Sun Management Center 4.0 Installation and Configuration Guide

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Preface

The *Sun Management Center 4.0 Installation and Configuration Guide* tells you how to install and start the Sun Management Center system software.

Note – The Solaris 10 release supports systems that use the SPARC and x86 families of processor architectures: UltraSPARC, SPARC64, AMD64, Pentium, and Xeon EM64T. The supported systems appear in the *Solaris 10 Hardware Compatibility List* at `http://www.sun.com/bigadmin/hcl`. This document cites any implementation differences between the platform types.

In this document the term "x86" refers to 64-bit and 32-bit systems manufactured using processors compatible with the AMD64 or Intel Xeon/Pentium product families. For supported systems, see the *Solaris 10 Hardware Compatibility List*.

Who Should Use This Book

This book is for system administrators who understand networking terminology and have experience working with and maintaining networks.

How This Book Is Organized

This book contains the following information:

Chapter 1, "Installing Sun Management Center 4.0," describes the requirements for Sun Management Center 4.0 and how to install it for the first time.

Chapter 2, "Installation Overview," provides an overview of Sun Management Center 4.0 installation and licensing.

Chapter 3, "Configuration Considerations," provides information that should be considered before installing Sun Management Center 4.0, including security and Sun Management Center domain management approaches.

Chapter 4, "Preparing Systems for Sun Management Center Upgrade and Installation," provides procedures for preparing your systems before you upgrade to Sun Management Center 4.0, or install Sun Management Center 4.0.

Chapter 5, "Upgrading Previous Versions of Sun Management Center on the Solaris Platform," provides procedures for upgrading previous versions of Sun Management Center to Sun Management Center 4.0.

Chapter 6, "Installing and Updating Agents and Installing on Microsoft Windows," provides the procedures for installing and updating agents and installing Sun Management Center on Microsoft Windows.

Chapter 7, "Sun Management Center Post-Installation Tasks," provides the procedures for post-installation tasks such as setting up users, installing multiple agents, upgrading agents, and installing separately released add-on products.

Chapter 8, "Starting and Stopping Sun Management Center," provides the procedures for starting and stopping Sun Management Center.

Chapter 9, "Sun Management Center Administration," provides procedures for post-installation administration tasks, such as regenerating security keys, stopping and disabling the SNMP daemon, and reconfiguring port addresses.

Chapter 10, "Integration With Other Enterprise Management Platform," provides information that should be considered if you plan to integrate Sun Management Center with other management platforms.

Appendix A, "Uninstalling Sun Management Center," provides the procedures for uninstalling Sun Management Center 4.0 from the Solaris platform and the Microsoft Windows platform.

Appendix B, "Using the Command Line for Uninstall, Install, and Setup," provides the procedures for uninstalling, installing, and setting up Sun Management Center.

Appendix C, "Determining Hardware Resources," provides information for determining the hardware resources needed by Sun Management Center.

Appendix D, "Network Address Translation," provides information about Network Address Translation (NAT) configuration and limitations, and provides configuration examples.

Product Information

Information about this product is located at the Sun Management Center Web site at `http://www.sun.com/sunmanagementcenter`.

The Sun Management Center product includes open source software. To view license terms, attribution, and copyright statements for open source software included in this release, see the copyright file available in the media.

Documentation, Support, and Training

See the following web sites for additional resources:

- Documentation (`http://docs.sun.com`)
- Support (`http://www.oracle.com/us/support/systems/index.html`)
- Training (`http://education.oracle.com`) – Click the Sun link in the left navigation bar.

Oracle Welcomes Your Comments

Oracle welcomes your comments and suggestions on the quality and usefulness of its documentation. If you find any errors or have any other suggestions for improvement, go to `http://docs.sun.com` and click Feedback. Indicate the title and part number of the documentation along with the chapter, section, and page number, if available. Please let us know if you want a reply.

Oracle Technology Network (`http://www.oracle.com/technetwork/index.html`) offers a range of resources related to Oracle software:

- Discuss technical problems and solutions on the Discussion Forums (`http://forums.oracle.com`).
- Get hands-on step-by-step tutorials with Oracle By Example (`http://www.oracle.com/technology/obe/start/index.html`).
- Download Sample Code (`http://www.oracle.com/technology/sample_code/index.html`).

Typographic Conventions

The following table describes the typographic conventions that are used in this book.

TABLE P–1 Typographic Conventions

Typeface	Meaning	Example
`AaBbCc123`	The names of commands, files, and directories, and onscreen computer output	Edit your `.login` file. Use `ls -a` to list all files. `machine_name% you have mail.`
`AaBbCc123`	What you type, contrasted with onscreen computer output	`machine_name%` **`su`** `Password:`
aabbcc123	Placeholder: replace with a real name or value	The command to remove a file is `rm` *filename*.

TABLE P–1 Typographic Conventions *(Continued)*

Typeface	Meaning	Example
AaBbCc123	Book titles, new terms, and terms to be emphasized	Read Chapter 6 in the *User's Guide*. A *cache* is a copy that is stored locally. Do *not* save the file. **Note:** Some emphasized items appear bold online.

Shell Prompts in Command Examples

The following table shows the default UNIX system prompt and superuser prompt for shells that are included in the Oracle Solaris OS. Note that the default system prompt that is displayed in command examples varies, depending on the Oracle Solaris release.

TABLE P–2 Shell Prompts

Shell	Prompt
Bash shell, Korn shell, and Bourne shell	`$`
Bash shell, Korn shell, and Bourne shell for superuser	`#`
C shell	`machine_name%`
C shell for superuser	`machine_name#`

Using UNIX Commands

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

For more information about UNIX commands and procedures, see the following documents:

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

Related Documentation

For details on Sun Management Center documentation and related Sun Management Center add-on documentation, see "Sun Management Center Documentation Resources" on page 41.

◆ ◆ ◆ CHAPTER 1

Installing Sun Management Center 4.0

This chapter describes how to install and set up Sun Management Center 4.0. This chapter assumes that the product has not been installed before.

This chapter has the following topics:

- "Installing the Product" on page 19
- "Preinstallation Information" on page 20
- "Sun Management Center Requirements" on page 22
- "Installing the Required JDK Version" on page 24
- "Sun Management Center Base Add-on Requirements" on page 25
- "Installing Sun Management Center" on page 26
- "Setting Up Sun Management Center" on page 30
- "(On Solaris 10) Installing and Setting Up a Sun Management Center Server Inside a Whole Root Zone" on page 37
- "Sun Management Center Documentation Resources" on page 41

Installing the Product

Sun Management Center has three main components, called base layers, that need to be installed: server, agent, and Java Console (console). The server is a collection of processes on a central host that enables management services. The agent is a process that runs on each monitored host. The Java Console is the window through which you monitor and manage the agents. It is the main user interface to the product.

Before you can use Sun Management Center 4.0, you must install the following:

- Server – On at least one machine.

Note – When the server is installed, the Sun Management Center agent is installed on the server machine as well.

- Agent – On all machines you want to monitor.
- Java Console – On any machine from which users will log into Sun Management Center.

In planning your installation you need to consider the following items:

- On which machine do you want to run the Sun Management Center server?
- Which machines do you want to monitor and manage? On these machines you need to install the Sun Management Center agent.
- On which machines do you want to run the Sun Management Center console? On these machines you need to install the Java Console.
- Which add-on products do you want to use? Sun Management Center has add-on products to extend its feature set and to make it work with specific software products or hardware platforms. For more information on the product and how it works in these different environments, see the documentation listed in "Sun Management Center Documentation Resources" on page 41.

In addition to *installing* the product components and the add-ons, you must *set up* the product components and add-ons before you can start the product.

Preinstallation Information

The following table lists the prerequisite information that you need before installing the product.

TABLE 1–1 Information Needed Before Installing

Installation Item	Description
Base Layers (Components)	Determine the machines on which you will install each component, for example, server, agent, and console.
Languages	Determine which, if any, additional languages (French, Traditional Chinese, Simplified Chinese, Korean, or Japanese) you need. The documentation for Sun Management Center 4.0 is not available on the media. Go to `http://docs.sun.com` for documentation in English and the supported languages.

TABLE 1–1 Information Needed Before Installing *(Continued)*

Installation Item	Description
Add-on Products	Review the add-on supplements to determine which add-ons you want to install. For a list of add-on supplements, see "Sun Management Center Documentation Resources" on page 41. Add-on products are installed on the same machine as the server.
Space Needed	If the machine does not have enough space in the default `/opt` directory, you might need to make one of the following adjustments: ■ Specify an alternate file system that has sufficient space ■ Select a machine with sufficient resources ■ Make more space in `/opt`
Permissions	You must have permission to write to the `/var/opt` and `/opt/SUNWsymon` directories as `root` on each machine. You also need privileges to run commands such as `chmod`.

After installing the product and its add-ons, you will need to set up the product and its add-ons. The following table lists the prerequisite information that you need before *setting up* the product.

TABLE 1–2 Information Needed Before Setting Up

Set Up Item	Description
Administrator user name	A valid Solaris/Linux user name is required for assignment as the Sun Management Center administrator on Sun Management Center server machines.
Network Addressing Mode	Sun Management Center uses two types of addressing for communication between the server and agent: IP addressing, and Network Address Translation (NAT). You must have the following information: ■ Which addressing mode is used in your network ■ The name of each machine that is to be managed by Sun Management Center ■ The IP addresses and names for all machines that have to be managed by Sun Management Center and that have been assigned static IP addresses See Appendix D, "Network Address Translation," for further information.
Sun Management Center Password to Generate Security Key	Sun Management Center requires an encrypted security key for communication between processes. The security key is generated based on a unique password you provide. Store the password securely. You need the password if you modify your Sun Management Center installation.

TABLE 1–2 Information Needed Before Setting Up *(Continued)*

Set Up Item	Description
SNMPv1 Community String	Sun Management Center requires an SNMPv1 community string for security. The default is `public`. You have the option of specifying a more secure custom string. Store the SNMPv1 string securely. You need the SNMPv1 security string if you modify your Sun Management Center installation.
Information to Generate Web Server Security Key	The Sun Management Center Web server requires an encrypted security key. The security key is generated based your organization name and location. Store the organization name and location securely. You need this information if you modify your Sun Management Center Web server.
Ports	Determine the assignments for the following ports: ■ SNMPv1 Port: default 161 ■ Sun Management Center Port: default 161, recommended 1161 ■ Database port: default 5432 ■ Web server port: default 8080 ■ Web server secure port: 8443 See "Default Ports" on page 157 for further information.

Sun Management Center Requirements

The following table provides a summary of Sun Management Center 4.0 requirements.

Note – Some hardware platform config readers (add-ons) do not work on all layers of Sun Management Center when installed on Solaris 10.

For specific information about determining the total amount of resources needed, see Appendix C, "Determining Hardware Resources."

TABLE 1–3 Sun Management Center 4.0 System Requirements

Base Layer	Operating System	Disk Space	RAM	Swap
Server				

TABLE 1–3 Sun Management Center 4.0 System Requirements *(Continued)*

Base Layer	Operating System	Disk Space	RAM	Swap
Server (SPARC/x64/x86)	Solaris 10 11/06, Solaris 10 8/07, Solaris 10 5/08 and Solaris 10 10/08 **Note –** You must have Postgres 8.1.* on the server system.	800 Mbytes total: 300 Mbytes in `/opt`, 500 Mbytes in `/var/opt`	512 Mbytes minimum 1 Gbyte recommended 2 Gbytes recommended	1 Gbyte recommended
Agent				
Agent (SPARC/x64/x86)	Solaris 8, Solaris 9, Solaris 10, Solaris 10 11/06, Solaris 10 8/07 and Solaris 10 10/08	18 Mbytes per agent in `/opt/SUNWsymon`. 2 Mbytes per agent in `/var/opt/SUNWsymon`.	10 to 29 Mbytes per agent depending on modules loaded and system type	
Agent (x86/x64)	Solaris 9, Solaris 10, Solaris 10 11/06, Solaris 10 8/07 and Solaris 10 10/08	18 Mbytes per agent in `/opt/SUNWsymon`. 2 Mbytes per agent in `/var/opt/SUNWsymon`.	10 to 29 Mbytes per agent depending on modules loaded and system type	
Agent (x86–Intel/AMD 32–bit and 64–bit)	■ RedHat Enterprise Linux 4.0 (ES/AS) ■ SUSE 9.3 ■ SUSE Linux Enterprise Server 10.0 ■ Fedora Core 4.0	18 Mbytes per agent in `/opt/SUNWsymon`. 2 Mbytes per agent in `/var/opt/SUNWsymon`.	10 to 29 Mbytes per agent depending on modules loaded and system type	
Console				
Java Console (SPARC)	Solaris 8, Solaris 9, Solaris 10, Solaris 10 11/06, Solaris 10 8/07 and Solaris 10 10/08	150 Mbytes	256 Mbytes	130 Mbytes
Java Console (x86/x64)	Solaris 9, Solaris 10, Solaris 10 11/06, Solaris 10 8/07 and Solaris 10 10/08	150 Mbytes	256 Mbytes	130 Mbytes
Java Console (x86)	Microsoft Windows 2000 Professional, Microsoft Windows XP Professional	35 Mbytes	256 Mbytes	768 Mbytes

TABLE 1–3 Sun Management Center 4.0 System Requirements *(Continued)*

Base Layer	Operating System	Disk Space	RAM	Swap
Java Console (x86–Intel/AMD 32–bit and 64–bit)	■ RedHat Enterprise Linux 4.0 (ES/AS) ■ SUSE 9.3 ■ SLES 10.0 ■ Fedora Core 4.0	35 Mbytes	256	768 Mbytes

The default maximum heap size for the console and server is 64 Mbytes each.

Java console does not install jar files for add-ons.

You can customize the maximum heap size for the console and server as described in "Starting Components Using `es-start`" on page 140.

Installing the Required JDK Version

The minimum JDK requirement for Sun Management Center 4.0 is JDK 1.5. The JDK software is available in the *DiskMountDir*`/disk1/`*jdk-dir*/*TargetOS* directory, where *jdk-dir* is the name of the JDK directory on the disk and *TargetOS* is the Linux, Solaris, or Windows operating system.

▼ To Install the Required JDK Version

1 Install the JDK from the disk using the `pkgadd` command.

Type the command `pkgadd -d` *DiskMountDir*`/disk1/`*jdk-dir*.

Press Return to install all of the packages. The JDK packages are installed in the `/usr/j2se` directory.

2 Reset the `JAVA_HOME` environment variable to `/usr/j2se`.

- In a C shell environment, type:

```
# setenv JAVA_HOME /usr/j2se
```

- In a Bourne or Korn shell environment, type:

```
# JAVA_HOME=/usr/j2se
# export JAVA_HOME
```

Tip – Set the `JAVA_HOME` environment variable in your `.login` or `.cshrc` file.

Sun Management Center Base Add-on Requirements

The following table shows the minimum disk space necessary to install the basic add-ons. For installation requirements for other add-ons, see the documentation supplement for that add-on. See "Sun Management Center Documentation Resources" on page 41.

For specific information about determining the total amount of resources needed, see Appendix C, "Determining Hardware Resources."

TABLE 1–4 Add-on Disk Space Requirements by Base Component

Base Add-on	Operating System	Disk Space
Advanced System Monitoring	Solaris 8, Solaris 9, Solaris 10, Solaris 10 11/06, Solaris 10 8/07 and Solaris 10 10/08 Windows XP, Windows 2000	Server: 3300 Kbytes Agent: 2020 Kbytes Console: 270 Kbytes
Service Availability Manager	Solaris 8, Solaris 9, Solaris 10, Solaris 10 11/06, Solaris 10 8/07 and Solaris 10 10/08	Server: 1600 Kbytes Agent: 1000 Kbytes Console: 500 Kbytes
Solaris Container Manager	Solaris 8, Solaris 9, Solaris 10, Solaris 10 11/06, Solaris 10 8/07 and Solaris 10 10/08	Server: 300 Mbytes Agent: 18 Mbytes Console: 500 Kbytes
System Reliability Manager	Solaris 8, Solaris 9, Solaris 10, Solaris 10 11/06, Solaris 10 8/07 and Solaris 10 10/08	Server: 3000 Kbytes Agent: 1000 Kbytes Console: not applicable
Performance Reporting Manager	Solaris 8, Solaris 9, Solaris 10, Solaris 10 11/06, Solaris 10 8/07 and Solaris 10 10/08 Windows XP, Windows 2000 **Note –** The Performance Reporting Manager requires 1 Gbyte of RAM and 1 Gbyte of swap space.	Agent: 8000 Kbytes minimum. For 1000 properties logged at five-minute intervals, 80 Mbytes are needed. Console: 3000 Kbytes

TABLE 1–4 Add-on Disk Space Requirements by Base Component *(Continued)*

Base Add-on	Operating System	Disk Space
X86 Config Reader	Solaris 9, Solaris 10, Solaris 10 11/06, Solaris 10 8/07 and Solaris 10 10/08 Linux 2.6 Solaris 9 or higher and Linux kernel 2.6 or higher on x86/x64 systems.	Server: 1600 Kbytes Agent: 1000 Kbytes

Installing Sun Management Center

Note – On Solaris 10, you can install Sun Management Center inside a whole root zone. For information about this, see "(On Solaris 10) Installing and Setting Up a Sun Management Center Server Inside a Whole Root Zone" on page 37. On Linux, you can install only agent and console layers.

This section describes how to install Sun Management Center 4.0 on Solaris and Linux platforms using the graphical user interface (GUI).

This installation procedure assumes that you are installing Sun Management Center from a media image directory on your network.

For information on creating an installation DVD image, see "Creating Installation DVD Images" on page 71.

▼ To Install Sun Management Center

Before You Begin (On Solaris 10 and above) Ensure that the packages `SUNWtcatu` and `SUNWtcatr` are installed in the global zone before running the Sun Management Center server layer.

1 Set up the installation environment.

a. If you are installing the product remotely, grant access to the X server by typing the command `xhost +` *machine* in a terminal window where *machine* is the name of the machine where you want to install the product.

b. Log into the machine. If you are installing the product remotely, type the command `rlogin` *machine* and type the password.

c. Log in as root by typing `su - root` and the root password.

Note – Do not miss the hyphen (-) after the **su** command

d. If you prefer a specific UNIX shell, type the command to use the shell, for example, `csh`.

e. If you are installing the product remotely, ensure that the DISPLAY environment variable is set to the machine's display, for example, `setenv DISPLAY` *local-machine*`:0.0`.

f. Ensure that the `group` entry in the `/etc/nsswitch.conf` has `files` as the first token.

```
group: files nis
```

g. Change to the *image* directory. Ensure that the *image* directory is NFS-shared.

For example:

```
# cd /net/machine/image/disk1/sbin
```

where *machine* is the machine where you created the installation image, and *image* is the root directory containing the installation images.

2 Run the installation.

a. Change to the installation directory *DiskMountDir*`/disk1/sbin`.

b. Type the installation command:

```
# ./es-guiinst
```

The Welcome screen appears.

FIGURE 1–1 Welcome Screen

3 Follow the screen prompts.

a. To accept the default `/opt` installation directory, click Next, or click Browse to choose another directory.

b. Select the components you want to install.

c. Review the Server Layer Binary Code License and use the scroll bar to scroll down to the end of the text.

d. To agree to the terms of the license, click I Agree.

e. If you want to install the product in additional languages, select the additional languages and click Next. The progress bar appears.

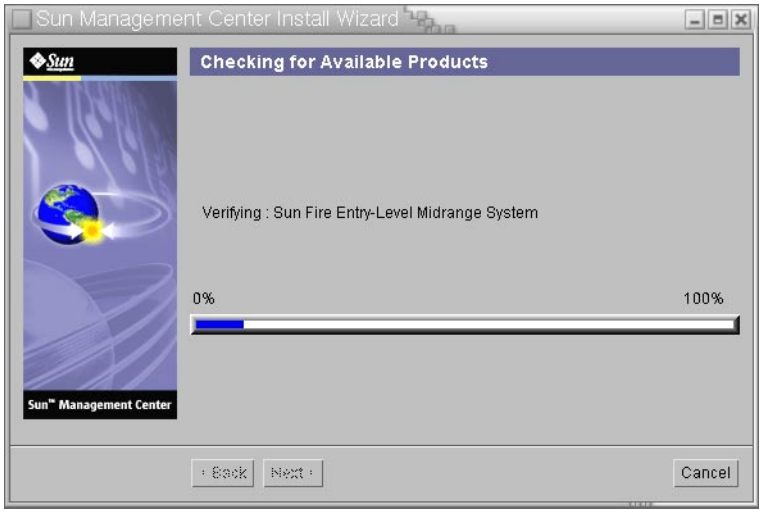

FIGURE 1–2 Checking for Available Products Progress Bar

f. Select the add-on products.

The Select Add-on Products screen appears. Your list of add-on products might vary from this screen.

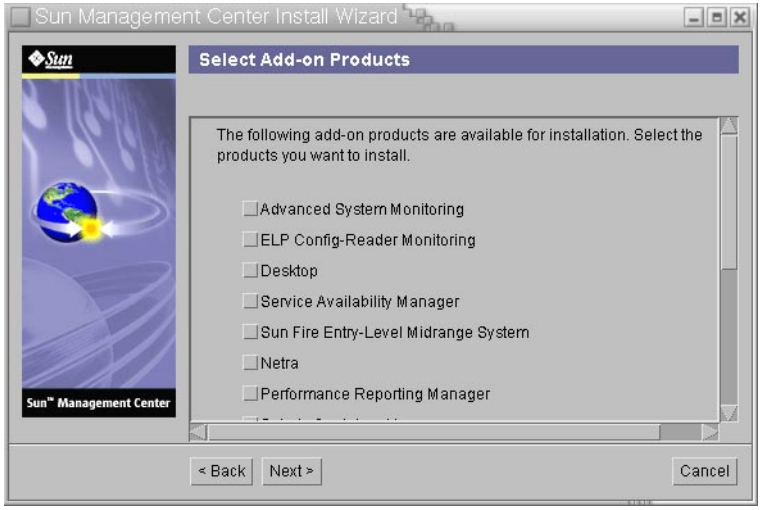

FIGURE 1–3 Add-on Products

g. If you selected add-on products that have optional components, select the optional components required and click Next.

h. Review the add-on products binary license and use the scroll bar to scroll down to the end of the text.

Some add-ons require binary license.

i. To agree to the terms of the license, click I Agree.

The Checking Disk Space progress bar appears. If there is not enough disk space, you are asked to provide an alternate file system.

Tip – In a terminal window on the machine where you are installing Sun Management Center, type **`df -ak`** to list the amount of used and free space for each file system on the machine.

---

j. Confirm installation selections and click Next.

Note – The installation process can take from a few minutes to half an hour or more, depending on the products selected.

If installation failed, a summary screen is displayed.

Review the installation log in `/var/opt/SUNWsymon/install` to find out why the installation failed, and correct the problem.

4 Choose whether to run the setup wizard.

Caution – If you have used `es-guiinst` to install only add-on products, click Close to exit the installation and setup process. You must set up the add-on products as described by "To Set Up an Add-on Product Using `es-setup`" on page 135. Otherwise, you will overwrite your security keys and will then have to set up all of the agents on all of your machines for the agents to work properly.

---

a. To continue to set up, click Next.

b. To run set up later, click Close.

You cannot run the product until you have set it up.

Setting Up Sun Management Center

You use the graphical setup wizard to set up, configure, and re-configure your Sun Management Center installation.

For information on using the command-line setup script, see "To Set Up Sun Management Center Using the `es-setup` Script" on page 197.

▼ To Set Up Sun Management Center

1 **Set up the installation environment. For more information, see Step 1 in "To Install Sun Management Center" on page 26.**

2 **Change to the Sun Management Center `sbin` directory. For example:**

```
# cd /opt/SUNWsymon/sbin
```

If you installed Sun Management Center in a directory other than `/opt`, Change to */installdir*`/SUNWsymon/sbin`, where *installdir* is the directory you specified.

3 **Run the set up by typing:**

```
# ./es-guisetup
```

The Set Up screen appears.

4 **Follow the screen prompts.**

a. **You are given the opportunity to store all of your setup responses in the file `/var/opt/SUNWsymon/install/setup-responses-file`. The `setup-responses-file` file is useful if you need to duplicate the setup on the current machine on other machines.**

- To continue setup without creating the response file, click Next.
- To create the response file, select Store Response Data and then click Next.

b. **Generate the Sun Management Center security key.**

Type a password in both fields and click Next to generate the security keys.

An encrypted security key is needed for communications between all Sun Management Center processes. The key is generated based on the password you provide, which must be between one and eight characters long and contain no spaces. Entries that are greater than eight characters are truncated to eight characters.

Note – Keep a record of the password you use to generate the security key for this machine in a secure location. You might need to regenerate the key for the machine at a later time. You can also change the security key later, if needed, as described in "Regenerating Security Keys" on page 152.

---

c. **Specify the SNMPv1 community security string.**

The community string is used for SNMP security and is set to `public` by default.

Set the community string to a value other than `public` or `private` to provide better SNMP security.

Caution – The same SNMP community string must be used on all of the machines on which you install Sun Management Center. If you use different community strings on each machine, SNMP communications between the machines and Sun Management Center components will not work.

- If you want to accept the community string default value of `public`, click Next.
- If you want to use a custom community string:
  a. Select Use Custom Community String.

     The community string can be up to 255 characters and must not contain any spaces or blanks.

  b. Type the same community string in both fields, and then click Next.

d. Enter a valid Solaris/Linux user name as the UNIX administrator account and click Next.

The setup process checks whether the SNMP port is in use.

e. If the SNMP port is in use, the SNMP Port Conflict screen appears.

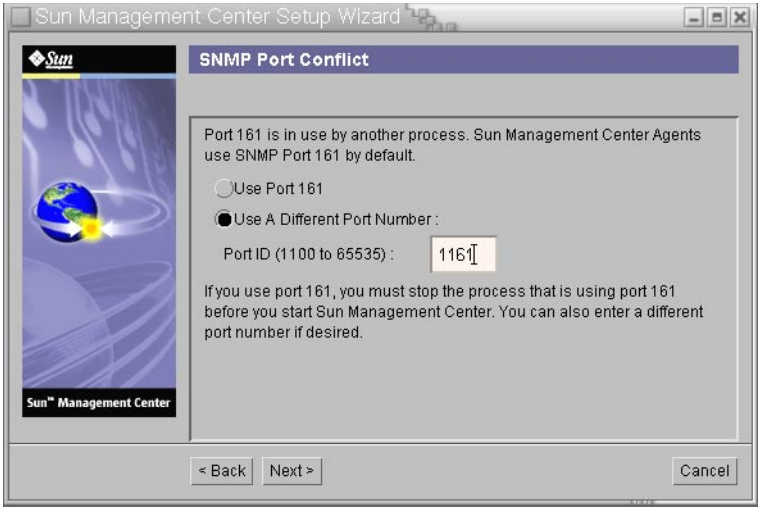

FIGURE 1–4 SNMP Port Conflict Screen

f. Resolve the port conflict.

In most cases, port 161 is the default port assigned to and used by the SNMP daemon. However, other processes or daemons could be using port 161. Several third-party replacements and enhancements for the SNMP daemon exist and could be installed on your system. The Sun Management Center agent is such a daemon.

We recommend that you use a different port number, such as port 1161.

- To assign a different port number to Sun Management Center:
  a. Click Use a Different Port Number.

     For instructions on how to find out whether a port is used, see "To Determine Whether a Port Is Used" on page 158.

  b. Type the port number, for example, 1161, in the Port ID field and click Next.

  Note – Keep a record of this alternate port number. You will need this number if you later install agents using JumpStart or update the Sun Management Center agents using the agent update-image tools.

- To use port 161, select Use Port 161 and click Next.

g. If you use port 161, you are reminded to manually stop and disable the SNMP daemon `snmpdx`.

Note – (On Solaris 10) If you use port 161, you will be reminded to stop and disable the SNMP daemon `SMA` manually.

There is no SNMP daemon on Linux by default.

- To stop and disable the SNMP daemon `snmpdx` automatically, make sure that Stop and Disable SNMP Daemon `snmpdx` has been selected, and then click Next.

Caution – Stopping and disabling the system SNMP daemon does not guarantee that you have stopped the actual process using port 161. To determine the actual daemon process that uses port 161, you must manually review all `/etc/rc`*N* and `/etc/rc`*N*`.d` files, where *N* is 0 through 6 and S. When you have identified the file that defines the process using port 161, you can disable the process by renaming the file. For example,

```
/etc/rc3.d# mv S76snmpdx s76snmpdx
```

You must stop all other processes that use port 161 before you can start Sun Management Center.

- To stop and disable the SNMP daemon `SMA`, navigate to the `/etc/init.d` directory. Type `./init.sma stop`.

h. If any Sun Management Center ports are in use, you are prompted to resolve the port conflict.

The ports are checked in the following order: trap service, event service, topology service, configuration service, platform agent, cst service, metadata service, database, look-up service, Web server default port, and Web server secure port.

If any of the ports are in use, you are prompted to provide an unused port number. Type an unused port number in the field, and then click Next.

i. Generate the Web server security key.

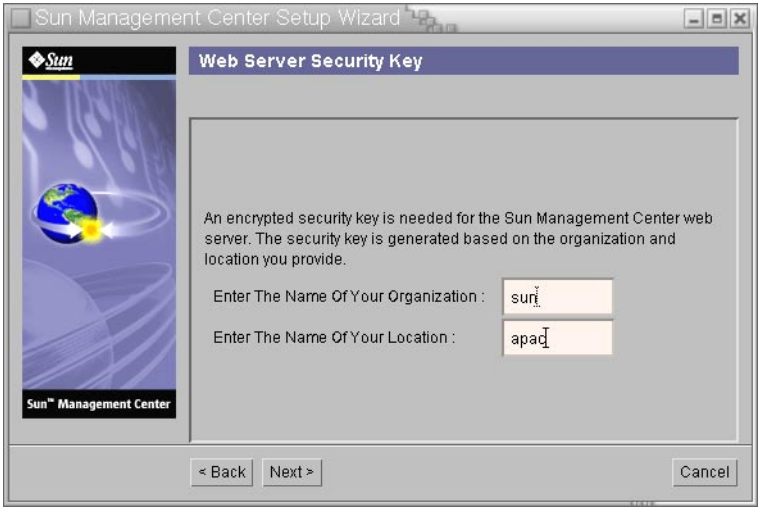

FIGURE 1–5 Web Server Security Key Generation

An encrypted security key is needed for the Sun Management Center Web server. The key is generated based on the name of your organization and the name of your location. The names that you provide must not contain any spaces or blanks.

Type the name of your organization and the name of your location to generate the Web server security key and click Next.

For example, you could type `admin` in the Name of Your Organization field and `headquarters` in the Name of Your Location field.

Note – Keep a record of the entries you use to generate the security key in a secure location in case you need to regenerate the key for a particular machine at a later time.

---

j. Confirm setup selections.

The setup process can take from a few minutes to half an hour or more, depending on the products selected.

If base product setup failed, you are informed that the setup of the base products was not successful. You are directed to see the log file for more details. The name of the log file is provided.

k. If you installed add-ons, click Next to set them up.

Some add-on products are included with the Sun Management Center 4.0 installation media. These add-ons are the ones listed in the Select Add-on Products panel. For information on how to set up each add-on, refer to the Sun Management Center supplement for each add-on. Each supplement provides the setup procedure for the specific add-on.

l. Start the product by selecting the components to start and clicking Next.

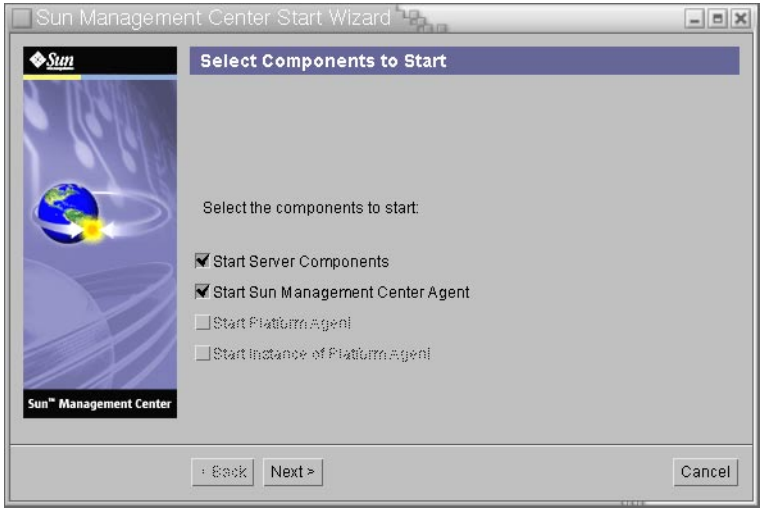

FIGURE 1–6 Start Up the Product

For more information on starting and stopping Sun Management Center, see Chapter 8, "Starting and Stopping Sun Management Center."

Caution – If your network uses Network Address Translation (NAT), click Close. Use the `es-config` command-line utility described in "To Enable NAT Support" on page 171 to configure the machine for NAT before you start Sun Management Center.

5 Start the console by typing this from a terminal window: `./es-start –c&`.

The Java Console login screen appears.

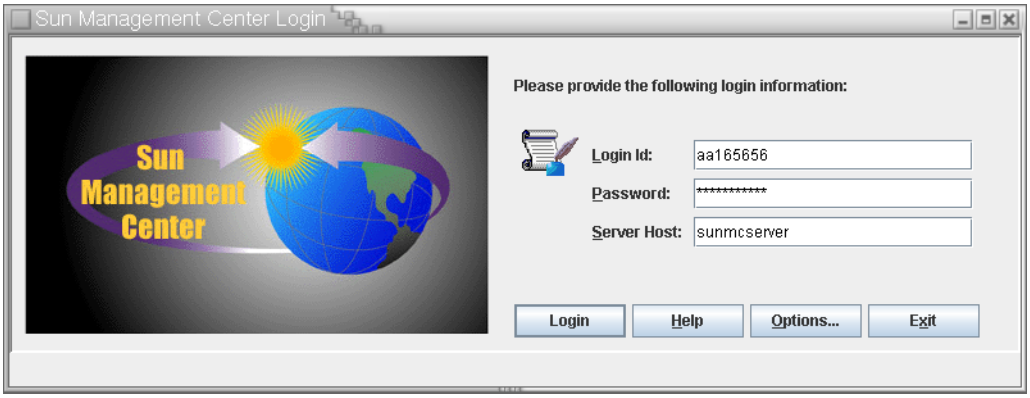

FIGURE 1–7 Console Start Up

Tip – If help does not come up in Java Console, modify the browser path in the `javaconsole.properties` file. This file is available in `/var/opt/SUNWsymon/cfg/` if you have installed the console layer. Otherwise, this file will be available in `/opt/SUNWsymon/cfg/`.

You are prompted to select the default domain and then a screen similar to this appears.

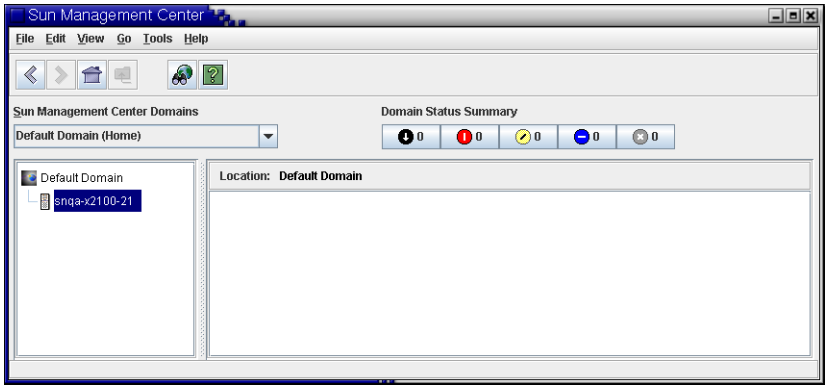

FIGURE 1–8 Sun Management Center Default Domain

Note – (On Solaris 10) When Sun Management Center is installed and set up, the services run as Service Management Facility (SMF) services. Based on the layers chosen, appropriate services will be started.

For information on using the product, see *Sun Management Center 3.6.1 User's Guide*.

(On Solaris 10) Installing and Setting Up a Sun Management Center Server Inside a Whole Root Zone

Zone is a virtualized operating system environment that you can set up for systems that run the Solaris 10 Operating System. Every Solaris system contains a global zone, the default zone for the system. You can create non-global zones. Non-global zone can either be a whole root zone or a sparse root zone.

Before You Begin

The following must be available:

- A whole root zone must be available.
- Host name and IP address must be available for the whole root zone.
- Lockhart 2.2.3 or above must be available in the global zone.
- Apache Tomcat must be available in the global zone.

TABLE 1–5 Task Information

Task	Instructions
Install Sun Cluster 3.1 Update 4 on each cluster node This task is required only if the user wants to configure Sun Management Center in a Sun Cluster environment.	Chapter 2, "Installing and Configuring Sun Cluster Software," in *Sun Cluster Software Installation Guide for Solaris OS.*
Install and configure Sun Cluster HA agent for Solaris Container data service This task is required only if the user wants to configure Sun Management Center in a Sun Cluster environment.	Chapter 1, "Installing and Configuring Sun Cluster HA for Solaris Containers," in *Sun Cluster Data Service for Solaris Containers Guide*
Enable a zone to run in a failover configuration	"To Enable a Zone to Run in a Failover Configuration" on page 38
Configure and install a whole root zone	"To Configure a Whole Root Zone" on page 39 and "To Install a Whole Root Zone" on page 40
Install and set up Sun Management Center inside a whole root zone	"To Install and Set Up Sun Management Center Server Inside a Whole Root Zone" on page 40

▼ To Enable a Zone to Run in a Failover Configuration

1 **Register the `SUNW.HAStoragePlus` resource type.**

```
# scrgadm -a -t SUNW.HAStoragePlus
```

2 **Create a failover resource group.**

```
# scrgadm -a -g solaris-zone-resource-group
```

3 **Create a resource for the zone disk storage.**

```
# scrgadm -a -j solaris-zone-has-resource \
-g wholerootzone-resource-group \
-t SUNW.HAStoragePlus \
-x FilesystemMountPoints=/global/zones/HA
```

4 **Add an entry for logical host in the `/etc/hosts` file on each cluster node.**

```
# scrgadm -a -L -g sunmc-zone-resource-group -j sunmc-lh-rs -l logical host name
```

5 **Enable the failover resource group.**

```
# scswitch -e -j solaris-zone-has-resource
# scswitch -Z -g wholerootzone-resource-group
```

▼ To Configure a Whole Root Zone

1 **Start the zone configuration.**

`#zonecfg -z` *wholerootzone*, where *wholerootzone* is the name of the new whole root zone.

2 **Create a configuration for the specified zone.**

`zonecfg:`*wholerootzone*`> create -b`

3 **Set the zone path.**

The zone path must specify a highly available local file system. The file system must be managed by the `SUNW.HAStoragePlus` resource.

`zonecfg:`*wholerootzone*`> set zonepath=/global/zones/HA/`*wholerootzone*

4 **Set the autoboot value.**

If the autoboot value is set to true, the zone is automatically booted when the global zone is booted. The default value is false.

`zonecfg:`*wholerootzone*`> set autoboot=false`

5 **If resource pools are enabled on the system, associate a pool with the zone.**

`zonecfg:`*wholerootzone*`> set pool=`*pool_default*, where *pool_default* is the name of the resource pool on the system.

6 **Add a network virtual interface.**

`zonecfg:`*wholerootzone*`> add net`

7 **Set the IP address for the network interface.**

`zonecfg:`*wholerootzone*`> set address=10.255.255.255`

8 **Set the physical device type for the network interface.**

`zonecfg:`*wholerootzone*`> set physical=hme0`

`zonecfg:`*wholerootzone*`> end`

9 **Verify and commit the zone configuration.**

`zonecfg:`*wholerootzone*`> verify`

```
zonecfg:wholerootzone> commit
zonecfg:wholerootzone> exit
```

▼ To Install a Whole Root Zone

1. **Install the whole root zone that is configured.**

   `# zoneadm -z` *wholerootzone* `install`, where *wholerootzone* is the name of the whole root zone that is configured.

2. **Boot the whole root zone.**

   `# zoneadm -z` *wholerootzone* `boot`

3. **Log in to the zone console.**

   `# zlogin -C` *wholerootzone*

4. **Log in to the zone.**

   `# zlogin` *wholerootzone*

5. **(required for Sun Cluster environment) Add the entry of the whole root zone to the `/etc/zones/index` file on the cluster node.**

6. **(required for Sun Cluster environment) Copy the `wholerootzone.xml` file to the `/etc/zones/index` directory on the cluster node.**

   ```
   # rcp zone-install-node:/etc/zones/wholerootzone.xml
   ```

7. **Verify the zone installation and configuration.**

   `# zoneadm -z` *wholerootzone* `boot`

   `# zlogin -z` *wholerootzone*

▼ To Install and Set Up Sun Management Center Server Inside a Whole Root Zone

1. **Ensure that you are inside the whole root zone that is configured and installed.**

2. **Follow the steps in the install wizard to install Sun Management Center.**

3. **Edit the `/etc/project` file for shared memory before setup. Otherwise, database setup will fail. For example,**

   ```
   default:3::::project.max-shm-memory=(privileged,2147483648,deny)
   ```

   2147483648 is the sample shared memory in bytes. The shared memory depends on the amount of physical memory.

4. **Follow the steps in the setup wizard to set up Sun Management Center.**

   Sun Management Center supports the server layer of all add-ons inside a non-global zone. Sun Management Center does not support the agent layer of add-ons like ELP Config Reader, X86 Config Reader, and Solaris Container Manager inside a non-global zone.

Sun Management Center Documentation Resources

Sun Management Center has many add-on products. Documentation for Sun Management Center is *not* installed with the product. The documents are available at `http://docs.sun.com`.

TABLE 1–6 Documentation Resources

Environment	Documentation
If you install and use the product in a *production* environment, see	*Sun Management Center 3.6.1 User's Guide*- Describes how to use the product. *Sun Management Center 4.0 Installation and Configuration Guide*- Describes how to install and configure the product.
If you use the product with *other software products or add-ons* (listed alphabetically), see	
Advanced System Monitoring	Not Applicable
Hardware Diagnostic Suite 2.0	*Hardware Diagnostic Suite 2.0 User's Guide*
Solaris Container Manager 4.0	*Installing and Administering Solaris Container Manager 4.0*
Performance Reporting Manager	*Sun Management Center 3.6.1 Performance Reporting Manager User's Guide*
Service Availability Manager	*Sun Management Center 3.6.1 Service Availability Manager User's Guide*
Sun Cluster	Task Map: Installing the Sun Cluster Module for Sun Management Center in the *Sun Cluster Software Installation Guide for Solaris OS*
System Reliability Manager	*Sun Management Center 3.6.1 System Reliability Manager User's Guide*

TABLE 1–6 Documentation Resources *(Continued)*

Environment	Documentation
Unicenter TNG	*Sun Management Center CA Integration Package User's Guide for Unicenter TNG*
If you use the product with these *hardware platforms* (listed alphabetically), see	
ELP Config Reader (CommonConfigReader)	See Sun Fire V210/V240/V250/V440/1500/2500
Desktop	See Sun Blade 100/150/1000/1500/2000/2500
Dynamic Reconfiguration for Sun Fire high-end and midrange	See Sun Fire V880/V890/15K to 3800
hPCI+ board and CP2140 system controller for Sun Fire high-end systems	See Sun Fire high-end systems
Netra 20/120/1280	*Sun Management Center 3.5 Supplement for Netra Servers*
Netra 240/440	*Sun Management Center 3.6 Supplement for Sun Fire, Sun Blade and Netra Systems*
Netra T4/20	*Sun Management Center 3.5 Supplement for Netra Servers*
PCI+ support for Sun Fire midrange systems	See Sun Fire midrange systems
Sun Blade 100/150/1000/2000	*Sun Management Center 3.5 Supplement for Workstations*
Sun Blade 1500/2500	*Sun Management Center 3.6 Supplement for Sun Fire, Sun Blade and Netra Systems*
Sun Cobalt LX50	See the software product, Sun Management Center Linux Agent
Sun Fire V60x/V65x/V20z/V40z	See the software product, Sun Management Center Linux Agent
Sun Fire 280R/V480/V490/V880/V890	*Sun Management Center 3.5 Supplement for VSP High-End Entry Servers (Workgroup Servers)*
Sun Fire high-end E25K/E20K/15K/12K	*Sun Management Center 3.5 Version 6 Release Notes and Supplement for Sun Fire High-End Systems*
Sun Fire midrange E6900/E4900/6800/4810/4800/3800	*Sun Management Center 3.5 Version 6 Release Notes and Supplement for Sun Fire Midrange Systems*
Sun Fire entry-level midrange E2900	*Sun Management Center 3.5 Version 6 Release Notes for Sun Fire Entry-Level Midrange Systems*
	Sun Management Center 3.5 Version 6 Supplement for Sun Fire Entry-Level Midrange Systems

TABLE 1–6 Documentation Resources *(Continued)*

Environment	Documentation
Sun Fire V100/V120	*Sun Management Center 3.5 Supplement for Netra Servers*
Sun Fire V210/V240/V250/V440	*Sun Management Center 3.6 Supplement for Sun Fire, Sun Blade and Netra Systems*
Sun LX50	See the software product, Sun Management Center Linux Agent
UltraSPARC IV CPU board support for Netra 1280	Requires midrange systems firmware 5.17.0 and Netra-T add-on packages for Sun Management Center
UltraSPARC IV CPU board support for Sun Fire 6800/4800	See Sun Fire 6800/4800

◆ ◆ ◆ CHAPTER 2

Installation Overview

This chapter provides overviews and examples of the installation and setup process. This chapter also provides a brief overview of the Sun Management Center and its components. Sizing information is provided in Appendix C, "Determining Hardware Resources."

This chapter discusses the following topics:

- "Sun Management Center Overview" on page 45
- "Supported Platforms" on page 50
- "Sample Sun Management Center Fresh Installation" on page 51
- "Using Agent-Update to Upgrade Agents to Sun Management Center 4.0" on page 53
- "To Install the Sun Management Center Console on Microsoft Windows" on page 54
- "Service Tag Registration" on page 54
- "Sun Management Center Java Console Using Java Web Start" on page 55

Sun Management Center Overview

Sun Management Center software is an open and extensible system management tool that enables you to:

- Perform remote configuration
- Monitor performance
- Isolate hardware and software faults

The Sun Management Center product is divided into a set of three base components. This section discusses the following topics:

- "Sun Management Center Architecture and Base Components" on page 46
- "Sun Management Center Base Add-on Products" on page 47
- "Additional Add-on Products" on page 48

The installation and setup of all Sun Management Center software, including add-on products, can be performed with a single installation command as described briefly in Chapter 1,

"Installing Sun Management Center 4.0," and in greater detail in Chapter 6, "Installing and Updating Agents and Installing on Microsoft Windows."

Sun Management Center Architecture and Base Components

The Sun Management Center software management framework is based on a three-tier architecture consisting of the Sun Management Center console, server, and agent components, which provide the core Sun Management Center functions.

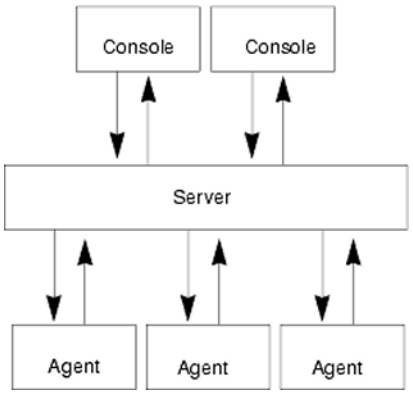

FIGURE 2–1 Sun Management Center Basic Architecture

- The Server executes management tasks and sends requests to Sun Management Center agents to perform management tasks. The server stores network hardware and software information as well as network and Sun Management Center configuration in a database. The Sun Management Center server is normally installed on a single dedicated machine, and only one Sun Management Center server is required on a network.
- The Agent responds to the Sun Management Center Server directives, accesses management information on the local machine, provides alarm determination, and monitors local resources. The agent is automatically installed on the Sun Management Center server machine and must be separately installed on any machine that you wish to monitor.
- The Java Console is the graphical user interface that you use to monitor your network and run network management tasks.
- The web console is an alternate user interface to the Java Console and has a subset of the Java Console's features.
- The Sun Management Center Web server is installed with the server layer on the same host as the server layer.

The Web Server enables you to access the Sun Management Center web console from any system that supports any one of the following Web browsers:

- Internet Explorer 6.0
- Mozilla 1.7
- Firefox 2.0

Sun Management Center initiates operations by sending requests to the Sun Management Center agents installed on each system. Based on SNMP technology, the agents process server requests. The agents also act autonomously, collecting and processing data locally. Agents can act on observed conditions to send SNMP traps (messages sent when errors or specific events occur on the network) or execute management operations. The agents can raise alarms or initiate specific actions through customized rules and thresholds even when connection to the manager is severed. For further information about SNMP, see "Security Keys and SNMP Community String" on page 60 and "SNMP Daemons and Legacy Agents" on page 153.

Management and monitoring functions of the Sun Management Center agent are structured into loadable modules. The agent modules provide flexibility, enabling you to establish as little or as much monitoring and management as required on a per system basis. Additional modules can be dynamically loaded into Sun Management Center agents from the Sun Management Center console without disruption of the management or agent systems. For further information about Sun Management Center modules, see Appendix C, "Sun Management Center Software Modules," in *Sun Management Center 3.6.1 User's Guide*.

Sun Management Center Base Add-on Products

Sun Management Center provides four add-ons that are distributed as part of the Sun Management Center distribution on the media or the Web download image:

- Advanced System Monitoring - Provides full kernel reader functionality, Solaris health monitoring, file system monitoring, directory size monitoring, process monitoring, IPv6 protocol monitoring, MIB-II Instrumentation, and log viewing.
- Performance Reporting Manager - Adds analysis, reporting, and graphing capabilities.
- Service Availability Manager - Tests and measures the availability of network services including DNS and NIS naming services, Web server, directory, LDAP, Telnet, FTP, mail, and Solaris calendar services.
- System Reliability Manager - Enhances reliability, helping to increase service levels and decrease administrative costs.

For detailed information about base add-on and additional add-on products, see the Sun Management Center Web site at http://www.sun.com/software/solaris/sunmanagementcenter/ .

Additional Add-on Products

Depending on the hardware platform on which you are installing Sun Management Center software, your system might require additional platform-specific add-ons. The add-on products provide additional functionality such as additional support for specific Sun hardware architectures, configuration readers, and new agent management. For information about a specific hardware platform, see the Sun Management Center supplement for your hardware platform. For information about additional add-ons for Sun Management Center, see the http://www.sun.com/software/solaris/sunmanagementcenter/ Web site.

Note – You should always read your Sun Management Center supplement for architecture-specific installation instructions before installing Sun Management Center software on a particular hardware platform.

Add-on products are released in one of the two ways:

- As part of the Sun Management Center distribution (Media or Web download image)
- Separately (add-on product only)

Add-on products released as part of the Sun Management Center distribution are installed during the installation process. The basic components are installed first, followed by installation of the add-on products.

Many add-on products offer architecture-specific support. Therefore, the installation checks your hardware. For example, if an add-on product supports workstation systems, you are given the opportunity to install the workstation add-on when you install Sun Management Center on a workstation host. In most cases, user confirmation is required prior to installing an add-on product.

If the add-on product is released separately from the Sun Management Center distribution, the add-on product includes its own installation instructions in the accompanying supplement.

Sun Management Center Directories

After a successful installation and setup on the Solaris platform, directories are created as shown in Table 2–1.

On Microsoft Windows, only the `C:\Program Files\SUNWsymon` directory is created.

TABLE 2–1 Sun Management Center Default Solaris Directories

Directory	Description
`/opt/SUNWsymon`	Root directory that contains the infrastructure and applications of Sun Management Center

TABLE 2–1 Sun Management Center Default Solaris Directories *(Continued)*

Directory	Description
`/etc/opt/SUNWsymon`	Contains the `init` scripts for Sun Management Center software applications
`/var/opt/SUNWsymon`	Contains the Sun Management Center configuration and data files for your system

Sun Management Center System Files

This section describes the system files modified by installation of Sun Management Center, and provides an overview of operating system patches.

`/etc/group` File

The Sun Management Center software installation program adds the groups `esadm`, `esdomadm`, and `esops` to the local `/etc/group` file on the machine. A group entry is created for the database group `smcdbg` in `/etc/group` on the machine where the Sun Management Center server is installed.

The user specified as the administrator during Sun Management Center setup is added to the `esadm` and `esdomadm` groups. For example, if the root user account is specified as the Sun Management Center administrator, the installation program appends the following lines to `/etc/group`:

```
smcdbg::98194049:
esadm::1000:root
esdomadm::1001:root
esops::1002:
```

`/etc/passwd` File

The Sun Management Center software installation adds the user `smcdbu` to the `/etc/passwd` file. The `smcdbu` user account is needed to run the database on the Sun Management Center server layer.

`/var/opt/SUNWsymon/cfg/esusers` File

The `/var/opt/SUNWsymon/cfg/esusers` file is used to define authorized Sun Management Center users. For further information, see "Users, Groups, and Roles Overview" on page 57.

Supported Platforms

For the latest information on supported hardware platforms, see the Sun Management Center Web site at `http://www.sun.com/sunmanagementcenter`.

Sun Management Center uses modules to monitor and manage the resources of systems, applications, and network devices. The module defines a collection of objects to be monitored by the agent. The Config-Reader module is required for hardware configuration information.

The following table provides examples of supported platforms for Sun Management Center and its add-ons.

TABLE 2–2 Examples of Supported Platforms

Operating System	Sun Management Center Layers	Example Hardware
Solaris (x86/x64)	Server , agent, console, add-ons **Note –** Some add-ons are platform-specific.	■ Sun Fire x4200/x4200 M2 ■ Sun Fire x4500 ■ Sun Fire x4600 ■ Sun Blade 8000, x8400, x8420
Solaris (SPARC)	Server, agent, console, add-ons **Note –** Some add-ons are platform-specific.	■ Sun Blade 2500 ■ Netra X1, Netra t1 100/105 ■ Sun Fire V880/V890 ■ Sun SPARC Enterprise T1000/T2000
Solaris (x86), Linux	Agent, some add-ons	■ Sun Fire x4200/x4200 M2 ■ Sun Fire x4500 ■ Sun Fire x4600 ■ Sun Blade 8000, x8400, x8420
Windows	Console layer and some add-ons	Pentium 233MHz or higher

The Config-Reader and the Dynamic Reconfiguration modules are not supported on all Sun hardware platforms. However, all other base Sun Management Center modules are supported on Sun hardware platforms.

For more information on base modules, refer to the *Sun Management Center 3.6.1 User's Guide*.

Sample Sun Management Center Fresh Installation

The following sample scenarios provide summaries of the major steps required to install Sun Management Center for the first time and to upgrade previous versions of Sun Management Center to Sun Management Center 4.0.

Note – To install, upgrade, and set up Sun Management Center, you must log in as root on each machine.

In this example, the Sun Management Center server, agent, console, and the Advanced System Monitoring (ASM) add-on are to be installed on three machines as follows:

- The console is to be installed on machine A. The ASM add-on is to be installed machine A.
- The server is to be installed on machine B. The ASM add-on is to be installed machine B.

  The agent is automatically installed with the server.
- The agent is to be installed on machine C. The ASM add-on is to be installed machine C.

Sun Management Center has not been installed on any of the machines.

The following procedure summarizes the major steps required to install Sun Management Center and ASM.

▼ To Install Sun Management Center and ASM

1. **Make sure each machine is a supported platform.**

   See "Supported Platforms" on page 50.

2. **Make sure each machine has the required resources.**

   See "Preinstallation Checklist" on page 66.

3. **Determine whether you will install from the media or from a installation image.**

   See "Determining the Installation Source" on page 70.

4. **Install the server on machine B as described in "Installing Sun Management Center" on page 26.**

   During installation:

   a. **Select the server layer. The agent layer is automatically selected.**

   b. **Select the Advanced System Monitoring add-on.**

      Advanced System Monitoring enables advanced monitoring capabilities for the server machine. For further information, see "Additional Add-on Products" on page 48.

5 **Set up the Sun Management Center server on machine B.**

When the system has rebooted, type the command **`/opt/SUNWsymon/sbin/es-guisetup`** to set up the Sun Management Center server.

When setting up the server:

- Provide a password to generate the security key.

  The password must be the same for all Sun Management Center machines.
- Provide an SNMPv1 security string.

  The security string must be the same for all Sun Management Center machines.

When server setup is finished, the Advanced System Monitoring setup is performed.

When Advanced System Monitoring setup is finished, you are given the option to start Sun Management Center components. Start all components.

6 **Install the agent on machine C as described in "Installing Sun Management Center" on page 26.**

During installation:

a. **Select the agent layer.**

b. **Select the Advanced System Monitoring add-on**

Advanced System Monitoring enables advanced monitoring capabilities for the agent machine. For further information, see "Additional Add-on Products" on page 48.

Note – If you need to install the agent on several machines, you can create an agent-update image and install the agent using the image as described in New LINK.

When the agent installation is finished, you are given the option to run setup. Run setup.

7 **Set up Sun Management Center agent on machine C.**

When setting up the agent:

- Provide the same security key password that you provided in Step 5.
- Provide the same SNMPv1 community string that you provided in Step 5.
- Provide the name of the Sun Management Center server machine.

When agent setup is finished, you are given the option to start the Sun Management Center agent. Start the agent.

8 **Install the console on machine A as described in "Installing Sun Management Center" on page 26.**

During installation:

a. **Select the console layer.**

b. Select the Advanced System Monitoring add-on.

Advanced System Monitoring includes console components and menus.

When the console installation is finished, you are given the option to run setup. Run setup.

When setup is finished, start the console by typing the command `/opt/SUNWsymon/sbin/es-start -c`.

Using Agent-Update to Upgrade Agents to Sun Management Center 4.0

In this example, the systems in the network have Sun Management Center 4.0 and Sun Management Center 3.6.1 installed as follows:

- The Sun Management Center 4.0 console and agent are installed on machine A.
- The Sun Management Center 4.0 server and agent are installed on machine B.
- The Sun Management Center 3.6.1 agent is installed on machines C through Z.

The following procedure summarizes the major steps required to upgrade machines C through Z to the Sun Management Center 4.0 agent.

▼ To Upgrade Agents to Sun Management Center 4.0 Using Agent-Update

1. **Make sure that all Sun Management Center components on the Sun Management Center server machine B are running as described in "Starting Components on the Solaris Platform" on page 140.**

2. **Create an agent-update image as described in "To Create an Agent-Update Image Using `es-gui-imagetool`" on page 81.**

3. **Apply the agent-update image to machines C through Z as described in "To Install or Update Agents From an Agent-Update Image Using `agent-update.bin`" on page 99.**

   While applying the agent-update image on each machine:

   - Provide a password to generate the security key.

     The password must be the same password you provided when you set up Sun Management Center 4.0 server.

   - Provide an SNMPv1 security string.

     The security string must be the same security string you provided when you set up Sun Management Center 4.0.

To Install the Sun Management Center Console on Microsoft Windows

If a previous Sun Management Center console version is installed on the Microsoft Windows machine, uninstall the console as described in "Uninstalling Sun Management Center From the Microsoft Windows Platform" on page 179.

To install the Sun Management Center 4.0 console, install the console as described in "Installing Sun Management Center 4.0 on Microsoft Windows" on page 128.

Service Tag Registration

Sun Management Center 4.0 registers its own service tag by using the Solaris `stclient` interface. Information such as the product name, product version, architecture, and zone name (if any) are registered. Sun Management Center 4.0 also inserts its unique product identifier information in the service tag registry, which identifies this product within Sun Microsystems. However, sensitive information like the host name or hardware are not inserted.

Note – Sun Management Center only inserts the information. You can send this information back to Sun Microsystems using the Product Client Registration mechanism of the Sun Connection product. Sun Management Center does not, in any form, transmit this information back to Sun on its own.

When you invoke Sun Management Center, the installation performs the following tasks:

- Checks whether the registration is for an agent or a server.
- Retrieves the unique resource identifier of the server for an agent-only installation from the installation registry file.
- Registers the agent in the server host's `stclient` registry file. This parent-child relationship mapping enables the Sun Microsystems Incorporation (SMI) central server or the registration tags central repository to determine the number of nodes that a given registered Sun Management Center server is managing.

Solaris Packages for Service Tags

For Solaris 8, 9, and 10 versions, service tags are available as Solaris packages. You can download a service tag for the Solaris Operating System from `http://www.sun.com/download/` . The Solaris packages are as follows:

- Solaris 10 `x86: SUNWservicetagr SUNWservicetagu`

- Solaris 10 `SPARC: SUNWservicetagr SUNWservicetagu`
- Solaris 9 `SPARC: SUNWstr`
- Solaris 8 `SPARC: SUNWstr`

Sun Management Center Java Console Using Java Web Start

Sun Management Center 4.0 supports the Java Web Start based console. To start the Sun Management Center Java console through Java Web Start, you must install both the server and the console layers. When the setup detects that both the server and console layers are installed, the following tasks are processed:

- The client API JAR files in the *BASEDIR*`/SUNWsymon/classes` directory are copied and signed in *BASEDIR*`/SUNWsymon/web/console/lib`.
- The localization messages files in the `SUNWsymon/lib/locale` directory are combined into a JAR file and signed.
- The JAR files in the *BASEDIR*`/SUNWsymon/apps/classes` directory are combined into a JAR file and signed.

The *BASEDIR*`/SUNWsymon/web/console/lib` directory forms the basis of the Java Web Start configuration for Sun Management Center. A script creates the Java Network Launch Protocol (JNLP) file at runtime using this directory as the web server's web application directory.

The setup uses the location and organization that you specify during the web console setup to generate the keystore for authenticating the Java Web Store based console certificates.

▼ To Start the Java Web Start Based Sun Management Center Console

1. **Type** `http://`*server-name*`:`*webserver-port*`/smconsole.jnlp` **in your browser.**
2. **Type your login name and password.**

◆ ◆ ◆ CHAPTER 3

Configuration Considerations

This chapter discusses items that can adversely affect your Sun Management Center installation or upgrade. This chapter provides the following topics:

- "Security Recommendations" on page 57
- "Management Strategies" on page 61

Security Recommendations

This section provides security recommendations for Sun Management Center access, server and agent components, and security keys.

Users, Groups, and Roles Overview

Before you set up Sun Management Center users and user groups, you should understand the types of management operations that are possible so you can assign these operations to the appropriate user classes. Careful planning of user groups and roles helps ensure proper configuration management, and data integrity and security of management information and system resources.

No user may gain access to Sun Management Center without first being explicitly identified in the master access file `/var/opt/SUNWsymon/cfg/esusers`. To grant access to Sun Management Center, the user name must be added to `/var/opt/SUNWsymon/cfg/esusers`. The user may then log into Sun Management Center using the user name and password.

When a user logs in, Sun Management Center uses PAM based authentication to authenticate users. Sun Management Center controls access and defines the user privileges based on the following functional roles:

- **Domain Administrators** – This role is the highest-level role, which permits members to create top-level domains in a server context and to assign privileges for other Sun Management Center users within these domains. The domain administrator can create customized configurations for specific topology environments by creating specific domains and assigning user privileges for those domains. Users are considered domain administrators if the users are members of the `esdomadm` UNIX user group.
- **Administrators** – This role is the administration role for all operations outside the topology system. Administrators can perform privileged operations, including the loading of modules and the configuration of managed objects and data properties. Administrators can also specify access control at the agent and module level. This control makes this role instrumental in the establishment and maintenance of entitlement policies. Users are considered administrators if the users are members of the `esadm` UNIX user group.
- **Operators** – This role allows system users to configure their own domains and topology containers. The operator role also allows the users to configure managed objects with respect to their data acquisition and alarms, and to view management information. Although operators may enable or disable management modules, operators cannot, by default, load modules or alter access control privileges. Operators therefore represent a class of user that can effectively use the product and fine-tune its operation but who cannot affect major configuration or architectural changes. Users are considered operators if the users are members of the `esops` UNIX user group.
- **General Users** – This role is for users who are not explicitly members of the above three groups. General users are not granted extensive privileges and can by default only view management information and acknowledge alarms. The general user role is well suited for first-level support, in which problem identification, re-mediation, and escalation are the primary goals.

In large organizations, the Sun Management Center security roles are likely to map directly onto existing systems administration and support functions. For others, the process could be more involved, as the mapping between a corporate function and a product role could be less clear. In some cases, assignment of all logical roles to a single user could be warranted.

Note – Specification of privileges is flexible and does not need to be confined to the four Sun Management Center security roles.

Sun Management Center privileges can be explicitly specified at the domain, topology container, agent, and module levels. The privileges specification can reference any arbitrary UNIX user or group, with the groups named above being used only by convention. The Sun Management Center privileges groups allow the use of existing account configurations when assigning functional roles. Although naming explicit users when assigning privileges is not recommended, the use of UNIX groups can be convenient in environments where such UNIX groups are already established.

For further information on security roles, groups, and users, see "Setting Up Users" on page 131 andChapter 18, "Sun Management Center Security," in *Sun Management Center 3.6.1 User's Guide*.

Sun Management Center Internal Security

This section describes the security process that is used between Sun Management Center components.

Server-to-Agent Security

Communication between the Sun Management Center server and its managed nodes is primarily performed using the industry standard Simple Network Management Protocol version 2, employing the User Security model SNMP v2usec. The SNMPv2 mechanism is well suited to mapping the user credentials from the server layer to agent-side operations. SNMPv2 is the primary mechanism for ensuring that access control policies cannot be circumvented.

Sun Management Center also supports SNMP v1 and v2 with community-based security. Although not as robust from a security standpoint, support for SNMP v1 and v2 is important for integration with other devices and other management platforms. In environments where the use of these mechanisms is undesirable, the access control specification mechanism can be used to restrict or forbid access to processes using the SNMP v1 and v2 protocols. The Sun Management Center agent can also understand and respond to SNMPv3 queries from third-party applications.

For customized operations where data streaming could be a requirement, a probe mechanism is also employed. The probe mechanism is initiated by SNMP operations. When initiated, probe operations use a streaming TCP connection to implement bidirectional, potentially interactive services on the managed node, for example, log file viewing. Since the probe mechanism uses SNMP communication, no encryption of the packet payload is performed.

Cross-Server Context Security

When Sun Management Center communicates with managed nodes outside the local server context, the security model ensures that operations are performed as the generic `public` SNMPv2 usec user. Use of `public` greatly restricts privileges and limits users to the perusal of management data.

Client-to-Server Security

Communication between the Sun Management Center server layer and clients such as consoles and command-line interfaces is performed using Java Technology Remote Method Invocation (RMI) in conjunction with a comprehensive product-specific security model. The security model allows clients to operate in either low, medium or high security modes, which affects the level of message authentication that is performed.

- **Low**: No message authentication. Only the user password is checked at time of login.
- **Medium** (default): Console-to-server authentication only, for example, server authentication of incoming console messages.
- **High**: Both console and server authenticate messages.

Because of the potential performance impact of the higher security levels, you should carefully consider your message authentication requirements.

Module Security

Sun Management Center provides module level security for *Service Management Facility*(SMF), *Module Configuration Propagation* (MCP), and *Solaris Container Manager* modules. Any user will be able to load any module on the Sun Management Center agent. However, for setting/changing actions or values on the module, the user needs to have prior permissions. Module security is provided in two ways: RBAC (Role Based Access Control) and local file access.

RBAC is based on profiles. Users having the required profiles can perform profile-specific tasks. RBAC can be implemented by running Solaris system administration commands.

Local file access is independent of the OS. The users need to have the required permissions to be added to the local access file. Security through local file access can implemented by using the `es-config` command. For more information refer to "Using `es-config`" on page 160.

Security Keys and SNMP Community String

When you install and then set up the Sun Management Center agent on a separate machine, you are prompted to provide a password that is used to generate the security key for the agent. The password should be the same password as the password you specified during setup of the Sun Management Center server. The Sun Management Center server and agent cannot communicate with each other if the server and agent have different security keys. For information on how to regenerate security keys, see "Regenerating Security Keys" on page 152.

During setup, you are also prompted to either accept the default SNMP community string (public), or specify a private community string. The SNMP community string is essentially a password for a privileged internal account. As such, this string potentially can be used to mimic the server layer if used with generic SNMPv2 usec tools. Therefore, do not use the default community string. Specify a separate, private community string for each server context.

Treat the security password and the SNMP community string with the same significance as a superuser password.

Management Strategies

This section provides an overview of Sun Management Center management approaches. Understanding the systems under management and their implementation can contribute to the successful deployment and use of Sun Management Center.

Server Contexts

The highest-level building block for the organization of management information is the server context. Each Sun Management Center server provides only one server context. Each server context might have one or more managed systems that report to the server context. A managed system can report to only one server context.

Communication between server contexts is typically restricted, and management events are not forwarded between servers. The use of server contexts should parallel the structure of the groups within the organization using Sun Management Center. Server contexts should also parallel the responsibilities of these groups with respect to systems management. The administrative group that owns the server also owns the management data within the server. This group controls all access to all system and network resources managed by the Sun Management Center server.

Domain Strategies

Domains are the highest-level construct within a server context. Domains provide individual environments within which you can create custom topology configurations. Domains are very generic. You can create a domain to represent information specific to users, environments, or any other logical division. Managed systems may appear in more than one domain, enabling multiple, overlapping domains to exist. You can therefore construct several different representations of the same management information and system resources.

Domains typically contain a hierarchical collection of Sun Management Center groups that you can use to aggregate sets of managed systems, Sun Management Center management modules, or managed objects. This hierarchy defines the visible breakdown of information in the user interface. This hierarchy also defines the rules for aggregating management status and providing this status to high-level summaries. This capability and flexibility makes domains, and the containers within them, a powerful tool for the construction of logical management models of a specific environment.

Organization Strategies

Sun Management Center contains a powerful Discovery Manager, which can be used to automatically and periodically examine the local environment to identify all managed nodes. While instrumental in the configuration of Sun Management Center, the Discovery Manager structures management information along physical, network-based lines.

Depending on the nature of your environment, using the Discovery Manager might not be the most useful way to view management information and aggregate status information. Conversely, using the Discovery Manager is very useful for identifying all managed systems prior to organizing your Sun Management Center environment. For further information about the Discovery Manager, see Chapter 4, "Adding Objects to the Topology Database Using the Discovery Manager," in *Sun Management Center 3.6.1 User's Guide*.

Other ways to organize the Sun Management Center environment include:

- Physical
- Environmental
- Application
- Service

In each of the Sun Management Center environments, emphasis should be placed on completeness. The breadth of coverage must be sufficient to pro-actively or at least immediately identify system problems. Failures in devices, hosts, services, or processes that are critical to an environment but that are not being monitored by Sun Management Center can cause gaps in the coverage that will affect the overall effectiveness of an implementation. To this end, you should consider customized modules, proxy solutions, and even information from other server contexts when building your Sun Management Center management environments.

Physical Organization

The physical locations of managed systems might not correspond to the networks on which the systems reside. In this case, you might want to create a new domain in which the Sun Management Center groups are structured on physical lines. Cities, sites, buildings, floors, server rooms and even equipment racks can easily be represented. The systems at these locations can be copied and pasted from the domain in which discovery was performed using the Discovery Manager.

To configure a Sun Management Center environment along physical lines requires you to know where the systems are physically located. This organization can become a valuable and easily accessed reference. A physical organization also defines a status roll-up path, enabling problems to be isolated on physical lines and assisting in the identification of common-mode failures. For example, a localized power outage might affect systems that reside on several networks but will only appear in one physical area.

Caution – You must keep the information up-to-date yourself. This information is not automatically updated when discoveries are performed. The discovery process does not automatically track assets that are physically relocated.

Environmental Strategies

Your organization might have several logical environments whose locations and resources overlap, but whose logical functions are distinct. Logical environments include corporate groups such as sales versus engineering, functional groups such as retail versus institutional, and even logical software environments such as user acceptance versus production.

In all of these cases, consider producing separate Sun Management Center topology groups that isolate the elements of each group. Separate topology groups prevent problems in one group from raising alarms in another group. This isolation is particularly important when configuring the Sun Management Center environment for systems that include multi-domain servers. The different domains might be performing functions for completely different groups or environments. The inclusion of the different domains in a single topology group could result in misleading information and alarm notifications.

Application Organization

Applications are complex entities in systems management. Determining what constitutes an application from a management perspective can be difficult, particularly when applications are distributed and rely on many external services to operate properly. For this reason, you should organize applications before installing Sun Management Center. Do not defer consideration of the cause and effect relationships until a problem is actually encountered. Some initial analysis contributes to increasing the efficiency with which application-level problems are resolved.

When configuring an application-oriented Sun Management Center environment, the topology containers typically contain a mix of hosts, modules, and specific objects. Some hosts might be completely dedicated to that application, while other hosts might only be partially responsible for the application's proper operation. For example, in the case of an application that makes use of a corporate directory service, the health of the directory service is critical to the operation of the application, but the health of other services on the server are not critical to or needed by the application.

Services Responsibilities

In some circumstances, a group or administrator might be responsible for a specific service but not the underlying resources. For example, a database administrator might be responsible for the database service availability and data integrity, but not responsible for the hardware or operating system administration. A Sun Management Center domain that is created specifically for the database services can assist the database administrator in performing the necessary tasks. General user role privileges can assist the administrator by providing access to general system and network status.

Managing Large Enterprises

Several facilities in Sun Management Center can help you to simplify management of large enterprises. One facility is Reference Domains, which allow groups to share management information across server contexts. Another feature is the Grouping Operations system, which facilitates performing large, highly distributed management operations.

The grouping system enables you to set data property values, and modify data property attributes. You can also load, unload, enable, and disable modules in your Sun Management Center server environment. All of these operations can be applied to a large group of managed systems and nodes. These groups can be defined using existing topology structures or flexible, discovery-style filters. Grouping operations can be saved and performed multiple times. A scheduler is available to automate grouping operations. Grouping operations also include Module Configuration Propagation (MCP), a facility in which a reference node's entire configuration can be cloned by pulling it to the server and then pushing it to all similar nodes.

For further information about Reference Domains, see "Monitoring Remote Administrative Domains" in *Sun Management Center 3.6.1 User's Guide*. For further information about group operations, see Chapter 13, "Managing Group-related Jobs," in *Sun Management Center 3.6.1 User's Guide*.

◆ ◆ ◆ CHAPTER 4

Preparing Systems for Sun Management Center Upgrade and Installation

This chapter provides procedures for preparing your Solaris and Microsoft Windows systems for Sun Management Center 4.0 installation.

This chapter discusses the following topics:

- "Compatibility With Other Software and Earlier Versions of the Product" on page 65
- "Preinstallation Checklist" on page 66
- "Prerequisite Packages" on page 67
- "Solaris Systems With More Than 4 Gbytes RAM" on page 67
- "Java Environment Variables and Path" on page 68
- "Determining the Installation Source" on page 70

Compatibility With Other Software and Earlier Versions of the Product

Sun Management Center 4.0 software is compatible with the following software:

- Any Simple Network Management Protocol (SNMP) v1, v2, v2 usec, and v3 entities, regardless of the Operating System and architecture.
- Solstice Enterprise Agents software for Solaris 8, Solaris 9, and Solaris 10 Operating System versions. Solstice agents can coexist with Sun Management Center agents on the same host system if you configure the Solstice agents as subagents of the Sun Management Center agent. See "Configuring a Legacy SNMP Agent as a Subagent of an Agent" on page 154.

Sun Management Center software does *not* offer the following features:

- Backward compatibility with the Solstice SyMON™ 1.x software
- SunVTS™ support in the Sun Management Center 4.0 software

Preinstallation Checklist

The following list describes the tasks that you need to perform before you can install Sun Management Center 4.0, or upgrade an existing Sun Management Center installation to Sun Management Center 4.0.

- ❒ Determine which components of Sun Management Center 4.0 and which product add-ons you want to install on each machine on your network.
  - Make sure the platforms on which you want to install Sun Management Center or Sun Management Center components are supported platforms. See "Supported Platforms" on page 50.
  - For minimum RAM and disk space requirements, see Chapter 1, "Installing Sun Management Center 4.0." Also, refer to the Sun Management Center add-on product supplements at `http://docs.sun.com`.

    Total the amount of RAM and disk space needed for the selected components and add-on products.
  - Ensure that each machine is running the correct operating system for the components you want to install. See Table 1–3 and Table 1–4.
- ❒ Ensure that the correct JDK version is installed on machines that are designated for the Sun Management Center server and console components. See Table 1–3. You can download the JDK software from `http://java.sun.com/`.
- ❒ Set the `PATH` and the `JAVA_HOME` environment variables.
  - For the Solaris platform:

    Make sure that the `DISPLAY` and `JAVA_HOME` environment variables are set in any account that is used to run the Sun Management Center Web or Java console.

    The default location for JDK versions 1.5 is `/usr/j2se`. See "To Set `JAVA_HOME` and `PATH` on the Solaris Platform" on page 68.
  - For the Microsoft Windows platform:

    Ensure the path to the JDK `bin` directory is added to the Microsoft Windows `%PATH%` environment variable.
- ❒ If any machine on your network has 4 Gbytes of RAM or more, install the 64–bit compatibility patch `SUNWscpux` on the machine. See "Solaris Systems With More Than 4 Gbytes RAM" on page 67.
- ❒ Select the installation source.

  You can install from a media or from installation images. See "Determining the Installation Source" on page 70.

Prerequisite Packages

The following Solaris operating environment packages are required by the Sun Management Center 4.0 server layer, and are included as part of the Solaris developer environment installation.

- `SUNWsprot` - Solaris Bundled tools
- `SUNWtoo` - Programming Tools
- `SUNWbtool` - CCS tools included with SunOS

Solaris Systems With More Than 4 Gbytes RAM

The `SUNWscpux` 64–bit source compatibility package must be installed on systems that have more than 4 Gbytes of RAM before you can install Sun Management Center 4.0. If the package is not installed, the command-line installation process will report the following messages and fail.

```
ps: read() on /proc/551/as: Value too large for defined data type
ps: read() on /proc/542/as: Value too large for defined data type
```

The `SUNWscpux` package is installed automatically during Solaris installation when any of the following Solaris environments are selected.

- Entire +OEM
- Entire
- Developer

To determine if the package is installed on the system, type the command `pkginfo SUNWscpux` in a terminal window.

- If the package is installed, information about the package is displayed.

  ```
  # pkginfo SUNWscpux
  system      SUNWscpux      Source Compatibility (Usr) (64-bit)
  ```

- If the package is not installed, an error message is displayed.

  ```
  # pkginfo SUNWscpux
  ERROR: information for "SUNWscpux" was not found
  ```

  To install the `SUNWscpux` package:

  1. Log in as root (**`su - root`**).
  2. Locate the package on the Solaris installation media.
  3. Install the package using the `pkgadd` command.

Java Environment Variables and Path

The JAVA_HOME and PATH environment variable must be set on Solaris systems in order for the Sun Management Center 4.0 installation wizards, the setup wizards and the Java console to function properly. Similarly, the Microsoft Windows %PATH% must be modified to include the path to the JDK software for the Sun Management Center Java console to work properly on Microsoft Windows.

If the environment variables and path are not set properly, installation and setup of Sun Management Center 4.0 can fail.

▼ To Set JAVA_HOME and PATH on the Solaris Platform

You must set the JAVA_HOME and PATH environment on the Solaris platform if the JDK 1.5 software has been installed in the default location on your system.

1. **Log in as root by typing `su - root`.**
2. **Set JAVA_HOME to `/usr/j2se`.**
   - In a C shell environment:

     ```
     # setenv JAVA_HOME /usr/j2se
     ```
   - In a Bourne or Korn shell environment:

     ```
     # JAVA_HOME=/usr/j2se
     # export JAVA_HOME
     ```

Tip – Add the appropriate statement to your `.login` or `.cshrc` file.

---

3. **Add `/usr/j2se/bin` to your system path.**
4. **Place `/usr/j2se/bin` in your PATH before `/usr/bin`.**
5. **Place `/usr/bin` in your PATH before `/usr/ucb`.**

▼ To Set PATH on Microsoft Windows 2000

1. **Choose Start → Settings → Control Panel.**
2. **Double-click System.**

3. **Select the Advanced tab and then Environment Variables.**

   The Environment Variables window is displayed.

4. **Click Path in the User Variables and System Variables and click Edit.**

   The Edit System Variable window is displayed.

   Note – The Edit System Variable window shows the Microsoft Windows root directory using the environment variable `%SystemRoot%`.

5. **Add the location of the JDK `bin` directory to the `PATH` statement.**

   For example, if the `PATH` statement shown in the Edit System Variable window is `%SystemRoot%\system32;%SystemRoot%`, the new path statement would then be `%SystemRoot%\system32;%SystemRoot%;c:\j2`*version-number*`\bin` where *version-number* is the JDK version.

   For example:

   ```
   %SystemRoot%\system32;%SystemRoot%;c:\j2sdk1.5\bin
   ```

   Separate each directory in the `PATH` statement with a semicolon as shown.

6. **Click OK to successively close each window.**

▼ To Set PATH on Microsoft Windows XP

1. **Choose Start → Settings → Control Panel.**

2. **Double-click System.**

3. **Select the Advanced tab and then Environment Variables.**

   The Environment Variables window is displayed.

4. **Click Path in the User Variables and System Variables and click Edit.**

   The Edit System Variable window is displayed.

   Note – The Edit System Variable window shows the Microsoft Windows root directory using the environment variable `%SystemRoot%`.

5 **Add the location of the JDK `bin` directory to the `PATH` statement.**

For example, if the `PATH` statement shown in the Edit System Variable window is `%SystemRoot%\system32;%SystemRoot%`, the new path statement would then be `%SystemRoot%\system32;%SystemRoot%;c:\j2`*version-number*`\bin` where *version-number* is the JDK version.

For example:

```
%SystemRoot%\system32;%SystemRoot%;c:\j2sdk1.5\bin
```

Separate each directory in the `PATH` statement with a semicolon as shown.

6 **Click OK to successively close each window.**

▼ To Set PATH on Linux

1 **Change to your home directory.**

```
cd $HOME
```

2 **Open the `.bashrc` file.**

3 **Add the following line to the file. Replace the *JDK-directory* with the name of your Java installation directory.**

```
export PATH=/usr/java/JDK-directory/bin:$PATH
```

4 **Save the file and exit.**

Use the `source` command to force Linux to reload the `.bashrc` file which normally is read only when you log in each time.

```
source .bashrc
```

Note – Note that if you wish to set the `PATH` for all users, you need to log in as root in the bash shell and perform the above steps on the `.profile` file in the `etc` directory and not the `.bashrc` file in the `home` directory.

Determining the Installation Source

You can install, set up, and configure Sun Management Center 4.0 using either the Sun Management Center installation DVDs or a Sun Management Center installation image located on your network. DVD images eliminate the need to install Sun Management Center on each machine from the DVDs.

This section provides the procedures for creating Sun Management Center installation images.

- "Creating Installation DVD Images" on page 71
- "Creating Images From the Download Tar File" on page 73

There are two methods for capturing an installation image. You can copy Sun Management Center installation DVDs to a location on your network. You can also download and unpack the Sun Management Center installation image from the Sun Management Center Web site.

Note – To install, set up, and configure , you must be logged in as root on Solaris machines, and as administrator on Microsoft Windows.

Creating Installation DVD Images

To create the Sun Management Center DVD images, you create a directory to contain the images, copy the DVD to the directory, and then share the directory using network file system mounting.

▼ To Create DVD Images

1 In a terminal window, log in as root by typing `su - root`.

2 Create a directory to which you will copy the DVD.

For example:

```
# mkdir /SunManagementCenter
```

3 Change to the directory you created for the DVD images.

For example:

```
# cd /SunManagementCenter
```

4 Create a `disk`*n* directory for each DVD, where *n* is the sequence number of the disk.

For example:

```
/SunManagementCenter# mkdir disk1 disk2
```

5 Make sure the `vold` daemon is running.

```
/SunManagementCenter# ps -eaf | grep vold
root 19033 19000  0 08:37:55 pts/9    0:00 vold
/SunManagementCenter#
```

If the `grep` command returns only the system prompt, then the `vold` daemon is not running, and must be started as follows:

```
/SunManagementCenter# /usr/sbin/vold &
```

6 **Insert Sun Management Center 4.0 DVD in your DVD drive.**

7 **List the contents of the Sun Management Center 4.0 DVD. Then copy the contents to the `disk1` subdirectory.**

When the copy completes, list the contents of the DVD and the directory to verify the contents of the disk image.

For example:

```
/SunManagementCenter# cp -r /DiskMountDir/.* disk1
/sunmanagementcenter > ls -acp /DiskMountDir/.*
.          .CD        Copyright  image/      lib/
..         .CD01      classes/    install/    sbin/
/sunmanagementcenter > ls -acp disk1
.          .CD        Copyright  image/      lib/
..         .CD01      classes/    install/    sbin/
```

Caution – <DiskMountDir> is a symbolic link. Copy *only* the Sun Management Center directory as shown in the above example.

8 **Make the Sun Management Center 4.0 DVD image directory NFS-shared.**

Using NFS to share the DVD image directory enables you to install Sun Management Center 4.0 from other machines by using the DVD installation images instead of manually installing from the DVDs.

a. **Stop the Network File System daemon `mountd`:**

```
/SunManagementCenter# /etc/init.d/nfs.server stop
```

b. **Add the following line to the `/etc/dfs/dfstab` file.**

`share -F nfs -o ro` *image-dir*

where *image-dir* is the Sun Management Center 4.0 image directory that you created in "Java Environment Variables and Path" on page 68.

For example: **`share -F nfs -o ro /SunManagementCenter`**

c. **Save and close `/etc/dfs/dfstab`.**

d. **Start the Network File System daemon `mountd`:**

```
/SunManagementCenter# /etc/init.d/nfs.server start
```

The Sun Management Center 4.0 image directory is now accessible from other machines.

You can now use the Sun Management Center DVD images to install Sun Management Center 4.0, or to upgrade previous versions of Sun Management Center as described in the following chapters.

Creating Images From the Download Tar File

You can download the Sun Management Center Sun Management Center compressed tar file from the Web to a Solaris machine on your network. You then decompress and untar the tar file to a image directory.

To download Sun Management Center, you must be registered with Sun as a Sun Web site user, and log in using your registered user ID. The download software Web page provides a link for registration.

Caution – Before you download the tar file, ensure that you have at least 1.6 Gigabytes of free disk space for the tar file and for the image files that are created when you uncompress and unpack the tar file.

▼ To Download the Tar File From the Web Site

1. **In a terminal window, log in as root on the system where you want to create the Sun Management Center installation image.**

2. **Go to the Sun Management Center Web site at** `http://www.sun.com/sunmanagementcenter/`.

3. **Click Get it.**

   Follow the instructions and download Sun Management Center 4.0 to a location that is accessible by root.

4. **Go to the location where the tar file has been downloaded:**

   `# cd /`*download-directory*

5. **Extract the Sun Management Center packages:**

   `# zcat` *downloaded-filename* `| tar xvf -`

   The image source directory is created, containing the subdirectories `disk1` and `disk2`.

6. **Make the Sun Management Center 4.0 image directory NFS-shared.**

   Using NFS to share the image directory enables you to install Sun Management Center 4.0 from other machines by using the installation images instead of manually installing from the DVDs.

   For example, if you extracted the images to the directory *SunManagementCenter*, you would make the directory NFS-shared as follows.

   a. **Stop the Network File System daemon** `mountd`**:**

      `/SunManagementCenter# /etc/init.d/nfs.server stop`

b. Edit the `/etc/dfs/dfstab` file.

Add the following line:

`share -F nfs -o ro` *image-dir*

where *image-dir* is the Sun Management Center 4.0 image directory.

For example: **`share -F nfs -o ro /SunManagementCenter`**

c. Save and close `/etc/dfs/dfstab`.

d. Start the Network File System daemon `mountd`:

```
/SunManagementCenter# /etc/init.d/nfs.server start
```

The Sun Management Center 4.0 image directory is now accessible from other machines.

You can now use the Sun Management Center images to install Sun Management Center 4.0, or to upgrade previous versions of Sun Management Center as described in the following chapters.

◆ ◆ ◆ CHAPTER 5

Upgrading Previous Versions of Sun Management Center on the Solaris Platform

This chapter describes how to upgrade Sun Management Center 3.6.1 software to Sun Management Center 4.0 on a single machine.

This chapter discusses the following topic:

- "Upgrade Considerations" on page 75

Note – If you do not want to migrate your Sun Management Center data, you must uninstall the existing Sun Management Center software before you can install Sun Management Center 4.0. To uninstall existing Sun Management Center software without saving your data, see Appendix A, "Uninstalling Sun Management Center"

Upgrade Considerations

When upgrading from any previous version of Sun Management Center software, the server and console layers must be upgraded first.

Sun Management Center 4.0 servers and consoles support previous versions of Sun Management Center agents. Consequently, Sun Management Center agents can be upgraded when time or circumstances permit.

All Sun Management Center software components should be upgraded to version 4.0 to take advantage of the improved monitoring and management capabilities provided by Sun Management Center 4.0.

Note – When upgrading an agent or a server, make sure you use the same port number for the agent as you used in the previous installation.

Upgrading the Server

If you have a Sun Management Center 3.6.1 server installation on Solaris 10 11/06, you can upgrade using either one of the following methods.

Note – These methods do not apply to the Solaris 8, 9, and Solaris 10 1/06 and Solaris 10 6/06 server layer installations. Sun Management Center 4.0 server layer is available only on Solaris 10 11/06 and higher versions.

- Run the Sun Management Center 4.0 graphical user interface installation command `es-guiinst`.
- Run the Sun Management Center 4.0 command-line installation script `es-inst`.

If you have a Sun Management Center 3.6.*x* server installation on a Solaris version that is earlier than Solaris 10 11/06, do the following:

- Uninstall Sun Management Center 3.6.*x* and save the configuration data.
- Upgrade the operating system to Solaris 10 11/06 or Solaris 10 8/07. Follow the server migration procedure described in `http://www.sun.com/software/whitepapers/solaris9/sunmc_datamigration.pdf` to move the data to a Solaris 10 11/06 SPARC or x86 system.

The Sun Management Center 4.0 installation process detects the existing 3.6.*x* installation and runs the Sun Management Center 3.6.*x* `es-uninst` command-line script. The Sun Management Center `es-uninst` script gives you the option to save your Sun Management Center 3.6.*x* data.

If you save the Sun Management Center 3.6.*x* data, the Sun Management Center 4.0 setup process detects the saved data and gives you the option to migrate the data to Sun Management Center 4.0.

▼ To Upgrade From Version 3.6.1 to 4.0

1 Run `es-inst` from the 4.0 source image.

The uninstallation wizard is launched. The uninstallation script uninstalls Sun Management Center 3.6.1 and asks whether you want to preserve the data.

2 Type y to preserve the data.

After uninstallation of the Sun Management Center 3.6.1 components, the new packages for 4.0 are installed. The installer takes you to the setup. The setup process detects the preserved data and asks whether you want to migrate the data.

3 Type y to migrate the data.

The upgrade procedure is complete.

Database Migration Scenarios

You may have to migrate the database if you are in the following situations:

- Migrating from 3.6.*x* on Solaris 8 OS, Solaris 9 OS, or Solaris 10 6/06 or earlier version.
- Migrating from 3.6.*x* on Solaris 8 OS, Solaris 9 OS, or Solaris 10 6/06 or earlier version to Sun Management Center 4.0 x86 server.

To migrate the database, do either one of the following:

1. Apply the data migration patch.
   a. Download the patch from `http://www.sunsolve.sun.com`.

      Different patch IDs are applicable for different versions of the Solaris operating system. Choose the patch based on the Solaris version of your installation. The patch IDs are as follows:

      - Solaris 8 SPARC: `123920-04`
      - Solaris 9 SPARC: `123921-04`
      - Solaris 10 SPARC: `123923-04`

   b. Untar and then unzip the downloaded patch archive file.
   c. Install the patch using the `patchadd` command.
2. Uninstall Sun Management Center 3.6.1 and preserve the data.
3. Install Sun Management Center 4.0.
4. Upgrade the operating system to Solaris 10 11/06 or Solaris 10 8/07.

or

1. Apply the database upgrade patch.
2. Follow the server migration procedure described in `http://www.sun.com/software/whitepapers/solaris9/sunmc_datamigration.pdf` to move the data to a Solaris 10 11/06 SPARC or x86 system.

Upgrading Agents

You can upgrade the Sun Management Center 3.6.1 agent to the Sun Management Center 4.0 agent using either of the following methods.

- Create an agent-only installation image on the Sun Management Center server as described in "To Create an Agent-Only Installation Image Using `es-makeagent`" on page 96. When you have created the agent-only installation image, apply the image to the agent hosts using the `es-inst -a` command as described in "To Install Agents From an Agent-Only Installation Image Using `es-inst -a`" on page 101.

- Create an agent-update image using either `es-gui-imagetool` as described in "To Create an Agent-Update Image Using `es-gui-imagetool`" on page 81, or by using `es-imagetool` as described in "To Create an Agent-Update Image Using `es-imagetool`" on page 86. When you have created the agent-update image, apply the image to the agent hosts using the `agent-update.bin` executable file as described in "To Install or Update Agents From an Agent-Update Image Using `agent-update.bin`" on page 99.

◆ ◆ ◆ CHAPTER 6

Installing and Updating Agents and Installing on Microsoft Windows

This chapter provides the procedures for installing and updating agents.

This chapter discusses the following topics:

- "Creating Agent Installation and Update Images" on page 79
- "Applying Agent Installation, Update, and Patch-Only Images" on page 98
- "Installing Agents Using JumpStart" on page 103
- "Configuring Server and Agent on Multi-IP Machines" on page 124
- "Installing Sun Management Center 4.0 on Microsoft Windows" on page 128

Caution – Before you install Sun Management Center 4.0 using `es-guiinst`, ensure that you have completed all the tasks listed by "Preinstallation Checklist" on page 66.

Creating Agent Installation and Update Images

Agent-update images are supported on systems that have the Sun Management Center agent *only* installed. If you try to use agent-update images on systems where you have the Sun Management Center server or console or all three layers installed, the operation fails.Sun Management Center provides three tools to create agent-update images that can be used to install or simultaneously update Sun Management Center agents on multiple systems. The script and GUI image tool utilities also enable you to create patch-only update images that can be used to update multiple systems.

- `es-gui-imagetool` creates an agent-update image or a patch-only image using a graphical interface.
- `es-imagetool` creates an agent-update image or a patch-only image using a command-line interface.

- `es-makeagent` creates an agent-only installation image that includes support files for each version of the Solaris software and add-ons that were included on the installation images. The agent is installed on target machines by applying the agent-only image using the command, the `es-inst -a` command, or by using the JumpStart software.

`es-gui-imagetool` and `es-imagetool` enable you to select specific Solaris and Linux operating environments and add-ons, resulting in a much smaller installation image than the image created by `es-makeagent`. Images created using the image tools are applied by using the Sun Management Center Java console Manage Jobs task, or by using the `agent-update.bin` executable file.

Note – The Manage Jobs task enables you to apply the agent-update image to the target machines without performing any tasks on the target machines. Alternatively, you could copy or use FTP to copy the `agent-update.bin` executable file to each target machine, and then run the `agent-update.bin` on each target machine to apply the agent-update image.

The image type that you create depends on the following factors.

- If you want to update the Sun Management Center 3.6.1 agent on the target machines, create an agent-update image using either `es-gui-imagetool` or `es-imagetool`. When the agent-update image has been created, use the `agent-update.bin` executable file to apply the agent-update image to the target machines.
- If you want to install add-on agent components, or add-on components and patches on Sun Management Center 4.0 agent machines, create an agent-update image using either `es-gui-imagetool` or `es-imagetool`. When the agent-update image has been created, use the Manage Jobs task or the `agent-update.bin` executable file to apply the agent-update image to the target machines.
- If you want to apply patches only to the agent machines, create a patch-only update image using either `es-gui-imagetool` or `es-imagetool`. When the patch-only image has been created, use the Manage Jobs task or the `agent-update.bin` executable file to apply the patch-only image to the target machines.
- If you want to use JumpStart to install the Solaris operating environment and the Sun Management Center4.0 agent on the target machines, create an agent-only image using `es-makeagent`. When you have created the agent-only update image, install the Solaris operating environment and the Sun Management Center 4.0 agent on the target machines as described in "Installing Agents Using JumpStart" on page 103.

The Sun Management Center 4.0 can be installed on SPARC, x86, and on Linux systems.

The following procedures describe how to create agent-update images and patch-only update images using , `es-gui-imagetool` or `es-imagetool`, and how to create an agent-only image using `es-makeagent`.

▼ To Create an Agent-Update Image Using `es-gui-imagetool`

`es-gui-imagetool` enables you to create agent-update images containing any one of the following items.

- Base agent packages
- Add-on agent packages
- Base and add-on agent packages
- Base agent patches and add-on agent patches only

Note – This procedure assumes that you installed Sun Management Center in the default directory `/opt`. If you installed Sun Management Center in a different directory, replace `/opt` with the name of the directory you specified.

---

1 Log in as root on the Sun Management Center 4.0 server machine.

2 Run the Sun Management Center GUI image tool by typing the following command:

```
# /opt/SUNWsymon/sbin/es-gui-imagetool
```

The Welcome screen appears. Click Next. The Overview screen appears, listing the information that you might need to provide. Click Next.

The Select Update-Image Components screen appears.

3 Select the update-image components.

Four choices are provided:

- Base Agent Packages
- Add-on Agent Packages
- Base and Add-on Agent Packages
- Base and Add-on Agent Patches Only

Note – Any patches needed for a selected package are automatically included when you select the package. If you want to install base agent patches and add-on agent patches only, select Base and Add-on Agent Patches Only.

Select the type of update-image that you want to create, and then click Next. The Specify the Installation Files Source Directory screen appears.

4 Provide the name of a valid Sun Management Center 4.0 source directory.

The installation source default */DiskMountDir*`/image` is displayed.

- If you are installing from DVDs, insert Sun Management Center 4.0 DVD in the DVD drive.

Enter a valid source directory: /*DiskMountDir*/**/disk1/image**

- If you are installing from a Sun Management Center 4.0 installation image on disk, either click Browse to navigate to the Sun Management Center installation `disk1/image` directory, or type the path to the `disk1/image` directory in the `Source Directory` field.

  `Source Directory:` **/net/***machine*/*installdir*/**disk1/image**

  where *machine* is the machine on which you created the installation image, and *installdir* is the directory containing the Sun Management Center 4.0 disk1 and disk2 images. See "Determining the Installation Source" on page 70 for further information about installation images.

Click Next.

- If you selected Base Agent Packages, or selected Base and Add-on Agent Packages, the Specify the Destination Directory screen appears. Go to Step 5.
- If you selected Add-on Agent Packages or Base and Add-on Agent Patches Only, the Sun Management Center Update Image Name screen appears. Go to Step 6.

5 Provide the target directory for Sun Management Center 4.0 installation.

The target directory is the directory where the Sun Management Center 4.0 `SUNWsymon` directory is created if it does not already exist.

- If an agent is not installed, then the new agent is installed in the directory you specify.
- If an older version of an agent is already installed in a different directory, then the new agent is installed in the directory you specify.
- If the same version of an agent is already installed in a different directory and the update you are applying contains additional components such as add-ons, the agent is updated in the existing directory.

The following scenario provides an example.

Assume you have created a base and add-on agent packages update image, and you have specified `/opt` as the target directory. Also, assume that you want to apply the update image to five different machines in the following states:

- Sun Management Center 3.6.1 is installed in `/opt/SUNWsymon` on machine A.
- Sun Management Center 3.6.1 is installed in `/export/home/opt/SUNWsymon` on machine B.
- No Sun Management Center components are installed on machine C.
- The Sun Management Center 4.0 base agent only is installed in `/opt/SUNWsymon` on machine D.
- The Sun Management Center 4.0 base agent only is installed in `/export/home/opt/SUNWsymon` on machine E.

When you apply the Sun Management Center 4.0 base and add-on agent packages update image to the five machines, each machine is updated as follows.

- On machine A, the Sun Management Center 4.0 agent is reinstalled and replaces the version 3.6.1 agent in directory `/opt/SUNWsymon`.
- On machine B, the Sun Management Center 4.0 agent is installed in directory `/opt/SUNWsymon`.
- On machine C, the Sun Management Center 4.0 agent is installed in directory `/opt/SUNWsymon`.
- On machine D, the base agent is upgraded, with add-on packages, to version 4.0 in directory `/opt/SUNWsymon`.
- On machine E, the base agent is upgraded, with add-on packages, to version 4.0 in directory `/export/home/opt/SUNWsymon`.

Click Next. The Sun Management Center Update-Image Name screen appears.

6 Provide a name for the agent update-image.

Type a name for the update-image that reflects the update-image type, for example `SPARC-Base-agents`, `x86-Base-agents`, `Linux agents add-ons` or `config-readers`.

The update-image is created in `/var/opt/SUNWsymon/agentupdate/`*update-image-name* where *update-image-name* is the name that you provide.

Click Next. The OS Selection screen appears.

7 Select the platform (Solaris or Linux) versions that the target machines are running.

The image tool will create images for all platform versions supported by Sun Management Center irrespective of the version of the machine on which the tool is running. You have a choice of selecting any of the platform versions, or all.

Caution – If you omit a platform version when you create an agent-update image, application of the update-image to the machine whose platform version is omitted will fail.

Click Next. The Checking for Available Products screen appears.

- If you selected Base Agent Packages, or Base and Add-on Agent Packages, the image tool verifies that all components of the base layer are available in the image source you specified.

  When image source verification completes, the SNMP Port Assignment screen appears. Go to Step 11.
- If you selected Add-on Packages, the Select Add-ons for Package and Patch Updates screen appears. Go to Step 8.
- If you selected Base and Add-on Agent Patches, the Select Patches screen appears. Go to Step 9.

8 Select Add-ons.

Select the products that you want to add to the agent update-image, and then click Next.

The image tool checks whether setup responses are needed by any of the add-on products you selected for inclusion in the update-image. Go to Step 10.

- If the selected add-on products do not require setup responses, the SNMP Port Assignment screen appears. Go to Step 11.
- If any selected add-on product requires setup responses, the Add-on Setup screen appears.

9 Select patches.

You can select all patches, or you can select individual patches.

When you have finished selecting patches, click Next. The Confirmation screen appears. Step 12.

10 Provide add-on setup responses.

You are prompted to click Next to answer the setup questions for the selected add-on products. Click Next.

A terminal window appears, and the image tool process steps through each add-on product that you selected for agent update, and prompts you for the responses needed by each product. Refer to the documentation that is provided with each add-on for further information.

When you finish providing responses, the SNMP Port Assignment screen appears.

11 Specify an SNMP port for the Sun Management Center agent.

In most cases, port 161 is the default port assigned to and used by the SNMP daemon. However, other processes or daemons could be using port 161. Several third-party replacements and enhancements for the SNMP daemon exist, and could be installed on your system. The Sun Management Center agent is one such daemon. Also keep in mind that a port number other than 161 could have been specified during Sun Management Center setup on each target machine.

See "To Determine Whether a Port Is Used" on page 158 for procedures on how to determine if a port is unused.

Caution – If you select port 161, you must stop and disable any process that uses port 161 on each target machine before you can restart the agent on each machine. Stopping and disabling the SNMP daemon on each machine is not a guarantee that you have stopped the actual process using port 161. To determine which daemon process uses port 161 requires you to manually review all `/etc/rc`*N* and `/etc/rc`*N*`.d` files, where *N* is 0 through 6 and S. When you have identified the file that defines the process using port 161, you can disable the process by renaming the file. For example,

```
/etc/rc3.d# mv S76snmpdx s76snmpdx
```

You must disable any daemon that uses port 161 on each target machine.

- To use port 161 on each target machine, select Use Port 161, and then click Next. The Stop and Disable SNMP Daemon screen appears.
- To assign a different port number, select Use A Different Port Number.

  Type the port number in the Port ID field and then click Next.

  When the agent-update image is applied on the target client, the update process checks whether an agent is already installed.

  – If an agent was previously installed and configured, the update process uses the original port assignment. For example, if the previous agent uses port 2261, then the update process assigns port 2261 to the updated agent.
  – If an agent is not installed and port 161 is not in use, the update process assigns port 161 to the agent .
  – If an agent is not installed and port 161 is in use, the update process assigns the port you specified to the agent .

The image tool process now checks for sufficient disk space.

- If there is not enough space to create the image, you are notified. The amount of free space that is needed is listed. Click Cancel to exit the update-image tool. You must increase the amount of free space by the amount listed before you can create an update-image.
- If there is enough disk space, the Confirmation screen is displayed.

12 Confirm the update-image selections.

A list of the components that you selected for inclusion in the agent update-image is displayed.

- If the list is not correct, click Back repeatedly to return to either the Select Add-ons for Package and Patch Updates screen, or to the Select Update-Image Components screen. When the appropriate screen is displayed, select the products that you want to add to the update-image and confirm your new selections.
- If the list is correct, click Next.

The image tool creates the agent update-image in the directory `/var/opt/SUNWsymon/agentupdate` using the file name you specified in Step 6.

You are notified when the update image has been created. Click Finish to return to the system prompt.

You can check the update image creation status by viewing the log file `/var/opt/SUNWsymon/install/es-gui-imagetool_`*host-name*`.`*date-and-time-string*`.`*process-id* where:

- *host-name* is the name of the Sun Management Center 4.0 server that you used to create the update image.
- *date-and-time-string* is the year, date, and time the image was created.
- *process-id* is the process ID of the imagetool session that created the agent-update image.

13 Apply the agent-update image.

You can now apply the update-image to the target machines.

- To install Sun Management Center 4.0 agents on a fresh installation, apply the image using the `agent-update.bin` executable file, see "To Install or Update Agents From an Agent-Update Image Using `agent-update.bin`" on page 99.
- To upgrade Sun Management Center 3.5 agents, apply the image using the Sun Management Center task manager, see "To Create an Agent Update Task" in *Sun Management Center 3.6.1 User's Guide*.

▼ To Create an Agent-Update Image Using `es-imagetool`

`es-imagetool` enables you to create agent-update images containing any one of the following.

- Base agent packages
- Add-on agent packages
- Base and add-on agent packages
- Base agent patches and add-on agent patches only

Note – This procedure assumes that you installed Sun Management Center in the default directory `/opt`. If you installed Sun Management Center in a different directory, replace `/opt` with the name of the directory you specified.

---

1 Log in as root on the Sun Management Center 4.0 server machine.

2 Run the Sun Management Center command-line image tool by typing the following command:

```
# /opt/SUNWsymon/sbin/es-imagetool
```

3 Select the components to update.

You are prompted to select the components that you want to add to the update-image, for example:

```
Select the components you want to add to the update-image.

Do you want to upgrade components of Base Agent? [y|n|q] y
Do you want to install/upgrade components of Addons? [y|n|q] y
```

Type **y** to add the component to the update-image, or type **n** to exclude the component from the update-image.

You are prompted for a valid source directory.

4 Provide the name of a valid Sun Management Center 4.0 source directory.

- If you are installing from DVDs, type the path to the Sun Management Center 4.0 installation image directory. For example:

  ```
  Enter a valid source directory: /DiskMountDir/image
  ```

- If you are installing from a Sun Management Center 4.0 installation image on disk, type the path to the image `disk1/image` directory. For example:

  ```
  Enter a valid source directory: /net/machine/installdir/disk1/image
  ```

  where *machine* is the machine on which you created the installation image, and *installdir* is the directory containing the Sun Management Center 4.0 disk1 and disk2 images. See "Determining the Installation Source" on page 70 for further information about installation images.

  - If you replied **y** to the prompt `Do you want to upgrade components of the Base Agent?`, you are prompted for the installation target directory. Go to Step 5.
  - If you replied **n** to the prompt `Do you want to upgrade components of the Base Agent?`, and replied **y** to the prompt `Do you want to install/upgrade components of Addons?`, you are prompted for the installation target directory. Go to Step 6.

5 Provide the name of the target directory for Sun Management Center 4.0 installation.

The target directory is the directory where the Sun Management Center 4.0 `SUNWsymon` directory is created if it does not already exist.

- If an agent is not installed, then the new agent is installed in the directory you specify.
- If an older version of an agent is already installed in a different directory, then the new agent is installed in the directory you specify.
- If the same version of an agent is already installed in a different directory, and the update you are applying contains new software, the agent is updated in the existing directory.

The following scenario provides an example:

Assume that you have created a Base and Add-on Agent Packages update image, and that you have specified `/opt` as the target directory. Also, assume that you want to apply the update image to five different machines in the following states:

- Sun Management Center 3.6.1 is installed in `/opt/SUNWsymon` on machine A.
- Sun Management Center 3.6.1 is installed in `/export/home/opt/SUNWsymon` on machine B.
- No Sun Management Center components are installed on machine C.
- The Sun Management Center 4.0 base agent only is installed in `/opt/SUNWsymon` on machine D.
- The Sun Management Center 4.0 base agent only is installed in `/export/home/opt/SUNWsymon` on machine E.

When you apply the Sun Management Center 4.0 Base and Add-on Agent Packages update image to the five machines, each machine is updated as follows.

- On machine A, the Sun Management Center 4.0 agent is reinstalled and replaces the version 3.6.1 agent in directory `/opt/SUNWsymon`.
- On machine B, the Sun Management Center 4.0 agent is installed in directory `/opt/SUNWsymon`.
- On machine C, the Sun Management Center 4.0 agent is installed in directory `/opt/SUNWsymon`.
- On machine D, the base agent is upgraded, with add-on packages, to version 4.0 in directory `/opt/SUNWsymon`.
- On machine E, the base agent is upgraded, with add-on packages, to version 4.0 in directory `/export/home/opt/SUNWsymon`.

You are prompted for a name for the agent update image.

6 Provide a name for the agent update-image.

Provide a name for the update-image that reflects the update-image type, for example Ultra60agent, SPARC-baseagent, x86–baseagent, or Linux agent and then press Return.

The update-image is created in `/var/opt/SUNWsymon/agentupdate/`*update-image-name*, where *update-image-name* is the name that you provide.

You are then prompted to choose the platform (Solaris or Linux) versions for the target machines.

The image tool creates images for all platform versions supported by Sun Management Center irrespective of the platform version on the machine on which the tool is running. You have a choice of selecting any Solaris version or all versions.

7 Select the platforms that the target machines are running.

The supported versions are listed, and you are asked whether you want to select all versions.

- Reply **y** if the target machines include all Solaris and Linux versions.

  The image tool process checks for available add-on products. Go to Step 8.

- Reply **n** if the target machines do not include all versions.

  Each version of Solaris and Linux is listed, and you are asked whether you want to create an image for that version. Reply **y** or **n** as appropriate for the target machines. For example:

```
Do you want to select ALL OS versions ? [y|n|q] n
Do you want to create images for sparc-sun-Solaris_8 ?   [y|n|q] y
Do you want to create images for sparc-sun-Solaris_9 ?   [y|n|q] n
Do you want to create images for sparc-sun-Solaris_10 ?  [y|n|q] y
Do you want to create images for i386-sun-Solaris_9 ?    [y|n|q] n
Do you want to create images for i386-sun-Solaris_10 ?   [y|n|q] y
Do you want to create images for i686-sun-Linux_2.6 ?    [y|n|q] n
```

Caution – If you omit a Solaris version when you create an agent-update image, application of the update-image to the machine whose Solaris version is omitted will fail.

- If you selected only Upgrade Components of Base Agent in Step 3, go to Step 9.
- If you selected Install/upgrade Components of Addons in Step 3, the image tool process checks the add-on products and lists the products for which an agent update is available. Go to Step 8.

8 Select the agent add-on products that you want to upgrade.

The available add-on products are listed, and you are then sequentially asked whether you want to install each add-on product. Reply **y** to add the add-on software to the update-image, or reply **n** to exclude the add-on software from the image.

When you finish selecting the add-on products to upgrade, you are prompted for the Sun Management Center agent port.

9 Specify a port for the Sun Management Center agent.

In most cases, port 161 is the default port assigned to and used by the SNMP daemon. However, other processes or daemons could be using port 161. Several third-party replacements and enhancements for the SNMP daemon exist, and could be installed on your system. The Sun Management Center agent is such a daemon. A different port number could have been specified during Sun Management Center on each target machine.

Caution – If you select port 161, you must stop and disable any process that uses port 161 on each target machine before you can restart the agent on each machine. Stopping and disabling the SNMP daemon on each machine is not a guarantee that you have stopped the actual process using port 161. Determining the actual daemon process that uses port 161 requires you to manually review all `/etc/rc`*N* and `/etc/rc`*N*`.d` files, where *N* is 0 through 6 and S. When you have identified the file that defines the process using port 161, you can disable the process by renaming the file. For example,

```
/etc/rc3.d# mv S76snmpdx s76snmpdx
```

You must disable the daemon that uses port 161 on each target machine.

Press Return to use port 161 on each target machine, or type a different port number.

- If you selected only Upgrade Components of Base Agent in Step 3, the image tool process checks for sufficient disk space. If there is enough space, the agent update-image is created.

  If there is not enough space to create the image, you are notified. The amount of free space that is needed is displayed. The image tool exits. You must increase the amount of free space by the amount listed before you can create an update-image.
- If you selected `install/upgrade components of Addons` in Step 3, the image tool process checks whether setup responses are needed by any of the add-on products that you selected for inclusion in the update-image.

  If any selected product requires setup responses, the image tool process steps through each add-on product that you selected for update, and prompts you for the responses needed by each product. Refer to the documentation that is provided with each add-on for further information.

  When add-on product setup response collection is completed, the image tool checks disk space. If there is enough space, the agent update-image is created.

  If there is not enough space to create the image, you are notified. The amount of free space that is needed is displayed. The image tool exits. You must increase the amount of free space by the amount listed before you can create an update-image.

You are notified when the update-image has been created. You can check the update image creation status by viewing the log file `/var/opt/SUNWsymon/install/es-imagetool_`*host-name*`.`*date-and-time-string*`.`*process-id* where:

- *host-name* is the name of the Sun Management Center 4.0 server that you used to create the update image.
- *date-and-time-string* is the year, date, and time that the image was created.
- *process-id* is the process ID of the imagetool session that created the agent-update image.

You can now apply the image to the target machines.

- To upgrade Sun Management Center 4.0 agents, apply the image using the Sun Management Center task manager, see "To Create an Agent Update Task" in *Sun Management Center 3.6.1 User's Guide*.
- To upgrade Sun Management Center 3.6.1 agents, apply the image using the `agent-update.bin` executable file, see "To Install or Update Agents From an Agent-Update Image Using `agent-update.bin`" on page 99.

▼ To Create a Patch-Only Image Using the Image Tools

Sun Management Center-specific patches are released periodically on the Sun Management Center web site at http://www.sun.com/sunmanagementcenter. Sun Management Center enables you to create a patch-only image, and then apply the patch-only image to multiple agent machines.

1 Log in as root on the Sun Management Center 4.0 server machine.

2 Create a directory in which to download the Sun Management Center patches.

Change to the directory you just created. Create directories for each Solaris operating environment version for which you want to download patches.

For example, assume you created the directory `/sunmcpatches`. Furthermore, assume you plan to create patch-only update images for each supported Solaris version. You would create the directories as follows.

```
# mkdir /sunmcpatches
# cd /sunmcpatches
/sunmcpatches# mkdir Solaris_8 Solaris_9
```

The directories must be created using the names shown.

3 Log on to SunSolve.

Click the Login button to display the login screen, and then enter your SunSolve ID and password.

If you do not have a SunSolve ID, click the Register button to obtain a SunSolve ID.

4 Download the patches for each Solaris version.

Click the patch number corresponding to the Solaris version.

The SunSolve Online Web page is displayed.

a. Type the number of the patch you want to view, and then click Find Patch.

A description of the patch is displayed.

Make note of the supported Solaris versions. If the patch applies to more than one Solaris version, you must download the patch file for each Solaris version.

b. Click either the HTTP or FTP download link to download the patch.

The Save As panel appears.

Save the patch file to the applicable Solaris version directory you created in Step 2.

For example, assume patch 111222-33 is applicable to Solaris version 8 and Solaris version 9. Assume that you also created the subdirectories `Solaris_8` and `Solaris_9` within the root directory `sunmcpatches`. You would then download the patch file to both `/sunmcpatches/Solaris_8` and `/sunmcpatches/Solaris_9`.

If you want to download more patches, click Back to return to the SunSolve Online Web page. Repeat the previous two steps to download each patch you have selected.

When you have completed downloading patches, go to the next step.

5 Uncompress the patch files.

Change to each directory where you downloaded the patch files and uncompress the files.

For example, assume you downloaded the patch file for patch 111222–33 and patch 111222–34 to `/sunmcpatches/Solaris_8`. Also assume that the patch file for patch file 111222–33 is `111222–33.tar.Z`, and the patch file for 111222–34 is `111222–34.zip`. You would then uncompress the patch files as follows:

```
/sunmcpatches # cd Solaris_8
/sunmcpatches/Solaris_8 # ls
111222-33.tar.Z        111222-34.zip
/sunmcpatches/Solaris_8 # zcat 111222-33.tar.Z | tar xvf -
x 111222-33, 0 bytes, 0 tape blocks
x 111222-33/installpatch, 119239 bytes, 233 tape blocks
   .
   .
   .
x 111222-33/README.111222-33, 136444 bytes, 267 tape blocks
/sunmcpatches/Solaris_8 # unzip 111222-34.zip
Archive: 111222-34.zip
   creating: 111222-34/
..inflating: 111222-34/prepatch
   .
   .
   .
  inflating: 111222-34/README.111222-34
/sunmcpatches/Solaris_8 # ls -p
111222-33/     111222-33.tar.Z.....111222-34/     111222-34.zip
```

You can create the patch-only image using either the graphical tool `es-gui-imagetool` as described next in Step 7 , or by using the command-line tool `es-imagetool` as described in Step 8.

6 **Move the download patch files to another directory.**

Either move the compressed download patch files to another directory for safekeeping, or delete the compressed patch files.

7 **Create the patch-only image file using `es-gui-imagetool`.**

Note – The following steps assume that you installed Sun Management Center in the default directory `/opt`. If you installed Sun Management Center in a different directory, replace `/opt` with the name of the directory you specified.

---

a. **Type the command `/opt/SUNWsymon/sbin/es-gui-imagetool`.**

The Welcome screen appears. Click Next. The Overview screen appears. Click Next.

The Select Update-Image Options screen appears.

b. **Select Base and Add-on Agent Patches Only.**

Click Next.

The Specify the Installation Files Source Directory screen appears.

c. **Specify the patch file source directory.**

Type the name of the patch directory you created in Step 2, or Click Browse to navigate to and select the directory.

Click Next. The Update Image Name screen appears.

d. **Provide a name for the patch-only image.**

Type a name for the patch-only image that reflects the image type, for example `base-and-addon-patches`.

The image is created in `/var/opt/SUNWsymon/agentupdate/`*update-image-name* where *update-image-name* is the name that you provide.

Click Next. The OS Selection screen appears.

e. **Select the Solaris versions that the target machines are running.**

The image tool will create images for all Solaris versions supported by Sun Management Center irrespective of the version of the machine on which the tool is running. You have a choice of selecting any of the Solaris versions, or all versions.

Caution – If you omit a Solaris version when you create a patch-only image, application of the patches to the machine whose Solaris version is omitted will fail.

Click Next. The Checking for Patches screen appears. When the image tool has completed checking for patches, the Select Patches screen appears.

f. Select the patches you want to add to the patch-only update image.

You can select all patches, or you can select individual patches.

When you have finished selecting patches, click Next. The image tool checks for disk space.

- If there is not enough space to create the image, you are notified. The amount of free space that is needed is listed. Click Cancel to exit the image tool. You must increase the amount of free space by the amount listed before you can create a patch-only image.
- If there is enough disk space, the Confirmation screen is displayed.

g. Confirm Update-Image Selections

A list of the patches and the Solaris versions that you selected for the patch-only image is displayed.

- If the list is not correct, click Back twice to return to the Solaris version selection screen, or click Back once to return to the Select Patches screen. Select the Solaris versions and patches that you want to add to the patch-only image and confirm your new selections.
- If the list is correct, click Next.

  The image tool creates the patch-only image in the directory `/var/opt/SUNWsymon/agentupdate` using the file name you specified in Step d.

You are notified when the update image has been created. Click Close to return to the system prompt.

You can check the update image creation status by viewing the log file `/var/opt/SUNWsymon/install/es-gui-imagetool_`*host-name*`.`*date-and-time-string*`.`*process-id* where:

- *host-name* is the name of the Sun Management Center 4.0 server that you used to create the update image.
- *date-and-time-string* is the year, date, and time the image was created.
- *process-id* is the process ID of the imagetool session that created the agent-update image.

h. Apply the patch-only image.

You can now apply the image to the target machines.

- To apply the image using the Sun Management Center task manager, see "To Create an Agent Update Task" in *Sun Management Center 3.6.1 User's Guide*.
- To apply the image using `agent-update.bin` executable file, see "To Install or Update Agents From an Agent-Update Image Using `agent-update.bin`" on page 99.

8 Create the patch-only image file using `es-imagetool`.

Note – The following steps assume that you installed Sun Management Center in the default directory `/opt`. If you installed Sun Management Center in a different directory, replace `/opt` with the name of the directory you specified.

a. Type the command `/opt/SUNWsymon/sbin/es-imagetool`.

You are asked whether you want to upgrade components of the Base agent. Type **n** and press Return.

You are asked whether you want to install or upgrade components of add-ons. Type **n** and press Return.

You are asked whether you want to install patches. Type **y** and press Return.

You are prompted for the patch-only source directory.

b. Specify the patch file source directory.

Type the name of the patch directory you created in Step 2, and then press Return.

You are prompted to provide a name for the patch-only image.

c. Provide a name for the patch-only image.

Type a name for the patch-only image that reflects the image type, for example `base-and-addon-patches`.

The image is created in `/var/opt/SUNWsymon/agentupdate/`*update-image-name* where *update-image-name* is the name that you provide.

Press Return. The supported Solaris versions are listed.

d. Select the Solaris versions that the target machines are running.

The image tool will create images for all Solaris versions supported by Sun Management Center irrespective of the version of the machine on which the tool is running. You have a choice of selecting any Solaris version, or all versions.

Caution – If you omit a Solaris version when you create an patch-only image, application of the patches to the machine whose Solaris version is omitted will fail.

- To select all Solaris versions, type **y**.
- To select only specific Solaris versions, type **n**.

  You are prompted to select each Solaris version sequentially. Type **y** to select a Solaris version, or type **n** to exclude the Solaris version from the image.

Press Return. The image tool lists the patches that are available for selection.

e. Select the patches that you want to add to the patch-only update image.

You are prompted to select each patch.

Type **y** to select a patch for inclusion in the patch-only image, or type **n** to exclude the patch from the image.

When you have completed selecting patches, press Return. The image tool checks for disk space.

- If there is not enough space to create the image, you are notified. The amount of free space that is needed is listed. Type **q** to exit the image tool. You must increase the amount of free space by the amount listed before you can create a patch-only image.
- If there is enough disk space, the patch-only image is created in the directory `/var/opt/SUNWsymon/agentupdate` using the file name that you specified in Step c.

You can check the update image creation status by viewing the log file `/var/opt/SUNWsymon/install/es-imagetool_`*host-name*`.`*date-and-time-string*`.`*process-id* where:

- *host-name* is the name of the Sun Management Center 4.0 server that you used to create the update image.
- *date-and-time-string* is the year, date, and time the image was created.
- *process-id* is the process ID of the imagetool session that created the agent-update image.

f. Apply the patch-only image.

You can now apply the image to the target machines.

- To apply the image using the Sun Management Center Task Manager, see "To Create an Agent Update Task" in *Sun Management Center 3.6.1 User's Guide*.
- To apply the image using the `agent-update.bin` executable file, see "To Install or Update Agents From an Agent-Update Image Using `agent-update.bin`" on page 99.

▼ To Create an Agent-Only Installation Image Using `es-makeagent`

Note – This procedure assumes that you installed Sun Management Center in the default directory `/opt`. If you installed Sun Management Center in a different directory, replace `/opt` with the name of the directory you specified.

1 Log in as root.

2 Place Sun Management Center 4.0 DVD in the DVD drive.

3. **Type the command `/opt/SUNWsymon/sbin/es-makeagent`.**

   You are prompted for the installation source files directory.

4. **Type the source directory:**

   `(SPARC)` */DiskMountDir*`/image/SunOS/sparc`

   `(x86)` */DiskMountDir*`/image/SunOS/i386`

   `(Linux)` */DiskMountDir*`/image/Linux`

   You are asked for a target directory in which to create the agent-only installation image.

5. **Type the name of the target directory.**

   If the directory does not exist, you are asked whether you want to create it. Type **`y`** to create the directory, or type **`n`** or **`q`** to exit to the system prompt.

   The directory you specify must have write permission for root.

   For example:

   ```
   # enter the target directory: /es-makeagent-image
   Directory /es-makeagent-image does not exist
   Do you want to create it (y|n|q) y
   ```

   The `es-makeagent` script creates the subdirectories `disk1` and `disk2` in the directory you specified, and then copies the files required to the subdirectories.

   a. **Remove the Sun Management Center 4.0 DVD.**

   b. **Press Return.**

      `es-makeagent` copies the remaining files from the DVD.

      You are informed that the agent-only product is available in the directory you specified. The command required to install the agent on the local machine is also displayed.

Tip – Mount the target directory using NFS, so that the directory is accessible by other machines on your network. See Step 8 in "To Create DVD Images" on page 71.

---

6. **Type the command `eject` to eject the DVD.**

   You can now install the Sun Management Center 4.0 agent using any of the following methods.

   - Use the `es-inst -a` command as described in "To Install Agents From an Agent-Only Installation Image Using `es-inst -a`" on page 101. When prompted for the installation source directory, provide the name of the agent-only installation image that you specified in Step 5. Make sure that you have shared the agent-only installation image by using Network File Sharing.

- Apply the agent-only installation image using the JumpStart software as described in "Installing Agents Using JumpStart" on page 103.

Note – The agent-only installation image also contains a tar file that you can copy using `ftp` to other agent machines and uncompress on each agent machine to create an installation image. The uncompressed installation image directory contains the subdirectories `disk1` and `disk2`. To install from the uncompressed image on each agent machine, change directory to the `disk1/sbin` directory, and use the `es-inst` command as described in "Installing Sun Management Center Using `es-inst`" on page 184.

Applying Agent Installation, Update, and Patch-Only Images

The following procedures describe how to install or update agents from agent-update images using the Manage Jobs task, and the `agent-update.bin` executable file, and how to install agent-only installation images using the `es-inst -a` command.

Note – If you want to use the JumpStart software to install the Solaris operating environment and the agent, see "Installing Agents Using JumpStart" on page 103.

▼ To Install Agents From an Agent-Update Image Using the Manage Jobs Task

If you want to upgrade Sun Management Center 3.6.1 agents, apply the agent-update image by using the `agent-update.bin` executable file as described in "To Install or Update Agents From an Agent-Update Image Using `agent-update.bin`" on page 99. The Manage Jobs task is used to upgrade existing Sun Management Center 4.0 agents.

1 **Create an agent-update image using either of the image tools.**

- To create an agent-update image using `es-gui-imagetool`, follow the instructions in "To Create an Agent-Update Image Using `es-gui-imagetool`" on page 81.
- To create an agent-update image using `es-imagetool`, follow the instructions in "To Create an Agent-Update Image Using `es-imagetool`" on page 86.

2 **Start the Sun Management Center console, and then log in to the console as an authorized Sun Management Center user.**

See "To Start the Console on the Solaris Platform" on page 142.

3 **Choose Tools → Manage Jobs.**

The Manage Jobs window is displayed.

The Manage Jobs window enables you to propagate your agents on multiple hosts simultaneously. For further details on the Manage Jobs feature, refer to the *Sun Management Center 3.6.1 User's Guide*.

4 Create a multiple-agent upgrade task.

Note – Make sure the Sun Management Center agent is installed and running on the target hosts.

---

a. Select target hosts for upgrades, and then create a group.

b. Create a task of type Agent Update

Select an appropriate image name for the upgrade operation. This name should be the name of an image you created using either the `es-imagetool` or the `es-gui-imagetool`.

For detailed instructions, see "To Create an Agent Update Task" in *Sun Management Center 3.6.1 User's Guide*

The status displayed in the Job Manager window only shows the success or failure of the entire job. The job is marked Failed if the upgrade fails on a single agent in the entire group, even though the rest of the agent upgrades succeeded. Click View Log next to the Job list to check the status of individual upgrades.

To view the intermediate upgrade status while the job is in progress, click View Logs tab, and then click `InstallServer.log`.

▼ To Install or Update Agents From an Agent-Update Image Using `agent-update.bin`

The space requirements on the target machine `/tmp` directory are as follows depending on the contents of the update-image:

- Base agent only - 115 Mbytes to 125 Mbytes
- Base agent and Add-ons - 200 Mbytes to 210 Mbytes
- Add-ons or patches only - less than 100 Mbytes

If you use a *seed-file* to specify the security seed and SNMP community string automatically, the *seed-file* must have the following format:

```
ES_SECURITY_SEED=seed
ES_SNMPV1_STRING=string
```

where *seed* and *string* are the actual seed and community string specified when the Sun Management Center server was installed. If you do not specify a value for `ES_SNMPV1_STRING`, the default SNMP value is used. In this case, the file will be:

```
ES_SECURITY_SEED=seed
ES_SNMPV1_STRING=string
```

1. **Log in as root on the Sun Management Center server machine.**

2. **Create an agent-update image using either of the image tools.**

   - To create an agent-update image using `es-gui-imagetool`, follow the instructions in "To Create an Agent-Update Image Using `es-gui-imagetool`" on page 81.
   - To create an agent-update image using `es-imagetool`, follow the instructions in "To Create an Agent-Update Image Using `es-imagetool`" on page 86.

3. **Download the relevant agent-update.bin file from the Sun Management Center server to each target machine's root directory.**

   - (SPARC) `/opt/SUNWsymon/base/bin/sparc-sun-solaris/agent-update.bin`
   - (x86) `/opt/SUNWsymon/base/bin/i386-sun-solaris/agent-update.bin`
   - (Linux)`/opt/SUNWsymon/base/bin/i686-sun-Linux/agent-update.bin`

   If you installed Sun Management Center in a different directory than `/opt`, replace the `/opt`with *installdir* in the paths mentioned, where *installdir* is the directory you specified. This step must be performed for each target machine.

   When you have finished downloading the file `agent-update.bin` to each target machine, you must log in to each target machine and perform the following four steps on each machine.

4. **Log in as root on the target machine.**

5. **Change to the directory where you downloaded `agent-update.bin`.**

6. **Type this command:**

   `./agent-update.bin -s` *server* `-r` *http-port* `-p` *image-name* `[-f` *seed-file*`]`

   where

   - *server* is the server that you logged into in Step 1
   - *http-port* is the Sun Management Center Web server port.
   - *image-name* is the name of the agent-only image you created in Step 2
   - *seed-file* is a file containing the security seed and SNMP community string. By using this option, you can make agent installation automatic after running the command. The *seed-file* must be owned by root and have read/write permissions for root only as a security precaution. If the file does not meet these requirements, the script exits.

For example, assume that the Sun Management Center server name is Production1 and that the Web server port is 8080. Also, assume that the agent-update image name is sparc-baseagent. You would then type:

```
# ./agent-update.bin -s Production1 -r 8080 -p sparc-baseagent
```

7 **Provide the security seed and the SNMPv1 community string.**

The agent-update process prompts you for the security seed and the SNMPv1 community string.

- The security seed must be the same seed that you provided when you set up the Sun Management Center server and agent.

  Type the security seed password that you provided in Step b, "Setting Up Sun Management Center" on page 30. Type the password again to confirm the password.
- The SNMPv1 community string must be the same community string you provided when you set up the Sun Management Center server and agent.

  If you specified a custom community string, make sure that you type the same community string that you provided in "Setting Up Sun Management Center" on page 30, Step c. If you used the default community string of `public`, press Return.

The update process applies the update to the machine without prompting for further information.

When the update process completes, check the update status by viewing the log file `/var/opt/SUNWsymon/log/agent-update.log` on the target machine.

▼ To Install Agents From an Agent-Only Installation Image Using `es-inst -a`

1 **Create an agent-only installation image as directed in "To Create an Agent-Only Installation Image Using `es-makeagent`" on page 96.**

2 **Log in as root on the machine where you want to install the agent.**

3 **Go to the agent-only install image `disk1/sbin` directory.**

For example, if you created the agent-only image in the `/export/agentsource` directory on a machine that is named `appserver`, you would type:

```
# cd /net/appserver/export/agentsource/disk1/sbin
```

4 **Type the command `./es-inst -a` to install the Sun Management Center agent.**

You are prompted for the target directory

5 Type the name of the directory in which to install Sun Management Center

The default location is `/opt`.

Sun Management Center software can be installed in any location on your system where the minimum required disk space is available. Press Return to accept the default location `/opt` or, if you want to install to a directory other than `/opt`, type the directory name.

Tip – The command **`df -ak`** lists the used space and free space for each file system on the machine.

The install process checks for any applicable add-ons.

6 Select the Sun Management Center add-on products.

The install process lists each add-on product, and asks whether you want to install the product.

Note – Only the agent component of a selected add-on is installed.

Type **y** to select the product for installation, or type **n** if you do not want to install the product.

If you did not select any add-on products, you are asked whether you want to proceed. Type **y** to continue. The install process checks disk space. Go to Step 8.

If you selected any add-ons, your selections are listed.

7 Review your selections.

Type **y** to continue, or type **n** to repeat the selection process.

The install process checks disk space.

8 Check disk space.

The installation process checks whether there is enough disk space to install the agent and the agent component of any add-on that you selected.

- If there is enough disk space, the agent is installed. You are asked whether you want to run setup. Go to Step 10.
- If there is not enough disk space, you are asked to provide an alternate file system. The amount of space available and the amount of space that is needed are displayed.

9 Provide the name of an alternate file system with enough disk space.

At the prompt requesting a different file system, type the name of a file system and directory that has enough free space.

Tip – In a terminal window on the machine where you are installing Sun Management Center, type **`df -ak`** to list the amount of used and free space for each file system on the machine.

The installation process checks disk space again. If there is enough disk space, the agent is installed. You are asked whether you want to run setup.

10 Decide whether to set up the agent.

To set up Sun Management Center agent and any add-on products that you selected, type **`y`**. Follow the instructions in "To Set Up Sun Management Center" on page 31.

If you chose to run setup later, you must set up the agent on the machine before you can run the agent. Use either `es-guisetup` or `es-setup` to set up the agent.

- To setup the agent using `es-guisetup`, follow the instructions in "To Set Up Sun Management Center" on page 31.
- To setup the agent using `es-setup`, follow the instructions in "Setting Up Sun Management Center 4.0 Using `es-setup`" on page 196.

Installing Agents Using JumpStart

This section describes how to configure and use a Solaris JumpStart server to install and set up the Sun Management Center 4.0 base agent, and the Solaris version 8 or version 9 operating environment, on a large number of systems.

JumpStart Concepts

The JumpStart software enables you to automatically install or upgrade the Solaris operating environment on several systems, and to perform pre-install and post-install tasks that can include installation and setup of additional software such as Sun Management Center.

The Solaris JumpStart software is a client-server application that consists of the following components:

- Boot server – Provides a mini-root Solaris operating system kernel to the install client using trivial file transfer protocol (*tftp*). The kernel is architecture-neutral, and provides base services to all hardware supported by the Solaris version running on the boot server.
- Install server – Provides the software packages, such as the Sun Management Center 4.0 base agent, that are to be installed on the target systems or *install clients*.
- Install clients – The target systems on which Solaris and specified software packages, such as the Sun Management Center 4.0 base agent, are to be installed.
- Profile or configuration server – Provides JumpStart *profiles*.

A JumpStart profile is a text file that defines how the Solaris operating environment software is to be installed on each install client in a group. The JumpStart profile can be used to specify which software groups to install, and the partition specifications, space allocations, and backup media to be used during software upgrades.

You can create more than one JumpStart profile, such as one for a fresh install of the Solaris operating environment, and another for an upgrade install of the Solaris operating environment. Each JumpStart profile is assigned to one or more install clients using the JumpStart *rules* file.

For detailed information about creating a JumpStart profile, see "Creating a Profile" in *Solaris 9 9/04 Installation Guide*.

- Rules file – Specifies the tasks that are to be performed on an install client, or on a group of install clients. Each rule within the rules file specifies the following items:
  - An install client or group of install clients, consisting of a rule keyword or general system attribute, and a rule value or specific system attribute.
  - An optional begin script, which performs specific tasks before the Solaris operating environment is installed or upgraded
  - The JumpStart profile that is to be applied to each install client or group of install clients.
  - An optional finish script, which performs specific tasks after the Solaris operating environment has been installed or upgraded. A finish script is required to install the Sun Management Center base agent using the JumpStart software.

  All install clients on which the Sun Management Center base agent is installed using a specific JumpStart rule will have an identical Sun Management Center configuration. The Sun Management Center root directory, server context, security seed, and SMNPv1 community string are identical.

You also need a separate machine, referred to as the *prototype* machine, on which to generate the Sun Management Center install and setup response files required by the JumpStart finish script.

For detailed information about the JumpStart software, see *Solaris 9 9/04 Installation Guide*.

System Services Needed

The JumpStart software requires the following system services.

TABLE 6–1 System Services Required for the JumpStart Software

Service	Used for
Network File System (NFS) daemons `mountd` and `nfsd`	Sharing the Solaris operating system image files
`rarp`	IP address discovery
`bootp`	Host definition and location of shared file systems

TABLE 6–1 System Services Required for the JumpStart Software *(Continued)*

Service	Used for
`tftp`	Transfer of the Solaris initial boot kernel from the boot server to the install client

JumpStart Process Overview

Deployment of the Sun Management Center 4.0 base agent is performed by the JumpStart finish script, which is run on the install clients. After JumpStart installs the specified Solaris operating environment, the JumpStart finish script installs the base agent on the install client based on the contents of the Sun Management Center install response file.

The finish script also prepares the install client to set up the base agent after the install client reboots, based on the contents of the Sun Management Center setup response file.

The Sun Management Center response files are generated during the Sun Management Center 4.0 command-line installation and setup process on a separate or *prototype* system. The response files are then copied to the JumpStart profile directory. If needed, you can manually create the install and setup response files directly in the JumpStart profile directory.

JumpStart mounts the install client's file systems on the `/a` partition. The JumpStart finish script then installs the Sun Management Center base agent by running the Sun Management Center command `es-inst -R /a -T /a/`*target-directory*, where *target-directory* is the name of the directory on the install client in which the agent is installed. For information about the `es-inst` command and parameters, see "`es-inst` Options" on page 184

The finish script also creates an `rc3.d` file that runs after the install client reboots. The `rc3.d` file sets up the Sun Management Center base agent using the setup response file. When the base agent is set up, the `rc3.d` file is deleted. Output from the finish script is stored in `/var/sadm/system/logs/finish.log`.

Security Considerations for Finish Scripts

During Sun Management Center setup, you provided a password to generate the security key, and you provided an SNMP community string. To ensure security, the security key and community string are not stored in the Sun Management Center setup response file.

To successfully install and set up the Sun Management Center base agent on an install client, you must provide the same password that was used to generate the security key in "Setting Up Sun Management Center" on page 30, Step b. You must also provide the same SNMP community string that you specified in "Setting Up Sun Management Center" on page 30, Step c. This can be performed using either of the following two methods.

- Hard-code the password seed and community string in the JumpStart finish script.

  This method presents a security risk because the security password seed and the community string are visible in the finish script. The security risk can be reduced, but not eliminated, by setting the finish script file permission to 400.

- Configure the JumpStart finish script so that the password seed and community string are manually entered on the install client during base agent setup.

  The finish script can be configured to prompt for the security password seed and SNMP community string responses on the install client. The answers are stored as variables in a temporary finish script. When the install client is rebooted, the `rc3.d` script executes the temporary finish script, and then restores the original finish script.

  This method requires you to manually enter the security password seed and community string at each install client.

Caution – This method does not validate the password seed or the community string. Communication between the agent and server will fail if you enter the wrong password seed or community string. If base agent setup fails on any install client, or if the agent fails to communicate with the Sun Management Center server, you have to run `es-setup -F` individually on each install client.

Examples of JumpStart finish scripts for both methods are provided in "To Create the JumpStart Finish Script" on page 117.

JumpStart Configuration and Use

The following list summarizes the major steps required to set up the JumpStart software and install the Solaris operating environment, and the Sun Management Center base agent, on one or more install clients.

- Create the JumpStart install and profile servers.
- Create the Sun Management Center 4.0 base agent image on the JumpStart install server.
- Generate the Sun Management Center 4.0 install and setup response files.
- Create the JumpStart profiles.
- Create the JumpStart finish scripts for Sun Management Center.
- Create the JumpStart rules file.
- Validate the JumpStart files.
- Add install client information to the JumpStart server.

When all of the above steps have been completed, you can use the JumpStart server to perform a fresh Solaris operating environment and Sun Management Center base agent install on one or more install clients.

The procedures in this section assume the following situation:

- The machine `bootserver01` has been configured as a boot server, and is to be used as the JumpStart boot server, install server, and profile server. Machine `bootserver01` has already been configured as the boot server.
- You are using `/export/home` as the base directory for all JumpStart files.

Note – You can specify any file system that has sufficient space for the Solaris operating environment install image, and for the Sun Management Center base agent install image. The file system should have a minimum of 500 Mbytes of free space.

If you have decided to use a different directory for the JumpStart base directory, replace `/export/home` in the following procedures with the name of the directory you have chosen for the JumpStart base directory.

- You have selected Solaris version 8 for JumpStart installations.

  If you are using Solaris version 9, replace `Solaris_9` with `Solaris_8` where appropriate in the following sections.
- You have chosen the default location of `/opt` for Sun Management Center base agent installation.

▼ To Create the JumpStart Install Server and Profile Directory

1 Create the JumpStart install server and Solaris operating environment image.

a. Log in as root on the machine you want to use as the JumpStart install server.

b. Insert the Solaris installation CD 1 of 2 in your CD-ROM drive.

c. Go to the `Tools` directory on the CD.

```
# cd /DiskMountDir/Solaris_2.8/Tools
```

d. Create the Solaris operating environment installation image.

Type the command `./setup_install_server` */install-server-directory*, where *install-server-directory* is the directory that is to be used to serve the install images. For example:

```
# ./setup_install_server /export/home/JumpStart/Solaris_9
Verifying target directory...
Calculating the required disk space for the Solaris_9 product
Copying the CD image to disk...
Install Server setup complete
```

e. Optional: Add the Solaris operating environment supplemental products to the JumpStart install server.

Insert the Solaris installation CD 2 of 2 in your CD-ROM drive, and go to the `Tools` directory on the CD.

Type the command **`./add_to_install_server /`***install-server-directory*, where *install-server-directory* is the directory that is to be used to serve the install images. For example:

```
# cd /DiskMountDir/s0/Solaris_9/Tools
# ./add_to_install_server /export/home/JumpStart/Solaris_9
```

2 Create the JumpStart profile directory on the server.

```
# mkdir /export/home/JumpStart/jumpstart
```

3 Insert the Solaris installation CD 1 of 2 in your CD-ROM drive.

4 Copy the JumpStart samples from the CD directory `Solaris_2.8/Misc/jumpstart_sample` to the JumpStart profile directory `/export/home/JumpStart/jumpstart`. For example:

```
# cd /DiskMountDir/s0/Solaris_2.8/Misc
# cp -r jumpstart_sample/* /export/home/JumpStart/jumpstart
```

5 Stop the Network File System daemon `mountd`.

```
# /etc/init.d/nfs.server stop
```

6 Make the JumpStart directory NFS-shared.

The JumpStart directory must be NFS-shared so that the install clients can access the files on the JumpStart server. Add the following line to the `/etc/dfs/dfstab` file, then save and close the file.

```
share -F nfs -o ro,anon=0 /export/home/JumpStart
```

7 Start the Network File System daemon `mountd`.

```
# /etc/init.d/nfs.server start
```

▼ To Create the Base Agent Image on the JumpStart Install Server

1 Log in as root on the machine where you created the JumpStart install server.

2 Insert the Sun Management Center 4.0 DVD in your DVD drive.

Change to the directory */DiskMountDir*`/sbin`.

3 Type the command `./es-makeagent` to create the Sun Management Center base agent image.

You are prompted for the installation files source directory, and for the agent image target directory.

(SPARC) The source directory is */DiskMountDir*`/disk1/image/sunOS/sparc`.

(x86) The source directory is */DiskMountDir*`/disk1/image/sunOS/i386`

(Linux) The source directory is */DiskMountDir*`/disk1/image/Linux`

The target directory is the directory on the JumpStart install server where the agent image is to be created, for example, `/export/home/JumpStart/AgentImage`.

Note – If the target directory that you specify does not exist, you are asked whether you want to create the directory. Type **y** to create the directory.

Example:

```
# ./es-makeagent
Installation files source directory: /DiskMountDir/image
Please enter the target directory: /export/home/JumpStart/AgentImage
```

Note – The image creation process can take over half an hour to complete.

---

4 Exclude add-on agents.

If you do not want to include the add-on agent components, rename the agent-image Addons directory.

```
# cd /export/home/JumpStart/AgentImage/disk1/image
# ls -p
Addons/     PE/         Patches/    Webserver/  db/
# mv Addons Addons-temp
```

▼ To Generate the Sun Management Center 4.0 Install and Setup Response Files

1 Select a machine on which to install and set up the Sun Management Center base agent, and log in as root.

This is the prototype machine.

Tip – Select a machine on which Sun Management Center has not been installed. If such a machine is not available, uninstall the Sun Management Center software from the prototype machine as directed by the installation manual for the Sun Management Center software. Do not save the configuration data from the previous version of Sun Management Center.

2 Insert the Sun Management Center 4.0 DVD in your DVD drive.

Change to the directory */DiskMountDir*`/sbin`.

3 Create a directory on the machine in which to store the Sun Management Center install and setup response files.

For example:

```
# mkdir /response-files
```

4 Generate the Sun Management Center Install Response file.

To generate the install response file, you must install the base agent using the command format **`./es-inst -C`** */response-file-dir/install-response-file*`.cfg` where:

- *response-file-dir* is the directory that you created in which to store the response files
- *install-response-file* is the name of the response file

For example:

```
# ./es-inst -C /response-files/install.cfg
```

You are prompted for the directory in which to install Sun Management Center.

a. Provide the name of the directory in which to install Sun Management Center

You are prompted for the target directory. The default location is `/opt`.

Sun Management Center software can be installed in any location on your system where the minimum required disk space is available. If you want to install to a directory other than `/opt`, type the directory name.

Tip – The command **`df -ak`** lists the used space and free space for each file system on the machine.

You are prompted to select the Sun Management Center components that you want to install.

b. Select only the agent component.

Type **`n`** when prompted to install the server component.

Type **`y`** when prompted to install the agent component.

Type **n** when prompted to install the console component.

```
3 component(s) are available for your selection:
  Do you want to install the Server component (y|n|q) n
  Do you want to install the Agent component (y|n|q) y
  Do you want to install the Console component (y|n|q) n
```

The install process checks for add-on components, and then prompts you to select add-ons.

c. Do not select any add-on components for installation.

Type **n** when prompted to select each add-on.

```
Select the products you want to install:
    Advanced System Monitoring (y|n|q) n
    Service Availability Manager (y|n|q) n
    Performance Reporting Manager (y|n|q) n
    Sun Fire Platform Administration (y|n|q) n
    System Reliability Manager (y|n|q) n
    Workgroup Server (y|n|q) n
```

You are asked whether you want to proceed. Type **y** to continue.

d. Check disk space.

The installation process checks whether there is enough disk space to install the Sun Management Center base agent.

- If there is enough disk space, the base agent is installed.
- If there is not enough disk space, you are asked to provide an alternate file system. The amount of space that is available and the amount of space that is needed are displayed.

Tip – In a terminal window on the machine where you are installing the Sun Management Center agent, type **`df -ak`** to list the amount of used and free space for each file system on the machine.

When the agent installation completes, you are asked whether you want to run setup.

Caution – Do not run setup. Type **n** to exit. Running setup from within the install process will not create the Sun Management Center setup response file needed by the JumpStart finish script.

---

5 Go to the directory `/opt/SUNWsymon/sbin`.

If you installed Sun Management Center in a different location, go to the */install-dir*`/SUNWsymon/sbin` directory, where *install-dir* is the directory you specified in Step 4.

6 Generate the Sun Management Center 4.0 setup response file.

To generate the Sun Management Center setup response file, you must set up the base agent using the command format **./es-setup -C** */response-file-dir/setup-response-file* **.cfg** where:

- *response-file-dir* is the directory that you created in which to store the response files
- *setup-response-file* is the name of the response file

For example:

```
# ./es-setup -C /response-files/setup.cfg
```

You are prompted to provide a seed for security key generation,

a. Generate the security keys.

An encrypted security key is needed for communications between all Sun Management Center processes. The key is generated based on the password seed that you provide. The seed must be between one and eight characters long, and contain no spaces. Entries that are greater than eight characters are truncated to eight characters.

Caution – You must ensure that you use the same security seed for all the machines that you install in a single server context.

Type the same password seed that you provided during Sun Management Center server setup in Step b in "Setting Up Sun Management Center" on page 30.

Type the password seed again when prompted.

Note – To ensure security, the password seed that you provide is not stored in the Sun Management Center setup response file. You can either hard-code the password seed in the JumpStart finish script, or configure the finish script so that the install client prompts for the password seed when the finish script runs on the install client. Both methods of specifying the password seed are provided in "To Create the JumpStart Finish Script" on page 117.

You are prompted for the SNMPv1 community string.

b. Specify the SNMPv1 community security string.

An SNMPv1 community string is required for security, and by default is set to `public`. For additional security, a customized string can be specified.

Caution – You must ensure that you use the same SNMPv1 community string on all the machines that you install in a single server context.

Provide the same community string that you provided during Sun Management Center server setup in Step c in "Setting Up Sun Management Center" on page 30.

- If you used the default community string of `public`, press Return when prompted to submit the SNMPv1 community string.
- If you specified a custom community text string, type the same community string that you provided during Sun Management Center server setup.

Note – To ensure security, the community string that you provide is not stored in the Sun Management Center setup response file. You can either hard-code the community string in the JumpStart finish script, or configure the finish script so that the install client prompts for the community string when the finish script runs on the install client. Both methods of specifying the community string are provided in "To Create the JumpStart Finish Script" on page 117.

You are prompted for the Sun Management Center server host name.

c. Specify the Sun Management Center server host name.

Type the name of the machine on which the Sun Management Center server was installed.

The setup process checks whether the SNMP port is in use.

- If SNMP port 161 is not in use, you are asked whether you want to start the Sun Management Center agent. Go to Step e.
- If SNMP port 161 is in use, you are prompted to assign an SNMP port number.

d. Resolve the SNMP port conflict.

Type the same port number that you provided during Sun Management Center server setup in Step f in "Setting Up Sun Management Center" on page 30.

e. Start the Sun Management Center agent.

Caution – If your network uses Network Address Translation (NAT), type **n** to exit setup without starting Sun Management Center. Use the `es-config` command-line utility described in "To Enable NAT Support" on page 171 to configure the machine for NAT before you start Sun Management Center.

- If you want to start the Sun Management Center base agent now, type **y**.

  The setup script starts the agent using `es-start -A`. See "Starting Components Using `es-start`" on page 140 for information about `es-start`.

  Also, see "Starting the Console" on page 142 for instructions on how to start the Sun Management Center console.
- If you want to start Sun Management Center later, type **n**. See Chapter 8, "Starting and Stopping Sun Management Center," when you are ready to start the Sun Management Center agent on this machine.

7 Copy the install and setup response files to the JumpStart profile server.

As an example in the previous steps, the Sun Management Center install response file `install.cfg` was created on the prototype machine in the directory `/response-files`. The Sun Management Center setup response file `setup.cfg` was also created on the prototype machine in the directory `/response-files`.

Assume that your JumpStart profile server is named bootserver01, and the JumpStart profile directory on machine bootserver01 is `/export/home/JumpStart/jumpstart`. Also assume that you have enabled write-access to the JumpStart profile directory from the prototype machine. You would then copy the response files from the prototype machine to the JumpStart profiles directory on the JumpStart machine. For example:

```
# cd /response-files
# cp install.cfg /net/bootserver01/export/home/JumpStart/jumpstart
# cp setup.cfg /net/bootserver01/export/home/JumpStart/jumpstart
```

8 Log in as root on the machine where you created the JumpStart profile directory.

9 Go to the JumpStart profile directory that you created in Step 2, in "To Create the JumpStart Install Server and Profile Directory" on page 107.

10 Edit the Sun Management Center install response file.

You must edit the install response file so that it can be used by JumpStart. The install response file is the file name you specified in Step 4. Make the following changes to the install response file:

- Change the `SOURCE_DIRECTORY` value to `/a/mnt/disk1/image`. The `/a/mnt/disk1/image` corresponds to the `$MNTDIR` value specified in the JumpStart finish script.
- Change the `TARGET_DIRECTORY` value to `/a/`*target_directory*, where *target_directory* is the directory on each install client where the Sun Management Center base agent is to be installed.
- Change the value of the `SETUP_NOW` parameter to zero. Setting the value of the `SETUP_NOW` parameter to zero ensures that the Sun Management Center setup does not automatically run on each install client when the Sun Management Center base agent has been installed.

The following sample shows a basic Sun Management Center install response file after edits have been completed.

```
SUNMC_VERSION=4.0
ENVIRONMENT=1
SOURCE_DIRECTORY=/a/mnt/disk1/image
TARGET_DIRECTORY=/a/opt
OSVERS=8
PRTOUT= Sun Microsystems sun4u PCI (UltraSPARC-II 450MHz)
LAYER.SERVER=0
LAYER.AGENT=1
```

```
LAYER.CONSOLE=0
SETUP_NOW=0
```

The value of the PRTOUT parameter is not important because the base agent is platform independent. However, JumpStart requires this parameter to be present. Do not delete the PRTOUT parameter.

11 Edit the Sun Management Center setup response file.

You must edit the setup response file so that it can be used by JumpStart. The setup response file is the file name that you specified in Step 6. Make the following changes to the setup response file if needed:

- Make sure that the server name specified by the SUNMC_SERVER parameter is the name of the Sun Management Center 4.0 server machine.
- Make sure that the value of the START_SUNMC parameter is set to 1 (one). Setting the value of the START_SUNMC parameter to 1 ensures that the Sun Management Center base agent is started after it has been set up.
- Make sure that the agent_OPTIONAL_PORT parameter is present, and that the assigned value is either a valid port number, or the text string DEFAULT.
- Make sure that all of the parameters in the sample setup response file shown below are present.

The following examples show a Sun Management Center setup response file before and after JumpStart edits have been applied. In both examples, bootserver01 is the name of the Sun Management Center server machine.

Example 6–1 Setup Response File Before JumpStart Edits Are Applied

```
SUNMC_SERVER=bootserver01
agent_OPTIONAL_PORT=1161
START_SUNMC=1
```

Example 6–2 Setup Response File After JumpStart Edits Are Applied

```
DISABLE_SNMPDX_DAEMON=1
STOP_SNMPDX=1
SUNMC_SERVER=bootserver01
agent_OPTIONAL_PORT=1161
START_SUNMC=1
```

In this example, the line DISABLE_SNMPDX_DAEMON=1 disables the SNMP daemon. The line STOP_SNMPDX=1 stops the SNMP daemon. The line SUNMC_SERVER=bootserver01 specifies that the base agent Sun Management Center server host is the machine named bootserver01. The line agent_OPTIONAL_PORT=1161 assigns port 1161 to the agent. The line START_SUNMC=1 starts the base agent when base agent setup is complete.

▼ To Create the JumpStart Profiles

1 **Log in as root on the machine where you created the JumpStart profile directory.**

2 **Go to the JumpStart profile directory that you created in Step 2, in "To Create the JumpStart Install Server and Profile Directory" on page 107.**

3 **Create a JumpStart profile for each type of install client on which you will install the Sun Management Center base agent.**

You can create a JumpStart profile either by copying an appropriate sample profile from the samples in the directory, or by using the following example as a template. Save each JumpStart profile that you create in the JumpStart profile server directory, and record the name of each profile you create.

Caution – Do not use a sample profile as the actual profile. Edit the profile to meet the JumpStart requirements, as described in "Creating a Profile" in Solaris 9 9/04 Installation Guide.

The following examples show sample JumpStart profiles. The first example shows a profile that is used for a fresh Solaris operating environment install. The second example shows a profile that is used for Solaris operating environment upgrade.

Example 6–3 Sample JumpStart Profile: Fresh Solaris Operating Environment Install

```
#
# all_9000_t0+swap
#
install_type    initial_install
system_type     standalone
partitioning    explicit
#
filesys         c0t0d0s1        2024    swap
filesys         c0t0d0s0        6120    /
filesys         c0t0d0s7        free    /export/home
#
cluster         SUNWCall
package         SUNWabe             delete
cluster         SUNWCapache         delete
cluster         SUNWCdhcp           delete
cluster         SUNWClux            delete
cluster         SUNWCfct            delete
cluster         SUNWCnet            delete
package         NSCPcom             delete
```

Example 6–4 Sample JumpStart Profile: Upgrade Solaris Operating Environment Install

```
install_type    upgrade
```

▼ To Create the JumpStart Finish Script

1. **Log in as root on the machine where you created the JumpStart profile directory.**
2. **Go to the JumpStart profile directory that you created in Step 2, in "To Create the JumpStart Install Server and Profile Directory" on page 107.**
3. **Create the JumpStart finish script.**

   Review "Security Considerations for Finish Scripts" on page 105. Then, depending on your security requirements, use either of the following sample finish scripts as a guideline to create the finish script in the JumpStart profile directory.

   The first example shows a finish script in which the password seed and community string are hard coded. The second example shows a finish script that will prompt for the password seed and community string.

   Save your finish script with the `sh` extension, for example, `base_agent_finish.sh`.

Example 6–5 Sample Finish Script: Security Password Seed and Community String Hard Coded

```
#!/bin/sh
#
# Program type      : Unix bourne shell script
# Description       : Standard finish script for installing and
#                     setting up Sun Management Center core agent
#
#
#
ROOTDIR=${ROOTDIR:-/a}              # Root directory for new OS
MNTDIR=${ROOTDIR}/mnt
LOGDIR=${ROOTDIR}/var/tmp/sunmcfinish
SI_CONFIG_DIR=${SI_CONFIG_DIR:-/export/home/JumpStart/jumpstart}
INSTALL_RESP=${SI_CONFIG_DIR}/install.cfg
SETUP_RESP=${SI_CONFIG_DIR}/setup.cfg
#
#
# Begin Main Program
#
#
umask 022
mkdir -p $LOGDIR
#
# Copy the install and setup response file to target system
#
cp ${INSTALL_RESP} $LOGDIR
cp ${SETUP_RESP} $LOGDIR
#
```

```
# mount Sun Management Center image
#
mount -F nfs bootserver01:/export/home/JumpStart/AgentImage $MNTDIR
[ $? -ne 0 ] && exit 1
#
# run es-inst with -a -R -T and -A options
# skip the next line for Flash Archive based deployment
# Do not use the -T option if you have specified the TARGET_DIRECTORY
# tag in install.cfg
#
${MNTDIR}/disk1/sbin/es-inst -a -R /a -T /a/opt -A ${LOGDIR}/install.cfg
#
# Clean up any rc script with the same name if present
#
test -f ${ROOTDIR}/etc/rc3.d/S80SunMCJumpStart && \
rm -f ${ROOTDIR}/etc/rc3.d/S80SunMCJumpStart
rm -f /etc/init.d/SunMCJumpStart
#
# Place rc script in rc3.d and init.d to do setup
# Remember to access es-setup based on the target directory location
#
echo "Creating rc script..."
cat > ${ROOTDIR}/etc/rc3.d/S80SunMCJumpStart << EOF
#!/sbin/sh
#
rm /etc/rc3.d/S80SunMCJumpStart /etc/init.d/SunMCJumpStart
SECURITY_SEED=abc123
SNMPV1_STRING=private
export SECURITY_SEED SNMPV1_STRING
/opt/SUNWsymon/sbin/es-setup -e -A /var/tmp/sunmcfinish/setup.cfg
EOF
cp ${ROOTDIR}/etc/rc3.d/S80SunMCJumpStart \
     ${ROOTDIR}/etc/init.d/SunMCJumpStart
exit 0
```

Example 6–6 Sample Finish Script: Prompt for Security Password Seed and Community

```
#!/bin/sh
#
# Program type      : Unix bourne shell script
# Description       : Standard finish script for installing and
#                     setting up Sun Management Center core agent
#
#
#
ROOTDIR=${ROOTDIR:-/a}              # Root directory for new OS
MNTDIR=${ROOTDIR}/mnt
LOGDIR=${ROOTDIR}/var/tmp/sunmcfinish
```

```
SI_CONFIG_DIR=${SI_CONFIG_DIR:-/export/home/JumpStart/jumpstart}
INSTALL_RESP=${SI_CONFIG_DIR}/install.cfg
SETUP_RESP=${SI_CONFIG_DIR}/setup.cfg
#
#
# Begin Main Program
#
#
umask 022
mkdir -p $LOGDIR
#
# Copy the install and setup response file to target system
#
cp ${INSTALL_RESP} $LOGDIR
cp ${SETUP_RESP} $LOGDIR
#
# mount Sun Management Center image
#
mount -F nfs bootserver01:/export/home/JumpStart/AgentImage $MNTDIR
[ $? -ne 0 ] && exit 1
#
# Read secure inputs from user who invoked boot net - install
#
echo "Enter Security seed:"
read SECURITY_SEED
echo "Enter SNMP string:"
read SNMPV1_STRING
#
# run es-inst with -a -R -T and -A options
# skip the next line for Flash Archive based deployment
# Do not use the -T option if you have specified the TARGET_DIRECTORY
# tag in install.cfg
#
${MNTDIR}/disk1/sbin/es-inst -a -R /a -T /a/opt -A ${LOGDIR}/install.cfg
#
# create a temporary es-setup script to use the secure information
# read earlier
# Remember to access es-setup based on the target directory location
#
FILE2=/a/opt/SUNWsymon/sbin/es-setup
FILE=/a/opt/SUNWsymon/sbin/es-setup.jumpstart
mv $FILE2 $FILE
count=‘wc -l $FILE‘
count=‘echo $count | cut -d’ ’ -f1‘
ncount=$count
count_enter=‘expr $ncount - 3‘
while [ $ncount -gt 0 ] ; do
   k=‘tail -$ncount $FILE | head -1‘
```

```
    if [ $ncount -eq $count_enter ]
    then
        echo $k >> $FILE2
        echo "SECURITY_SEED=$SECURITY_SEED" >> $FILE2
        echo "SNMPV1_STRING=$SNMPV1_STRING" >> $FILE2
    else
        echo $k >> $FILE2
    fi
    ncount=‘expr $ncount - 1‘
done
chmod +x $FILE2
#
# Clean up any rc script with the same name if present
#
test -f ${ROOTDIR}/etc/rc3.d/S80SunMCJumpStart && \
rm  -f ${ROOTDIR}/etc/rc3.d/S80SunMCJumpStart \
rm -f /etc/init.d/SunMCJumpStart
#
# Place rc script in rc3.d and init.d to do setup and cleanup
# Remember to access es-setup based on the target directory location
#
echo "Creating rc script..."
cat > ${ROOTDIR}/etc/rc3.d/S80SunMCJumpStart << EOF
#!/sbin/sh
#
rm /etc/rc3.d/S80SunMCJumpStart /etc/init.d/SunMCJumpStart
/opt/SUNWsymon/sbin/es-setup -e -A /var/tmp/sunmcfinish/setup.cfg
mv /opt/SUNWsymon/sbin/es-setup.jumpstart /opt/SUNWsymon/sbin/es-setup
EOF
cp ${ROOTDIR}/etc/rc3.d/S80SunMCJumpStart \
   ${ROOTDIR}/etc/init.d/SunMCJumpStart
exit 0
```

▼ To Create the JumpStart Rules File

1. **Log in as root on the machine where you created the JumpStart profile directory.**

2. **Go to the JumpStart profile directory that you created in Step 2, in “To Create the JumpStart Install Server and Profile Directory” on page 107.**

3. **Create the JumpStart rules file.**

   Use the following example rules file as a template, and create the rules file in the JumpStart profile directory.

Example 6–7 Sample Rules File

```
#
# rule keywords and rule values   begin script   profile    finish  script
# ------------------------------  ------------   -------    --------------

# This rule matches one system:
#
hostname bootserver01            -         basic_prof  base_agent_finish.sh


# This is a complex rule:
#
network 192.43.34.0 && ! model \
 SUNW,SPARCstation-20                -         net_prof         -


# This rule applies to all
# SUNW,SPARCstation-LX:
#
model SUNW,SPARCstation-LX           -         lx_prof     complete.sh


# Another complex rule:
#
network 193.144.2.0 && karch i86pc   init.sh    IA_prof     done.sh

#
# You can use system attributes like RAM size and architecture to
# classify targets:
#
memsize 16-32 && arch i386           -          prog_prof        -


# rules are matched top-down. If nothing matches, this rule will apply:
#
any                  -              -         generic_prof     -
```

▼ To Validate Your JumpStart Files

1. **Log in as root on the machine where you created the JumpStart profile directory.**
2. **Go to the JumpStart profile directory that you created in Step 2, in "To Create the JumpStart Install Server and Profile Directory" on page 107.**

3 Type `./check` to validate your JumpStart files.

```
# ./check
Validating rules...
Validating profile basic_prof...
Validating profile net_prof...
Validating profile lx_prof...
Validating profile IA_prof...
Validating profile prog_prof...
Validating profile any_machine...
The custom JumpStart configuration is ok.
# cat rules.ok
hostname bootserver01          -         basic_prof      base_agent_finish.sh
network 192.43.34.0 && ! model \
 SUNW,SPARCstation-20                    -         net_prof        -
model SUNW,SPARCstation-LX             -         lx_prof         complete.sh
network 193.144.2.0 && karch i86pc       init.sh   IA_prof         done.sh
memsize 16-32 && arch i386               -         prog_prof       -
any -                                    -         generic_prof    -
```

▼ To Add Install Client Information to the JumpStart Server

1 Log in as root on the JumpStart server.

2 Insert the Solaris installation CD 1 of 2 in your CD-ROM drive.

Go to the `Tools` directory on the CD.

```
# cd /DiskMountDir/s0/Solaris_2.8/Tools
```

3 Determine the system identification information for each install client.

The JumpStart server requires the following information about each install client.

- Name
- Ethernet address
- IP address
- Architecture

Log on to each install client, and use the `arp` and `uname` commands as follows to display the install client's Ethernet address, IP address, name, and architecture.

```
> arp clienthost
clienthost (111.222.123.124) at 8:0:80:e4:23:eb permanent published
> uname -a
SunOS clienthost 5.9 Generic_112233-01 sun4u sparc SUNW
```

In the above example, the `clienthost` install client Ethernet address is `8:0:80:e4:23:eb`, the IP address is `111.222.123.124`, and the architecture is `sun4u`.

4 Add the system identification information for each install client to the JumpStart server.

The `add_install_client` command is used to add the install client information to the JumpStart server as follows:

```
add_install_client \
-c JumpStart_profile_server:path_to_configuration_directory \
-s JumpStart_install_server:path_to_operating_environment_image \
-p JumpStart_profile_server:path_to_SYSIDCFG_file \
-e install_client_ethernet_address \
-i install_client_IP_address \
install_client_name install_client_architecture
```

For example, assume your systems are configured as follows.

- Machine `bootserver01` is your JumpStart boot server, profile server, and install server.
- The JumpStart configuration directory on `bootserver01` is `/export/home/JumpStart/jumpstart`.
- The JumpStart operating environment image directory on `bootserver01` is `/export/home/JumpStart/Solaris_9`.
- The system identification configuration file `sysidcfg` is located in the JumpStart configuration directory `/export/home/JumpStart/jumpstart`.
- The install client Ethernet address is `8:0:80:e4:23:eb`, and the IP address is `111.111.123.124`.
- The install client's name is `clienthost`, and the install client's architecture is `sun4u`.

You would then add the install client `clienthost` using the `add_install_client` command as follows.

```
# ./add_install_client -c bootserver01:/export/home/JumpStart/jumpstart \
  -s bootserver01:/export/home/JumpStart/Solaris_9 \
  -p bootserver01:/export/home/JumpStart/jumpstart \
-e 8:0:80:e4:23:eb -i 111.111.123.124 \
  clienthost sun4u
  Adding Ethernet number for clienthost to /etc/ethers
  making /tftpboot
  enabling tftp in /etc/inetd.conf
  starting rarpd
  starting bootparamd
  updating /etc/bootparams
  copying inetboot to /tftpboot
```

When you have finished adding install client system information to the JumpStart server, you can then use JumpStart to install the Solaris operating environment and the Sun Management Center base agent as described in the next step.

For further information about the `add_install_client` command and options, see the man page `add_install_client`(1m).

5 **Boot each install client.**

a. **Logon as root on the client machine in single-user mode.**

b. **At the ok prompt, type the command** `boot net - install`**.**

For example:

```
{2} ok boot net - install
```

The client system boots from the JumpStart server. JumpStart installs the Solaris operating environment specified by the JumpStart profile assigned to the install client by the applicable rule in the rules file. When the operating environment has been installed, the Sun Management Center 4.0 base agent is installed. The install client then reboots.

When the install client reboot completes, the Sun Management Center base agent is set up according to the specifications of the finish script assigned to the install client by the applicable rule in the rules file. If you hard coded the security password seed and the SNMP community string in the finish script, base agent setup is automatic. If you chose not to hard code the password seed and community string in the finish script, you must respond to the base agent setup prompts on each install client to complete base agent setup.

Configuring Server and Agent on Multi-IP Machines

This section describes how to configure the Sun Management Center 4.0 server and agent on multi-IP machines.

Server Configuration

When installed on a system with multiple IP interfaces, the Sun Management Center 4.0 server is configured, by default, to support all agents on all of the IP interfaces.

The `esmultiip` command enables you to list, remove, or add an IP interface. The syntax of the `esmultiip` command is as follows:

```
esmultiip [-lh] | [ < -a | -d > Host-IP ]
```

The following table describes the `esmultiip` command parameters.

TABLE 6–2 esmultiip options

Option	Modifying Options	Definition
		Enable the multi-IP feature on the Sun Management Center server if more than one IP interface is present.

TABLE 6–2 esmultiip options *(Continued)*

Option	Modifying Options	Definition
`-h`		List the options for `esmultiip`
`-l`		List all of the active IP interfaces of the Sun Management Center server
`-a`	*Host-IP*	Add the host name corresponding to the IP address *Host-IP* to the list of active server IP interfaces
`-d`	*Host_IP*	Remove the host name corresponding to the IP address *Host-IP* from the list of active server IP interfaces

Note – The following procedures assume that the Sun Management Center server has been installed on the multi-IP machine in the directory `/opt`. If you installed the agent in a different directory, replace `/opt` with the name of the directory that you specified.

▼ To Add an IP Interface to the Sun Management Center Server

1 Log in as root on the server multi-IP machine.

2 List the current Sun Management Center active IP interfaces.

Type the command **`/opt/SUNWsymon/sbin/esmultiip -l`**. For example:

```
# /opt/SUNWsymon/sbin/esmultiip -l
Multi IP configured with active interfaces "10.1.2.111"
```

3 List all IP interfaces on the machine.

Type the command **`ifconfig -a`**. For example:

```
# ifconfig -a
lo0: flags=1000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4> mtu 8232 index 1
        inet 127.0.0.1 netmask ff000000
hme0: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 2
        inet 10.1.2.111 netmask ffffff00 broadcast 10.1.2.255
        ether 8:0:20:a8:7a:c9
hme1: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 3
        inet 129.1.2.222 netmask ffffff00 broadcast 129.199.199.255
        ether 8:0:20:a8:7a:c9
```

As shown by the above examples, only IP interface `hme0` at IP address `10.1.2.111` is being used by the Sun Management Center server.

4 **Add an IP interface.**

Assume that you want to add the IP interface `hme1` at IP address `129.1.2.222`. You would then type the command **`/opt/SUNWsymon/sbin/esmultiip -a 129.1.2.222`**.

The IP interface is added to the list of active Sun Management Center server interfaces.

▼ To Remove an IP Interface From the Sun Management Center Server

1 **Log in as root on the server multi-IP machine.**

2 **List the current Sun Management Center active IP interfaces.**

Type the command **`/opt/SUNWsymon/sbin/esmultiip -l`**. For example:

```
# /opt/SUNWsymon/sbin/esmultiip -l
Multi IP configured with active interfaces "10.1.2.111 129.1.2.222"
```

3 **Remove an IP interface.**

Assume that you want to remove the IP interface `hme1` at IP address `129.1.2.222`. You would then type the command **`/opt/SUNWsymon/sbin/esmultiip -d 129.1.2.222`**.

The IP interface is removed from the list of active Sun Management Center server interfaces.

Agent Configuration

If the Sun Management Center 4.0 agent is configured to use one IP interface on a multi-IP machine, and another IP interface is configured for use by the server, then the Sun Management Center agent on the multi-IP machine cannot communicate with the Sun Management Center server.

The agent must be reconfigured to use the same IP interface as the server

---

Note – The following procedure assumes that only the Sun Management Center agent has been installed on the multi-IP machine in the directory `/opt`. If you installed the agent in a different directory, replace `/opt` with the name of the directory that you specified.

▼ To Configure the Sun Management Center Agent on a Multi-IP Machine

1 **Log in as root on the multi-IP agent machine.**

2 **Determine which IP address the agent is using.**

Type the command **`uname -n`** to display the machine name.

```
# uname -n
u60-01
```

The agent is configured to run on the IP address corresponding to the machine name reported by **`uname -n`**. In this example, the agent is configured to run on the IP interface assigned to machine name `u60–01`.

3 Determine the IP interface addresses.

Type the command **`cat /etc/hosts`** to display the machine name assigned to each IP interface.

For example:

```
# uname -n
u60-01
# cat /etc/hosts
127.0.0.1       localhost
10.1.2.111      u60-01      loghost
10.2.3.222      u60-01-ip2
```

In the above examples, `uname -n` showed `u60–01`, and `u60–01` is assigned to the IP interface `10.1.2.111`.

If you want to configure the Sun Management Center agent to run on a different IP interface, reassign the agent to use the required IP interface as described in the following steps.

4 Stop the agent if it is running.

Type the command **`/opt/SUNWsymon/sbin/es-stop -A`**.

All Sun Management Center processes are stopped.

5 Change the machine name to the name assigned to the appropriate interface.

Assume that the agent uses IP interface 10.1.2.111, which is named `u60–01`. Also assume you want to reassign the agent to use IP interface `10.2.3.222`, which is named `u60–01-ip2`.

You would then reassign to agent to IP interface 10.2.3.222 by typing the command **`uname -S u60–01–ip2.`**

6 Set up the agent.

You must set up the agent again to enable the agent to use the new IP interface assignment.

Type the command **`/opt/SUNWsymon/sbin/es-setup -F`**.

You are prompted for the security key seed.

a. Specify the Sun Management Center security key.

Type the same security seed password that you provided during Sun Management Center setup in "Setting Up Sun Management Center" on page 30, Step b. Type the password again to confirm.

You are prompted for the SNMPv1 community string.

b. Specify the SNMPv1 community string.

Type the same community string that you provided during Sun Management Center setup in "Setting Up Sun Management Center" on page 30, Step c. If you used the default value `public`, press Return.

You are informed that *server-host-name* appears to be configured as your Sun Management Center server, where *server-host-name* is the name of the machine where the server was installed.

- If the displayed server name is correct, type **y**.
- If the displayed server name is not correct, type **n**. You are prompted to provide the Sun Management Center host name.

  Type the name of the machine where the server is installed.

The agent is set up to use the new IP address.

Note – If you installed any add-on agent components, you might be asked to set up the add-on components as well.

Agent configuration is now complete, and you can restart the agent.

7 Restart the agent.

Type the command **`/opt/SUNWsymon/sbin/es-start -A`**.

Installing Sun Management Center 4.0 on Microsoft Windows

Only the Sun Management Center console and the console components of some add-ons can be installed on Microsoft Windows. The Microsoft Windows machine must be accessible by your Solaris or UNIX network, and must have access to your network for the console to work.

Caution – Before you install Sun Management Center 4.0 on any Microsoft Windows platform, make sure that you have set the Java environment variables and path as described in "Java Environment Variables and Path" on page 68. Installation will fail if JDK 1.5 or higher version is not installed and configured.

▼ To Install Sun Management Center 4.0 on Microsoft Windows

1 Log in as administrator, or as a user with administrator privileges.

2 Run Windows Explorer.

3 Review the README file.

If you are installing from the DVD, insert Sun Management Center 4.0 DVD in the DVD drive, and then use Windows Explorer to navigate to and open `/install/windows_install_readme.txt`.

If you are installing from the Sun Management Center image, use Windows Explorer to navigate to and open */net/machine-name/imagedir* `/disk1/install/windows_install_readme.txt`.

4 Use the Windows Explorer to navigate to `/install/install.bat` and double-click the icon.

5 The Welcome window appears.

Ensure that you have the information listed, and then click Next.

The Specify the Installation Destination Directory window appears.

6 Specify the installation directory.

You are prompted for the directory in which to install Sun Management Center. The default location is `C:\Program Files\SUNWsymon`. The Sun Management Center 4.0 console can be installed in any location on your system where the minimum required disk space is available.

Click Next to accept the default of `C:\Program Files\SUNWsymon`, or browse to a directory name, select the directory, and then click Next.

- If the directory exists, the Select Add-on Products window appears.
- If the directory does not exist, you are informed that the directory does not exist, and asked `Create it now?`.

  Click Create. The window closes.

  Click Next in the Specify the Installation Destination Directory window.

  The Select Add-on Products window appears.

7 Select the add-ons that you want to install, and then click Next.

The Disk Space Check window appears.

- If there is enough free disk space to install Sun Management Center, the Confirmation window appears.
- If there is not enough free disk space, you are prompted to specify a different directory, or to browse to and select a different directory.

  The disk space check is run again. If the directory does not have enough space, you are again prompted to specify a directory that contains enough free space. If the directory that you specified has sufficient space, the Confirmation window appears.

8 Confirm installation selections.

A list of your selections is displayed.

- Confirm the selections. If the list is correct, click Next to start installation of Sun Management Center.
- If the list is not correct, click Back to return to the Select Add-on Products window to select the products that you want to install.

The installation in progress screen appears.

9 Complete the installation process.

When the installation process completes, a list of installed products is displayed. Click Close.

See Also This concludes the Microsoft Windows installation process. Setup and configuration is not required for the Sun Management Center console on Microsoft Windows systems. You can now run the Sun Management Center console as directed by "To Start the Console on Microsoft Windows" on page 143.

◆ ◆ ◆ CHAPTER 7

Sun Management Center Post-Installation Tasks

This chapter provides the instructions for post-installation tasks you can perform to complete your Sun Management Center 4.0 configuration and implementation.

This chapter discusses the following topics:

- "Setting Up Users" on page 131
- "Stopping and Disabling the SNMP Daemons" on page 133
- "Installing Separately Released Add-on Products" on page 134
- "Sun Management Center Validation Tool" on page 136

Setting Up Users

During Sun Management Center server setup, the file `/var/opt/SUNWsymon/cfg/esusers` is created.

Sun Management Center users are valid UNIX users whose login names are stored in the file `/var/opt/SUNWsymon/cfg/esusers`. All users listed in this file have general access privileges by default unless the user is given additional privileges, as described in "To Assign a User to a Security Group" on page 132.

If a user login name is not in `/var/opt/SUNWsymon/cfg/esusers`, that user cannot log in to Sun Management Center. For a user to be able to access Sun Management Center, the user name must be added to the `/var/opt/SUNWsymon/cfg/esusers` file, as described in "To Add Sun Management Center Users" on page 132.

Users must also be assigned a security level for access. Sun Management Center assigns users to specific security groups. Three groups are created by default during the installation process: `esops`, `esadm`, and `esdomadm`.

- `esops` is the group that is assigned to users who can effectively use the product and fine-tune its operation. These users cannot affect major configuration or architectural changes. The `esops` group has the greatest restriction of access privileges.

- `esadm` is the group that is assigned to users who can perform privileged operations, including the loading of modules and the configuration of managed objects and data properties. The `esadm` group has more access privileges than `esops`, but fewer access privileges than `esdomadm`.
- `esdomadm` is the group that is assigned to users who have domain administration privileges. These users can create top-level domains in a server context and assign privileges for other Sun Management Center users within these domains. This role is the highest-level role.

For further information about security groups and roles, see "Users, Groups, and Roles Overview" on page 57. To find out how to assign a user to a specific Sun Management Center security group, see "To Assign a User to a Security Group" on page 132. For further information about Sun Management Center security, see "Security Recommendations" on page 57.

▼ To Add Sun Management Center Users

1. **Log in as root (`su - root`) on the Sun Management Center server machine.**
2. **Add the user name on a new line in the `/var/opt/SUNWsymon/cfg/esusers` file.**

   The user name that you add must be a valid UNIX user name.
3. **Save the file and exit the editor.**

See Also The user can now log in to Sun Management Center as a general user with limited access privileges. To enable additional access privileges for the user, assign the user to a specific security group. For further information about security groups, see "Users, Groups, and Roles Overview" on page 57.

▼ To Assign a User to a Security Group

1. **Ensure that the user login name is in the `/var/opt/SUNWsymon/cfg/esusers` file.**
2. **Log in as root on the Sun Management Center Server machine.**
3. **In the `/etc/group` file, add the user to one of the following lines as applicable: `esadm`, `esops`, or `esdomadm`.**

   Separate each entry by a comma. For example, assume that you want to make the following assignments:

   - sysadmin1 and syadmin2 to the domain administration group `esdomadm`
   - admin1, admin2, and admin3 to the administration group `esadm`
   - ops1 and ops2 to the operations group `esops`

The entries in the `/etc/group` file would then be:

```
esadm::1000:admin1,admin2,admin3
esdomadm::1001:sysadmin1,sysadmin2
esops::1002:ops1,ops2
```

See "Users, Groups, and Roles Overview" on page 57 for a thorough description of each of the security groups.

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

The user can now log in to Sun Management Center using the security privileges that you have assigned.

Stopping and Disabling the SNMP Daemons

The Sun Management Center agent uses User Datagram Protocol (UDP) port 161 by default to communicate with the Sun Management Center server. The Sun Management Center agent is a complete replacement and enhancement for the SNMP agent `snmpdx` and the Sun SNMP utility `mibissa`, which also use port 161 by default.

The SNMP agent `snmpdx` is the main component of Solstice Enterprise Agent technology. `snmpdx` and `mibissa` run as daemon processes and listen for SNMP requests on port 161.

Note – (On Solaris 10) If you use port 161, you are reminded to manually stop and disable the SNMP daemon, `SMA`.

If port 161 is in use during Sun Management Center setup, you are given the opportunity to specify a different port for the Sun Management Center agent and server, or to continue and use port 161. If you choose to use port 161, you are given the opportunity to stop and disable the SNMP agent daemon.

Caution – If you use port 161 and have chosen to manually stop and disable the SNMP daemon, Sun Management Center will not start until you stop all processes that use port 161.

The following procedure applies to any machine on which the Sun Management Center agent has been installed.

▼ To Stop and Disable `snmpdx` Manually

1. **Log in as root.**
2. **Disable the `snmpdx` daemon by typing:**

```
# svcadm disable svc:/application/management/snmpdx
```

Note – A script whose name begins with an uppercase "S" automatically starts when the system reboots. A script whose name begins with a lowercase "s" is not run automatically.

Troubleshooting Your system might have other legacy SNMP agents or processes utilizing port 161. If Sun Management Center fails to start even though you have stopped and disabled `snmpdx`, view the `agent.log` file `/var/opt/SUNWsymon/log/agent.log` to see whether there is a port conflict.

▼ To Stop and Disable `SMA` Manually

1. **Log in as root.**
2. **Stop and disable the `SMA` daemon by typing:**

```
# /etc/init.d/init.sma stop
```

Installing Separately Released Add-on Products

Installing a separately released add-on product involves two steps:

- Installing the add-on product as directed by the documentation for the product.
- Setting up the add-on product by using either the Sun Management Center setup wizard `es-guisetup` or the command-line script `es-setup`.

Tip – You can install several add-ons, and then set up all of the add-ons by using the `es-guisetup` command.

▼ To Set Up an Add-on Product Using `es-guisetup`

1. **Log in as root on the Sun Management Center machine where the add-on is installed.**
2. **Go to the Sun Management Center `sbin` directory, for example:**

```
# cd /opt/SUNWsymon/sbin
```

If you installed Sun Management Center in a different directory than `/opt`, go to */installdir*`/SUNWsymon/sbin`, where *installdir* is the directory that you specified.

3 **Run the `es-guisetup` script:**

```
# ./es-guisetup
```

The Overview screen appears.

4 **Click Next.**

The Advanced Setup Options screen appears.

5 **Select Configure Add-ons and click Next.**

The Select Add-on Products screen appears.

6 **Click Next.**

- If no add-ons have been set up, the add-ons are listed. You are informed that the listed add-ons will be set up. Click Next to start the setup process for the listed add-ons.
- If one or more add-ons have already been set up, those add-ons are listed. A list of add-ons that have not been set up is also displayed.

  Select the add-on or add-ons that you want to set up, then click Next.

  The setup screens for each selected add-on are presented in sequence. The Sun Management Center setup process prompts you for any information required by each selected add-on. Provide the requested information as needed. Refer to the add-on documentation for additional information for each add-on product that you selected.

  If an add-on product setup failed, you are informed that the setup of the add-on product was not successful. You are then directed to see the log file for more details. The name of the log file is provided.

  When the add-on setup process is complete, a list of the add-on components you installed and set up is displayed. You are prompted to click Next to start Sun Management Center, or to click Close to exit the setup process and start Sun Management Center later.

▼ To Set Up an Add-on Product Using `es-setup`

1 **Log in as root on the Sun Management Center machine where the add-on is installed.**

2 **Go to the Sun Management Center `sbin` directory, for example:**

```
# cd /opt/SUNWsymon/sbin
```

If you installed Sun Management Center in a different directory than `/opt`, go to */installdir*`/SUNWsymon/sbin`, where *installdir* is the directory that you specified.

3 **Determine the directory name of the add-on.**

List the contents of the *installdir*`/SUNWsymon/addons` directory, for example:

```
# ls -p /opt/SUNWsymon/addons
AdvancedMonitoring/    PRM/              SystemManagement/          storage/
EServices/             SunfireSun4dConfigReader/                       wgs/
```

4 **Set up the add-on by typing** `es-setup -p` *add-on-name*, **where** *add-on-name* **is the directory name for the add-on. For example:**

```
# ./es-setup -p SunfireSun4dConfigReader
```

The setup process is started for the specified add-on. When the add-on setup completes, you are asked whether you want to start the Sun Management Center agent and server processes.

- Type **y** to start the Sun Management Center agent and server.
- Type **n** to exit without starting the Sun Management Center agent and server.

Sun Management Center Validation Tool

The Sun Management Center validation tool `es-validate` checks and verifies installation and setup information after the software has been installed on your system. The tool is automatically installed when you install any of the base component layers.

`es-validate` provides the following information, which is based on the parameters you use:

- The version of the Sun Management Center base product installed on the local host
- The Sun Management Center base component layers installed on the host
- A list of all Sun Management Center base packages installed on the host
- A list of all Sun Management Center add-on packages and the version of each installed on the host
- The Sun Management Center base installation directory (BASEDIR)
- The Sun Management Center patch IDs that have been installed
- The Solaris operating environment version
- The disk space used by the Sun Management Center installation

The validation tool also checks functional aspects of your system, including the following items:

- Confirms whether the products installed on your system are compatible
- Checks whether the Sun Management Center base product and add-on products have been set up
- Checks whether the Sun Management Center database is functional
- Confirms whether the Sun Management Center Web server is running

- Displays all agents in the server context of the current Sun Management Center server, and also checks for agent connections in the server context
- Confirms whether the command-line interface is functional

`es-validate` Options

The syntax for the `es-validate` command is as follows:

`es-validate [-s` *server* **`[-r`** *serverport*`] [-u`** *user-name* **`[-p`** *password* **`]]] [-a`** *agenthost* **`[-b`** *agentport*`] [-d]] [-c] [-o`** *outfile*`]`

The following table describes the `es-validate` parameters.

TABLE 7–1 `es-validate` Options

Option	Modifying Options	Description
-a	*agenthost*	Check connectivity with agent host machine *agenthost*.
-b	*agentport*	The SNMP port number associated with *agentport*.
-c		Show all the agents in the context of the Sun Management Center server specified with `-s` option.
-d		Show the version number of the agent on *agenthost*.
-o	*outfile*	Store the output of `es-validate` in file *outfile*. *outfile* should be an absolute file path. The default is an arbitrary file name in `/tmp`.
-p	*password*	The password for `-u` *user-name* If not specified, and `-u` *user-name* is specified, you are prompted for the password.
-r	*serverport*	The Sun Management Center RMI port number. If not specified, port 2099 is used.
-s	*server*	The Sun Management Center server host name. If not specified, the current host is used.
-u	*user-name*	The user name used to connect with the Sun Management Center server. The `-u` *user-name* parameter is mandatory for login checks.

◆ ◆ ◆ CHAPTER 8

Starting and Stopping Sun Management Center

This chapter provides the following procedures for starting and stopping Sun Management Center.

This chapter discusses the following topics:

- "Commands Supported by the Linux Agent" on page 139
- "Starting Components on the Solaris Platform" on page 140
- "Starting the Console" on page 142
- "Stopping Components on the Solaris Platform" on page 143

Note – The procedures in this chapter assume that you installed Sun Management Center in the default file system `/opt`. If you installed Sun Management Center in a different location, replace `/opt` with the name of the file system you chose.

Commands Supported by the Linux Agent

The following commands are supported by the Linux agent:

- `es-start`
- `es-stop`
- `es-config`
- `es-dt`
- `es-inst` (remote installation is not supported)
- `es-uninst`
- `es-makeagent`
- `es-load-default`
- `es-platform`
- `es-run`
- `es-trapdest`
- `es-validate`

- `es-setup`

Starting Components on the Solaris Platform

This section describes how to start Sun Management Center components using the graphical user interface and the command-line script.

Note – On Solaris 10, if any service fails, Service Management Facility (SMF) will start that service. The only way to stop that service is to use the `es-stop` command.

Starting Components Using `es-guistart`

The graphical user interface wizard enables you to start specific Sun Management Center components as described by the following procedure.

▼ To Start Sun Management Center Using `es-guistart`

1. **Log in as root on the machine on which you want to start Sun Management Center components.**
2. **Change to the `/opt/SUNWsymon/sbin` directory.**
3. **Run the start wizard by typing:**

   ```
   # ./es-guistart
   ```

   The Select Components to Start screen appears.

   Depending on the components installed on the machine, you might have one or more of the following options to select:

   - Start Server Components
   - Start Sun Management Center Agent
   - Start Default Platform Agent
   - Start Instance of Platform Agent

4. **Select the components that you want to start and then click Next.**

   The Starting Components screen appears. The status of each component is listed.

Starting Components Using `es-start`

The `es-start` command-line script enables you to start specific Sun Management Center components. The syntax of the `es-start` command is as follows:

es-start -achlYAS [-y *instance-name*] **[--** *args*...]

Note – `es-start` starts the Sun Management Server service through SMF.

The following table describes the `es-start` command parameters.

TABLE 8–1 `es-start` Options

Option	Modifying Options	Definition
`-a`		Start the agent
`-c`		Start the console
`-c`	`-- -XmxNNm`	Start the console with a default heap size of *64* Mbytes
`-c`	`-- -p port-number`	Start the console and override the default port with *port-number*
`-c -n`	*login-file*	Start the console and use *login-file* to supply the user name, password, host, and port
`-h`		List the options for `es-start`
`-l`		Start the platform agent
`-y`	*instance-name*	Start a new instance of the platform agent where *instance-name* is the name of the platform instance you provide
`-Y`		Start all instances of platform agents
`-A`		Start all components except the console
`-S`		Start the server and all the server subcomponents
`-S`	`-- -XmxNNm`	Start the server and all server subcomponents, arguments are passed to console or server when started

The *login-file* is used with the `-c` and `-n` options to specify a text file to retrieve login information. It has the following format:

```
user=user
password=password
serverhost=local-host
serverport=port-namber
```

Note – The user starting the console must be the same as the user name specified in the *login-file*.

The following examples show how to use `es-start` and its parameters.

To start all Sun Management Center processes, type:

```
# /opt/SUNWsymon/sbin/es-start -A
```

To start the console automatically, using a file to specify the login information, create a *login-file*. Then type:

```
# /opt/SUNWsymon/sbin/es-start -c -n login-file
```

To start the console, the server, and the agent, type:

```
# /opt/SUNWsymon/sbin/es-start -Ac
```

To specify the maximum console heap size when starting the console, use the `es-start -c` and `-X` parameters.

```
# /opt/SUNWsymon/sbin/es-start -c -- -Xmx100m
```

To specify a specific port when starting the console, use the `es-start -c` and `-p` parameters.

```
# /opt/SUNWsymon/sbin/es-start -c -- -p 2090
```

To specify the maximum server heap size when starting the server, use the `es-start -s` and `-X` parameters.

```
# es-start -S -- -Xmx100m
```

Starting the Console

This section describes how to start the Sun Management Center console on the Solaris platform and on Microsoft Windows.

Sun Management Center 4.0 authenticates users based on PAM.

▼ To Start the Console on the Solaris Platform

The same procedure applies on the Linux Platform also.

1. **Log in as an authorized Sun Management Center user on the Solaris machine where you have installed the Sun Management Center console.**
2. **Change to the `/opt/SUNWsymon/sbin` directory.**

3. **Start the Sun Management Center console by typing:**

   ```
   # ./es-start - c &
   ```

   The Sun Management Center Login screen appears.

4. **Type your Sun Management Center user name in the Login ID field.**

5. **Type your Sun Management Center password in the Password field.**

6. **Type the name of the server where the Sun Management Center server layer is installed.**

7. **Click Login.**

   A connection is established to the Sun Management Center server, and your login is authenticated. The Sun Management Center Java console appears.

▼ To Start the Console on Microsoft Windows

1. **Access the Sun Management Center Login window.**

   Double-click the Sun Management Center shortcut icon or choose Start → Programs → Sun Management Center → Console.

   The Sun Management Center Login window appears. A command-prompt window also appears that displays the commands run by Sun Management Center.

2. **Type your Sun Management Center user name in the Login ID field.**

3. **Type your Sun Management Center password in the Password field.**

4. **Type the name of the server where the Sun Management Center server layer is installed.**

5. **Click Login.**

   A connection is established to the Sun Management Center server, and your login is authenticated. The console appears.

Stopping Components on the Solaris Platform

This section describes how to stop Sun Management Center components using the graphical user interface or the command-line script.

Stopping Components Using `es-guistop`

The graphical user interface wizard enables you to stop specific Sun Management Center components as described in the following procedure.

▼ To Stop Sun Management Center Components Using `es-guistop`

1. **Log in as root on the machine on which you want to stop Sun Management Center components.**

2. **Change to the `/opt/SUNWsymon/sbin` directory.**

3. **Run the stop wizard by typing:**

   `# ./es-guistop`

   The Select Components to Stop screen appears.

   Depending on the components installed on the machine, you might have one or more of the following options to select:

   - Stop Server Components
   - Stop Sun Management Center Agent
   - Stop Default Platform Agent
   - Stop Instance of Platform Agent

4. **Select the components that you want to stop and then click Next.**

   The Stopping Components screen appears. The status of each component is listed.

Stopping Components Using `es-stop`

The `es-stop` command-line script enables you to stop specific Sun Management Center components. The syntax of the `es-stop` command is as follows:

`es-stop -ahlYAS [-y` *instance-name*`]`

Note – On Solaris 10, `es-stop` stops the services managed by SMF.

The following table describes the `es-stop` command parameters.

TABLE 8–2 `es-stop` Options

Option	Modifying Options	Definition
`-a`		Stop the Sun Management Center agent

TABLE 8–2 `es-stop` Options *(Continued)*

Option	Modifying Options	Definition
`-h`		List the options for `es-stop`
`-l`		Stop the platform agent
`-y`	*instance-name*	Stop the platform agent instance named *instance-name*
`-Y`		Stop all instances of platform agents
`-A`		Stop all Sun Management Center components except the console
`-S`		Stop all Sun Management Center server and server subcomponents

The following examples show how to use `es-stop` and its parameters.

To stop all Sun Management Center processes, type:

```
# /opt/SUNWsymon/sbin/es-stop -A
```

To stop all Sun Management Center processes except the agent, type:

```
# /opt/SUNWsymon/sbin/es-stop -S
```

◆ ◆ ◆ CHAPTER 9

Sun Management Center Administration

This chapter provides the instructions for administrative tasks such as Sun Management Center backup, security key regeneration, and other tasks you can perform to resolve configuration problems with your Sun Management Center 4.0 installation.

This chapter discusses the following topics:

- "Sun Management Center Backup and Recovery" on page 147
- "Regenerating Security Keys" on page 152
- "SNMP Daemons and Legacy Agents" on page 153
- "Reconfiguring Port Addresses" on page 157
- "Assigning an Agent to a Different Server" on page 166
- "Using Sun Management Center With a Firewall" on page 170
- "Enabling Network Address Translation Support" on page 170

Note – The procedures in this chapter assume that you installed Sun Management Center in the default file system `/opt`. If you installed Sun Management Center in a different location, substitute `/opt` with the name of the file system you chose.

Sun Management Center Backup and Recovery

The `es-backup` command enables you to back up all base and add-on data in your database, and all of the configuration data in `/var/opt/SUNWsymon/cfg`. The `es-restore` command restores the database and configuration data from a previous backup.

Using `es-backup`

You should use `es-backup` to back up your database and configuration data as follows:

- On a scheduled, regular basis as part of standard maintenance
- Before performing a hardware or operating environment upgrade

- Before and after performing a Sun Management Center upgrade installation
- After a fresh Sun Management Center installation and setup

For more information on using the `es-backup` command to do online backups, see "Database Backup and Recovery" in *Sun Management Center 3.6.1 User's Guide*.

The syntax of the `es-backup` command is as follows:

`es-backup [ -h ] [ -c ] [-y] [ -d` *dir***`] [ -o ] [ -e ]`**

The following table describes the `es-backup` command parameters.

TABLE 9–1 `es-backup` Options

Option	Modifying Options	Description
`-c`		Perform cold backup.
`-d`	*dir*	Back up the database and configuration data to the directory *dir*.
`-e`		Report estimated backup size.
`-h`		List the options for `es-backup`.
`-o`		Perform an online backup.
`-y`		Perform a non-interactive backup. You will not be prompted to stop Sun Management Center processes, nor will you be prompted for a backup directory name. **Note –** If you do not specify a backup directory using the `--d` option, all database and configuration data is backed up to the directory `/var/opt/SUNWsymon/backup`.

To minimize and prevent data loss, you must run `es-backup` on a routine basis to enable recovery of your most current data in the event of a system failure. You can create a `cron` entry for the `es-backup -y` script to run the script on a periodic basis. As part of the `cron` entry, you might also want to copy the contents of `/var/opt/SUNWsymon/backup` to an alternate directory.

Note – By default, a non-interactive backup overwrites the contents of `/var/opt/SUNWsymon/backup`. If you have previously performed a non-interactive backup of Sun Management Center data, and you want to save the previous backup, copy the contents of the directory `/var/opt/SUNWsymon/backup` to another location before running a non-interactive backup.

The following procedure assumes that you installed Sun Management Center in the default directory `/opt`. If you did not install Sun Management Center in `/opt`, replace `/opt` with the name of the directory you specified.

▼ To Manually Back Up Sun Management Center Data to the Default Directory

1 Log in as root on the Sun Management Center server machine.

2 Stop all Sun Management Center processes.

Type the command **`/opt/SUNWsymon/es-stop -A`** and press Return.

3 Backup your Sun Management Center data.

Type the command **`/opt/SUNWsymon/es-backup`** and press Return.

If any Sun Management Center processes are still running, you are notified that Sun Management Center must be shut down.

You are asked whether you want to proceed. Type **`y`** and press Return.

4 Specify the backup directory.

You are prompted for the directory path in which to store the backup. The default location `/var/opt/SUNWsymon/backup` is displayed.

- To accept the default backup directory `/var/opt/SUNWsymon/backup`, press Return.

  If a prior backup has been performed using the default directory `/var/opt/SUNWsymon/backup`, you are asked whether to delete the old backups.

  - To keep the old backups, type **`n`** to exit the backup process, then copy `/var/opt/SUNWsymon/backup` to a different directory.
  - To overwrite the old backups, type **`y`**.
- To specify a different backup directory, type the name of the directory and press Return.

  For example:

```
# Enter full directory path to store the backup data files
   [/var/opt/SUNWsymon/backup]: /backup-set-1
```

  If the directory does not exist, you are asked whether you want to create the directory. Type **`y`** and press Return.

  `es-backup` stops all running processes, and then backs up the database and configuration data to the directory you specified. When the backup is completed, `es-backup` starts all Sun Management Center processes.

5 Validate the backup.

Type the command **`/opt/SUNWsymon/sbin/es-restore -c`** and press Return.

You are prompted to enter the full directory path to the backup files. The default backup directory path `/var/opt/SUNWsymon/backup` is displayed.

- If you chose the default backup directory `/var/opt/SUNWsymon/backup`, press Return.
- If you specified a different backup directory, type the full path and name of the directory and press Return.

`es-restore` validates the data in the backup directory. You are informed whether the backup data is valid.

- If the backup is not valid, examine the backup log file `/var/opt/SUNWsymon/install/backup_`*host-name*`.`*date and time string*`.`*process-id* where:
  - *host-name* is the name of the server you used to create the backup
  - *date and time string* is the year, date, and time the backup was created
  - *process-id* is the process ID of the `es-backup` session that created the backup
- If the backup is valid, copy the backup directory to a different directory for safe keeping.

The `es-backup` log file is `/var/opt/SUNWsymon/install/backup_`*host-name*`.`*date and time string*`.`*process-id* where:

- *host-name* is the name of the server you used to perform the backup
- *date and time string* is the year, date, and time the backup was run
- *process-id* is the process ID of the `es-backup` session

Using `es-restore`

To restore your Sun Management Center database and configuration data, for example if your database has been corrupted due to a system failure, use the `es-restore` command.

The syntax of the `es-restore` command is as follows:

`es-restore [-h] [-c] [ -d` *dir***`] [-y] [-f]`**

The following table describes the `es-restore` command parameters.

TABLE 9–2 `es-restore` Options

Option	Modifying Options	Description
`-c`		Verify the backup files only. Do not restore the data.
`-d`	*dir*	Restore the data using the backup files located in the directory *dir*.
`-h`		List the options for `es-restore`.

TABLE 9–2 `es-restore` Options *(Continued)*

Option	Modifying Options	Description
`-f`		Force database schema recreation.
`-y`		Use default answer.

The following procedure assumes that you installed Sun Management Center in the default directory `/opt`. If you did not install Sun Management Center in `/opt`, replace `/opt` with the name of the directory you specified.

▼ To Restore Sun Management Center Data Using the Default Backup Directory

1 Log in as root on the Sun Management Center server machine.

2 Stop all Sun Management Center processes.

Type the command **`/opt/SUNWsymon/es-stop -A`** and press Return.

3 Type the command `/opt/SUNWsymon/sbin/es-restore`.

If any Sun Management Center processes are still running, you are notified that Sun Management Center must be shut down.

You are asked whether you want to proceed. Type **y** and press Return.

4 Specify the backup directory.

You are prompted for the directory path to the backup files. The default location `/var/opt/SUNWsymon/backup` is displayed.

- If you are restoring Sun Management Center data from the default backup directory `/var/opt/SUNWsymon/backup`, press Return.
- If you are restoring Sun Management Center data from a different backup directory, type the name of the directory and press Return.

All Sun Management Center processes are stopped. `es-restore` validates the backup data in the specified directory.

- If the backup data is corrupted, you are informed, and `es-restore` exits to the system prompt.

  If you decide not to restore the Sun Management Center data from a different backup, and want to restart Sun Management Center, type **`/opt/SUNWsymon/sbin/es-start -A`** and press Return.
- If the backup data is valid, `es-restore` restores the database and configuration data from the specified directory.

When the restore is completed, `es-restore` restarts all Sun Management Center processes.

The `es-restore` log file is `/var/opt/SUNWsymon/install/restore_`*host-name*`.`*date and time string*`.`*process-id* where:

- *host-name* is the name of the server you used to perform the restore
- *date and time string* is the year, date, and time the restore was run
- *process-id* is the process ID of the `es-restore` session

Regenerating Security Keys

Security keys are used to validate communications between the Sun Management Center server and agent. The server and agent cannot communicate with each other if the server and agent have different security keys.

The Sun Management Center setup process generates the security keys for Sun Management Center components using the following default settings:

- Valid Sun Management Center users are `public` and `esmaster`
- Sun Management Center superuser is `esmaster`

The software uses an eight-character password string as a *seed* to make the generated key unique. During setup, you must create a seed. The same seed must be used for all server and agent setups in a given server context. For more information on server context, see "Access Control Definitions and Limitations" in *Sun Management Center 3.6.1 User's Guide*.

Sun Management Center setup does not create UNIX accounts for the special users `public` and `esmaster`. You do not need to log into the Sun Management Center console using these user IDs. These IDs are reserved for internal communication between processes. However, some troubleshooting activities might require you to log in using one of these user IDs. If so, you have to create the user ID, and then assign a password using the usual UNIX commands `useradd` and `passwd`. The `esmaster` user ID bypasses normal permission checks, so use this ID with care. For normal operation, use an existing login account.

Setup provides an opportunity to specify an existing user as a Sun Management Center administrator. This user ID is added to the `esadm` and `esdomadm` groups as well as the `esusers` file. For more information on security and the Sun Management Center superuser, see Chapter 18, "Sun Management Center Security," in *Sun Management Center 3.6.1 User's Guide*.

The security keys for the components need to be regenerated if one or more of the following is true:

- UDP ports of any of the Sun Management Center agents change
- Host names or IP addresses of the Sun Management Center agent host change

Note – Changing the host name or the IP address of the Sun Management Center server is not supported.

▼ To Regenerate the Security Keys

Note – In these examples, *shared-secret* stands for a secret string of up to eight characters that is common to all machines in a server context. The string is required as an argument to the script `base-usm-seed.sh`. A default string, `maplesyr` is provided by the software, but you can specify your own password. This secret string or password is used to generate keys for communication between processes.

The following procedure applies to machines on which the Sun Management Center server, agent, or both server and agent are installed.

1. **Log in as root.**
2. **Change to the `/opt/SUNWsymon/sbin` directory.**
3. **Regenerate the security keys.**
   - If you installed only the agent layer, type:

     ```
     # ./es-run base-usm-seed.sh -s shared-secret -c agent -u public
     ```

   - If you installed only the server layer, type:

     ```
     # ./es-run base-usm-seed.sh -s shared-secret -c topology -u public
     # ./es-run base-usm-seed.sh -s shared-secret -c trap event cfgserver servers
     ```

   - If you installed both the agent and server layers on one host, type:

     ```
     # ./es-run base-usm-seed.sh -s shared-secret -u public
     ```

4. **Restart the Sun Management Center server.**

SNMP Daemons and Legacy Agents

This section provides an overview of SNMP, and the procedure for configuring legacy SNMP agents as subagents of the Sun Management Center agent.

SNMP Overview

The Sun Management Center server uses SNMP to communicate with the Sun Management Center agents. SNMP also communicates with the other server components, such as the Topology manager, Configuration manager, Event manager, and Trap handler. By contrast, the Sun Management Center server uses remote method invocation (RMI) to communicate with the Sun Management Center consoles.

The SNMP port definitions for Sun Management Center components are defined in two files:

- The `/var/opt/SUNWsymon/cfg/domain-config.x` file exists in every machine running any Sun Management Center component
- The `/var/opt/SUNWsymon/cfg/server-config.x` file exists on machines that have the Sun Management Center server component installed

The `domain-config.x` file contains one configuration block for each of the SNMP-based Sun Management Center agents. Each configuration block contains at least one line that defines the port address for the corresponding agent. The default port definition for the Sun Management Center server is in the `server-config.x` file.

You can manually add hosts with Sun Management Center agents that use port addresses other than 161 to the administrative domain through the Create Topology Object window. Alternatively, you can discover these hosts automatically by specifying the port number in the discovery parameters. For more information about the Create Topology Object window, see Chapter 3, "Manually Adding Objects to the Topology Database," in *Sun Management Center 3.6.1 User's Guide*. For more information about how hosts are discovered automatically, see Chapter 4, "Adding Objects to the Topology Database Using the Discovery Manager," in *Sun Management Center 3.6.1 User's Guide*. Because you can only specify one port number in addition to port 161, you must select an alternate port number and use that number for all agent installations.

Configuring a Legacy SNMP Agent as a Subagent of an Agent

A legacy SNMP agent is an SNMP agent that is not part of the Sun Management Center agent framework. You might need to configure one or more legacy agents as subagents of a Sun Management Center agent if you want to use the legacy agent with Sun Management Center.

Any legacy SNMP agent can be configured as a subagent of a Sun Management Center Agent provided that the following criteria are met:

- The legacy agent can run on a port other than 161
- The legacy agent configuration supports running that agent as a non-daemon process
- You have the legacy agent MIB definition file

The following procedure applies to machines on which the Sun Management Center server, agent, or both server and agent are installed.

▼ To Configure a Legacy SNMP Agent as a Subagent of an Agent

1. **Log in as root.**

2. **If the file `/var/opt/SUNWsymon/cfg/subagent-registry-d.x` does not exist, copy the file from the `/opt/SUNWsymon/base/cfg` directory**

   ```
   # cp /opt/SUNWsymon/base/cfg/subagent-registry-d.x /var/opt/SUNWsymon/cfg/
   ```

3. **In the file `/var/opt/SUNWsymon/cfg/subagent-registry-d.x`, find the block that is similar to the following block:**

   ```
   # sa2 = {
   #    type             = legacy
   #    persist          = false
   #    snmpPort         = "20001"
   #    errorAction      = restart
   #    startCommand     = "/usr/lib/snmp/mibiisa -p %port"
   #    stopCommand      = "kill -9 %pid"
   #    pollInterval     = 60
   #    pollHoldoff      = 60
   #    oidTrees         = 1.3.6.1.2.1
   #    snmpVersion      = SNMPv1
   #    securityLevel    = noauth
   #    securityName     = public
   # }
   ```

4. **Remove the comment symbols (#) at the beginning of each line so that the code resembles the following code.**

   ```
   sa2 = {
       type             = legacy
       persist          = false
       snmpPort         = "20001"
       errorAction      = restart
       startCommand     = "/usr/lib/snmp/mibiisa -p %port"
       stopCommand      = "kill -9 %pid"
       pollInterval     = 60
       pollHoldoff      = 60
       managedTrees     = "mib-2 sun"
       oidTrees        = 1.3.6.1.2.1
       snmpVersion      = SNMPv1
       securityLevel    = noauth
       securityName     = public
    }
   ```

5 Modify the codes as follows:

- Change `sa2` to the unique subagent name for the agent.
- Set `type` to `legacy`.
- Set `persist` to `false` if the subagent is stopped when the Sun Management Center agent exits. If this value is `true`, then the Sun Management Center agent does not stop the subagent when the Sun Management Center agent exits.
- Set `snmpPort` to the UDP port number on which you want to run the subagent.
- Set `errorAction` to `restart`, `ignore`, or `kill`. If the `restart` option is used, the Sun Management Center agent tries to restart if the agent encounters an error when communicating with the subagent.
- Set `startCommand` to the mandatory command to start the subagent. This command should contain `%port`, which is replaced by the value that is given in `snmpPort`.
- Set `stopCommand` to the command to stop the process. `%pid` can represent the process ID (PID) of the subagent process.
- Set `pollInterval` to the time in seconds in which the Sun Management Center agent polls the subagent.
- Set `pollHoldoff` to the time in seconds after which the first poll is performed on the subagent after the Sun Management Center agent starts the subagent.
- Set `oidTrees` to a space-separated list of SNMP OIDs managed by the subagent.
- Set `snmpVersion` to either `SNMPv1`, `SNMPv2`or `SNMPv3`.
- Set `securityLevel` to either `priv`, `auth`, or `noauth`.
- Set `securityName` to the SNMPv1 community name or SNMPv2 security name you want to use.

For more details, refer to the descriptions in the `subagent-registry-d.x` file.

6 Stop and restart Sun Management Center to make the changes effective.

a. Type `/opt/SUNWsymon/sbin/es-stop -A` to stop Sun Management Center.

Wait for all processes to stop successfully.

b. Type `/opt/SUNWsymon/sbin/es-start -A` to start Sun Management Center.

Wait for all processes to start successfully.

See Chapter 8, "Starting and Stopping Sun Management Center," for further information.

Reconfiguring Port Addresses

This section describes how to configure Sun Management Center software when port addresses might conflict. See Table 9–3 for a list of the default ports for each Sun Management Center component.

Note – The Sun Management Center setup process checks whether each default port is in use. If the port is not in use, the default port is assigned. If a port is in use, you are given the opportunity to specify a separate port. In either case, the port assignments are stored in the configuration files, as described in "SNMP Overview" on page 154.

Default Ports

The default ports used by Sun Management Center components might be used by other processes already installed on the system. If you install Sun Management Center using the default port assignments, you might encounter port conflicts and be unable to start Sun Management Center. The Sun Management Center setup process checks the ports for each component. The process prompts you to either assign an alternate port or use the default port.

The following table lists the Sun Management Center components and the default port for each component. See "To Determine Whether a Port Is Used" on page 158 to find out how to check whether a port is in use.

TABLE 9–3 Sun Management Center Default Port Addresses

Layer	Component	Default Port Number
Agent	Agent	161
Server	Trap handler	162
Server	Event manager	163
Server	Topology manager	164
Server	Configuration manager	165
Server	Platform	166
Advanced System Monitoring Add-on	System event and configuration tracking component `cstservice`	167
Server	Agent information caching component `Metadata`	168
Server	Server RMI	2099
Server	Database	5432

TABLE 9–3 Sun Management Center Default Port Addresses *(Continued)*

Layer	Component	Default Port Number
Server	Grouping	5600
Tomcat	Web server	8006
Server	Web server default port	8080
Server	Web server secure port	8443

▼ To Determine Whether a Port Is Used

- **In a terminal window, type `/bin/netstat -an | grep` *portnumber* where *portnumber* is the port number that you want to query. For example:**

```
# /bin/netstat -an | grep 8443
#
```

  - If the port is not in use, only the command-line prompt is returned as shown above.
  - If the port is in reserved or in use, the status of the port is returned. For example:

```
# /bin/netstat -an | grep 1161
#       *.1161                                 Idle
# /bin/netstat -an | grep 8080
# 172.16.0.0.8080         *.*                0      0 24576      0 LISTEN
```

    where `172.16.0.0` is the IP address of the machine on which you entered the `netstat` command.

Reconfiguring Sun Management Center Ports

To reconfigure Sun Management Center ports, use the `es-config` command.

The following procedures provide examples of how to use the `es-config` command to reconfigure Sun Management Center port assignments.

▼ To Reconfigure the Agent SNMP Port

1. **Log in as root on the Sun Management Center server-layer machine.**
2. **Locate an unused port.**

   See "To Determine Whether a Port Is Used" on page 158.

3. **Type `/opt/SUNWsymon/sbin/es-config -p agent`.**

   `es-config` stops all Sun Management Center processes. The port numbers currently assigned to the Sun Management Center components are then displayed. The port number assigned to the agent is displayed next, and you are prompted to enter the port number.

```
# ./es-config -p agent
Following ports are occupied by Sun Management Center:
161,162,163,164,165,167,168,166,5600,2099,8080,8443.

Sun Management center agent component is presently using port:161
Hit RETURN key to continue with present configuration.
Enter the port number you would like to use for agent component
    [ 1100 to 65535 ]:
```

4. **Type the port number that you want to assign, or press Return to use the default 161 port assignment.**

   You are asked whether you want to start the Sun Management Center components.

5. **Type `y` to start the Sun Management Center components, or type `n` if you do not want to start the components.**

▼ To Reconfigure the Server RMI Port Address

1. **Log in as root on the Sun Management Center server-layer machine.**

2. **Locate an unused port.**

   See "To Determine Whether a Port Is Used" on page 158.

3. **Type `/opt/SUNWsymon/sbin/es-config -p rmi`.**

   `es-config` stops all Sun Management Center processes. The port numbers currently assigned to the Sun Management Center components are then displayed. The port number assigned to the server is displayed next, and you are prompted to enter the port number. For example:

```
# ./es-config -p rmi
Following ports are occupied by Sun Management Center:
161,162,163,164,165,167,168,166,5600,2099,8080,8443.

Sun Management center server component is presently using port:2099
Hit RETURN key to continue with present configuration.
Enter the port number you would like to use for rmi component
   [ 1100 to 65535 ]:
```

4. **Type the port number that you want to assign, or press Return to use the default port assignment.**

   You are asked whether you want to start the Sun Management Center components.

5 Type y to start the Sun Management Center components, or type n if you do not want to start the components.

Using es-config

The syntax for the es-config command is:

es-config [-Adhmnqrox] [-y *filename***] [-p** *sunmc_component***] [-c** *sunmc_component:channel***] [-u** *usmuser***] [-f** *filename***] [-a** *option***] [-F** *component:status***] [[-P [***component:MinPort:MaxPort***] [-w** *webuser***] [-M** *module* **[-z** *priv***] [-k** *lauser* **|-l** *lauser* **| -s]]**

The following table describes the es-config parameters.

TABLE 9–4 es-config Options

Option	Modifying Options	Description
-A		Configure all ports
-a	*option*	Set up database in archive log mode or no archive log mode. The valid values are enable and disable.
-c	*sunmc_component:channel*	Enable or disable the component channels being logged. Valid Sun Management Center components for which channels can be controlled are topology, cfgserver, event, cstservice, trap, metadata, agent, platform, and platform_instances. Valid channels are debug, info, error, status, history, syslog, warning, eventhistory, trace, trap, audit, and attributeAudit.
-d		Restore all ports to the 4.0 default value. See Table 9–3.
-F	*component:status*	Enable firewall support where the valid values for component are server and console and the valid values for status are enable or disable.
-f	*file*	Used only with the -r, -u, and -o options. Reads the seed and community string from the specified file and seeds the esd component. The file has the format: ES_SECURITY_SEED=*seed* ES_SNMPV1_STRING=*string* where *seed* is the seed you want to reseed with and *string* is the community string. The file should be owned by root and have read/write permissions for root only; otherwise the seed could be readable by unauthorized users.
-h		List the es-config options.

TABLE 9–4 `es-config` Options *(Continued)*

Option	Modifying Options	Description
`-k`	*lauser*	Delete the specified Local Access user from the ACL list. This option can be used for Service Management Facility (SMF), Module Configuration Propagation, and Solaris Container Manager modules.
`-L`	*sunmc_component*	List of channels being logged for the given component. The valid Sun Management Center component for which channels can be listed are `topology`, `cfgserver`, `event`, `cstservice`, `trap`, `metadata`, `agent`, `platform`, and `platform_instances`.
`-l`	*lauser*	Add Local Access user or users from ACL list. This option can be used for Service Management Facility (SMF), Module Configuration Propagation, and Solaris Container Manager modules.
`-M`	*module*	Module name for local access user. Used in conjunction with `-k`, `-l`, `-s`. – When used with the `-z` option, updates the module level ACLs – When used without the `-z` option, updates the Local Access user
`-m`		Configure module configuration propagation by adding a list of user names to the `es-mcp-users` configuration file.
`-n`		Enable the Network Address Translation support.

TABLE 9–4 `es-config` Options *(Continued)*

Option	Modifying Options	Description
`-P`	*component:MinPort:MaxPort*	Configure the probe mechanism port range where *MinPort* is the starting port number and *MaxPort* is the ending port number. The range of ports must be at least 20 for example, 1024:1044. The minimum specified ports for `-P` is 20. The ports are used by the probe mechanism to execute ad hoc commands for communication between the Sun Management Center server and agent or between server and console. Valid port numbers are 1100-65535. Valid values for component are `server` and `console`. This option can be used in one of the following ways: `-P MinPort:MaxPort`: Configures port range for communication between server and agent `-P server:MinPort:MaxPort`: Configures server port range for communication between server and console `-P console:MinPort:MaxPort`: Configures console port range for communication between server and console **Note –** You must configure the port range to support communication between the Sun Management Center server and agent or between server and console through a firewall.
`-p`	*sunmc_component*	Configure port to be used by the Sun Management Center component *component-name*. Valid components are `topology`, `cfgserver`, `event`, `cstservice`, `trap`, `metadata`, `rmi`, `agent`, `grouping`, `HTTP`, `HTTPS`, `platform`, and `platform_instances`.
`-q`		Exit from script without starting the *esd* component. By default, the script tries to start the *esd* component before exiting.
`-r`		Regenerate security keys, and enable or disable encrypted SNMP communication. For more information, see "SNMP Encryption (Privacy)" in *Sun Management Center 3.6.1 User's Guide*
`-s`		Show Local Access users or ACL users. This option can be used for Service Management Facility (SMF), Module Configuration Propagation, and Solaris Container Manager modules.
`-u`	*usmuser*	Create or update User Security Model (USM) user for an SNMPv3 agent. *usmname* is the name of the SNMPv3 user to be added to the USM table. After entering the user name and pressing Return, you will be prompted to enter the passphrase (minimum of eight characters) and confirm it. This passphrase is used to generate the keys needed for performing SNMPv3 communication.

TABLE 9–4 `es-config` Options *(Continued)*

Option	Modifying Options	Description
`-w`	*webuser*	Configure or change the specified user to start and stop the Web Server. Sun Management Center server uses *noaccess* as the default user to start or stop the Tomcat Web Server.
`-x`		Configure PRM data retention parameters
`-y`	*file*	Read the age limits from this file. Used only with the `-x` option.
`-z`	*priv*	Privilege level for USM users. Valid values are `admin`, `operator`, and `general`.

Multiple Trap Destinations

You can specify multiple secondary trap destinations for Sun Management Center agents with the `es-trapdest` command. *Secondary* trap destinations (zero or more) receive the same set of traps that are sent to the primary trap destination. Secondary trap destinations do not receive event traps. By default, all traps sent to secondary destinations use SNMPv2c with a community of `public`. The security level for secondary destinations is `noauth`.

Using the `es-trapdest` Command

Secondary trap destinations are managed with the `es-trapdest` command.

The syntax for the `es-trapdest` command is:

`es-trapdest [-c] [-a` *host:port*`] [-v] [-u] [-f] [-d`** *entrynum* **`] [-l]`**

TABLE 9–5 `es-trapdest` Options

Option	Modifying Options	Description
`-c`		Sun Management Center Component such as agent, platform. Agent is the default component.
`-l`		List the currently specified secondary trap destinations.

TABLE 9–5 `es-trapdest` Options *(Continued)*

Option	Modifying Options	Description
`-d`	*entrynum*	Delete a currently specified secondary trap destination. *entrynum* is the number of the currently specified secondary trap destination to be deleted. *entrynum* must match the number listed using the `-l` option.
`-a`	*host*:*port*	Add a new secondary trap destination.
`-v`		SNMP Version (SNMPv1, SNMPv2c, SNMPv2u, or SNMPv3)
`-u`		SNMP User/Community
`-f`		Trap Filter. The list of OIDs or trap names to be sent to destination. If NOT is the first element, all traps are sent EXCEPT the ones listed.

You can also specify the following optional parameters when adding a new secondary trap destination with the `es-trapdest -a` command:

`-v` *version* Specify SNMP version: SNMPv1, SNMPv2c, SNMPv2u, or SNMPv3

`-u` *user* Specify the SNMP community or user name

`-f` *filter* Specify the trap filter

Trap Filter Specification

Trap filters are specified as a list of criteria, which can be either a series of numerical OID prefixes or a series of these mnemonic trap names:

- `sunmcTraps`
- `snmpTraps`
- `coldStart`
- `warmStart`
- `linkDown`
- `linkUp`
- `authenticationFailure`

The trap name `sunmcTraps` represents the OID prefix for all Sun Management Center enterprise-specific traps, and the trap name `snmpTraps` represents the OID prefix for all the standard traps defined in the SNMP RFCs.

Trap filters can be either positive or negative. A *positive* filter specifies which traps to send. A negative filter specifies which traps should *not* be sent. A *negative* filter is defined by specifying `NOT` as the first criterion.

For example, to forward only standard SNMP traps to the secondary trap destination, specify the filter as `-f "snmpTraps"`.

To forward all traps *except* Sun Management Center enterprise-specific traps to the secondary trap destination, specify the filter as `-f "NOT sunmcTraps"`.

Note – Filter specifications that contain spaces must be enclosed in quotation marks to prevent misinterpretation by the shell.

The following command adds `machine02:162` as a secondary trap destination that only receives `warmStart` and `coldStart` traps for the Sun Management Center agent:

```
es-trapdest -a machine02:162 -f "warmStart coldStart"
```

Platform Agent Instances

Each instance of a platform agent can have its own set of secondary trap destinations. To specify secondary trap destinations for a particular instance of a platform agent, use the `-c` *instance* option to the `es-trapdest` command, where *instance* is the name of the platform agent instance. If the `-c` is not specified as an argument to the `es-trapdest` command, the `es-trapdest` command uses the default value of `agent`, which manages the secondary trap destinations for the Sun Management Center agent component.

Registration Trap Configuration

You can configure the agent to send the registration trap at a custom interval. The parameter `agentRegisterHoldOff` controls the initial delay in sending the first registration trap. By default, the value of this parameter is set to 90 seconds. You can change this parameter value in the file `/var/opt/SUNWsymon/cfg/domain-config.x`. For example, to set the value to 120 in the file, you would type:

```
agent = {
agentServer = <myHostname>
    ..
```

```
    agentRegisterHoldOff = 120
}
```

The value for this parameter should be between the minimum of 60 seconds and a maximum of 300 seconds.

If for some reason the initial trap is lost and is not received by the configuration server, the parameter `agentRegisterRetry` controls the interval for resending of the agent registration trap. The parameter has a default value of 300 seconds. If the registration trap is lost, the agent resends the registration trap at the retry interval until it is received by the configuration server.

You can change the parameter value from a minimum of 300 seconds to a maximum of 900 seconds. For example, to set the value to 450 in the file, you would type:

```
agent = {
 agentServer = <myHostname>
     ..
     agentRegisterRetry = 450
}
```

If you specify a value below the minimum, the system uses the minimum value (300 seconds). If you specify a value higher than the maximum, the system uses the maximum value (900 seconds). If you do not specify any values, the system uses the default value of 300 seconds.

Assigning an Agent to a Different Server

This section provides the instructions to assign an agent that is monitored by one Sun Management Center server to another Sun Management Center server.

In the following procedure, assume an agent is currently monitored from Sun Management Center server *Machine-A*, and you want to reassign the agent to Sun Management Center server *Machine-B*.

Reassigning an agent to a different server consists of two main steps as follows.

- Reassign the agent to a different server
- Clear the agent's cache entry from the original server

When an agent has been reassigned to a different server, a cached entry still exists in the original server for the agent. The cached entry must be cleared from the original server using the `es-servercontrol.sh` script to prevent access conflicts. If the cached entry is not cleared from the original server, the original server can still access the agent.

▼ To Assign an Agent to a Different Server

1 **Log in as root on the agent machine.**

2 **Reassign the agent to a different server**

To assign the agent to a different server, you must set up the agent using the command `es-setup -F`.

Type **`/opt/SUNWsymon/sbin/es-setup -F`**.

You are prompted for the security key seed.

3 **Type the security seed.**

An encrypted security key is need for communications among all Sun Management Center processes. The key is generated based on the password you provide, which must be between one and eight characters long, and contain no spaces. Entries that are greater than eight characters are truncated to eight characters.

Make sure that you type the same security seed password that you provided during the original installation and setup process for Step b in "Setting Up Sun Management Center" on page 30.

a. **Type the password for the seed to generate the security keys.**

b. **Type the password again.**

You are prompted for the SNMPv1 community string.

4 **Specify the SNMPv1 community security string.**

The community string is used for SNMP security.

Make sure that you type the same community string that you provided during the original installation and setup process for Step c in "Setting Up Sun Management Center" on page 30.

You are informed that *Machine-A* is configured as your Sun Management Center server, where *Machine-A* is the actual name of the server to which the agent currently is assigned. For example:

```
Machine-A appears to be configured as your Sun Management Center server.
Is this correct (y|n|q)
```

Type **n**. You are prompted for the Sun Management Center server hostname.

5 **Type the hostname of the server to which you want to reassign the agent.**

Type the name of the server. For example:

```
Machine-A appears to be configured as your Sun Management Center server.
Is this correct (y|n|q) n
```

```
Please enter the Sun Management Center Server Hostname: Machine-B
```

You are asked whether you want to start the Sun Management Center agent.

6 Start the agent.

- If you want to start Sun Management Center now, type **y**.

  The setup script starts Sun Management Center using `es-start -A`. See "Starting Components Using `es-start`" on page 140 for information about `es-start`.

  Also, see "Starting the Console" on page 142 for instructions on how to start the Sun Management Center console.
- If you want to start Sun Management Center later, type **n**. See Chapter 8, "Starting and Stopping Sun Management Center," when you are ready to start Sun Management Center.

7 Log in as root on the original server.

8 Type the command `/opt/SUNWsymon/base/sbin/es-servercontrol.sh`.

- If the ESROOT environment variable is set, you are prompted for the Sun Management Center server host name. Go to Step 10.
- If the ESROOT environment variable is not set, you are notified and prompted for the ESROOT directory.

9 Specify the ESROOT directory.

The ESROOT environment variable specifies the location of the Sun Management Center `SUNWsymon` directory.

```
The ESROOT environment variable is not set.
 Enter ESROOT [/opt/SUNWsymon]:
```

Press Return to accept the displayed default of `/opt/SUNWsymon`, or type the full path to the `SUNWsymon` directory.

10 Specify the Sun Management Center server host name.

You are prompted for the server host name.

```
Enter the hostname of the Sun Management Center server [Machine-A]:
```

Press Return to accept the displayed default hostname, or type the server hostname. The server hostname must be the name of the original server to which the agent was assigned.

You are prompted for the server port.

11 Specify the Sun Management Center server port.

The server port is the remote method invocation (RMI) port used by the Sun Management Center server. See Table 9–3 for further information.

The current RMI port is displayed.

```
Enter the port of the Sun Management Center server [2099]:
```

Press Return to accept the displayed port, or type the port that is used for RMI.

You are prompted for the Sun Management Center superuser ID.

12 Specify the superuser ID.

The superuser ID is the administration user ID that you assigned during the original installation and setup process.

The current superuser ID is displayed.

```
Enter the Sun Management Center Superuser ID [esmaster]:
```

Press Return to accept the displayed ID, or type the administrator ID.

You are prompted for the superuser password.

13 Type the password.

A list of server control functions is displayed.

14 Clear the server cache.

Type **1** to select Clear the Server Context Cache. For example:

```
Select one of the following Server control functions:
0) View the Server Context Cache
1) Clear the Server Context Cache
2) Remove a host from the Server Context Cache
3) Remove a host:port from the Server Context Cache
4) View the SNMP OID (Finder and Privacy OID) Cache
5) Clear the SNMP OID (Finder and Privacy OID) Cache
6) Remove a host from the SNMP OID (Finder and Privacy OID) Cache
7) Remove a host:port from the SNMP OID (Finder and Privacy OID) Cache
8) Remove a host:port from the Cfgserver Engines Table
9) Exit

Please Enter Your Selection [9]:1
```

The server cache is cleared, and the server control list is displayed again. Type **9** to exit server control and return to the system prompt.

Using Sun Management Center With a Firewall

A *firewall* is a software or hardware device that controls access between networks. The firewall is located where one network connects to another network, for example, at the point where a corporate intranet connects to the global Internet. Due to increased security awareness, many organizations have implemented security policies within their networks using firewall technology. Because the Sun Management Center software uses a distributed architecture model, you must use the `es-config` command to restrict the ports that Sun Management Center uses for firewalls.

The following procedures provide examples of how to use the `es-config` command to restrict the Sun Management Center firewall port assignments to the port range 6000 to 6150.

▼ To Restrict the Firewall Port Range

1. **Log in as root on the Sun Management Center server-layer machine.**
2. **Locate a range of unused ports.**

   See "To Determine Whether a Port Is Used" on page 158.
3. **Type `/opt/SUNWsymon/sbin/es-config -P 6000:6150`.**

Note – The difference between the starting port number and the ending port number must be at least 100.

`es-config` stops all Sun Management Center processes. The port numbers currently assigned to the Sun Management Center components are then displayed. You are then informed that `/var/opt/SUNWsymon/cfg/domain-config.x` has been updated for the new configuration.

The Sun Management Center components are started.

Enabling Network Address Translation Support

If your network uses Network Address Translation (NAT), you must enable NAT support after you have installed and set up Sun Management Center 4.0. You cannot start Sun Management Center until you have enabled NAT support for each server, agent, and console machine in your network as described in the following procedure. See Appendix D, "Network Address Translation," for more information about NAT.

The following procedure assumes you installed Sun Management Center in the default directory `/opt`. If you did not install Sun Management Center in `/opt`, replace `/opt` with the name of the directory you specified.

▼ To Enable NAT Support

1 **Log in as root on the machine for which you want to enable Network Address Translation support.**

2 **Type** `/opt/SUNWsymon/sbin/es-config -n`**.**

`es-config` stops all Sun Management Center processes. The port numbers currently assigned to the Sun Management Center components are then displayed.

You are asked to provide the host name for the machine. The machine name is displayed.

3 **Provide the machine host name.**

- If you are configuring the Sun Management Center server machine for NAT, press Return.
- If you are configuring a Sun Management Center agent or console machine, type the name of the Sun Management Center server, and then press Return.

Note – Depending on the Sun Management Center 4.0 components installed on the machine, one or more informational messages could be displayed.

You are informed that Network Address Translation support is enabled for the machine. You are then asked whether you want to start the Sun Management Center components.

4 **Determine whether to start Sun Management Center 4.0.**

Caution – Do not start Sun Management Center until you have enabled NAT support for each machine in your network that uses Network Address Translation. The Sun Management Center agent will not run unless NAT support has been enabled for each machine.

Type **y** to start the Sun Management Center components, or type **n** if you do not want to start the components.

◆ ◆ ◆ CHAPTER 10

Integration With Other Enterprise Management Platform

This chapter provides an overview of the integration of Sun Management Center with the Unicenter TNG management platform.

This chapter discusses the following topic:

- "Computer Associates Unicenter TNG Integration" on page 173

Computer Associates Unicenter TNG Integration

The Unicenter TNG product provides network-monitoring functionality for a heterogeneous environment. Sun Management Center provides advanced capabilities and in-depth information for monitoring Sun products. An integration package from Sun provides a bridge between the two products. The integration of these two products provides Unicenter TNG users with superior management capabilities in environments that contain Sun products.

Unicenter TNG Integration Key Features

Unicenter TNG and Sun Management Center integration provides the following capabilities:

- Enables Unicenter TNG to discover Sun Management Center agents and their loaded modules, and present the agents and modules in the Unicenter TNG WorldView
- Enables agent status, agent alarms and agent module load and unload notifications to be forwarded from Sun Management Center to Unicenter TNG through traps
- Enables Unicenter TNG users to view Sun Management Center agent information by launching the Sun Management Center Host Details window from Unicenter TNG WorldView

Unicenter TNG Integration Key Components

The key components required to integrate Unicenter TNG and Sun Management Center are as follows:

- Computer Associates Unicenter TNG 2.4 and WorldView/DSM (Distributed State Machine) or Computer Associates Unicenter TNG 3.0 and WorldView/DSM.
- Sun Management Center Integration Package For Unicenter TNG which is available in the Sun Management Center 4.0 DVD. The Integration Package contains the following items:
  - Event Adaptor
  - Package for TNG WorldView class files
  - Package for Unicenter TNG DSM policy files
  - Package for launching Sun Management Center Details Window
- Sun Management Center version 3.6.1 or 4.0

Unicenter TNG Integration Prerequisites

The following software is required in order to integrate Unicenter TNG and Sun Management Center:

- Unicenter TNG version 2.4 or version 3.0 WorldView/DSM must be installed and running when installing the Unicenter TNG integration package.
- The Unicenter TNG integration package can be installed at the same time Sun Management Center is installed or as an add-on package. Sun Management Center versions 3.6.1 and 4.0 support the Unicenter TNG integration package.
- The Sun Management Center server and the TNG Event Adaptor can be installed on different hosts. The TNG Event Adaptor must be installed on a host that already has the Sun Management Center console installed.
- The Unicenter TNG WorldView class files from the integration package must be installed on the same host as TNG WorldView.
- The Unicenter TNG DSM and Unicenter TNG must be on the same host as the Unicenter TNG DSM policy files from the integration package in order to be installed.

Unicenter TNG Integration Supported Platforms

The following platforms are supported:

- Sun Management Center agents: Solaris 8
- TNG Event Adaptor: Solaris 8
- TNG Integration Packages on TNG Server:Solaris 8

Starting the Adaptor in Command-Line Interface

You can run the Unicenter TNG adaptor without starting the graphical user interface. To start the adaptor in a command-line interface, use this syntax:

```
# SunMC-base_dir/SunMC-TNG/sbin/ea-start [ -h | help] [-f propertyfile \
[ -u username ] ]
```

Note – The UNIX token (\) indicates the continuation of a command-line.

Here is an example of starting the CA Integration TNG Unicenter add-on in the command-line interface :

```
# /opt/SUNWsymon/SunMC-TNG/sbin/ea-start -f \
/var/opt/SUNWsymon/SunMC-TNG/SunMCToTngAdaptorMain.cfg
```

Starting the Adapter in Graphical User Interface

To start the adaptor in the graphical user interface, use this syntax:

```
# SunMC-base_dir/SunMC-TNG/sbin/ea-start [-h help] [-ss serverhost] \
[-sp serverport] [-ts TNG hostname, TNG hostname...] \
[-tp TNG port] [-l log filepath] [-i pollinginterval] \
[-u username]
```

Here is an example of starting the CA Integration TNG Unicenter add-on in the graphical user interface:

```
# /opt/SUNWsymon/SunMC-TNG/sbin/ea-start -ss sunmcserv -ts tngserv
```

Unicenter TNG Integration Additional Documentation

For more information on Unicenter TNG integration, see *Sun Management Center Integration Package User's Guide For Unicenter TNG*.

◆ ◆ ◆ APPENDIX A

Uninstalling Sun Management Center

This appendix provides the procedures for uninstalling Sun Management Center 4.0.

This appendix discusses the following topics.

- "Uninstalling Sun Management Center from the Solaris Platform" on page 177
- "Uninstalling Sun Management Center From the Microsoft Windows Platform" on page 179

Caution – If you want to preserve and use your existing Sun Management Center configuration data, you must perform an upgrade install of Sun Management Center 4.0 as described in Chapter 5, "Upgrading Previous Versions of Sun Management Center on the Solaris Platform."

Uninstalling Sun Management Center from the Solaris Platform

You can use the graphical `es-guiuninst` wizard to either uninstall the entire Sun Management Center 4.0 installation, or only specific add-on products. `es-guiuninst` also provides the option to back up the Sun Management Center configuration data from the previous version. If you chose to back up the configuration data, the Sun Management Center 4.0 installation process detects the backup and checks whether you want to apply the data to the new installation.

You can uninstall specific Sun Management Center 4.0 add-on products by using either the graphical `es-guiuninst` wizard as described below, or by using the `es-uninst` command-line script as described in "Uninstalling Sun Management Center" on page 181.

Caution – When you uninstall Sun Management Center from the global zone on Solaris 10, the agent data in the sparse root zone will not be preserved.

▼ To Uninstall Sun Management Center Using `es-guiuninst`

1. **Open a terminal window, then type the command `xhost +` in the terminal window.**
   Also, make sure that the DISPLAY environment variable is set to your machine's display.

2. **Log in as root on the machine where the Sun Management Center 4.0 software is installed.**

3. **Type the following command:**
   ```
   # /opt/SUNWsymon/sbin/es-guiuninst
   ```
   The Welcome screen appears.

4. **Click Next.**
   The Product Selection for Uninstall screen appears.

5. **Select the products to uninstall.**

6. **Determine whether to save configuration data.**

Caution – If you do not save the configuration data, your current Sun Management Center packages are uninstalled and the contents of `/var/opt/SUNWsymon` are removed. In addition, your security keys are overwritten and you must set up all agents again for the agents to work properly. Select Save Data if you want to retain your administrative domain configuration and custom alarm settings in `/var/opt/SUNWsymon` for subsequent installations or upgrades.

   The Product Removal Confirmation screen appears.

7. **Confirm your selections for uninstall.**
   The selections that you made are listed.

8. **Click Close to exit the uninstall wizard.**

9. **Ensure that all components have been uninstalled.**
   Type the following command to list all Sun Management Center packages:
   ```
   # pkginfo -c symon
   ```
   If any packages are listed, uninstall each package using the `pkgrm` command. For example:

   ```
   # pkginfo -c symon
   SUNWesse
   # pkgrm SUNWesse
   ```

Uninstalling Sun Management Center From the Microsoft Windows Platform

This section provides the procedure for uninstalling the Sun Management Center Console from Microsoft Windows.

▼ To Uninstall Sun Management Center From Microsoft Windows

Before uninstalling Sun Management Center, make sure you do not have any Sun Management Center directories open in Windows Explorer. Also make sure no other applications are accessing Sun Management Center directories. If any Sun Management Center directories are accessed when you uninstall Sun Management Center, the uninstall process will not remove the Sun Management Center directories.

1. **Log in as administrator, or as a user with administrator privileges.**
2. **Choose Start → Settings → Control Panel.**

   The Control Panel window appears.
3. **Double-click Add/Remove Programs.**

   The Add/Remove Programs window appears.
4. **Select Sun Management Center.**
5. **Click Change/Remove.**

   A command window opens and displays the uninstall progress. When the uninstall completes, the command window closes.
6. **Click Close in the Add/Remove Programs window.**

◆ ◆ ◆ APPENDIX B

Using the Command Line for Uninstall, Install, and Setup

This appendix provides the procedures for using the command-line interface to uninstall, install, and set up Sun Management Center.

The following topics are provided:

- "Uninstalling Sun Management Center" on page 181
- "Installing Sun Management Center Using `es-inst`" on page 184
- "Setting Up Sun Management Center Using `es-setup`" on page 195

Uninstalling Sun Management Center

This section provides a summary of the `es-uninst` options, and the procedure for using the `es-uninst` command-line script to uninstall Sun Management Center from Solaris systems.

`es-uninst` Options

The syntax for the `es-uninst` command is:

```
es-uninst [ -f | -F | -X | -h | -v ]
```

The following table describes the `es-uninst` command parameters.

TABLE B–1 `es-uninst` Options

Option	Description
`-F`	Uninstall the entire Sun Management Center installation without prompting for confirmation and without stopping any running Sun Management Center processes. This option should be used only in a situation when the executables that are called while stopping Sun Management Center processes are not present where expected. For example, if the operating environment has been upgraded after Sun Management Center was installed from the Solaris 8 release to the Solaris 9 release, then some dynamically generated path names will be incorrect. In this case, this option avoids errors being reported during the uninstall process.
`-f`	Uninstall the entire Sun Management Center installation without prompting for confirmation.
`-h`	List the `es-uninst` options.
`-v`	Perform the uninstall using verbose mode.
`-X`	Complete Sun Management Center uninstall without interaction. All processes are stopped, then the entire Sun Management Center installation, including the database and all add-ons, is removed. You are not given the opportunity to save your configuration data.

Uninstalling Sun Management Center Versions 3.6.*x*

The Sun Management Center 3.6.*x* `es-uninst` command is used to uninstall the entire of 3.6.*x* installation. The Sun Management Center 3.6.*x* `es-uninst` command also provides the option to back up the Sun Management Center configuration data. If you chose to back up the configuration data, the Sun Management Center 4.0 installation process detects the backup, and asks whether you want to apply the data to the new installation.

You can uninstall Sun Management Center 3.6.*x* by using the `es-uninst` command-line script, as described below.

Note – The Sun Management Center 4.0 installation process automatically runs the `es-uninst` uninstall script of an existing Sun Management Center 3.6.*x* installation. The Sun Management Center 3.6.*x* `es-uninst` uninstall script gives you the opportunity to back up the configuration data from the previous version so that it can be applied to a new Sun Management Center 4.0 installation.

Caution – (On Solaris 10) When you uninstall Sun Management Center 4.0 from the global zone, the agent data in the sparse root zone is not preserved.

▼ To Uninstall Sun Management Center 3.6.*x* Using `es-uninst`

The following steps assume that you installed Sun Management Center in the default directory `/opt`. If you installed Sun Management Center in a different directory, replace `/opt` with the name of the directory you specified.

1. **Log in as root on the machine where the Sun Management Center 3.6.*x* server is installed.**

2. **To uninstall Sun Management Center 3.6.*x*, type the command:**

   ```
   # /opt/SUNWsymon/sbin/es-uninst
   ```

   - If you are uninstalling Sun Management Center 3.6.*x*, you are asked whether you want to save your user and configuration data. Go to Step 6.
   - If you are uninstalling Sun Management Center 4.0, a list of existing products is displayed.

3. **Select the Sun Management Center 4.0 products that you want to uninstall.**

   - Type **y** to uninstall the product and all add-ons.

     You are notified that all Sun Management Center products will be uninstalled, and you are asked whether you want to change your selection. Go to Step 5.
   - Type **n** if you only want to uninstall one or more add-ons.

4. **Select the Sun Management Center 4.0 add-on products that you want to uninstall.**

   The uninstall process steps through each add-on installed on your system. You are asked whether you want to uninstall the add-on.

   Type **y** to uninstall the add-on, or type **n** to keep the installed add-on.

   When you have completed your selections, a list of the products you selected for uninstall is displayed. You are asked whether you want to change your selections.

5. **Change selections if needed.**

   - Type **y** to make different selections. The list of installed products is displayed again, and the uninstall selection process is repeated.
   - Type **n** to continue the uninstall process. You are asked whether you want to preserve the your user and configuration data.

6. **Save the Sun Management Center user and configuration data if needed.**

Caution – If you type **n**, your current Sun Management Center user and configuration data, including the database, is removed. In addition, your security keys will be overwritten, and you will also need to set up all agents for the agents to work properly.

   - Reply **y** if you want to retain your administrative domain configuration and custom alarm settings in `/var/opt/SUNWsymon` for subsequent installations or upgrades.

- Type **n** to discard the existing database.

You are asked whether you want to proceed with the uninstall.

7 Complete the uninstall process.

- Type **y** to uninstall the product or products that you have selected.

  Your selection or selections are uninstalled. When the process completes, the `es-uninst` script exits to the command prompt.
- Type **n** if you do not want to uninstall the selected products.

  The `es-uninst` script exits to the command prompt.

Installing Sun Management Center Using `es-inst`

This section describes how to install the product on Solaris and Linux systems using the `es-inst` script. During installation, you may install the console, server, and agent layers either separately or in combination. You may also choose specific add-on products for the features that you want to install. When the install process is completed, the setup script `es-setup` is run, enabling you to set up the base and add-on components.

Note – On Linux, agent and console layers can be installed. Remote installation is not possible using `es-inst`.

`es-inst` Options

The syntax for the `es-inst` command is:

`es-inst [-S` *dir*`**][-T** *dir*`**][-R** *dir*`**][-C** *file*`**][-A** *file*`**][avh]`**

The following table describes the `es-inst` parameters.

TABLE B–2 `es-inst` Options

Option	Modifying Options	Description
`-A`	*filename*	Perform an automated installation using the specified configuration file *filename*. This option is ignored if `–C` is also used.
`-C`	*filename*	Specify a file in which to store the configuration details entered during installation and setup. The file can be used for subsequent automated installation.

TABLE B–2 es-inst Options *(Continued)*

Option	Modifying Options	Description
-R	*/path/remote-machine*	Install Sun Management Center on a *remote* machine that is network file system read/write accessible from the root login account on the *local* machine. See "Installing on a Remote Machine" on page 191.
-S	*directory*	Specify the source directory.
-T	*directory*	Specify the target directory.
-a		Perform an agent-only product installation. See "To Install or Update Agents From an Agent-Update Image Using agent-update.bin" on page 99.
-h		List the es-inst options.
-v		Perform an installation using verbose full log mode.

Hands-Free Installation

Sun Management Center 4.0 supports hands-free, also known as *Boom*, installation. In a hands-free installation, the installer does not prompt you for any inputs while installing the product. You can install both the server and agent components using the `es-inst -B` command. Two response files, `default-agent-install.ascii` and `default-server-install.ascii`, contain the default parameter values that are required for a hands-free installation. The `default-agent-install.ascii` file has default values for an agent installation and the `default-server-install.ascii` file has default values for a server installation.

Assuming that you are installing Sun Management Center from a media image directory on your network, the response files are located in the `/net/`*machine*`/disk1/sbin` directory. You can make a copy of the response files and modify the parameter values, if required. To run the hands-free installation, do the following:

1. Log in as root.
2. Run the command

   `es-inst -B` *filename*

where

- `-B` installs the product with the default parameter values
- *filename* is the name of the response file

For example, `es-inst -B` *default-agent-install.ascii*

Note – Hands-free installation is supported only on the Solaris platform.

Installing on a Local Machine

This installation procedure assumes you are installing Sun Management Center from a image directory on your network. See "Creating Installation DVD Images" on page 71 for further information. This procedure also assumes that you have not specified any of the `es-inst` parameters.

▼ To Install Using `es-inst`

1. **Log in as root on the machine where you want to install Sun Management Center.**

2. **In the `/etc/nsswitch.conf` file, ensure that the `group` entry has `files` as the first token.**

   ```
   group: files nis
   ```

3. **Go to the Sun Management Center installation disk 1 `sbin` directory.**

   - If you are installing from disk, and then go to the */DiskMountDir*`/sbin` directory.

     During the installation process, you might be prompted to change the disks depending on your selections.

   - If you are installing from a image, go to the */image-dir*`/disk1/sbin` directory, where *image-dir* is the directory either where you copied the installation images, or where you downloaded and untarred the installation image from the Web.

4. **Run the `es-inst` installation script:**

   ```
   #./es-inst
   ```

   - If a prior version of Sun Management Center is not installed on the system, you are prompted for the target directory. Go to Step 7.
   - If a prior version of Sun Management Center is installed on the system, you are asked whether you want to uninstall the previous Sun Management Center version.

5. **Uninstall the previous version.**

   You are asked whether you want to uninstall the previous version. You cannot install Sun Management Center 4.0 until the previous version is uninstalled.

   - Type **`n`** or **`q`** if you do not want to uninstall the previous version. You are returned to the system prompt.
   - Type **`y`** to uninstall the previous version.

You are asked whether you want to migrate the data from the previous installation of Sun Management Center.

6 Migrate previous version data.

The administrative domain configuration data, custom alarm settings, and scripts from your previous installation of Sun Management Center can be saved and applied to the new installation of Sun Management Center 4.0. The data is located in `/var/opt/SUNWsymon`.

- Type **y** to save and migrate the data from the previous version of Sun Management Center.

  The installation process stops any Sun Management Center processes that are running. The data is saved to `/var/opt/SUNWsymon.bak`.
- Type **n** to discard all data from the previous version of Sun Management Center.

  The installation script warns you to move any custom scripts that you want to save.

Caution – If you have custom scripts stored in any directory under `/var/opt/SUNWsymon` that you want to use in Sun Management Center 4.0, move them to an alternate location before going to Step 5.

The installation process then runs the previous Sun Management Center version's `es-uninst` script to uninstall the previous version.

Note – The uninstall process can take anywhere from a few minutes to half an hour, depending on the products and add-ons installed in the previous version.

During the uninstall process, you might see messages that state package removal failed. You can ignore these messages. Any package that is not removed at first is removed later by the uninstall process.

When the uninstall process completes, you are prompted for the directory in which to install Sun Management Center.

7 Type the name of the directory in which to install Sun Management Center

The default location is `/opt`.

Sun Management Center software can be installed in any location on your system where the minimum required disk space is available. Press Return to accept the default location `/opt` or, if you want to install to a directory other than `/opt`, type the directory name.

Tip – The command **`df -ak`** lists the used space and free space for each file system on the machine.

8 Select the Sun Management Center component layers that you want to install.

You are asked to reply **y** or **n** to each layer. For example:

```
Select the Sun Management Center Architectural Component Layers:
3 Layer(s) are available for your selection:
Do you want to install Server Layer Components ? [y|n|q]  y
    The Server Layer has been selected for install.
    The Sun Management Center Agent will be installed automatically.
Do you want to install Console Layer Components ? [y|n|q]  y
```

Note – If you select Server, Agent is automatically selected.

- If you selected Server, or selected Server, Agent, and Console, the Server Layer Binary Code License is displayed. Go to Step 9.
- If you selected Console, or Agent and Console, the Select Language Support message appears. Go to Step 10.
- If you selected Agent only, the Select Add-on Products message appears. Go to Step 11.

9 Review the Server Layer Binary Code License.

Read the Server Layer Binary Code License carefully. To continue the installation, you must agree to the terms of the license.

Type **y** to agree to the license and continue, or type **n** to exit the installation.

- If a valid JDK version is not installed, you are informed which version is needed. The installation process then exits to the system prompt.
- If you accept the license, the installation process checks for a valid JDK version. If a valid JDK version is installed, you are prompted to select additional language support.

Note – The Sun Management Center Web server and online help are installed with the server layer.

---

10 If you want to install the product in additional languages, select the appropriate languages.

- If you want to install additional language support, type **y**.

  You are asked to reply **y** or **n** to each language.
- If you do not want to install additional language support, type **n**.

When you have completed language selection, the install process checks for add-on products.

11 Select the Sun Management Center add-on products.

The install process lists each add-on product, and asks if you want to install the product. Type **y** to select the product for installation, or type **n** if you do not want to install the product.

- Some add-ons are platform-specific. For information about each add-on, refer to the platform supplements provided with the Sun Management Center release kit, and to the Sun Management Center Web site at http://www.sun.com/solaris/sunmanagementcenter/.
- Some add-ons have optional components. If optional add-on components are available, the components are listed sequentially. Type **y** to select the optional component for installation, or type **n** if you do not want to install the optional component.

If you did not select any add-on products, you are asked whether you want to proceed. Type **y** to continue. The install process checks disk space. Go to Step 14.

If you selected any add-ons, your selections are listed.

12 Review your selections.

Type **y** to continue, or type **n** to repeat the selection process.

- If you selected only the agent, or agent and console during component selection, and selected any add-on products, the installation process checks disk space. Go to Step 14.
- If you selected the server during component selection, and selected any of the following add-on products, the Add-on Products Binary Code License is displayed. Go to Step 13.
  - Advanced System Monitoring
  - Performance Reporting Manager
  - Service Availability Manager
  - Solaris Container Manager
  - System Reliability Manager
- If you did not select any of the above add-on products but did select other add-on products, the installation process checks disk space. Go to Step 14.

13 Review the Add-on Products Binary License.

Read the Add-on Products Binary Code License carefully. To continue the installation, you must agree to the terms of the license.

Type **y** to agree to the license or **n** to exit the installation.

If you typed **y** to agree to the license and did not select additional add-on components, the installation process checks disk space.

14 Check disk space.

The installation process checks whether there is enough disk space to install the products that you selected.

- If there is enough disk space, the products that you selected are installed.

Note – The installation process can take from a few minutes to half an hour or more, depending on the products selected.

When the installation process completes, a list of installed products is displayed. You are asked whether you want to set up the Sun Management Center components. Go to Step 16.

- If there is not enough disk space, you are asked to provide an alternate file system. The amount of space available and the amount of space that is needed are displayed.

15 Provide the name of an alternate file system with enough disk space.

At the prompt requesting a different file system, type the name of a file system and directory that has enough free space.

Tip – In a terminal window on the machine where you are installing Sun Management Center, type **df -ak** to list the amount of used and free space for each file system on the machine.

The installation process checks disk space again. If there is enough disk space, the products that you selected are installed.

Note – The installation process can take from a few minutes to half an hour or more, depending on the products selected.

When the installation process completes, a list of installed products is displayed. You are asked whether you want to set up the Sun Management Center components.

16 Decide whether to set up the installed products.

Type **y** to set up Sun Management Center and any add-on products that you selected, or type **n** to exit and run setup later.

Caution – If you have used es-inst to install *only* add-on products, type **n** to exit the installation and setup process. You must set up the add-on products as described by "To Set Up an Add-on Product Using es-setup" on page 135. Otherwise, you will overwrite your security keys, and will then have to set up all of the agents on all of your machines for the agents to work properly.

- If you typed **y** to run setup now, follow the instructions in "Setting Up Sun Management Center 4.0 Using es-setup" on page 196.
- If you typed **n** to run setup later, you must set up the agent on the machine before you can run the agent.
  - To set up the agent using es-guisetup, follow the instructions in "To Set Up Sun Management Center" on page 31.

– To set up the agent using es-setup, follow the instructions in "Setting Up Sun Management Center 4.0 Using es-setup" on page 196.

Installing on a Remote Machine

This section provides the procedure for installing Sun Management Center 4.0 on a Network File System accessible (NFS-mounted) remote machine using the es-inst command. The procedure assumes that you are installing Sun Management Center from a image directory on your network. See "Creating Installation DVD Images" on page 71 for further information.

To install Sun Management Center on a remote machine, you have to prepare the remote machine before you install the software. Also, if the local machine is running Solaris 8 software, you must install a patch as described in "To Install Patches for pkgadd" on page 191.

The following machine names are used as examples in the procedures in this section:

- *admin-host* is the local machine used to perform the installation on the remote machine.
- *remote* is the remote machine on which you want to install Sun Management Center.

Note – Remote installation is not supported if the remote machine is a Solaris 10 machine.

▼ To Install Patches for pkgadd

If the local machine is running Solaris 8 software, a patch for pkgadd specific to the operating system version must be installed on the local machine. You must install this patch before you can use the local machine to install Sun Management Center 4.0 on the remote machine.

If the local machine is running the Solaris 9 release, you do not need to install any patches. Go to "To Prepare the Remote Machine" on page 192.

1 Log in as root on the *local* machine.

2 Ensure that the OS patch level is current.

To determine whether the patch is already installed, use the command showrev -p | grep *patchnum*, where *patchnum* is the required OS patch as follows:

- Solaris 8 release: 110934

For example, if the local machine is running Solaris 8 release, you would type:

```
admin-host# showrev -p | grep 110934
admin-host#
```

In the above example, the patch is not installed. The patch must be downloaded and installed as directed by Step 3.

If the patch is installed, a listing similar to the following is displayed.

```
admin-host# showrev -p | grep 110934
admin-host# Patch: 110934-13 Obsoletes: Requires: Incompatibles:
Packages: pkgtrans, pkgadd, pkgchk
```

If the patch that is required by the local machine Solaris version is installed, go to "To Prepare the Remote Machine" on page 192.

3 Install the OS patch if needed.

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

b. Untar and then unzip the downloaded patch archive file.

c. Install the patch using the `patchadd` command.

▼ To Prepare the Remote Machine

1 Log in as root on the *remote* machine.

2 Create the Sun Management Center database access group and user account.

a. Use the `groupadd` command to create the access group `smcdbg`.

remote# **`/usr/sbin/groupadd smcdbg`**

b. Create the directory `/var/opt/SUNWsymon`.

This directory is where the database user account will be located.

remote# **`mkdir -p /var/opt/SUNWsymon`**

c. Use the `useradd` command to create the database user account `smcdbu`, and then add the user account to the group `smcdbg`.

```
remote# /usr/sbin/useradd \
...-d /var/opt/SUNWsymon/smcdbu \
   -m -g smcdbg -s /bin/sh smcdbu
```

3 Stop the Network File System daemon `mountd`.

remote# **`/etc/init.d/nfs.server stop`**

4 Edit the `/etc/dfs/dfstab` file on the remote host.

Add the following line:

`share –F nfs –o rw=`*admin-host*`,root=`***admin-host*** **`/`**

where *admin-host* is the name of the machine from which you will install Sun Management Center onto the remote host.

For example, if the remote host name is *remote-server*, and the name of the machine you will use to install Sun Management Center on *remote-server* is *adminserver*, then the entry in the *remote-server* /etc/dfs/dfstab file would be:

share –F nfs –o rw=*adminserver***,root=***adminserver*

This entry in the remote machine's dfstab file gives remote read and write permission only to the root user account logged on to the machine *adminserver*.

5 Save and close /etc/dfs/dfstab.

6 Start the Network File System daemon mountd.

remote# **/etc/init.d/nfs.server start**

7 Determine the Solaris version running on the remote machine.

remote# **/usr/bin/uname -r**

When you install Sun Management Center on the remote host, the es-inst script will prompt you for the Solaris version running on the remote host.

8 Determine the remote host machine type.

When you install Sun Management Center on the remote host, the es-inst script will prompt you for the remote machine type.

The information required by es-inst for the remote host machine is generated by the command:

remote# **/usr/platform/***platform***/sbin/prtdiag | /usr/bin/head -1 **
| /usr/bin/cut -f2 -d:

where *platform* is the output of the command uname -i.

For example:

```
remote# /usr/bin/uname -i
SUNW,Ultra
remote# /usr/platform/SUNW,Ultra/sbin/prtdiag
  | /usr/bin/head -1 | /usr/bin/cut -f2 -d:
Sun Microsystems  sun4u Sun Ultra UPA/PCI (UltraSPARC-IIi 333 MHz)
```

Tip – Copy the remote host machine-type information to a temporary file on the local host. You can then paste the information when es-inst prompts you for the remote host machine type.

9 **Log off the remote machine.**

You can now install Sun Management Center on the remote host as described by the next procedure.

▼ To Install Sun Management Center on the Remote Machine

1 **Log in as root on the *local* machine.**

2 **Change to the Sun Management Center installation disk 1 `sbin` directory.**

- If you are installing from disk, then Change to the `/c`*DiskMountDir*`/sbin` directory.

  During the installation process, you might be prompted to change the disks depending on your selections.
- If you are installing from a image, Change to the */image-dir*`/disk1/sbin` directory, where *image-dir* is the directory either where you copied the installation images, or where you downloaded the installation image from the Web.

3 **Run the `es-inst` installation script, and specify the remote host machine using the `-R` *path/remote* parameter.**

`#./es-inst -R` *path/remote*

where *path/remote* is the full path to the remote machine. For example, if the remote host path and name is `/net/remote-server`, you would type:

```
local-machine# ./es-inst -R /net/remote-server
```

You are prompted for the Solaris version running on the remote machine.

4 **Type the Solaris version running on the remote machine.**

See "To Prepare the Remote Machine" on page 192, Step 7.

You are prompted for the remote host machine type.

5 **Provide the remote host machine type.**

Type the machine type string that you generated in "To Prepare the Remote Machine" on page 192, Step 8. Alternately, if you copied the generated text to a file on the local host, you can paste the machine-type string in answer to the prompt.

Note – The steps that are required to complete installation of Sun Management Center on a remote host are the same steps that are required for the default Sun Management Center install.

---

6 **Complete the installation.**

- If a prior version of Sun Management Center is installed on the system, you are asked whether you want to migrate the data from the previous Sun Management Center version. Go to "To Install Using es-inst" on page 186, Step 6.
- If a prior version of Sun Management Center is not installed on the system, you are prompted for the target directory. Go to "To Install Using es-inst" on page 186, Step 7.

Note – Remote installation on to a Solaris 10 system is supported only from another Solaris 10 system.

Setting Up Sun Management Center Using es-setup

This section describes how to install the product on the Solaris platform using the es-setup script. During installation, you may install the console, server, and agent layers either separately or in combination. You may also choose specific add-on products for the features that you want to install. When the install process is completed, the set up script es-setup is run, enabling you to set up the base and add-on components.

When to Run Setup

You should run the setup process in the following situations:

- When you have completed installing Sun Management Center 4.0 for the first time but have not run setup
- When you change your setup configuration, such as changing the server context
- When instructed to do so in your add-on software or hardware supplement
- When you need to reconfigure your entire Sun Management Center 4.0 installation
- When you need to set up a new add-on product
- When you need to re-create the Sun Management Center database

es-setup Options

The syntax for the es-setup command is:

es-setup [-A *file* **] [-C** *file* **] [-p** *directory* **] [-Fhrvw] [-z** *Zone*

The following table describes the es-setup parameters.

TABLE B–3 es-setup Options

Option	Modifying Options	Description
-A	*filename*	Perform an automated setup using the specified response setup file *filename*.
		Note – This option is ignored if -C is also used.
-C	*filename*	Specify a file in which to store the setup responses that you provide during the setup process. The setup responses file can be used for subsequent automated setup.
		This option supersedes the -A option.
-F		Set up the entire Sun Management Center installation again, including all installed base products, database, and add-ons.
		Use of this option is equivalent to resetting the entire installation to a post-install and pre-setup state, and then running setup.
-h		List the es-setup options.
-k		Perform setup without generating security keys.
-p	*directory*	Set up a single add-on where *directory* is the directory name for the add-on. For example, the storage add-on is in /opt/SUNWsymon/addons/storage. To set up the storage add-on using es-setup, you would type es-setup -p storage.
		Use of this option is equivalent to resetting the specified add-on to a post-install and pre-setup state, and then running setup for the single add-on.
-r		Recreate the database. No other setup is performed.
-v		Perform setup using verbose mode.
-w		Skip Database re-setup. This option is valid with the -F option.
-z		Setup agent to be run in zone

Setting Up Sun Management Center 4.0 Using es-setup

This section provides the procedure for setting up Sun Management Center. This procedure assumes that you have not specified any of the es-setup parameters.

▼ To Set Up Sun Management Center Using the es-setup Script

1 **Log in as root on the machine where you installed Sun Management Center.**

2 **Change to the Sun Management Center sbin directory. For example:**

```
# cd /opt/SUNWsymon/sbin
```

If you installed Sun Management Center in a different directory than /opt, Change to */installdir*/SUNWsymon/sbin, where *installdir* is the directory you specified.

3 **Run the es-setup script.**

```
# ./es-setup
```

- If you installed only the Sun Management Center console, the setup process sets up the console and then runs setup for any add-ons you selected. Go to Step 16.
- If you installed only the agent, or agent and console, you are prompted to provide a password for security key generation. Go to Step 5.
- If you installed the Sun Management Center server, the setup process checks for DB listener port conflict.
  - If the DB listener port is not in use and the system has sufficient memory, you are prompted to provide a password for security key generation. Go to Step 5.
  - If the DB listener port is not in use, and the system does not have sufficient memory, the amount of memory that is available and the amount of memory that is needed is displayed. The setup process exits to the system prompt. Take steps to make enough memory available, and then run setup again.
  - If the DB listener port is in use, you are prompted to assign an unused port.

4 **Resolve DB listener port conflict**

Press Return to accept the alternate default port 2522, or type the number of an unused port. "To Determine Whether a Port Is Used" on page 158 describes how to determine whether a port is in use. "Reconfiguring Sun Management Center Ports" on page 158 describes how to use the es-config command to reassign Sun Management Center ports.

The setup process checks the available memory.

- If the system has sufficient memory, you are prompted to provide a password for security key generation. Go to Step 5.
- If the system does not have sufficient memory, the amount of memory that is available and the amount of memory that is needed is displayed. The setup process exits to the system prompt. Take steps to make enough memory available, and then run setup again.

5 Generate the Sun Management Center security key.

An encrypted security key is needed for communications between all Sun Management Center processes. The key is generated based on the password you provide, which must be between one and eight characters long, and contain no spaces. Entries that are greater than eight characters are truncated to eight characters.

Note – Keep a record of the password that you use to generate the security key for this machine in a secure location in case you need to regenerate the key for the machine at a later time. You can also change the security key later, if needed, as described in "Regenerating Security Keys" on page 152.

---

a. Type the password for the seed to generate the security keys.

b. Type the password again.

You are prompted for the SNMPv1 community string.

6 Specify the SNMPv1 community security string.

The community string is used for SNMP security, and is set to `public` by default.

Set the community string to a value other than `public` or `private` to provide better SNMP security.

Caution – The same SNMP community string must be used on all of the machines on which you install Sun Management Center 4.0. If you use different community strings on each machine, SNMP communications between the machines and Sun Management Center components will not work. Keep a record of the community string that you used in a secure location in case you need to specify the community string again at a later time.

- If you want to accept the community string default value of `public`, press Return when prompted to submit the SNMPv1 community string.
- If you want to use a custom community string, type the community string text. The community string can be up to 255 characters in length, but must not contain any spaces or blanks.

  You are prompted to retype the SNMPv1 community string to confirm the string. Type the same string. For example:

```
An SNMPv1 community string is required for security, and by default is set
to public. If you want additional security, specify a customized string.
You must use the same SNMPv1 community string on all of the machines on
which you install Sun Management Center 4.0. Press RETURN to force default value.
Enter SNMPv1 community string:
```

The setup process checks which base components have been installed.

- If you installed only the agent, or agent and console, you are prompted for the Sun Management Center server host name. Go to Step 9.
- If you installed the server, the setup process checks for a valid UNIX administrator account name for the Sun Management Center `esadm` and `esdomadm` groups. See "Users, Groups, and Roles Overview" on page 57 for information about groups.
  - If a valid UNIX administrator account name exists, the setup process checks for server port conflicts. Go to Step 8.
  - If a valid UNIX administrator account name does not exist, you are prompted for the UNIX administrator account name.

7 Type a valid Solaris/Linux user name as the UNIX administrator account name.

A valid Solaris/Linux user name is required for Sun Management Center administration. Type a valid Solaris/Linux user name.

The setup process checks for server port conflicts.

8 Resolve server port conflicts.

The setup process checks the ports needed by the Sun Management Center server to determine whether the ports are in use. If any ports are in use, you must assign an unused port. "To Determine Whether a Port Is Used" on page 158 describes how to determine whether a port is in use. "Reconfiguring Sun Management Center Ports" on page 158 describes how to use the `es-config` command to reassign Sun Management Center ports.

The ports are checked in the following order: topology service, configuration service, event service, cst service, trap service, metadata service, and look-up service.

- If no ports are in use and you have installed the Sun Management Center server, you are prompted for the information needed to generate the Web server security key. Go to Step 10.
- If no ports are in use and you have not installed the Sun Management Center server, you are prompted for the Sun Management Center server host name. Go to Step 7.
- If any ports are in use, you are prompted to either reconfigure the port, or to stop the process that is using the port.
  - To reconfigure a port, type the number of an unused port.
  - To use the default port, press Return.

Caution – If you chose to use the default port, you must manually review, identify, and then rename the `/etc/rc`*N* and `/etc/rc`*N*`.d` files that use the port, and then manually stop the processes that are using the port before you can start Sun Management Center.

Once all port conflicts are resolved, the setup process checks whether you installed the server.

- If you installed the Sun Management Center server, you are prompted for the information needed to generate the Web server security key. Go to Step 10.
- If you have not installed the Sun Management Center server, you are prompted for the Sun Management Center server host name.

9 Specify the Sun Management Center server host name.

Type the name of the machine on which the Sun Management Center server was installed.

The setup process checks whether the SNMP port is in use. Go to Step 12.

10 Specify the Web server security key.

An encrypted security key is needed for the Sun Management Center Web server. The key is generated based on the name of your organization and the name of your location. The names that you provide must not contain any spaces or blanks.

For example, you could type `administration` for the organization, and `headquarters` for the location.

Note – Keep a record of the entries that you use to generate the security key in a secure location in case you need to regenerate the key for a particular machine at a later time.

Type the name of your organization at the prompt. For example:

```
An encrypted security key is needed for the Sun Management Center
Web server. The key is generated based on the organization and location
you provide.
Please enter the name of your organization : administration
```

You are prompted for your geographical location. Type the name of your location at the prompt. For example:

```
Please enter the geographical location of this host : headquarters
```

The setup process checks whether the web server ports are in use.

- If the web server port and the web server secure port are not in use, the setup process checks whether SNMP port 161 is in use. Go to Step 12.
- If the web server default port or secure port is in use, you are prompted to assign an unused port.

11 Resolve web server port conflicts.

Press Return to use the displayed default port, or type the number of a port that is not in use.

Caution – If you chose to use the default web server port or secure port, you must manually review, identify, and then rename the `/etc/rc`*N* and `/etc/rc`*N*`.d` files that use the port, and then manually stop the processes that are using the port before you can start Sun Management Center.

The setup process checks whether the SNMP port is in use.

- If SNMP port 161 is not in use, the setup process checks whether configuration data from a previous version of Sun Management Center has been saved. If you saved the configuration data from a previous Sun Management Center installation, you are asked whether you want to restore the data. Go to Step 14.

  If you did not save configuration data from a previous installation, or if this is the first time Sun Management Center has been installed on this machine, then the setup process lists the setup status for the core products you selected. Go to Step 15.
- If SNMP port 161 is in use, you are prompted to assign an SNMP port number.

12 Resolve the SNMP port conflict.

You are notified that port 161 is in use by another process. In most cases, port 161 is the port that is assigned to and used by the SNMP daemon. However, other processes or daemons could be using port 161. Several third-party replacements and enhancements for the SNMP daemon exist, and could be installed on your system. The Sun Management Center agent is such a daemon.

You can choose to use port 161, or you can assign a different port number.

Caution – If you chose to restore the configuration data from a previous Sun Management Center installation, make sure you use the same port number as you had in the previous Sun Management Center installation for both agent and server upgrades.

a. To assign a different port number, type an unused port number.

For example:

```
It appears that agent.snmpPort 161 is already in use.
Sun Management Center 4.0 agent may not be able to run due to this conflict.
There are two ways to correct this conflict:
1. Reconfigure the port that Sun Management Center 4.0 uses.
2. Stop the process that is using the port.
Press RETURN to force default port.
Enter port you would like to use [ 1100 to 65535 ]: 1161
Updating /var/opt/SUNWsymon/cfg/domain-config.x with new port number.
```

Note – Keep a record of this alternate port number. You will need this number if you later install agents using the JumpStart software, or update the Sun Management Center agents using the agent update-image tools. For more information, see "Installing Agents Using JumpStart" on page 103 and "Creating Agent Installation and Update Images" on page 79.

If you did not save configuration data from a previous installation, or if this is the first time Sun Management Center has been installed on this machine, the setup process lists the setup status for the core products you selected. Go to Step 15.

b. To use port 161, press Return.

You are informed that port 161 will be used by Sun Management Center, and that the SNMP daemon might be set to restart automatically when the system is rebooted.

You are asked whether you want to stop and disable the SNMPDX daemon.

13 Stop and disable the SNMP daemon.

- Type **y** to stop and disable the SNMP daemon.

Caution – Stopping and disabling the SNMP daemon is not a guarantee that you have stopped the actual process that is using port 161. If Sun Management Center fails to start after you have completed Sun Management Center setup, another process or daemon could be using port 161. As noted in Step 12, you must manually review, identify, and then rename the `/etc/rc`*N* and `/etc/rc`*N*`.d` files that use port 161 to resolve the port conflict.

- Type **n** if you do not want to stop and disable the SNMP daemon.

Caution – You must stop all processes that use port 161 before you can start Sun Management Center.

The setup process checks for configuration data from a previous version of Sun Management Center.

- If you did not save configuration data from a previous installation, or if this is the first time Sun Management Center has been installed on this machine, the setup process lists the setup status for the core products you selected. Go to Step 15.
- If you saved the configuration data from a previous Sun Management Center installation, you are asked whether you want to restore the data.

14 Restore previous Sun Management Center configuration data

The saved configuration data includes the graphs, topology objects, alarms, and other information that is displayed in the Sun Management Center console.

Caution – If you do not restore the configuration data from the previous installation of Sun Management Center, you will have to manually re-create the information.

- To restore the configuration data, type **y** and press Return. The configuration data from the previous Sun Management Center is restored.
- To discard the configuration data, type **n** and press Return. The configuration data from the previous Sun Management Center is deleted.

The setup process lists the setup status for the core products you selected.

15 Finalize the base product setup process.

- If base product setup failed, you are informed that the setup of the base products was not successful. You are then directed to see the log file for more details. The name of the log file is provided. The setup process exits to the system prompt.

  Review the log file to determine the cause of setup failure.
- If base product setup succeeded, and you selected one or all of the base products only (console, agent, and server), you are asked whether you want to start the Sun Management Center components. Go to Step 17.
- If base product setup succeeded and you selected any add-on products, the setup process runs the setup script for each add-on product you selected.

16 Set up add-on products.

Some add-on products are included with the Sun Management Center 4.0 installation image. These add-ons are the ones listed in Step 11, in the procedure "To Install Using es-inst" on page 186. To set up each add-on, refer to the Sun Management Center supplement for each add-on, which is included in your installation kit. Each supplement provides the setup procedure for the specific add-on. The setup procedure for add-ons is therefore not duplicated here.

When the add-on setup is completed, the setup process lists the setup status for the add-on products.

- If add-on product setup failed, you are informed that the setup of the add-on product was not successful. You are then directed to see the log file for more details. The name of the log file is provided. The setup process exits to the system prompt.

  Review the log file to determine the cause of setup failure.
- If add-on setup succeeded, you are asked whether you want to start the Sun Management Center components.

17 Start Sun Management Center 4.0.

Caution – If your network uses Network Address Translation (NAT), type **n** to exit setup without starting Sun Management Center. Use the `es-config` command-line utility described in "To Enable NAT Support" on page 171 to configure the machine for NAT before you start Sun Management Center.

- If you want to start Sun Management Center now, type **y**.

  The setup script starts Sun Management Center using `es-start -A`. See "Starting Components Using `es-start`" on page 140 for information about `es-start`.

  Also, see "Starting the Console" on page 142 for instructions on how to start the Sun Management Center console.
- If you want to start Sun Management Center later, type **n**. See Chapter 8, "Starting and Stopping Sun Management Center," when you are ready to start Sun Management Center.

◆ ◆ ◆ APPENDIX C

Determining Hardware Resources

This appendix provides guidelines for selecting the appropriately sized hardware for the Sun Management Center basic management framework and base add-on products. The Sun Management Center basic management framework and each base add-on product have specific disk space requirements for the Sun Management Center core layers agent, server, and console.

This appendix discusses the following topics:

- "Agent Layer Resources" on page 205
- "Server Layer Resources" on page 211
- "Java Console Layer Resources" on page 217
- "Sun Management Center Server with the Performance Reporting Manager Add-on" on page 214
- "Sun Fire Proxy/Platform Agent Resources" on page 217

Note – The information provided in this section does not take into consideration any third-party modules, nor are such modules reflected in any of the sizing figures.

Agent Layer Resources

Sun Management Center 4.0 agents should be installed on every managed node in your network to enable advanced management and monitoring functions. Sun Management Center agents are supported on any SPARC platform workstations and servers running the Solaris 8, Solaris 9, or Solaris 10 Operating System. Sun Management Center agents are also available for Solaris operating system (x86 Platform Edition) systems running Solaris 9 and Solaris 10 and on Linux.

x86 Agent Limitations

Note – The same limitations apply for the Linux agent.

The x86 agents do not support any hardware-specific add-ons (except X86 Config Reader). The x86 agents have modules under the Operating System, Local Applications, and Remote Systems categories of the Module Browser tab in the Host Details window. Features such as Physical View, Logical View, Hardware Diagnostic module, and the Config-Reader module are not yet available on the Solaris x86 platform.

In the Java Console window, all x86 platforms have the same x86 icon. For example, two different x86 platform machines, such as the Sun Cobalt LX50 and the Sun Fire V60x, would both have the same icon.

You can filter by platform type when you use the Discovery feature, the Manage Jobs feature, or the PRM add-on. You can filter for the x86 platform by selecting x86 as the platform option.

For the Performance Reporting Manager (PRM) add-on, no system reports and hardware configuration reports are available.

CPU Resources

Sun Management Center agents add a minimal computational load on the host system. The computational load is caused by normal management operations, including periodic data acquisition, alarm rule processing, alarm annunciation, alarm action execution, and the processing of client requests.

The amount of load introduced is proportional to the rate at which data is gathered, the amount of data gathered, the number of alarms detected, and the number of user requests. The percentage of CPU resources consumed therefore depends on the number and type of modules loaded on the system, the configuration of these modules, and the computational capacity of the host system.

Even on low-end machines with a comprehensive suite of modules loaded and high management activity, the agent should never consume more than a fraction of the CPU resources.

Light configurations are based on an agent with the following modules loaded:

- Agent Statistics
- Kernel Reader (Simple)
- MIB-II System (Simple)

The following tables give estimates of the agent CPU and RAM usage for light modules.

TABLE C–1 Agent CPU and RAM Use Estimates for SPARC (light modules)

Machine	Memory (MB)			CPU (%)			Resident Set Size (MB)			Virtual Memory (MB)		
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
Small	0.4	0.4	0.4	0.3	0.3	0.3	7.46	7.46	7.46	9.17	9.17	9.17
Medium	0.2	0.2	0.2	< 0.1	< 0.1	< 0.1	7.38	7.43	7.43	9.12	9.17	9.17
Large	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	7.62	7.68	7.68	9.34	9.40	9.40
Extra Large	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	7.82	8.08	8.12	9.40	9.59	9.62
CMT (T2000)	0.1	0.1	0.1	< 0.1	< 0.1	< 0.1	8.44	8.44	8.44	9.43	9.43	9.43

TABLE C–2 Agent CPU and RAM Use Estimates for x86 (light modules)

Machine	Memory (MB)			CPU (%)			Resident Set Size (MB)			Virtual Memory (MB)		
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
Small	0.6	0.6	0.6	< 0.1	< 0.1	< 0.1	6.10	6.21	6.22	7.69	7.76	7.76
Medium	0.2	0.2	0.2	< 0.1	< 0.1	< 0.1	6.25	6.25	6.25	7.80	7.80	7.80
Large	0.2	0.2	0.2	< 0.1	< 0.1	< 0.1	6.19	6.29	6.29	7.76	7.82	7.82

Heavy configuration is based on an agent with the following modules loaded:

- Agent Statistics
- Data Logging Registry
- Health Monitor
- Kernel Reader (Full)
- MIB-II Instrumentation
- MIB-II Proxy Monitoring
- Solaris Process Details
- Config Reader
- Directory Size Monitoring
- File Scanning
- Script Launcher
- Script Repository
- Service Management Facility

The heavy configuration is likely to be greater than needed. Larger machines typically have larger hardware configurations with more processors and disks. These configurations result in greater memory consumption by agents running on larger machines. Heavy modules can include various user-defined custom modules.

The following tables give estimates of the agent CPU and RAM usage by system type for heavy modules.

TABLE C–3 Agent CPU and RAM Use Estimates for SPARC (heavy modules)

Machine	Memory (MB)			CPU (%)			Resident Set Size (MB)			Virtual Memory (MB)		
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
Small	1.0	1.0	1.0	1.2	1.24	1.4	19.15	19.15	19.15	21.68	21.68	21.68
Medium	0.5	0.5	0.6	< 0.1	0.66	1.3	20.93	20.95	20.96	23.60	23.61	23.61
Large	0.2	0.2	0.2	0.1	0.12	0.2	19.13	19.16	19.20	21.88	21.88	21.88
Extra Large	0.1	0.1	0.1	0.1	0.1	0.1	23.97	23.99	24.00	26.38	26.38	26.38
CMT (T2000)	0.3	0.35	0.4	0.1	0.19	0.3	22.42	24.41	26.53	23.69	25.74	27.79

TABLE C–4 Agent CPU and RAM Use Estimates for x86 (heavy modules)

Machine	Memory (MB)			CPU (%)			Resident Set Size (MB)			Virtual Memory (MB)		
	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max
Small	1.3	1.4	1.4	0.1	0.1	0.1	13.40	13.76	13.79	16.60	16.96	17.00
Medium	0.4	0.4	0.4	0.1	0.2	0.3	14.25	14.43	14.45	17.33	17.50	17.52
Large	0.4	0.4	0.4	< 0.1	0.06	0.1	13.97	14.81	14.89	17.00	17.82	17.90

Virtual Memory Requirements

The virtual memory used by an agent depends on multiple factors. The primary considerations are the number of management modules loaded and the amount of information being monitored by these modules. Loading many modules on an agent increases its memory requirement. Similarly, agents managing hosts with large disk arrays or other highly scalable assets will probably require more virtual memory because the volume of management information passing through the agents will increase.

In general, a base agent with the default set of management modules loaded is under 10 Mbytes in size. The base agent requires only 50% to 60% of the 10 Mbytes to be resident in physical memory.

Hardware-Specific Module Availability

The majority of Sun Management Center management modules are portable across all SPARC platform systems running Sun Management Center agents. Some advanced hardware-specific Sun Management Center modules, however, are not supported on all Sun hardware. Specifically, the platform Config-Reader and Dynamic Reconfiguration modules provide

advanced management of the underlying hardware platform. The functions these modules provide are not necessarily applicable to all hardware systems in the Sun product family.

The following table summarizes the availability of the Sun Management Center management modules on the various hardware platforms.

TABLE C–5 Hardware-Specific Module Availability

Hardware	Config-Reader Module	Dynamic Reconfiguration Module	All Other Sun Management Center Modules
SPARCStation 1, 2, 5, 10, 20	No	No	Yes
Sun Ultra 1, 450	Yes	No	Yes
Sun Enterprise 5, 10, 150, Sun Fire 280R, Sun Fire V480	Yes	No	Yes
SPARCserver 1000, 1000E	Yes	No	Yes
SPARCcenter 2000, 2000E	Yes	No	Yes
Netra T1120-1125, T1400-T1405	Yes	No	Yes
Sun Blade 100, 1000, 1500, 2500	Yes	No	Yes
Sun Fire 3800, 4800, 4810, 6800, V210, V240, V250, V440, V880, E25K, E20K, E6900, E4900	Yes	Yes	Yes

Management Module Resources

The resource requirements of management modules depend on the following factors:

- The number of managed properties in the module.
- The volume of managed property data processed in the module. Tables with many rows of data incur increased resource usage.
- The refresh intervals of managed properties.
- The complexity of data collection and rule processing.

The following table summarizes the resource impact of the Sun Management Center management modules.

TABLE C–6 Sun Management Center Management Module System Impact Summary

Module	Impact
Agent Statistics	Incurs low footprint increase and low CPU load increase.

TABLE C–6 Sun Management Center Management Module System Impact Summary *(Continued)*

Module	Impact
Config-Reader	Uses CPU and memory relative to the complexity of the hardware configuration of the managed node.
Data Logging Registry	Incurs low footprint and CPU load increase that is proportional to the amount of data values being logged.
Directory Size Monitoring	Incurs a low footprint increase that is proportional to the number of directories monitored. Incurs low to moderate CPU load that depends on both the number of directories monitored and the activity within those directories.
Dynamic Reconfiguration	Has minimal footprint impact and utilizes CPU only when performing reconfiguration operations.
File Monitoring	Incurs low footprint increase proportional to the number of files that are monitored. Incurs low to moderate CPU load, depending on both the number of files that are monitored and the activity within those files.
File Scanning (System Log)	Incurs low footprint and CPU load increase.
Health Monitoring	Has relatively low impact on resources.
HP JetDirect	Incurs low footprint increase and low CPU load.
IPV6 Instrumentation Module	Incurs low CPU load increase and low to medium footprint increase dependent on the number of network interfaces.
Kernel Reader, Full	Affects CPU and memory based on the number of file systems, CPUs, and other system resources under management, as well as the rate of refresh of this information. Consumes more resources than the Simple Kernel Reader.
Kernel Reader, Simple	Has minimal impact on CPU and memory.
MIB-II Instrumentation	Incurs minimal CPU load and low to moderate footprint increase depending on the number of network interfaces, and the size of the routing tables, ARP tables, and related system tables.
MIB-II Proxy Monitoring	Incurs moderate footprint increase proportional to the size of the MIB of the proxy-monitored SNMP agent. Incurs low to moderate CPU load proportional to the number of managed objects in the proxy-monitored SNMP agent.
MIB-II Simple	Incurs virtually no CPU load and very little footprint increase, proportional to the size of the system interfaces, IP forwarding, and IP address table.

TABLE C–6 Sun Management Center Management Module System Impact Summary *(Continued)*

Module	Impact
NFS File System	Incurs low footprint increase that is proportional to the number of network file systems mounted on the host machine, and low CPU load.
NFS Statistics	Incurs low footprint increase and low to moderate CPU load.
Print Spooler	Incurs low footprint and CPU load increase.
Solaris Process Monitoring	Incurs low footprint increase that is proportional to the number of processes monitored. Incurs low to moderate CPU load, depending both on the number of processes monitored and how often the processes are started and stopped.

Server Layer Resources

The server layer is the core of the Sun Management Center software. The specification of appropriate hardware for the server layer host is critical to ensure the reliable and responsive operation of Sun Management Center. The hardware requirements for the Sun Management Center server layer are significantly greater than the requirement for agents.

The Sun Management Center server layer is supported on SPARC and x86 platform desktops and servers running on Solaris 10 11/06 or Solaris 10 8/07 that meet the minimum hardware requirements described in this section.

Note – For the best performance, install the Sun Management Center 4.0 server layer on a dedicated machine running server layer applications only.

Recommended Server Hardware Platforms

The hardware systems specified in the following table represent four broad classes of machines that can be employed as Sun Management Center server platforms. In each case, alternate machine configurations could provide equivalent performance.

For Solaris SPARC:

TABLE C–7 Recommended Sun Management Center Server Hardware Platforms for Solaris SPARC

Architecture	Machine Type	CPU Type	RAM	Swap Space
Small	Sun Fire V120	One 650 MHz UltraSPARC IIe/i CPU	2 Gbyte	1 Gbyte minimum, 2 Gbyte recommended
Medium	Sun Fire V440	Two 1.02 GHz UltraSPARC III CPUs	4.096 Gbyte	1 Gbyte minimum, 2 Gbyte recommended
Large	Sun Fire V480	Four 900 MHz UltraSPARC III CPUs	16.384 Gbyte	1 Gbyte minimum, 2 Gbyte recommended
Extra-large	Netra-T12	Twenty-four 1.35 GHz UltraSPARC III CPUs	49.152 Gbyte	1 Gbyte minimum, 2 Gbyte recommended
T2000 (CMT)	Sun Fire T2000	Sixteen 1 GHz SPARCv9 CPUs	8.184 Gbyte	1 Gbyte minimum, 2 Gbyte recommended

For Solaris x86:

TABLE C–8 Recommended Sun Management Center Server Hardware Platforms for Solaris x86

Architecture	Machine Type	CPU Type	RAM	Swap Space
Small	AMD PC	One 2.393 GHz AMD processor	1.023 Gbyte	1 Gbyte minimum, 2 Gbyte recommended
Medium	Sun Fire V20z	Two 2.393 GHz AMD processors	4.032 Gbyte	1 Gbyte minimum, 2 Gbyte recommended
Large	Sun Fire X4100	Four 2.200 GHz AMD processors	3.968 Gbyte	1 Gbyte minimum, 2 Gbyte recommended

Sizing Requirements

The Sun Management Server host sizing requirements are highly dependent on the number of agents being managed by the server layer and the management activity on these agents. Management activity consists of system-generated activity such as event generation and processing, and user-initiated operations such as browsing data, network discovery, group operations, and system monitoring and diagnosis.

Because of the impact of management activity, the sizing requirements depends on the number, type and configuration of all Sun Management Center add-on packages that are installed on the server, and on the number of managed nodes. In general, the more add-ons that are in use, the greater the management activity and the higher the server hardware requirements.

The following diagram shows the machine classes recommended for the Sun Management Center server as a function of the number of agents under management, and the estimated management activity. The diagram assumes that Sun Management Center consoles are not running on the server machine. The diagram also assumes that there are 5 remote console sessions for the small server; 10 remote console sessions for the medium server; and 15 remote console sessions for the large and extra large server.

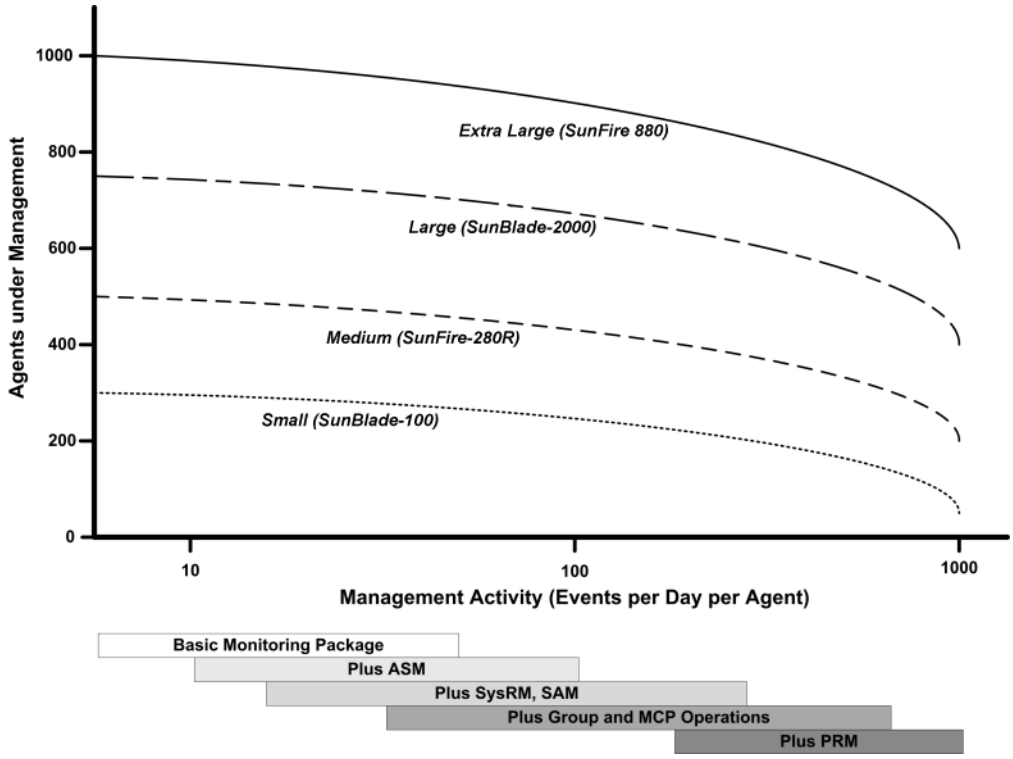

FIGURE C–1 Sun Management Center Server Load by Events per Day and Objects Managed

The machine classes depicted in the above diagram are representative of classes of hosts with similar performance.

Caution – Server performance is adversely affected by running the Sun Management Center console application on the server layer host and by the number of active console sessions. If the server host is not sized generously to support the server layer components, do not run Sun Management Center consoles on the server machine.

Sun Management Center Server with the Performance Reporting Manager Add-on

The Sun Management Center performance reporting manager (PRM) add-on is used to track historical trends and generate reports for any data property being monitored by Sun Management Center agents. The PRM add-on can have a significant impact on the sizing requirements of the Sun Management Center server since it can involve the collection and processing of large volumes of data.

The impact of the PRM add-on is shown in the PRM segment of Figure C–1. In general, increasing the management activity and the total number of data properties being tracked by PRM reduces the number of agents that can be managed by the Sun Management Center server.

Determining the requirements for a Sun Management Center server with the PRM add-on requires two steps.

1. Based on the total number of agents to be managed by Sun Management Center server with the PRM add-on installed, refer to the PRM segment of Figure C–1 to determine the required machine class.
2. Based on the estimated number of PRM data properties you want to collect, determine the appropriate PRM configuration as described in the following section.

Generating Performance Reporting Manager Reports

A wide range of reports can be generated by specifying different numbers of agents, numbers of data properties, and report durations such as 4 hours to 1 month.

Typical reports take a few seconds to several minutes to generate. The actual time required is affected by the following factors:

- The number of actual data points included in the report

  Note – Reports are limited to a maximum of 10,000 data points per report.

- Amount of performance reporting manager data in the database
- Server performance and activity

- Concurrent generation of other performance reporting manager reports

For example, on a medium Sun Management Center server configured with the performance reporting manager add-on, a relatively simple report that includes 5 properties for 1 agent over the last 24 hours can be generated in about 20 seconds. Conversely, a more substantial report that includes 5 properties for 5 agents over the last 7 days can take around 10 minutes to generate.

Note – A medium Sun Management Center server with the performance reporting manager add-on is assumed to be a SunFire x4200 with two 2200 MHz x86 CPUs or a SunFire-v440 with two 1281 MHz SPARCv9 CPUs, 1 GB RAM, and 1 GB swap. It is also assumed that the server is monitoring 300 agents and collecting 300 data properties per agent for the performance reporting manager.

Scheduling Performance Reporting Manager Reports

If a report takes more than 30 minutes to generate, it is recommended that you schedule the report to run between 4:00 AM and 8:00 AM. Scheduling large reports to run after 4:00 AM reduces the load on the Sun Management Center server during normal business hours, and also can reduce the chance of conflicts with the nightly Sun Management Center and performance reporting manager tasks that typically occur between 12:00 AM and 4:00 AM.

Performance Considerations

Major factors that affect the server layer performance include:

- Simultaneous startup of Sun Management Center components
- Topology group configuration
- Management activity
- Number of console users

Simultaneous Startup of Sun Management Center Components

Simultaneous startup of the server layer and many agents can adversely affect server layer performance. The initialization of a server layer managing hundreds of agents can result in slow console response and the temporary inability to access some agents.

Topology Group Configuration

The number of topology groups in a Sun Management Center server context should not exceed the following:

- Small servers - 25 topology groups
- Medium servers - 50 topology groups

- Large servers - 75 topology groups
- Extra-large servers - 100 topology groups

  The maximum number of immediate child objects in a topology group is 256. For optimal performance, the number of child objects in a group should not exceed 100.

  If you install the Performance Reporting Manager add-on, each topology domain should contain less than 200 Sun Management Center agents to ensure optimal collection of Performance Reporting Manager data.

Management Activity

Sun Management Center server activity depends on the following factors:

- The number of operations initiated by users
- The stability and activity of the host systems under management
- The number of management modules loaded by the host systems
- The specification of alarm thresholds and rule parameters for properties under management

The last two factors greatly influence the tendency of the managed nodes to generate management activity in the form of event processing.

As a result, high management activity can occur with no add-ons if alarm thresholds are poorly configured. Conversely, low management activity can occur with many add-ons if the managed systems are stable and the alarm thresholds are reasonable.

Number of Console Users

Increasing the number of concurrent Sun Management Center console user sessions incurs a modest increase in load on the server layer. The sizing estimates assume 5 active users for a small configuration, 10 users for a medium configuration, and 15 users for a large and extra-large configuration. The sizing estimates assume the users are performing activities such a browsing managed property data and events and editing property attributes.

Some user-initiated actions might temporarily affect the performance of the server layer for the duration of the operation.

- **Large group operations** that are targeted at 100 or more agents can consume significant server resources. These operations can further affect server performance if the changes generate alarms on the managed agents. These alarms produce additional management activity in the form of event processing.
- **Network discovery operations** involving the addition of many new entities for the server to manage can incur noticeable load on the server layer host during the discovery process.
- **Topology data import operations** involving the addition of many new entities to manage can result in slower response from the server layer while the entities are being added.

The effect of these user-initiated actions can be minimized by not executing these operations concurrently, by breaking up large operations, and, when possible, by performing or scheduling the operations during off-peak hours.

Java Console Layer Resources

For the best performance, the Sun Management Center console should be run from a host other than the server layer host. The console can be readily installed on any host and used to connect to the server layer remotely. The recommended server layer configurations assume that the host system is dedicated to running server layer applications only. Running other applications such as the Sun Management Center console on the server layer host should be avoided unless the server host has been sized generously to support the additional requirements.

The Sun Management Center console is based on the Java technology. The console is supported on SPARC systems running the Solaris 8, Solaris 9, or Solaris 10 Operating System and x86 systems running the Solaris 9 and Solaris 10 operating system. The console is also supported on Intel systems running Microsoft Windows 2000, Microsoft Windows XP Professional, RedHat Enterprise Linux 4.0, SUSE 9.3, SLES 10.0, and Fedora Core 4.0.

Sun Fire Proxy/Platform Agent Resources

Sun Fire platform agents require a different installation procedure than standard Sun Management Center agents. Sun Fire platforms contain a number of domains, each domain with its own hardware allocation. Each domain runs a separate Solaris operating environment instance. Each of the Sun Fire domains runs a domain agent.

The Sun Fire platform as a whole consists of all the hardware in the platform allocated to the domains. The platform is controlled by a System Controller (SC) board within the platform.

To manage Sun Fire servers, Sun Management Center software uses Sun Fire platform agents that interact with the Sun Fire server system controller and Sun Fire domain agents. The platform agents must be deployed on a Solaris host external to the Sun Fire chassis that the agents are to monitor. Multiple platform agents can be deployed on a single host system to manage multiple Sun Fire servers, provided that the platform agent host system has been sized accordingly.

On average, each platform agent consumes 5% to 9% CPU and 15 to 18 Mbytes of memory. The CPU and memory consumption of platform agents deployed on the same host system are additive and can be used to gauge hardware requirements. The disk space requirements for multiple platform agent instances are minimally more than that for a single platform agent instance because the agents share the same software packages.

In general, the CPU and memory resource requirements of a platform agent are proportional to the size and complexity of the Sun Fire server configuration being managed. Sun Fire systems with larger configurations require more platform agent resources on the platform agent host.

System Requirements

You can install platform agents on either:

- A Sun Management Center server layer host
- A Sun Management Center dedicated platform agent host

The number of platform agents that can be installed on a given host varies depending on whether that host is a Sun Management Center server layer or platform agent layer host. To maximize the overall performance and responsiveness of Sun Management Center, platform agents should be deployed on dedicated hosts instead of the server layer host. If the server layer is deployed on a multiple CPU system with excess capacity, you can consider running platform agents on a server layer host.

The following figure shows the architecture for a dedicated platform agent host deployment, and a server layer host deployment.

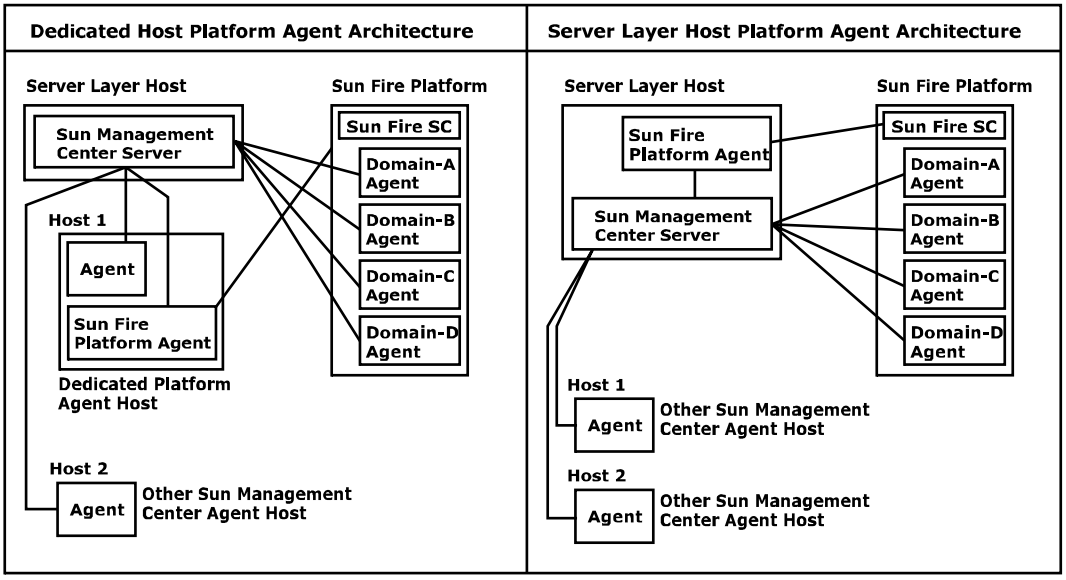

FIGURE C–2 Platform Agent Architecture

Startup of Multiple Platform Agents

Sun Fire platform agents refresh their management information hourly by default. When multiple platform agents are deployed on the same host and are initialized at the same time, the

agents tend to perform their data refreshes in quick succession. If too many platform agents attempt to refresh their data concurrently, the overall responsiveness of the host system can be adversely affected.

To reduce the likelihood of concurrent operations by multiple platform agents on the same host, do not start all of the platform agents at the same time.

Deploying Sun Fire Platform Agents on a Dedicated Host

The following table lists typical hardware configurations and the corresponding number of platform agents that can be deployed on the dedicated host system.

TABLE C–9 Dedicated Host: Sun Fire Platform Agent Capacity

Representative Hardware Configurations	Maximum Number of Platform Agents
Sun Fire V120 with a single 650 MHz UltraSPARC IIe/i CPU, 2 Gbyte of RAM and 1 Gbyte of swap	5 to 7
Sun Fire V440 with dual 1.2 GHz UltraSPARC III CPUs, 4 Gbytes of RAM and 1 Gbyte of swap	14 to 20

Because platform agent resource use can vary, the limits shown in the table represent a range of acceptable values that leave sufficient capacity to ensure that operational peaks do not exhaust system capacity. Larger Sun Fire platforms require greater platform agent resources, with the result that fewer platform agents can be run on a single host. Conversely, smaller Sun Fire platforms require fewer platform agent resources, so more platform agents can be run on a single host.

Deploying Sun Fire Platform Agents on a Server Layer Host

The hardware sizing requirements of a host system running the Sun Management Center server layer are a function of the number of platform agents managed by the server layer and the management activity in the system.

Only large multiple-CPU systems should be considered for running both the Sun Management Center server layer and Sun Fire platform agents. The deployment of platform agents on a server layer host with limited capacity can adversely affect the overall performance of Sun Management Center.

Assuming a moderate level of management activity of fewer than 1000 events per host per day, the maximum number of platform agents than can be deployed on a Sun Management Center server layer host is the function of the number of agents under management and the machine class. The following table lists typical system capacity.

TABLE C–10 Server Layer Host: Sun Fire Platform Agent Capacity

Number of Agents Under Management	Maximum Number of Platform Agents
100	6
300	5
500	4
750	NA

Sun Fire 280R denotes a Sun Fire 280R, a Sun Blade 1000, or a Netra T4 system with a dual 750 MHz UltraSPARC III server host with 1 Gbyte of RAM and 1 Gbyte of swap.

For Sun Fire Sun Management Center installation procedures, see *Sun Management Center Software Supplement for Sun Fire 6800/4810/4800/3800 Systems*.

◆ ◆ ◆ APPENDIX D

Network Address Translation

This appendix describes the issues related to using Sun Management Center 4.0 in a Network Address Translation (NAT) environment, and outlines the factors that affect the overall approach to a Sun Management Center NAT solution.

This appendix discusses the following topics.

- "NAT Concepts" on page 221
- "Complexity of the NAT Solution" on page 223
- "NAT Configuration" on page 224
- "NAT Solution" on page 225
- "NAT Limitations" on page 225
- "NAT Examples" on page 226

NAT Concepts

Network Address Translation (NAT) enables servers, hosts, and consoles on different networks to communicate with each other across a common internal network. A NAT solution maps the private local address realm to a public address realm. These mappings can be static or dynamic.

NAT is becoming increasingly prevalent in Sun Management Center client environments. By using NAT, clients can make more efficient use of network addresses and, in some cases, provide secure access to external networks from sensitive internal environments.

Note – The term *Sun Management Center NAT host* refers to any host that is running a Sun Management Center component (agent, server, or console) and that must communicate with other Sun Management Center components across a NAT environment.

Use of IP Addresses With NAT

Sun Management Center 4.0 assumes that the IP address and port of a managed node can be used to uniquely identify and access the managed node within a server context. Furthermore, the software assumes that the local IP address and port of a managed node are authoritative.

As a result of these assumptions, Sun Management Center makes extensive use of IP addresses in both its core operation and its management functionality. Specifically, network addresses are used in the following areas:

- Communication (SNMP, RMI, Probe, MCP HTTP, ICMP)
- Network entity discovery
- Event management
- Identifying server contexts
- Identifying managed nodes, objects, and properties using SNMP URLs
- Managing property contents, for example, the MIB-II module
- Managed property table indices, for example, the MIB-II interfaces table
- Generating localized USEC keys
- Various console browsers and displays

In environments where Sun Management Center components operate across one or more NAT environments, the assumptions regarding the uniqueness and accessibility of the local IP addresses and ports of managed nodes break down. Furthermore, because administrators might be more familiar with the node's public IP address, the use of local IP addresses to identify managed nodes in a NAT environment might no longer be intuitive.

How NAT Works

The following figure illustrates how NAT works.

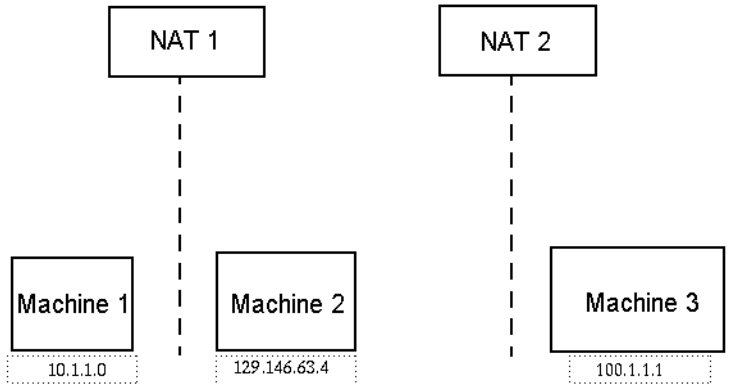

FIGURE D–1 Simple NAT Network Conceptual Diagram

The private subnet `10.1.1.0` has one machine called `Machine 1` that runs behind NAT 1, which uses `129.146.63.100`, a translated IP address, for all communication from `Machine 1` to hosts outside NAT 1. Communication from hosts outside NAT 1 to `Machine 1` (`129.146.63.100`) are redirected to `Machine 1` (`10.1.1.1`) by NAT 1.

A second private subnet (`100.1.1.1`) has one machine `Machine 3` (`100.1.1.1`) and runs behind NAT 2, which uses `129.146.63.101` (a translated IP) for communication from `Machine 3` to hosts outside NAT 2. Communication from hosts outside NAT 2 to `Machine 3` (`129.146.63.101`) is redirected to `100.1.1.1` by NAT 2.

Complexity of the NAT Solution

The extensive use of IP addresses in Sun Management Center complicates deployment in environments that involve simple address or proxy translations. The addresses appear at the driver, library, application, and console integration levels. The solution is further complicated by the types of communication that occur in Sun Management Center.

This software is a distributed application with the following layers:

- Console
- Multicomponent server
- Multicomponent agent

The software layers can reside on a different host or on different networks that could be subject to routing rules or NAT.

Furthermore, the console, server, or agent components of one Sun Management Center system can potentially communicate with components of another Sun Management Center system on another network. These aspects add to the complexity of the solution.

NAT enables Sun Management Center 4.0 to operate in a network environment where the consoles, servers, and agents are deployed in one or more network addressing realms. As a result, the consoles, servers, and agents must communicate across one or more NAT environments.

The functionality also supports cross-server context operation such as remote reference domains across NAT environments. With NAT, Sun Management Center components can also communicate with other Sun Management Center components in the same addressing realm. Without NAT, Sun Management Center consoles, servers and agents cannot operate across NAT environments.

NAT Configuration

Static NAT mappings must be defined for every Sun Management Center NAT host.

Note – Dynamic NAT mappings are not supported for Sun Management Center 4.0 operation across the NAT.

Because several undefined ports are used by Sun Management Center, Sun Management Center does not support the ability to specify port restrictions for Sun Management Center NAT support. These ports include SNMP, probe, RMI, and console integration.

To support operation in a NAT environment, NAT enables Sun Management Center 4.0 software to use names rather than IP addresses to identify and communicate with other Sun Management Center hosts. The name must be a host alias that can be resolved to a valid IP address through standard naming services. This name also must be resolvable to the appropriate IP address in the relevant addressing realms in which the Sun Management Center components are deployed.

Thus, common host aliases for all Sun Management Center NAT hosts must be defined in the host maps of all addressing realms in which Sun Management Center components are installed.

The host aliases must be defined in the standard system host maps that can include such things as the files, for example, `/etc/hosts`, NIS, NIS+, and DNS. For the remainder of this chapter, the common host alias is referred to as the NAT host name.

NAT Solution

The Sun Management Center NAT solution is focused on self-consistency to avoid complex or error-prone translation mechanisms. This solution addresses the fundamental assumption regarding the use of IP addresses in the software.

Sun Management Center 4.0 uses logical identifiers, rather than IP addresses, to uniquely identify and access the nodes managed by the software in NAT environments. The identifiers can be the fully qualified host name of a managed node. This method enables Sun Management Center 4.0 to leverage the existing host name-to-IP address mapping infrastructure in IP-based systems.

In environments where the use of fully qualified host names are not appropriate or feasible, any logical name that is unique and resolvable from the agent and server layer addressing realm can be used. In non-NAT environments, the logical identifiers can default to IP addresses for backward compatibility.

This solution requires that the logical identifier must be unique within a server context. The logical identifiers must be resolvable to valid IP addresses that can be used to access the managed node across a NAT environment. You should be able to use the logical identifiers to intuitively identify managed nodes.

When using the Sun Management Center 4.0 NAT solution, note the following information:

- Static NAT mappings must be specified for all Sun Management Center NAT hosts.
- Host map entries must be specified for all NAT hosts in all the network addressing realms in which Sun Management Center components are deployed.
- Routing table-based discovery using more than one hop is not supported across NAT environments.
- A console deployed behind a NAT does not work with a server outside the NAT.

NAT Limitations

The following NAT limitations exist:

- The IP address should be unique for Sun Management Center servers and Sun Management Center agent hosts.
- The host name should be unique to Sun Management Center hosts. If the host name is not unique, you will have flexibility to choose the host alias during the software setup.
- If Sun Management Center server is set up using NAT, the host name or host alias must not contain dashes. For example, do not use `server-one` for the name of a Sun Management Center server if the server is set up using NAT.

NAT Examples

This section provides examples of a single NAT environment and a dual NAT environment.

Single NAT Environment

The basic NAT example involves a single NAT environment where a single server context is deployed on both sides of the NAT.

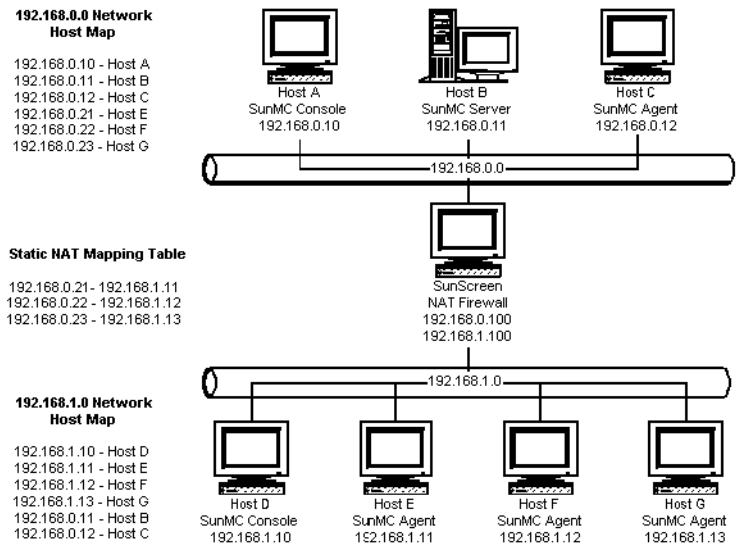

FIGURE D–2 Simple NAT Network Configuration Example

The figure shows the console, a server layer, and an agent deployed in the `192.168.0.0` network. A console and three agents are deployed in the `192.168.1.0` network behind the NAT. All of the agents, including the remote agents, are part of the server context managed by the server layer on Host B.

Sun Management Center assumes that these components are configured to operate in the host name logical addressing mode. Therefore, all agents are configured with Host B as their trap and event destinations.

To support this configuration, the network host and NAT maps listed in Figure D–2 must be complete. The three remote agents on Hosts E, F, and G are accessible from the `192.168.0.0` network using static NAT mappings. Furthermore, the logical identifiers of Hosts E, F and G must also be resolvable to valid IP addresses in the `192.168.0.0` network. This step is accomplished through the host mappings for Hosts E, F, and G in the `192.168.0.0` network.

To allow the remote agents to name `Host B` as their trap and event destinations, a host map entry for `Host B` is specified in the `192.168.1.0` network host map.

Dual NAT Environment

The following figure illustrates a more complex example. The figure shows a dual NAT environment with three Sun Management Center server contexts with remote reference domains.

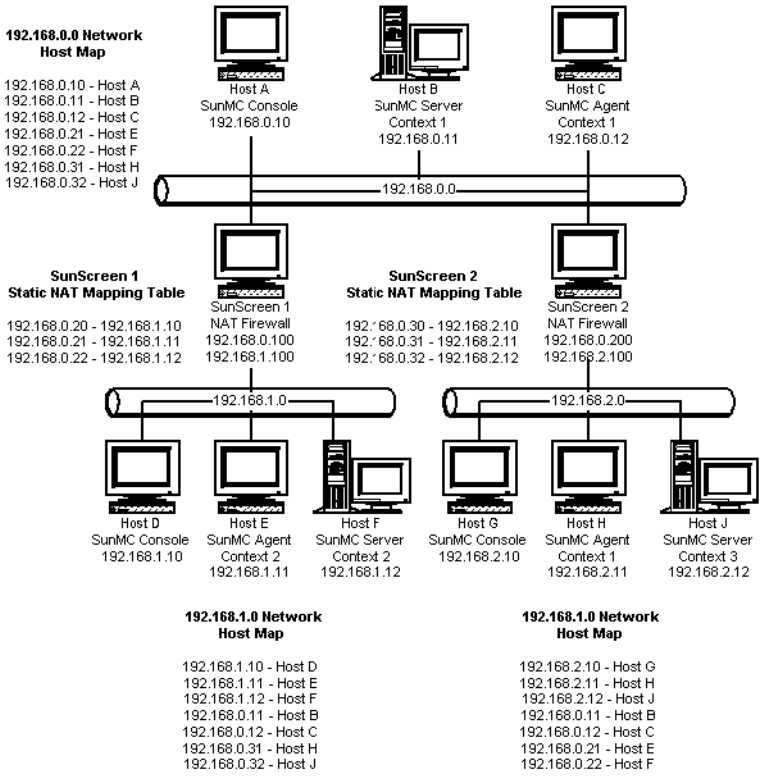

FIGURE D–3 Complex NAT Network Configuration Example

In the figure, the `192.168.0.0` network is in front of the NAT environments, while the `192.168.1.0` and `192.168.2.0` networks are behind the NAT environments. SunScreen 1 provides the `192.168.0.0` network with access to hosts on the `192.168.1.0` network. SunScreen 2 provides the `192.168.0.0` network with access to hosts in the `192.168.2.0` network. Static NAT mappings are assumed.

Host maps in the three addressing realms provide host name resolution for all hosts on which Sun Management Center server and agent components are deployed. All Sun Management Center components are assumed to have been configured with the host name logical addressing mode.

◆ ◆ ◆ APPENDIX E

Sun Management Center 4.0 Packages

This appendix provides an alphabetical list of the Sun Management Center packages and their descriptions.

Package Name	Description
SUNWbuhc	Sun Management Center Simplified Chinese Help
SUNWbuhf	Sun Management Center French Help
SUNWbuhh	Sun Management Center Traditional Chinese Help
SUNWbuhj	Sun Management Center Japanese Help
SUNWbuhk	Sun Management Center Korean Help
SUNWcam	Sun Management Center Advanced Monitoring Simplified Chinese message files package
SUNWccam	Sun Management Center - Unicenter TNG Integration Simplified Chinese message files package
SUNWccscs	Simplified Chinese Sun Management Center Sun Fire High-End Systems SC Server Support
SUNWcemcf	Simplified Chinese Sun Management Center MetaData Config Reader
SUNWcescd	Simplified Chinese Sun Management Center Console Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWcescp	Simplified Chinese Sun Management Center Sun Fire High-End Systems Platform Agent Support
SUNWcesda	Simplified Chinese Sun Management Center Sun Fire High-End Systems Domain Agent Support
SUNWcesf	Simplified Chinese Sun Management Center Console properties
SUNWcesfd	Simplified Chinese Sun Management Center Starfire Domain Agent Support

Package Name	Description
SUNWcesfp	Simplified Chinese Sun Management Center Starfire SSP Agent Support
SUNWcesgcl	Generic X86/X64 Config Reader add-on for Sun Management Center Simplified Chinese message files package
SUNWcesi	Simplified Chinese Sun Management Center script localization messages
SUNWceslw8c	Simplified Chinese Sun Management Center Sun Fire Entry-Level Midrange System Installation Scripts
SUNWceslw8s	Simplified Chinese Sun Management Center Server Images For Sun Fire Entry-Level Midrange System Platforms
SUNWcesna	Simplified Chinese Sun Management Center Configd Agent For Netra t Platforms
SUNWcesni	Simplified Chinese Sun Management Center Netra t Installation Scripts
SUNWcesns	Simplified Chinese Sun Management Center Server Images For Netra t Platforms
SUNWcess	Simplified Chinese Sun Management Center Sun Fire High-End Systems Server Support
SUNWcessc	Simplified Chinese Sun Management Center Sun Fire Midrange Systems Support - Server component for Domain Admin Module
SUNWcessd	Simplified Chinese Sun Management Center Console Sun Fire Midrange Systems Platform Administration
SUNWcessf	Simplified Chinese Sun Management Center Starfire Common Support
SUNWcessg	Simplified Chinese Sun Management Center Sun Fire High-End Systems Common Support
SUNWcesso	Simplified Chinese Sun Management Center Server for Sun Fire Midrange Systems Domain
SUNWcessp	Simplified Chinese Sun Management Center Sun Fire Midrange Systems Platform Support
SUNWcesss	Simplified Chinese Sun Management Center Starfire Server Support
SUNWcesw	Simplified Chinese Sun Management Center Server Images For Ultra Workstations
SUNWceswg	Simplified Chinese Sun Management Center Server Layer support for Workgroup Servers
SUNWceswi	Simplified Chinese Sun Management Center Ultra Workstation Initialization
SUNWcnsdo	Simplified Chinese Sun Management Center OPL Systems Dynamic Reconfiguration Messages
SUNWcoplc	Simplified Chinese Sun Management Center Console OPL Platform Administration
SUNWcopli	Simplified Chinese SunMC Server Support Package For OPL Platform Administration
SUNWcopls	Simplified Chinese SunMC Server Support Package For OPL Platform Administration

Package Name	Description
SUNWcplda	Simplified Chinese Sun Management Center Agent layer support for OPL domains
SUNWcplds	Simplified Chinese SunMC Server Support Package For OPL Domain Administration
SUNWcprm	Sun Management Center PRM Addon - Simplified Chinese
SUNWcsam	Sun Management Center SAM Addon - Simplified Chinese
SUNWcsca	Simplified Chinese Sun Management Center Sun Fire High-End Systems SC Agent Support
SUNWcscca	Simplified Chinese SunMC Common Config Reader Module Agent Core Component
SUNWcscci	Simplified Chinese SunMC Common Config Reader Module Initialization
SUNWcsccs	Simplified Chinese SunMC Common Config Reader Module Server Core Component
SUNWcscdo	Simplified Chinese Sun Management Center Console Support for Dynamic Reconfiguration on OPL Systems
SUNWcscmh	Simplified Chinese Solaris Container Manager Help
SUNWcscmp	Simplified Chinese Solaris Container Manager Properties Files
SUNWcsrm	Sun Management Center SysRM Addon - Simplified Chinese
SUNWcssd	Simplified Chinese Sun Management Center Server Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWcssda	Simplified Chinese Sun Management Center Sun Fire Midrange Systems Domain Agent
SUNWcssdr	Simplified Chinese Sun Management Center Sun Enterprise (6500/5500/4500) DR server properties
SUNWcsspa	Simplified Chinese Sun Management Center Sun Fire Midrange Systems Platform Agent
SUNWcswgi	Simplified Chinese Sun Management Center Workgroup Server Initialization
SUNWcycfd	Simplified Chinese Sun Enterprise 3000-6500 Servers/sun4d SunMC Agent Config Reader module
SUNWedacs	Sun Management Center Sun Fire Midrange Systems Domain Admin Module Setup for Server and Agent
SUNWenadm	Sun Management Center Advanced Monitoring message files package
SUNWencam	Sun Management Center - Unicenter TNG Integration message files package
SUNWenesf	Sun Management Center Console properties
SUNWenesi	Sun Management Center script localization messages
SUNWensca	Sun Management Center Sun Fire High-End Systems Message Files
SUNWensda	Sun Management Center Sun Fire Midrange Systems Domain Agent Messages

Package Name	Description
SUNWensdo	Sun MC Dom DR SPARC Enterprise Mx000 Messages
SUNWensdr	Sun Management Center Sun Fire High-End and Midrange Systems Dynamic Reconfiguration Messages
SUNWensfc	Sun Management Center English messages for Sun Enterprise (6500/5500/4500/3500) Config Reader
SUNWensfi	Sun Management Center Starfire English Message Support
SUNWenspa	Sun Management Center Sun Fire Midrange Systems Platform Agent Messages
SUNWesadf	Sun Management Center Agent Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWesado	Sun MC Dom DR SPARC Enterprise Mx000 Agent Support
SUNWesadr	Sun Management Center Sun Enterprise (6500/5500/4500) DR module
SUNWesae	Sun Management Center Agent System Files
SUNWesaem	Sun Management Center Event Module for Agent
SUNWesaes	Service Availability Manager add-on for Sun Management Center agent
SUNWesafm	Sun Management Center FMA Service Module for Agent
SUNWesagt	Sun Management Center Agent
SUNWesamn	Sun Management Center Advanced System Monitoring Agent components
SUNWesarg	Sun Management Center PRM agent package
SUNWesasc	Sun Management Center Advanced Services Console
SUNWesasm	Sun Management Center System Reliability Manager Modules
SUNWesaxp	Java API for XML Processing (JAXP) v1.1.3
SUNWesbuh	Sun Management Center Help
SUNWesbui	Sun Management Center Web Console
SUNWescaa	Sun Management Center - Unicenter TNG Integration event adaptor package
SUNWescad	Sun Management Center - Unicenter TNG Integration DSM package
SUNWescah	Sun Management Center - Unicenter TNG Integration hostDetailBean package
SUNWescam	Sun Management Center Advanced System Monitoring Console components
SUNWescap	Sun Management Center - Supporting package for Unicenter TNG Integration event adaptor package
SUNWescas	Sun Management Center - Unicenter TNG Integration world view package

Package Name	Description
SUNWescca	Sun Management Center Common Config Reader Module Agent Core Component
SUNWesccd	Sun Management Center Sun Fire High-End and Midrange Systems Support - Console component for Dynamic Reconfiguration
SUNWescci	Sun Management Center Common Config Reader Module Initialization
SUNWesccp	Sun Management Center Sun Fire Midrange Systems Support - Console component for Platform Admin Module
SUNWesccs	Sun Management Center Common Config Reader Module Server Core Component
SUNWescda	Sun Management Center Common Config Reader Module Agent DAQ Component
SUNWescdf	Sun Management Center Console Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWescdl	Sun Management Center Common Config Reader DAQ Library
SUNWescdo	Sun MC Dom DR SPARC Enterprise Mx000 Console Support
SUNWescdv	Sun Management Center Console Dataview
SUNWesces	Service Availability Manager add-on for Sun Management Center Console
SUNWescfa	Sun Management Center Common Config Reader Module Sun Fire V250 Agent Component
SUNWescfl	Sun Management Center Common Config Reader Sun Fire V250 platform support
SUNWescfs	Sun Management Center Common Config Reader Module Sun Fire V250 Server Component
SUNWescha	Sun Management Center Common Config Reader Module Sun Fire V440/V445 Agent Component
SUNWeschl	Sun Management Center Common Config Reader Sun Fire V440/V445 Platform Support
SUNWeschs	Sun Management Center Common Config Reader Module Server V440/V445 Platform Component
SUNWescix	Sun Management Center Import/Export
SUNWesclb	Sun Management Center Command Line Interface For BatchMode
SUNWescli	Sun Management Center Command Line Interface
SUNWesclt	Sun Management Center Client API
SUNWescna	Sun Management Center Common Config Reader Module Netra 440 Agent Component
SUNWescnl	Sun Management Center Common Config Reader Netra 440 Platform Support

Package Name	Description
SUNWescns	Sun Management Center Common Config Reader Module Server Netra 440 Platform Component
SUNWescom	Sun Management Center Common Components
SUNWescon	Sun Management Center Console
SUNWescpa	Sun Management Center Common Config Reader Module Sun Fire V125/V210/V215/V240/V245 and Netra 240/210 Agent Component
SUNWescpl	Sun Management Center Common Config Reader Sun Fire V125/V210/V215/V240/V245 and Netra 240/210 Platform Support
SUNWescps	Sun Management Center Common Config Reader Module Sun Fire V125/V210/V215/V240/V245 and Netra 240/210 Server Component
SUNWescrg	Sun Management Center PRM console package
SUNWescwa	Sun Management Center Common Config Reader Module Sun Blade 1500/2500/Ultra-45(A70)/Ultra-25 Agent Platform Component
SUNWescws	Sun Management Center Common Config Reader Module Sun Blade 1500/2500/Ultra 45(A70)/Ultra 25 Server Platform Component
SUNWesdb	Sun Management Center Database
SUNWesdrg	Sun Management Center PRM database package
SUNWesera	Sun Management Center Common Config Reader Module Sun Fire T1000 Agent Component
SUNWeserl	Sun Management Center Common Config Reader Sun Fire T1000 Platform Support
SUNWesers	Sun Management Center Common Config Reader Module Sun Fire T1000 Platform Component
SUNWesfma	Sun Management Center FMA Module
SUNWesgcl	Sun Management Center Agent -- Generic X86/X64 Config Reader Module
SUNWesgcs	Sun Management Center Generic X86/X64 Config Reader
SUNWesgui	Sun Management Center GUI Installation
SUNWesip6	Sun Management Center IPV6 Modules
SUNWesjp	Sun Management Center Additional Components
SUNWesjrm	Sun Management Center Client API support classes
SUNWesken	Sun Management Center Kernel Reader Module
SUNWeslac	Sun Management Center Local Access

Package Name	Description
SUNWeslrg	Sun Management Center PRM Service API (Client side) package
SUNWeslw8a	Sun Management Center Configd Agent For Sun Fire Entry-Level Midrange System Platforms
SUNWeslw8c	Sun Management Center Sun Fire Entry-Level Midrange System Installation Scripts
SUNWeslw8s	Sun Management Center Server Images For Sun Fire Entry-Level Midrange System Platforms
SUNWesmc	Sun Management Center MCP Console
SUNWesmcf	Sun Management Center MetaData Config Reader
SUNWesmcp	Sun Management Center Module Configuration Propagation
SUNWesmdr	Sun Management Center MDR for Basic Pack
SUNWesmib	Sun Management Center Mib Instance Module
SUNWesmod	Sun Management Center Agent Modules
SUNWesnta	Sun Management Center Configd Agent For Netra t Platforms
SUNWesnti	Sun Management Center Netra t Installation Scripts
SUNWesnts	Sun Management Center Server Images For Netra t Platforms
SUNWesodbc	Sun Management Center Server
SUNWesona	Sun Management Center Common Config Reader Module Sun Fire T2000/Netra T2000/Sun Blade T6300 Agent Component
SUNWesonl	Sun Management Center Common Config Reader Sun Fire T2000/Netra T2000/Sun Blade T6300 Platform Support
SUNWesons	Sun Management Center Common Config Reader Module Sun Fire T2000/Netra T2000/Sun Blade T6300 Platform Component
SUNWesoplc	Sun MC PltAdmin SPARC Enterprise Mx000 Console Support
SUNWesoplda	Sun MC DomMonit SPARC Enterprise Mx000 Agent Support
SUNWesopldi	Sun MC DomMonit SPARC Enterprise Mx000 Server and Agent Support
SUNWesoplds	Sun MC DomMonit SPARC Enterprise Mx000 Server Support
SUNWesopli	Sun MC PltASUNWescon Sun Management Center Consoledmin SPARC Enterprise Mx000 Server Setup Support
SUNWesopls	Sun MC PltAdmin SPARC Enterprise Mx000 Server Support
SUNWespda	Sun Management Center Common Config Reader Module Agent PCPDAQ Component
SUNWespdl	Sun Management Center Common Config Reader PCPDAQ Library

Package Name	Description
SUNWesprm	Sun Management Center PRM addon
SUNWespro	Sun Management Center Process Module
SUNWespsc	Sun Management Center Sun Fire Midrange Systems Support - Server component for Platform Admin Module
SUNWessa	Sun Management Center Server/Agent
SUNWessam	Service Availability Manager add-on for Sun Management Center
SUNWesscd	Sun Management Center Sun Fire High-End Systems Domain Agent Support
SUNWesscg	Sun Management Center Sun Fire High-End Systems Common Support
SUNWessco	Sun Management Center Sun Fire Midrange Systems Support - Server component for Domain Admin Module
SUNWesscp	Sun Management Center Sun Fire High-End Systems Platform Agent Support
SUNWesscs	Sun Management Center Sun Fire High-End Systems Server Support
SUNWessda	Sun Management Center Sun Fire Midrange Systems Domain Agent
SUNWessdf	Sun Management Center Server Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWessdk	Sun Management Center SDK 4.0 Components
SUNWessdo	Sun MC Dom DR SPARC Enterprise Mx000 Server Support
SUNWessdr	Sun Management Center Sun Enterprise (6500/5500/4500) DR server properties
SUNWessdv	Sun Management Center Advanced Services
SUNWesse	Sun Management Center Server System Files
SUNWesses	Service Availability Manager add-on for Sun Management Center Server
SUNWessfd	Sun Management Center Starfire Domain Agent Support
SUNWessfg	Sun Management Center Starfire Common Support
SUNWessfp	Sun Management Center Starfire SSP Agent Support
SUNWessfs	Sun Management Center Starfire Server Support
SUNWessmf	Sun Management Center Service Management Facility Module
SUNWessmn	Sun Management Center Advanced System Monitoring Server components
SUNWessms	Sun Management Center MCP Services
SUNWesspa	Sun Management Center Sun Fire Midrange Systems Platform Agent

Package Name	Description
SUNWesspc	Sun Management Center Console Sun Fire Midrange Systems Platform Administration
SUNWessps	Sun Management Center Sun Fire Midrange Systems Platform Support
SUNWessrg	Sun Management Center PRM server package
SUNWessrm	Sun Management Center System Reliability Manager message files package
SUNWessrv	Sun Management Center Server
SUNWesssd	Sun Management Center Server for Sun Fire Midrange Systems Domain
SUNWesssml	Sun Management Center System Reliability Manager - Server
SUNWessvc	Sun Management Center Advanced Services
SUNWesval	Sun Management Center Validation Tool Components
SUNWesweb	Sun Management Center Web Console
SUNWeswga	Sun Management Center Workgroup Server Agent Support
SUNWeswgi	Sun Management Center Workgroup Server Initialization
SUNWeswgs	Sun Management Center Server Layer support for Workgroup Servers
SUNWeswha	Sun Management Center Workgroup Server Agent Support
SUNWeswhd	Sun Management Center Workgroup Server Agent Support (V880/V890 Specific)
SUNWeswsa	Sun Management Center Configd Agent For Ultra Workstations
SUNWeswsi	Sun Management Center Ultra Workstation Initialization
SUNWeswss	Sun Management Center Server Images For Ultra Workstations
SUNWeszkoss	Sun Management Center Web Console ZK framework
SUNWfcscs	French Sun Management Center Sun Fire High-End Systems SC Server Support
SUNWfemcf	French Sun Management Center MetaData Config Reader
SUNWfescd	French Sun Management Center Console Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWfescp	French Sun Management Center Sun Fire High-End Systems Platform Agent Support
SUNWfesda	French Sun Management Center Sun Fire High-End Systems Domain Agent Support
SUNWfesfd	French Sun Management Center Starfire Domain Agent Support
SUNWfesfp	French Sun Management Center Starfire SSP Agent Support
SUNWfesgcl	Generic X86/X64 Config Reader add-on for Sun Management Center French message files package

Package Name	Description
SUNWfeslw8c	French Sun Management Center Sun Fire Entry-Level Midrange System Installation Scripts
SUNWfeslw8s	French Sun Management Center Server Images For Sun Fire Entry-Level Midrange System Platforms
SUNWfesna	French Sun Management Center Configd Agent For Netra t Platforms
SUNWfesni	French Sun Management Center Netra t Installation Scripts
SUNWfesns	French Sun Management Center Server Images For Netra t Platforms
SUNWfess	French Sun Management Center Sun Fire High-End Systems Server Support
SUNWfessc	French Sun Management Center Sun Fire Midrange Systems Support - Server component for Domain Admin Module
SUNWfessd	French Sun Management Center Console Sun Fire Midrange Systems Platform Administration
SUNWfessf	French Sun Management Center Starfire Common Support
SUNWfessg	French Sun Management Center Sun Fire High-End Systems Common Support
SUNWfesso	French Sun Management Center Server for Sun Fire Midrange Systems Domain
SUNWfessp	French Sun Management Center Sun Fire Midrange Systems Platform Support
SUNWfesss	French Sun Management Center Starfire Server Support
SUNWfesw	French Sun Management Center Server Images For Ultra Workstations
SUNWfeswg	French Sun Management Center Server Layer support for Workgroup Servers
SUNWfeswi	French Sun Management Center Ultra Workstation Initialization
SUNWfnsdo	French Sun Management Center OPL Systems Dynamic Reconfiguration Messages
SUNWfoplc	French Sun Management Center Console OPL Platform Administration
SUNWfopli	French SunMC Server Support Package For OPL Platform Administration
SUNWfopls	French SunMC Server Support Package For OPL Platform Administration
SUNWfplda	French Sun Management Center Agent layer support for OPL domains
SUNWfplds	French SunMC Server Support Package For OPL Domain Administration
SUNWfram	Sun Management Center Advanced Monitoring French message files package
SUNWfrcam	Sun Management Center - Unicenter TNG Integration French message files package
SUNWfresf	French Sun Management Center Console properties
SUNWfresi	French Sun Management Center script localization messages

Package Name	Description
SUNWfrprm	Sun Management Center PRM Addon - French
SUNWfrsam	Sun Management Center SAM Addon - French
SUNWfrsrm	Sun Management Center SysRM Addon - French
SUNWfsca	French Sun Management Center Sun Fire High-End Systems SC Agent Support
SUNWfscca	French SunMC Common Config Reader Module Agent Core Component
SUNWfscci	French SunMC Common Config Reader Module Initialization
SUNWfsccs	French SunMC Common Config Reader Module Server Core Component
SUNWfscdo	French Sun Management Center Console Support for Dynamic Reconfiguration on OPL Systems
SUNWfscmh	French Solaris Container Manager Help
SUNWfscmp	French Solaris Container Manager Properties Files
SUNWfssd	French Sun Management Center Server Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWfssda	French Sun Management Center Sun Fire Midrange Systems Domain Agent
SUNWfssdr	French Sun Management Center Sun Enterprise (6500/5500/4500) DR server properties
SUNWfsspa	French Sun Management Center Sun Fire Midrange Systems Platform Agent
SUNWfswgi	French Sun Management Center Workgroup Server Initialization
SUNWfycfd	French Sun Enterprise 3000-6500 Servers/sun4d SunMC Agent Config Reader module
SUNWham	Sun Management Center Advanced Monitoring Traditional Chinese message files package
SUNWhcam	Sun Management Center - Unicenter TNG Integration Traditional Chinese message files package
SUNWhcscs	Traditional Chinese Sun Management Center Sun Fire High-End Systems SC Server Support
SUNWhemcf	Traditional Chinese Sun Management Center MetaData Config Reader
SUNWhescd	Traditional Chinese Sun Management Center Console Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWhescp	Traditional Chinese Sun Management Center Sun Fire High-End Systems Platform Agent Support
SUNWhesda	Traditional Chinese Sun Management Center Sun Fire High-End Systems Domain Agent Support
SUNWhesf	Traditional Chinese Sun Management Center Console properties

Package Name	Description
SUNWhesfd	Traditional Chinese Sun Management Center Starfire Domain Agent Support
SUNWhesfp	Traditional Chinese Sun Management Center Starfire SSP Agent Support
SUNWhesgcl	Generic X86/X64 Config Reader add-on for Sun Management Center Traditional Chinese message files package
SUNWhesi	Traditional Chinese Sun Management Center script localization messages
SUNWheslw8c	Traditional Chinese Sun Management Center Sun Fire Entry-Level Midrange System Installation Scripts
SUNWheslw8s	Traditional Chinese Sun Management Center Server Images For Sun Fire Entry-Level Midrange System Platforms
SUNWhesna	Traditional Chinese Sun Management Center Configd Agent For Netra t Platforms
SUNWhesni	Traditional Chinese Sun Management Center Netra t Installation Scripts
SUNWhesns	Traditional Chinese Sun Management Center Server Images For Netra t Platforms
SUNWhess	Traditional Chinese Sun Management Center Sun Fire High-End Systems Server Support
SUNWhessc	Traditional Chinese Sun Management Center Sun Fire Midrange Systems Support - Server component for Domain Admin Module
SUNWhessd	Traditional Chinese Sun Management Center Console Sun Fire Midrange Systems Platform Administration
SUNWhessf	Traditional Chinese Sun Management Center Starfire Common Support
SUNWhessg	Traditional Chinese Sun Management Center Sun Fire High-End Systems Common Support
SUNWhesso	Traditional Chinese Sun Management Center Server for Sun Fire Midrange Systems Domain
SUNWhessp	Traditional Chinese Sun Management Center Sun Fire Midrange Systems Platform Support
SUNWhesss	Traditional Chinese Sun Management Center Starfire Server Support
SUNWhesw	Traditional Chinese Sun Management Center Server Images For Ultra Workstations
SUNWheswg	Traditional Chinese Sun Management Center Server Layer support for Workgroup Servers
SUNWheswi	Traditional Chinese Sun Management Center Ultra Workstation Initialization
SUNWhnsdo	Traditional Chinese Sun Management Center OPL Systems Dynamic Reconfiguration Messages
SUNWhoplc	Traditional Chinese Sun Management Center Console OPL Platform Administration
SUNWhopli	Traditional Chinese SunMC Server Support Package For OPL Platform Administration

Package Name	Description
SUNWhopls	Traditional Chinese SunMC Server Support Package For OPL Platform Administration
SUNWhplda	Traditional Chinese Sun Management Center Agent layer support for OPL domains
SUNWhplds	Traditional Chinese SunMC Server Support Package For OPL Domain Administration
SUNWhprm	Sun Management Center PRM Addon - Traditional Chinese
SUNWhsam	Sun Management Center SAM Addon - Traditional Chinese
SUNWhsca	Traditional Chinese Sun Management Center Sun Fire High-End Systems SC Agent Support
SUNWhscca	Traditional Chinese SunMC Common Config Reader Module Agent Core Component
SUNWhscci	Traditional Chinese SunMC Common Config Reader Module Initialization
SUNWhsccs	Traditional Chinese SunMC Common Config Reader Module Server Core Component
SUNWhscdo	Traditional Chinese Sun Management Center Console Support for Dynamic Reconfiguration on OPL Systems
SUNWhscmh	Traditional Chinese Solaris Container Manager Help
SUNWhscmp	Traditional Chinese Solaris Container Manager Properties Files
SUNWhsrm	Sun Management Center SysRM Addon - Traditional Chinese
SUNWhssd	Traditional Chinese Sun Management Center Server Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWhssda	Traditional Chinese Sun Management Center Sun Fire Midrange Systems Domain Agent
SUNWhssdr	Traditional Chinese Sun Management Center Sun Enterprise (6500/5500/4500) DR server properties
SUNWhsspa	Traditional Chinese Sun Management Center Sun Fire Midrange Systems Platform Agent
SUNWhswgi	Traditional Chinese Sun Management Center Workgroup Server Initialization
SUNWhycfd	Traditional Chinese Sun Enterprise 3000-6500 Servers/sun4d SunMC Agent Config Reader module
SUNWjaam	Sun Management Center Advanced Monitoring Japanese message files package
SUNWjacam	Sun Management Center - Unicenter TNG Integration Japanese message files package
SUNWjaesf	Japanese Sun Management Center Console properties
SUNWjaesi	Japanese Sun Management Center script localization messages
SUNWjaprm	Sun Management Center PRM Addon - Japanese
SUNWjasam	Sun Management Center SAM Addon - Japanese

Package Name	Description
SUNWjasrm	Sun Management Center SysRM Addon - Japanese
SUNWjcscs	Japanese Sun Management Center Sun Fire High-End Systems SC Server Support
SUNWjemcf	Japanese Sun Management Center MetaData Config Reader
SUNWjescd	Japanese Sun Management Center Console Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWjescp	Japanese Sun Management Center Sun Fire High-End Systems Platform Agent Support
SUNWjesda	Japanese Sun Management Center Sun Fire High-End Systems Domain Agent Support
SUNWjesfd	Japanese Sun Management Center Starfire Domain Agent Support
SUNWjesfp	Japanese Sun Management Center Starfire SSP Agent Support
SUNWjesgcl	Generic X86/X64 Config Reader add-on for Sun Management Center Japanese message files package
SUNWjeslw8c	Japanese Sun Management Center Sun Fire Entry-Level Midrange System Installation Scripts
SUNWjeslw8s	Japanese Sun Management Center Server Images For Sun Fire Entry-Level Midrange System Platforms
SUNWjesna	Japanese Sun Management Center Configd Agent For Netra t Platforms
SUNWjesni	Japanese Sun Management Center Netra t Installation Scripts
SUNWjesns	Japanese Sun Management Center Server Images For Netra t Platforms
SUNWjess	Japanese Sun Management Center Sun Fire High-End Systems Server Support
SUNWjessc	Japanese Sun Management Center Sun Fire Midrange Systems Support - Server component for Domain Admin Module
SUNWjessd	Japanese Sun Management Center Console Sun Fire Midrange Systems Platform Administration
SUNWjessf	Japanese Sun Management Center Starfire Common Support
SUNWjessg	Japanese Sun Management Center Sun Fire High-End Systems Common Support
SUNWjesso	Japanese Sun Management Center Server for Sun Fire Midrange Systems Domain
SUNWjessp	Japanese Sun Management Center Sun Fire Midrange Systems Platform Support
SUNWjesss	Japanese Sun Management Center Starfire Server Support
SUNWjesw	Japanese Sun Management Center Server Images For Ultra Workstations
SUNWjeswg	Japanese Sun Management Center Server Layer support for Workgroup Servers
SUNWjeswi	Japanese Sun Management Center Ultra Workstation Initialization

Package Name	Description
SUNWjnsdo	Japanese Sun Management Center OPL Systems Dynamic Reconfiguration Messages
SUNWjoplc	Japanese Sun Management Center Console OPL Platform Administration
SUNWjopli	Japanese SunMC Server Support Package For OPL Platform Administration
SUNWjopls	Japanese SunMC Server Support Package For OPL Platform Administration
SUNWjplda	Japanese Sun Management Center Agent layer support for OPL domains
SUNWjplds	Japanese SunMC Server Support Package For OPL Domain Administration
SUNWjsca	Japanese Sun Management Center Sun Fire High-End Systems SC Agent Support
SUNWjscca	Japanese SunMC Common Config Reader Module Agent Core Component
SUNWjscci	Japanese SunMC Common Config Reader Module Initialization
SUNWjsccs	Japanese SunMC Common Config Reader Module Server Core Component
SUNWjscdo	Japanese Sun Management Center Console Support for Dynamic Reconfiguration on OPL Systems
SUNWjscmh	Japanese Solaris Container Manager Help
SUNWjscmp	Japanese Solaris Container Manager Properties Files
SUNWjssd	Japanese Sun Management Center Server Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWjssda	Japanese Sun Management Center Sun Fire Midrange Systems Domain Agent
SUNWjssdr	Japanese Sun Management Center Sun Enterprise (6500/5500/4500) DR server properties
SUNWjsspa	Japanese Sun Management Center Sun Fire Midrange Systems Platform Agent
SUNWjswgi	Japanese Sun Management Center Workgroup Server Initialization
SUNWjycfd	Japanese Sun Enterprise 3000-6500 Servers/sun4d SunMC Agent Config Reader module
SUNWkcscs	Korean Sun Management Center Sun Fire High-End Systems SC Server Support
SUNWkemcf	Korean Sun Management Center MetaData Config Reader
SUNWkescd	Korean Sun Management Center Console Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWkescp	Korean Sun Management Center Sun Fire High-End Systems Platform Agent Support
SUNWkesda	Korean Sun Management Center Sun Fire High-End Systems Domain Agent Support
SUNWkesfd	Korean Sun Management Center Starfire Domain Agent Support
SUNWkesfp	Korean Sun Management Center Starfire SSP Agent Support

Package Name	Description
SUNWkesgcl	Generic X86/X64 Config Reader add-on for Sun Management Center Korean message files package
SUNWkeslw8c	Korean Sun Management Center Sun Fire Entry-Level Midrange System Installation Scripts
SUNWkeslw8s	Korean Sun Management Center Server Images For Sun Fire Entry-Level Midrange System Platforms
SUNWkesna	Korean Sun Management Center Configd Agent For Netra t Platforms
SUNWkesni	Korean Sun Management Center Netra t Installation Scripts
SUNWkesns	Korean Sun Management Center Server Images For Netra t Platforms
SUNWkess	Korean Sun Management Center Sun Fire High-End Systems Server Support
SUNWkessc	Korean Sun Management Center Sun Fire Midrange Systems Support - Server component for Domain Admin Module
SUNWkessd	Korean Sun Management Center Console Sun Fire Midrange Systems Platform Administration
SUNWkessf	Korean Sun Management Center Starfire Common Support
SUNWkessg	Korean Sun Management Center Sun Fire High-End Systems Common Support
SUNWkesso	Korean Sun Management Center Server for Sun Fire Midrange Systems Domain
SUNWkessp	Korean Sun Management Center Sun Fire Midrange Systems Platform Support
SUNWkesss	Korean Sun Management Center Starfire Server Support
SUNWkesw	Korean Sun Management Center Server Images For Ultra Workstations
SUNWkeswg	Korean Sun Management Center Server Layer support for Workgroup Servers
SUNWkeswi	Korean Sun Management Center Ultra Workstation Initialization
SUNWknsdo	Korean Sun Management Center OPL Systems Dynamic Reconfiguration Messages
SUNWkoam	Sun Management Center Advanced Monitoring Korean message files package
SUNWkocam	Sun Management Center - Unicenter TNG Integration Korean message files package
SUNWkoesf	Korean Sun Management Center Console properties
SUNWkoesi	Korean Sun Management Center script localization messages
SUNWkoplc	Korean Sun Management Center Console OPL Platform Administration
SUNWkopli	Korean SunMC Server Support Package For OPL Platform Administration
SUNWkopls	Korean SunMC Server Support Package For OPL Platform Administration

Package Name	Description
SUNWkoprm	Sun Management Center PRM Addon - Korean
SUNWkosam	Sun Management Center SAM Addon - Korean
SUNWkosrm	Sun Management Center SysRM Addon - Koreand
SUNWkplda	Korean Sun Management Center Agent layer support for OPL domains
SUNWkplds	Korean SunMC Server Support Package For OPL Domain Administration
SUNWksca	Korean Sun Management Center Sun Fire High-End Systems SC Agent Support
SUNWkscca	Korean SunMC Common Config Reader Module Agent Core Component
SUNWkscci	Korean SunMC Common Config Reader Module Initialization
SUNWksccs	Korean SunMC Common Config Reader Module Server Core Component
SUNWkscdo	Korean Sun Management Center Console Support for Dynamic Reconfiguration on OPL Systems
SUNWkscmh	Korean Solaris Container Manager Help
SUNWkscmp	Korean Solaris Container Manager Properties Files
SUNWkssd	Korean Sun Management Center Server Support for Dynamic Reconfiguration on Sun Fire High-End and Midrange Systems
SUNWkssda	Korean Sun Management Center Sun Fire Midrange Systems Domain Agent
SUNWkssdr	Korean Sun Management Center Sun Enterprise (6500/5500/4500) DR server properties
SUNWksspa	Korean Sun Management Center Sun Fire Midrange Systems Platform Agent
SUNWkswgi	Korean Sun Management Center Workgroup Server Initialization
SUNWkycfd	Korean Sun Enterprise 3000-6500 Servers/sun4d SunMC Agent Config Reader module
SUNWlgsmc	Sun Management Center Web Console Authorization plugin
SUNWmeta	Sun Management Center Metadata Agent
SUNWscma	Solaris Container Manager Agent
SUNWscmc	Solaris Container Manager Console
SUNWscmca	Solaris Container Manager Client API
SUNWscmcm	Solaris Container Manager Common Components
SUNWscmdb	Solaris Container Manager Database
SUNWscmh	Solaris Container Manager Help
SUNWscmp	Solaris Container Manager Properties Files

Package Name	Description
SUNWscms	Solaris Container Manager Server
SUNWscsca	Sun Management Center Sun Fire High-End Systems SC Agent Support
SUNWscscs	Sun Management Center Sun Fire High-End Systems SC Server Support
SUNWsuagt	Sun Management Center Dynamic Agent Update Agent Components
SUNWsucon	Sun Management Center Dynamic Agent Update Console Components
SUNWsusrv	Sun Management Center Dynamic Agent Update Server Components
SUNWsycfd	Sun Enterprise 3000-6500 Servers/sun4d SunMC Agent Config Reader module

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