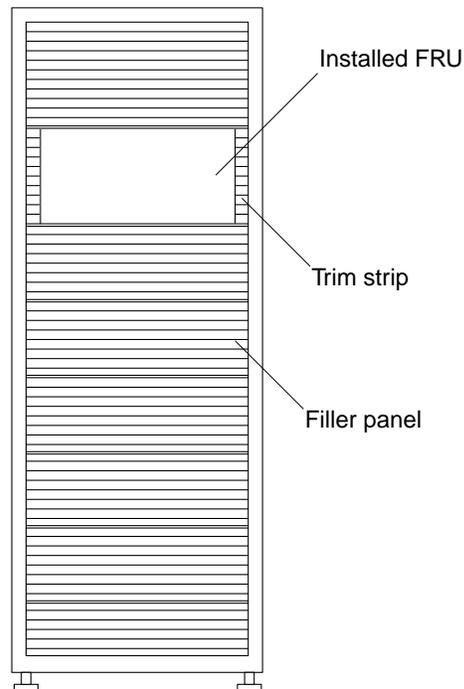
FIGURE 6-5 Filler Panel and Trim Strip Location

6. **If the storage system is not bolted to the floor, extend the stabilizer legs.**

   The stabilizer legs are located under the front of the storage system. Refer to Section 2.5 "Installing the Stabilizer Legs" on page 2-5.

   Caution – You must extend or retract the stabilizer legs as a pair. Make sure that the levelers have been adjusted before attempting to move the stabilizer legs.

7. **Install the FRU.**

   Refer to the section Section 6.4 "FRU Placement" on page 6-9.

8. **Route the power cables from the FRU to the power sequencer(s).**

   A storage system that is ordered without all possible FRUs installed has the power cables routed as shown in FIGURE 6-6.
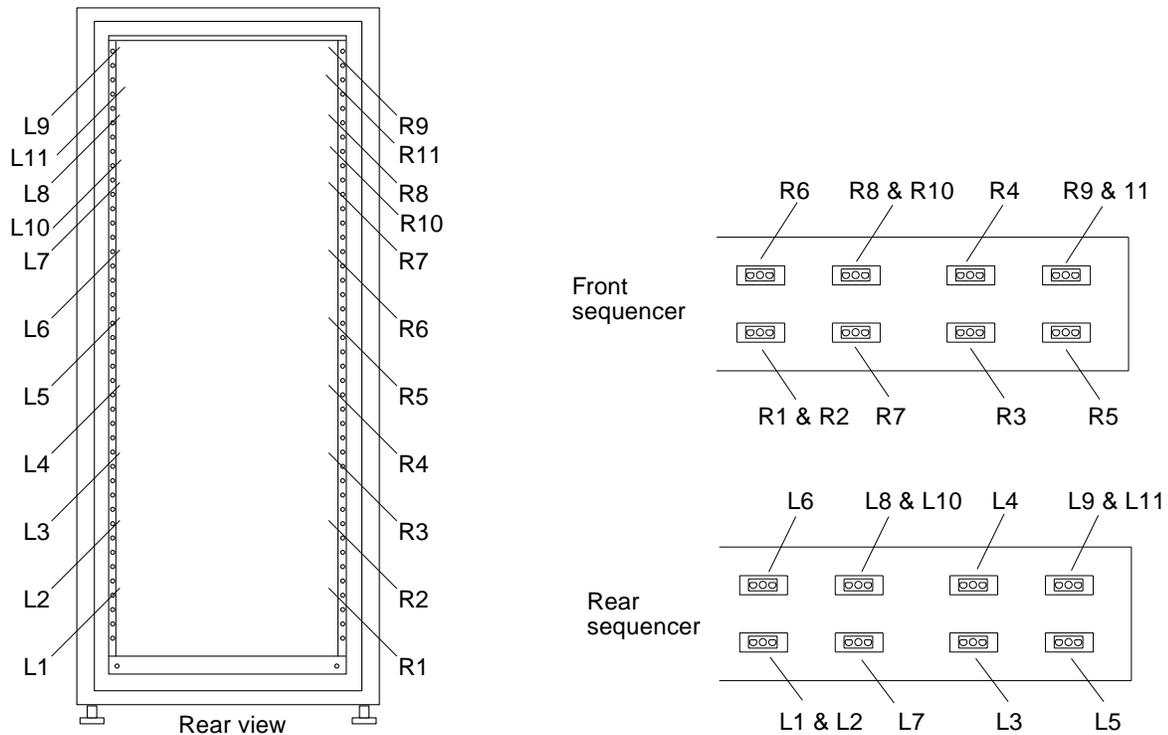
FIGURE 6-6   Power Cable Routing

⚠ **Caution –** Power cable routing can vary depending on how the storage system is configure.

9. **Install the trim strips (**FIGURE 6-5**).**

   Use a No. 2 Phillips screwdriver to tighten the captive screws.

10. **If necessary, retract the stabilizer legs under the storage system.**

11. **If necessary, close the front screen door.**

   If you formerly removed the door, refer to Section 5.3 "Removing and Replacing the Front Door" on page 5-2.

6.6 Removing a FRU

Note – If the instructions that came with your FRU instructs you to remove the side panels, also perform the steps in Section 5.4 "Removing and Replacing the Side Panel" on page 5-3.

1. **For cabinets equipped with a front screen door, open the front screen door.**

   If it is necessary to remove the front door to remove a FRU, perform the steps in Section 5.3 "Removing and Replacing the Front Door" on page 5-2.

2. **Remove the trim strips beside the FRU (**FIGURE 6-5**).**

   Use a No. 2 Phillips screwdriver and loosen the captive screws that fasten the trim strips to the storage system. Do not expect the screws to be completely removed from the trim strips.

   Remove the trim strips and save for future use.

3. **If the storage system is not bolted to the floor, extend the stabilizer legs.**

   The stabilizer legs are located under the front of the storage system.

   Caution – Always extend or retract the stabilizer legs as a pair. Make sure that the levelers have been adjusted before attempting to move the stabilizer legs.

4. **Remove the FRU.**

   Refer to Section 6.4 "FRU Placement" on page 6-9 for the location of FRUs in the storage system.

5. **If you are not reinstalling the FRU, install a filler panel over its previous location (**FIGURE 6-5**).**

   Use a Phillips screwdriver to tighten the captive screws.

   Note – To maintain proper airflow, make sure you install filler panels over locations that do not have FRUs mounted.

6. **If necessary, retract the stabilizers under the storage system.**

7. **If necessary, close the front screen door.**

   If you formerly removed the door refer to Section 5.3 "Removing and Replacing the Front Door" on page 5-2.

6.7 Key Switch

6.7.1 Removing the Key Switch

Caution – Ensure that the power to the storage system is off. See Section 4.2 "Powering Off the Storage System" on page 4-5.

1. **Remove the bottom Sun StorEdge T3+ array.**

   See Section 6.16 "Sun StorEdge T3+ Array" on page 6-51 for information about removing and replacing Sun StorEdge T3+ arrays.

2. **Disconnect the key switch cable connector from the cable adapter cable connector near the back of the power sequencers (**FIGURE 6-7**).**

   The adapter cable remains connected to the power sequencer.
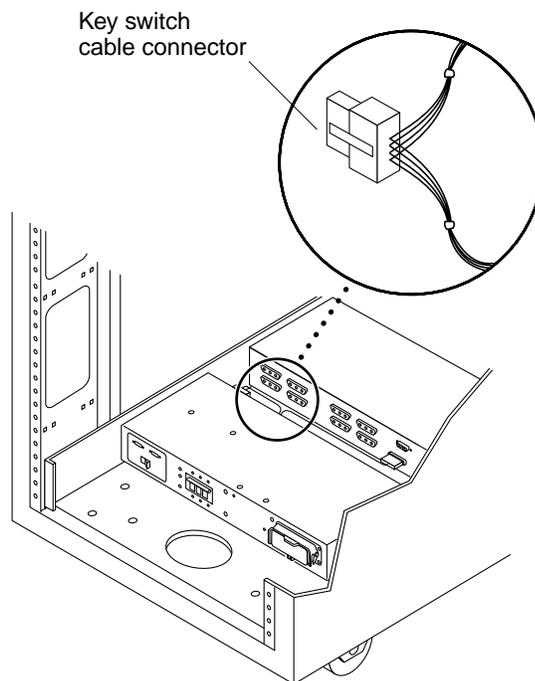
FIGURE 6-7 Key Switch Cable Connector

3. **Remove the Phillips screws and cable ties that secure the key switch cable to the chassis frame.**

   Each screw secures a clamp on the frame that holds the cable in place.

4. **Facing the back of the key switch on the inside of the storage system, use a pair of needle-nose pliers to slide out and remove the metal clip that secures the key switch to the storage system (**FIGURE 6-8**).**

Metal clip
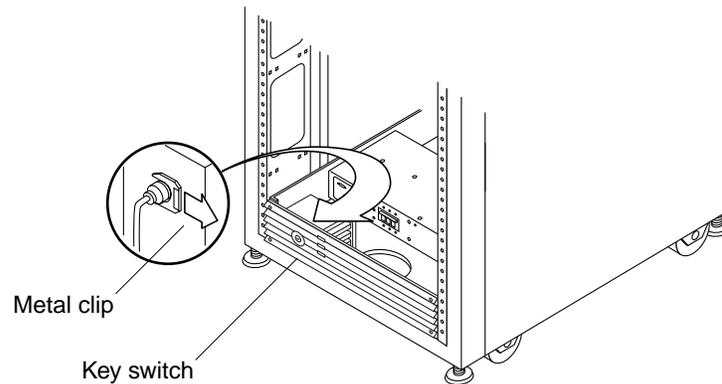
Key switch

FIGURE 6-8 Removing and Replacing the Key Switch

5. **Pull the key switch out of the chassis opening.**

6.7.2   Replacing the Key Switch

1. **Insert the key switch into the panel opening.**

2. **Facing the back of the key switch on the inside of the storage system, slide the metal clip onto the notch of the key switch body to secure it in place (**FIGURE 6-8**).**

3. **Route the key switch cable to the power sequencer, securing it to the chassis frame with cable ties and Phillips screws.**

   Each screw secures a clamp on the frame that holds the cable in place.

4. **Connect the key switch cable connector to the adapter-cable connector near the back of the power sequencer (**FIGURE 6-7**).**

5. **Replace the Sun StorEdge T3+ array.**

   See Section 6.16 "Sun StorEdge T3+ Array" on page 6-51.

6. **Power on the storage system.**

See Section 4.1 "Powering On the Storage System" on page 4-1.

6.8 AC Input Cable Assembly

6.8.1 Removing the AC Input Cable Assembly

Caution – Ensure that the power to the storage system is off. See Section 4.2 "Powering Off the Storage System" on page 4-5.

1. **Disconnect the AC power cord from the power connector on the power sequencer (**FIGURE 6-9**).**

2. **Close the power connector cover.**

3. **Pull the latch up over the cover to secure it.**
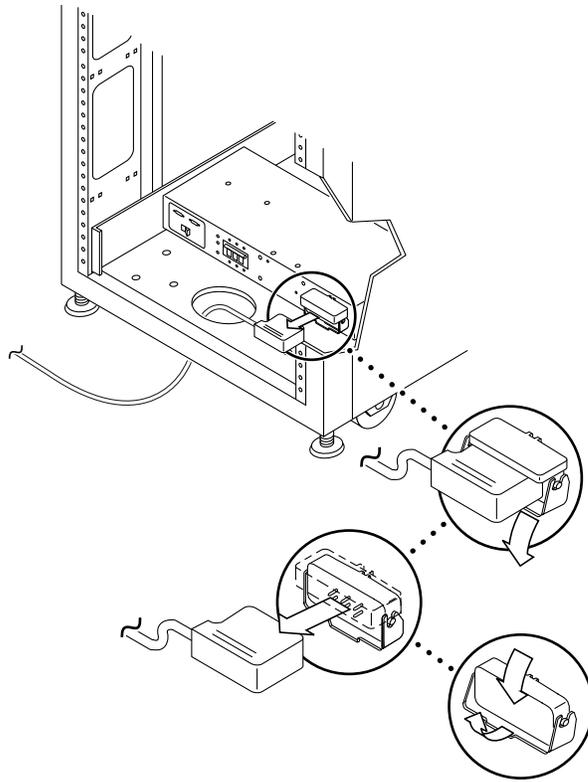
FIGURE 6-9 Removing the AC Power Cord

6.8.2 Replacing the AC Input Cable Assembly

Caution – Be sure that the power to the storage system is off. See Section 4.2 "Powering Off the Storage System" on page 4-5.

1. **Pull back the power connector cover (**FIGURE 6-9**).**

   Flip the cover latch open to access the connector.

2. **Connect the power cord to the power connector.**

3. **Pull the latch over the power cord to secure it to the power connector.**

4. **Power on the storage system.**

   See Section 4.1 "Powering On the Storage System" on page 4-1.

6.9 Power Sequencer

6.9.1 Removing the Power Sequencer

1. **Ensure that the power to the storage system is off.**

   See Section 4.2 "Powering Off the Storage System" on page 4-5.

2. **Disconnect the key switch adapter cable from the mating power supply connector at the back of the power sequencer (**FIGURE 6-10**).**
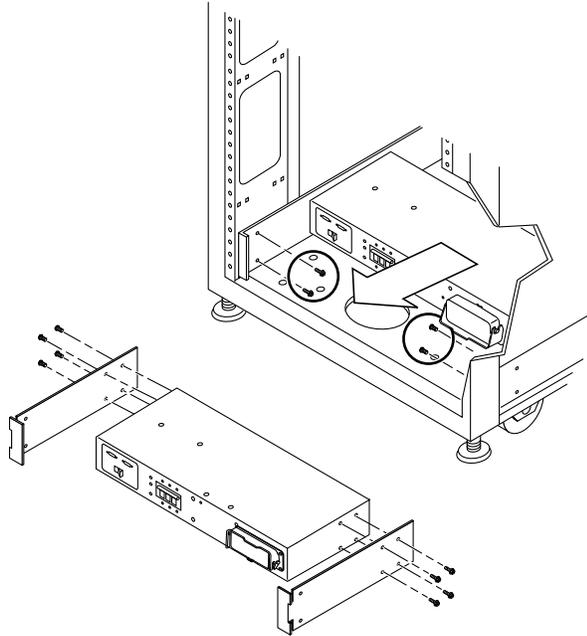
FIGURE 6-10 Removing the Power Sequencer

3. **Remove the AC power cord from the power sequencer.**

   See Section 6.8.1 "Removing the AC Input Cable Assembly" on page 6-20.

4. **Remove the screws that secure the sequencer to the chassis.**

5. **Slide out the power sequencer to access the power cables.**

6. **Disconnect all other power cables from the sequencer.**

7. **Remove the power sequencer.**

6.9.2 Replacing the Power Sequencer

1. **Place the power sequencer on the floor.**

2. **Connect all cables to the back of the power sequencer.**

3. **Slide the power sequencer into the storage system (FIGURE 6-10).**

4. **Tighten the screws that secure the sequencer to the chassis.**

5. **Connect the AC power cord.**

   See Section 6.8.2 "Replacing the AC Input Cable Assembly" on page 6-21.

6. **Power on the storage system.**

   See Section 4.1 "Powering On the Storage System" on page 4-1.

6.10 Service Processor Service Panel

The service processor in the Sun StorEdge 3900 and 6900 series storage system is responsible for:

- Monitoring the FRUs in the Sun StorEdge 3900 and 6900 series storage systems.
- Providing fault isolation, verification, and notification of failed FRUs in the storage system.
- Configuring some limited, non mission critical functions, including:
  - Sun StorEdge T3+ arrays
  - Virtualization engine
  - Fibre Channel switches

The access to the service processor is through the service panel. The service panel is bolted to the back of the Sun StorEdge 3900 and 6900 series storage system inside the back cover. The functions of the service processor are carried out through the use of a console cable connected from the serial console port on the service panel to a laptop or a serial port of a workstation or server (cables and DB9 and DB25 adapters are shipped with the storage system). FIGURE 6-11 shows the service panel and its connections to the service processor.
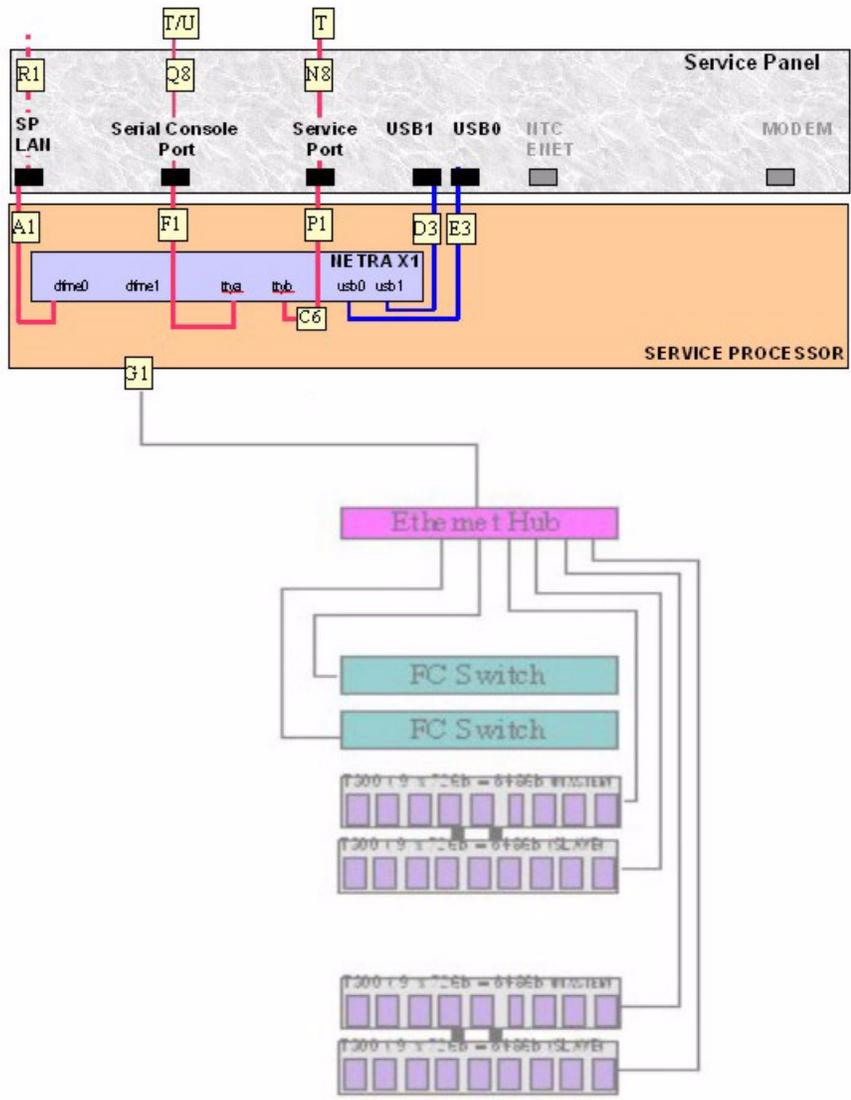
FIGURE 6-11 Service Processor Service Panel

TABLE 6-5 Service Processor to Service Panel Cabling

Cable Number	Type	Part Number	Description
A1, G1, F1, P1, R1	RJ45 ╱ RJ45	530-1871-04	Standard CAT5 Cable (1-to-1)
D3, E3	USB	530-3136-01	Standard USB
C6	RJ45 ╱ RJ45F	370-4901-01	Special 6" Roll-Over Adapter (1-to-8/8-to-1)
Q8, N8	RJ45 ╱ RJ45	530-2093-01	Standard Cable (1-to-1) Ships with the service processor
T	RJ45 ╱ DB9F	530-3100-01	Standard Adapter Ships with the service processor
U	RJ45 ╱ DB25	530-2889-03	Standard Adapter Ships with the service processor

TABLE 6-6   Service Panel Connectors

Connector Name	Internal	External	Comments
SP LAN	RJ45	RJ45	Uses an Ethernet cross-over cable to connect the Network Terminal Concentrator to the service processor for single service processor configurations. When several service processors are located geographically and are being aggregated together, the SP LAN Ethernet port is connected to an Ethernet router or hub port using a straight-through cable.
Serial Console Port	RJ45	RJ45	Uses RS-232 protocol to directly access the console port (ttya) of the local service processor. When the Sun StorEdge Remote Response option is installed, this port comes from the local Xylogics MicroAnnex port 1 allowing on site support personnel access to the service processor through the Xylogics MicroAnnex.
Service Port	RJ45	RJ45	Uses a serial RS-232 connection to connect the local service processor (ttyb) to its storage system FRUs (for example, Sun StorEdge T3+ array firmware downloads). This is the port by which support personnel (on site or remote) establish a connection to do maintenance on the storage system after a connection to the service processor has been established. Alternately, this service port panel connection can be used to attach an aggregated service processor (slave) serial console port panel connection. This connection is then used by the master service processor to gain access to the slave service processor console port (ttya) when the Sun StorEdge Remote Response option PPP connection exists.
USB1	USB	USB	Not used

TABLE 6-6   Service Panel Connectors *(Continued)*

Connector Name	Internal	External	Comments
USB2	USB	USB	Not used
NTC ENET	RJ45	RJ45	Used to connect the Network Terminal Concentrator to the service processor when the Sun StorEdge Remote Response option is installed. When several geographically located service processors are aggregated together, the NTC ENET port is connected to the Ethernet router LAN port using a straight-through cable. When the Sun StorEdge Remote Response option is not installed, this port is not used.
MODEM	RJ12	RJ12	Used to support the Sun StorEdge Remote Response option. This port provides an RS-232 serial protocol port to be connected to the externally located modem. When the Sun StorEdge Remote Response option is not installed, this port is not used.

Note – All service panel connectors are female connectors.

6.10.1   Removing the Service Panel

1. **Shut down the service processor through the service panel connection.**

2. **Shut down any FRUs connected to the service port and the serial console port on the service panel. From the LAN server, take the Sun StorEdge 3900 or 6900 Series storage system off line.**

3. **Open the back door of the storage system.**

4. **Remove the screws from the right side of the service panel and swing the panel out.**

5. **Identify the location of each cable on the inside of the service panel through the placement shown in** FIGURE 6-11, TABLE 6-5, **and** TABLE 6-6**. Remove all cables from the inside of the service panel.**

6. **Close the service panel. Identify the location of each cable on the outside of the service panel by the placement shown in** FIGURE 6-11, TABLE 6-5, **and** TABLE 6-6**. Remove all cables from the outside of the service panel.**

7. **Note the location of the service panel and remove the remaining screws holding the left side of the service panel to the back of the storage system.**

8. **Remove the service panel.**

6.10.2   Replacing the Service Panel

1. **Place the new service panel in its location and replace the screws on the left side to hold the service panel in place on the storage system.**

2. **Open the service panel and reconnect the cables to the inside of the service panel that were removed from the inside of the previous service panel. Make certain to connect them in the same position.**

3. **Close the service panel and replace the screws on the right side of the panel.**

4. **Replace all the cables that were removed from the outside of the previous service panel. Make certain to connect them in the same position.**

5. **Start the service processor.**

   See the *Sun StorEdge 3900 and 6900 Reference Manual* for the software associated with starting the service processor.

6.11   Sun StorEdge Network Fibre Channel Switch-8

See the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* to confirm the need to remove and replace the Sun StorEdge network Fibre Channel switch-8 (hereafter referred to as the 8-port Fibre Channel switch).

6.11.1   Removing the 8-Port Fibre Channel Switch

1. **Halt any I/O between the host system(s) and the 8-port Fibre Channel switch.**

   See the *Sun StorEdge 3900 and 6900 Series Reference Manual* for the software associated with removing and replacing the 8-port Fibre Channel switch.

2. **Verify that the hosts that were connected to the switch to be removed have their path changed to the other switch.**

   The 8-port Fibre Channel switch is hot swappable.

3. **Open the back door of the storage system.**

4. **Power off the switch to be removed.**

5. **Remove the gigabit interface converters (GBICs) from the ports and make a note of the port numbers where the GBICs were inserted.**

6. **Disconnect the power cable to the switch.**

7. **At the front of the storage system, remove the decorative grill covering the 8-port Fibre Channel switch and set it aside.**

8. **Remove the screws that connect the switch to the storage system.**

9. **Remove the switch by sliding it out the front of the cabinet.**

10. **Identify the media access control (MAC) address for the new switch.**

    The MAC address for the 8-port Fibre Channel switch is a 12-digit number that is printed on the label on the back of the 8-port Fibre Channel switch.

11. **Log onto the service processor.**

    Log into the service processor using either of the following methods:
    - A console cable connected from the serial console port on the service panel to a laptop
    - A console cable connected from the serial console port on the service panel to a workstation or server

    Cables and DB9 and DB25 adapters are shipped with the storage system.

12. **Edit the** `/etc/ethers` **file on the service processor to include the MAC address of the new switch. See the** `ethers`**(4) man page for details. For example:**

    ```
    8:0:20:7d:93:7e switch-name
    ```

13. **Ensure the RARP daemon (**`in.rarpd`**(1M) is running on the service processor. For example:**

    ```
    msp0# ps -eaf | grep rarpd
    root 317 314 0 sept 28 ? 0:00 /usr/sbin/in.rarpd dmfe 1
    msp0#
    ```

6.11.2 Replacing the 8-Port Fibre Channel Switch

1. **Place the switch in its position in the storage system.**

   See FIGURE 6-1 on page 6-10 or FIGURE 6-3 on page 6-12 for the position of the switch.

2. **Replace the screws that connect the switch to the storage system.**

3. **At the back of the storage system, reinsert the GBICs into the same port numbers they occupied on the removed switch.**

   Make certain you use the same ports you made a note of in Step 5 of Section 6.11.1 "Removing the 8-Port Fibre Channel Switch" on page 6-28.

4. **Reconnect the power cable to the 8-port Fibre Channel switch.**

5. **Log onto the service processor.**

   Log into the service processor using either of the following methods:

   - A console cable connected from the serial console port on the service panel to a laptop
   - A console cable connected from the serial console port on the service panel to a workstation or server

   Cables and DB9 and DB25 adapters are shipped with the storage system.

   See the *Sun StorEdge 3900 and 6900 Series Reference Manual* for the software associated with replacing the 8-port Fibre Channel switch.

   See the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* to verify the status of the 8-port Fibre Channel switch.

6. **Edit the** `/etc/ethers` **file on the service processor to include the MAC address of the new switch. See the** `ethers`**(4) man page for details. For example:**

   ```
   8:0:20:7d:93:7e switch-name
   ```

7. **Ensure the RARP daemon (**`in.rarpd`**(1M) is running on the service processor. For example:**

   ```
   msp0# ps -eaf | grep rarpd
   root 317 314 0 sept 28 ? 0:00 /usr/sbin/in.rarpd dmfe 1
   msp0#
   ```

8. **Power on the 8-port Fibre Channel switch.**

9. **Replace the decorative grill covering the 8-port Fibre Channel switch.**

   The switch initialization and flash update procedures are in the *SANbox-8/16 Segmented Loop Switch Management User's Guide.* TABLE 6-8, TABLE 6-9, and TABLE 6-10 show the base configuration of the 8-port Fibre Channel switch. See the manual *Sun StorEdge 3900 and 6900 Series Reference Manual* for a description of the configuration utilities used to modify the base configuration.

6.11.3   8-Port Fibre Channel Switch Configuration Parameters

TABLE 6-7   Sun StorEdge 8-Port Fibre Channel Switch Configuration Parameters

Field	Value
chassis_stage_type	IO/T (I/O transfer mode)
port admin mode	online (for each port)
HW:	1003
Chassis Type:	A8 (8-port switch)
PROM	30300
FLASH:	30462
Chassis Number [1]	1 (sw1a) 2 (sw1b) 3 (sw2a) 4 (sw2b)
Fabric Id:	1
edtov:	2560
mfstov:	0
ratov:	5000
rttov:	100
Netmask	255.255.255.0
ARP Timeout	30000
Gateway	192.168.0.1
SNMP Trap Address	local host
SNMP Location	undefined
SNMP Contact	undefined
Chassis-mode:	1 online
Port MFS Mode:	0 off

1 The Chassis Number default can be overridden in a SAN environment with multiple Sun
   StorEdge 6900 series storage systems.

6.11.4 Sun StorEdge 3910 Storage System 8-Port Fibre Channel Switch Configuration

TABLE 6-8 Sun StorEdge 3910 Storage System 8-Port Fibre Channel Switch Configuration

sw1a	sw1b
Four Hard Zones	Four Hard Zones
Zone 1	**Zone 1**
Port 1 = TL (t3b0)	Port 1 = TL (t3b0 altmaster)
Port 2 = F (Host 1a)	Port 2 = F (Host 1b)
Zone 2	**Zone 2**
Port 3 = TL (t3b1)	Port 3 = TL (t3b1 altmaster)
Port 4 = F (Host 2a)	Port 4 = F (Host 2b)
Zone 3	**Zone 3**
Port 5 = TL (t3b2)	Port 5 = TL (t3b2 altmaster)
Port 6 = F (Host 3a)	Port 6 = F (Host 3b)
Zone 4	**Zone 4**
Port 7 = TL (t3b3)	Port 7 = TL (t3b3 altmaster)
Port 8 = F (Host 4a)	Port 8 = F (Host 4b)

6.11.5 Sun StorEdge 6910 Storage System 8-Port Fibre Channel Switch Configuration

TABLE 6-9 Sun StorEdge 6910 Storage System 8-Port Fibre Channel Switch Configuration

sw1a	sw1b
Single Hard Zone	Single Hard Zone
Port 1 = F (v1a host side)	Port 1 = F (v1b host side)
Port 2 = F (Host 1a)	Port 2 = F (Host 1b)
Port 3 = F (Host 2a)	Port 3 = F (Host 2b)
Port 4 = F (Host 3a)	Port 4 = F (Host 3b)
Port 5 = F (Host 4a)	Port 5 = F (Host 4b)

TABLE 6-9 Sun StorEdge 6910 Storage System 8-Port Fibre Channel Switch Configuration *(Continued)*

sw1a	sw1b
Port 6 = F (Host 5a)	Port 6 = F (Host 5b)
Port 7 = F (Host 6a)	Port 7 = F (Host 6b)
Port 8 = F (Host 7a)	Port 8 = F (Host 7b)

TABLE 6-10 Sun StorEdge 6910 System 8-Port Fibre Channel Switch Configuration (*Continued*)

sw2a	sw2b
Single Hard Zone	Single Hard Zone
Port 1 = F (v1a FRU side)	Port 1 = F (v1b FRU side)
Port 2 = TL (t3b0)	Port 2 = TL (t3b0 altmaster)
Port 3 = TL (t3b1)	Port 3 = TL (t3b1altmaster)
Port 4 = TL (t3b2)	Port 4 = TL (t3b2 altmaster)
Ports 5 and 6 = Unused	Ports 5 and 6 = Unused
Port 7 = T (sw2b port7)	Port 7 = T (sw2a port7)
Port 8 = T (sw2b port 8)	Port 8 = T (sw2a port 8)

6.12 Sun StorEdge Network Fibre Channel Switch-16

See the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* to confirm the need to remove and replace the Sun StorEdge network Fibre Channel switch-16 (hereafter referred to as the 16-port Fibre Channel switch).

6.12.1 Removing the 16-Port Fibre Channel Switch

1. **Halt all I/O between the host system(s) and the 16-port Fibre Channel switch.**

2. **Verify that the hosts that were connected to this switch have their path switched to the other switch.**

   The 16-port Fibre Channel switch is hot swappable.

3. **Open the back door of the storage system.**

4. **Power off the switch to be removed.**

5. **Remove the gigabit interface converters (GBICs) from the ports and make a note of the port numbers where the GBICs were inserted.**

6. **Disconnect the power cable to the switch.**

7. **At the front of the storage system, remove the decorative grill covering the 16-port Fibre Channel switch and set it aside.**

8. **Remove the screws that connect the switch to the storage system.**

9. **Remove the switch by sliding it out the front of the cabinet.**

10. **Identify the media access control (MAC) address for the new switch.**

    The MAC address for the 16-port Fibre Channel switch is a 12-digit number that is printed on the label on the back of the 16-port Fibre Channel switch.

11. **Log onto the service processor.**

    Log into the service processor using either of the following methods:

    - A console cable connected from the serial console port on the service panel to a laptop
    - A console cable connected from the serial console port on the service panel to a workstation or server

    Cables and DB9 and DB25 adapters are shipped with the storage system.

12. **Edit the** `/etc/ethers` **file on the service processor to include the MAC address of the new switch. See the** `ethers`**(4) man page for details. For example:**

    ```
    8:0:20:7d:93:7e switch-name
    ```

13. **Ensure the RARP daemon (**`in.rarpd`**(1M) is running on the service processor. For example:**

    ```
    msp0# ps -eaf | grep rarpd
    root 317 314 0 sept 28 ? 0:00 /usr/sbin/in.rarpd dmfe 1
    msp0#
    ```

6.12.2   Replacing the 16-Port Fibre Channel Switch

1. **Place the switch in its position in the storage system.**

   See FIGURE 6-2 on page 6-11, or FIGURE 6-4 on page 6-13 for the position of the switch.

2. **Replace the screws that connect the switch to the storage system.**

3. **At the back of the storage system, reinsert the GBICs to the same port numbers they occupied on the removed switch.**

   Make certain you use the same ports you made a note of in Step 5 of Section 6.12.1 "Removing the 16-Port Fibre Channel Switch" on page 6-34.

4. **Reconnect the power cable to the 16-port Fibre Channel switch.**

5. **Log onto the service processor.**

   Log into the service processor using either of the following methods:

   - A console cable connected from the serial console port on the service panel to a laptop
   - A console cable connected from the serial console port on the service panel to a workstation or server

   Cables and DB9 and DB25 adapters are shipped with the storage system.

   See the *Sun StorEdge 3900 and 6900 Series Reference Manual* for the software associated with replacing the 16-port Fibre Channel switch.

   See the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* to verify the status of the 16-port Fibre Channel switch.

6. **Edit the** `/etc/ethers` **file on the service processor to include the MAC address of the new switch. See the** `ethers`**(4) man page for details. For example:**

   ```
   8:0:20:7d:93:7e switch-name
   ```

7. **Ensure the RARP daemon (**`in.rarpd`**(1M) is running on the service processor. For example:**

   ```
   msp0# ps -eaf | grep rarpd
   root 317 314 0 sept 28 ? 0:00 /usr/sbin/in.rarpd dmfe 1
   msp0#
   ```

8. **Power on the 16-port Fibre Channel switch**

9. **Replace the decorative grill covering the 16-port Fibre Channel switch.**

   The switch initialization and flash update procedures are in the *SANbox-8/16 Segmented Loop Switch Management User's Guide.* TABLE 6-12, TABLE 6-13, and TABLE 6-14 and show the base configuration of the 16-port Fibre Channel switch. See the *Sun StorEdge 3900 and 6900 Series Reference Manual* for a description of the configuration utilities used to modify the base configuration.

6.12.3   16-Port Fibre Channel Switch Configuration Parameters

TABLE 6-11   16-Port Fibre Channel Switch Configuration Parameters

Field	Value
chassis_stage_type	IO/T (I/O transfer mode)
port admin mode	online (for each port)
HW:	1003
Chassis Type:	A16 (16-port switch)
PROM	30300
FLASH:	30462
Chassis Number [1]	1 (sw1a) 2 (sw1b) 3 (sw2a) 4 (sw2b)
Fabric Id:	1
edtov:	2560
mfstov:	0
ratov:	5000
rttov:	100
Netmask	255.255.255.0
ARP Timeout	30000
Gateway	192.168.0.1
SNMP Trap Address	local host
SNMP Location	undefined
SNMP Contact	undefined
Chassis-mode:	1 online
Port MFS Mode:	0 off

[1] The Chassis Number default can be overridden in a SAN environment with multiple Sun StorEdge 6900 series storage systems.

6.12.4 Sun StorEdge 3960 Storage System 16-Port Fibre Channel Switch Configuration

TABLE 6-12 Sun StorEdge 3960 Storage System 16-Port Fibre Channel Switch Configuration

sw1a	sw1b
Seven Hard Zones	Seven Hard Zones
Zone 1	**Zone 1**
Port 1 = TL (t3b0)	Port 1 = TL (t3b0 altmaster)
Port 2 = F (Host 1a)	Port 2 = F (Host 1b)
Zone 2	**Zone 2**
Port 3 = TL (t3b1)	Port 3 = TL (t3b1 altmaster)
Port 4 = F (Host 2a)	Port 4 = F (Host 2b)
Zone 3	**Zone 3**
Port 5 = TL (t3b2)	Port 5 = TL (t3b2 altmaster)
Port 6 = F (Host 3a)	Port 6 = F (Host 3b)
Zone 4	**Zone 4**
Port 7 = TL (t3b3)	Port 7 = TL (t3b3 altmaster)
Port 8 = F (Host 4a)	Port 8 = F (Host 4b)
Zone 5	**Zone 5**
Port 9 = TL (t3be0)	Port 9 = TL (t3be0 altmaster)
Port 10 = F (Host 4a)	Port 10 = F (Host 4b)
Zone 6	**Zone 6**
Port 11 = TL (t3be1)	Port 11 = TL (t3be1 altmaster)
Port 13 = TL (t3be3)	Port 13 = TL (t3be3 altmaster)
Port 12 = F (Host 5a)	Port 12 = F (Host 5b)
Zone 7	**Zone 7**
Port 15 = TL (t3be2)	Port 15 = TL (t3be2 altmaster)
Port 16 = TL (t3be4)	Port 16 = TL (t3be4 altmaster)
Port 14 = F (Host 7a)	Port 14 = F (Host 7b)

6.12.5 Sun StorEdge 6960 Storage System 16-Port Fibre Channel Switch Configuration

TABLE 6-13   Sun StorEdge 6960 Storage System 16-Port Fibre Channel Switch Configuration

sw1a	sw1b
Single Hard Zone	Single Hard Zone
Port 1 = F (v1a host side)	Port 1 = F (v1b host side)
Port 2 = F (Host 1a)	Port 2 = F (Host 1b)
Port 3 = F (Host 2a)	Port 3 = F (Host 2b)
Port 4 = F (Host 3a)	Port 4 = F (Host 3b)
Post 5 = F (Host 4a)	Post 5 = F (Host 4b)
Post 6 = F (Host 5a)	Post 6 = F (Host 5b)
Post 7 = F (Host 6a)	Post 7 = F (Host 6b)
Port 8 = F (Host 7a)	Port 8 = F (Host 7b)
Port 9 = F (v2a host side)	Port 9 = F (v2b host side)
Port 10 = F (Host 8a)	Port 10 = F (Host 8b)
Port 11 = F (Host 9a)	Port 11 = F (Host 9b)
Port 12 = F (Host 10a)	Port 12 = F (Host 10b)
Port 13 = F (Host 11a)	Port 13 = F (Host 11b)
Port 14 = F (Host 12a)	Port 14 = F (Host 12b)
Port 15 = F (Host 13a)	Port 15 = F (Host 13b)
Port 16 = F (Host 14a)	Port 16 = F (Host 14b)

TABLE 6-14   Sun StorEdge 6960 Storage System 16-Port Fibre Channel Switch Configuration (*Continued*)

sw2a	sw2b
Two Hard Zones	Two Hard Zones
Zone 1	**Zone 1**
Port 1 = F (v1a FRU side)	Port 1 = F (v1b FRU side)
Port 2 = TL (t3b0)	Port 2 = TL (t3b0 altmaster)

TABLE 6-14 Sun StorEdge 6960 Storage System 16-Port Fibre Channel Switch Configuration (*Continued*)

sw2a	sw2b
Port 3 = TL (t3b2)	Port 3 = TL (t3b2 altmaster)
Port 4 = TL (t3be1)	Port 4 = TL (t3be1)
Port 5 = TL (t3be3)	Port 5 = TL (t3be3 altmaster)
Port 6 = Unused	Port 6 = Unused
Port 7 = T (sw2b port 7)	Port 7 = T (sw2a port 7)
Port 8 = T (sw2b port 8)	Port 8 = T (sw2a port 8)
Zone 2	**Zone 2**
Port 9 = F (v2a FRU side)	Port 9 = F (v2b FRU side)
Port 10 = TL (t3b1)	Port 10 = TL (t3b1 altmaster)
Port 11 = TL (t3be0)	Port 11 = TL (t3be0 altmaster)
Port 12 = TL (t3be2)	Port 12 = TL (t3be2 altmaster)
Port 13 = TL (t3be4)	Port 13 = TL (t3be4 altmaster)
Port 14 = Unused	Port 14 = Unused
Port 15 = T (sw2b port 15)	Port 15 = T (sw2a port 15)
Port 16 = T (sw2b port 16)	Port 16 = T (sw2a port 16)

6.13   Service Processor

1. **Obtain as much site specific information as possible.**

   See the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* to verify the status of the service processor.

2. **Using Storage Automated Diagnostic Environment, type the following path if the service processor is the Master service processor:**

   ```
   /var/opt/SUNWstage/DATA/rasagent.conf
   ```

   This is a path to the setup information for the customer's configuration. See the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* for additional information about the Storage Automated Diagnostic Environment.

6.13.1 Removing the Service Processor

1. **At the front of the storage system, remove the decorative grill covering the service processor and set it aside.**

2. **If possible, verify the hostname of the service processor being replaced.**

   Log into the service processor using either of the following methods:

   - A console cable connected from the serial console port on the service panel to a laptop
   - A console cable connected from the serial console port on the service panel to a workstation or server

   Cables and DB9 and DB25 adapters are shipped with the storage system.

3. **Type the following command and make a note of the host name.**

   ```
   msp0# uname -n
   msp0
   msp0#
   ```

4. **Shut down the service processor through the service panel connection.**

5. **Power off the service processor.**

6. **Open the back door of the storage system and disconnect the service processor from the internal net, the service panel, and the power cable.**

7. **If the Sun StorEdge Remote Response option is installed, disconnect it also.**

8. **Remove the screws that connect the service processor to the storage system.**

9. **Remove the service processor by sliding it out the front of the cabinet.**

6.13.2 Replacing the Service Processor

1. **Place the service processor in its position in the storage system.**

2. **Replace the screws that hold the service processor to the storage system.**

3. **Open the back door of the storage system if it is closed.**

4. **Reconnect the service processor to the internal net, the service panel, the power cable, and optionally, the Sun StorEdge Remote Response.**

5. **Power on the service processor.**

   See the *Sun StorEdge 3900 and 6900 Series Reference Manual* for the software associated with replacing the service processor.

   See the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* to verify the status of the service processor.

6.14 Ethernet Hub

6.14.1 Removing the Ethernet Hub

1. **See the** *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* **to verify the need to remove the Ethernet hub.**

2. **Power off the Ethernet hub to be removed.**

3. **Open the back door of the storage system.**

4. **Disconnect the following:**
   - Telco rollover cable (RJ45-to- RJ45) from the service port on the service panel to the Ethernet hub console port.
   - The connections to the service processor, the Fibre Channel switches, the Sun StorEdge T3+ arrays, and if the Ethernet hub is in a Sun StorEdge 3960 or 6960 series storage system, disconnect it from the Ethernet hub in the second cabinet of the storage system.

5. **Go to the front of the storage system.**

6. **Remove the screws holding the Ethernet hub to the storage system.**

7. **Remove the Ethernet hub by sliding it out the front of the cabinet.**

6.14.2 Replacing the Ethernet Hub

1. **Place the Ethernet hub in its location in the storage system.**

2. **Replace the screws that hold the Ethernet hub to the storage system.**

3. **Open the back door of the storage system if it is closed.**

4. **Reconnect the following:**

- Telco rollover cable (RJ45 to RJ45) from the service port on the service panel to the Ethernet hub console port.
- The connections to the service processor, the Fibre Channel switches, the Sun StorEdge T3+ arrays, and if the Ethernet hub is in a Sun StorEdge 3960 or 6960 series storage system, it must be reconnected to the Ethernet hub in the second cabinet of the storage system.

5. **Power on the Ethernet hub.**

TABLE 6-15 shows the base addressing configuration of the Ethernet hub. See the *Sun StorEdge 3900 and 6900 Series Reference Manual* for a description of the configuration utilities used to modify the base addressing configuration.

See the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* to verify the status of the Ethernet hub.

6.14.3 Ethernet Hub Addressing Configuration

TABLE 6-15 Ethernet Hub Addressing Configuration

IP Address	Designator	Description
127.0.0.1	local host	Standard UNIX loop back
10.0.0.10	msp0	Master service processor
10.0.0.3	ntc0	Network Terminal Concentrator
10.0.0.11	ssp1	Slave service processor
10.0.0.12	ssp2	Slave service processor
10.0.0.13	ssp3	Slave service processor
10.0.0.14	ssp4	Slave service processor
10.0.0.15	ssp5	Slave service processor
10.0.0.16	ssp6	Slave service processor
10.0.0.17	ssp7	Slave service processor
10.0.0.2	mgmt0	Management station
192.168.0.1	sp0	dmfe 1 Ethernet port log host
192.168.0.20	v1a	Virtualization engine (SAN only)
192.168.0.21	v1b	Virtualization engine (SAN only)
192.168.0.22	v2a	Virtualization engine (Sun StorEdge 6960 system only)
192.168.0.23	v2b	Virtualization engine (Sun StorEdge 6960 system only)
192.168.0.30	sw1a	Sun StorEdge network FC switch-8 or switch-16 port
192.168.0.31	sw1b	Sun StorEdge network FC switch-8 or switch-16 port
192.168.0.32	sw2a	Sun StorEdge network FC switch-8 or switch-16 port (SAN only)
192.168.0.33	sw2b	Sun StorEdge network FC switch-8 or switch-16 port (SAN only)
192.168.0.40	t3b0	Sun StorEdge T3+ array
192.168.0.41	t3b1	Sun StorEdge T3+ array
192.168.0.42	t3b2	Sun StorEdge T3+ array
192.168.0.43	t3b3	Sun StorEdge T3+ array (DAS configuration only)

TABLE 6-15 Ethernet Hub Addressing Configuration *(Continued)*

IP Address	Designator	Description
192.168.0.50	t3be0	Sun StorEdge T3+ array (expansion configuration)
192.168.0.51	t3be1	Sun StorEdge T3+ array (expansion configuration)
192.168.0.52	t3be2	Sun StorEdge T3+ array (expansion configuration)
192.168.0.53	t3be3	Sun StorEdge T3+ array (expansion configuration)
192.168.0.54	t3be4	Sun StorEdge T3+ array (expansion configuration)

6.15   Virtualization Engine

See the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* to confirm the need to remove and replace the virtualization engine.

6.15.1   Removing the Virtualization Engine

1. **Halt all I/O between the host system(s) and the FRUs in the storage system and between the virtualization engine and the FRUs in the storage system.**

2. **Save the configuration of the virtualization engine.**

3. **Power off the virtualization engine.**

4. **Open the back door of the storage system and disconnect all GBICs.**

   Make sure no cabling is connected to either the switch or the storage interface to the virtualization engine to be removed.

5. **Remove the screws holding the tray to which the virtualization engines are bolted.**

6. **Slide the tray out the toward the back of the storage system.**

7. **For the virtualization engine to be replaced, remove the screws from the bottom of the tray that holds that virtualization engine in place.**

8. **Remove the virtualization engine from the storage system.**

6.15.2 Replacing the Virtualization Engine

1. **Bolt the new virtualization engine to the tray.**

2. **Slide the tray back into the storage system and replace the screws that hold the tray in place.**

3. **Reconnect all GBICs and cables that connect the virtualization engine to the switches and the storage interface.**

4. **Power up the virtualization engine.**

5. **Load the configuration into the virtualization engine.**

   See the *Sun StorEdge 3900 and 6900 Series Reference Manual* for the software associated with replacing the virtualization engine.

6.15.3 Standard Virtualization Engine Settings

The following tables, TABLE 6-16 through TABLE 6-18, show the default settings of the virtualization engine.

TABLE 6-16   Standard Virtualization Engine Settings

Standard Virtualization Engine Settings		
Device Side Settings		
	Operating mode:	Pt-to-pt mode
	UID reporting scheme:	Port
Host Side Settings		
	Operating mode:	Pt-to-pt mode
	LUN mapping mode:	Direct LUN mapping
	Command queue depth:	0
	HS/DS UID distinguish:	Enable
	UID reporting scheme:	Port
Ethernet		
	Subnet mask:	255.255.255.0
	Default gateway:	192.168.0.1

TABLE 6-16 Standard Virtualization Engine Settings *(Continued)*

Standard Virtualization Engine Settings		
	IP address:	v1a - 192.168.0.20 v1b - 192.168.0.21 v2a - 192.168.0.22 v2b - 192.168.0.23
	Server port number (5000-65535):	25000
SV Management Programs		
	Router management program access is:	Enabled
	Host WWN authentications are:	1. Unassigned 2. Unassigned
	Host IP authentications are:	1. 255.255.255.255 2. 255.255.255.255
	Other router's IP is:	*n.n.n.n*[1]
	Password Protection is Disabled[2]	
	Password is Invalid[2]	
[1] - The other router's IP address is based on virtualization engine pairs. `v1a` and `v1b` are a pair and so are `v2a` and `v2b`. The value that must be entered is the IP address of the other router in the pair. For example, if you are setting up the `v1a` you enter the IP address of `v1b`. [2] - The password selections do not set the password for telnet(1) or `ftp`(1). These passwords are set by the Ethernet settings.		

6.15.4 Sun StorEdge 6910 Storage System Virtualization Engine Default Settings

TABLE 6-17   Sun StorEdge 6910 Storage System Virtualization Engine Default Settings

Sun StorEdge 6910 Default - 1 VE Default Settings (v1a-v1b pair)		
Disk Pool	Number of VLUNs	VLUN Size (73 GB or 36 GB Drives
t3b00	1	477 GB or 236 GB
t3b01	1	477 GB or 236 GB
t3b10	1	477 GB or 236 GB
t3b11	1	477 GB or 236 GB
t3b20	1	477 GB or 236 GB
t3b21	1	477 GB or 236 GB

6.15.5 Sun StorEdge 6960 Storage System Virtualization Engine Default Settings

TABLE 6-18   Sun StorEdge 6960 Storage System Virtualization Engine Default Settings

Sun StorEdge 6960 Virtualization Engine Default Settings		
v1a-v1b Virtualization Engine Pair		
Disk Pool	Number of VLUNs	VLUN Size (73 GB or 36 GB Drives)
t3b00	1	477 GB or 236 GB
t3b01	1	477 GB or 236 GB
t3b20	1	477 GB or 236 GB
t3b21	1	477GB or 236 GB
t3be10	1	477GB or 236 GB
t3be11	1	477 GB or 236 GB
t3be30	1	477 GB or 236 GB

TABLE 6-18   Sun StorEdge 6960 Storage System Virtualization Engine Default Settings

Sun StorEdge 6960 Virtualization Engine Default Settings		
t3be31	1	477 GB or 236 GB
v2a-v2b Virtualization Engine Pair		
Disk Pool	**Number of VLUNs**	**VLUN Size (73 GB or 36 GB Drives)**
t3b10	1	477 GB or 236 GB
t3b11	1	477 GB or 236 GB
t3be00	1	477 GB or 236 GB
t3be01	1	477 GB or 236 GB
t3be20	1	477 GB or 236 GB
t3be21	1	477 GB or 236 GB
t3be40	1	477 GB or 236 GB
t3be41	1	477 GB or 236 GB

Note – The default disk pool and virtual logical unit number (VLUN) assignments are one disk pool per Sun StorEdge T3+ array LUN. The default disk pool is named with the Sun StorEdge T3+ array host name with a number (0 or 1) appended to it. A single VLUN is carved from each disk pool equivalent to the size of the Sun StorEdge T3+ array LUN. This assumes a full complement of Sun StorEdge T3+ arrays, configured as RAID 5. This applies to both the Sun StorEdge 6910 and the Sun StorEdge 6960 storage system configurations.

See the *Sun StorEdge 3900 and 6900 Series Reference Manual* for a description of the configuration utilities.

See the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* to verify the status of the virtualization engine.

6.16 Sun StorEdge T3+ Array

For information about adding, removing, or replacing Sun StorEdge T3+ arrays, see the *Sun StorEdge T3 and T3+ Array Installation, Operation, and Service Manual*.

See the *Sun Network Storage Agent User's Guide* for detailed instructions about FRU recovery.

See the *Sun StorEdge 3900 and 6900 Series Reference Manual* for the software associated with removing and replacing the Sun StorEdge T3+ arrays.

See the *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* to verify the status of the Sun StorEdge T3+ arrays.

TABLE 6-19 contains the base configuration of the Sun StorEdge T3+ arrays installed in the Sun StorEdge 3900 and 6900 series storage systems. See the *Sun StorEdge 3900 and 6900 Series Reference Manual* for a description of the configuration utilities used to change the base configuration.

6.16.1 Sun StorEdge T3+ Array Base Configurations

TABLE 6-19 Sun StorEdge T3+ Array Base Configurations

Element	Default Sun StorEdge 3900 Series Configuration	Default Sun StorEdge 6900 Series Configuration	Sun StorEdge 3900 or 6900 Series Option No. 1	Sun StorEdge 3900 or 6900 Series Option No. 2
Hot spare	Yes	Yes	Yes	Yes
Block size	16k	16k	16k, 32k, 64k	16k, 32k, 64k
Cache	auto	auto	auto	auto
Mirror	auto	auto	auto	auto
mp_support[2]	mpxio	rw	rw (Sun StorEdge 3900 or 6900 Series), mpxio (Sun StorEdge 3900 Series only)	rw (Sun StorEdge 3900 or 6900 Series), mpxio (Sun StorEdge 3900 Series only)
rd_ahead[3]	off	off	off	off
recon_rate	med	med	med	med
RAID type	5	5	1 (10) or 5	1 (10) and 5
LUNs or partner pair	2	2	2 or 4	4[4]

All Sun StorEdge 3900 and 6900 series storage systems are shipped from the factory in the default configuration.

[2] mp_support in the Sun StorEdge 6900 series configurations must be *rw.*

[3] rd_ahead is generally set to off in random access environments. This delivers better overall Cache performance.

[4] In this configuration, one LUN per brick, two LUNs per array, will be used by the RAID 1 (10) FRUs and one LUN per brick, two LUNs per array will be used by the RAID 5 FRUs. The configuration utility assigns three physical drives to the RAID 1 (10) and assigns the remaining five physical drives to the RAID 5 FRU. The ninth physical drive is always the hot spare.

6.16.2 Sun StorEdge T3+ Array Target ID and Host Name

TABLE 6-20   Sun StorEdge T3+ Array Target ID and Host Name

Sun StorEdge T3+ Array	Target ID	Host Name
t3b0	0,1	t3b0
t3b1	2,3	t3b1
t3b2	4,5	t3b2
t3b3	6,7	t3b3
t3be0	8,9	t3be0
t3be1	10,11	t3be1
t3be2	12,13	t3be2
t3be3	14,15	t3be3
t3be4	16,17	t3be4

6.16.3 Sun StorEdge T3+ Array Set Command Configuration Settings

TABLE 6-21   Sun StorEdge T3+ Array Set Command Configuration Settings

Parameter	Default Value
bootmode	auto
bootdelay	3
sn	nnnnnn
ip	n.n.n.n [1]
netmask	255.255.255.0
gateway	192.168.0.1
tftphost	0.0.0.0
tftpfile	NULL
hostname	See TABLE 6-20
vendor	0310

TABLE 6-21 Sun StorEdge T3+ Array Set Command Configuration Settings *(Continued)*

Parameter	Default Value
model	501-5710-02(51)
revision	0200
logto	*
loglevel	3
rarp	on
mac	n:n:n:n:n:n
[1] See TABLE 6-15 for the IP addresses.	

6.16.4 Sun StorEdge T3+ System List Command Configuration

TABLE 6-22 Sun StorEdge T3+ System List Command Configuration

Parameter	Default Value
block size	16k
cache	auto
mirror	auto
mp_support	StorEdge Traffic Manager (`mpxio` Sun StorEdge 3900 series default) (`rw` for Sun StorEdge 6900 series default)
rd_ahead	off
recon_rate	med
sys memsize	128m
cache memsize	1024m
naca	off

6.16.5 Sun StorEdge T3+ Array Miscellaneous Configuration Parameters

TABLE 6-23 Sun StorEdge T3+ Array Miscellaneous Configuration Parameters

Parameter	Default Value
vol init	rate =16
vol verify	rate = 1
port host	sun

The documents listed in the Related Documentation table in the Preface contain additional information about Sun StorEdge T3+ arrays.

6.17 Sun StorEdge Remote Response Program

The Sun StorEdge Remote Response (SSRR) program provides early detection of component or system anomalies and allows fast response, fast reaction to alarms, and remote trouble shooting, diagnosis, and repair.

This section contains the following:

- Section 6.17.1 "Overview".
- Section 6.17.2 "Removing and Replacing the Sun StorEdge Remote Response Hardware" on page 6-57.

6.17.1 Overview

The Sun StorEdge Remote Response program consists of the items in the following table and their Sun part numbers if they exist.

TABLE 6-24   Hardware Contents of the Sun StorEdge Remote Response Program

Part Number	Unit Type	Quantity	Cable Number
	Xylogics 8 - Port MicroAnnex	1 each	
	USRobotics V.Everything Modem	1 each	
Cables			
530-1871-01	Standard CAT5 (1 to 1 or 8 to 8)	5 each	NO. 1
VLX912-08	Special Xylogics MicroAnnex	1 each	NO. 7
VLX1031	Special Xylogics MicroAnnex	2 each	NO. 2
530-2149-01	Ethernet Cross-Over	1 each	NO. 4
VLX-abcd-nn	Special Modem Adapter	1 each	NO. 5

Additionally, the service processor of the Sun StorEdge 3900 and 6900 Series storage system contains Storage Automated Diagnostic Environment software that identifies, logs events, and alerts Sun engineers by e-mail and pager if the data falls outside of pre-defined tolerances.

The service processor communicates on 2 networks. The internal Component LAN (Network Address 192.168.0.0) and the SP LAN (Network Address 10.0.0.0). The SP Lan is used to aggregate multiple service processors and the Xylogics MicroAnnex.

There may be cases where the LAN addresses have been changed to accommodate special circumstances. In these cases, you need to determine some preliminary information about the service processor and the network it resides on before the new Xylogics MicroAnnex can be set up. The information needed is the following:

■ IP address of the service processor

■ Netmask of the network

■ Broadcast of the network

■ IP address that will be used to setup the Xylogics MicroAnnex

Most of this information can be obtained by issuing an `ifconfig -a` command on the service processor. The interface information that is NOT the `lo0` FRU is the information required. For example:

CODE EXAMPLE 6-1   Output From the `ifconfig -a` Command

```
# /usr/sbin/ifconfig -a

lo0: flags=1000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4> mtu 8232 index 1
inet 127.0.0.1 netmask ff000000
dmfe0: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 2
inet 10.0.0.10 netmask ff000000 broadcast 10.0.0.255
ether 0:3:ba:5:11:ea
dmfe1: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 3
inet 192.168.0.1 netmask ffffff00 broadcast 192.168.0.255
ether 0:3:ba:5:11:ea
```

The example in CODE EXAMPLE 6-1 gives us the following information:

■ service processor IP address: 10.0.0.10 (for the master service processor)

■ netmask being used   : 255.0.0.0   ff (HEX) = 255 (DECIMAL)

■ broadcast being used   : 10.0.0.255

6.17.2   Removing and Replacing the Sun StorEdge Remote Response Hardware

This section describes removing and replacing the Xylogics 8-port MicroAnnex portion of the Sun StorEdge Remote Response program.

TABLE 6-25 lists the cables used to connect the Sun StorEdge Remote Response Hardware.

FIGURE 6-12 shows the cabling between the service processor, service panel, and the Xylogics 8-port MicroAnnex unit.

TABLE 6-25   Sun StorEdge Remote Response Program Service Panel Cabling

Cable	Type	Service Processor Connector	Service panel Connector
B7	RJ45 / RJ45	NTC port 1	Serial Console Port
G1	RJ45 / RJ45	NETRA dfme1	None. Direct to the internal LAN.
H1	RJ45 / RJ45	NTC Ethernet	NTC ENET
J2	RJ45 / RJ45	NETRA ttya / NTC Port 2	(Internal Only)
K1	RJ45 / RJ45	NTC Port 8	MODEM (Internally)
L1	RJ45 / RJ45	Service Panel to Modem	MODEM (Externally)
M5	RJ45 / DB25(M)	Cable "L"	(Attaches to Modem)
O4	RJ45 / RJ45	Ethernet Cross-Over	SP LAN -> NTC ENET (Supplied with SSRR Option)
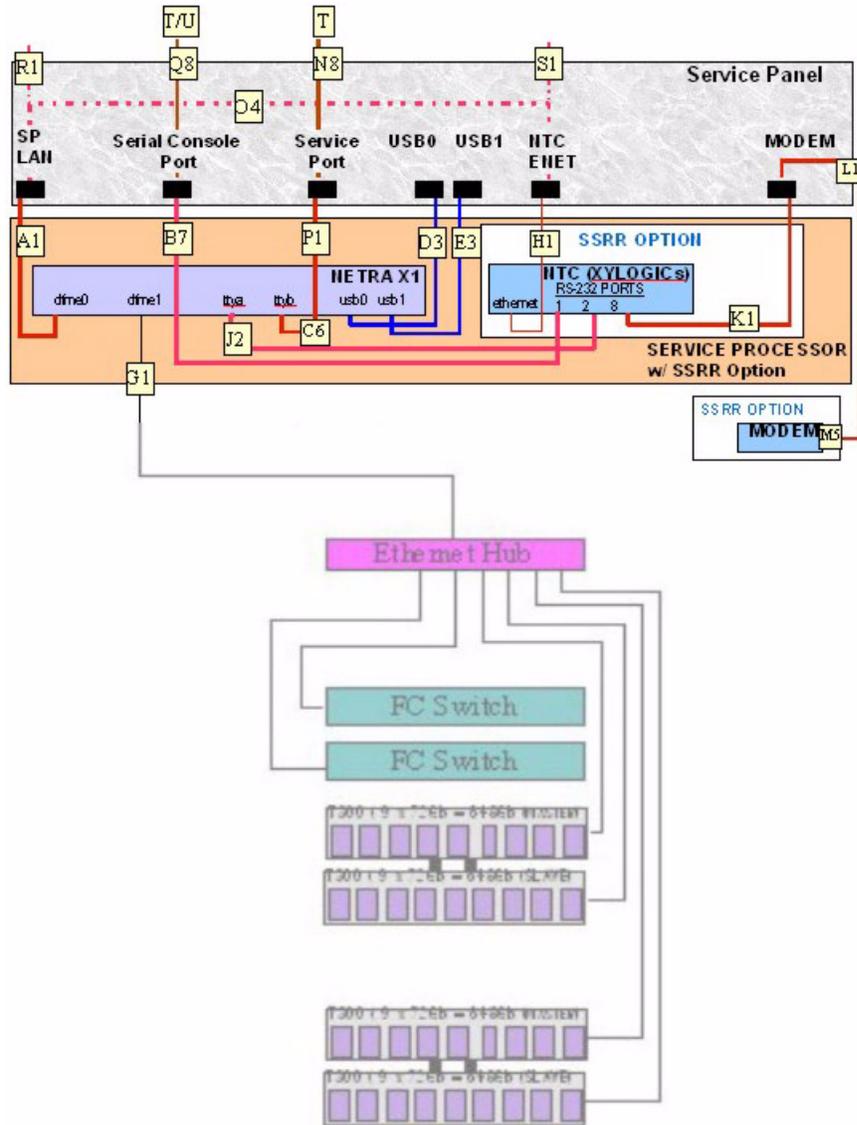
FIGURE 6-12 Service Processor with Sun StorEdge Remote Response Hardware

6.17.3   Removing the Xylogics MicroAnnex Unit

1. **At the back of the storage system, open the back door and remove the two screws on the right side of the Xylogics MicroAnnex mount.**

2. **Open the Xylogics MicroAnnex mount and turn power off on the Xylogics MicroAnnex and on the outside of the storage system, turn power off on the Modem.**

3. **Make a note of the location of the cables at the back of the Xylogics MicroAnnex and remove the two cables from the RJ45 Serial Ports, the Ethernet cable, the cable to the Modem, and the power cable.**

4. **Remove the four hinge screws from the left side of the Xylogics MicroAnnex mount. It is advised that you lay the Xylogics MicroAnnex mount on a flat, stable surface to remove the Xylogics Microannex unit.**

5. **Note the position of the Xylogics MicroAnnex in the mount. Remove the six nuts (three on either side) of the brackets that secure the Xylogics MicroAnnex. Remove the brackets and remove the Xylogics MicroAnnex.**

6.17.4   Replacing the Xylogics MicroAnnex Unit

1. **Put the new Xylogics MicroAnnex into position in the mount and replace the brackets. Put the six nuts on the bolts and tighten them.**

2. **Put the Xylogics MicroAnnex mount in place on the storage system and replace the four hinge screws.**

3. **Replace the two cables from the RJ45 Serial Ports, the Ethernet cable, the cable to the Modem, and the power cable.**

4. **Power on the Xylogic MicroAnnex and the Modem and press the TEST button on the front of the Xylogic MicroAnnex. The test button can be pressed while powering on or within 10 seconds after powering on. The amber LED that is on the left side of the TEST button will illuminate indicating that the Xylogics MicroAnnex is in configuration mode.**

Expect to see the Xylogics MicroAnnex front panel LEDs flash for a few minutes until they stop with the following indications:

    POWER (on solid)

    UNIT (on solid)

    NET (on solid)

    ACTIVE (flashing)

The Modem LEDs also go through a startup sequence until they stop with the following indications:

    HS (on solid possible after the first phone home)

    AA (on solid)

    TR (on solid)

    MR (on solid)

    RS (on solid)

    CS (on solid)

5. **Log into the service processor using either of the following methods:**
   - A console cable connected from the serial console port on the service panel to a laptop
   - A console cable connected from the serial console port on the service panel to a workstation or server

   Cables and DB9 and DB25 adapters are shipped with the storage system.

6. **From the external serial connection, gain access to the Xylogics MicroAnnex console (port 1). The following example shows how `tip` would be used from a server.**

```
# tip –9600 /dev/ttya
```

Note – The Xylogics MicroAnnex console communicates at 9600 BAUD.

Expect to see the following prompt:

```
monitor::
```

7. Configure the Ethernet interface as in the following example:

CODE EXAMPLE 6-2   Configuring the Ethernet Interface

```
monitor:: seq net
            Interface sequence: net
monitor:: addr
Enter Internet address [<uninitialized>]:: 10.0.0.10
            Internet address: 10.0.0.10
Enter Subnet mask [255.255.0.0]:: 255.0.0.0
            Subnet mask: 255.0.0.0
Enter Preferred load host Internet address [47.16.116.5]:: 10.0.0.10

            Preferred load host address: 90.0.0.1

Enter Broadcast address [0.0.0.0]:: 10.0.0.255
            Broadcast address: 10.0.0.255
Enter Preferred dump address [0.0.0.0]:: 10.0.0.10
Select type of IP packet encapsulation (ieee802/ethernet) [<ethernet>]::
            Type of IP packet encapsulation: <ethernet>
Load Broadcast Y/N [N]::
monitor:: image
            Enter Image name [(ip)"oper.52.enet",
(mop)"OPER_52_ENET.SYS"]:: (mop)"OPER_52_ENET.SYS"]:: oper.52.enet
            Enter TFTP Load Directory [""]::
            Enter TFTP Dump path/filename ["dump.10.0.0.10"]::
```

8. Download, save, and execute the image from the net as in the following example

CODE EXAMPLE 6-3   Downloading, Saving, and Executing the Image From the Net

```
monitor:: boot -l
        Enter boot file name [oper.52.enet]::
          Requesting boot file "oper.52.enet".
             Unanswered requests shown as '?', transmission errors as '*'.

          Requesting boot from 10.0.0.10 via Ethernet...
Booting BFS file using open delay of 8

          Booting from 10.0.0.10
Header received OK.  Received data blocks shown as '.'.
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
. . . . .EOF
                    Saving image into storage device...
Erasing device
|-------------------------------------------------------------------|
....................................................................
Erase completed
Storing image........
....................................................................
Storage completed
Beginning execution of image...

Annex Command Line Interpreter * Copyright (C) 1988, 1995 Xylogics,Inc.


annex:
```

9. **Exit the** `tip` **session.**

```
annex:~.      (you will not see the "~" when exiting tip with "~.")
```

Note – If you have a problem exiting the tip session, press the RETURN key (enter key) and then type in ~.

10. **ftp to the Xylogics MicroAnnex.**

Note – "--->" below indicate commands entered at ftp prompts.

Note – NOTE: The responses to the `ftp` commands are examples and should not be used as verification of successful command completion.

CODE EXAMPLE 6-4 `ftp` to the Xylogics MicroAnnex

```
# su  (if not already root)
          # cd /var/spool/erpcd/bfs
          # ftp 10.0.0.10
          Connected to 10.0.0.10
          220 Annex FTP server (Version MICRO-XL-UX R10.0#2) ready.
--->      Name (10.0.0.10:root): root
          331 Password required for root.
--->      Password: 10.0.0.10
NOTE: The password will be the ip address of the annex
          230 User root logged in.
--->      ftp> bin
          200 Type set to I.
--->      ftp> put config.annex
          200 PORT command successful.
          150 ASCII data connection for config.annex
(129.154.35.23,42503).
          226 ASCII Transfer complete.
          local: config.annex remote: config.annex
          1499 bytes sent in 0.0014 seconds (1074.00 Kbytes/s)
--->      ftp> bye
```

11. **You will now need to use the** `na` **command to setup the Xylogics MicroAnnex serial ports.**

Note – "--->" below indicates responses to `na` command questions.

CODE EXAMPLE 6-5   Using the `na` Command to Set Up the Xylogics MicroAnnex Serial Ports

```
# su  (if not already root)
# cd /opt/annex
# ./na
Annex network administrator R14.1 October 22nd, 1997
--->          command: annex 10.0.0.10
            10.0.0.10: Micro-Annex-UX R10.0, 8 async ports

--->          command: read /var/spool/erpcd/bfs/config.ports

            setting annex parameters

            setting parameters for async port 1
            setting parameters for async port 2
            setting parameters for async port 3
            setting parameters for async port 4
            setting parameters for async port 5
            setting parameters for async port 6
            setting parameters for async port 7
            setting parameters for async port 8
            setting parameters for interface en0
            setting parameters for interface asy1
            setting parameters for interface asy2
            setting parameters for interface asy3
            setting parameters for interface asy4
            setting parameters for interface asy5
            setting parameters for interface asy6
            setting parameters for interface asy7
            setting parameters for interface asy8
--->          command: quit
```

12. **Power off and on the Xylogics MicroAnnex.**

13. **Test the dial in and dial out capability of the modem.**

6.18 Troubleshooting the Installation

Use this checklist as a guide for isolating common installation problems.

1. Verify that all power and data cables are properly installed and in the right location.

2. Verify that all Fibre Channel connections, cable adapters, and GBICs are installed and secure.

3. Verify that the power is turned on to the drives, trays, and storage system.

See the *Sun StorEdge 3900 and 6900 Series Reference Manual, Storage Automated Diagnostic Environment User's Guide,* and *Sun StorEdge 3900 and 6900 Series Troubleshooting Guide* for a description of the procedures to perform fault detection and isolation.

Product Specifications

This appendix contains the following sections:

- Section A.1 "Physical Characteristics
- Section A.2 "Physical Specifications" on page A-2
- Section A.3 "Clearance and Service Access" on page A-3
- Section A.4 "Power Sequencer Electrical Specifications" on page A-4
- Section A.5 "Environmental Requirements" on page A-4

A.1   Physical Characteristics

The physical characteristics of the Sun StorEdge 3900 and 6900 series storage systems are as follows:

- Internal dimensions conform to EIA RS-310C standard (RETMA) for 19-inch (482 MM.) cabinets. Universal mounting holes are used with 10-32UNF tapped holes in all locations. The nominal rack opening is 17.875 inches (454 MM.).

- A vertical panel opening of 36 rack units (RUs) minimum is provided to accommodate various rack-mountable FRUs. One RU is equal to 1.75 inches (44.45 MM.).

- Overall storage system height with cosmetic panels is 75 inches (191 cm) maximum.

- Subsystem structure and casters are designed to handle 1465 pounds (665 kg) for a Sun StorEdge 3910 or Sun StorEdge 6910 storage system and 2895 pounds (1314 kg) for a Sun StorEdge 3960 or Sun StorEdge 6960 storage system static load.

Caution – Make no mechanical or electrical modifications to this storage system. Sun Microsystems is not responsible for the regulatory compliance if the storage system is modified.

A.2 Physical Specifications

TABLE A-1   Storage System Physical Specifications

Subsystem	Height	Width	Depth	Weight
Sun StorEdge 3910 storage system	75 in. 109.5 cm	23.9 in. 60.7 cm	37 in. 94 cm	1465 lb. 665 kg
Sun StorEdge 3960 storage system	75 in. 191 cm	47.8 in. 122 cm	37 in. 94 cm	2855 lb. 1295 kg
Sun StorEdge 6910 storage system	75 in. 109.5 cm	23.9 in 60.7 cm	37 in. 94 cm	1210 lb. 549 kg
Sun StorEdge 6960 storage system	75 in. 109.5 cm	47.8 in 121.4 cm	37 in. 94 cm	2895 lb. 1314 kg
Note: The values given in this table are for the maximum hardware configuration available including the Sun StorEdge expansion cabinet in both the StorEdge 3960 and StorEdge 6960 storage systems.				

The power cords are 15 feet (4.6m) long.

A.3 Clearance and Service Access

TABLE A-2   Clearance and Service Access for Sun StorEdge 3910 and 6910 Subsystems

Location	With Service Access	Without Service Access
Front	48 inches 122 cm	24 inches 61 cm
Rear	36 inches 92 cm	24 inches 61 cm
Left	36 inches[1] 92 cm	2 inches[1] 5.1 cm
Right	36 inches[1] 92 cm.	0

1. Side access may be required for some service procedures. Refer to the descriptions in Chapter 5 "Preparing for Service".

TABLE A-3   Clearance and Service Access for Sun StorEdge 3960 and 6960 Subsystems

Location	With Service Access	Without Service Access
Front	96 inches 244 cm	47.8 inches 122 cm
Rear	60 inches 153 cm	47.8 inches 122 cm
Left	60 inches[1] 153 cm	2 inches[1] 5.1 cm
Right	60 inches[1] 153 cm	0

1. Side access might be required for some service procedures.

A.4 Power Sequencer Electrical Specifications

TABLE A-4 Power Sequencer Electrical Specifications

Parameter	Value(s)
AC voltage rating	200 to 240 VAC
AC voltage range	180 to 264 VAC
Frequency range	47 to 63 Hz
Current at 240 VAC	32A
Power consumption, maximum Sun StorEdge 3910 storage system Sun StorEdge 3960 storage system Sun StorEdge 6910 storage system Sun StorEdge 6960 storage system	 4.2kW 8.4kW 4.2kW 8.4kW

A.5 Environmental Requirements

TABLE A-5 Operating Environment Requirements

Parameter	Operating	Nonoperating
Temperature	41°F to 95°F (5°C to 35°C)	-41°F to 140°F (-20°C to 60°C)

TABLE A-5 Operating Environment Requirements *(Continued)*

Parameter	Operating	Nonoperating
Humidity	20% to 80% RH, noncondensing 80.6°F (27°C) maximum wet bulb	5% to 93% RH, noncondensing
Altitude	-1000 to 10,000 feet (-305 to 3,048 Meters)	-1000 to 40,000 feet (-305 to 12,192 Meters)
Environment	Avoid temperature extremes and keep the work area clean. Maintain the operating conditions described. The storage system should be in a computer room environment. A computer room environment should provide secure access to computers and stored information, and provides control over environmental factors such as temperature, humidity, and airborne dust. A computer room installation can also help protect equipment from fire, flood, or other danger originating in the building.	

Sun Storage System Part Numbers

B.0.1 Sun Field Replaceable Units

The following field-replaceable units (FRUs) can be replaced at a customer site by a qualified field service engineer. The part numbers are Sun part numbers.

TABLE B-1 FRU List

FRU Description	Part Number
Power sequencer, universal, rack	300-1393
Assembly, cable, rack AC input, international	530-2675
Assembly, cable, rack AC input, domestic	530-2674
Assembly, cable, universal power cord	530-2197
Assembly, cable, main rack to expansion interface	530-2236
Key switch panel assembly	540-3804
Filler panel and trim strip kit	595-4853
Service processor	N19-UPE1-9S-512AX1
Ethernet hub (with rack kit)	370-4170-01
24-port unmanaged hub with rack kit	3COM3C1644A-US
Sun StorEdge network Fibre Channel switch-16 (with rack kit)	595-5800-01
Sun StorEdge network Fibre Channel switch-8 (with rack kit)	6746A
Virtualization engine	370-4684-01
Sun StorEdge T3+ array partner pair (36 GB)	T3BES-RR-22-655

TABLE B-1   FRU List *(Continued)*

FRU Description	Part Number
Sun StorEdge T3+ array partner pair (73 GB)	T3BES-RR-22-1321
Sun StorEdge T3+ mounting tray	9676A
Fibre Channel GBIC	370-2303-03
7U Sun StorEdge T3+ array ES Rack Kit	9663A
Virtualization engine rack kit	

B.0.2   Sun StorEdge Storage Systems

TABLE B-2 contains the part numbers for the Sun StorEdge 3900 and 6900 series storage systems.

TABLE B-2   Sun StorEdge 3900 and 6900 Series Storage Systems Part Numbers

Storage Systems	Part Number
Sun StorEdge 3910 storage system with Sun StorEdge T3+ array 36-GB drives	TB3910-B2-655
Sun StorEdge 3910 storage system with Sun StorEdge T3+ array 73-GB drives	TB3910-B2-1321
Sun StorEdge 3960 storage system with Sun StorEdge T3+ array 36-GB drives	TB3960-C2-655
Sun StorEdge 3960 storage system with Sun StorEdge T3+ array 73-GB drives	TB3960-C2-1321
Sun StorEdge 6910 storage system with Sun StorEdge T3+ array 36-GB drives	TB6910-B2-655
Sun StorEdge 6910 storage system with Sun StorEdge T3+ array 73-GB drives	TB6910-B2-1321
Sun StorEdge 6960 storage system with Sun StorEdge T3+ array 36-GB drives	TB6960-C2-655
Sun StorEdge 6960 storage system with Sun StorEdge T3+ array 73-GB drives	TB6960-C2-1321
Sun StorEdge 3910 storage system with Sun StorEdge T3+ array 36-GB drives	TB3910-B8-2620
Sun StorEdge 3910 storage system with Sun StorEdge T3+ array 73-GB drives	TB3910-B8-5284
Sun StorEdge 3960 storage system with Sun StorEdge T3+ array 36-GB drives	TB3960-C8-2620

TABLE B-2   Sun StorEdge 3900 and 6900 Series Storage Systems Part Numbers

Storage Systems	Part Number
Sun StorEdge 3960 storage system with Sun StorEdge T3+ array 73-GB drives	TB3960-C8-5284
Sun StorEdge 6910 storage system with Sun StorEdge T3+ array 36-GB drives	TB6910-B6-1965
Sun StorEdge 6910 storage system with Sun StorEdge T3+ array 73-GB drives	TB6910-B6-3963
Sun StorEdge 6960 storage system with Sun StorEdge T3+ array 36-GB drives	TB6960-C6-1965
Sun StorEdge 6960 storage system with Sun StorEdge T3+ array 73-GB drives	TB6960-C6-3963
Sun StorEdge 3960 or 6960 series storage system expansion cabinet with T3+ array 36-GB drives	TBEC-N2-655
Sun StorEdge 3960 or 6960 series storage system expansion cabinet with T3+ array 73-GB drives	TBEC-N2-1321
Sun StorEdge T3ES expansion array with StorEdge T3+ 36-GB drives for factory configured Sun StorEdge 39x0 and 69x0 series storage system	TBEA-N2-655
Sun StorEdge T3ES expansion array with StorEdge T3+ 73-GB drives for factory configured Sun StorEdge 39x0 and 69x0 series storage systems	TBEA-N2-1321

B.0.3 Explanation of Part Number TB3910-B2-1321

TABLE B-3 contains an explanation of the part number sequence for an example part number of TB3910-B2-1321.

TABLE B-3 Explanation of the Storage System Part Numbers

Part Number Part	Explanation
TB	Storage Type: TB is Sun StorEdge T3+ array
3910	Sun StorEdge series product: 3910 - small DAS 3960 - Large DAS 6910 - Small SAN 6960 - Large SAN EC - Expansion cabinet for Sun StorEdge 3960 or 6960 series EA - Expansion array
B	Connectivity: N - None B - 8 port switch C - 16 port switch
2	Number of Sun StorEdge T3+ array: 2 - 2 Sun StorEdge T3+ arrays 6 - 6 Sun StorEdge T3+ arrays 8 - 8 sun StorEdge T3+ arrays
1321	Capacity in GB: Raw capacity of the system (using either 36.4 GB or 73.4 GB HDDs).