Sun microsystems

Sun StorEdge™
Enterprise Storage Manager 2.0
Software Installation Guide

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Preface

This document describes the installation considerations, requirements, and procedures for the Sun StorEdge™ Enterprise Storage Manager 2.0 software.

The intended audience for this document includes Sun support engineers and storage system administrators. The installation and post-installation steps of the Sun StorEdge Enterprise Storage Manager software must be performed by a person who has a working knowledge of storage area networks (SANs) and direct-attached through Fibre Channel storage (DAS) configurations. If the installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, a working knowledge of Oracle database administration is needed also.

How This Book Is Organized

Chapter 1 describes the Sun StorEdge Enterprise Storage Manager 2.0 software.

Chapter 2 provides the installation requirements and preparation procedures for the software.

Chapter 3 explains how to install the software.

Chapter 4 provides post-installation procedures that you perform after you install the software.

Chapter 5 describes general tips to troubleshoot any problems that might occur when installing the software.

Appendix A provides a worksheet to help organize information that the installation procedure requires.

Appendix B explains how to write scriptable alerts, which you can use with the capacity reporting function of Sun StorEdge Enterprise Storage Manager.

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 the following for this information:

- Software documentation that you received with your system
- Solaris™ operating environment documentation, which is at

  `http://docs.sun.com`

Shell Prompts

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

Typographic Conventions

Typeface[*]	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.

Related Documentation

Application	Title	Part Number
`esm`(1M) man page	*Sun StorEdge Enterprise Storage Manager 2.0 esm(1M) Command Line Interface Quick Reference*	817-2941

	`esminstall(1M)`
	`esmuninstall(1M)`
	`esmcheck(1M)`
	`esmconfig(1M)`
	`esmcontrol(1M)`
		N/A

Release and product information	*Sun StorEdge Management Software 2.0 Getting Started Guide*	817-2943
	Sun StorEdge Enterprise Storage Manager 2.0 Release Notes	817-3154
	Sun StorEdge SAN Foundation Software 4.2 Release Notes	817-1246
Installation and configuration	*Sun StorEdge Network FC Switch8 and Switch-16 Installation and Configuration Guide, Sun StorEdge SAN 3.0 Release*	816-0830
	Sun StorEdge SAN Foundation Software Installation Guide	817-1244
	Sun StorEdge SAN Foundation 4.2 Software Configuration Guide	817-1245
User and diagnostic	*Sun Management Center 3.5 User's Guide*	816-2716

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

Sun StorEdge Enterprise Storage Manager 2.0 Software Installation Guide, part number
817-3152-10

Sun StorEdge Enterprise Storage Manager Installation Overview

This chapter includes information about:

Software Features

The Sun StorEdge Enterprise Storage Manager 2.0 software is a storage asset management tool that provides graphical views, device management, fault management, and capacity reporting of your storage area network (SAN) or direct attached storage (DAS) through Fibre Channel environment. The software consists of:

- The SAN Manager component of the Sun StorEdge Enterprise Storage Manager software

- The Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software

The installation script allows you to install the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software only, or include the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software.

The Sun StorEdge Enterprise Storage Manager components allow you to link and launch to the other. You can also launch other device management software from within Sun StorEdge Enterprise Storage Manager software to manage devices such as switches, arrays, and the like. Make sure you install the applications that you want to launch from the Sun StorEdge Enterprise Storage Manager software.

TABLE 1-1 briefly describes the features of the Sun StorEdge Enterprise Storage Manager software.

TABLE 1-1 Sun StorEdge Enterprise Storage Manager Software Overview

Software Function	Description
Topology management and reporting	Lets you view devices in a storage area network (SAN) or direct-attached storage (DAS) environment.
Device configuration management services	Lets you manage Sun StorEdge T3, T3+, and 6000 Family storage arrays and devices in your SAN or DAS environment.
Health monitoring and diagnostic services	Provides fault management and health reporting for Sun storage devices. You can perform a variety of functions, such as SAN device health monitoring, diagnostic tests, view the SAN topology for all SAN devices, and Email or pager notification of system events and alarms.
Capacity reporting	Scans storage devices and gathers information. The software uses the information to create reports and notify users when a device exceeds user-defined capacity thresholds.
	The Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software uses the Oracle Database Standard Edition software to store the information it collects. Before you install the Sun StorEdge Enterprise Storage Manager software, your network storage environment must include an Oracle database server. See "Setting Up the Database Environment" on page 20 for information about how to prepare the Oracle database server for use with Sun StorEdge Enterprise Storage Manager.

You can use the software to manage your storage devices using a web browser user interface (UI).

The SAN Manager component of the Sun StorEdge Enterprise Storage Manager software includes a CLI. You can install the CLI on a Sun StorEdge Enterprise Storage Manager agent station or a system that has no Sun StorEdge Enterprise Storage Manager components. Note that a CLI is not available for the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software.

The Sun StorEdge Enterprise Storage Manager 2.0 software package also includes:

- Sun StorEdge SAN Foundation Software 4.2, which incorporates kernel drivers and utilities that let a host connect to, monitor and transfer data on a SAN

- Sun Web Console software, which authenticates and authorizes users, and provides a web browser user interface

Management and Agent Stations

The Sun StorEdge Enterprise Storage Manager software consists of management and agent software. You can install the software on any Solaris system in your SAN or DAS environment. Each system is considered a *station* and can have a different role:

■ Management station

   The software components use a management station to run the server portion of their packages.

   The management station is the system on which you install the software that enables you to use the web browser UI and CLI (for the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software) to view information about, and to administer and report on your SAN fabric or DAS devices.

■ Agent station

   The agent station is one or more systems in your SAN through which the software collects information about your SAN devices. SAN devices can be host systems, host bus adapters, switches, and storage devices. The agent station sends this information to the management station, from which you then use the web browser user interface or CLI to view it.

Typically your network storage environment consists of one management station and multiple agent stations. The default installation installs both the management and agent software on a system so that it is both the management station *and* a agent station.

Summary of Installation and Post-Installation Steps

TABLE 1-2 lists all the steps for a complete Sun StorEdge Enterprise Storage Manager software installation.

TABLE 1-2   All Installation and Post-Installation Steps

Pre-Installation Steps	See This Section or Chapter
1. Choose the systems in your SAN or DAS environment on which you plan to install the software. *Make sure the systems meet the prerequisites for installation.*	"Required Software" on page 8 "Required and Supported Hardware" on page 11 "Required Disk Space and Memory" on page 12
2. Create an ESMUser user role.	"Configuring Role-Based Access Control to Enable Access to the Software" on page 13
3. Select and prepare the systems that will be the management and agent stations.	"Preparing the Management Station" on page 16 "Preparing the Agent Station" on page 18
4. Set up the Oracle database, if your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software.	"Setting Up the Database Environment" on page 20
• Set the language and locale parameters on the Oracle database server system.	"Configuring for Internationalization" on page 22
• Decide if you want to install the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software in trusted or untrusted mode.	"Choosing Trusted or Untrusted Mode" on page 22
• Create Oracle tablespaces on the Oracle database server system for an **untrusted** mode installation.	"Creating Oracle Tablespaces" on page 23
• Assign database files to the tablespaces on the Oracle database server system for an **untrusted** mode installation.	"Assigning Database Files" on page 26
• Create a user role	"Creating the User Role" on page 26
• Create an Oracle database user account on the Oracle database server system for an **untrusted** mode installation r.	"Creating the Oracle Database User Account" on page 27
• Configure the Oracle database client.	"Configuring the Oracle Database Client" on page 28

TABLE 1-2   All Installation and Post-Installation Steps *(Continued)*

Pre-Installation Steps	See This Section or Chapter
5. Collect information that you will need during the installation.	"Gathering the Required Information" on page 29 "Default Port Numbers" on page 32 Appendix A

Installation Steps	See This Section or Chapter
6. Install the software as root: • On a single system that serves as both a management *and* an agent station (the default) • On individual systems that serve as a management *or* an agent station Note that you can install the Sun StorEdge Enterprise Storage Manager software interactively or by using the esminstall script options.	"To Install the Software on a Single System That Acts as a Management Station and Agent Station" on page 34 "To Install the Software on a Management Station" on page 49 "To Install the Software on an Agent Station" on page 51 "To Install the CLI" on page 56
7. Use the answer file if you want to install the same configuration on another system.	"Using the Answer File" on page 59
8. (Optional) Configure the Sun Management Center SAN Manager component of the Sun StorEdge Enterprise Storage Manager agent software.	"Sun Management Center Integration" on page 63

Post-Installation Steps	See This Section or Chapter
9. Test the installation.	"Starting and Stopping the Software" on page 70
10.Log in to the software.	"Accessing the Sun StorEdge Enterprise Storage Manager Software" on page 72
11.(Optional) Edit the .clif-user file.	"To Configure your CLI Login Information" on page 74
12.If necessary, reconfigure the software.	"Reconfiguring the Software" on page 75
13.Remove the software.	"Uninstalling the Software" on page 82
14.Check the log files for messages related to the installation.	"Checking the Log File" on page 92

Preparing for the Installation

This chapter includes information about tasks you must perform before you install the Sun StorEdge Enterprise Storage Manager software:

System Requirements

Your network storage environment must have the required software, hardware, disk space, and memory to install the Sun StorEdge Enterprise Storage Manager software. The installation procedure terminates if it detects that your environment does not meet the minimum installation requirements. You must supply the missing requirements before you can attempt to install the software again.

Required Software

The Sun StorEdge Enterprise Storage Manager installation requires that you have the latest network, switch, and host bus adapter software packages and updates. These packages and updates are available at:

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

Patches are available at:

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

TABLE 2-1 lists the required SAN, operating environment, and database software for the Sun StorEdge Enterprise Storage Manager installation.

TABLE 2-1   Required SAN, Operating Environment, and Database Software

Required SAN software on each agent station	Sun StorEdge SAN Foundation version 4.2 software. Though your system may already include the Sun StorEdge SAN Foundation version 4.2 software, the Sun StorEdge Management Software CD includes `SUNWsan` and related software, which is also available from `http://www.sun.com/storage/san/`. **Note:** Before you install the Sun StorEdge SAN Foundation version 4.2 software, check the web site to make sure you have the most recent version of the software. Patches are available at the following URL: `http://sunsolve.sun.com/`
Minimum Operating Environment Version	*Management Station*: • Solaris 9 (if your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software) • Solaris 8, update 6 Note that the Solaris 8, update 6 operating environment requires the latest patch cluster, including patches for the Java™ 2 SDK v1.4, which is available at the following URL: `http://sunsolve.sun.com` To download the patch cluster: 1. Click Patches under the SunSolve title on the left side of the page. 2. Click Patch Finder under the Patches title on the left side of the page. 3. Click J2SE Solaris 8 (49.8M) in the Recommended Solaris Patch Clusters and J2SE Clusters list box in the center of the page. 4. Click the radio button for the Readme file. 5. Choose Download HTTP or Download FTP as the method to download the patch cluster. 6. Click Go to download the patch cluster. 7. Refer to the Readme file for information about installing the patches. *Agent Stations*: Solaris 8, update 6

TABLE 2-1 Required SAN, Operating Environment, and Database Software *(Continued)*

Required Web Browser (minimum version)*	Netscape Navigator™ version 4.78, 4.79 (English only), or 7.0[†]
	Microsoft Internet Explorer version 5.5 (if your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software)
	Microsoft Internet Explorer version 5.1
	Mozilla™ 1.1
Required Database Software	*If you plan to use the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software*:
	• Oracle 9i Release 2 (9.2.0.2) Standard Edition Database Server software installed on any platform
	• Oracle 9i Release 2 (9.2.0.2) Standard Edition Client software installed on the Sun StorEdge Enterprise Storage Manager management station
	Start the Oracle database software before you install the Sun StorEdge Enterprise Storage Manager software.

* Enable your browser to accept cookies.

† Netscape Navigator version 7.0 provides improved results.

Required and Supported Hardware

TABLE 2-2 lists the supported and required hardware.

TABLE 2-2   Supported and Required Hardware

CD-ROM Requirement	A CD-ROM drive connected to the host system where you plan to install the software.
Supported Host Systems	Host systems that use the Solaris operating environment support Sun StorEdge Enterprise Storage Manager software. Hosts include but are not limited to: • Sun Enterprise™ server models 220R, 250, 420R, 450 • Sun Enterprise server models 3500, 4500, 5500, 6500 • Sun Fire™ server models 280R, 3800, 4800, 4810, and 6800 Management stations include the servers listed above. For the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software only, management stations include the following workstations: • Sun Ultra™ workstation models 60 and 80
Supported and Discoverable Attached Storage	Sun StorEdge T3 arrays, minimum firmware release 1.17 Sun StorEdge T3+ arrays, minimum firmware release 2.0 Sun StorEdge 3510FC series arrays Sun StorEdge 3900 and 6900 series storage subsystems[*] Sun StorEdge 9900 series systems (includes the Sun StorEdge 9910, 9960, 9970, and 9980 system arrays)
Supported Switches	Sun StorEdge Network FC Switch, 1 GBps, 8 and 16-port SAN switches Sun StorEdge Network FC Switch, 2 GBps, 8, 16, and 64-port SAN switches Brocade Communications Systems, 1 GBps, 8 and 16-port SAN switches Brocade Communications Systems, 2 GBps, 8, 16, and 64-port SAN switches McDATA Corporation, 2 GBps, 16, 32, and 64-port SAN switches INRANGE FC 8 or 16-port Edge Switches (for the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software only)

[*] SNMP discovery of Sun StorEdge 3900 series and 6900 series arrays require Service Processor 2.3.1 Upgrade on the arrays. Arrays with a service processor image prior to the 2.3.1 release will be discovered incorrectly as a Solaris host. Refer to the README and the 3900/6900 Array Administration Guide for instruction on how to upgrade the array.

Using JNI Host Bus Adapters

If your storage network configuration includes a JNI host bus adapter card, make sure:

- You have the latest version of your card's JNIsnia and JNIC146x packages for the Solaris operating environment. These packages are available at the following URL:

  `http://www.jni.com`

- Your JNI HBA card drivers are current. The Sun StorEdge Enterprise Storage Manager software requires the latest packages and drivers.

Required Disk Space and Memory

TABLE 2-3 lists the disk space and memory requirements for the Sun StorEdge Enterprise Storage Manager installation.

TABLE 2-3   Required Disk Space and Memory Requirements, Total

System	Disk Space	System Memory
Management station installation and operation:	640 MB	256 MB minimum 512 MB optimal
Agent station installation and operation:	71 MB	256 MB minimum 512 MB optimal
If the management and agent station is a single system:	1 GB	256 MB minimum 512 MB optimal
On the system that hosts the Oracle database server:	1500 MB	600 MB

Note – When you install the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, the installation procedure creates the `/var/opt/SUNWstm/reports` directory to store reports from scanned systems. Though the Sun StorEdge Enterprise Storage Manager software deletes old reports from the reports directory, in rare instances the directory can run low on or out of disk space. Consequently, reports may display stale data. This situation can occur if other applications share the same file system as the reports directory or you scan a large number of storage elements. At a minimum, dedicate a partition or volume with 1 GB of free space for the reports directory. When the installation procedure prompts for the directory path to store scan reports, enter the path to the dedicated directory.

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 software. By default, the installation procedure assigns the `ESMUser` user role to the superuser (root). 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 gives 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 Sun StorEdge Enterprise Storage Manager management station software, you must create the ESMUser role and set a default password. You do not need to do this for agent station and CLI installations.

Note – After the installation completes, use the `roles` *username* command to verify that you have created and assigned the `ESMUser` role successfully. If you use the roles command before you install the software, you receive an error message.

▼ To Create the `ESMUser` Role

1. **Log in to your system as root.**

2. **Create a default `ESMUser` user role:**

   ```
   # /usr/sbin/roleadd ESMUser
   ```

3. **Create the `ESMUser` user role password:**

   ```
   # /usr/bin/passwd ESMUser
   New password:
   Re-enter new password:
   ```

   You can also use the Solaris admintool to create the role.

4. **Assign an additional user to the** `ESMUser` **user role:**

```
# /opt/SUNWstm/bin/esm_user -a guest
Assigning ESMUser role to local user: guest ...
Restarting name service cache daemon and lockhart server...
#
```

The esm_user script also removes a user from the `ESMUser` role. It does not change role passwords or remove users from the `/etc/user_attr` file.

Syntax:

esm_user [-a,--add *username*] [-r,--remove *username*] [? | -h,--help]

TABLE 2-4   esm_user Script Options

Option	Description
none	Display a usage message.
-a,--add *username*	Assign the `EMSUser` role to a user.
-r,--remove *username*	Remove the `ESMUser` role from a user.
? -h, --help	Display a list of options and usage for the script.

▼ To Allow All Logged-in Users Access

1. **Log in to your system as root.**

2. **Edit the** `/etc/security/policy.conf` **file to append the** `esm.user.all` **privilege to the** `AUTHS_GRANTED` **line:**

```
AUTHS_GRANTED=solaris.device.cdrw,esm.user.all
```

Now all users that can log on to your system can access the software, regardless of their role (including no role).

▼ To Remove Users and `ESMUser` Role

1. **Log in to your system as root.**

2. **Delete the user:**

```
# userdel username
```

You can also use the Solaris admintool.

3. **Remove the `ESMUser` role manually:**

```
# roledel ESMUser
```

The Sun StorEdge Enterprise Storage Manager uninstallation procedure will remove the `ESMUser` role from the root user, and the `ESMAllRights` from the `ESMUser` role. It does not remove the `ESMUser` role.

You can also use the Solaris admintool.

Note that the installation procedure adds Sun StorEdge Enterprise Storage Manager entries to the following files, which the uninstallation procedure does not remove:

■ `/etc/security/auth_attr`

```
esm.user.all:::Assign All Rights:help=ESMProfMgrAssign.html
esm.user.read:::Assign Read Rights:help=ESMProfMgrAssign.html
esm.user.write:::Assign Write Rights:help=ESMProfMgrAssign.html
```

■ `/etc/security/prof_attr`

```
ESMAllRights:::a basic right that provides a user with the read,
write and update rights to ESM:help=ESMAllRights.html;auths=
esm.user.all
```

Preparing the Management Station

Before you install the management station software, make sure the management station meets the disk and memory space requirements in TABLE 2-2.

▼ To Prepare the Management Station

1. **Log in as root.**

2. **Back up the** `/etc/system` **file; use a text editor to modify the** `/etc/system` **file.**

   Add the following text to the end of the file:

   ```
   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
   ```

   If an existing value in the `/etc/system` file is a decimal number, you can use the `bc(1)` command to convert hexadecimal and decimal values. For example, to display the decimal value of hexadecimal value 0x2000000 (which is decimal 33554432), type the following bold text at a terminal command prompt:

   ```
   # bc
   ibase=16
   2000000
   33554432
   quit
   #
   ```

   To convert decimal to hexadecimal, use the `obase=16` option instead. See the `bc(1)` man page for more information.

> **Note –** If you or an application previously edited this file and specified memory values, keep the higher of the memory values. For example, if the values shown in this section are higher, use these values. The internal database semaphores require these shared memory entries.

Save and exit the file.

3. **Make sure that the** `JAVA_HOME` **environment variable is not set.**

   The installation procedure sets the `JAVA_HOME` environment variable.

4. **Make sure that** `/var` **and** `/var/opt` **are file systems or directories. They are** *not* **symbolic links.**

5. **If your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager, specify the following environment variables so the software can access the Oracle database client:**

```
setenv ORACLE_HOME path/oracle/product/9.2 (csh,tcsh)

ORACLE_HOME=path/oracle/product/9.2;export ORACLE_HOME (sh,ksh)
```

6. **Perform a reconfiguration reboot:**

> **Note –** If you are using this system as an agent station also, perform the procedures in "Preparing the Agent Station" on page 18 before performing this step. *Except for this reconfiguration reboot, the software installation process does not require you to shut down and restart your system.*

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

7. **When the system returns, log in as root to install the software.**

Preparing the Agent Station

Make sure the agent station meets the disk and memory space requirements in TABLE 2-3.

You must install the agent station software on each host that is connected to the SAN or fabric. If you install the software on some hosts but not all, you will only partially discover information.

If your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager installation, the type of storage element that you want to scan determines how you install the agent station software (See TABLE 2-5).

TABLE 2-5   Agent Station Software Installation Types

Storage Element	What to Install
Standard Host	The Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager agent software on any Sun Solaris system. The software scans the system on which it resides for information.
Sun StorEdge and Hitachi Data System 9900and 9900V series array	None
	The Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software supports Sun StorEdge and Hitachi Data Systems 9900 and 9900V series arrays that are managed by Hitachi Data Systems HiCommand™ Server (HiCommand Server) software.
	Agent station software (on the management station or on another host) communicates with the HiCommand Server's web user interface to collect information about Sun StorEdge and Hitachi Data Systems 9900 and 9900V Series arrays. Therefore, a host with the agent station software must have a TCP/IP connection to the same network as the HiCommand Server that manages the 9900 990V Series Arrays.
Cluster	The Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager agent software on all member nodes of a cluster. Refer to "Installing the Software on Clusters" on page 19 for more information about how to prepare your host to scan clusters.
Storage Array	The Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager agent software on a host for which the Storage Array supplies storage. To enable scanning, you must register the host as the Storage Array's access path.
Switch	The Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager agent software on a host that is a member of the switch's fabric.
Remote Host, without installing agent software on it	None
	The management station can scan a remote host that does not include agent software. Refer to "Scanning Remote Hosts" on page 19 for more information.

Scanning Remote Hosts

If you cannot or do not want to install the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager agent software on a target Solaris system, you can use the remote host scanning function. Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager's remote host scanning function uses Telnet to access a root-like privileged account and scan a host system without installing the agent software. Note that the scan may not provide information as complete as that gathered when you install the agent software on the target host.

To scan a remote host system, you may have to provide two account names and passwords. When you register the remote host system:

1. You must include a login account name and corresponding password. The login account information allows you to use Telnet to log in to the remote host system. If the login account has root-like privileges, you can scan the remote host system successfully.

2. You might need to enter a privileged account name and corresponding password. If the login account does not have the necessary root-like privileges, you must provide a privileged account name that does have the appropriate privileges.

Installing the Software on Clusters

The Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software supports the Sun Cluster and VERITAS Cluster Server (VCS) software environment, which lets the agent station scan and report on shared cluster resources without counting them multiple times in reports.

There are two types of cluster installations:
- Cluster Primary Node
- Cluster Secondary Node(s)

Before you install the agent station software on the cluster, collect the following information:

1. Which member node is assigned the lowest LLT number in the cluster. This is the system from which you must register the cluster with the management station before any shared resources can be properly reported.

2. A suitable cluster alias for the cluster, which you use to register the cluster with the management station.The installation procedure suggests a cluster alias. Make sure that the cluster alias is not the same as another managed computer or cluster alias on the management station. The cluster alias must be a properly formatted computer system name that is unique on your network, however it does not necessarily have to exist.

▼ To Prepare an Agent Station

1. **Log in as root.**

2. **Make sure that the correct software patches are installed on your system for your host bus adapter cards, switches, and environment.**

   See "System Requirements" on page 8.

   The most current operating environment and Sun SAN Foundation software patches and patch clusters are available from `http://sunsolve.sun.com/`.

3. **After installing the patches, perform a reconfiguration reboot *only if the patch installation requires it* (see the patch README file):**

   Note – Except for this possible patch reconfiguration reboot, the software installation process does not require you to shut down and restart your system.

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

4. **When the system returns, log in as root to install the software.**

Setting Up the Database Environment

The following sections describe the configuration tasks that are specific to the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software. Refer to the Oracle product documentation for information about how to install and configure the Oracle database.

The Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software uses an Oracle database to store the data it collects from the network storage environment. For the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software to function properly with the Oracle database software, you must configure the Oracle server and client systems appropriately.

Configuring the Oracle Database Server

You must have a functioning Oracle 9i Release 2 (9.2.0.2) database server installation on any operating system environment in your network storage environment. Make sure that the system has sufficient disk space and memory.

Setting Minimum Recommended Oracle Database Values

TABLE 2-6 lists the minimum recommended Oracle database settings to ensure that the performance of the Sun StorEdge Enterprise Storage Manager software is acceptable:

TABLE 2-6   Minimum Recommended Oracle Database Settings

Tablespace Settings	System tablespace size	512 MB
	Temporary tablespace size	250 MB
	Undo tablespace size	300 MB
Redo Log Settings	Three (3) redo log groups, each with at least one redo log file:	
	Redo log file size	100 KB
Oracle SGA Settings	Shared pool size	300 MB
	Buffer cache size	150 MB
	Large pool size	50 MB
	PGA size	25 MB
Initialization Settings	Database block size	16 KB
	Number of processes	150
	Number of open cursors	300
	Sort area size	500KB

Configuring for Internationalization

For internationalization purposes:

- Select the Unicode character set
- Use the following recommended National Language Support (NLS) settings:

Parameter*	Setting
NLS_COMP	BINARY
NLS_NCHAR_CONV_EXP	FALSE
NLS_SORT	BINARY
NLS_LENGTH_SEMANTICS	CHAR

* Set the NLS_LANG and NLS_CALENDAR parameters accordingly for your geography.

Note – If the Oracle database server uses different NLS settings, the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software may not display fields or sort data properly.

Choosing Trusted or Untrusted Mode

You must choose from one of two installation modes to install the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software:

- **Trusted mode** — means that you let the installation procedure define all the required Oracle database objects automatically. To do this, you must provide a privileged DBA Oracle account name and the corresponding password to the installation script prompt. Because the installation procedure has access to the privileged DBA Oracle account, it will access the Oracle database to allocate space, create tablespaces, and create accounts.

  If you choose to install the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software in trusted mode, skip to "Configuring the Oracle Database Client" on page 28

- **Untrusted mode** — means that you do *not* let the installation procedure define all the required Oracle database objects automatically. You may not have or want to provide a privileged DBA Oracle account and the corresponding password for the installation script prompt. Therefore, an Oracle database administrator must create the following database objects before you install the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software:

  - Six (6) tablespaces and six (6) associated data files (see "Creating Oracle Tablespaces" on page 23)

- A user role that defines necessary privileges (see "Creating the User Role" on page 26)
- An Oracle database user account and password with the user role (see "Creating the Oracle Database User Account" on page 27)

Creating Oracle Tablespaces

In trusted mode, the installation procedure establishes six predefined tablespaces for small, medium, and large schema objects. To help separate data and indices, each tablespace is one of a pair with the same storage parameters.

To eliminate fragmentation and the need to coalesce the Oracle database, the Sun StorEdge Enterprise Storage Manager software uses locally managed tablespaces with UNIFORM extent sizes.

Locally managed tablespaces use bitmaps, which are in data file headers, to control space allocation and deallocation. The locally managed tablespaces do not contend for data dictionary resources, which eliminates recursive operations in the data dictionary, such as allocating a new extent.

The predefined tablespaces use uniform extents, therefore all objects that the software creates in the tablespaces use the same extent sizes. Because any isolated free extents in a tablespace match the specified extent size, there is virtually no fragmentation. The use of uniform extent sizes also simplifies the table and index creation DDL. Because the software sets the sizing parameters at the tablespace level, it does not need to address sizing when it creates an object. The uniform extent size of a locally managed tablespace cannot be overridden when a table or an index is created.

In untrusted mode, your Oracle database administrator must create small, medium, and large tablespaces and their associated database files. Note that the maximum size of the tablespaces is unlimited. Refer to TABLE 2-7 and CODE EXAMPLE 2-1 for recommendations about how to create the required tablespaces.

TABLE 2-7   Recommended Tablespace Configuration

Tablespace Name	Initial Size	Extent Size
ESM_TBSP_SMALL_A	150 MB	80 KB
ESM_TBSP_SMALL_B	150 MB	80 KB
ESM_TBSP_MEDIUM_A	250 MB	512 KB
ESM_TBSP_MEDIUM_B	250 MB	512 KB
ESM_TBSP_LARGE_A	300 MB	1 MB
ESM_TBSP_LARGE_B	300 MB	1 MB

CODE EXAMPLE 2-1   create_tablespace.sql

```
CREATE TABLESPACE ESM_TBSP_SMALL_A
       LOGGING PERMANENT
       DATAFILE '&&1' SIZE 153664K
       AUTOEXTEND ON NEXT 10M MAXSIZE UNLIMITED
       EXTENT MANAGEMENT LOCAL UNIFORM SIZE 80K
       SEGMENT SPACE MANAGEMENT AUTO
       ONLINE
/
CREATE TABLESPACE ESM_TBSP_SMALL_B
       LOGGING PERMANENT
       DATAFILE '&&2' SIZE 153664K
       AUTOEXTEND ON NEXT 10M MAXSIZE UNLIMITED
       EXTENT MANAGEMENT LOCAL UNIFORM SIZE 80K
       SEGMENT SPACE MANAGEMENT AUTO
       ONLINE
/
CREATE TABLESPACE ESM_TBSP_MEDIUM_A
       LOGGINGPERMANENT
       DATAFILE '&&3' SIZE 256064K
       AUTOEXTEND ON NEXT 25M MAXSIZE UNLIMITED
       EXTENT MANAGEMENT LOCAL UNIFORM SIZE 512K
       SEGMENT SPACE MANAGEMENT AUTO
       ONLINE
/
CREATE TABLESPACE ESM_TBSP_MEDIUM_B
       LOGGING PERMANENT
       DATAFILE '&&4' SIZE 256064K
       AUTOEXTEND ON NEXT 25M MAXSIZE UNLIMITED
       EXTENT MANAGEMENT LOCAL UNIFORM SIZE 512K
       SEGMENT SPACE MANAGEMENT AUTO
       ONLINE
/
CREATE TABLESPACE ESM_TBSP_LARGE_A
       LOGGING PERMANENT
       DATAFILE '&&5' SIZE 307264K
       AUTOEXTEND ON NEXT 30M MAXSIZE UNLIMITED
       EXTENT MANAGEMENT LOCAL UNIFORM SIZE 1M
       SEGMENT SPACE MANAGEMENT AUTO
       ONLINE
```

```
/
CREATE TABLESPACE ESM_TBSP_LARGE_B
       LOGGING PERMANENT
       DATAFILE '&&6' SIZE 307264K
       AUTOEXTEND ON NEXT 30M MAXSIZE UNLIMITED
       EXTENT MANAGEMENT LOCAL UNIFORM SIZE 1M
       SEGMENT SPACE MANAGEMENT AUTO
       ONLINE
/
EXIT
/
```

Assigning Database Files

In trusted mode, you must supply the names of the database files associated with each tablespace.

In untrusted mode, the installation script does not prompt you for the database files; however, it does verify that the tablespaces and their associated database files exist.

Sun recommends that you use only one database file for each tablespace.

Creating the User Role

In trusted mode, the installation procedure creates the ESM_ROLE user role, which defines the necessary privileges for the Oracle database user account.

In untrusted mode, the Oracle database administrator must create the ESM_ROLE user role. Refer to CODE EXAMPLE 2-2 for recommendations about how to create the ESM_ROLE user role.

CODE EXAMPLE 2-2   create_role_noexist.sql

```
DECLARE
  counter NUMBER;

BEGIN
  SELECT COUNT(1) INTO counter FROM dba_roles WHERE UPPER(role) =
UPPER('ESM_ROLE');
  IF counter = 0 THEN
    EXECUTE IMMEDIATE 'CREATE ROLE &&1';
    EXECUTE IMMEDIATE 'GRANT CONNECT, RESOURCE, OEM_MONITOR TO
ESM_ROLE';
  END IF;
END;
/
exit
/
```

Creating the Oracle Database User Account

In trusted mode, the installation procedure creates a Sun StorEdge Enterprise
Storage Manager Oracle database user account and grants it the necessary privileges
(ESM_ROLE) to access the Oracle database.

In untrusted mode, the Oracle database administrator must create the Sun StorEdge
Enterprise Storage Manager Oracle database user account and grant it the necessary
privileges (ESM_ROLE) to access the Oracle database. Refer to for
recommendations about how to create the ESM Oracle database user account.

CODE EXAMPLE 2-3   create_user_noexist.sql

```
-Creates user ONLY if it does not already exist
SET VERIFY OFF
DECLARE
  counter NUMBER;

BEGIN
 SELECT COUNT(1) INTO counter FROM dba_users WHERE UPPER(username)
= UPPER('&&1');

  IF counter = 0 THEN
    EXECUTE IMMEDIATE 'CREATE USER &&1 IDENTIFIED BY &&2 ' ||
                      'DEFAULT TABLESPACE &&4 ' ||
                      'TEMPORARY TABLESPACE &&5 ' ||
                      'QUOTA UNLIMITED ON &&6 ' ||
                      'QUOTA UNLIMITED ON &&7 ' ||
                      'QUOTA UNLIMITED ON &&8 ' ||
                      'QUOTA UNLIMITED ON &&9 ' ||
                      'QUOTA UNLIMITED ON &&10 ' ||
                      'QUOTA UNLIMITED ON &&11';

    EXECUTE IMMEDIATE 'GRANT &&3 to &&1';
  END IF;
END;
/
exit
/
```

Configuring the Oracle Database Client

To set up the Oracle database client:

1. Install the Oracle 9i client software on the same system on which you plan to install the ESM management station software.

2. Edit the tnsnames.ora file to define the net service name for the Oracle instance that the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software uses. The recommended default for the net service name is ESMDB.

Gathering the Required Information

The installation procedure starts by prompting you for all required information. Once you have answered the prompts or accepted the default values, you need not supply any other information. The following help you gather the required information for the installation procedure's prompts:

- TABLE 2-8 lists the prompts to which you must supply Oracle database information.
- TABLE 2-9 lists the default service port numbers.
- Appendix A provides a worksheet on which you can note specific configuration attributes for an installation.

Note that the installation procedure retains this information in an answer file, which you can use during subsequent installations to duplicate your settings. Refer to "Using the Answer File" on page 59 for more information about the answer file.

TABLE 2-8 Required Database Information for Installation

Script prompts for	Description	Default
Permission to create Oracle tables and users	**No** indicates *untrusted mode*, which does not let the installation procedure create the required database objects. You do not supply a privileged DBA Oracle account user name and password, therefore, the Oracle database administrator must create the database objects before you start the installation. **Yes** indicates *trusted mode*, in which you must supply a privileged DBA Oracle account user name and password so that the installation procedure can create the required database objects.	No
Host name or IP address of the Oracle database server	The system in your environment that hosts the Oracle database server and to which the Oracle database client software on the Sun StorEdge Enterprise Storage Manager management station connects. Note that the host name or IP address must be the same as that in the ESM Oracle net service name.	None
Port number for the Oracle database	The Oracle port number, which must be the same as that in the ESM Oracle net service name.	1521

TABLE 2-8   Required Database Information for Installation   *(Continued)*

Script prompts for	Description	Default
Oracle DBA account name	The privileged DBA Oracle account name, which you must supply for a trusted mode installation.	SYSTEM
Oracle DBA account password	The privileged DBA Oracle account password, which you must supply for a trusted mode installation.	None
Login ID for the Oracle database	The ESM Oracle database user account name that lets the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software access the Oracle database. In **trusted** mode, the installation procedure creates this account, creates the user role (ESM_ROLE), and assigns the role to the account. In **untrusted** mode, the Oracle database administrator must create the account and assign the necessary role (ESM_ROLE) before you start the installation. The installation script verifies that the account exists.	ESM_STD_USER
Login password for the Oracle database	The password for the ESM Oracle database user account.	None
ESM Oracle net service name	The net service name for the Oracle instance that the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software uses, which is typically in the tnsnames.ora file used in your environment.	ESMDB
Service name for the Oracle database	The Oracle database service name, which must be the same as that in the ESM Oracle net service name.	None
Name for the SMALL configuration A tablespace	In **untrusted mode**, the name the Oracle database administrator gives to the existing SMALL configuration tablespace.	ESM_TBSP_SMALL_A
Name for the SMALL configuration B tablespace	In **untrusted mode**, the name the Oracle database administrator gives to the existing SMALL configuration tablespace.	ESM_TBSP_SMALL_B
Name for the MEDIUM configuration A tablespace	In **untrusted mode**, the name the Oracle database administrator gives to the existing MEDIUM configuration tablespace.	ESM_TBSP_MEDIUM_A
Name for the MEDIUM configuration B tablespace	In **untrusted mode**, the name the Oracle database administrator gives to the existing MEDIUM configuration tablespace.	ESM_TBSP_MEDIUM_B

TABLE 2-8 Required Database Information for Installation *(Continued)*

Script prompts for	Description	Default
Name for the LARGE configuration A tablespace	In **untrusted mode**, the name the Oracle database administrator gives to the existing LARGE configuration tablespace.	ESM_TBSP_LARGE_A
Name for the LARGE configuration B tablespace	In **untrusted mode**, the name the Oracle database administrator gives to the existing LARGE configuration tablespace.	ESM_TBSP_LARGE_B
Path to the TablespaceName1 data backing file	Full path name of the data file for the SMALL_A tablespace. The installation script prompts for the path name during **trusted mode** installations only.	None
Path to the TablespaceName2 data backing file	Full path name of the data file for the SMALL_B tablespace. The installation script prompts for the path name during **trusted mode** installations only.	None
Path to the TablespaceName3 data backing file	Full path name of the data file for the MEDIUM_A tablespace. The installation script prompts for the path name during **trusted mode** installations only.	None
Path to the TablespaceName4 data backing file	Full path name of the data file for the MEDIUM_B tablespace. The installation script prompts for the path name during **trusted mode** installations only.	None
Path to the TablespaceName5 data backing file	Full path name of the data file for the LARGE_A tablespace. The installation script prompts for the path name during **trusted mode** installations only.	None
Path to the TablespaceName6data backing file	Full path name of the data file for the LARGE_B tablespace. The installation script prompts for the path name during **trusted mode** installations only.	None

Default Port Numbers

lists the default port numbers for the Sun StorEdge Enterprise Storage Manager software. You need to know the port numbers in case other applications on your system conflict with the Sun StorEdge Enterprise Storage Manager software. The installation and configuration scripts give you the option to reset the default ports, if necessary.

TABLE 2-9   Sun StorEdge Enterprise Storage Manager Default Port Numbers

Port	Description	Port Number
SSL HTTP Server Port	Secure Socket Layer (SSL) HTTP server port for the Sun Web Console, which provides the Sun StorEdge Enterprise Storage Manager web browser user interface	6789
Apache HTTP Server Port	The HTTP/HTTPS port for the Apache web server	1024
Indication Handler Port	The destination for indications or event messages	4567
SAN Manager RMI Registry Port	The port for the Remote Method Invocation (RMI) registry	1099
SNMP Port	The destination for SNMP traps	161
PostgreSQL Server Port	The port for the embedded PostgreSQL database, which comes with SAN Manager component of the Sun StorEdge Enterprise Storage Manager component of the	5437
Oracle Database Port	The port for the Oracle database, which the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager requires	1521
ARPS HTTPS Port	The agent station port for communication between management and agent stations	11141
ESMOM HTTP Port	HTTP listener port for the software that interprets and runs the scan schedules of selected storage elements	11130
ESMOM RMI Port	RMI listener port for the software that interprets and runs the scan schedules of selected storage elements	11131
Service RMI Port	RMI port for communication between the UI and the Job Manager	4099
ESM Agent Service Port	Solaris host provider port	11150

Installing the Software

This chapter includes information about the Sun StorEdge Enterprise Storage Manager software installation procedure:

- "Using the setup Script" on page 33
- "Using the esminstall Script" on page 34
- "Using the Answer File" on page 59
- "The esminstall Script Options" on page 61
- "Sun Management Center Integration" on page 63

Note – Refer to the release notes listed in "Related Documentation" on page xvi for possible additional installation and release information for each software component.

If your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, the Oracle database *must* be started before you proceed with the installation procedure.

Using the setup Script

The Sun StorEdge Management Software CD includes a setup script that prompts you to indicate:

- Whether you have a DAS or SAN environment
- If you have a SAN environment, whether you want to install the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software

If you use the setup script, go to Step 6 of "To Install the Software on a Single System That Acts as a Management Station and Agent Station" on page 34. Refer to the *Sun StorEdge Management Software 2.0 Getting Started Guide* for more information about the Sun StorEdge Management Software CD and the setup script.

Using the `esminstall` Script

The `esminstall` script on the product CD also installs the Sun StorEdge Enterprise Storage Manager software. You can choose to install either the SAN Manager component of the Sun StorEdge Enterprise Storage Manager or the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, or both.

Refer to for a list of script options.

▼ To Install the Software on a Single System That Acts as a Management Station and Agent Station

1. **Log in to your system as root.**

2. **Insert the CD into the CD-ROM drive and start the Volume Manager daemon** `vold`**(1) (if needed):**

   ```
   # /etc/init.d/volmgt start
   ```

   Note – You need to start the Volume Manager daemon only once. Do not start the daemon again.

3. **Run the** `esminstall` **script to start the installation procedure:**

   ```
   # cd /cdrom/cdrom0
   # ./esminstall
   ```

4. **Type yes to accept the license terms.**

5. **Type 1 to choose to install both components of the Sun StorEdge Enterprise Storage Manager software:**

```
========================================================

      Sun StorEdge(TM)
      Enterprise Storage Manager 2.0
      MAIN INSTALL MENU

========================================================

1) All Applications (default)
2) Capacity Reporter
3) SAN Manager
q) Quit.
========================================================
Type a number to install the selected applications
[press Enter for default (All), Type q to Quit]:
========================================================
Your Choice: 1
```

6. Press Enter to accept the default installation option, which installs all software components:

```
=====================================================

     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
q) Quit.
=====================================================
Type a number to install the selected components
[press Enter for default (management and agent stations),
Type q to Quit]:
=====================================================
Your Choice:
```

The menu displays the Command Line Interface Client Components option if you choose an installation that includes the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software.

TABLE 3-1 describes the main installation options.

TABLE 3-1 Installation Options

Installation	Description
1) All Management and Agent Station Components (default)	Install the management station, agent station, and command-line interface (CLI)* client software on a single system, which acts as both the management station and the agent station. This is the default installation choice.
2) Management Station Components (including the CLI Client)	Install only the management station software on a management station. Note that the installation procedure also installs the CLI client software.
3) Agent Station Components	Install only the agent station software on an agent station in your SAN.
4) Command Line Interface Client Components	Install the command line interface (CLI) client component on a system other than the management station.
	The installation procedure installs the Sun StorEdge Enterprise Storage Manager CLI software on the management station by default. To use the CLI on another system in your network storage environment, you must install the CLI software on it.

* Note that a CLI client is available only for the SAN Manager component of the Sun StorEdge Enterprise Storage Manager.

If you plan to install the management and agent station software separately, install the management station software first.

7. **If the installation procedure detects an existing installation of the Sun StorEdge Enterprise Storage Manager software, press Enter to remove it:**

```
Please wait - checking for Sun StorEdge(tm) ESM version 1.x
stations...
Please wait - checking initial state of previously-installed Sun
StorEdge(tm) ESM stations...

Previously installed station found:

Management station: fully installed
Agent station:      fully installed

Would you like to remove all stations prior to installing
Management Agent station(s) (Default: y) [y,n,?,q]
```

If you type:

- **y** — the installation procedure removes the existing software and continues with the installation.

- **n** — the installation procedure halts and your environment remains unchanged.

8. **Press Enter to start the Sun StorEdge Enterprise Storage Manager processes when the installation is complete:**

```
Begin: Invoking Preconfiguration Actions
End:   Invoking Preconfiguration Actions

Begin: Get Configuration Attributes

Once install is complete, would you like to start the ESM processes
(yes):
```

If you type **no**, you can use the esmcontrol script to start the Sun StorEdge Enterprise Storage Manager processes at a later time. Refer to the "Starting and Stopping the Software" on page 70 for information about starting the software.

9. **Type yes if you want to set advanced attributes, otherwise go to Step 10:**

```
Do you want to set the advanced attributes, in addition to the
required attributes (no):

----- PostgreSQL -----

What is the PostgreSQL server port (5437):

----- RMI Registry -----

What is the SAN Manager RMI registry port (1099):
What is the SAN Manager RMI registry host (localhost):
```

Advanced attributes typically pertain to the settings of the many service port numbers that the Sun StorEdge Enterprise Storage Manager software requires at installation.

In this step, you can set the PostgreSQL server and RMI registry port information. If your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, you can set advanced attributes later in the installation procedure.

10. **Indicate the size of your SAN:**

```
----- --- Installation --- -----

Approximately how big is the SAN that you plan to manage
(1: small; 2: medium; 3: large) (2):
```

The approximate number of devices in each size SAN are as follows:
- Small — 20 devices
- Medium — 50 to 70 devices
- Large — 70 or more devices

11. **If your installation includes only the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software, go to Step 27.**

12. **Make up a string of characters to respond to the prompt, which the software uses to encrypt data:**

```
Enter the string used to encrypt sensitive product data:
```

Choose a string that includes at least six (6) characters.

Note – Make sure you do not lose or forget the string. You may have to supply it if you contact Sun technical support.

13. **If your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, enter yes so that the management station displays in the UI as a managed storage element:**

```
----- Agent Tier -----

Enable this host as an ESM scannable asset (yes):
```

14. **If your installation is on the primary node of a cluster, enter cluster information, otherwise go to Step 15:**

```
Enable cluster support (yes):
```

When installing the agent station software on a cluster, the installation script detects the cluster software and prompts for registration as a cluster member:

```
Enter cluster name:
Enter the virtual server hostname for scanning this cluster:
```

Refer to "Installing the Software on Clusters" on page 19 for information about choosing a suitable cluster name or alias and the virtual host server.

15. If you typed yes at the advanced attributes prompt in Step 9, do the following:

a. Set the ARPS HTTP and ESM agent service port numbers:

```
Enter the number for the ARPS HTTP port (11140):
What is the ESM agent service port number (11150):
```

b. Set the port number for the software that interprets and runs the scan schedules of selected storage elements:

```
Enter the number for the ESMOM HTTP port (11130):
```

16. Type a directory path for a repository, which the software that interprets and runs the scan schedules of selected storage elements will use:

```
Enter the directory path for the ESMOM repository
(/var/opt/SUNWstm/esmom):
Checking available disk space (mount point: '/var')...
```

The installation procedure checks that 1 GB of disk space is available on the partition on which the path resides. If there is insufficient space, the installation procedure displays a listing for currently mounted file systems so you can determine which partitions have sufficient space:

```
The partition on which '/var/opt/SUNWstm/esmom' resides does not
have sufficient space.
(The partition '/var' currently has only 433102 kilobytes of free
space.)
It is recommended that at least 1 GB (1048576 kilobytes) should be
available on the target partition to store the ESMOM repository.

Here are the current filesystem capacities on this system:
Filesystem              size    used   avail capacity  Mounted on
/dev/dsk/c0t0d0s0       1.8G     96M   1.7G      6%    /
/dev/dsk/c0t0d0s6       6.0G    1.3G   4.6G     23%    /usr
/proc                    0K      0K     0K      0%    /proc
mnttab                   0K      0K     0K      0%    /etc/mnttab
fd                       0K      0K     0K      0%    /dev/fd
/dev/dsk/c0t0d0s1       3.9G    3.4G   423M     90%    /var
swap                    8.2G    168K   8.2G      1%    /var/run
/dev/dsk/c0t1d0s7       8.7G     10K   8.6G      1%    /files
swap                    8.3G     71M   8.2G      1%    /tmp
/dev/dsk/c0t0d0s5       4.8G    1.2G   3.6G     25%    /opt
udist-43,udist-42:/usr/dist
                         50G     17G    32G     35%    /usr/dist

Are you sure you want to use /var/opt for the ESMOM repository?
[y,n,?] n

The path where the ESMOM creates and maintains its internal
database. The partition containing this path must have at least
1GB of free space. The directory you specify must either be empty,
or else not exist; that is, the directory must be dedicated to the
ESMOM repository.

Enter the directory path for the ESMOM repository
(/var/opt/SUNWstm/esmom): /files/esmom
Checking available disk space (mount point: '/files')... done.
```

17. **Type yes if you will allow the installation procedure to create Oracle database objects (trusted mode installation) or no if you will not allow the installation procedure to create Oracle database objects (untrusted mode installation). Enter the appropriate Oracle database information:**

```
----- Oracle Database -----

Allow the ESM software to create the ESM Oracle tables and users
(no):
Enter the Oracle net service name (ESMDB):
Checking Oracle tnsnames for 'name' service name... found.
Enter the hostname or IP address of the Oracle database server:
your_database_server_ID
Checking accessibility of the database server... ID is alive
Enter the port number of the Oracle LISTENER (1521):
Enter the Oracle service name: your_service_name
```

If you choose an untrusted mode installation, your database administrator must have created the Sun StorEdge Enterprise Storage Manager user account, tablespaces, and database files prior to the installation.

18. **If this is a trusted mode installation, enter the Oracle DBA account name and password, otherwise go to Step 19:**

```
Enter Oracle DBA account name (SYSTEM):
Enter the password for the Oracle DBS account(******):
Please re-enter the password for confirmation:
```

19. **Enter the Oracle login information:**

```
Enter the Oracle user login ID(ESM_STD_USER): your_oracle_username
Enter the password for the Oracle user login ID ([no default
value]): your_oracle_password
Please re-enter the password for confirmation: your_oracle_password
```

20. **If this is an untrusted mode installation, enter the tablespace names, otherwise go to step Step 21:**

```
Enter the name for the Oracle temporary tablespace (TEMP):
Enter the name for the SMALL A tablespace (ESM_TBSP_SMALL_A):
Enter the name for the SMALL B tablespace (ESM_TBSP_SMALL_B):
Enter the name for the MEDIUM A tablespace (ESM_TBSP_MEDIUM_A):
Enter the name for the MEDIUM B tablespace (ESM_TBSP_MEDIUM_B):
Enter the name for the LARGE A tablespace (ESM_TBSP_LARGE_A):
Enter the name for the LARGE B tablespace (ESM_TBSP_LARGE_B):
```

Go to Step 22.

21. **If this is a trusted mode installation, enter the paths to the tablespace data files on the Oracle server:**

```
Enter the path to the SMALL A tablespace data backing file ([no
default value]): /oracle/data/your_SID/ESM_TBSP_SMALL_A.dbf
Enter the path to the SMALL B tablespace data backing file ([no
default value]): /oracle/data/your_SID/ESM_TBSP_SMALL_B.dbf
Enter the path to the MEDIUM A tablespace data backing file ([no
default value]): /oracle/data/your_SID/ESM_TBSP_MEDIUM_A.dbf
Enter the path to the MEDIUM B tablespace data backing file ([no
default value]): /oracle/data/your_SID/ESM_TBSP_MEDIUM_B.dbf
Enter the path to the LARGE A tablespace data backing file ([no
default value]): /oracle/data/your_SID/ESM_TBSP_LARGE_A.dbf
Enter the path to the LARGE B tablespace data backing file ([no
default value]): /oracle/data/your_SID/ESM_TBSP_LARGE_B.dbf
```

22. **Type a directory path in which to store scan reports:**

```
Enter the directory path for storing scan reports
(/var/opt/SUNWstm/reports):
Checking available disk space (mount point: '/var')... done.
```

Refer to "Required Disk Space and Memory" on page 12 for information about sufficient disk space for the reports directory.

23. **If you typed yes at the advanced attributes prompt in Step 9, enter the maximum and minimum number of simultaneous connections to the Oracle database that the software uses:**

```
Enter the maximum number of Oracle connections (50):
Enter the minimum number of Oracle connections (10):
```

24. **Enter an account name and password for RMI communications with the software that interprets and runs the scan schedules of selected storage elements:**

```
----- Service Tier -----

Enter the account name used for RMI communications with the ESMOM
(root):
Enter the password for the account used for RMI communications with
the ESMOM (*):
Please re-enter the password for confirmation:
```

25. **Type y if you want the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager to perform an initial scan or discovery of storage elements, otherwise go to Step 27:**

```
Enable initial discovery of managable assets (yes):

Please enter network addresses using the dotted octet form of:
a.b.c.d
For example: 192.1.135.0

Starting network address (default: 129.148.43.0) [?]
Ending network address (default: 129.148.43.255) [?]
SNMP port number (default: 161) [1-65535,?]
Community name (default: public) [?]

Enter additional network addresses [y,n,?]

Here are the network specifications you have entered:

Starting Address   Ending Address    SNMP Port  Community Name
----------------   --------------    ---------  --------------
129.148.43.0       129.148.43.255      161        public

Do you wish to use these values [y,n,?]
```

The installation procedure can provide an initial SNMP-based discovery. At the prompts, you must enter:

- Starting and ending IP addresses. You can specify an unlimited number of addresses.
- An SNMP port number. The default value is 161
- An SNMP community name. The default community name is public.

26. **Type y if you have a Sun StorEdge 3510 FC Array attached to the agent station, otherwise go to Step 27:**

```
----- Sun StorEdge(tm) 3500 FC Array Support -----

Do you have a Sun StorEdge(tm) 3510 FC Array attached to this host
(n):

End:   Get Configuration Attributes
```

The installation procedure installs the necessary software to support the link and launch capability from the SAN Manager UI to the 3510 FC Array configuration service.

27. **If the installation fails because your environment is missing prerequisites, make the necessary correction and run the installation procedure again:**

```
Begin: Checking for prerequisites

Checking for prerequisite account:

Checking for prerequisite memory:
ERROR: shmsys:shminfo_shmseg value is set to: 100; minimum
required is: 256
```

If your environment meets the requirements, the installation procedure installs the software components, applies configuration parameters, applies security, and starts the Sun Web Console.

28. **Optionally, when the installation completes, configure the** `.clif-user` **file to include user names and passwords to use the CLI of the SAN Manager component of the Sun StorEdge Enterprise Storage Manager:**

```
Begin: Invoking Post-Install Actions
Assigning root user the ESMUser role...
Creating Keystore and Truststore...
Registering Keystore and Truststore...
Restarting smcwebserver...

================ ATTENTION =================
If you would like to configure user password
for CLI client beforehand, please manually
modify /.clif-user :
 - update user:         ~username=<username>
 - add user password:   ~password=<password>
If configuring for a non-root user, please copy
/.clif-user into the user $HOME/ and then
update the username and password accordingly.
============================================
```

Refer to "To Configure your CLI Login Information" on page 74 for information about editing the `.clif-user` file.

The installation procedure displays a number of informational messages until it completes the post-installation actions:

```
End:    Invoking Post-Install Actions
```

29. **If you typed n in , start the Sun StorEdge Enterprise Storage Manager processes:**

```
# /opt/SUNWstm/bin/esmcontrol start
```

If you typed y in , the installation procedure automatically starts the Sun StorEdge Enterprise Storage Manager processes:

```
Begin: Start ESM processes

Starting Sun StorEdge(TM) SAN Manager Components
Starting PostgreSQL ...
JAVA_HOME is set to /usr/java
Starting CRE
Starting the ESM Management Station platform...
Starting the ESMOM...

Starting Sun StorEdge(TM) SAN Manager Agent Components
Starting the ESM Capacity Reporter Agent Components...
Starting the SSCRA ARP...
Starting GIDU...
End:   Start ESM processes

Enterprise Storage Manager Version 2.0 Install Successfully
Completed.

To log in to the application from a web browser, please type the
following URL in the URL text field to display the SMI Common
Console Login Page:
      https://mgmt-station-hostname.domain:6789/

INFO: Sun StorEdge(tm) ESM  Installer Log:
      /var/sadm/install/logs/esm.log
```

30. **After the installation completes, if necessary, view details about the installation in these files:**

   - /tmp/esm.answer (Refer to "Using the Answer File" on page 59 for more information about the answer file.)

   - /var/sadm/install/logs/esm.log (Refer to "Checking the Log File" on page 92 for more information about the log file.)

31. **Go to Chapter 4 for information about getting started with the software and for instructions about reconfiguring the software for your environment.**

▼ To Install the Software on a Management Station

1. **Log in to your system as root.**

2. **Insert the CD into the CD-ROM drive and start the Volume Manager daemon** `vold`**(1) (if needed):**

```
# /etc/init.d/volmgt start
```

Note – You need to start the Volume Manager daemon only once. Do not start the daemon again.

3. **Run the** `esminstall` **script to start the installation procedure:**

```
# cd /cdrom/cdrom0
# ./esminstall
```

4. **Type yes to accept the license terms.**

5. **Type 1 to choose to install both components of the Sun StorEdge Enterprise Storage Manager software:**

```
======================================================

      Sun StorEdge(TM)
      Enterprise Storage Manager 2.0
      MAIN INSTALL MENU


======================================================

1) All Applications (default)
2) Capacity Reporter
3) SAN Manager
q) Quit.
======================================================
Type a number to install the selected applications
[press Enter for default (All), Type q to Quit]:
======================================================
Your Choice: 1
```

6. **Type 2 to install the management station components only and display the installation 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*
q) Quit.
======================================================
Type a number to install the selected components
[press Enter for default (All), Type q to Quit]:
======================================================
Your Choice: 2
```

* The menu displays the Command Line Interface Client Components option if your installation includes the SAN Manager component of the Sun StorEdge Enterprise Storage Manager

The installation procedure is the same as that documented in "To Install the Software on a Single System That Acts as a Management Station and Agent Station" on page 34, less the prompts for agent station information.

7. **When the installation procedure completes, go to Chapter 4 for information about getting started with the software and for instructions about reconfiguring the software for your environment.**

▼ To Install the Software on an Agent Station

Plan to install the agent station software on each agent host in a fabric or cluster. If you install the software on some agent hosts but not all, you will only partially discover information in your environment.

1. **Make sure that each agent host includes the Sun StorEdge SAN Foundation version 4.2 software or the JNI HBA software.**

   See TABLE 2-1 for information about required SAN software or "Using JNI Host Bus Adapters" on page 12 for information about JNI HBA software. If your agent hosts do not include the required software, the installation procedure does not complete.

2. **Log in to your system as root.**

3. **Insert the CD into the CD-ROM drive and start the Volume Manager daemon** `vold`**(1) (if needed):**

   ```
   # /etc/init.d/volmgt start
   ```

   Note – You need to start the Volume Manager daemon only once. Do not start the daemon again.

4. **Run the** `esminstall` **script to start the installation procedure:**

   ```
   # cd /cdrom/cdrom0
   # ./esminstall
   ```

5. **Type yes to accept the license terms.**

6. Type 1 to choose to install both components of the Sun StorEdge Enterprise Storage Manager software:

```
=======================================================

      Sun StorEdge(TM)
      Enterprise Storage Manager 2.0
      MAIN INSTALL MENU


=======================================================

1) All Applications (default)
2) Capacity Reporter
3) SAN Manager
q) Quit.
=======================================================
Type a number to install the selected applications
[press Enter for default (All), Type q to Quit]:
=======================================================
Your Choice: 1
```

7. **Type 3 to install the agent station components only and display the installation 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*
q) Quit.
=======================================================
Type a number to install the selected components
[press Enter for default (All), Type q to Quit]:
=======================================================
Your Choice: 3
```

* The menu displays the Command Line Interface Client Components option if your installation includes the SAN Manager component of the Sun StorEdge Enterprise Storage Manager

The installation procedure begins to gather configuration information. Type yes to start the Sun StorEdge Enterprise Storage Manager processes when the installation is complete:

```
Please wait - checking for Sun StorEdge(tm) ESM version 1.x
stations...
Please wait - checking initial state of previously-installed Sun
StorEdge(tm) ESM stations...

Begin: Invoking Preconfiguration Actions
End:   Invoking Preconfiguration Actions

Begin: Get Configuration Attributes

----- --- Installation --- -----
Once install is complete, would you like to start the ESM processes
(yes):
```

If you type **no**, you can use the esmcontrol script to start the Sun StorEdge Enterprise Storage Manager processes at a later time. Refer to "Starting and Stopping the Software" on page 70 for information about starting the software.

8. **Type yes if you want to set advanced attributes, otherwise go to Step 13:**

```
Do you want to set the advanced attributes, in addition to the
required attributes (no):
```

9. **If your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, enter yes so that the agent station displays in the UI as a managed storage element, otherwise go to Step 12:**

```
----- Agent Tier -----

Enable this host as an ESM scannable asset (yes):
```

10. **If your installation is on a cluster, type yes:**

```
Enable cluster support (yes): yes
```

If the system is the cluster primary node, type the cluster information, otherwise go to Step 12:

```
Enter cluster name:
Enter the virtual server hostname for scanning this cluster:
```

Refer to "Installing the Software on Clusters" on page 19 for information about cluster names.

11. **Type the name or IP address of the management station with which to register the agent station:**

```
----- Service Tier -----

Enter the hostname or IP address of the Management Station ([no
default value]):
```

12. **If you typed yes at the advanced attributes prompt in Step 8, type the name of SAN Manager RMI registry host:**

```
----- RMI Registry -----

What is the SAN Manager RMI registry host (localhost):

End:   Get Configuration Attributes

Begin: Checking for prerequisites

Checking for prerequisite package:
End:   Checking for prerequisites
...
```

The value you type for the SAN Manager RMI registry host must match the value you typed for the host name or IP address of the management station in Step 11.

13. **Go to Chapter 4 for information about getting started with the software and for instructions about reconfiguring the software for your environment.**

▼ To Install the CLI

1. **Log in to your system as root.**

2. **Insert the CD into the CD-ROM drive and start the Volume Manager daemon** `vold`**(1) (if needed):**

```
# /etc/init.d/volmgt start
```

Note – You only need to start the Volume Manager daemon once. Do not start the daemon again.

3. **Run the** `esminstall` **script to start the installation procedure:**

```
# cd /cdrom/cdrom0
# ./esminstall
```

4. **Type yes to accept the license terms.**

5. **Type 3 to choose to install the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software:**

```
======================================================

      Sun StorEdge(TM)
      Enterprise Storage Manager 2.0
      MAIN INSTALL MENU


======================================================

1) All Applications (default)
2) Capacity Reporter
3) SAN Manager
q) Quit.
======================================================
Type a number to install the selected applications
[press Enter for default (All), Type q to Quit]:
======================================================
Your Choice: 3
```

The CLI client is available only for the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software.

6. Type 4 to install the CLI client components only:

```
========================================================

      Sun StorEdge(tm)
      Enterprise Storage Manager 2.0
      INSTALL MENU


========================================================

1) All Components (default)
2) Management Station Components
3) Agent Station Components
4) Command Line Interface Client Components
q) Quit.
========================================================
Type a number to install the selected components
[press Enter for default (All), Type q to Quit]:
========================================================
Your Choice: 4
```

The installation procedure checks for a previous installation, starts preconfiguration actions, and gets configuration attributes:

```
Please wait - checking for Sun StorEdge(tm) ESM version 1.x
stations...

Please wait - checking initial state of previously-installed Sun
StorEdge(tm) ESM stations...


Begin: Invoking Preconfiguration Actions
End:   Invoking Preconfiguration Actions

Begin: Get Configuration Attributes

----- --- Installation --- -----

Do you want to set the advanced attributes, in addition to the
required attributes (no):
Once install is complete, would you like to start the ESM processes
(yes):
```

7. Type the host name or IP address of the Sun StorEdge Enterprise Storage Manager management station with which the system will communicate:

```
----- SAN Manager CLI Client -----

What is the SAN Manager management hostname or IP address
(localhost):

End:   Get Configuration Attributes
```

8. Go to Chapter 4 for information about getting started with the software and for instructions about reconfiguring the software for your environment, and to "To Access the CLI" on page 74 for information about accessing the CLI.

Using the Answer File

When you install the Sun StorEdge Enterprise Storage Manager software, the installation procedure records your answers to the prompts and other configuration information in an *answer file.* The default location for the answer file is `/tmp/esm.answer`.

You can use the answer file:

- To review your installation's configuration information.
- As an option to begin a non-interactive installation session.
- To install identical configurations. Typically, you use an answer file when you want to install the same configuration on multiple agent stations in your network storage environment.
- To reinstall the software if the installation fails (it is assumed that the configuration attribute values are correct).

CODE EXAMPLE 3-1 shows a sample of an answer file.

Note – To make configuration changes, use the `esmconfig` script. Do not edit the answer file in a text editor.

CODE EXAMPLE 3-1 Sample Answer File

```
ARP_HTTPS_PORT=11141
ARP_HTTP_PORT=11140
AT_PASSWORD=atpwd
CLUSTER_IDENTIFIER=
CLUSTER_VIRTUAL_SERVER=
DBAPrivAcct=SYSTEM
DBAPrivPass=
DT_PASSWORD=dtpwd
DataFileName1=
DataFileName2=
DataFileName3=
DataFileName4=
DataFileName5=
DataFileName6=
ENABLE_CLUSTER=false
ENABLE_SCANNABLE_ASSET=true
DB_LOGIN_ID=smith
ORACLE_DB_PASSWORD=smith
ORACLE_DB_PORT=1521
ORACLE_DB_SERVER=jones
ORACLE_DB_SID=ESM20
SERVICE_ENABLE_SSL=false
SERVICE_LOCATION=localhost
SERVICE_RMI_PORT=4099
SMICC_HOSTNAME=localhost
SMICC_PORT=6789
ServiceName=jones
.
.
.
TablespaceName1=ESM_TBSP_SMALL_A
TablespaceName2=ESM_TBSP_SMALL_B
TablespaceName3=ESM_TBSP_MEDIUM_A
TablespaceName4=ESM_TBSP_MEDIUM_B
TablespaceName5=ESM_TBSP_LARGE_A
TablespaceName6=ESM_TBSP_LARGE_B
TempTablespaceName=TEMP
TrustingMode=false
UAGENT_PORT=11150
esm.rdp.report.report_dir=/var/opt/SUWNstm/reports
```

The `esminstall` Script Options

The `esminstall` script, which is on the product CD, includes options that let you choose a non-interactive session or use an answer file to duplicate an installation's configuration attributes.

TABLE 3-2 lists the options for the `esminstall` script. The script can accept short or long names for each option. A short name option requires a single hyphen (-). A long name option requires a double hyphen (--).

For example, to install the agent software on a single system (agent station) in silent mode, type:

```
# ./esminstall -a -s /tmp/esm.answer
```

Note – When you use a long name option, do not type a space between hyphens.

Syntax:

esminstall [-A,--all *answerfile*][-m,--management *answerfile*]
[-a,--agent *answerfile*][-c,--cli *answerfile*][-p,--product *product*][-s,--silent]
[? | -h,--help]

TABLE 3-2 `esminstall` Script Options

Option	Description
None	Display the main installation menu. Refer to "Using the esminstall Script" on page 34 for more information.
-A, --all *answerfile*	Install both the management and agent station components. An answer file provides configuration attribute settings. Refer to "Using the Answer File" on page 59 for more information about answer files.
-m, --management *answerfile*	Install the management station components. You must specify an answer file that contains the values of the management station component's configuration variables.
-a, --agent *answerfile*	Install the agent station components. You must specify an answer file that contains the values of the agent station component's configuration variables.

TABLE 3-2 `esminstall` Script Options *(Continued)*

Option	Description
-c, --cli *answerfile*	Install the CLI station components. You must specify an answer file that contains the values of the CLI component's configuration variables.
-p, --product *product*	Install the selected product only. Use `cr` (for Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager) or `sm` (for SAN Manager component of the Sun StorEdge Enterprise Storage Manager).
-s, --silent	Install the software in silent mode. You must specify which components to install when you use this option. The installation script does not display messages or prompts; it records error messages in a log file. If you do not specify this option, the script prompts you with messages as in "Using the setup Script" on page 33.
? -h, --help	Display a list of options and usage for the script.

Sun Management Center Integration

The SAN Manager component of the Sun StorEdge Enterprise Storage Manager option of the Sun StorEdge Enterprise Storage Manager software includes components that enable it to work with the Sun™ Management Center software. When you complete the procedures in this section, you can use the Sun Management Center software to view management and agent station status, and to launch the Sun StorEdge Enterprise Storage Manager web-browser user interface.

When you install the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software on a management station, the installation procedure also installs:

■ The Sun Management Center agent module for the Sun StorEdge Enterprise Storage Manager software

■ The Sun Management Center `sunmc.configure` configuration script, which enables the Sun Management Center software to launch the Sun StorEdge Enterprise Storage Manager software in a separate web browser window.

To enable the Sun Management Center agent module:

3. Run the `sunmc.configure` configuration script on the management station and each agent station to enable status reporting to the Sun Management Center software.

4. Make sure that you install and start the Sun Management Center agent software (including the SUNWesagt package) on each agent station. See the *Sun Management Center 3.5 Installation and Configuration Guide* for more information.

5. Run the `sunmc.configure` configuration script on the Sun Management Center host system.

6. Refer to the *Sun Management Center 3.5 User's Guide* for more information about how to manage modules.

Preparing to Start the SAN Manager Component of the Sun StorEdge Enterprise Storage Manager Software

Before you can launch the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software in a web browser from the Sun Management Center, you must:

1. Configure the SAN Manager component of the Sun StorEdge Enterprise Storage Manager and other software as described in Chapter 4.

2. Make sure you have installed and started the Sun Management Center agent software (including the SUNWesagt package) on each agent station.

3. Load the Sun StorEdge Enterprise Storage Manager agent module, which the Sun StorEdge Enterprise Storage Manager installation procedures installs. See the *Sun Management Center 3.5 Installation and Configuration Guide*, part number 816-2678-10, for information about how to manage modules.

▼ To Configure the Management and Agent Stations

1. **Log on to the management station as root.**

2. **Type:**

```
# /opt/SUNWstm/sbin/sunmc.configure -H hostname 6789
```

Where *hostname* is the management station host name.

3. **Enable the status reporting agent software:**

```
# /opt/SUNWstm/sbin/sunmc.configure -A
```

4. **Make sure the SunMC** SUNWesagt **package is installed and started on each agent station.**

Use the pkginfo(1M) command to view the installed packages. See the *Sun Management Center 3.5 Installation and Configuration Guide*, for information about how to manage modules.

5. **Repeat Step 3 on each agent station.**

▼ To Configure the SunMC Host

1. **Log on to the SunMC host system as root.**

2. **Type the following to enable the Sun StorEdge Enterprise Storage Manager software to start from the SunMC software:**

```
# /opt/SUNWstm/sbin/sunmc.configure -S
```

The script prompts for the management station host name and port, and displays the following output:

```
/var/opt/SUNWsymon/cfg/tools-extension-j.x updated.
```

▼ To Start the Sun StorEdge Enterprise Storage Manager Software from the SunMC Main Console

1. **Select the system configured as the Sun StorEdge Enterprise Storage Manager management station from the SunMC main console window.**

2. **Make sure that the management and agent station software is running on the selected system.**

   a. Click Tools and select Details to display the Details window. (See FIGURE 3-1.)

   b. Click the Browser tab and expand Local Applications to show the SAN Manager folder.

   c. Select the SAN Manager folder.

   d. Make sure that the management and agent station Value is `installed` and the Status is `running`.

   e. Close the Details window and return to the SunMC main console window.

3. **Choose Tools and select Enterprise Storage Manager from the pull-down menu to display a web browser window. (See FIGURE 3-2.)**

4. **Log in to the software as described in "Accessing the Sun StorEdge Enterprise Storage Manager Software" on page 72.**
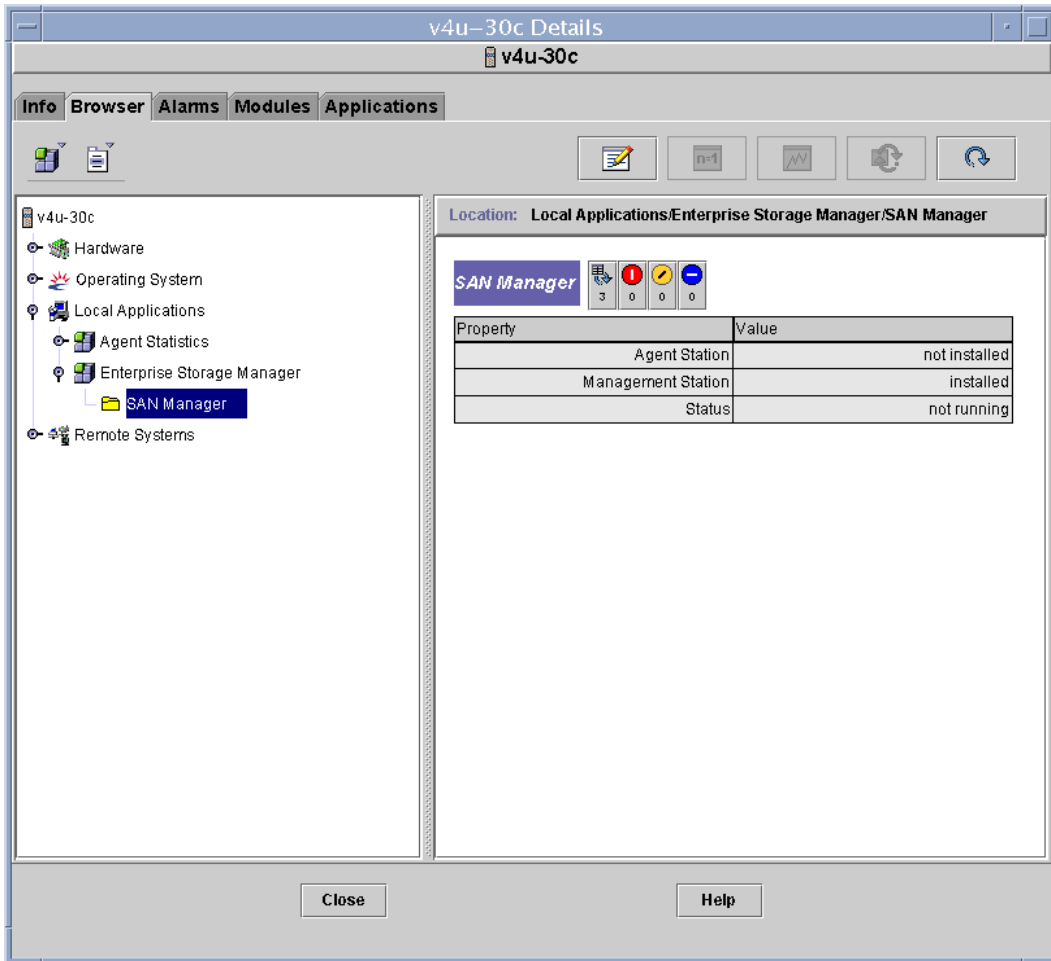
FIGURE 3-1   Sun Management Center Details Window
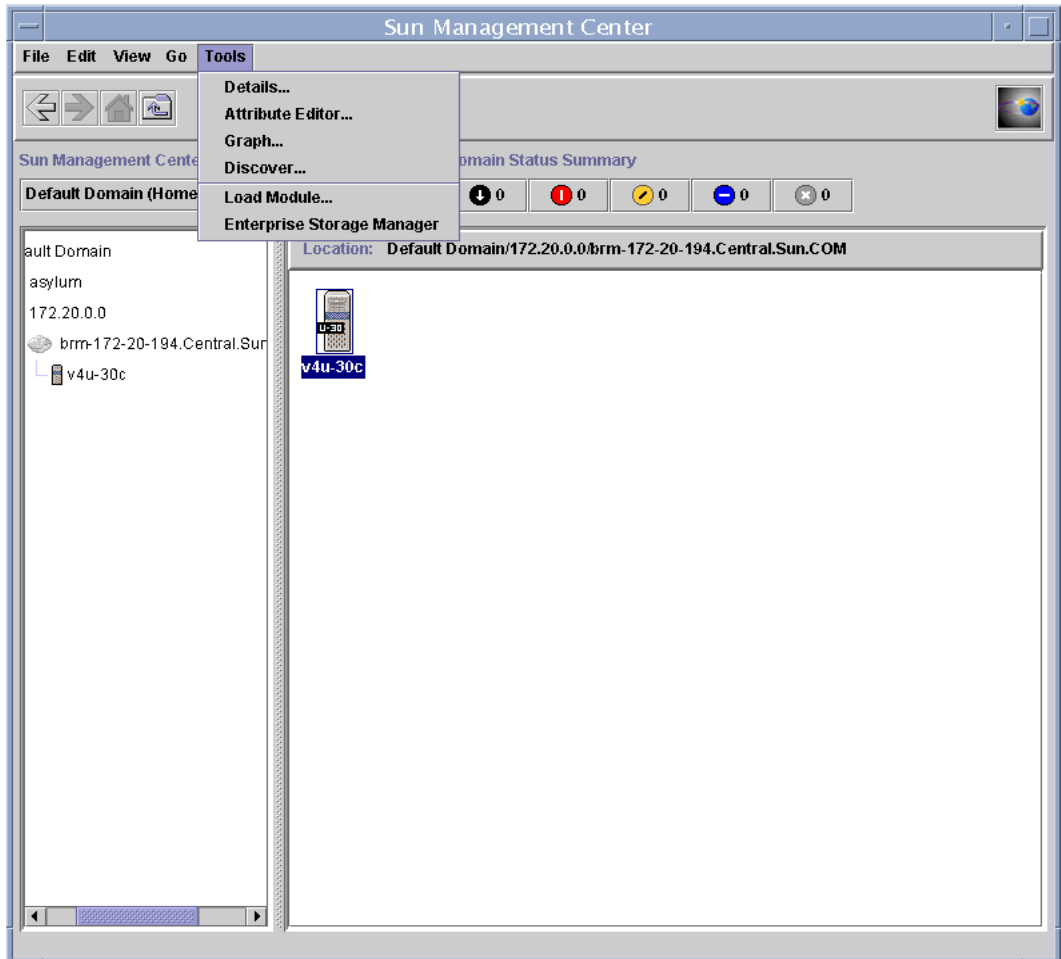
FIGURE 3-2 Sun Management Center Tools Menu

Accessing and Configuring the Software

This chapter provides information about accessing and configuring the Sun StorEdge Enterprise Storage Manager software:

- "Sun StorEdge SAN Foundation Software" on page 69
- "Starting and Stopping the Software" on page 70
- "Accessing the Sun StorEdge Enterprise Storage Manager Software" on page 72
- "Reconfiguring the Software" on page 75
- "Uninstalling the Software" on page 82
- "Removing the Sun Web Console Software" on page 87

Sun StorEdge SAN Foundation Software

If you installed the Sun StorEdge SAN Foundation software from the Sun StorEdge Enterprise Storage Manager 2.0 software package onto your agent hosts, see the *Sun StorEdge SAN Foundation Software Installation Guide* (on the CD or at `http://www.sun.com/storage/san`) for the post-installation procedures that ensure the product operates correctly.

Starting and Stopping the Software

This section describes how to start, stop, or restart the Sun StorEdge Enterprise Storage Manager software on the management station and each agent station. You can use the standard Solaris `/etc/init.d/esm` scripts to start and stop the software.

You can also use the `esmcontrol` script to:

- Start the software if you did not tell the installation procedure to start the software upon completion.
- Stop the software before you use the `esmconfig` script to change default attributes. After you reconfigure, you must start the software again.
- Stop the software before you use the `esmuninstall` script to uninstall the software.

The `esmcontrol` script is in the `/opt/SUNWstm/bin` directory and on the product CD.

Note – You must start and stop the Sun StorEdge Enterprise Storage Manager software as root.

The `esmcontrol` Script Options

Syntax:

esmcontrol start| stop |restart [-m,--management][-a,--agent] [? |-h,--help]

TABLE 4-1   `esmcontrol` Script Options

Option	Description
none	Display a usage message.
start	Start Sun StorEdge Enterprise Storage Manager processes.
stop	Stop Sun StorEdge Enterprise Storage Manager processes.
restart	Stop and start Sun StorEdge Enterprise Storage Manager processes again.
-m,--management	Start, stop, or restart the management station only.
-a,--agent	Start, stop, or restart the agent station only.
? -h, --help	Display a list of options and usage for the script.

If you do not indicate the management or agent station as an option, the `esmcontrol` script attempts to start, stop, or restart all installed stations.

If you have installed both the SAN Manager and Capacity Reporter components of the Sun StorEdge Enterprise Storage Manager software, the `esmcontrol` script starts, stops, or restarts both components.

CODE EXAMPLE 4-1 provides an example of the output when you use the `esmcontrol` script to stop the Sun StorEdge Enterprise Storage Manager software processes.

CODE EXAMPLE 4-1 `esmcontrol` Script

```
# /opt/SUNWstm/bin/esmcontrol stop

Begin: Stopping processes
Stopping the ESMOM...
Stopping the ESM Management Station platform...
End:   Stopping processes

Enterprise Storage Manager Version 2.0 control Successfully
Completed.

INFO: Sun StorEdge(tm) ESM  Installer Log:
      /var/sadm/install/logs/esm.log

#
```

Accessing the Sun StorEdge Enterprise Storage Manager Software

You can access the Sun StorEdge Enterprise Storage Manager software using either the:

■ Web browser UI

When you have successfully installed and started the Sun StorEdge Enterprise Storage Manager software, log in to the application from a web browser.

The Sun StorEdge Enterprise Storage Manager installation procedure installs the Sun Web Console. The Sun Web Console, which provides authentication and authorization services, is the starting point for the Sun StorEdge Enterprise Storage Manager software. You can choose to access either the SAN Manager or Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software from the Sun Web Console; the link and launch feature in both lets you move between the two.

■ `esm` CLI

If you plan to use the Sun StorEdge Enterprise Storage Manager command-line interface (CLI) on a system that is not the management station, make sure that you install the CLI software on the system. Note that the system does not require the Sun StorEdge Enterprise Storage Manager software to be installed on it.

> **Note –** Sun StorEdge Enterprise Storage Manager 2.0 software does not support the versions 1.0, 1.1, or 1.2 `/opt/SUNWnsm/bin/sstr`(1M) CLI. You must rewrite any scripts that use the `sstr`(1M) CLI; use the `esm`(1M) CLI and its options.

▼ To Log In Through a Web Browser

1. **Open your web browser.**

   Make sure that:

   - Your web browser has cookies and Javascript enabled.
   - You do not set your preferences to suppress popup windows. Your browser's Suppress Popup setting or commercial anti-popup software interferes with the Sun StorEdge Enterprise Storage Manager software's popup windows.

2. **Type the following URL in the URL text field to display the Sun Web Console Login Page (note that the URL begins with https):**

   ```
   https://mgmt-station-hostname.domain:6789/
   ```

   Where *mgmt-station-hostname.domain* is the management station host name and 6789 is the default port number for the Sun Web Console software. If you configured the port to be different, use that port number.

3. **Enter your user name and `ESMUser` role (along with the corresponding passwords) to log in to the Sun Web Console and display the applications to which you have access.**

   See "Configuring Role-Based Access Control to Enable Access to the Software" on page 13 for more information about

4. **Click the Sun StorEdge Enterprise Storage Manager — SAN Manager link to display the Topology page, which is the initial page of the application.**

   See the online help for information about using the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software.

5. **Click the Sun StorEdge Enterprise Storage Manager — Capacity Reporter link to display Alarms page, which is the initial page of the application.**

   Refer to the online help for information about using the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software.

▼ To Access the CLI

1. Type `/opt/SUNWstm/bin/esm` and an option. For example:

```
/opt/SUNWstm/bin/esm listassets --type host
```

You can use the --help option to list the options.

2. Enter your login information so the CLI can proceed:

```
~USERNAME:
~PASSWORD:
~ROLENAME:
~ROLE_PASSWORD:
```

At the prompts, type the following:

- Your Solaris user name
- Your Solaris user name password
- Your role
- Your role password

The CLI will prompt you for this information each time you enter a CLI command unless you configure your CLI login information.

▼ To Configure your CLI Login Information

1. To avoid logging in each time you use the `esm` **CLI, edit the** `/.clif-user` **file to include your root user name and password:**

```
~username=username
~password=password
~rolename=ESMUser
~role_password=ESMUser password
```

The Sun StorEdge Enterprise Storage Manager installation procedure creates the `/.clif-user` file for the root user. The file contains the `ESMUser` role and password, which you created before installing the software.

2. **If you are a non-root user, create a** `/.clif-user file` **in your home directory and edit it to include your Solaris user name and password:**

```
~username=user's Solaris username
~password=user's Solaris password
~rolename=ESMUser
~role_password=ESMUser password
```

The entries in the `/.clif-user file` are optional. The CLI prompts you for omitted entries when you enter a CLI command. If you choose to place your passwords in the `/.clif-user` file, make sure that the file has 600 access permission.

Reconfiguring the Software

To set configuration attributes that you need to change frequently, use the Sun StorEdge Enterprise Storage Manager web browser UI or command line interface (for installations that include only the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software). Theses configuration attributes include scan policies, methods of notification, and the like. Refer to the online help or the man pages for information about setting these configuration attributes.

To change configuration attributes that you set during the installation procedure, use the `emsconfig` script in the `/opt/SUNWstm/bin/` directory. These configuration attributes, which you change infrequently, include port numbers, Oracle database information, and the like. For example, use the `emsconfig` script to increase the number of Oracle database connection pools or change a port number if another application already uses the default port number.

If you need to reconfigure the software after installation, you must first stop the software before you run the `esmconfig` script. If you do not stop the software and it is running while you attempt to configure it, the software detects that ports are in use.

The `esmconfig` script reports only on the attributes of the system on which it runs. For example, if you run the `esmconfig` script from a system which has only the agent station software installed, you cannot configure a management station on another system.

The `esmconfig` Script Options

The `esmconfig` script includes options that are useful if you want to apply configuration attributes from another installation or when you do not want an interactive configuration session. The script is in the `/opt/SUNWstm/bin` directory.

TABLE 4-2 lists the options for the script. The script can accept short or long names for each option. A short name option requires a single hyphen (-). A long name option requires a double hyphen (--). For example, to configure all packages, type:

```
# /opt/SUNWstm/bin/esmconfig
```

Note – When you use a long name option, do not type a space between hyphens.

Syntax:

esmconfig [-f,--filename *answerfile*] [-s,--silent] [? | -h,--help]

TABLE 4-2 `esmconfig` Script Options

Option	Description
None	Display the main configuration menu.
-f,--filename *answerfile*	Indicate the path to an answer file that contains values for all of the configuration attribute prompts. Refer to "Using the Answer File" on page 59 for information about the answer file.
-s,--silent	Set the configuration attributes in silent mode so that the script does not display messages or prompts. You do not need to responds to prompts.
? -h,--help	Display a list of options and usage for the script.

▼ To Reconfigure the Software

1. **Log in to your system type as root.**

   The system types are management station or agent station. Note that a single system can act as a management station and agent station.

2. **Run the `esmcontrol` script to stop the software:**

   ```
   # /opt/SUNWstm/bin/esmcontrol stop
   ```

3. **Run the `esmconfig` script to display the main configuration menu:**

   ```
   # /opt/SUNWstm/bin/esmconfig
   ```

4. Type 1 to a configure all software components and to access the Configuration Category Menu.

```
Please wait - checking previously-installed Sun StorEdge(tm) ESM
stations...

=====================================================

     Sun StorEdge(tm)
     Enterprise Storage Manager 2.0
     MAIN CONFIGURATION MENU

NOTE: Configuration attribute changes will be applied
     upon exiting esmconfig

=====================================================

1) Set All Management and Agent Station Attributes
2) Set Management Station Attributes (including CLI Client)
3) Set Agent Station Attributes
4) Set Command Line Interface Client Attributes
q. quit
=====================================================
Enter the number for what you want to configure,
or p to print attribute values,
or q to Quit.
=====================================================
Your Choice: 1

Please wait...
=====================================================
```

The configuration menu is dynamic; that is, the menu presents configuration choices only for those currently-installed software packages. For example, if you invoke the configuration script on a system with the management station packages installed, the menu displays choices for the management station packages and does not display choices for the agent station packages.

5. Type 2 to change the configuration attributes for the RMI Registry:

```
========================================================

      Sun StorEdge(tm)
      Enterprise Storage Manager 2.0
      CONFIGURATION CATEGORY MENU

NOTE: Configuration attribute changes will be applied
      upon exiting esmconfig


========================================================

1) PostgreSQL
2) RMI Registry
3) SAN Manager CLI Client
q) Return to the Main Menu
========================================================
Enter the number for what you want to configure,
or q to Quit.
========================================================

Your Choice: 2
```

6. Type 1 to change the server port number:

```
=======================================================

       Sun StorEdge(tm)
       Enterprise Storage Manager 2.0
       CONFIGURATION TITLE MENU

NOTE: Configuration attribute changes will be applied
      upon exiting esmconfig


=======================================================

1) SSSM RMI Registry Server Port ( 1099 )
2) SSSM RMI Registry Host ( localhost )
q) Return to the Category Menu
=======================================================
Enter the number for what you want to configure,
or q to Quit.
=======================================================
Your Choice: 1
What is the RMI Registry server port (1099): 2477

RMI Registry port is changed
```

When you run the `esmconfig` script, the software allows you to choose the next available port number. For example, it might allow you to choose port 8280 but not port 8180.

7. Type q to Quit and return to the Configuration Category Menu, and then type q again to return to the Main Menu.

8. **Type q to Quit from the Main Menu and press Enter to apply the new configuration parameters:**

```
========================================================

        Sun StorEdge(tm)
        Enterprise Storage Manager 2.0
        MAIN CONFIGURATION MENU

NOTE: Configuration attribute changes will be applied
        upon exiting esmconfig


========================================================

1) Set All Management and Agent Station Attributes
2) Set Management Station Attributes (including CLI Client)
3) Set Agent Station Attributes
4) Set Command Line Interface Client Attributes
q. quit
========================================================
Enter the number for what you want to configure,
or p to print attribute values,
or q to Quit.
========================================================
Your Choice: q

Would you like to apply configuration
parameters (default: y) [y,n,?,q] y

Enterprise Storage Manager Version 2.0 configuration Successfully
Completed.

INFO: Sun StorEdge(tm) ESM  Installer Log:
        /var/sadm/install/logs/esm.log
```

9. **Start the software:**

```
# /opt/SUNWstm/bin/esmcontrol start
```

Uninstalling the Software

If your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager, refer to "Uninstalling the Capacity Reporter Component of the Sun StorEdge Enterprise Storage Manager" on page 82 for information before running the esmuninstall script. Otherwise, refer to "The esmuninstall Script" on page 83.

Uninstalling the Capacity Reporter Component of the Sun StorEdge Enterprise Storage Manager

If your installation includes a trusted mode installation for the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager, the esmuninstall script will delete the Oracle database objects that the installation procedure created. Before you run the esmuninstall script, use:

1. The esmcontrol stop script to stop all Sun StorEdge Enterprise Storage Manager processes (refer to "Starting and Stopping the Software" on page 70 for more information about stopping processes).

2. Oracle database tools to backup the database.

If your installation includes an untrusted mode installation for the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager, the esmuninstall script does not delete Oracle database objects. The uninstall procedure indicates you must remove the Oracle database manually:

```
WARNING: The DBA has mandated manual DB configuration, therefore
all DB uninstallation must be manually performed (tablespaces,
user and role)
```

The uninstall procedure continues and removes the Sun StorEdge Enterprise Storage Manager components.

The `esmuninstall` Script

The `esmuninstall` script file removes the Sun StorEdge Enterprise Storage Manager software interactively or automatically. Run this script on the management station and each agent station with the Sun StorEdge Enterprise Storage Manager software. The `esmuninstall` script is in the `/opt/SUNWstm/bin` directory and on the product CD.

By default, the `esmuninstall` script deletes all installed Sun StorEdge Enterprise Storage Manager packages, except for any files that other applications are using and Oracle database persistence files. You can choose to perform a full uninstall, which deletes all software packages and files associated with Sun StorEdge Enterprise Storage Manager, or a partial uninstall that removes a specified component.

Note – The `esmuninstall` script does not remove the Sun Web Console software. See "Removing the Sun Web Console Software" on page 87 for information about how to remove the software.

The script displays removal messages (except when you choose silent mode (`-s`)) and also writes the messages to `/var/sadm/install/logs/`*filename*`.log.`

The script can accept a short or long name for each option. A short name requires a single hyphen (`-`). A long name requires a double hyphen (`--`). This section shows the short name option followed by the long name option in parentheses.

Note – When you use a long name option, do not type a space between hyphens.

---

lists the options you can use with the `esmuninstall` script.

Syntax:

esmuninstall [-m,--management] [-a,--agent] [-c,--cli] [-p,--product *product*][-f,--full][-s,--silent] [? | -h,--help]

TABLE 4-3   `esmuninstall` Script Options

Option	Description
none	Uninstall all the Sun StorEdge Enterprise Storage Manager products and components in verbose mode. The uninstallation procedure retains some Sun StorEdge Enterprise Storage Manager software configuration files.
	Note: If you have a trusted mode installation of the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager, the uninstall procedure removes Oracle database objects. You must back up your database.
-m, --management	Uninstall the management station component only.
-a, --agent	Uninstall the agent station components only.
-c, --cli	Uninstall the CLI client components only.
-p, --product *product*	Uninstall the selected product only. Use `cr` (for Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager) or `sm` (for SAN Manager component of the Sun StorEdge Enterprise Storage Manager).
-f, --full	Fully uninstall the Sun StorEdge Enterprise Storage Manager software and any associate files, including Oracle database persistence files. Note that only the installation, uninstallation, and configuration logs remain.
-s, --silent	Uninstall the software in silent mode. The installation script does not display messages or prompts (that is, it automatically removes all packages without prompting you). Note that a log file records any error messages.
? -h, --help	Display a list of options and usage for the script.

▼ To Remove the Software

1. **Log in to your system as root.**

2. **Run the `esmcontrol` file script to stop all processes and daemons related to the software:**

   ```
   # /opt/SUNWstm/bin/esmcontrol stop
   ```

3. **Run the esmuninstall file script to remove the software packages:**

   ```
   # /opt/SUNWstm/bin/esmuninstall
   ```

CODE EXAMPLE 4-2 `esmuninstall` Script Sample Output

```
Begin: Removing ESM Station(s)
        Stopping cr_agent...
Stopping the ESM Capacity Reporter Agent Components...
Stopping the SSCRA ARP...
Stopping GIDU...
        Removing cr_agent package(s)...
Unregistering the ARP with the Management Station...
unreg_arp Success
Removing ARP configuration...
Removing Unix agent configuration...
        Stopping tr_agent...
Stopping Sun StorEdge(TM) SAN Manager Components
SAN Manager Agent ..............running.
        Removing tr_agent package(s)...
        Stopping esmom...
Stopping the ESMOM...
        Removing esmom package(s)...
        Stopping platform...
Stopping the ESM Management Station platform...
        Removing platform package(s)...
Beginning Data Tier Uninstall
Stopping the SMICC to release database connections...
Shutting down Sun(TM) Web Console Version 2.0...
Dropping Database User and Role...
Dropping Tablespaces...
Starting the SMICC...
Starting Sun(TM) Web Console Version 2.0-beta3...
See /usr/share/webconsole/logs/catalina.out for server logging
information
Data Tier Uninstall Complete
Unregistering the UI with the SMICC...


    Unregistering com.sun.netstorage.mgmt.ui.framework_1.0.
Restarting the SMICC...
Shutting down Sun(TM) Web Console Version 2.0-beta3...
Starting Sun(TM) Web Console Version 2.0-beta3...
See /usr/share/webconsole/logs/catalina.out for server logging
information
Removing ESM reports directories...
Removing security keys...
        Removing tr_cli package(s)...
        Stopping tr_mgmt...
Stopping Sun StorEdge(TM) SAN Manager Components
JAVA_HOME is set to /usr/java
Stopping CRE
```

CODE EXAMPLE 4-2   `esmuninstall` Script Sample Output

```
Stopping PostgreSQL ...
        Removing tr_mgmt package(s)...
Removing the keystore and truststore registration from SMICC...
Removing ESM 2.0 registration from SMICC...
        Removing cr_common package(s)...
        Removing esm_common package(s)...
End:   Removing ESM Station(s)



Enterprise Storage Manager Version 2.0 Uninstall Successfully
Completed.



INFO: Sun StorEdge(tm) ESM  Installer Log:
        /var/sadm/install/logs/esm.log
```

Removing the Sun Web Console Software

The Sun StorEdge Enterprise Storage Manager installation procedure installs the Sun Web Console software. Because other applications may need to use this software, the `esmuninstall` script does not remove it from your network storage environment. However, you can remove the software manually.

Note – Make sure that other applications in your network storage environment do not need the Sun Web Console service before you remove it.

▼ To Remove the Sun Web Console Software

1. **Log in as root.**

2. **Type:**

   ```
   /usr/sadm/lib/webconsole/bin/smicc_setup -uf
   ```

Evaluating the Installation

This chapter includes information about checking the completed installation and how to solve possible installation problems:

Checking the Environment and Processes

If the installation fails, run the esmcheck script file for information about the system's state. The esmcheck script provides information about the Sun StorEdge Enterprise Storage Manager environment and its processes, such as:

- Operating system version
- Prerequisite packages and software patches for a the Sun StorEdge Enterprise Storage Manager software installation
- Sun StorEdge Enterprise Storage Manager packages that are already fully or partially installed on your system
- Any Sun StorEdge Enterprise Storage Manager processes that are running

The esmcheck script is in the /opt/SUNWstm/bin directory and on the product CD. You must run the script as root.

The `esmcheck` Script Options

The script can accept a short or long name for each option. A short name requires a single hyphen (–). A long name requires a double hyphen(––). This section shows the short name option followed by the long name option in parentheses.

Note – When you use a long name option, do not type a space between hyphens.

Syntax:

esmcheck [-c,--components][-p,--processes][-l,--logs][? | -h,--help]

TABLE 5-1   esmcheck Script Options

Option	Description
None	Invoke the main configuration menu.
-c, --component	Display information about the installed Sun StorEdge Enterprise Storage Manager components.
-p, --processes	Display the status of the Sun StorEdge Enterprise Storage Manager processes running on the host system.
-l, --logs	Display the names and sizes of the Sun StorEdge Enterprise Storage Manager log files on the host system.
? -h, --help	Display a list of options and usage for the script.

CODE EXAMPLE 5-1 esmcheck Script Sample Output

```
# ./esmcheck

'ESM_Common' Component Package State Version
     SUNWstm                    fully installed     2.0.0
'SAN Manager Management' Component Package State Version
     SUNWstoba                  fully installed     2.0.0
     SUNWstmsu                  fully installed     2.0.0
     SUNWstmsr                  fully installed     2.0.0
     SUNWstmdb                  fully installed     2.0.0
     SUNWstmm                   fully installed     2.0.0
     SUNWstui                   fully installed     2.0.0
'SAN Manager Command Line Interface Client' Component Package
State Version
     SUNWstcli                   fully installed      2.0.0
'SMICC' Component Package State Version
     SUNWmcon                   fully installed     2.0
     SUNWmcosx                  fully installed     2.0
     SUNWmconr                  fully installed     2.0
     SUNWmctag                  fully installed     2.0
     SUNWjato                   fully installed     2.0.4
     SUNWmcos                   fully installed     2.0
'Java' Component Package State Version
     SUNWj3dev                  fully installed     1.4.1
     SUNWj3man                  fully installed     1.4.1
     SUNWj3rt                   fully installed     1.4.1
     SUNWj3dmo                  fully installed     1.4.1
End:   Checking for components
.
.
.
.
(Lockhart) Log
---- List log files in /var/log/webconsole/ ----
/var/log/webconsole//catalina_log.2003-08-06.txt
/var/log/webconsole//console_debug_log
/var/log/webconsole//localhost_access_log.2003-08-06.txt
/var/log/webconsole//localhost_log.2003-08-06.txt
---- End of Listing in /var/log/webconsole/ ----

End:   Checking for log sizes

Enterprise Storage Manager Version 2.0 esmcheck Successfully
Completed

INFO: Sun StorEdge(tm) ESM  Installer Log:
      /var/sadm/install/logs/esm.log
```

Checking the Log File

The `esminstall`, `esmuninstall`, `esmconfig`, and `esmcheck` scripts record messages to a single log file. The log file includes:

- Installation messages
- Removal messages
- Configuration messages
- Error messages
- Informational messages

The default location for this log file is `/var/sadm/install/logs/esm.log`.

The log file delimits the output from each script with separator lines, the name of the script and a time stamp. CODE EXAMPLE 5-2 shows a sample Sun StorEdge Enterprise Storage Manager installation log file.

CODE EXAMPLE 5-2   Sample Log File

```
=====================================================
Sun StorEdge(TM)
Enterprise Storage Manager 2.0
Start <action>
2003/02/28 17:23:24:
=====================================================

    <log output>


INFO: Sun StorEdge(tm) ESM  Installer Log:
    /var/sadm/install/logs/esm.log
=====================================================
Sun StorEdge(TM)
Enterprise Storage Manager 2.0
End of Install
2003/02/28 17:23:29:
=====================================================
```

Setting Switch Credentials

The discovery agent of the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software contacts the hardware switch for its status and identification. If the switch requires a user name and password to access the devices and you have not entered this information through the browser user interface or command-line interface, you might not see the zones you expect in your fabric.

To fix this, you must enter the switch information into the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software.

Determining the User Name, and Password

The typical default login information for a switch is:

```
Username: admin
Password: password
```

The user name and password must match the settings you entered for the switch when you used the switch's management tool.

▼ To Add Switch Credentials

Note – These steps make the SAN Manager component of the Sun StorEdge Enterprise Storage Manager software aware of switch user names and passwords and do not change existing switch settings.

1. **Log in to the SAN Manager component of the Sun StorEdge Enterprise Storage Manager to display the Topology page, which is the initial page of the application.**

2. **If you have a switch group, click the group to display the individual switches. Otherwise go to Step 3.**

3. **Click a switch's icon to display the drop-down menu.**

4. **Click View Details to display the Switch Details page.**

5. **Click the Contact Information link.**

6. **Click the Edit button to display the Edit Contact Info page.**

7. **Optionally, type contact and location information in the related text field:**
   - Contact — The name of the person or organization responsible for the switch.
   - Location — The location of the person or organization responsible for the switch.

8. **Type the required information in the related text field:**
   - User Name — The user's login name for the switch. Typically this field is `admin`.
   - Password — The password for the switch.

9. **Click the Save button to save your settings**

Troubleshooting the Installation

The following lists possible problems that you can encounter when you install the Sun StorEdge Enterprise Storage Manager software:

Cannot determine if `ESMUser` role is set

You must create the `ESMUser` role prior to installation and complete the installation to set the role. Then you can use the **roles** *username* command to verify that the role is set. Refer to "To Create the ESMUser Role" on page 13 for more information about creating the `ESMUser` role.

Login page does not display expected components

If you are not authenticated and authorized by the Sun Web Console software, the login page does not display links to the components of the Sun StorEdge Enterprise Storage Manager. You must be assigned the `ESMUser` role. Refer to "To Create the ESMUser Role" on page 13 for more information about the `esm_user` script.

Unexpected Installation Type

If you use the `esminstall` script and type more than one option to choose an installation type, the last option on the command line is used.

Installation Fails

If your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, make sure you have specified the ORACLE_HOME environment variable. Refer to "To Prepare the Management Station" on page 16 for more information about preparing the management station.

Performance problems

If your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, and the Oracle database settings are less than the recommended minimum value, the performance of the Sun StorEdge Enterprise Storage Manager software may be unacceptable. Refer to "Setting Minimum Recommended Oracle Database Values" on page 21 for more information about minimum Oracle database values.

Reports display unexpectedly

If your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, and the NLS settings are not the default values, the Sun StorEdge Capacity Reporter software may not display fields or sort data as expected. Refer to "Configuring for Internationalization" on page 22 for more information about the default NLS values.

Failure to create database objects

If your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, verify that you can use the Oracle database client. Refer to "Configuring the Oracle Database Client" on page 28 for more information about how to set up the Oracle database client.

Agent and database synchronization failure

If your installation includes the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software, verify that you supplied a valid account name and password for RMI communications with the software that interprets and runs the scan schedules of selected storage elements. Refer to "To Install the Software on a Single System That Acts as a Management Station and Agent Station" on page 34 for more information.

Installation Worksheet

The following checklist lists the prompts that require user input, any default values, and space in which you can enter notes about a specific installation.

Refer to the appropriate sections of this guide for detailed information about how to answer each of the prompts. The worksheet is a tool to help you provide specific configuration attributes to the installation procedure's prompts.

Prompts	Notes
Unique string of at least 6 characters (which you make up) for encryption of sensitive product data	
PostgreSQL server port (5437)	
SAN Manager RMI registry port (1099)	
SAN Manager RMI registry host (*localhost*)	
SAN size (2)	
Cluster name	
Virtual server hostname for scanning the cluster	
ARPS HTTP port (11140)	
ESM agent service port number (11150)	
Directory path for the ESMOM repository (for the software that interprets and runs the scan schedules of selected storage elements) (`/var/opt/SUNWstm/esmom`)	
ESMOM (the software that interprets and runs the scan schedules of selected storage elements) HTTP port (11130)	
Trusted (Yes) or untrusted installation (No)	
ESM Oracle net service name (ESMDB)	
Host name or IP address of the Oracle database server	
Port number for the Oracle LISTENER (1521)	

Prompts	Notes
Service name for the Oracle database	
Oracle DBA account name (SYSTEM) Password	
Login ID for the Oracle database (ESM_STD_USER) Password	
Name for the SMALL A tablespace (EMS_TBSP_SMALL_A)	
Name for the SMALL B tablespace (EMS_TBSP_SMALL_B)	
Name for the MEDIUM A tablespace (EMS_TBSP_MEDIUM _A)	
Name for the MEDIUM B tablespace (EMS_TBSP_MEDIUM _B)	
Name for the LARGE A tablespace (EMS_TBSP_LARGE_A)	
Name for the LARGE B tablespace (EMS_TBSP_LARGE _B)	
Path to the SMALL A tablespace data backing file	
Path to the SMALL B tablespace data backing file	
Path to the MEDIUM A tablespace data backing file	

Prompts	Notes
Path to the MEDIUM B tablespace data backing file	
Path to the LARGE A tablespace data backing file	
Path to the LARGE B tablespace data backing file	
Directory path for storing scan reports (`/var/opt/SUNWstm/reports`)	
Starting network address	
Ending network address	
SNMP port number (161)	
Community name (public)	
Starting network address	
Ending network address	
SNMP port number (161)	
Community name (public)	
Maximum number of Oracle connections (50)	
Minimum number of Oracle connections (10)	
Account name for RMI communication with the ESMOM (the software that interprets and runs the scan schedules of selected storage elements) Password	

Writing Script Notifications

The Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software can respond to conditions that it detects in several ways. One response is for the software to execute a user-supplied script. Use the web browser UI to enable the script option.

When the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager software detects a particular condition, it passes the appropriate context information to the user-supplied script. The software then executes the script. The script execution writes output to a file.

The Sun StorEdge Enterprise Storage Manager installation procedure creates the directories in which the user-supplied scripts and the script output reside. You must be running as root to access either of these directories.

Note – User-supplied scripts run on the management station; they do not run on an agent station.

▼ To Write Script Notifications

1. **Make sure you are logged in as root.**

2. **Write the script and save it in the** `/var/opt/SUNWstm/scripts` **directory.**

   The software passes context information to the script by means of command line parameters. You must follow the required format of the command line parameters to make use of the context information. Note that different conditions provide different types of context information.

   TABLE B-1 describes the different command line arguments and their usage.

TABLE B-1   Command Line Arguments and Usage

Applies to Policy Type	Argument Variable	Argument Name	Value Description
All*	$1	Policy type	Contains one of the following strings: • capacityThreshold • discoveryThreshold • missingResourceThreshold†
All	$2	Asset ID	The unique ID of a storage element.
All	$3	Asset name	The name property of a storage element.
All	$4	Asset type	A string describing the type of storage element.
All	$5	Asset subtype	If applicable, a further qualification of the storage element type.
Capacity	$6	Available threshold setting	The threshold setting specified by the user that indicates the amount of available space causes an alarm of a particular severity
Capacity	$7	Percent used threshold setting	The threshold setting specified by the user that indicates the percent of capacity causes an alarm of a particular severity.
Capacity	$8	Current value	The capacity measurement that triggers the alarm.
Discovery	$6	Addresses	List of IP addresses or www names of the discovered storage element.
Discovery	$7	Address format	Specifies whether the addresses argument contains IP addresses or WWW names.
Discovery	$8	When discovered	The UTC time when the storage element was discovered.
Discovery	$9	Other	Text string that describes the discovered storage element, which changes depending on the storage element type. For clusters, the text string describes a member server in the cluster.

*   *All* is applicable to all policy types

†   This string refers to an unavailable storage element.

Note – The notification of an unavailable storage element uses the arguments that apply to all policy types only.

3. **Check** `/var/opt/SUNWstm/scripts/output` **directory for the output from the script execution.**

4. **Refer to the online help for more information about using a notification script and about other ways in which the Capacity Reporter component of the Sun StorEdge Enterprise Storage Manager can respond to conditions.**

5. **See** `/opt/SUNWstm/doc/esm-sample-alarm-script.sh` **for an example of a script notification.**

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