Sun
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Sun StorEdge™ Management Software 2.0 Getting Started Guide

Adobe PostScript

Contents

Preface

This Getting Started Guide describes the Sun StorEdge™ Management software (including the Sun StorEdge Enterprise Storage Manager software), lists related documentation, and provides tasks to help you start to use the software.

This guide is intended for Sun™ support engineers, software installers, and system and storage administrators.

How This Book Is Organized

Chapter 1 introduces the software and provides a list of getting started tasks.

Chapter 2 describes the software concepts, introduces the Sun™ Web Console access rights, and how to log in to the software.

Chapter 3 provides a quick reference list of the steps that are required to install the SAN Manager and Capacity Reporter software modules.

Using UNIX Commands

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

See one or more of the following for this information:

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

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. Replace command-line variables with real names or values.	Read Chapter 6 in the *User's Guide*. These are called *class* options. You *must* be superuser to do this. To delete a file, type `rm` *filename*.

* The settings on your browser might differ from these settings.

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

Application	Title	Part Number
Installation and configuration	*Sun StorEdge Enterprise Storage Manager 2.0 Software Installation Guide*	817-3152
	Storage Automated Diagnostic Environment 2.2 User's Guide - Device Edition	817-0822
	Sun StorEdge SAN Foundation Software 4.2 Guide to Documentation	817-1576
	Sun StorEdge SAN Foundation Software 4.2 Installation Guide	817-1244
	Sun StorEdge SAN Foundation Software 4.2 Configuration Guide	817-1245
Release	*Sun StorEdge Enterprise Storage Manager 2.0 Release Notes*	817-3154

Application	Title	Part Number
	Sun StorEdge SAN Foundation Software 4.2 Release Notes	817-1246
Man pages	*Sun StorEdge Enterprise Storage Manager 2.0 esm(1M) Command-line Interface Quick Reference*	817-2941
	esm(1M) esminstall(1M) esmuninstall(1M) esmcheck(1M) esmcontrol(1M)	N/A

Accessing Sun Documentation

You can view, print, or purchase a broad selection of Sun documentation, including localized versions, at:

http://www.sun.com/documentation

Contacting Sun Technical Support

If you have technical questions about this product that are not answered in this document, go to:

http://www.sun.com/service/contacting

Sun Welcomes Your Comments

Sun is interested in improving its documentation and welcomes your comments and suggestions. You can submit your comments by going to:

`http://www.sun.com/hwdocs/feedback`

Please include the title and part number of your document with your feedback:

Sun StorEdge Management Software 2.0 Getting Started Guide,
part number 817-2943-10

Third-Party Web Sites

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Introduction to the Sun StorEdge Management Software

The Sun StorEdge Management Software provides an integrated and expandable storage software platform to help storage and system administrators manage their direct-attached storage (DAS) and storage area network (SAN) environments. This software platform can scale as your storage environment grows and can accommodate existing software modules delivered on the product CD-ROM, third-party software applications, and future value-added Sun StorEdge Management Software modules delivered by Sun Microsystems.

This chapter provides a general overview of the products available on the Sun StorEdge Management Software CD-ROM and how they can be used in your storage environment.

This chapter describes the following topics:

- "What Is the Sun StorEdge Management Software?" on page 2
- "How Do SAN Manager and Capacity Reporter Work Together?" on page 13
- "Management and Agent Stations" on page 14
- "Getting Started Task Summary" on page 15
- "Web Browser Requirements" on page 16
- "Locating the Sun StorEdge Enterprise Storage Manager Documentation" on page 17

What Is the Sun StorEdge Management Software?

The software on the Sun StorEdge Management Software CD-ROM includes:

- Sun StorEdge Enterprise Storage Manager 2.0 software

  The Sun StorEdge Enterprise Storage Manager 2.0 software is an open and standards-based end-to-end SAN management software tool. This software can scale as your SAN grows and as you add more devices and supporting application software.

  You can view and manage your SAN and Fibre Channel DAS environment through a web browser user interface (UI) or command-line interface (CLI) connected to the Sun Web Console web server (see "Sun Web Console" on page 3). The software enables you to view storage information and storage capacity reports for hardware and software elements like hosts, clusters, arrays, volumes, and so on in your SAN.

  This software includes the following functional modules:

  - "SAN Manager" on page 4
  - "Capacity Reporter" on page 6

- Storage Automated Diagnostic Environment Software

  You can discover, monitor, and diagnose faults in a SAN or a DAS environment. Use the `setup` installation script to install this software (Option 1: Health Monitoring and Fault Management). See also "Storage Automated Diagnostic Environment Software" on page 8. The Storage Automated Diagnostic Environment Software User's Guide listed in the Preface contains more information about this software.

- Sun StorEdge SAN Foundation Software

  This software is required for SAN Manager and is optional for Capacity Reporter. Install this software on each agent station in your SAN environment to support your SAN component infrastructure. See also "Sun StorEdge SAN Foundation Software" on page 10.

Note – Do not install the Storage Automated Diagnostic Environment and Sun StorEdge Enterprise Storage Manager 2.0 agent software on the same host.

Sun Web Console

The Sun Web Console is a Sun-developed web server that provides a "common console" user interface for Sun Web Console-compatible management software modules like SAN Manager and Capacity Reporter.

The Sun StorEdge Enterprise Storage Manager installation process checks your *management station* machine for the correct Sun Web Console version. If it is not found, the installation process installs the Sun Web Console version required to launch these software modules.

Note – If the installation process detects a previous version of the Sun Web Console software, it exits. You must then remove the previous version and restart the Sun StorEdge Enterprise Storage Manager installation process.

See also:

- "Management and Agent Stations" on page 14
- "Getting Started Task Summary" on page 15
- "Concepts and Logging In" on page 19
- "Configuring Role-Based Access Control to Enable Access to the Software" on page 20

SAN Manager

The SAN Manager software module is a SAN management tool. This module enables you to view and control components in your storage environment through a web browser UI or a CLI. You can also link to and launch other software from the UI, including the Capacity Reporter module.

The software module includes agent, management, and database software installed on host machines in your environment. The agent software continuously collects information from devices in your environment and stores the information in a database. This database contains the information needed to build a data model of your environment. The agent software updates the data model depending on discovered changes in device status.

You can view and manage this information at any time by using the web browser UI. For example, you can view a graphic representing your environment and click parts of the graphic to see details about that host machine or device. See FIGURE 1-1.

You can also use the CLI to perform the same tasks as you would in the UI.

SAN Manager enables you to:

- View hardware assets such as hosts, host bus adapters, switches, and storage devices, including a graphical view of your environment
- Track events, such as alarms. If you want, you can be notified by email, by mobile device email, and by SNMP traps when alarms occur
- Manage users, event alarm reporting, and assets
- Configure user email notification and network host notification
- Manage asset reporting
- Launch supporting web browser-based applications related to devices in your environment

Note – The web browser and launchable software must be installed on all relevant platforms in your environment.

Hosts
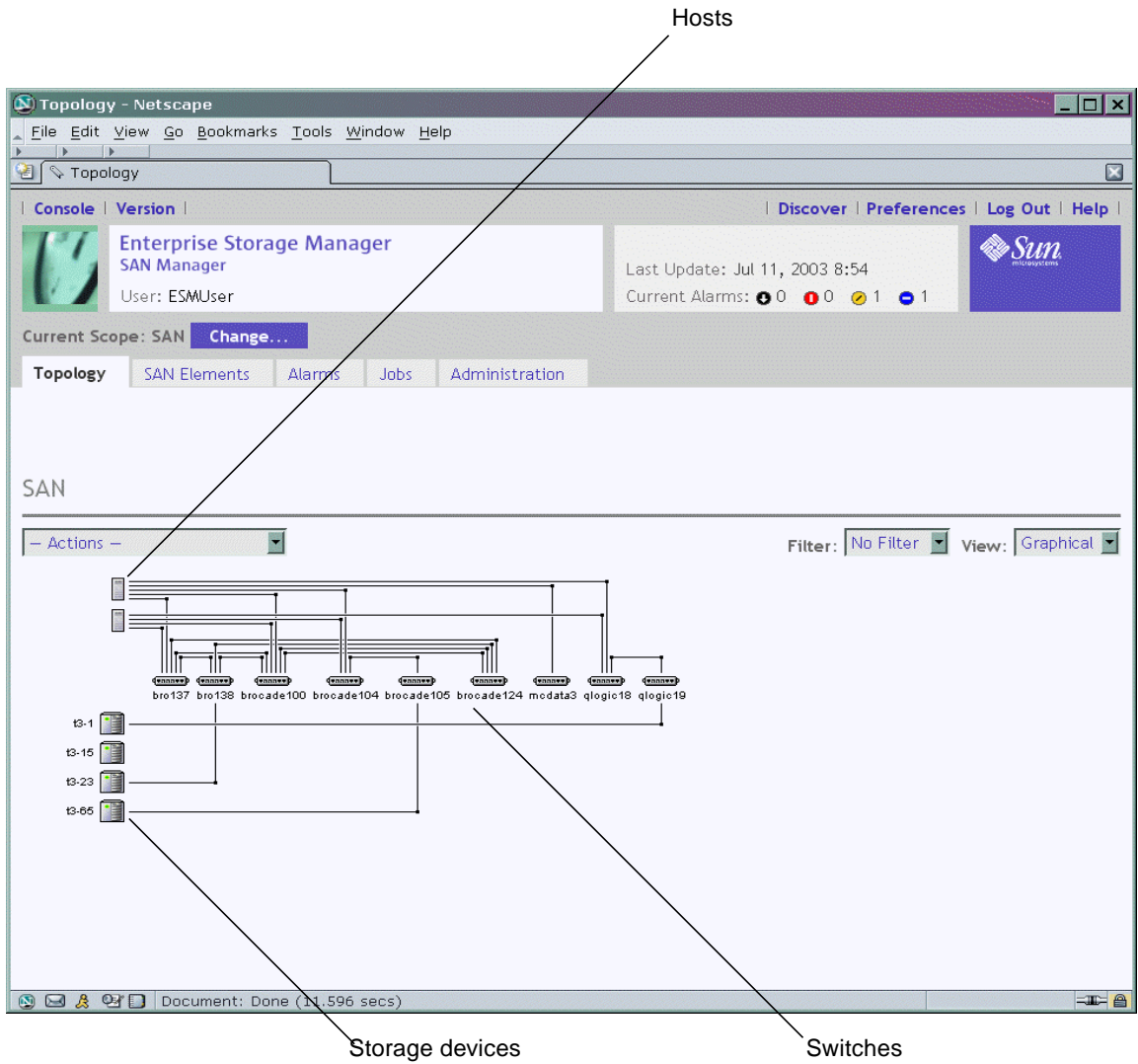
FIGURE 1-1   SAN Manager Topology Page

Capacity Reporter

The Capacity Reporter software module enables you to view storage capacity usage reports on the hardware and software storage elements in your network. Like SAN Manager, you can launch supporting web browser-based applications from the web browser UI to further manage storage elements. See FIGURE 1-2.

From the Capacity Reporter web browser UI, you can:

- View storage capacity reports on your network's top-level storage elements, such as hosts, arrays, clusters, and switches
- View historical and comparison graphical representations of report information
- Create policies to define thresholds that generate alarms
- Track storage capacity events, such as alarms. If you want, you can be notified by email, by mobile device email, and by SNMP traps when alarms occur
- Automatically address alarms by writing scripts that can be executed when a storage element is in an alarm condition

Capacity Reporter includes support for a Capacity Reporter management station and various agent stations. It uses an Oracle Standard Edition database for collecting and using storage capacity and Sun StorEdge Enterprise Storage Manager configuration data.

After successfully installing Capacity Reporter, you can configure and run the discovery process. This process polls the storage elements in your network that meet the discovery criteria, and delivers this basic information to the Capacity Reporter management station for display in the Capacity Reporter web browser UI.

Note – The Capacity Reporter discovery process is different from the SAN Manager discovery process. In Capacity Reporter, you can choose to perform detailed reporting on a storage element after the storage element is discovered. In SAN Manager, detailed reporting is automatically performed on every discovered storage element. See "First Task - Performing a Discovery" on page 24.

After discovery, you can let the agent software that you install on various hosts in your network scan (collect detailed data from) the storage elements. You can do this by choosing to manage or register the storage elements. Scan results are stored in the Capacity Reporter database and are used to build detailed storage capacity reports.

You can view and manage storage capacity reports from the Capacity Reporter web browser UI, accessible from the Sun Web Console.
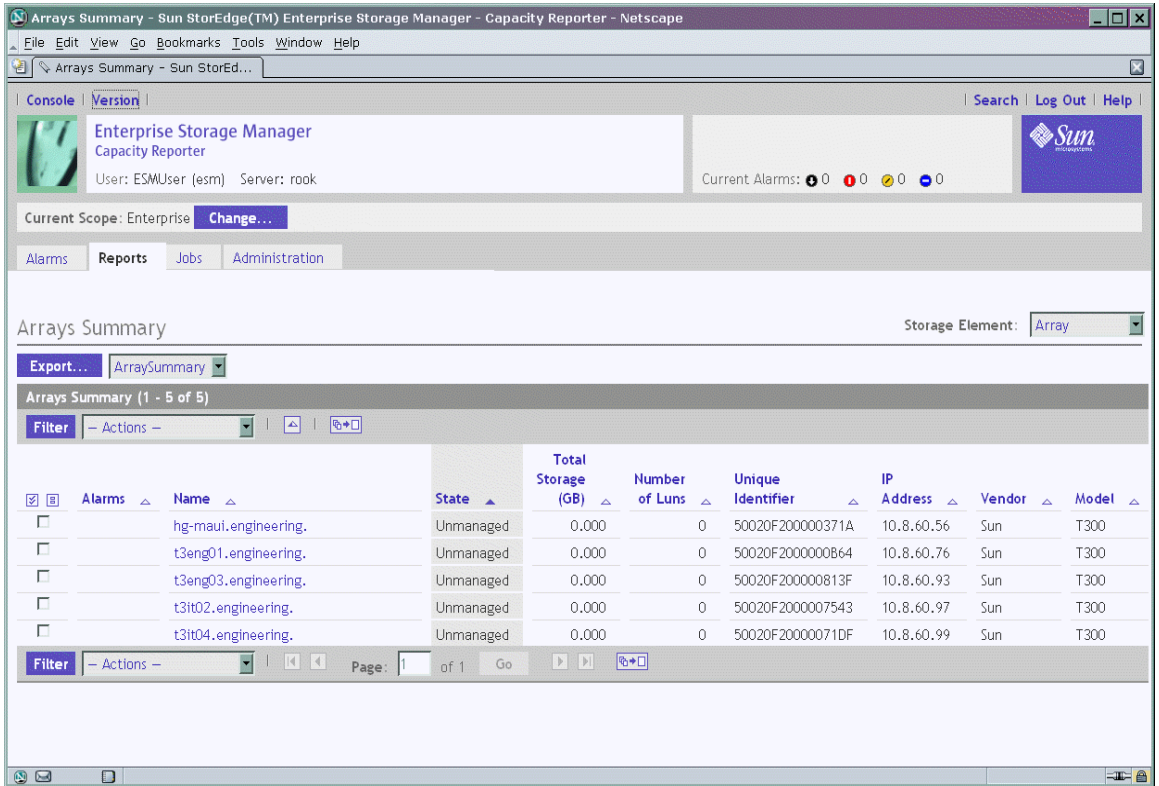
FIGURE 1-2 Capacity Reporter Reports Page

Storage Automated Diagnostic Environment Software

The Storage Automated Diagnostic Environment software is a distributed online health and diagnostic monitoring tool for DAS and SAN devices. It can be configured to monitor your Fibre Channel and non-Fibre Channel-connected devices on a 24-hour basis, collecting information that helps enhance the reliability, availability, and serviceability (RAS) of the storage devices.

FIGURE 1-3 shows the software's main window.

This software provides the following features:

- A common web-based user interface for device monitoring and diagnostics
- Distributed test invocation by means of lists or topology. You can run the tests through the Storage Automated Diagnostic Environment GUI or through the CLI
- Topology grouping for multi-level hosts and components
- Alternate master support for redundancy
- Revision checking
- Support for the Storage Service Processor of the Sun StorEdge 6320 system offerings
- Remote notification through Sun Remote Services, Sun Remote Services Net Connect service, Sun StorEdge Remote Response service, HTTP and SNMP Providers, or email
- Support for DAS and SANs
- Encryption by way of a Secure Socket Layer (SSL) protocol to protect transmitted information

FIGURE 1-3   Storage Automated Diagnostic Environment Main Window

Sun StorEdge SAN Foundation Software

The Sun StorEdge Management Software CD-ROM includes a version of the Sun StorEdge SAN Foundation software required for the management software. Install this software as follows:

- Install the software on each agent station in your SAN. SAN Manager requires this software be installed on its agent stations; install this software on a Capacity Reporter agent station if you use this software module to manage devices in a SAN.
- If you have a single machine in your SAN that acts a a management and an agent station, install the software on that machine.

See "Management and Agent Stations" on page 14 for information about station types.

The Sun StorEdge SAN Foundation software incorporates kernel drivers and utilities that enable a host to connect, monitor, and transfer data over a SAN or DAS system. The software includes driver and utility packages for host bus adapters and other devices supporting your SAN infrastructure.

The section "To Download the Sun StorEdge SAN Foundation Software" on page 11 describes how to download this software.

▼ To Download the Sun StorEdge SAN Foundation Software

Note – You must register a user name and password to download software from these web pages.

1. **In a web browser such as Netscape Navigator™, navigate to:**

```
http://www.sun.com/storage/san/
```

2. **Click the Sun StorEdge SAN 4.2 release Software/Firmware Upgrades and Documentation link at the bottom of the page:**

Key SAN Components:

SAN Infrastructure

Sun StorEdge Software

Storage Arrays & Tape

Storage Consulting Services

Get the Software:

- Multiplatform Support
- Sun StorEdge SAN 4.2 release Software/Firmware Upgrades and Documentation
- Sun StorEdge SAN 3.0/3.1/3.2 release Software/Firmware Upgrades and Documentation
- Sun Storage Automated Diagnostic Environment
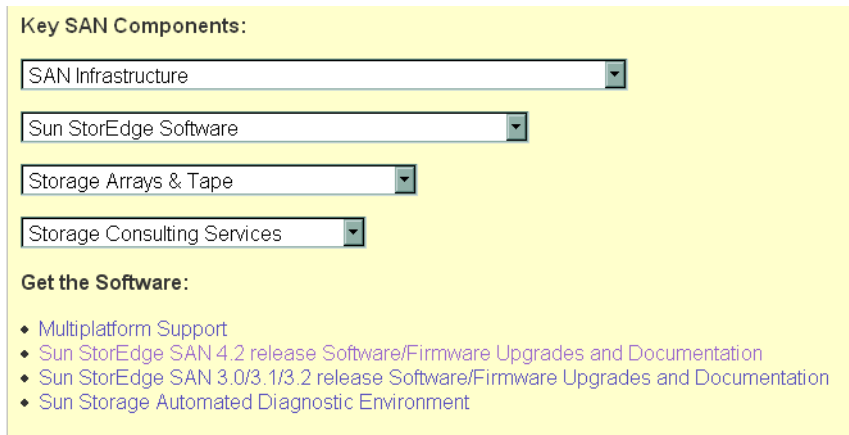
FIGURE 1-4   Sun StorEdge SAN Foundation Software Web Page Link

3. **Accept the license agreement.**

4. **Download the required packages for your operating system (Solaris 8 or 9).**

   You need at least the following software:

   - `SUNWcfpl/x` and `SUNWsan` packages
   - SNIA library support for topology reporter version 1.0 software
   - SAN 4.x switch packages for the Sun StorEdge Network 2 Gbyte FC Switch, if your SAN includes these switches

FIGURE 1-5   Required SAN Software

Note – If your environment includes a JNI host bus adapter card, get the latest JNI drivers that include the `JNIsnia` package (such as the Solaris 5.3 No Reboot Driver) for your operating system at `http://www.jni.com`. See also "Third-Party Web Sites" on page ix.

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5. **Get any SAN patches or operating system patch cluster updates at:**

```
http://sunsolve.sun.com
```

6. **Install the packages and patches according to the documentation and README files that come with them.**

   The Sun Storage SAN Foundation software web page also has links to SAN documentation.

7. **Install any switch management applications, if needed.**

8. **Reboot your system.**

How Do SAN Manager and Capacity Reporter Work Together?

The SAN Manager and Capacity Reporter software modules provide an "at-a-glance" view of the logical and physical characteristics of your SAN or DAS environment, like devices, zones, storage policies, storage capacity reports, and device health information.

You can install these software modules on a single host machine that provides a "command console" integrated storage management station to help you manage your storage environment more easily. ("Management and Agent Stations" on page 14 describes the concept of each station.)

You can launch each module from the other in context. For example, if you are viewing your SAN from the SAN Manager Topology page, and you launch Capacity Reporter from the host icon, Capacity Reporter opens with storage capacity details about that host. See "Link and Launch Capacity Reporter and SAN Manager" on page 27 and "To Launch SAN Manager From Capacity Reporter" on page 28.

You also link and launch supporting applications. See "Linking and Launching Other Software" on page 30.

Management and Agent Stations

The Sun StorEdge Enterprise Storage Management 2.0 environment consists of one host machine that you designate as a *management station* and one or more host machines designated as an *agent station*.

The management station is the machine where you can view information about and administer your devices using the UI or CLI. You can also install the agent and Sun StorEdge SAN Foundation software on this machine and use it as a management *and* agent station.

The management station runs the Sun Web Console web server software which enables you to access the UI through a web browser. You can use the web browser on the management station or from any machine that has access to the management station.

The agent station can be one or more machines in your environment where the software collects information about your SAN and DAS devices, such as hosts, host bus adapters, switches, and storage devices. You then use the UI or CLI on the management station to view this information. This information collection process is known as *discovery* and *scanning*. Discovery indicates the discovery of storage elements in the SAN and scanning indicates the collection of data from those elements.

SAN Manager requires that you install the agent station portion of the software on each host connected to a SAN or switch fabric (that is, switch and storage devices and their attributes) or on each host directly attached to storage. If you install the software on some hosts but not all, you will discover information only from those hosts.

You can choose to install the Capacity Reporter software on each host that you want to collect information from (also known as scanning) or not install it and use the remote host scanning feature. The remote host scanning feature enables you to collect storage capacity information from hosts without having the Capacity Reporter software module installed. However, the remote host scanning feature might not provide as much storage capacity detail as the information provided by an agent station with the Capacity Reporter software module installed.

For more details, see the *Sun StorEdge Enterprise Storage Manager 2.0 Installation Guide* and the online help for each software module.

Getting Started Task Summary

Note – This information is not a substitute for the detailed prerequisite and installation information in the *Sun StorEdge Enterprise Storage Manager 2.0 Software Installation Guide.* See that guide for detailed installation information.

Each module's online help describes the specific tasks that you perform to start using the software module. This list describes the general tasks to start using the Sun StorEdge Enterprise Storage Manager 2.0 software.

Getting Started Task	See This Section, Manual, or Online Help for More Information
1. **Make sure you satisfy the installation prerequisites.**	*Sun StorEdge Enterprise Storage Manager 2.0 Software Installation Guide* Chapter 3
Create the `ESMUser` role and optionally assign non-superuser users to the role. • Configure the management station `/etc/system` file. • Install the Sun StorEdge SAN Foundation software required for each SAN Manager agent station. • If you plan to install Capacity Reporter, ensure that you have access to an Oracle Standard Edition database with sufficient storage capacity. • Reboot your system if you performed one of the following three steps: - Edited the `/etc/system` file - Installed SAN software - Edited `/etc/system` file and installed SAN software	"Configuring Role-Based Access Control to Enable Access to the Software" on page 20 "Other Requirements Before You Install" on page 39 "To Download the Sun StorEdge SAN Foundation Software" on page 11 and the Sun StorEdge SAN Foundation software documentation listed in "Related Documentation" on page vii
2. Install and configure the software.	*Sun StorEdge Enterprise Storage Manager 2.0 Software Installation Guide* *Storage Automated Diagnostic Environment 2.2 User's Guide - Device Edition*
3. Log in to the web console and launch one or both the software modules.	"Logging In to the Software" on page 21

4. Perform an initial discovery.	"First Task - Performing a Discovery" on page 24
	Online Help for each module.
5. Choose the storage elements to manage.	Online Help for each module.
6. Configure the email notification feature.	Online Help for each module.
7. Configure supporting applications to "link and launch" from the web browser UI.	"Link and Launch Capacity Reporter and SAN Manager" on page 27
	"Linking and Launching Other Software" on page 30
	Online Help for each module.

Web Browser Requirements

You can use the following web browsers with the software UI:

- Netscape Navigator versions 4.79 and 7.02
- Internet Explorer 5.0
- Mozilla 1.1

Ensure that you have following items enabled in your web browser:

- Cookies
- Javascript

Locating the Sun StorEdge Enterprise Storage Manager Documentation

"Related Documentation" on page vii lists the available documentation for the Sun StorEdge Management Software. TABLE 1-1 shows where the documentation is located.

TABLE 1-1   Sun StorEdge Enterprise Storage Manager Documentation Locations

Documentation	Location
esm(1M) CLI man page	`/opt/SUNWstm/man/man1m/esm.1m`
	Sun StorEdge Enterprise Storage Manager 2.0 esm(1M) Command Line Interface Quick Reference
Other man pages: `esminstall`(1M) `esmuninstall`(1M) `esmcheck`(1M) `esmcontrol`(1M)	`/opt/SUNWstm/man/man1m`
All Sun StorEdge Management Software-related documentation on the `docs.sun.com` web site	`http://docs.sun.com/db/coll/ESM2.0`
Sun StorEdge Enterprise Storage Manager 2.0 Software Installation	Sun StorEdge Enterprise Storage Manager Product CD: `Docs/817-3152-10.pdf`

Sun StorEdge Enterprise Storage Manager 2.0 Release Notes	`Docs/817-3154-10.pdf`
	
	`http://docs.sun.com/db/coll/ESM2.0`

Storage Automated Diagnostic Environment 2.2 User's Guide - Device Edition	`http://docs.sun.com` After installing this software, the documentation is located in `/opt/SUNWstade/docs`
Sun StorEdge SAN Foundation Software	`http://www.sun.com/storage/san` This web page includes a link to the software and documentation. It requires you to register to download the software and documentation. The documentation, especially the release notes, contains information about patches, supported hardware, and so on.

Concepts and Logging In

This chapter describes the Sun StorEdge Enterprise Storage Manager software concepts and explains how to log in to the software. The topics described in this chapter include the following:

- "Configuring Role-Based Access Control to Enable Access to the Software" on page 20
- "Logging In to the Software" on page 21
- "First Task - Performing a Discovery" on page 24
- "Link and Launch Capacity Reporter and SAN Manager" on page 27
- "Using the Command-Line Interface" on page 31

For specific information about the Sun StorEdge Management Software components Storage Automated Diagnostic Environment and the Sun StorEdge SAN Foundation software, see the documentation listed in "Related Documentation" on page vii and "Locating the Sun StorEdge Enterprise Storage Manager Documentation" on page 17.

Configuring Role-Based Access Control to Enable Access to the Software

The Sun Web Console uses Role-Based Access Control (RBAC) to allow users to access all features of the Sun StorEdge Enterprise Storage Manager 2.0 software. By default, the installation procedure assigns the `ESMUser` user role to the superuser. The superuser can also assign these access rights (`ESMAllRights`) to other non-superuser users by using the `/opt/SUNWstm/bin/esm_user` script.

The software allows all Sun StorEdge Enterprise Storage Manager user rights to any user with the `ESMUSer` role. This user can then view any page and administer any feature of the Sun StorEdge Enterprise Storage Manager software.

Before you install the software, you must create the ESMUser role and set a default password. Use the following general steps.

Note – You must be root (superuser) to perform these steps.

---

1. **Before you install the software**, create a new role account and password by using the `roleadd`(1M) and `passwd`(1M) commands:

   - `/usr/sbin/roleadd ESMUser`
   - `/usr/bin/passwd ESMUser`

2. Ensure that you satisfy all installation prerequisites.

   See "Getting Started Task Summary" on page 15.

3. Install the software.

4. After successfully installing the software, you can now assign the `ESMUser` role to other non-superuser users by using the `/opt/SUNWstm/bin/esm_user` script.

See the *Sun StorEdge Enterprise Storage Manager 2.0 Software Installation Guide* listed in "Related Documentation" on page vii and the online help for details.

Logging In to the Software

The following sections describe how to log in to the Sun StorEdge Management Software and access the software modules.

■ "To Log In to the Storage Automated Diagnostic Environment" on page 21.

■ "To Log In to the SAN Manager and Capacity Reporter Software Modules" on page 22.

▼ To Log In to the Storage Automated Diagnostic Environment

1. Type the following URL in your web browser:

See "Web Browser Requirements" on page 16.

The default Storage Automated Diagnostic Environment URLs are:

```
# if you chose nonsecure installation:
http://management-station-hostname:7654/
# if you chose secure installation:
https://management-station-hostname:7654/
```

Where *hostname* is the name of the management station where you installed software.

A login popup windows is displayed.

2. Type the following default user name and password in the popup login window:

■ Username: **ras**

■ Password: **agent**

The Storage Automated Diagnostic Environment window is displayed.

▼ To Log In to the SAN Manager and Capacity Reporter Software Modules

1. Type the following URL in your web browser:

See "Web Browser Requirements" on page 16.

```
https://hostname:6789/
```

Where *hostname* is the name of the host where the software is installed.

2. Log in to the Sun Web Console by typing your user name and password and clicking Log In or pressing Return.

The Sun Web Console access page is displayed.

FIGURE 2-1 Sun Web Console Access Page

3. Choose the ESMUser Role Name from the menu.

4. **Type the** `ESMUser` **role password, and then click Log In or press Return.**

See "Configuring Role-Based Access Control to Enable Access to the Software" on page 20 for information about creating a role and role password. By default, the installation procedures assigns the `ESMUser` user role to the superuser (root) user.

The Sun Web Console server page is displayed. The server page shows links to any available and installed software modules. See FIGURE 2-2.

5. **Click the SAN Manager or Capacity Reporter link to launch the software module.**

FIGURE 1-1 and FIGURE 1-2 show examples of these pages.

| Console | Version | | | Log Out | Help |

Sun™ Web Console
User: ESMUser   Server:

◆Sun
microsystems

Console

To start an application, click its name. To start multiple applications, each in a new window, select the check box first.

☐ Open Each Application in a New Window

| **Systems** | **Desktop Applications** |
| No Applications available | No Applications available |

Storage	**Other**
Sun StorEdge[TM] Enterprise Storage Manager - SAN Manager	Tag Library Examples
Sun StorEdge[TM] Enterprise Storage Manager - Capacity Reporter	

| **Services** | |
| No Applications available | |

FIGURE 2-2   Sun Web Console

First Task - Performing a Discovery

The first task to perform after you log in to SAN Manager or Capacity Reporter is to perform a discovery. However, because each software module provides a different set of features and functions, discovery is defined differently for each module.

SAN Manager Discovery

SAN Manager software discovery is the process during which software agents on agent stations retrieve information about Fibre Channel-attached SAN elements in your environment. These SAN elements are:

- Hosts
- Switches
- Host bus adapters
- Storage devices
- Zones

The agents report the information to the management station and the information is stored in the software's database. You can then view this information by using the UI or CLI at a management station. See the esm(1M) man page for information about the CLI.

Note – You must install the agent station portion of the software on each agent station host that is connected to a SAN or fabric. If you install the software on some agent stations but not all, the software discovers information only on those agent stations where the software is installed.

When you can first view device status or topology depends on the size of your environment. In a small SAN environment, you might see information immediately. In larger environments, the initial discovery might take a few minutes. Also, discovery depends on the agents being started on agent station machines.

SAN sizes in the software are defined as follows:

- Small SAN - up to 25 elements
- Medium SAN - up to 50 elements
- Large SAN - up to 75 or more elements

▼ To Perform a SAN Manager Discovery

> **Note –** Refer to the SAN Manager online help for more information about how to perform a discovery.

1. **Click the Jobs tab.**

   The default **Discovery Jobs** page is displayed. This page enables you to view the status of any discovery operations you perform.

2. **Click the Discover link.**

   The **Discovery Setup** window is displayed. It contains the following fields.

From IP Address	Specify an element IP address or device name. This field is required.
To IP Address	Specify an ending element IP address. This field is required only if you are performing a discovery operation across a range of IP addresses. In that case, you would fill in a starting address in the **From IP Address** field.
Time Out	Define a time-out value, in seconds.

3. **Perform one of the following:**

   - Type a single IP address or element name (such as a host name) in the **From IP Address** field to discover one element
   - Type a range of IP addresses to discover all elements, starting with the first element in the **From IP Address** field and ending with the last element in the **To IP Address** field

4. **Type a time-out value in the Time Out field.**

5. **Click Submit.**

6. **Wait a few minutes for icons to appear.**

   Waiting to view the Topology page gives the software a chance to discover a new SAN element. You can view the discovery operation progress on the Jobs page at the default **Discovery Jobs** tab.

7. **Click the Topology tab to view the discovered elements.**

Capacity Reporter Discovery

Note – Typically, Capacity Reporter discovers information during its installation process if the installer has provided configuration information. After installation, you can view information from the Reports tab or further configure the software for discovery and scanning. Refer to the Capacity Reporter online help for details.

Capacity Reporter discovery is the process during which the software detects top-level elements in your network and displays the storage elements in the UI. The top-level elements are:

- Hosts
- Switches
- Storage arrays
- Clusters

After discovery, you can let the agent software that is installed on various hosts in your network scan or collect detailed data from the storage elements. You can do this by choosing to manage or register the storage elements. Scan results are stored in the Capacity Reporter database and are used to build detailed storage capacity reports. You can view and manage storage capacity reports from the Capacity Reporter UI, which is accessible from the Capacity Reporter management station.

▼ To Configure and Perform a Capacity Reporter Discovery

Note – The Capacity Reporter online help contains more information about how to configure and perform discovery and scanning operations.

1. **Click the Administration tab and go to the Discovery Configuration page.**

2. **Configure the discovery criteria by typing information in the configuration fields.**

   These fields include Discovery Scan Schedule, New Element Discovery Notification, and so on.

3. **After configuring the discovery, click Run Discovery Now.**

4. **Click the Jobs tab to view status about the discovery task.**

Link and Launch Capacity Reporter and SAN Manager

Each software module can launch from the other. This feature is known as "link and launch" and it enables you to launch Capacity Reporter from SAN Manager or SAN Manager from Capacity Reporter. See the following topics.

- "To Launch SAN Manager From Capacity Reporter" on page 28
- "To Launch Capacity Reporter From SAN Manager" on page 29

▼ To Launch SAN Manager From Capacity Reporter

1. **Open Capacity Reporter in a web browser.**

2. **Click the Reports tab.**

3. **Choose the storage element type from the Select Summary Report menu.**

4. **Click a storage element Name link from the report table.**

5. **Choose Launch Topology from the Actions Menu.**

   A separate SAN Manager window is displayed. See FIGURE 2-3.
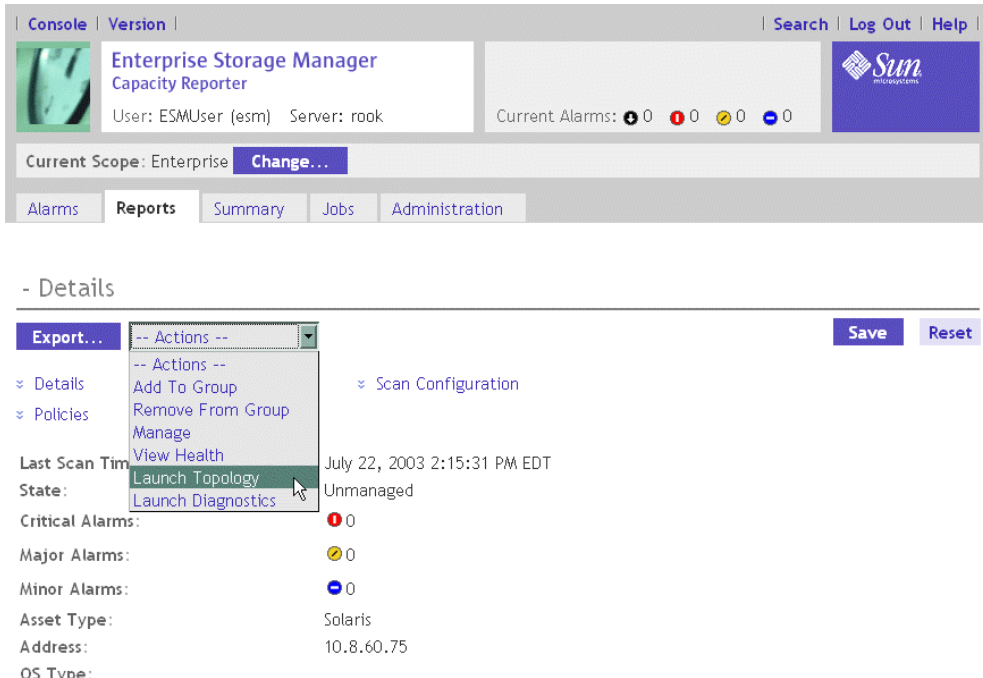
FIGURE 2-3   Capacity Reporter Actions Launch Topology Selection

▼ To Launch Capacity Reporter From SAN Manager

1. **Open SAN Manager in a web browser.**

2. **Click the Topology tab.**

3. **In SAN Manager, click the host icon.**

   The Host Actions menu is displayed. See FIGURE 2-4.
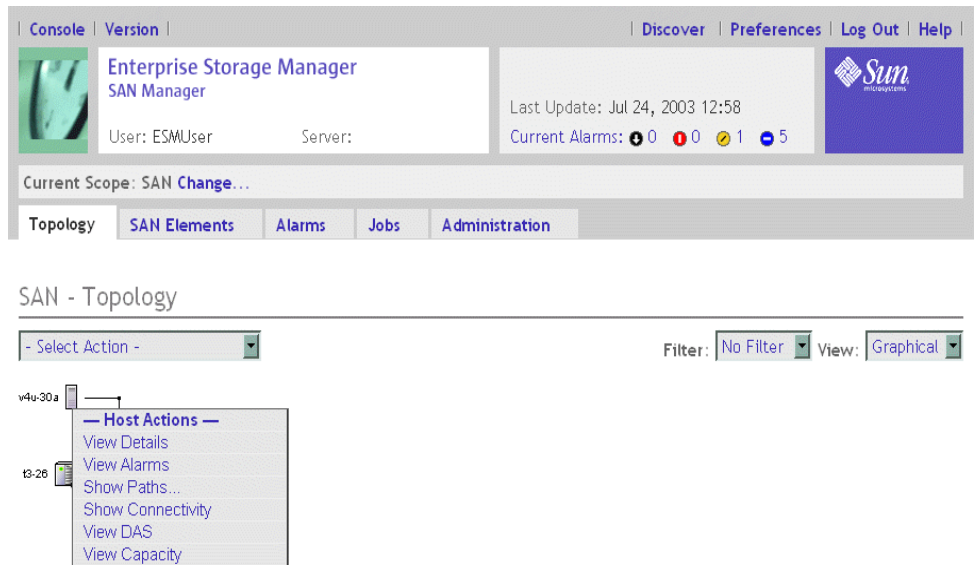
FIGURE 2-4 SAN Manager Host Actions Launch Selection

4. **Click View Capacity.**

   A separate Capacity Reporter web browser window is displayed.

Linking and Launching Other Software

Note – See the SAN Manager and Capacity Reporter online help for more details.

The Sun StorEdge Enterprise Storage Manager software also enables you to link and launch supporting web browser-based software from within the SAN Manager and Capacity Reporter web browser UI.

Launchable software includes but are not limited to the following:

- Sun StorEdge Configuration Service software for Sun StorEdge T3 and T3+ arrays, Sun StorEdge 6000 Family arrays and systems, and Sun StorEdge 3500FC arrays
- Sun StorEdge 9900 HiCommand and Storage Navigator software for Sun StorEdge 9900 Series arrays
- SunPlex™ manager for Sun Cluster environments
- VERITAS Cluster Server for VERITAS cluster environments
- Switch management software embedded in or included with switches in your environment, such as SANSurfer, Brocade Communications Corp. WEBTOOLS, or McDATA Corp. Enterprise Fabric Connectivity Manager software

You can add these supporting applications by using the SAN Manager or Capacity Reporter interface and then associating the supporting application with a storage element in your DAS or SAN environment.

In most cases, you simply add the URL and port number of the installed application. You typically launch these applications from the related storage element's report table or topology icon.

Using the Command-Line Interface

> **Note –** You can find man pages for each of the following commands and scripts in the `/opt/SUNWstm/man/man1m` directory after you install the software.

The Sun StorEdge Enterprise Storage Manager software includes a command-line interface consisting of the following commands.

TABLE 2-1 Available CLI Scripts and Command

Command or Script	Description	Where The Script is Located
setup esminstall	Use these scripts to install the software interactively by using the menu or script options. See "Choosing the Features to Install by Using the setup Script" on page 40.	CD-ROM root directory
	See the *Sun StorEdge Enterprise Storage Manager Installation Guide* for script options.	
esmuninstall	Use these scripts to remove the software interactively by using the menu or script options.	/opt/SUNWstm/bin
esm	Use this command to control the SAN Manager software module. You can perform the same functions that are available in the SAN Manager web browser UI. See "Using the esm CLI" on page 32.	/opt/SUNWstm/bin
	At this time, the Capacity Reporter is available in a web browser UI only; it does not include a CLI.	
This section does not describe the following scripts or commands:		
esmconfig	Use this script to reconfigure the software after installation. Note that the installation process includes configuration	/opt/SUNWstm/bin
esmcheck	Use this script to display installation status, software process status, and log file locations and sizes.	/opt/SUNWstm/bin
esmcontrol	Use this script to start, stop, and restart the Sun StorEdge Enterprise Storage Manager software.	/opt/SUNWstm/bin
esm_user	Use this script to assign ESMUser access rights to nonroot users. See "Configuring Role-Based Access Control to Enable Access to the Software" on page 20.	/opt/SUNWstm/bin

Using the esm CLI

Note – The Sun StorEdge Enterprise Storage Manager version 2.0 software does not
support the versions 1.0, 1.1, or 1.2 /opt/SUNWnsm/bin/sstr(1M) CLI. Any scripts
that you have written using the sstr(1M) CLI and want to keep using must be
rewritten by using the esm(1M) CLI and its options. The options for this CLI are
completely different than the options for sstr(1M).

By default, the root user (superuser) is allowed to use the Sun StorEdge Enterprise
Storage Manager esm(1M) CLI. Non-superuser users can also use the CLI if they are
configured to do so.

The esm command accepts short or long names for each subcommand option. A
short name option requires a single hyphen (-). A long name option requires a
double hyphen (--). For example, to display all the ports for a specified device,
including the ID for each subcomponent, you can type one of the following:

```
esm listports --name t3_1

esm listports -n t3_1
```

Type esm --help at a terminal command line to see a brief list of all subcommands.
You can also use the --help option to display information about a specific
subcommand. For example, to show information about the discovery subcommand,
type:

```
esm discovery --help
```

▼ To Configure the esm CLI for Use By a Non-superuser User

1. **Ensure that the superuser has assigned the `ESMUser` role to you.**

   See "Configuring Role-Based Access Control to Enable Access to the Software" on page 20

2. **Configure the following two properties files before issuing the `esm`(1M) command and its subcommands:**

   - `.clif-esmconfig`

     Place this file in any directory from which you will issue the `esm`(1M) command and subcommands. As a best practice and for convenience, include this file in your home directory and make sure that your `PATH` includes your home directory.

     This file should contain the following entries (you can substitute the management station host name for `localhost` in the following example):

     ```
     ~server=localhost
     ~port=6789
     ~servlet_path=/esm/clif/CLIFrontController
     ~secure=true
     ~strict-certificate=false
     ```

   - `.clif-user`

     Place this file in your home directory. For instance, if you are user `guest` with a home directory of `/home/guest`, you must have this file as `/home/guest/.clif-user`. (The default superuser must have it in the system root directory of `/`.)

     This file must contain the following entries:

     ```
     ~username=your-username
     ~password=your-password
     ~rolename=ESMUser
     ~role_password=ESMUser-password-as-assigned-by-superuser
     ```

Using the esm CLI to Run Diagnostic Tests That Require a Password

The SAN Manager esm(1M) CLI includes the test subcommand, enabling you to run diagnostic tests on elements in your SAN environment from the command line. Some diagnostic tests require that you enter a password to execute them.

The Sun StorEdge Enterprise Storage Manager installation process installs the following two files:

- .esm-test - installed in the superuser root directory. For superuser use.
- /opt/SUNWstm/etc/esm-test.tmpl - A copy of .esm-test for non-superuser user (non-superuser) use. Copy this file to your home directory and rename it as .esm-test

The .esm-test file allows you to run the tests without having to specify the password on the command line, adding a layer of security to the CLI use. Use this file as follows.

▼ To Use the esm CLI with Tests that Require a Password

1. **Open the** .esm-test **file in a text editor.**

   Non-superuser users need to copy the /opt/SUNWstm/etc/esm-test.tmpl file to their home directory first and rename it to .esm-test.

2. **Type a password definition entry for each test or element that requires a password as follows:**

   password-key=password

   Where:

password-key	Text representing the password you need to run a diagnostic test. The esm test command refers to the key in this file as specified on the esm command line.
password	The password required to execute the command.

3. **Save and exit the file.**

For example, if the file contains the following entry:

```
xyz=admin1234
```

You can specify the esm test command as follows (this example runs a test on a storage device named t3-1):

```
esm test -t test-id -x "password-key=xyz, FRU=fru1" -n t3-1
```

Quick Installation

This chapter provides you with an overview of the steps for installing the Sun StorEdge Management software, including the Sun StorEdge Enterprise Storage Manager software modules.

Refer to the detailed prerequisite and installation information in the *Sun StorEdge Enterprise Storage Manager 2.0 Software Installation Guide.*

This chapter describes the following:

■ "Prerequisites" on page 38

■ "Choosing the Features to Install by Using the setup Script" on page 40

■ "Quick Installation Steps, SAN Choice" on page 44

Prerequisites

The Sun StorEdge Enterprise Storage Manager installation script checks for required prerequisite software on the management station and each agent station.

Before you run the script, ensure that you check for the following prerequisites:

1. The installer is superuser.

2. Required operating system version, any patch clusters (including Java™ path clusters), and other required patches are installed.

3. Sun StorEdge SAN Foundation software version 4.2 and the patches required for SAN Manager and Capacity Reporter agent station installation are installed. A version of this software is on your product CD.

Note – Install the Sun StorEdge SAN Foundation software on a Capacity Reporter agent station if you use this software module to manage devices in a SAN.

If the installation script detects the correct information, it continues with the installation. If the script detects missing prerequisites, it displays a message and exits. *The installer then has to correct the missing or incorrect piece (wrong patch version or operating system revision, and so on) and run the installation script again.*

In general, you should have the software listed in TABLE 3-1 installed.

TABLE 3-1   Required Software and Where to Get It

Software	Location
Solaris operating system, either:	`http://wwws.sun.com/software/solaris/get.html`
• Solaris 8 10/01 (also known as Update 6) with the latest patch cluster, including patches for the Java 2 SDK version 1.4.0	`http://sunsolve.sun.com`
or	
• Solaris 9, all versions	
Java 2 SDK software	`http://java.sun.com/j2se/1.4/`

TABLE 3-1   Required Software and Where to Get It

Software	Location
Sun StorEdge SAN Foundation Software version 4.2 (SAN Manager agent station installation only)	`http://www.sun.com/storage/san/` See also "To Download the Sun StorEdge SAN Foundation Software" on page 11.
Other patch clusters, packages, and updates	`http://sunsolve.sun.com`
Netscape Navigator	`http://www.netscape.com` `http://wwws.sun.com/software/solaris/netscape/get.html`

Other Requirements Before You Install

1. Ensure that your management station's `/etc/system` file contains the following values. If you already have larger values set in this file, use the larger values:

```
set shmsys:shminfo_shmmax=0x2000000
set shmsys:shminfo_shmmin=1
set shmsys:shminfo_shmmni=256
set shmsys:shminfo_shmseg=256
set semsys:seminfo_semmap=256
set semsys:seminfo_semmni=512
set semsys:seminfo_semmsl=32
set semsys:seminfo_semmns=512
```

Edit and save this file in a text editor and then perform a reconfiguration reboot:

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

2. See the *Sun StorEdge Enterprise Storage Manager 2.0 Software Installation Guide* for more information about disk space and memory requirements.

3. Add the `ESMUser` role (see "Configuring Role-Based Access Control to Enable Access to the Software" on page 20).

4. Access to an Oracle database server with sufficient storage. See the *Sun StorEdge Enterprise Storage Manager 2.0 Software Installation Guide* for more information about database configuration and other pre-installation topics.

5. Enable cookies and Javascript in your web browser. See "Web Browser Requirements" on page 16.

Choosing the Features to Install by Using the setup Script

The setup script is the Sun StorEdge Management Software install script and is located in the CD-ROM root directory. This script enables you to choose specific monitoring and management features based on your storage environment type.

When you run the setup script (Step 3 as described in "Quick Installation Steps, SAN Choice" on page 44), the following menu is displayed in your terminal window.

```
======================================================
Sun StorEdge (TM) Management Software Installer
======================================================

For your storage management needs, are you primarily interested in:

1) Health Monitoring and Fault Management

2) SAN Management, Capacity Reporting, Health Monitoring
   and Fault Management


======================================================
Type 1 or 2, type q to Quit:
======================================================
Your Choice:
```

See also:

- "Choice 1: Health Monitoring and Fault Management" on page 41 (Storage Automated Diagnostic Environment installation)
- "Choice 2: SAN Management and Capacity Reporting" on page 43 (Sun StorEdge Enterprise Storage Manager 2.0 installation)

Note – Do not install the Sun StorEdge Enterprise Storage Manager 2.0 agent software on the same agent host as the Storage Automated Diagnostic Environment software; do not install the Storage Automated Diagnostic Environment software on the same host as the Sun StorEdge Enterprise Storage Manager 2.0 agent software.

Choice 1: Health Monitoring and Fault Management

Select choice 1 for health monitoring and for fault management.

The setup script then starts to install the Storage Automated Diagnostic Environment software. Like the other components of the Sun StorEdge Management Software, this software enables you to install the software on a management station and on one or more agent stations.

CODE EXAMPLE 3-1 shows an example of an installation. In this example, the software is installed:

- On a single machine acting as a management (master) station and agent (slave) station
- In nonsecure mode, that is, available through an HTTP URL (you can choose HTTPS secure mode)

After you install the software, see "To Log In to the Storage Automated Diagnostic Environment" on page 21.

CODE EXAMPLE 3-1 Using the setup Script for Health Monitoring and Fault Management

```
Are you installing a Master or a Slave Agent?
(Enter M=master,S=slave) [M/S] or [m/s] or q to
quit: (default=M) [?,q] m/s

Select language for GUI (en=English, fr=French,
ja=Japanese, zh=Chinese, q/Q to quit) or q to
quit [en] (default=en) [?,q] en

Do you want to turn on https security [y|n|q]
(default: n) [y,n,?,q] n
End:   Get Configuration Attributes
Begin: Installing SUNWstade 2.2
Install takes a few minutes. Please wait ...
End:   Installing SUNWstade 2.2
Begin: Applying Configuration Parameters
**** Installing the Package and Crons ****
Language EN not available, using english!
*** Master Install ***
This script will now add the inet service to the inetd config file.
When this scripts ends, go to the IP Name/Address of the HOST
configured as
MASTER, port 7654, with a browser to complete the configuration.
```

CODE EXAMPLE 3-1 Using the `setup` Script for Health Monitoring and Fault Management *(Continued)*

```
/etc/services is now updated.
/etc/inetd.conf is now updated.
** cron installed.
- Resetting the inetd services to see the new rashttp service.
- Testing access to the webserver, (this will timeout after 30
secs) ...
  ***** ping 'hostname' succeeded!
  1/6 attempting to contact agent service...
*** Contacted agent service (808f31e2).
SUNWstade installed properly!
To complete the configuration, point your browser to
http://<hostname>:7654. Use the browser only after package
has been installed on all Master and Slave hosts.
End:   Applying Configuration Parameters
Sun StorEdge (TM) Management Software install Successfully
Completed.
INFO: Sun StorEdge(TM) ESM  Installer Log:
/var/sadm/install/logs/esm.log
INFO: Storage Automated Diagnostic Environment 2.2 Log:
/var/sadm/install/logs/storade.log
```

Choice 2: SAN Management and Capacity Reporting

Select choice 2 if you are managing a SAN environment, that is, hosts, host bus adapters, and storage devices and arrays interconnected through Fibre Channel switches.

The setup script displays a menu and prompts you to choose a SAN installation type. CODE EXAMPLE 3-2 shows the installation menu.

After you select an installation type, the setup script then starts to install the Sun Web Console software (if required) and Sun StorEdge Management Software software modules and supporting components.

See "Quick Installation Steps, SAN Choice" on page 44. For installation details, see the *Sun StorEdge Enterprise Storage Manager 2.0 Software Installation Guide.*

CODE EXAMPLE 3-2   setup Script SAN Management and Capacity Reporting Main Menu

```
=======================================================
      Sun StorEdge(tm)
      Enterprise Storage Manager 2.0
      INSTALL MENU
=======================================================


1) All Management and Agent Station Components (default)
2) Management Station Components (including the CLI Client)
3) Agent Station Components
4) Command Line Interface Client Components
5) Locale Menu (current locale: en)
q) Quit.
=======================================================
Type a number to install the selected components
[press Enter for default (management and agent stations),
Type q to Quit]:
=======================================================
Your Choice:
```

Quick Installation Steps, SAN Choice

Tip – If you are installing Capacity Reporter, contact your database administration to help coordinate the installation prerequisites and process.

You might also open a second terminal window and note the installation messages by typing:

`/usr/bin/tail -f /var/sadm/install/logs/esm.log`

The following general steps describe the

1. **Perform all requirements described in "Prerequisites" on page 38.**

   ■ Ensure that you meet the prerequisites, especially those required for the Oracle database.

   ■ Ensure that you perform the ESMuser role addition steps described in "Configuring Role-Based Access Control to Enable Access to the Software" on page 20.

2. **Set up your SAN: hosts, switches, host bus adapters, and storage devices.**

3. **Insert the Sun StorEdge Management Software 2.0 CD into your CD-ROM drive and install the software.**

   See "Choosing the Features to Install by Using the setup Script" on page 40.

   ```
   # cd /cdrom/cdrom0/
   # ./setup
   ```

   Note – Do not install the agent software on a host that is running Storage Automated Diagnostic Environment agent host software.

4. **Follow the prompts as required, depending on whether you are installing the software for health monitoring and fault management or for SAN management and capacity reporting.**

   A typical configuration is one management station and one or more agent stations. You can also install the software on a single machine acting both as a management and an agent station. See "Management and Agent Stations" on page 14.

> **Note –** In most cases, after choosing a station type, you can accept the default responses in the script.

5. **Repeat the installation process on each agent station, installing only the agent station portion of the software (selectable from the installation script).**

   Make sure that you install the Sun StorEdge SAN Foundation software on each agent station.

6. **When the installation is finished, log into the software by using a web browser.**

   The default SAN URL is:

   ```
   https://management-station-hostname:6789/
   ```

7. **Perform a discovery.**

   See "First Task - Performing a Discovery" on page 24.

8. **If needed, set switch credentials for the switches in your SAN for the SAN Manager.**

   > **Note –** Contact your system administrator or see your switch documentation to determine the default switch user name and password.

   - Navigate to the SAN Elements page.
   - Click Switches.
   - Click a switch Name in the table.
   - Click Contact Information.
   - Click Edit.
   - Add information to the following fields and then click OK:
     - Contact
     - Location
     - User name - the user name to log in to the switch
     - Password - the switch password

9. **Log in to the software and launch the online help by clicking the Help link.**

   Read the help to become familiar with the features and functions of the Sun StorEdge Enterprise Storage Manager software. See "Logging In to the Software" on page 21.

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