



System Management Services (SMS) 1.4.1 Installation Guide

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Adobe PostScript

Contents

Preface vii

1. Introduction 1

SMS 1.4.1 Software on the SC 1

SMS 1.4.1 Software Requirements 2

Default Stop Sequence 3

Software Combinations 3

Other Documentation and Requirements 7

Example Conventions 7

2. SMS 1.4.1 Software Installation 9

Preparing to Perform a Reinstallation or Fresh OS/SMS Installation (Type 1) 9

Performing a Type 1 Installation 10

Downloading SMS Software 11

Backing Up Your SMS Environment 11

Installing the Solaris Operating Environment 13

Installing SMS Packages 14

Restoring Your SMS Configuration on the Spare SC 16

Configuring the MAN Network on the Spare SC 17

Switching Control to the Spare SC 22

Updating the Flash PROMs on the SC and the System Boards	23
Reinstalling the Former Main SC	25
Installation of the Solaris Operating Environment on the Former Main SC	26
Installing SMS 1.4.1 Software on the Former Main SC	27
Restoring Your SMS Configuration on the Former Main SC	29
Configuring the MAN Network on the Former Main SC	30
Rebooting the Former Main SC	35
Updating the Flash PROMs on the Former Main SC	35
Verifying the Chassis Serial Number	37
Enabling Failover on the Main SC (SC1)	38
3. SMS 1.4.1 Software Upgrade	39
Preparing to Perform an OS/SMS Upgrade (Type 2) Installation	40
Performing a Type 2 Upgrade	40
Downloading SMS Software	41
Preparing Your SMS Environment for Upgrade	42
Upgrading the Solaris Operating Environment	44
Upgrading SMS Packages	45
Switching Control to the Spare SC	48
Updating the Flash PROMs on the SC and the System Boards	49
Upgrading the Former Main SC	51
Upgrade the Solaris Operating Environment on the Spare SC	52
SMS 1.4.1 Software on the Former Main SC	53
Rebooting the Former Main SC	57
Updating the Flash PROMs on the Former Main SC	57
Enabling Failover on the Main SC (SC1)	60
4. SMS 1.4.1 Additional Software Instructions	61
Adding Users to SMS	61

Installing SMS Patches	65
Installing Additional Software Packages	67
Network Time Protocol (NTP) Information	69
Stopping and Starting SMS	70
Mounting the CD-ROM over NFS	71
5. SMS 1.4.1 Security Options	73
6. SMS 1.4.1 Software and Domains	75
Setting Up and Installing the Solaris Operating Environment for the Domain	75
Unconfigured Domains	81
Creating a Domain	83
Making Changes to a Domain	89
Index	93

Preface

This guide contains installation and upgrade instructions for the System Management Services (SMS) 1.4.1 software.

Before You Read This Book

This guide is intended for the Sun Fire high-end system administrator, who has a working knowledge of UNIX® systems, particularly those based on the Solaris™ operating environment. If you do not have such knowledge, read the Solaris User and System Administrator documentation provided with this system, and consider UNIX system administration training.

All members of the next-generation Sun Fire server family can be configured as loosely coupled clusters. However, it is currently outside of the scope of this document to address system management for Sun Fire cluster configurations.

How This Book Is Organized

This guide contains the following information:

Chapter 1 introduces installation for SMS 1.4.1.

Chapter 2 describes SMS 1.4.1 software reinstallation.

Chapter 3 describes SMS 1.4.1 software upgrade.

Chapter 4 describes additional SMS software instructions.

Chapter 5 describes security option instructions.

Chapter 6 describes SMS 1.4.1 software and domains.

Using UNIX Commands

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

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

<http://docs.sun.com>

Typographic Conventions

Typeface or Symbol	Meaning	Examples
AaBbCc123	The names of commands, files, and directories; on-screen computer output	Edit your <code>.login</code> file. Use <code>ls -a</code> to list all files. % You have mail.
AaBbCc123	What you type, when contrasted with on-screen computer output	% su Password:
<i>AaBbCc123</i>	Book titles, new words or terms, words to be emphasized. Replace command-line variables with real names or values.	Read Chapter 6 in the <i>User's Guide</i> . These are called <i>class</i> options. To delete a file, type <code>rm filename</code> .

Shell Prompts

Shell	Prompt
C shell	<i>sc_name</i> : sms-user: > or <i>domain_id</i> : sms-user: >
C shell superuser	<i>sc_name</i> :# or <i>domain_id</i> : #
Bourne shell and Korn shell	>
Bourne shell and Korn shell superuser	#

Related Documentation

Application	Title	Part Number
Release Notes	<i>System Management Services (SMS) 1.4.1 Release Notes</i>	817-5407-10
Overview	<i>Sun Fire High-End Systems Software Overview Guide</i>	817-3075-10
Administrator Guide	<i>System Management Services (SMS) 1.4.1 Administrator Guide</i>	817-5410-10
Reference (manpages)	<i>System Management Services (SMS) 1.4.1 Reference Manual</i>	817-5408-10
Options	<i>System Management Services (SMS) 1.4 Dynamic Reconfiguration User Guide</i>	817-4459-10
	<i>Sun Fire High-End Systems Dynamic Reconfiguration User Guide</i>	817-4586-10
	<i>System Administration Guide: IP Services</i>	806-4075-11
	<i>OpenBoot™ 4.x Command Reference Manual</i>	816-1177-10
	<i>Sun Fire 15K/12K System Site Planning Guide</i>	806-3510-12

Application	Title	Part Number
	<i>Sun Fire Link™ Fabric Administrator's Guide</i>	806-1405-11
	<i>Securing the Sun Fire 12K and 15K System Controllers: Updated for SMS 1.4</i>	817-1358-10
	<i>Securing the Sun Fire 12K and 15K Domains: Updated for SMS 1.4</i>	817-1357-10

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System Management Services (SMS) 1.4.1 Installation Guide, part number 817-3055-10

Introduction

This chapter describes what's involved in the reinstallation and upgrade of the SMS 1.4.1 software. Instructions are provided in subsequent chapters.

SMS 1.4.1 Software on the SC

Versions of SMS 1.4.1 software are available for both the Solaris 9 and the Solaris 8 operating environment. Each version is distinct, and will run only on the operating environment for which it was designed.

The SMS packages use approximately 18 Gbytes each of disk space on two disks on the system controller (SC). The following table lists the total size of the SMS software by partition.

TABLE 1-1 SMS Software Approximate Partition Sizes

Partition	Size
0 / (root)	8 Gbytes
1 /swap	2 Gbyte
4 OLDS/LVM database (metadb)	10 Mbytes
5 OLDS/LVM database (metadb)	10 Mbytes
7 /export/install	8 Gbytes

SMS requires two disk partitions, of at least 10 Mbytes, be dedicated to each metadevice state database copy for disk mirroring.

SMS 1.4.1 Software Requirements

The Solaris 8 version of SMS requires:

- The 02/02 version of the Solaris 8 operating environment.
- The same version of SMS software on both system controllers (SCs).
- Installation of the `Entire Distribution` software group of the Solaris operating environment.

The same version of the Solaris operating environment, including update version and installed patches, on both SCs is strongly recommended. All patches are available from : <http://sunsolve.sun.com>.

- The 117002-01 patch.
- The 110826-09 patch for Solaris 8 on each domain (not required for SC).
- The 111335-18 patch for Solaris 8 on each domain (not required for SC).
- The Solaris 8 version of SMS 1.4.1 has binary dependencies on these Solaris libraries:

```
/usr/lib/libnvpair.so.1
```

```
/usr/lib/libuuid.so.1
```

```
/usr/lib/fm/libdiagcode.so.1
```

The fixes for these libraries are available respectively through patches 108528-24, 115831-01, 115829-01, or better. These patches are available through:

<http://sunsolve.sun.com>

Installation of SMS 1.4_s8 version requires all three of these libraries to be present on the system controllers and the domains. Otherwise, the SMS daemons will not start.

- Java 1.2.2 installed in the default directory (`/usr/java1.2/bin/java`). Java 1.2.2 is normally installed in this directory during `Solaris Entire Distribution` installation.



Caution – If you are using the Sun Fire Interconnect and Java 1.2.2 is not installed, or not installed in its default directory, SMS will fail to load.

Note – After installing Java 1.2.2, be sure to stop and restart SMS.

The Solaris 9 version of SMS requires:

- The 4/04 version of the Solaris 9 operating environment.
- The same version of SMS software on both system controllers (SCs).
- Installation of the `Entire Distribution` software group of the Solaris operating environment.

The same version of the Solaris operating environment, including update version and installed patches, on both SCs is strongly recommended.

- The 113027-03 patch, available from: <http://sunsolve.sun.com>.
- Either Solaris 9 12/03 or patch 112233-09 for all Solaris 9 domains (not required on the SC)
- Java 1.2.2 installed in the default directory (`/usr/java1.2/bin/java`). Java 1.2.2 is normally installed in this directory during Solaris Entire Distribution installation.



Caution – If you are using the Sun Fire Interconnect and Java 1.2.2 is not installed, or not installed in its default directory, SMS will fail to load.

Note – After installing Java 1.2.2, be sure to stop and restart SMS.

Default Stop Sequence

Since SMS 1.3, the default sequence to stop the system (STOP-A) has been changed to the following alternate:

```
[Return][tilde][CTRL-B]
```

This was done to facilitate failover. Solaris 8 introduced this new feature which gives the system the ability to force a hanging system to halt when required without allowing random or spurious breaks to cause an unintentional stop.

Note – This is true only with serial devices acting as consoles and not for systems with keyboards of their own. There must be an interval of more than 0.5 seconds between characters, and the entire string must be entered in less than 5 seconds.

Software Combinations

These are the valid SMS software upgrade paths for the Solaris 8 and Solaris 9 operating environments:

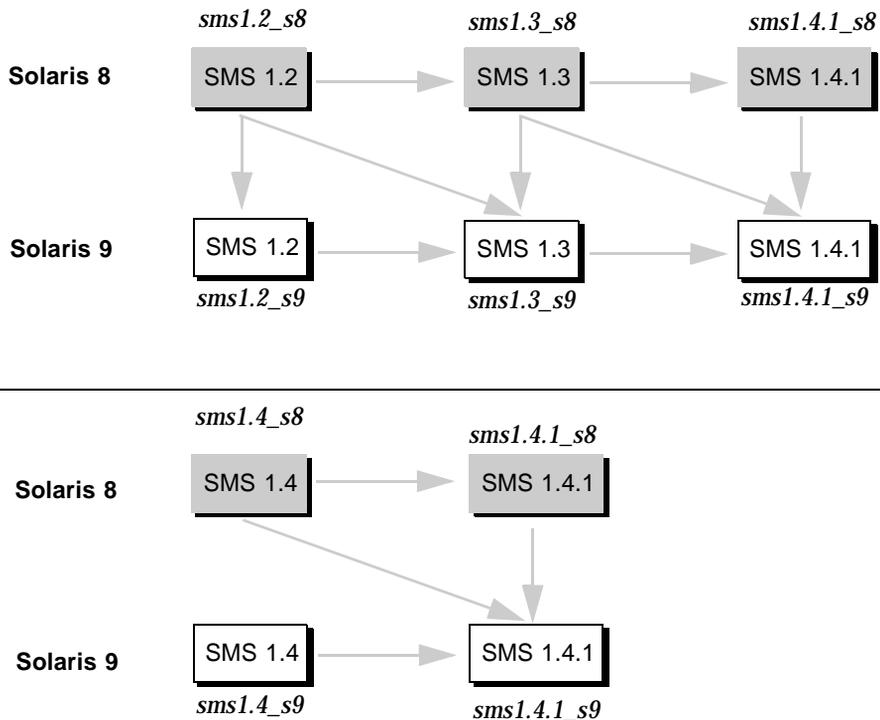


FIGURE 1-1 SMS Upgrade Paths

Note – SMS 1.1 is no longer supported. Also note that there is no upgrade path from SMS 1.3 to SMS 1.4. The equivalent upgrade is SMS 1.3 to SMS 1.4.1.

Note – The upgrade from SMS 1.4 to SMS 1.4.1 is permanent. Once you upgrade to SMS 1.4.1, you cannot return to SMS 1.4.

To upgrade from SMS software from the Solaris 8 operating environment, follow the procedures summarized in FIGURE 1-2. To upgrade SMS software from the Solaris 9 operating environment, follow the procedures summarized in FIGURE 1-3.

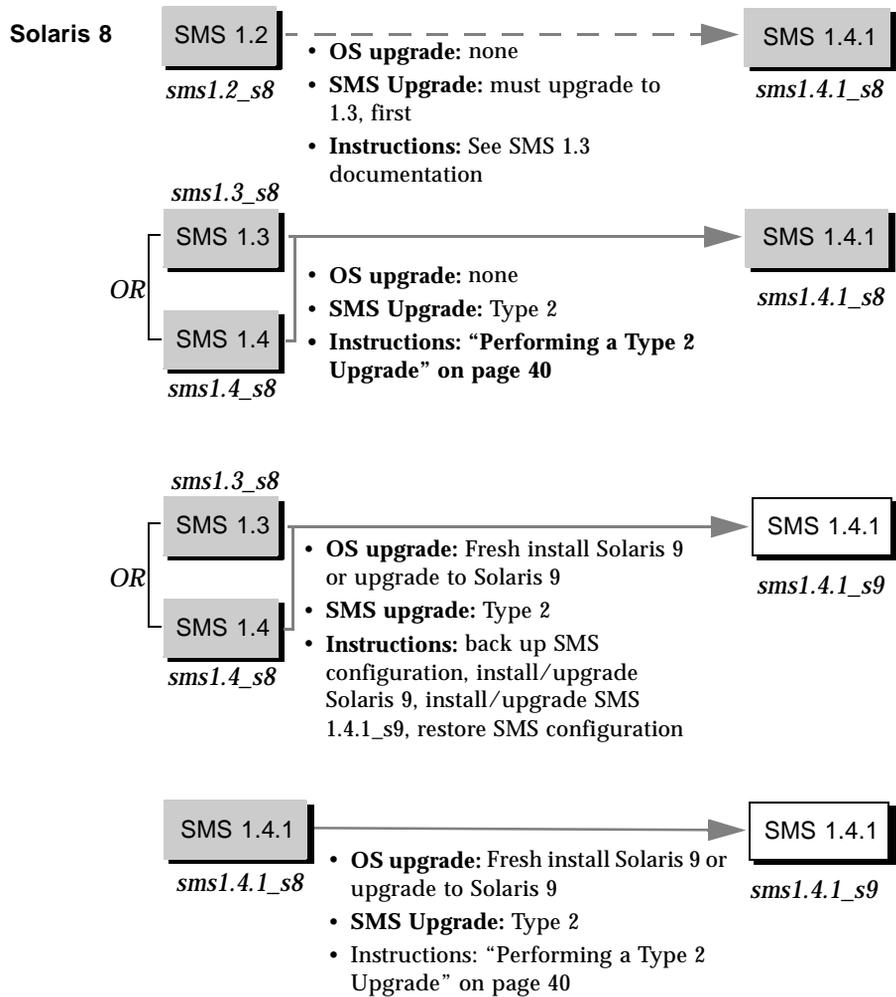


FIGURE 1-2 SMS Upgrade Instructions - Solaris 8

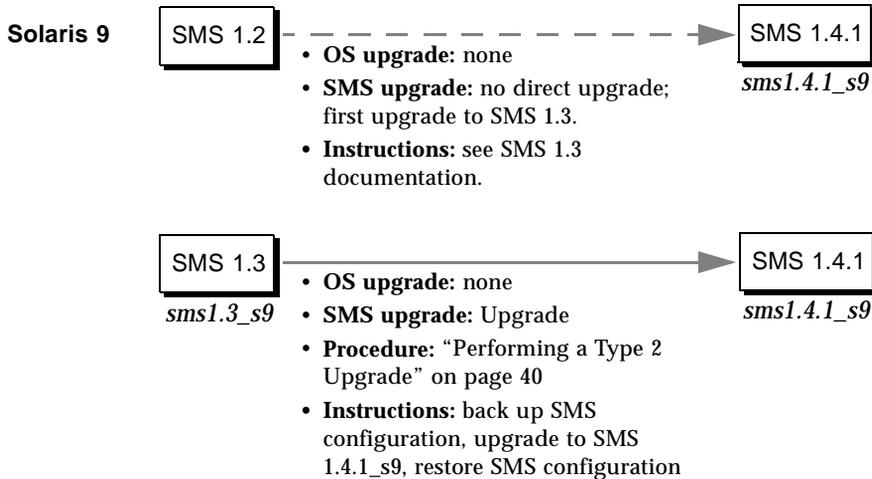


FIGURE 1-3 SMS Upgrade Instructions - Solaris 9

Note – In the 1.4.1 release of SMS for Solaris 9, `smversion` does not support a return to SMS 1.1, SMS 1.2_s8 or SMS 1.3_s8. To return to SMS 1.1, SMS 1.2_s8 or SMS 1.3_s8 you must return to the *applicable* Solaris 8 operating environment.

Previous versions of SMS documented the use of the Java™ Web Start GUI and the `pkgadd` command to install the SMS packages on to the Sun Fire high-end system. SMS 1.3 introduced the `smsinstall` and `smupgrade` scripts, which simplify and streamline the installation and upgrade process. As a result, Web Start and `pkgadd` are no longer recommended and are not documented in this manual. Do not use any method not documented in this manual to install or upgrade SMS 1.4.1 or you could misconfigure SMS and lose functionality.

Note – SMS 1.4.1 does not support mixed configurations of CP1500 and CP2140 boards on the SC's. In other words, you cannot use a CP1500 board on one SC, and a CP2140 board on the other. Both SC's must use the same type of board.

Other Documentation and Requirements

The following chapters contain overviews of the reinstallation and upgrade process, which require you to use sections from different publications and files. You should ensure that you have the following publications, printouts and patches before you start the reinstallation or upgrade.

- *Solaris 9 Installation Guide*
- *Sun Fire 15K/12K System Site Planning Guide*

Refer to the *Sun Fire 15K/12K System Site Planning Guide* when reconfiguring your MAN network. You will need the following information from your worksheets:

- Platform name
- Chassis serial number
- Hostname IP addresses and submask for the I1 internal network
- Hostname IP addresses and submask for the I2 internal network
- Community hostname IP addresses and submask for the external network
- Hostname IP address for the SC logical interface
- Community hostname addresses for the domains

Note – We recommend that you install the release-appropriate Solaris Patch Cluster available at <http://sunsolve.sun.com>, to ensure that SMS runs properly. Any patches to the Solaris operating environment should be applied before re-installing or upgrading the SMS software.

Check the *Solaris 9 (SPARC Platform Edition) Release Notes*, the *Solaris 9 Release Notes Supplement for Sun Hardware*, the *System Management Services (SMS) 1.4.1 Release Notes* and sunsolve.sun.com for the latest information on issues, late-breaking news, and patch availability.

Note – During installation, or whenever the other SC is at the Open Boot PROM prompt or not running SMS, you may see “SC clocks NOT phase locked” messages in the platform log. You can ignore them.

Example Conventions

For the examples in this guide:

Prompt	Definition
sc0:#	Superuser on SC0, initially the main SC
sc1:#	Superuser on SC1, initially the spare SC
<i>domain_id</i> :#	Superuser on the domain
<i>sc_name</i> : <i>sms-user</i> :>	User prompt on the SC <i>sms-user</i> is the <i>user-name</i> of an administrator, operator, configurator, or service personnel logged in to the SC.
<i>domain_id</i> : <i>sms-user</i> :>	User prompts on the domain <i>sms-user</i> is the <i>user-name</i> of the administrator, operator, configurator, or service personnel logged in to the domain.

SMS 1.4.1 Software Installation

This chapter contains instructions for reinstalling SMS 1.4.1 software under the Solaris operating environment or fresh installing Solaris 9 and SMS 1.4.1_s9 software. These instructions apply to Sun Fire high-end systems.

The SMS installation focuses on setting up group IDs used for credential checking, and setting up and running control scripts that start SMS when the Solaris operating environment boots.

This chapter includes:

- To Download Software From the Web
- To Back Up Your SMS Environment
- To Install the Solaris Operating Environment (optional)
- To Install the SMS Software Packages Using `smsinstall`
- To Restore Your SMS Configuration
- To Configure the Management Network (MAN) Using the `smsconfig(1M)` Command
- To Verify the Chassis Serial Number
- To Enable Failover

Preparing to Perform a Reinstallation or Fresh OS/SMS Installation (Type 1)

The SMS 1.4.1 installation instructions in this section assume that you are fresh installing the Solaris 9 operating environment or your system is already running the Solaris 9 operating environment.

Performing a Type 1 Installation

To fresh install Solaris 9 and SMS 1.4.1_s9 software or reinstall the SMS 1.4.1_s9 software on your Sun Fire high-end system, you will need to perform the following procedures:

Task	Reference	Page
Download your SMS packages	To Download Software From the Web To Download Software From a CD-ROM	9
Backup SMS software - Turn off failover on the main SC (SC0) - Stop SMS on the spare SC (SC1) - Backup the current SMS software using <code>smsbackup</code> on the spare	To Backup Your SMS Environment	10
Install Solaris operating environment	Solaris Installation Guide	
Install SMS software packages on the spare SC (SC1)	To Install the SMS Software Packages Using <code>smsinstall</code>	12
Restore your SMS configuration on the spare SC	To Restore Your SMS Configuration	15
Configure the MAN network on the spare SC	To Configure the Management Network (MAN) Using <code>smsconfig(1M)</code>	16
Configure your SMS user groups on the spare SC (optional)	To Add Users to SMS Groups and Configure Directory Access	63
Switch control to the spare SC	To Switch Control to the Spare SC	21
Update the SC and CPU flash PROMs on the new spare SC	Updating the Flash PROMs	22
Reinstall the former main SC - Backup the current SMS software using <code>smsbackup</code> on the former main SC - Install Solaris operating environment - Install SMS software packages on the former main SC	To Reinstall the Former Main SC	25
Restore your SMS configuration on the former main SC	To Restore Your SMS Configuration	29
Configure the MAN network on the former main SC	To Configure the Management Network (MAN) Using <code>smsconfig(1M)</code>	30
Configure your SMS user groups for the former main SC (optional)	To Add Users to SMS Groups and Configure Directory Access	63
Reboot the former main SC (SC0)	To Reboot the Former Main SC	36
Update the SC flash PROMs on the new spare SC	To Update the Flash PROMs	36
Verify the chassis serial number	To Verify the Chassis Serial Number	37
Turn on failover on the new main SC (SC1)	To Enable Failover	38

To begin, proceed to “Downloading SMS Software” on page 11.

Downloading SMS Software

You can retrieve SMS 1.4.1 software from the web.

▼ To Download Software From the Web

1. **Using your web browser, go to** <http://www.sun.com/servers/sw/>
2. **Click the System Management Services (SMS) link.**
3. **Click the** [Click here to download link](#).

The file that is then downloaded is named `sms_1_4_1_sparc.zip`.

4. **Log in to the SC as superuser.**
5. **Change directory to the location where you downloaded the software:**

```
scl:# cd /download_directory
```

6. **Extract the downloaded file by typing:**

```
scl:# unzip sms_1_4_1_sparc.zip
```

The SMS 1.4.1 packages are located in
`/download_directory/sms_1_4_1_sparc/System_Management_Services_1.4.1/`
Product.

7. **Proceed to “Backing Up Your SMS Environment” on page 11.**

Backing Up Your SMS Environment

If this SC has a working SMS environment, you should do the following before attempting to reinstall the SMS software:

▼ To Back Up Your SMS Environment

On the main SC:

1. Make certain your configuration is stable.

Being stable means no commands are running and no hardware is changed during the reinstallation or upgrade process.

2. Log in to the main SC as a user with `platadmin` privileges.

3. Deactivate failover:

```
sc0:sms-user:> /opt/SUNWSMS/bin/setfailover off
```

On the spare SC:

1. Log in to the spare as superuser.

2. Stop SMS on the spare SC (SC1):

```
sc1:# /etc/init.d/sms stop
```

3. Backup the system on the spare SC.

Run `smsbackup` before proceeding or have the latest copy of the `smsbackup` file (`sms_backup.XX.cpio`) accessible to the disk.

Note – The `sms_backup.X.X.cpio` file of one SC cannot be used by the other SC. They are SC specific files and non-interchangeable.

```
sc1:# /opt/SUNWSMS/bin/smsbackup directory_name
```

where:

directory_name is the name of the directory in which the backup file is created. The *directory_name* requires the absolute path name for the file. This file can reside in any directory on the system, connected network or tape device to which you have read/write privileges. If no *directory_name* is specified, a backup file is created in `/var/tmp`.

The *directory_name* specified must be mounted on as a UFS file system. Specifying a TMPFS file system, such as `/tmp`, will cause `smsbackup` to fail. If you are not certain that your *directory_name* is mounted as a UFS file system, type:

```
sc1:# /usr/bin/df -F ufs directory_name
```

A UFS file system will return directory information. Any other type of file system will return a warning.

If you are fresh installing the Solaris 9 operating environment, proceed to “Installing the Solaris Operating Environment” on page 13.

If you are reinstalling SMS 1.4.1 software proceed to “Installing SMS Packages” on page 14.

Installing the Solaris Operating Environment

Note – Make sure you have the proper release of the Solaris operating environment, including patches (see “SMS 1.4.1 Software Requirements” on page 2). Without the proper version and patches, the availability daemons on the SC will not start, causing SMS daemon startup failures and an unusable SC.

▼ To Install the Solaris Operating Environment

1. **Install the Solaris 9 operating environment according to the Solaris installation instructions. Refer to the *Solaris 9 Installation Guide* for detailed installation instructions.**

The instructions in the following sections assume that your system is running the `Entire Distribution` software group (or higher) of the Solaris 9 operating environment. SMS 1.4.1_s9 does not run under software releases *earlier* than Solaris 9 or software groups *less* than `Entire Distribution`. All patches should be applied according to each patch's instructions. Several Solaris patches are required for SMS to run properly. See "Other Documentation and Requirements" on page 7.

Note – You must select the English, 'C,' locale when reinstalling the Solaris operating environment on a system controller. SMS does not support any Solaris locale other than English on the SC.

2. **Verify that Java 1.2.2 has been installed in the default directory.**

The default directory is `/usr/java1.2/bin/java`. If you are using the Sun Fire Interconnect and Java 1.2.2 is not installed in the default directory, SMS will not start.

3. **Stop and Restart SMS.**

See "To Manually Stop and Restart SMS" on page 70

4. **Once your operating environment has been successfully installed proceed to "Installing SMS Packages" on page 14.**

Installing SMS Packages

SMS provides a script, `smsinstall(1M)`, to automate software installation. To install SMS software packages, follow the steps in the procedure "To Install the SMS Software Packages Using `smsinstall`" on page 14.

▼ To Install the SMS Software Packages Using `smsinstall`

1. **Log in to the spare SC as superuser.**

Change directory to the location of `smsinstall` and type:

```
sc1:# cd
/download_dir/sms_1_4_1_sparc/System_Management_Services_1.4.1/Tools
```

Note – `smsinstall(1M)` automatically installs the online System Management Services (SMS) Reference Manual (`man`) pages in `/opt/SUNWSMS/man/sman1m`. To avoid conflicts, do *not* change this location.

2. Install packages using the `smsinstall(1M)` command.

`directory_name` is the `/Product` directory from “Downloading SMS Software” on page 11. Here is an example:

```
scl:# smsinstall directory_name
Installing SMS packages. Please wait. . .
pkgadd -n -d "directory_name" -a
/tmp/smsinstall.admin.24501 SUNWSMSr SUNWSMSop SUNWSMSdf
SUNWSMSjh SUNWSMSlp SUNWSMSmn SUNWSMSob SUNWSMSod SUNWSMSpd
SUNWSMSpo SUNWSMSpp SUNWSMSsu SUNWscdvr.u SUNWufrx.u SUNWufu
SUNWwccmn

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205 blocks

Installation of <SUNWSMSr> was successful...
Installation of <SUNWSMSop> was successful...
Installation of <SUNWSMSdf> was successful...
Installation of <SUNWSMSjh> was successful...
Installation of <SUNWSMSlp> was successful...
Installation of <SUNWSMSmn> was successful...
Installation of <SUNWSMSob> was successful...
Installation of <SUNWSMSod> was successful...
Installation of <SUNWSMSpd> was successful...
Installation of <SUNWSMSpo> was successful...
Installation of <SUNWSMSpp> was successful.
Installation of <SUNWSMSsu> was successful.
Installation of <SUNWscdvr> was successful...

Reboot client to install driver.
type=ddi_pseudo;name=flashprom uflash\N0
Installation of <SUNWufrx> was successful.
```

```
Installation of <SUNWufu> was successful.
Installation of <SUNWwccmn> was successful.

Verifying that all SMS packages are installed.OK
Setting up /etc/init.d/sms run control script for SMS 1.4.1
New SMS version 1.4.1 is active
Attempting to start daemon picld
/etc/init.d/picld start
smsupgrade complete.
Log file is /var/sadm/system/logs/smsinstall.
```

3. Proceed to “To Restore Your SMS Configuration” on page 16.

Restoring Your SMS Configuration on the Spare SC

▼ To Restore Your SMS Configuration

1. Restore your SMS configuration.

Run `smsrestore` to restore the `smsbackup` file.

Note – Once `smsrestore` completes you will see the following message: “Please set the desired SMS failover state.” Ignore this message.

```
sc1:# /opt/SUNWSMS/bin/smsrestore filename
```

where:

filename is the absolute path to the backup file that was created by `smsbackup(1M)`. The *filename* must contain the full path name for the file. This file can reside anywhere on the system, connected network or tape device. If no *filename* is specified, you will receive an error.

2. For a fresh install:

Proceed to “To Configure the Management Network (MAN) Using the `smsconfig(1M)` Command” on page 17.

For reinstallation:

During reinstallation the SMS group file was restored. Proceed to “To Add Users to SMS Groups and Configure Directory Access” on page 63 *only* if you will be changing user group memberships. Otherwise, proceed to “To Switch Control to the Spare SC” on page 22.

Configuring the MAN Network on the Spare SC

▼ To Configure the Management Network (MAN) Using the `smsconfig(1M)` Command

To correctly configure the management network, you need to do the following:

- Run `smsconfig -m`
- Edit the `/etc/nsswitch.conf`
- Edit your Solaris Naming software.
- Reboot the SC.

1. Be sure you have read and filled out the information in the *Sun Fire 15K/12K System Site Planning Guide*.

Note – A domain can be excluded from the I1 network configuration by using the word NONE as the `net_id`. This applies only to the I1 network.

2. Read the `smsconfig(1M)` man page.
3. Log into the spare SC as superuser.
4. To display, review, or change the Management Network settings, type:

```
scl:# /opt/SUNWSMS/bin/smsconfig -m
```

5. Answer the questions based on the information gathered for your site in the *Sun Fire 15K/12K System Site Planning Guide*.

The following example shows IPv4 and accepts the default settings provided with the Solaris 9 Supplemental CD. An IPv6 network example differs slightly. There will be no prompts for `netmasks` and `/etc/ipnodes` will be modified in addition to `/etc/hosts`.



Caution – The IP addresses shown in the following example are examples only. Refer to your *Sun Fire 15K/12K System Site Planning Guide* for valid IP addresses for your network. Using invalid network IP addresses could, under certain circumstances, render your system unbootable!

Note – The IP addresses on the external network for failover, eri0 and eri1 on each SC must be unique. The floating IP address is the same on both SCs.

For more information on `smsconfig -m` refer to the “MAN Configuration” section of the *System Management Services (SMS) 1.4.1 Administrator Guide* and the `smsconfig man` page.

```
sc1:# smsconfig -m

The platform name identifies the entire host machine to the SMS
software. The platform name occupies a different name space than
domain names (hostnames of bootable systems).

What is the name of the platform this SMS will service [sun15]?
sun15
Configuring the External Network for Community C1

Do you want to define this Community? [y,n] y
Two network interfaces controllers (NICs) are required for IPMP
network failover.
Enter NICs associated with community C1 [eri0 eri1]: [Return]

Enter hostname for eri0 [sun15-sc1-eri0]:[Return]
Enter IP address for eri0: 10.1.1.52

Enter hostname for eri1 [sun15-sc1-eri1]:[Return]
Enter IP address for sun15-sc1-eri1: 10.1.1.53

The Logical/Floating IP hostname and address will "float" over to
whichever system controller (SC0 or SC1) is acting as the main SC.

Enter Logical/Floating IP hostname for community C1 [sun15-sc-
C1]:[Return]
Enter IP address for sun15-sc-C1:10.1.1.50
Enter Netmask for community C1: 255.255.255.0

Enter hostname for community C1 failover address [sun15-sc1-C1-
failover]:[Return]
Enter IP address for sun15-sc1-C1-failover:10.1.1.51

Hostname                               IP Address (platform=sun15)
-----                               -
sun15-sc-C1                             10.1.1.50
sun15-sc1-C1-failover                   10.1.1.51
sun15-sc1-eri0                          10.1.1.52
sun15-sc1-eri1                          10.1.1.53
```

Do you want to accept these network settings? [y,n] **y**

Configuring the External Network for Community C2

Do you want to define this Community? [y,n] **n**

Configuring I1 Management Network - 'I1' is the Domain to SC MAN.
MAN I1 Network Identification

Enter the IP network number (base address) for the I1 network:

10.2.1.0

Enter the netmask for the I1 MAN network

[255.255.255.224]:**[Return]**

Hostname	IP Address (platform=sun15)
----------	-----------------------------

netmask-i1	255.255.255.224
------------	-----------------

sun15-sc-i1	10.2.1.1
-------------	----------

sun15-a	10.2.1.2
---------	----------

sun15-b	10.2.1.3
---------	----------

sun15-c	10.2.1.4
---------	----------

sun15-d	10.2.1.5
---------	----------

sun15-e	10.2.1.6
---------	----------

sun15-f	10.2.1.7
---------	----------

sun15-g	10.2.1.8
---------	----------

sun15-h	10.2.1.9
---------	----------

sun15-i	10.2.1.10
---------	-----------

sun15-j	10.2.1.11
---------	-----------

sun15-k	10.2.1.12
---------	-----------

sun15-l	10.2.1.13
---------	-----------

sun15-m	10.2.1.14
---------	-----------

sun15-n	10.2.1.15
---------	-----------

sun15-o	10.2.1.16
---------	-----------

sun15-p	10.2.1.17
---------	-----------

sun15-q	10.2.1.18
---------	-----------

sun15-r	10.2.1.19
---------	-----------

Do you want to accept these network settings? [y,n] **y**

Configuring I2 Management Network - 'I2' is for SC to SC MAN.
MAN I2 Network Identification

Enter the IP network number (base address) for the I2 network:

10.3.1.0

Enter the netmask for the I2 MAN network

[255.255.255.252]:**[Return]**

```

Hostname                IP Address    (platform=sun15)
-----
netmask-i2             255.255.255.252
sun15-sc0-i2           10.3.1.1
sun15-sc1-i2           10.3.1.2

Do you want to accept these settings? [y,n] y
Creating /.rhosts to facilitate file propagation...done
MAN Network configuration modified!
Changes will take effect on next reboot.
The following changes are about to be applied to the "/etc/hosts"
hosts file.
-----
ADD: 10.2.1.2    sun15-a #smsconfig-entry#
ADD: 10.2.1.3    sun15-b #smsconfig-entry#
ADD: 10.2.1.4    sun15-c #smsconfig-entry#
ADD: 10.2.1.5    sun15-d #smsconfig-entry#
ADD: 10.2.1.6    sun15-e #smsconfig-entry#
ADD: 10.2.1.7    sun15-f #smsconfig-entry#
ADD: 10.2.1.8    sun15-g #smsconfig-entry#
ADD: 10.2.1.9    sun15-h #smsconfig-entry#
ADD: 10.2.1.10   sun15-i #smsconfig-entry#
ADD: 10.2.1.11   sun15-j #smsconfig-entry#
ADD: 10.2.1.12   sun15-k #smsconfig-entry#
ADD: 10.2.1.13   sun15-l #smsconfig-entry#
ADD: 10.2.1.14   sun15-m #smsconfig-entry#
ADD: 10.2.1.15   sun15-n #smsconfig-entry#
ADD: 10.2.1.16   sun15-o #smsconfig-entry#
ADD: 10.2.1.17   sun15-p #smsconfig-entry#
ADD: 10.2.1.18   sun15-q #smsconfig-entry#
ADD: 10.2.1.19   sun15-r #smsconfig-entry#
ADD: 10.2.1.1    sun15-sc-il #smsconfig-entry#
ADD: 10.1.1.50   sun15-sc-cl #smsconfig-entry#
ADD: 10.1.1.51   sun15-sc1-cl-failover #smsconfig-entry#
ADD: 10.1.1.52   sun15-sc1-eri0 #smsconfig-entry#
ADD: 10.1.1.53   sun15-sc1-eri1 #smsconfig-entry#
ADD: 10.3.1.1    sun15-sc0-i2 #smsconfig-entry#
ADD: 10.3.1.2    sun15-sc1-i2 #smsconfig-entry#
-----
Update the hosts file, "/etc/hosts", with these changes? [y,n] y
Hosts file "/etc/hosts" has been updated.

The following information is about to be applied to the
"/etc/netmasks" file.
-----
ADD network: 10.1.1.50, mask: 255.255.255.0
ADD network: 10.2.1.0, mask: 255.255.255.224
ADD network: 10.3.1.0, mask: 255.255.255.224
-----

```

```
Update the netmasks file, "/etc/netmasks", with these changes?
[y,n] y
Netmasks files "etc/netmasks" has been updated.
smsconfig complete. Log file is /var/sadm/system/logs/smsconfig
scl:#
```

Note – Any changes made to the network configuration on one SC using `smsconfig -m` must be made to the other SC as well. Network configuration is not automatically propagated.

6. Configure the Name Services for SMS

7. Log in to the SC as superuser.

8. Edit the `/etc/nsswitch.conf` file.

- a. The first entry for `password`, `group`, `hosts`, `netmasks` and `ethers` should be files. List other naming services in use, such as `nis` or `DNS`, next.

The following example shows the correct partial contents of an `/etc/nsswitch.conf` file on the spare SC. The look-up order for the database entries is first files then naming services.

```
scl: # vi /etc/nsswitch.conf
...
passwd:      files nis
group:       files nis
...
hosts:       files nis
...
netmasks:   files nis
...
ethers:      files nis
...
```

Note – `smsconfig` automatically updates the `/etc/netmasks` and the `/etc/inet/hosts` file with all the private host names and logical addresses for the SC.

9. Update your Solaris Naming software (NIS, NIS+, DNS, etc), as appropriate.

10. Configure SMS groups. See “To Add Users to SMS Groups and Configure Directory Access” on page 63.

During reinstallation this file was restored. Proceed with this step *only* if you will be changing user group memberships or you have performed a fresh installation.

11. After adding users to your SMS Groups:

Proceed to “To Switch Control to the Spare SC” on page 22.

Switching Control to the Spare SC

▼ To Switch Control to the Spare SC

1. Log in to the main SC (SC0) as superuser.

2. Stop SMS on the main SC:

```
sc0:# /etc/init.d/sms stop
```

3. Log in to the spare SC (SC1) and drop to the OpenBoot PROM prompt.

```
sc1:# shutdown -y -g0 -i0
...[system message]
ok
```

4. Boot the spare SC.

```
ok boot -rv
```

You must reboot the SC in order for the changes to take effect. Once you have rebooted the system, network configuration is complete and SMS will start and SC1 will become the main SC.

5. Next:

For reinstallation of SMS 1.4.1, proceed to “To Reinstall the Former Main SC” on page 25.

If you are fresh installing a system which previously ran SMS 1.3, proceed to “To Update the Flash PROMs” on page 23.

Updating the Flash PROMs on the SC and the System Boards

▼ To Update the Flash PROMs

When you fresh install SMS 1.4.1 on system previously running SMS 1.3 or SMS 1.4, you must update the flash PROMs on:

- The main SC
- The spare SC
- Each system board

You cannot update the flash PROM on one SC from the other. You must be logged on to the SC whose prom you want to update.

You must have platform privileges to run the `flashupdate(1M)` command. For more information on `flashupdate(1M)` refer to the *System Management Services (SMS) 1.4.1 Reference Manual* or the `flashupdate` man page.

Note – In order to update your SC PROMs you must have access to the following drivers:

```
sc#:# ls -l /dev/uflash*
lrwxrwxrwx 1 root other 62 Oct 12 20:30 /dev/uflash0 ->
../devices/pci@1f,0/pci@1,1/ebus@1/flashprom@10,400000:uflash0
lrwxrwxrwx 1 root other 62 Oct 12 20:30 /dev/uflash1 ->
../devices/pci@1f,0/pci@1,1/ebus@1/flashprom@10,800000:uflash1
```

If the drivers are not available you must run the following command as superuser on each SC:

```
sc#:# /usr/sbin/devfsadm -i uflash
```

1. Log in to one SC as a user with `platadm` privileges.
2. Upgrade the `fp0` Flash PROM.

Use `flashupdate`. This example updates the `fp0` prom on `sc0`:

```
sc0:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/SCOBPimg.di sc0/fp0
```

3. Upgrade the `fp1` Flash PROM, using the appropriate image for the type of board.

For the CP1500 board, use `flashupdate` with the `nSSCPOST.di` image. For example:

```
sc0:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/nSSCPOST.di
sc0/fp1
```

For the CP2140 board, use `flashupdate` with the `oSSCPOST.di` image:

```
sc0:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/oSSCPOST.di sc0/fp1
```

4. Repeat steps 1-3 for the other SC.

Here's an example for a CP2140-based SC:

```
(log in to other SC)
sc1:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/SCOBPing.di sc0/fp0
sc1:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/oSSCPOST.di sc0/fp1
```

5. Upgrade the CPU Flash PROMs on each system board.

Use `flashupdate`.

```
sc1:sms-user:> flashupdate -f /opt/SUNWSMS/hostobjs/sgcpu.flash location
```

where:

location is the FPRM location.

The FPRM location consists of *board_loc/FPRM_id*, separated by a forward slash.

The *FPRM_id* is specified only when you want to update a particular FPRM (FP0 or FP1) on a CPU board and the system controller (SC).

For example, the location, SB4/FP0, indicates the FPRM 0 on the CPU board in slot 4.

Sun Fire 15K/E25K, Sun Fire 12K/E20K

SB(0...17), SB(0...8)

IO(0...17), IO(0...8)

SC(0|1), SC(0|1)

The following *FPRM_id* forms are accepted:

FP(0|1), FP(0|1)

6. Drop to the OpenBoot PROM prompt.

```
scl:sms-user:> su -  
password: [superuser passwd]  
scl:# shutdown -y -g0 -i0  
...[system message]  
ok
```

7. Reboot the SC. Type:

```
ok boot -rv
```

8. Proceed to “To Reinstall the Former Main SC” on page 25.

Reinstalling the Former Main SC

▼ To Reinstall the Former Main SC

- 1. Log in to the former main as superuser.**
- 2. Backup the system on the former main SC (SC0).**

Run `smsbackup` before proceeding or have the latest copy of the `smsbackup` file (`sms_backup.XX.cpio`) accessible to the disk.

Note – The `sms_backup.X.X.cpio` file of one SC cannot be used by the other SC. They are SC specific files and non-interchangeable.

```
sc0:# /opt/SUNWSMS/bin/smsbackup directory_name
```

where:

directory_name is the name of the directory in which the backup file is created. The *directory_name* requires the absolute path name for the file. This file can reside in any directory on the system, connected network or tape device to which you have read/write privileges. If no *directory_name* is specified, a backup file is created in `/var/tmp`.

The *directory_name* specified must be mounted on as a UFS file system. Specifying a TMPFS file system, such as `/tmp`, will cause `smsbackup` to fail. If you are not certain that your *directory_name* is mounted as a UFS file system, type:

```
sc0:# /usr/bin/df -F ufs directory_name
```

A UFS file system will return directory information. Any other type of file system will return a warning.

3. Next:

To fresh install the Solaris 9 operating environment, proceed to “Installation of the Solaris Operating Environment on the Former Main SC” on page 26.

To reinstall SMS 1.4.1, proceed to “Installing SMS 1.4.1 Software on the Former Main SC” on page 27.

Installation of the Solaris Operating Environment on the Former Main SC

Note – Make sure you have the proper release of the Solaris operating environment, including patches (see “SMS 1.4.1 Software Requirements” on page 2). Without the proper version and patches, the availability daemons on the SC will not start, causing SMS daemon startup failures and an unusable SC.

▼ To Install the Solaris Operating Environment

1. **Install the Solaris 9 operating environment according to the Solaris installation instructions. Refer to the *Solaris 9 Installation Guide* for detailed installation instructions.**

The instructions in the following sections assume that your system is running the `Entire Distribution` software group (or higher) of the Solaris 9 operating environment. SMS 1.4.1 does not run under software releases *earlier* than Solaris 9 or software groups *less* than `Entire Distribution`. All patches should be applied according to each patch's instructions. Several Solaris patches are required for SMS to run properly. See "Other Documentation and Requirements" on page 7.

Note – You must select the English, 'C,' locale when reinstalling the Solaris operating environment on a system controller. SMS does not support any Solaris locale other than English on the SC.

2. **Verify that Java 1.2.2 has been installed in the default directory.**

The default directory is `/usr/java1.2/bin/java`. If you are using the Sun Fire Interconnect and Java 1.2.2 is not installed in the default directory, SMS will not start.

3. **Stop and Restart SMS.**

See "To Manually Stop and Restart SMS" on page 70.

4. **Once your operating environment has been successfully installed proceed to "Installing SMS 1.4.1 Software on the Former Main SC" on page 27.**

Installing SMS 1.4.1 Software on the Former Main SC

To install SMS software packages, perform the steps in the following procedure.

▼ To Install the SMS Software Packages Using `smsinstall`

1. **Log in to the former main SC as superuser.**
2. **Change directory to the location of `smsinstall`:**

Type:

```
sc0:# cd
/download_dir/sms_1_4_1_sparc/System_Management_Services_1.4.1/Tools
```

Note – `smsinstall(1M)` command automatically installs the online System Management Services (SMS) Reference Manual (`man`) pages in `/opt/SUNWSMS/man/sman1m`. To avoid conflicts, do *not* change this location.

3. Install packages using the `smsinstall(1M)` command.

`directory_name` is the `/Product` directory location of the SMS packages from “Downloading SMS Software” on page 11. Here is an example.

```
sc0:# smsinstall directory_name
Installing SMS packages. Please wait. . .
pkgadd -n -d "directory_name" -a
/tmp/smsinstall.admin.24501 SUNWSMSr SUNWSMSop SUNWSMSdf
SUNWSMSjh SUNWSMSlpUNWSMSmn SUNWSMSob SUNWSMSod SUNWSMSpd
SUNWSMSpo SUNWSMSpp SUNWSMSsuUNWscdvr.u SUNWufrx.u SUNWufu
SUNWwccmn

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205 blocks

Installation of <SUNWSMSr> was successful...
Installation of <SUNWSMSop> was successful...
Installation of <SUNWSMSdf> was successful...
Installation of <SUNWSMSjh> was successful...
Installation of <SUNWSMSlp> was successful...
Installation of <SUNWSMSmn> was successful...
Installation of <SUNWSMSob> was successful...
Installation of <SUNWSMSod> was successful...
Installation of <SUNWSMSpd> was successful...
Installation of <SUNWSMSpo> was successful...
Installation of <SUNWSMSpp> was successful.
Installation of <SUNWSMSsu> was successful.
Installation of <SUNWscdvr> was successful...

Reboot client to install driver.
type=ddi_pseudo;name=flashprom uflash\N0
Installation of <SUNWufrx> was successful.
```

```
Installation of <SUNWufu> was successful.
Installation of <SUNWwccmn> was successful.

Verifying that all SMS packages are installed.OK
Setting up /etc/init.d/sms run control script for SMS 1.4.1
New SMS version 1.4.1 is active
Attempting to start daemon picld
/etc/init.d/picld start
smsupgrade complete.
Log file is /var/sadm/system/logs/smsinstall.
```

4. Proceed to “To Restore Your SMS Configuration” on page 29.

Restoring Your SMS Configuration on the Former Main SC

▼ To Restore Your SMS Configuration

1. Restore your SMS configuration on the former main SC.

Run `smsrestore`.

Note – Once `smsrestore` completes you will see the following message: “Please set the desired SMS failover state.” Ignore this message.

```
sc0:# /opt/SUNWSMS/bin/smsrestore filename
```

where:

filename is the absolute path to the backup file that was created by `smsbackup(1M)`. The *filename* must contain the full path name for the file. This file can reside anywhere on the system, connected network or tape device. If no *filename* is specified, you will receive an error.

2. For a fresh install:

Proceed to “To Configure the Management Network (MAN) Using the `smsconfig(1M)` Command” on page 30.

For reinstallation:

During reinstallation the SMS group file was restored. Proceed to “To Add Users to SMS Groups and Configure Directory Access” on page 63 *only* if you will be changing user group memberships. Otherwise, proceed to “To Reboot the Former Main SC” on page 35.

Configuring the MAN Network on the Former Main SC

▼ To Configure the Management Network (MAN) Using the `smsconfig(1M)` Command

To correctly configure the management network, you need to do the following:

- Run `smsconfig -m`
- Edit the `/etc/nsswitch.conf`
- Edit your Solaris Naming software.
- Reboot the SC.

1. **Be sure you have read and filled out the information in the *Sun Fire 15K/12K System Site Planning Guide*.**

Note – A domain can be excluded from the I1 network configuration by using the word NONE as the `net_id`. This applies only to the I1 network.

2. **Read the `smsconfig(1M)` man page.**
3. **Log into the former main SC as superuser.**
4. **To display, review, or change the Management Network settings, type:**

```
sc0:# /opt/SUNWSMS/bin/smsconfig -m
```

5. **Answer the questions based on the information gathered for your site in the *Sun Fire 15K/12K System Site Planning Guide*.**

The following example shows IPv4 and accepts the default settings provided with the Solaris 9 Supplemental CD. An IPv6 network example differs slightly. There will be no prompts for netmasks and `/etc/ipnodes` will be modified in addition to `/etc/hosts`.



Caution – The IP addresses shown in the following example are examples only. Refer to your *Sun Fire 15K/12K System Site Planning Guide* for valid IP addresses for your network. Using invalid network IP addresses could, under certain circumstances, render your system unbootable!

Note – The IP addresses on the external network for failover, eri0 and eri1 on each SC must be unique. The floating IP address is the same on both SCs.

For more information on `smsconfig -m` refer to “MAN Configuration” section of the *System Management Services (SMS) 1.4.1 Administrator Guide* and the `smsconfig man` page.

```
sc0:# smsconfig -m

The platform name identifies the entire host machine to the SMS
  software. The platform name occupies a different name space than
  domain names (hostnames of bootable systems).

What is the name of the platform this SMS will service [sun15]?
sun15
Configuring the External Network for Community C1

Do you want to define this Community? [y,n] y
Two network interfaces controllers (NICs) are required for IPMP
network failover.
Enter NICs associated with community C1 [eri0 eri1]: [Return]

Enter hostname for eri0 [sun15-sc0-eri0]:[Return]
Enter IP address for eri0: 10.1.1.52

Enter hostname for eri1 [sun15-sc0-eri1]:[Return]
Enter IP address for sun15-sc0-eri1: 10.1.1.53

The Logical/Floating IP hostname and address will "float" over to
whichever system controller (SC0 or SC1) is acting as the main SC.

Enter Logical/Floating IP hostname for community C1 [sun15-sc-
C1]:[Return]
Enter IP address for sun15-sc-C1:10.1.1.50
Enter Netmask for community C1: 255.255.255.0

Enter hostname for community C1 failover address [sun15-sc0-C1-
failover]:[Return]
Enter IP address for sun15-sc0-C1-failover:10.1.1.51

Hostname                                IP Address (platform=sun15)
-----                                -
sun15-sc-C1                             10.1.1.50
sun15-sc0-C1-failover                   10.1.1.51
sun15-sc0-eri0                          10.1.1.52
sun15-sc0-eri1                          10.1.1.53
```

Do you want to accept these network settings? [y,n] **y**

Configuring the External Network for Community C2

Do you want to define this Community? [y,n] **n**

Configuring I1 Management Network - 'I1' is the Domain to SC MAN.
MAN I1 Network Identification

Enter the IP network number (base address) for the I1 network:

10.2.1.0

Enter the netmask for the I1 MAN network

[255.255.255.224]:**[Return]**

Hostname	IP Address (platform=sun15)
----------	-----------------------------

netmask-i1	255.255.255.224
------------	-----------------

sun15-sc-i1	10.2.1.1
-------------	----------

sun15-a	10.2.1.2
---------	----------

sun15-b	10.2.1.3
---------	----------

sun15-c	10.2.1.4
---------	----------

sun15-d	10.2.1.5
---------	----------

sun15-e	10.2.1.6
---------	----------

sun15-f	10.2.1.7
---------	----------

sun15-g	10.2.1.8
---------	----------

sun15-h	10.2.1.9
---------	----------

sun15-i	10.2.1.10
---------	-----------

sun15-j	10.2.1.11
---------	-----------

sun15-k	10.2.1.12
---------	-----------

sun15-l	10.2.1.13
---------	-----------

sun15-m	10.2.1.14
---------	-----------

sun15-n	10.2.1.15
---------	-----------

sun15-o	10.2.1.16
---------	-----------

sun15-p	10.2.1.17
---------	-----------

sun15-q	10.2.1.18
---------	-----------

sun15-r	10.2.1.19
---------	-----------

Do you want to accept these network settings? [y,n] **y**

Configuring I2 Management Network - 'I2' is for SC to SC MAN.
MAN I2 Network Identification

Enter the IP network number (base address) for the I2 network:

10.3.1.0

Enter the netmask for the I2 MAN network

[255.255.255.252]:**[Return]**

Hostname	IP Address	(platform=sun15)
----------	------------	------------------

```
netmask-i2          255.255.255.252
sun15-sc0-i2       10.3.1.1
sun15-scl-i2       10.3.1.2
```

Do you want to accept these settings? [y,n] **y**

Creating /.rhosts to facilitate file propagation...done

MAN Network configuration modified!

Changes will take effect on next reboot.

The following changes are about to be applied to the "/etc/hosts" hosts file.

```
-----
ADD: 10.2.1.2    sun15-a #smsconfig-entry#
ADD: 10.2.1.3    sun15-b #smsconfig-entry#
ADD: 10.2.1.4    sun15-c #smsconfig-entry#
ADD: 10.2.1.5    sun15-d #smsconfig-entry#
ADD: 10.2.1.6    sun15-e #smsconfig-entry#
ADD: 10.2.1.7    sun15-f #smsconfig-entry#
ADD: 10.2.1.8    sun15-g #smsconfig-entry#
ADD: 10.2.1.9    sun15-h #smsconfig-entry#
ADD: 10.2.1.10   sun15-i #smsconfig-entry#
ADD: 10.2.1.11   sun15-j #smsconfig-entry#
ADD: 10.2.1.12   sun15-k #smsconfig-entry#
ADD: 10.2.1.13   sun15-l #smsconfig-entry#
ADD: 10.2.1.14   sun15-m #smsconfig-entry#
ADD: 10.2.1.15   sun15-n #smsconfig-entry#
ADD: 10.2.1.16   sun15-o #smsconfig-entry#
ADD: 10.2.1.17   sun15-p #smsconfig-entry#
ADD: 10.2.1.18   sun15-q #smsconfig-entry#
ADD: 10.2.1.19   sun15-r #smsconfig-entry#
ADD: 10.2.1.1    sun15-sc-1l #smsconfig-entry#
ADD: 10.1.1.50   sun15-sc-C1 #smsconfig-entry#
ADD: 10.1.1.51   sun15-sc0-C1-failover #smsconfig-entry#
ADD: 10.1.1.52   sun15-sc0-eri0 #smsconfig-entry#
ADD: 10.1.1.53   sun15-sc0-eril #smsconfig-entry#
ADD: 10.3.1.1    sun15-sc0-i2 #smsconfig-entry#
ADD: 10.3.1.2    sun15-scl-i2 #smsconfig-entry#
-----
```

Update the hosts file, "/etc/hosts", with these changes? [y,n] **y**

Hosts file "/etc/hosts" has been updated.

The following information is about to be applied to the "/etc/netmasks" file.

```
-----
ADD network: 10.1.1.50, mask: 255.255.255.0
ADD network: 10.2.1.0, mask: 255.255.255.224
ADD network: 10.3.1.0, mask: 255.255.255.224
-----
```

Update the netmasks file, "/etc/netmasks", with these changes?

[y,n] **y**

```
Netmasks files "etc/netmasks" has been updated.
smsconfig complete. Log file is /var/sadm/system/logs/smsconfig
sc0:#
```

6. Configure the Name Services for SMS.

7. Log in to the SC as superuser.

8. Edit the /etc/nsswitch.conf file.

- a. The first entry for password, group, hosts, netmasks and ethers should be files. List other naming services in use, such as nis or DNS, next.**

The following example shows the correct partial contents of an /etc/nsswitch.conf file on the spare SC. The look-up order for the database entries is first files then naming services.

```
sc0:# vi /etc/nsswitch.conf
...
passwd:      files nis
group:       files nis
...
hosts:       files nis
...
netmasks:   files nis
...
ethers:      files nis
...
```

Note – smsconfig automatically updates the /etc/netmasks and the /etc/inet/hosts file with all the private host names and logical addresses for the SC.

9. Update your Solaris Naming software (NIS, NIS+, DNS, etc), as appropriate.

10. Configure SMS groups. See “To Add Users to SMS Groups and Configure Directory Access” on page 63.

During reinstallation this file was restored. Proceed with this step *only* if you will be changing user group memberships or you have done a fresh install of the Solaris operating environment. Otherwise proceed to “To Reboot the Former Main SC” on page 35.

11. After adding users to your SMS Groups:

Proceed to “To Reboot the Former Main SC” on page 35.

Rebooting the Former Main SC

▼ To Reboot the Former Main SC

1. **Log in to the former main SC (SC0) as superuser and drop to the OpenBoot PROM prompt.**

```
sc0:# shutdown -y -g0 -i0
...[system message]
ok
```

2. **Boot the former main SC.**

```
ok boot -rv
```

You must reboot the SC in order for the changes to take effect. Once you have rebooted the system, network configuration is complete.

3. **Next:**

For reinstallation of SMS 1.4.1, proceed to “To Enable Failover” on page 38.

If you are fresh installing a system that was previously running SMS 1.3 or SMS 1.4 software, proceed to “To Update the Flash PROMs” on page 35.

Updating the Flash PROMs on the Former Main SC

▼ To Update the Flash PROMs

When you fresh install SMS 1.4.1 on a system that was previously running SMS 1.3 or SMS 1.4 software you must update the flash PROMs on:

- The main SC
- The spare SC

You do not need to update the CPU flash PROMs. This was done earlier and is not repeated.

You cannot update the flash PROM on one SC from the other. You must be logged on to the SC whose prom you want to update.

You must have platform privileges to run the `flashupdate(1M)` command. For more information on `flashupdate(1M)` refer to the *System Management Services (SMS) 1.4.1 Reference Manual* or the `flashupdate` man page.

Note – In order to update your SC PROMs you must have access to the following drivers:

```
sc#:# ls -l /dev/uflash*
lrwxrwxrwx 1 root other 62 Oct 12 20:30 /dev/uflash0 ->
../devices/pci@1f,0/pci@1,1/ebus@1/flashprom@10,400000:uflash0
lrwxrwxrwx 1 root other 62 Oct 12 20:30 /dev/uflash1 ->
../devices/pci@1f,0/pci@1,1/ebus@1/flashprom@10,800000:uflash1
```

If the drivers are not available you must run the following command as superuser on each SC:

```
sc#:# /usr/sbin/devfsadm -i uflash
```

1. Log in to one SC as a user with `platadm` privileges.

2. Upgrade the `fp0` Flash PROM.

Use `flashupdate`. This example updates the `fp0` prom on `sc0`:

```
sc0:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/SCOBPimg.di sc0/fp0
```

3. Upgrade the `fp1` Flash PROM, using the appropriate image for the type of board.

For the CP1500 board, use `flashupdate` with the `nSSCPOST.di` image. For example:

```
sc0:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/nSSCPOST.di
sc0/fp1
```

For the CP2140 board, use `flashupdate` with the `oSSCPOST.di` image:

```
sc0:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/oSSCPOST.di sc0/fp1
```

4. Repeat steps 1-3 for the other SC.

Here's an example for a CP2140-based SC:

```
(log in to other SC)
sc1:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/SCOBPing.di sc0/fp0
sc1:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/oSSCPOST.di sc0/fp1
```

5. Drop to the OpenBoot PROM prompt.

```
sc0:sms-user:> su -
password: [superuser passwd]
sc0:# shutdown -y -g0 -i0
...[system message]
ok
```

6. Reboot the main SC (SC0). Type:

```
ok boot -rv
```

7. Proceed to “To Enable Failover” on page 38.

Verifying the Chassis Serial Number

The chassis serial number is a unique alphanumeric text string, up to 20 characters in length, that identifies a Sun Fire high-end system. This serial number is displayed on a label located on the front of the system chassis, near the bottom center.

Verify that the chassis serial number has been recorded, as explained in the following procedure.

▼ To Verify the Chassis Serial Number

1. Make sure the centerplane is powered on.

If it is not powered on, run `poweron cp0`.

2. Login to the new main SC (SC1) as a user with `platform admin` privileges.

3. Run the `showplatform -p csn` command and review the output to determine whether a chassis serial number was assigned to your Sun Fire high-end system.

If a chassis serial number was previously recorded, the chassis serial number will be displayed in the output. For example:

```
scl:sms-user:> /opt/SUNWSMS/bin/showplatform -p csn

CSN:
====
Chassis Serial Number: 353A00053
```

Proceed to “Enabling Failover on the Main SC (SC1)” on page 38. If the chassis serial number is not displayed, proceed to Step 4.

4. Record the chassis serial number.

```
scl:sms-user:> /opt/SUNWSMS/bin/setcsn -c chassis_serial_number
```

where the *chassis_serial_number* is the number that identifies your Sun Fire high-end system. You obtain the chassis serial number from a label on the front of the system chassis, near the bottom center.

5. Proceed to “Enabling Failover on the Main SC (SC1)” on page 38.

Enabling Failover on the Main SC (SC1)

▼ To Enable Failover

1. Login in the new main SC (SC1) as a user with `platadmn` privileges.
2. Turn on failover.

```
scl:sms-user:> /opt/SUNWSMS/bin/setfailover on
```

Your reinstallation or upgrade is now complete! If you want to secure the SCs, proceed to “SMS 1.4.1 Security Options” on page 73. Otherwise, proceed to “Creating a Domain” on page 83.

SMS 1.4.1 Software Upgrade

This chapter contains upgrade instructions for System Management Services (SMS) 1.4.1 software under the Solaris operating environment. These instructions apply to the Sun Fire high-end server systems.

Note – SMS 1.4.1 requires specific releases of the Solaris Operating Environment. See “SMS 1.4.1 Software Requirements” on page 2.

The SMS upgrade focuses on setting up group IDs used for credential checking, and setting up and running control scripts that start SMS when the Solaris operating environment boots.

This chapter includes:

- To Download Software From the Web
- To Prepare Your SMS Environment for Upgrade
- To Upgrade the Solaris Operating Environment (optional)
- To Upgrade the SMS Software Packages
- To Switch Control to the Spare SC
- To Update the Flash PROMs on the Former Main
- To Upgrade the Former Main SC (optional)
- To Upgrade the Solaris Operating Environment (optional)
- To Upgrade the SMS Software Packages
- To Reboot the Former Main SC on the Former Main
- To Verify and Assign the Chassis Serial Number
- To Enable Failover on the New Main SC (SC1)

Note – `smversion` does not support a return to SMS 1.2_s8, SMS 1.3_s8 or SMS 1.4.1_s8 in this release of SMS 1.4.1 for Solaris 9. To return to SMS 1.2_s8, SMS 1.3_s8 or SMS 1.4.1_s8 you must return to the *applicable* Solaris 8 operating environment.

Note – SMS 1.1 is not available on the Sun Fire 12K/E20K system. The SMS 1.1 upgrade information refers to the Sun Fire 15K/E25K system only.

Preparing to Perform an OS/SMS Upgrade (Type 2) Installation

The SMS 1.4.1 installation instructions in this section assume that you are upgrading the Solaris 9 operating environment and SMS software, or SMS software alone.

Performing a Type 2 Upgrade

To *upgrade* the Solaris operating environment software from Solaris 8 with SMS 1.3_s8 or 1.4_s8; or to upgrade from Solaris 9 with SMS1.3_s9 or SMS 1.4_s9 software, you will be performing the following procedures:

Task	Reference	Page
Download your SMS packages	To Download Software From the Web To Download Software From a CD-ROM	42
Prepare for Upgrade - Turn off failover on the main SC (SC0) - Stop SMS on the spare SC (SC1) - Backup the current SMS software on the spare (optional)	To Prepare Your SMS Environment for Upgrade	43
Upgrade your Solaris operating environment	Solaris Installation Guide	
Upgrade SMS software packages using <code>smsupgrade</code>	To Upgrade SMS Software Packages	45
Switch control to the spare SC	To Switch Control to the Spare SC	49
Update the SC and CPU flash PROMs on the new spare SC	To Update the Flash PROMs	50
Upgrade the former main SC (SC0) - Stop SMS on the former main SC - Backup the current SMS environment on the former main SC (SC0) (optional) - Upgrade your Solaris operating environment - Upgrade SMS software packages on the former main SC (SC0)	To Upgrade the Former Main SC	52
Reboot the former main SC (SC0)	Rebooting the Former Main SC	57
Update the SC flash PROMs on the former main SC (SC0)	To Update the Flash PROMs on the Former Main	58
Verify and assign the chassis serial number	To Verify the Chassis Serial Number	59
Turn on failover on the new main SC (SC1)	To Enable Failover on the New Main SC (SC1)	60

To begin Type 2 upgrade, proceed to “Downloading SMS Software” on page 41.

Downloading SMS Software

You can retrieve SMS software from the web.

▼ To Download Software From the Web

1. **Using your web browser, go to** `http://www.sun.com/servers/sw/`
2. **Click the System Management Services (SMS) link.**
3. **Click the** `Click here to download link`.
The file that is then downloaded is named `sms_1_4_1_sparc.zip`.
4. **Log in to the SC as superuser.**
5. **Change directory to the location where you downloaded the software:**

```
sc1:# cd /download_directory
```

6. **Extract the downloaded file by typing:**

```
sc1:# unzip sms_1_4_1_sparc.zip
```

The SMS 1.4.1 packages are located in
`/download_directory/sms_1_4_1_sparc/System_Management_Services_1.4.1/Product`.

7. **Proceed to “Preparing Your SMS Environment for Upgrade” on page 42.**

Preparing Your SMS Environment for Upgrade

If this SC has a working SMS environment, you should do the following before attempting to reinstall the SMS software:

▼ To Prepare Your SMS Environment for Upgrade

On the main SC:

1. **Make certain your configuration is stable.**
Being stable means no commands are running and no hardware is changed during the reinstallation or upgrade process.
2. **Log in to the main SC as a user with** `platadmin` **privileges.**
3. **Deactivate failover:**

```
sc0:sms-user:> /opt/SUNWSMS/bin/setfailover off
```

On the spare SC:

1. Log in to the spare as superuser.
2. Stop SMS on the spare SC (SC1):

```
scl:# /etc/init.d/sms stop
```

3. Backup the system on the spare SC (optional).

`smsupgrade` backs up and restores your SMS environment, however, if you will be upgrading your Solaris software and are unfamiliar with that process, we recommend you make a backup of your SMS environment prior to the Solaris upgrade. Save the resulting file off the local system for redundancy.

Note – The `sms_backup.X.X.cpio` file of one SC cannot be used by the other SC. They are SC specific files and non-interchangeable.

```
scl:# /opt/SUNWSMS/bin/smsbackup directory_name
```

where:

directory_name is the name of the directory in which the backup file is created. The *directory_name* requires the absolute path name for the file. This file can reside in any directory on the system, connected network or tape device to which you have read/write privileges. If no *directory_name* is specified, a backup file is created in `/var/tmp`.

The *directory_name* specified must be mounted on as a UFS file system. Specifying a TMPFS file system, such as `/tmp`, will cause `smsbackup` to fail. If you are not certain that your *directory_name* is mounted as a UFS file system, type:

```
scl:# /usr/bin/df -F ufs directory_name
```

A UFS file system will return directory information. Any other type of file system will return a warning.

4. Upgrade to Solaris 9 or install the required patches to Solaris 8.

Have your *Solaris 9 Installation Guide* available and proceed to “To Upgrade the Solaris Operating Environment” on page 44.

If you are already running the required release of the Solaris 9 operating environment, and only wish to upgrade your version of SMS, proceed to “Upgrading SMS Packages” on page 45.

Upgrading the Solaris Operating Environment

Note – Make sure you have the proper release of the Solaris operating environment, including patches (see “SMS 1.4.1 Software Requirements” on page 2). Without the proper version and patches, the availability daemons on the SC will not start, causing SMS daemon startup failures and an unusable SC.

▼ To Upgrade the Solaris Operating Environment

1. Upgrade the Solaris 9 operating environment according to the Solaris installation instructions in the *Solaris 9 Installation Guide*.

The instructions below assume that your system is running the `Entire Distribution` software group (or higher) of the Solaris 9 operating environment. All patches should be applied according to each patch’s instructions. Several Solaris patches are required for SMS to run properly. See “Other Documentation and Requirements” on page 7.

Note – You must select the English, ‘C,’ locale when reinstalling the Solaris operating environment on a system controller. SMS does not support any Solaris locale other than English on the SC.

Once you have upgraded your Solaris software and rebooted you may see `krtld` (`kern.notice`) and `kstat` and `scman ifconfig` error messages. You can disregard them.

2. Stop SMS on the spare SC (SC1):

```
sc1:# /etc/init.d/sms stop
```

3. Proceed to “Upgrading SMS Packages” on page 45.

Upgrading SMS Packages

To upgrade SMS software packages, follow the steps in the procedure “To Upgrade the SMS Software Packages” on page 45.

▼ To Upgrade the SMS Software Packages

1. **Log in to the spare SC as superuser.**
2. **Change directory to the location of `smsupgrade`.**

Type:

```
scl:# cd
/download_directory/sms_1_4_1_sparc/System_Management_Services_1.4.1/Tools
```

Note – `smsupgrade(1M)` automatically installs the online System Management Services (SMS) Reference Manual (`man`) pages in `/opt/SUNWSMS/man/sman1m`. To avoid conflicts, do *not* change this location.

3. **Upgrade SMS using the `smsupgrade(1M)` command.**

directory_name is the `/Product` directory from “Downloading SMS Software” on page 41.

`smsupgrade` backs up and restores any existing SMS environment. The backup file resides in `/var/tmp/sms_backup.1.x.cpio`. Here is an example:

```
scl:# smsupgrade directory_name

Attempting to stop daemon picld
/etc/init.d/picld stop

Verifying that all SMS packages are installed
.....OK

Backing up SMS to /var/tmp/sms_backup.1.4.cpio before upgrade.
Please wait. . .
smsbackup /var/tmp
smsbackup: Backup configuration file created:
/var/tmp/sms_backup.1.4.1.cpio
SMS backup complete.

Installing SMS packages. Please wait. . .
pkgadd -n -d "directory_name" -a
```

```
/tmp/smsinstall.admin.24501 SUNWSMSr SUNWSMSop SUNWSMSdf
SUNWSMSjh SUNWSMSlp
SUNWSMSmn SUNWSMSob SUNWSMSod SUNWSMSpd SUNWSMSpo SUNWSMSpp
SUNWSMSsu
SUNWscdvr.u SUNWufrx.u SUNWufu SUNWwccmn
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
205 blocks
```

```
Installation of <SUNWSMSr.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
61279 blocks
```

```
Installation of <SUNWSMSop.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
32 blocks
```

```
Installation of <SUNWSMSdf.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
2704 blocks
```

```
Installation of <SUNWSMSjh.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
5097 blocks
```

```
Installation of <SUNWSMSlp.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
1696 blocks
```

```
Installation of <SUNWSMSmn.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
576 blocks
```

```
Installation of <SUNWSMSob.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
1025 blocks
```

```
Installation of <SUNWSMSod.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
1025 blocks
```

```
Installation of <SUNWSMSpd.2> was successful.
```

```
Copyright 2004 Sun Microsystems, Inc. All rights reserved.  
Use is subject to license terms.  
14763 blocks
```

```
Installation of <SUNWSMSpo.2> was successful.  
Copyright 2004 Sun Microsystems, Inc. All rights reserved.  
Use is subject to license terms.
```

```
Installation of <SUNWSMSpp.2> was successful.
```

```
Copyright 2004 Sun Microsystems, Inc. All rights reserved.  
Use is subject to license terms.  
5 blocks
```

```
Installation of <SUNWSMSsu.2> was successful.  
Copyright 2004 Sun Microsystems, Inc. All rights reserved.  
479 blocks
```

```
Installation of <SUNWscdvr.2> was successful.  
Copyright 2004 Sun Microsystems, Inc. All rights reserved.  
33 blocks
```

```
Reboot client to install driver.  
type=ddi_pseudo;name=flashprom uflash\N0  
Installation of <SUNWufrx.2> was successful.  
Copyright 2004 Sun Microsystems, Inc. All rights reserved.  
13 blocks
```

```
Installation of <SUNWufu.2> was successful.
```

```
Installation of <SUNWwccmn.2> was successful.
```

```
Verifying that all SMS packages are installed  
.....OK  
Checking that all installed SMS packages are correct  
pkgchk -n SUNWSMSr SUNWSMSop SUNWSMSdf SUNWSMSjh SUNWSMSlp  
SUNWSMSmn SUNWSMSob  
SUNWSMSod SUNWSMSpd SUNWSMSpo SUNWSMSpp SUNWSMSsu SUNWscdvr  
SUNWufrx SUNWufu SUNWwccmn  
OK
```

```
Setting up /etc/init.d/sms run control script for SMS 1.4.1  
New SMS version 1.4.1 is active
```

```
Restoring SMS from /var/tmp/sms_backup.1.4.1.cpio after upgrade.  
Please wait. . .  
smsrestore /var/tmp/sms_backup.1.4.1.cpio
```

```
Attempting to restart daemon picld
```

```
/etc/init.d/picld stop
/etc/init.d/picld start

smsupgrade complete. Log file is
/var/sadm/system/logs/smsupgrade.
```

4. Proceed to “To Switch Control to the Spare SC” on page 48.

Switching Control to the Spare SC

▼ To Switch Control to the Spare SC

1. Log in to the main SC (SC0) as superuser.
2. Stop SMS on the main SC:

```
sc0:# /etc/init.d/sms stop
```

3. Log in to the spare SC (SC1) and drop to the OpenBoot PROM prompt.

```
sc1:# shutdown -y -g0 -i0
...[system message]
ok
```

4. Boot the spare SC.

```
ok boot -rv
```

You must reboot the SC in order for the changes to take effect. Once you have rebooted the system, network configuration is complete and SMS will start and SC1 will become the main SC.

5. Next:

Proceed to “To Update the Flash PROMs” on page 49.

Updating the Flash PROMs on the SC and the System Boards

▼ To Update the Flash PROMs

When you upgrade the SMS software you must update the SC flash PROMs on both SCs. You must also update the CPU flash PROMs on the system boards. You must have platform privileges to run the `flashupdate(1M)` command. In the following example the new main SC is designated with the `sc1` prompt, while the new spare SC is designated with the `sc0` prompt.

Note – In order to update your SC PROMs you must have access to the following drivers:

```
sc#:# ls -l /dev/uflash*
lrwxrwxrwx 1 root other 62 Oct 12 20:30 /dev/uflash0 ->
../devices/pci@1f,0/pci@1,1/ebus@1/flashprom@10,400000:uflash0
lrwxrwxrwx 1 root other 62 Oct 12 20:30 /dev/uflash1 ->
../devices/pci@1f,0/pci@1,1/ebus@1/flashprom@10,800000:uflash1
```

Note – If the drivers are not available you must run the following command as superuser on each SC:

```
sc#:# /usr/sbin/devfsadm -i uflash
```

1. Log in to the new main SC as a user with `platadm` privileges.
2. Upgrade the `sc1/fp0` Flash PROM.

Use `flashupdate`:

```
sc1:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/SCOBPimg.di sc1/fp0
```

3. Upgrade the `sc1/fp1` Flash PROM, using the appropriate image for the type of board.

For the CP1500 board, use `flashupdate` with the `nSSCPOST.di` image:

```
sc1:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/nSSCPOST.di
sc1/fp1
```

For the CP2140 board, use `flashupdate` with the `oSSCPOST.di` image:

```
sc1:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/oSSCPOST.di
sc1/fp1
```

4. Upgrade the CPU Flash PROMs.

Update all CPU Flash PROMs using `flashupdate`.

```
sc1:sms-user:> flashupdate -f /opt/SUNWSMS/hostobjs/sgcpu.flash location
```

where:

location is the FPROM location.

The FPROM location consists of *board_loc/FPROM_id*, separated by a forward slash.

The *FPROM_id* is specified only when you want to update a particular FPROM (FP0 or FP1) on a CPU board and the system controller (SC).

For example, the location, SB4/FP0, indicates the FPROM 0 on the CPU board in slot 4.

Sun Fire 15K/E25K, Sun Fire 12K/E20K

SB(0...17), SB(0...8)

IO(0...17), IO(0...8)

SC(0|1), SC(0|1)

The following *FPROM_id* forms are accepted:

FP(0|1), FP(0|1)

For more information on `flashupdate(1M)` refer to the *System Management Services (SMS) 1.4.1 Reference Manual* or the `flashupdate` man page.

5. Drop to the OpenBoot PROM prompt.

```
scl:sms-user:> su -  
password: [superuser passwd]  
scl:# shutdown -y -g0 -i0  
...[system message]  
ok
```

6. Reboot the SC. Type:

```
ok boot -rv
```

7. Proceed to “To Upgrade the Former Main SC” on page 51.

Upgrading the Former Main SC

▼ To Upgrade the Former Main SC

- 1. Log in to the former main as superuser.**
- 2. Stop SMS on the former main SC:**

```
sc0:# /etc/init.d/sms stop
```

3. Backup the system on the former main SC (optional).

smsupgrade backs up and restores your SMS environment, however, if you will be upgrading your Solaris software and are unfamiliar with that process, we recommend you make a backup of your SMS environment prior to the Solaris upgrade. Save the resulting file off the local system for redundancy.

Note – The `sms_backup.X.X.cpio` file of one SC cannot be used by the other SC. They are SC specific files and non-interchangeable.

```
sc0:# /opt/SUNWSMS/bin/smsbackup directory_name
```

where:

directory_name is the name of the directory in which the backup file is created. The *directory_name* requires the absolute path name for the file. This file can reside in any directory on the system, connected network or tape device to which you have read/write privileges. If no *directory_name* is specified, a backup file is created in `/var/tmp`.

The *directory_name* specified must be mounted on as a UFS file system. Specifying a TMPFS file system, such as `/tmp`, will cause `smsbackup` to fail. If you are not certain that your *directory_name* is mounted as a UFS file system, type:

```
sc0:# /usr/bin/df -F ufs directory_name
```

A UFS file system will return directory information. Any other type of file system will return a warning.

4. You are now ready to upgrade.

If you wish to upgrade the Solaris 9 operating environment on the former main SC, have your *Solaris 9 Installation Guide* available. Proceed to “To Upgrade the Solaris Operating Environment” on page 53.

If you are already running Solaris 9 software and only wish to upgrade SMS proceed to “To Upgrade the SMS Software Packages” on page 53.

Upgrade the Solaris Operating Environment on the Spare SC

Note – Make sure you have the proper release of the Solaris operating environment, including patches (see “SMS 1.4.1 Software Requirements” on page 2). Without the proper version and patches, the availability daemons on the SC will not start, causing SMS daemon startup failures and an unusable SC.

▼ To Upgrade the Solaris Operating Environment

1. **Upgrade the Solaris 9 operating environment according to the Solaris installation instructions. Refer to the *Solaris 9 Installation Guide* for detailed installation instructions.**

The instructions in the following sections assume that your system is running the `Entire Distribution` software group (or higher) of the Solaris 9 operating environment. SMS 1.4.1_s9 does not run under software releases *earlier* than Solaris 9 or software groups *less* than `Entire Distribution`. All patches should be applied according to each patch's instructions. Several Solaris patches are required for SMS to run properly. See "Other Documentation and Requirements" on page 7.

Note – You must select the English, 'C,' locale when reinstalling the Solaris operating environment on a system controller. SMS does not support any Solaris locale other than English on the SC.

Once you have upgraded your Solaris software and rebooted you may see `krtld` (`kern.notice`) and `kstat` and `scman ifconfig` error messages. You can disregard them.

2. **Stop SMS on the former main SC:**

```
sc0:# /etc/init.d/sms stop
```

3. **Proceed to "To Upgrade the SMS Software Packages" on page 53.**

SMS 1.4.1 Software on the Former Main SC

To upgrade SMS software packages, follow the steps in the procedure "To Upgrade the SMS Software Packages" on page 53.

▼ To Upgrade the SMS Software Packages

1. **Log in to the former main SC as superuser.**
2. **Change directory to the location of `smsupgrade` (1M).**

Type:

```
sc0:# cd
/download_directory/sms_1_4_1_sparc/System_Management_Services_1.4.1/Too
ls
```

Note – `smsupgrade(1M)` command automatically installs the online System Management Services (SMS) Reference Manual (`man`) pages in `/opt/SUNWSMS/man/sman1m`. To avoid conflicts, do *not* change this location.

3. Upgrade packages using the `smsupgrade(1M)` command.

`directory_name` is the `/Product` directory from “Downloading SMS Software” on page 41.

`smsupgrade` backs up and restores any existing SMS environment. The backup file resides in `/var/tmp/sms_backup.1.x.cpio`. Here is an example.

```
sc0:# smsupgrade directory_name

Attempting to stop daemon picld
/etc/init.d/picld stop

Verifying that all SMS packages are installed
.....OK

Backing up SMS to /var/tmp/sms_backup.1.4.1.cpio before upgrade.
Please wait. . .
smsbackup /var/tmp
smsbackup: Backup configuration file created:
/var/tmp/sms_backup.1.4.1.cpio
SMS backup complete.

Installing SMS packages. Please wait. . .
pkgadd -n -d "directory_name" -a
/tmp/smsinstall.admin.24501 SUNWSMSr SUNWSMSop SUNWSMSdf
SUNWSMSjh SUNWSMSlp
SUNWSMSmn SUNWSMSob SUNWSMSod SUNWSMSpd SUNWSMSpo SUNWSMSpp
SUNWSMSsu
SUNWscdvr.u SUNWufrx.u SUNWufu SUNWwccmn
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
205 blocks

Installation of <SUNWSMSr.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
61279 blocks

Installation of <SUNWSMSop.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
32 blocks
```

Installation of <SUNWSMSdf.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
2704 blocks

Installation of <SUNWSMSjh.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
5097 blocks

Installation of <SUNWSMSlp.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
1696 blocks

Installation of <SUNWSMSmn.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
576 blocks

Installation of <SUNWSMSob.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
1025 blocks

Installation of <SUNWSMSod.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
1025 blocks

Installation of <SUNWSMSpd.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
14763 blocks

Installation of <SUNWSMSpo.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.

Installation of <SUNWSMSpp.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
Use is subject to license terms.
5 blocks

Installation of <SUNWSMSsu.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
479 blocks

```
Installation of <SUNWscdvr.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
33 blocks

Reboot client to install driver.
type=ddi_pseudo;name=flashprom uflash\N0
Installation of <SUNWufrx.2> was successful.
Copyright 2004 Sun Microsystems, Inc. All rights reserved.
13 blocks

Installation of <SUNWufu.2> was successful.

Installation of <SUNWwccmn.2> was successful.

Verifying that all SMS packages are installed
.....OK
Checking that all installed SMS packages are correct
pkgchk -n SUNWSMSr SUNWSMSop SUNWSMSdf SUNWSMSjh SUNWSMSlp
SUNWSMSmn SUNWSMSob
SUNWSMSod SUNWSMSpd SUNWSMSpo SUNWSMSpp SUNWSMSsu SUNWscdvr
SUNWufrx SUNWufu SUNWwccmn
OK

Setting up /etc/init.d/sms run control script for SMS 1.4.1
New SMS version 1.4.1 is active

Restoring SMS from /var/tmp/sms_backup.1.4.1.cpio after upgrade.
Please wait. . .
smsrestore /var/tmp/sms_backup.1.4.1.cpio

Attempting to restart daemon picld
/etc/init.d/picld stop
/etc/init.d/picld start

smsupgrade complete. Log file is
/var/sadm/system/logs/smsupgrade.
```

4. Proceed to “To Reboot the Former Main SC” on page 57.

Rebooting the Former Main SC

▼ To Reboot the Former Main SC

1. **Log in to the former main SC (SC0) as superuser and drop to the OpenBoot PROM prompt.**

```
sc0:# shutdown -y -g0 -i0
...[system message]
ok
```

2. **Boot the former main SC.**

```
ok boot -rv
```

You must reboot the SC in order for the changes to take effect. Once you have rebooted the system, network configuration is complete.

3. **Next:**

Proceed to “To Update the Flash PROMs on the Former Main” on page 57.

Updating the Flash PROMs on the Former Main SC

▼ To Update the Flash PROMs on the Former Main

When you upgrade the SMS software you must update the SC flash PROMs on both SCs.

Note – You do not need to update the CPU flash PROMs. This was done earlier and is not repeated.

You must have platform privileges to run the `flashupdate(1M)` command.

Note – In order to update your SC PROMs you must have access to the following drivers:

```
sc#:# ls -l /dev/uflash*
lrwxrwxrwx 1 root other 62 Oct 12 20:30 /dev/uflash0 ->
../devices/pci@1f,0/pci@1,1/ebus@1/flashprom@10,400000:uflash0
lrwxrwxrwx 1 root other 62 Oct 12 20:30 /dev/uflash1 ->
../devices/pci@1f,0/pci@1,1/ebus@1/flashprom@10,800000:uflash1
```

Note – If the drivers are not available you must run the following command as superuser on each SC. In the following example the `sc#` prompt indicates both the main or spare SCs:

```
sc#:# /usr/sbin/devfsadm -i uflash
```

1. **Log in to the main SC as a user with `platadm` privileges.**
2. **Upgrade the `sc0/fp0` Flash PROM.**

Use `flashupdate`:

```
sc0:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/SCOBPimg.di sc0/fp0
```

3. **Upgrade the `sc0/fp1` Flash PROM, using the appropriate image for the type of board.**

For the CP1500 board, use `flashupdate` with the `nSSCPOST.di` image:

```
sc0:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/nSSCPOST.di
sc0/fp1
```

For the CP2140 board, use `flashupdate` with the `oSSCPOST.di` image:

```
sc0:sms-user:> flashupdate -f /opt/SUNWSMS/firmware/oSSCPOST.di
sc0/fp1
```

For more information on `flashupdate(1M)` refer to the *System Management Services (SMS) 1.4.1 Reference Manual* or the `flashupdate` man page.

4. Drop to the OpenBoot PROM prompt.

```
sc0:sms-user:> su -  
password: [superuser passwd]  
sc0:# shutdown -y -g0 -i0  
...[system message]  
ok
```

5. Reboot the main SC (SC0). Type:

```
ok boot -rv
```

6. Proceed to “To Enable Failover on the New Main SC (SC1)” on page 60.

Verifying and Assigning the Chassis Serial Number

The chassis serial number is a unique alphanumeric text string, up to 20 characters in length, that identifies a Sun Fire high-end system. This serial number is displayed on a label located on the front of the system chassis, near the bottom center.

If you are upgrading from an SMS release earlier than SMS 1.4, you must verify that the chassis serial number was recorded, as explained in the following procedure.

▼ To Verify and Assign the Chassis Serial Number

1. Make sure the centerplane is powered on.

If it is not powered on, run `poweron cp0`.

2. Login to the new main SC (SC1) as a user with `platform admin` privileges.

3. Run the `showplatform -p csn` command and review the output to determine whether a chassis serial number was assigned to your Sun Fire high-end system.

If a chassis serial number was previously recorded, the chassis serial number will be displayed in the output, for example:

```
scl:sms-user:> /opt/SUNWSMS/bin/showplatform -p csn

CSN:
====
Chassis Serial Number: 353A00053
```

Proceed to “To Enable Failover on the New Main SC (SC1)” on page 60. If the chassis serial number is not displayed, proceed to Step 4.

4. Record the chassis serial number.

```
scl:sms-user:> /opt/SUNWSMS/bin/setcsn -c chassis_serial_number
```

where the *chassis_serial_number* is the number that identifies your Sun Fire high-end system. You obtain the chassis serial number from a label located on the front of your system chassis, near the bottom center.

5. Proceed to “To Enable Failover on the New Main SC (SC1)” on page 60.

Enabling Failover on the Main SC (SC1)

▼ To Enable Failover on the New Main SC (SC1)

1. Login in the new main SC (SC1) as a user with `platadmn` privileges.
2. Turn on failover.

```
scl:sms-user:> /opt/SUNWSMS/bin/setfailover on
```

Your upgrade is now complete! To secure the SCs proceed to “SMS 1.4.1 Security Options” on page 73. If you do not wish to secure the SCs, you can proceed to “Creating a Domain” on page 83.

SMS 1.4.1 Additional Software Instructions

This chapter contains additional instructions for System Management Services (SMS) 1.4.1 software under the Solaris operating environment. These instructions apply to the Sun Fire high-end server systems.

This chapter includes:

- To Add Users to SMS Groups and Configure Directory Access
- To Patch Either System Controller
- To Install Additional Software Packages
- To Configure an SC as an NTP Client
- To Manually Stop and Restart SMS
- To Share SMS Packages on the Spare SC to the Main SC

Adding Users to SMS

The SMS security model uses group membership to provide users with the authority to perform various system management tasks. The level and type of system management available depends on a user's group membership. For more information, refer to Chapter 2, "SMS Security" in the *System Management Services (SMS) 1.4.1 Administrator Guide*.

Note – Adding users using `smsconfig` must be performed on both the main and spare SCs once software installation and network configuration are completed.

The SMS user group IDs are created during initial installation. The following table lists the user groups that are set up for you:

User Group ID	User Group Description
platadmin	Platform Administrator Group
platsvc	Platform Service Group
platooper	Platform Operator Group
dmnaadmin	Domain A Administrator Group
dmnbadmin	Domain B Administrator Group
dmncadmin	Domain C Administrator Group
dmndadmin	Domain D Administrator Group
dmneadmin	Domain E Administrator Group
dmnfadmin	Domain F Administrator Group
dmngadmin	Domain G Administrator Group
dmnhadmin	Domain H Administrator Group
dmniadmin	Domain I Administrator Group
dmnjadmin	Domain J Administrator Group
dmnkadmin	Domain K Administrator Group
dmnladmin	Domain L Administrator Group
dmnmadmin	Domain M Administrator Group
dmnnadmin	Domain N Administrator Group
dmnoadmin	Domain O Administrator Group
dmnpadmin	Domain P Administrator Group
dmnqadmin	Domain Q Administrator Group
dmnradmin	Domain R Administrator Group
dmnarcfg	Domain A Configuration Group
dmnbrcfg	Domain B Configuration Group
dmncrcfg	Domain C Configuration Group
dmndrcfg	Domain D Configuration Group
dmnercfg	Domain E Configuration Group
dmnfrcfg	Domain F Configuration Group
dmngrcfg	Domain G Configuration Group
dmnhrcfg	Domain H Configuration Group
dmnircfg	Domain I Configuration Group

User Group ID	User Group Description (<i>Continued</i>)
dmnjrcfg	Domain J Configuration Group
dmnkrcfg	Domain K Configuration Group
dmnlrcfg	Domain L Configuration Group
dmnmrcfg	Domain M Configuration Group
dmnnrcfg	Domain N Configuration Group
dmnorcfg	Domain O Configuration Group
dmnprcfg	Domain P Configuration Group
dmnqrcfg	Domain Q Configuration Group
dmnrrcfg	Domain R Configuration Group

▼ To Add Users to SMS Groups and Configure Directory Access

SMS provides the ability to add users to SMS groups and refine user access to directories on the Sun Fire high-end system. This functionality protects domain integrity and system security.

1. **Login as superuser.**
2. **To correctly configure SMS groups and administrative privileges, you must use the following command for each user you wish to add.**

```
sc0: #/opt/SUNWSMS/bin/smsconfig -a -u username -G groupname domain_id|platform
```

where:

username is the name of a user account on the system.

groupname is one of the following valid group designations: admn, rcfg, oper or svc.

domain_id is the ID for a domain. Valid *domain_id* s are A through R and are case insensitive.

For example, to add a user to the dmnaadm group with access to domain a directories, type:

```
sc0: # /opt/SUNWSMS/bin/smsconfig -a -u fdjones -G admn a
fdjones has been added to the dmnaadm group
All privileges to domain a have been applied.
```

Note – Do *not* manually add or remove users from SMS groups in the `/etc/group` file. This can limit or deny access to users.

3. To list SMS groups and administrative privileges, use the following command.

```
sc0: # /opt/SUNWSMS/bin/smsconfig -l domain_id|platform
```

For example, to display all users with platform privileges, type:

```
sc0: # /opt/SUNWSMS/bin/smsconfig -l platform
fdjones
jtd
```

4. To correctly configure SMS groups and administrative privileges, you must use the following command for each user you wish to remove.

```
sc0: # /opt/SUNWSMS/bin/smsconfig -r -u username -G groupname domain_id|platform
```

For example, to remove `fdjones` from the `dmnbadmn` group, type:

```
sc0: # /opt/SUNWSMS/bin/smsconfig -r -u fdjones -G admn B
fdjones has been removed from the dmnbadmn group.
All access to domain B is now denied.
```

where:

username is the name of a valid user account on the system.

groupname is one of the following group designations: `admn`, `rcfg`, `oper` or `svc`.

domain_id is the ID for a domain. Valid *domain_id* s are A through R and are case insensitive.

Note – Do *not* manually add or remove users from SMS groups in the `/etc/group` file. This can limit or deny access to users.

5. You have successfully configured your SMS user groups. Return to your installation instructions.

Installing SMS Patches

SMS patches are available at: <http://sunsolve.sun.com>

Follow these guidelines and notify the affected administrators:

- The system should be stable.
- No DR operations should be in progress.
- No domain bringup or shutdown should be in progress.
- No user initiated `datasync` or `cmdsnc` operations should be in progress.

Complete any domain, board, or configuration changes *before* you begin patch installation.

Please read all patch instructions carefully before attempting this procedure. Instructions in the patch procedure could preempt these instructions.

This example assumes that, initially, the main SC is `sc0` and the spare SC is `sc1`.

▼ To Patch Either System Controller

1. Log in to the *main* SC with platform administrator privileges.
2. Turn failover off. Type:

```
sc0:sms-user:> /opt/SUNWSMS/bin/setfailover off
```

3. Stop the SMS processes on both SC's simultaneously.

```
sc0:# /etc/init.d/sms stop
```

4. Install the patch on both SC's.
5. Start the SMS processes on the previous main SC first.

```
sc0:# /etc/init.d/sms start
```

Wait for all processes to start before proceeding to the next step. Use the `showenvironment` command to verify that all SMS processes have started.

6. Start the SMS processes on the spare SC.

```
sc1:# /etc/init.d/sms start
```

7. Enable failover on the main SC.

```
sc0:sms-user:> /opt/SUNWSMS/bin/setfailover on
```

The main SC will reboot and become the former main SC.

▼ To Restore SC Roles

At this point, the original spare SC is running as main and the original main is running as spare. If you wish, you can return them to their original roles as follows:

1. Log in to the new main SC with platform administrator privileges.

2. Failover to the spare SC:

```
sc1:sms-user:> /opt/SUNWSMS/bin/setfailover force
```

The new main SC reboots and becomes the spare SC. The original main becomes the main again.

3. Log in to the main SC with platform administrator privileges.

4. Reactivate failover on the main SC and verify that it is active:

```
sc0:sms-user:> /opt/SUNWSMS/bin/setfailover on

sc0:sms-user:> /opt/SUNWSMS/bin/showfailover
SC Failover Status: Activating
...
sc0:sms-user:> /opt/SUNWSMS/bin/showfailover
SC Failover Status: Active
```

It can take a minute or two for failover to activate.

Installing Additional Software Packages

The additional software packages are in separate media. Install the software packages one at a time, from the appropriate media to the domain.

Note – None of these packages should be installed on the SCs. For information on installing additional software on the Sun Fire high end system SCs refer to the *Sun Fire 15K Open System Controller (OpenSC) White Paper*.

There is no particular order in which the packages need to be installed. Following are additional packages that you may want to install:

- Sun Remote Services (SRS)
- Veritas Volume Manager (VM)
- Load Sharing Facility (LSF) 3.2.3
- Workshop 7
- ClusterTools 3.1
- C programming language and compiler
- Fortran 77 programming language and compiler
- Oracle database software

▼ To Install Additional Software Packages

1. Log in to the SC as superuser.
2. Insert the appropriate installation CD into the CD-ROM drive on the SC.
3. Use the `share(1M)` command to share the CD across the network.
 - a. Verify that the `nfsd` server is running. Type:

```
sc0:#ps -ef | grep nfsd
```

- b. Add a CDROM entry to the `/etc/dfs/dfstab` file:

```
share -F nfs -o ro,anon=0 /cdrom/cdrom0
```

c. To propagate the CDROM image to NFS, type:

```
sc0: # /etc/init.d/nfs.server start
```

4. Log in to the domain as superuser.

5. Create and mount the /cdrom directory for the domain.

```
domain_id: # mkdir /cdrom
domain_id: # mount SC-II: /cdrom/cdrom0 /cdrom
```

where:

SC-II: is the hostname specified for the SC II network in Step 5 of “To Configure the Management Network (MAN) Using the `smsconfig(1M)` Command” on page 17.

6. Add the additional software package.

```
domain_id: # cd /cdrom/install_disk_name
domain_id: # pkgadd -d . software_package_name
```

where:

install_disk_name is the name of the installation disk from which you are installing.

software_package_name is the name of the software package you are adding.

The `pkgadd(1M)` command might display several messages and ask several installation questions for each package, some relating to space, others asking whether it is OK to continue. After answering these questions, and when asked whether to proceed, answer yes.

7. Unmount the CD.

```
domain_id: # cd /
domain_id: # umount /cdrom
```

8. Log out of the domain and log in to the SC as superuser.

9. Eject the installation CD from the CD-ROM drive on the SC.

```
sc0: # cd /
sc0: # eject cdrom
```

Network Time Protocol (NTP) Information

To keep the most accurate time of day on Sun Fire high end systems running SMS 1.2 or later, configure both system controllers and each bootable domain in the platform as NTP clients of the same NTP servers.

▼ To Configure an SC as an NTP Client

Before proceeding, make sure that the platform has the most up to date patches, and that the latest recommended patch cluster is installed on the domains and system controllers.

If the system controllers are running the Solaris 8 operating environment, make sure that the Kernel Update Patch level is at KU-24 or later. For the latest revision of the KU patches, check the SunSolveSM website (<http://sunsolve.sun.com>).

The default NTP configuration file is `/etc/inet/ntp.conf`. It must contain a minimum of three NTP time servers with independent time sources. (For a list of public NTP time servers, see <http://www.ntp.org>.)

1. Insert the names of three NTP servers into the NTP configuration file of each SC and bootable domain.

Insert the following lines, replacing `ntp_server` with the actual name of the NTP server:

```
server ntp_server prefer
server ntp_server2
server ntp_server3
```

The server name followed by the `prefer` argument will be the primary NTP server.

2. Add the name of the driftfile.

The driftfile records the frequency offset of the local clock oscillator. It is read at startup to set the initial frequency offset. Use the `driftfile` argument, followed by the name of the file:

```
driftfile filename
```

3. Add instructions for generating statistics.

These instructions consist of one line for a statistics path followed by a line for each type of statistics that will be collected:

```
statsdir /var/ntp/ntpstats
filegen peerstats file peerstats type day enable
filegen loopstats file loopstats type day enable
filegen clockstats file clockstats type day enable
```

The first line indicates the path in which the statistics files will be saved. The following lines each indicate the type of statistic (peer statistics, loop filter statistics, and clock driver statistics).

For more information about the available options, consult the `xntp(1M)` manpage.

Stopping and Starting SMS

For diagnostic or service reasons you may be asked to stop and restart SMS. The following procedure describes how to do that manually.

▼ To Manually Stop and Restart SMS

1. Log in to the SC as a user with platform administrator privileges.

You must have platform administrator privileges to run `setfailover`.

2. Turn off failover.

```
sc0:sms-user:> /opt/SUNWSMS/bin/setfailover off
```

3. Log out as a platform administrator.

4. Log in to the SC as a user with `superuser` privileges.

You must have superuser privileges to perform the following tasks.

5. Use the `/etc/init.d/sms` script to stop SMS.

```
sc0: # /etc/init.d/sms stop
```

6. Use the `/etc/init.d/sms` script to restart SMS.

```
sc0: # /etc/init.d/sms start
```

Note – This procedure assumes that `smsconfig -m` has already been run. If `smsconfig -m` has not been run, you will receive the following error and SMS will exit.

```
sc0: # /etc/init.d/sms start
sms: smsconfig(1M) has not been run. Unable to start sms services.
```

7. Log out as superuser.

8. Log in to the SC as a user with platform administrator privileges.

9. Turn on failover.

```
sc0:sms-user:> /opt/SUNWSMS/bin/setfailover on
```

10. Type:

```
sc0:sms-user:> /opt/SUNWSMS/bin/showenvironment
```

11. Wait until `showenvironment` finishes displaying all board status.

At this point you can log out and begin using SMS programs.

Mounting the CD-ROM over NFS

▼ **To Share SMS Packages on the Spare SC to the Main SC**

1. Log in to the main SC as superuser.

2. Insert the Software Supplement for the Solaris 9 12/03 Operating Environment CD-ROM into the CD-ROM drive.
3. Use the `share(1M)` command to share the CD across the network.
 - a. Verify that the `nfsd` server is running. Type:

```
sc0:#ps -ef | grep nfsd
```

- b. Add a CDROM entry to the `/etc/dfs/dfstab` file:

```
share -F nfs -o ro,anon=0 /cdrom/cdrom0
```

- c. To propagate the CDROM image to NFS, type:

```
sc0:##/etc/init.d/nfs.server start
```

4. Log in to the spare SC as superuser.
5. Create and mount the `/cdrom` directory for the spare SC.

```
sc1:# mkdir /cdrom
sc1:# mount SC-II: /cdrom/cdrom0 /cdrom
```

where:

SC-II: is the hostname specified for the SC II network in Step 5 of “To Configure the Management Network (MAN) Using the `smsconfig(1M)` Command” on page 17.

6. Change to the Product installation directory:

```
sc1:# cd /cdrom/cdrom0/System_Management_Services_1.4_1/Product
```

SMS 1.4.1 Security Options

This chapter contains information on securing the System Management Services (SMS) 1.4.1 software under the Solaris operating environment. These instructions apply to the Sun Fire high-end server systems.

The following security options are available in SMS 1.4.1:

Strongly Recommended

- Use Secure Shell (`ssh`) as an alternative transport for `fomd` (failover management daemon).
- Disable ARP (Address Resolution Protocol) on the I1 MAN network between the SCs and domains.

Optional

- Disable all IP traffic between the SC and a domain by excluding that domain from the SC's MAN driver.

By using `ssh` as an alternative transport for `fomd`, the SCs no longer require a `.rhosts` file. Secure Shell provides user authentication and encrypts all network traffic; it prevents an intruder from being able to read an intercepted communication or from spoofing the system.

To protect against ARP spoofing and IP-based attacks, We strongly recommend that you disable ARP on the MAN network in all multi-domain configurations. For systems where domain separation is critical, we also recommend disabling IP connectivity between the SC and specific domains that require separation.

Before you implement the above security options, we strongly recommend that you modify (harden) your Solaris Operating Environment configurations on the SCs and domains to improve overall system security. For details, refer to following Sun BluePrints Online articles available at:

<http://www.sun.com/security/blueprints>

- Solaris Operating Environment Security - Updated for Solaris 8 Operating Environment

- Solaris Operating Environment Security - Updated for Solaris 9 Operating Environment

For step-by-step instructions on implementing the three options, which involve the use of the Solaris Security Toolkit (SST, a/k/a JASS), and detailed description of all security recommendations for Sun Fire high end systems, refer to the following Sun BluePrints Online articles available at:

<http://www.sun.com/security/blueprints>

- Securing the Sun Fire 12K and 15K (or High-End) System Controllers: Updated for SMS 1.4 or later.
- Securing the Sun Fire 12K and 15K (or High-End) Domains: Updated for SMS 1.4 or later.

SMS 1.4.1 Software and Domains

This chapter contains additional instructions for System Management Services (SMS) 1.4.1 software and domains. These instructions apply to the Sun Fire high-end server systems.

This chapter includes:

- To Install the Solaris Operating Environment on the Domain
- To Set Up OpenBoot PROM Environment Variables for the Domain
- To Configure Domain Networks
- To Build a New Domain on the System Controller
- To Activate the Domain
- To Bring Up a Console for the Domain
- To Set up the Network Install Server on the System Controller
- To Set Up the Domain as an Install Client
- To Install the Solaris Operating Environment on the Domain
- To Set Up OpenBoot PROM Environment Variables for the Domain
- To Change the IP Address of an SC or Domain
- To Change the Hostname of a Domain or SC

Setting Up and Installing the Solaris Operating Environment for the Domain

This section describes the recommended procedures for setting up and installing the Solaris operating environment for the domain:

- To Set up the Network Install Server on the System Controller
- To Set Up the Domain as an Install Client
- To Install the Solaris Operating Environment on the Domain

Note – If you had the Solaris operating environment pre-installed on your system or you have run the `sys-unconfig` command on the domain please see “Unconfigured Domains” on page 81 before proceeding.

▼ To Set up the Network Install Server on the System Controller

We strongly recommend creating an install server to install the Solaris operating environment software for a domain over the network.

- **You should be familiar with setting up network install servers before beginning this procedure.**

For information on configuring network install servers, refer to the *Solaris 9 Installation Guide*.

Refer to the *Solaris 9 Installation Guide* for information on setting up the spare SC as an install client.

For partition and Solaris operating system distribution information see “SMS 1.4.1 Software on the SC” on page 1.

▼ To Set Up the Domain as an Install Client

After you have created an install server on `sc0`, you are ready to install the Solaris operating environment software for the domain over the network. The system needs to identify the name of the domain, and you add this information by using the `add_install_client(1M)` command.



Caution – If you are installing the Solaris OE from more than one jumpstart server, be sure you have only one jumpstart boot server per subnet. If you have more than one jumpstart boot server per subnet, run the `rm_install_client` command on the extra servers and leave only the SC as the jumpstart boot server.

Refer to the *Solaris 9 Reference Manual* for more information about the `add_install_client(1M)` and `rm_install_client(1M)` commands.

1. Obtain the MAN network Ethernet address at the OpenBoot PROM prompt by typing:

The output displayed is an *example* only and does not reflect the specific information that will appear on your system.

```
ok banner
Sun Fire 15000, using IOSRAM based Console
Copyright 1998-2001 Sun Microsystems, Inc. All rights reserved.
OpenBoot 4.5, 3072 MB memory installed, Serial #####.
Ethernet address 8:0:20:0:0:0, Host ID: 80200000.
```

2. As superuser on SC0, set up the host domain as an install client.

```
sc0: # /install_dir_path/Solaris_9/Tools/add_install_client -e
domain_man_etheraddr -s scI1_hostname:/install_dir_path -c
scI1_hostname:/install_dir_path domain_hostname sun4u
```

where:

install_dir_path specifies the directory where the CD images were copied.

domain_man_etheraddr is the Ethernet address for the domain.

scI1_hostname is the hostname given to the SC I1 network during the `smsconfig -m` procedure.

domain_hostname is the name given to the domain I1 network interface assigned during the `smsconfig -m` procedure.

See ““To Configure the Management Network (MAN) Using the `smsconfig(1M)` Command” on page 17.” The domain host name was originally defined on the worksheet in the *Sun Fire 15K/12K System Site Planning Guide*.

▼ To Install the Solaris Operating Environment on the Domain

1. Display the functioning network interfaces.

```
ok watch-net-all
```

Note – If the system is using a FastEthernet board with Lucent PHY, an error message claiming the device failed the test may appear. Ignore the error message or set the OpenBoot PROM (OBP) parameter `diag-switch?` to `false`. Changing the switch setting will keep the error message from reappearing.

If `watch-net-all` reports a failure on the device associated with `man-net`, you will need to contact your Sun representative.

2. Network boot the domain from the SC using the Management Network. Type:

```
ok boot man-net
```

3. Install the Solaris operating environment for the domain.

Refer to the *Solaris 9 Installation Guide* for detailed installation instructions. Refer to your *Sun Fire 15K/12K System Site Planning Guide* for site specific and system dependent information when prompted during installation.

Note – You can choose any Solaris locale you wish for the operating environment on the domain. The SC must have the English locale installed but the domains do not.

4. Change the domain nodename.

When using the SC as an install server for a domain, change the domain's nodename after the installation is complete. This reduces the amount of network traffic generated between the domain and SC over the MAN network. Change the nodename of the domain to the hostname of one of its external network interfaces (for example, `qfe0`).

To change the domain's nodename do the following:

1. Log in to the domain as superuser.
2. Type:

```
domain_id:# uname -s new_nodename
domain_id:# echo new_nodename > /etc/nodename
```

3. Log out.

5. Remove the domain from the network install server list.

After installing the domain software, to remove the domain from the install server list:



Caution – If you do not remove the domain from the install server list the domain will not boot from the boot disk or the net!

1. Log in to the SC as superuser.
2. Type:

```
sc0: #/install_dir_path/Solaris_9/Tools/rm_install_client
domain_hostname
```

3. In preparation for Step 4 of the *next* procedure, note the physical disk location. For example, type:

```
sc0: #ls -la /dev/dsk/c0t17d0s0
lrwxrwxrwx  1 root    root          77 Oct 12 17:38
/dev/dsk/c0t17d0s0 ->
../../../../devices/pci@3c,600000/pci@1/SUNW,q1c@4/fp@0,0/ssd@w21000020
370dac0c,0:a
```

4. Log out.

▼ To Set Up OpenBoot PROM Environment Variables for the Domain

1. At the domain console's `ok` prompt, remove any duplicate entries in the `devalias` list.

```
ok nvunalias duplicate_alias
```

where:

duplicate_alias is the alias of the duplicate entry.

Note – This sequence must be repeated once per duplication. `nvunalias` removes only one device alias at a time; the last one in the list of device aliases.

2. Display the OpenBoot PROM device tree to use in creating the device aliases.

```
ok show-devs
```

3. Display the functioning network interfaces.

```
ok watch-net-all
```

Note – If the system is using a FastEthernet board with Lucent PHY, an error message claiming the device failed the test may appear. Ignore the error message or set the OpenBoot PROM (OBP) parameter `diag-switch?` to `false`. Changing the switch setting will keep the error message from reappearing.

4. Set the `bootdisk_alias` so that it refers to the device on which you are installing the Solaris operating environment.

```
ok nvalias bootdisk_alias device_string
```

where:

`bootdisk_alias` is the alias for the device on which you are installing the Solaris operating environment

`device_string` is the string for the device on which you are installing the Solaris operating environment as displayed in Step 3.

For example:

```
nvalias disk /pci@3c,600000/pci@1/SUNW,qlc@4/fp@0,0/disk@w21000020370dac0c,0:a
```

Note – Enter the `nvalias` command on a single line. In the above example, the `ssd` in the physical disk location changed to `disk` in the boot string.

5. Record the newly created NVRAM data.

```
ok nvstore
```

6. Use the `setenv` command to set the default boot device to the correct alias.

```
ok setenv boot-device bootdisk_alias
```

where:

bootdisk_alias is the user-defined alias you established in Step 4. The boot device must correspond to the a bootable disk on which you are installing the operating environment. This variable will be used in case of a panic and auto-boot. It is very important to set this variable correctly.

7. Now that you have set up an alias for your boot device, boot the disk by typing:

```
ok boot
```

Unconfigured Domains

If you had the Solaris operating environment pre-installed on a domain or have run the `sys-unconfig(1M)` command on a domain, you must configure the MAN network information on that domain manually.

Note – Do not add the domain as an install client on the SC prior to booting the domain, as described in “To Set Up the Domain as an Install Client” on page 76.

▼ To Configure Domain Networks

1. Log in to the domain as superuser.

2. Type:

```
domain_id:#nidd -get /dev/dman man_get_hostinfo
```

The following is an example of the output displayed.

```
manc_magic = 0x4d414e43
manc_version = 01
manc_csum = 0x0
manc_ip_type = AF_INET
manc_dom_ipaddr = 10.1.1.3
manc_dom_ip_netmask = 255.255.255.224
manc_dom_ip_netnum = 10.1.1.0
manc_sc_ipaddr = 10.1.1.1
manc_dom_eaddr = 0:0:be:a8:48:26
manc_sc_eaddr = 8:0:20:f9:e4:54
manc_iob_bitmap = 0x400 io boards = 10.1,
manc_golden_iob = 10
```

3. Add or edit a `network-id` entry to `/etc/netmasks`, using the following format:

```
manc_dom_ip_netnum manc_dom_ip_netmask
```

For example:

```
10.1.1.0 255.255.255.224
```

4. Create an `/etc/hostname.dman0` file with the following content:

```
manc_dom_ipaddr netmask + broadcast + private up
```

For example:

```
10.1.1.3 netmask + broadcast + private up
```

5. Ensure that the 'manc_sc_ipaddr' IP address matches what's in /etc/syslog.conf:

```
domain_id:# cat /etc/syslog.conf
```

```
...  
*.notice @10.1.1.1
```

If not, edit the /etc/syslog.conf file. Save and exit.

6. Type:

```
domain_id:# ifconfig dman0 plumb  
domain_id:# ifconfig dman0 manc_dom_ipaddr netmask + broadcast +  
private up
```

where

manc_dom_ipaddr is the domain IP address listed in /etc/netmasks.

7. The domain is now configured.

Creating a Domain

This section describes the following procedures for creating a new domain:

Note – You must have a valid `idprom.image` file for the domain in the `/var/opt/SUNWSMS/data/domain_id` directory in order to create a domain. Contact your Sun service representative if this file is missing.

- To Build a New Domain on the System Controller
- To Activate the Domain
- To Bring Up a Console for the Domain

▼ To Build a New Domain on the System Controller

For the examples in this guide:

Prompt	Definition
<code>sc0:#</code>	Superuser on the main SC
<code>domain_id: #</code>	Superuser on the domain
<code>sc_name:sms-user:></code>	User prompt on the SC. <i>sms-user</i> is the <code>user-name</code> of an administrator, operator, configurator or service personnel logged in to the SC.
<code>domain_id:sms-user:></code>	User prompts on the domain <i>sms-user</i> is the <code>user-name</code> of the administrator, operator, configurator or service personnel logged in to the domain.

The privileges allotted to the user are determined by the platform or domain groups to which the user belongs. In these examples, the *sms-user* is assumed to have both platform and domain administrator privileges, unless otherwise noted.

Note – In the following example, a platform administrator creates a domain by adding boards to the domain. If you wish to have a domain administrator create the domain, the platform administrator must first run `setupplatform` and place the boards in the domain available component list before the domain administrator can run `addboard`.

1. Log in as a user with `platadm`n privileges, and create a domain by adding boards.

```
sc0:sms-user:> addboard -d domain_id -c assign location [location]
```

where:

domain_id is the ID of the domain (A through R) that you are creating

location corresponds to board location. The following *location* forms are accepted:

Valid form for Sun Fire 15K	Valid form for Sun Fire 12K
SB(0...17)	SB(0...8)
IO(0...17)	IO(0...8)

For example, the following command adds CPU boards in slots 2, 4, and 7 to domain A.

```
sc0:sms-user:> addboard -d A -c assign SB2 SB4 SB7
```

The next example adds I/O boards in slots 3, 5, and 8 to domain A.

```
sc0:sms-user:> addboard -d A -c assign IO3 IO5 IO8
```

2. Use the `deleteboard(1M)` command if you need to remove boards from an inactive domain

```
sc0:sms-user:> deleteboard -c unassign location [location]
```

where:

location is the board location. The following *location* forms are accepted:

Valid form for Sun Fire 15K	Valid form for Sun Fire 12K
SB(0..17)	SB(0..8)
IO(0..17)	IO(0..8)

For example, the following command removes the CPU board in slot 2 of slot 0 from domain A.

```
sc0:sms-user:> deleteboard -c unassign SB2
```

The next example removes an I/O board in slot 3 of slot 1 from domain A.

```
sc0:sms-user:> deleteboard -c unassign IO3
```

3. Add a tag for the domain.

```
sc0:sms-user:> addtag -d domain_id domain_tag
```

where:

domain_id is the ID of the domain (A through R) you are creating.

domain_tag is the name of the new tag you are adding for the domain, such as `domainA`.

For example, the following command adds the tag for domain A to the platform configuration database (PCD).

```
sc0:sms-user:> addtag -d A domainA
```

4. Use the `deletetag(1M)` command if you want to remove a tag.

```
sc0:sms-user:> deletetag -d domain_id
```

where:

domain_id is the ID of the domain from which you want to remove a tag (A through R).

For example, the following command deletes the tag for domain A from the platform configuration database (PCD).

```
sc0:sms-user:> deletetag -d A
```

▼ To Activate the Domain

Note – To install the Solaris operating environment and SMS on a new system controller, you must have a valid `idprom.image` file in `/var/opt/SUNWSMS/data/domain_id/idprom.image`, where *domain_id* is A through R. If you do *not* have this file already, contact your Sun service representative.

SMS contains a virtual key switch for each domain, which controls the states of the domain. The `showkeyswitch(1M)` command displays the position of the virtual key switch, and the `setkeyswitch(1M)` command changes the position of the virtual key switch. The valid positions of the virtual key switch are `on`, `standby`, `off`, `diag`, and `secure`. For more information refer to the *System Management Services (SMS) 1.4.1 Reference Manual*.

1. Display the domain status.

```
sc0:sms-user:> showkeyswitch -d domain_id
```

where:

domain_id is the ID of the domain (A through R) for which you want to check status.

For example, the following command shows the status of domain A.

```
sc0:sms-user:> showkeyswitch -d A
```

2. Activate the domain as a user with Domain Administrator (dmnaadmin) privileges.

```
sc0:sms-user:> setkeyswitch -d domain_id position
```

where:

domain_id is the ID of the domain (A through R) you want to activate

position is whether you want the virtual keyswitch in the *on* (activate), *off* (deactivate), *standby*, *diag*, or *secure* position.

For example, the following command activates domain A.

```
sc0:sms-user:> setkeyswitch -d A on
```

3. If you need to deactivate a domain, set the *position* of the virtual keyswitch to *off*.

For example, the following command deactivates domain A.

```
sc0:sms-user:> setkeyswitch -d A off
```

▼ To Bring Up a Console for the Domain

The conditions required for network console are as follows:

- The network was properly installed and configured on both the SC and the domain in question using the *Sun Fire 15K/12K System Site Planning Guide* and *smsconfig*.
- A network connection exists between the SC and the domain in question.
- IPSec configuration on both SC and the domain in question were properly installed and configured using *smsconfig*. For more information on IPSec, see the *kmd(1M)* man page and Chapter 3, “SMS Internals” in the *System Management Services (SMS) 1.4.1 Administrator Guide*.

1. Bring up an active console window for the domain

```
sc0:sms-user:> console -d domain_id
```

where:

domain_id is the ID of the domain (A through R) for which you want to bring up a console.

For example, the following command brings up a console for domain A.

```
sc0:sms-user:> console -d A
```

In the domain console window, `vi(1)` runs properly and the escape sequences (tilde commands) work as intended only if the environment variable `TERM` has the same setting as that of the console window.

For example:

```
domain_id:sms-user:> setenv TERM xterm
```

For more information on domain console refer to the *System Management Services (SMS) 1.4.1 Administrator Guide* and the `console` man page.

Making Changes to a Domain

This section describes how to change the IP address or hostname of a domain or system controller.

▼ To Change the IP Address of an SC or Domain

1. Update your name service maps with the new IP address(es).
2. Reboot the domain or system controller.

▼ To Change the Hostname of a Domain or SC

1. Update your name service maps with the new hostname(s).
2. Change the hostname in the following files in the domain:

```
/etc/inet/hosts  
  
/etc/nodename  
  
/etc/hostname.interface-card-name  
  
/etc/net/ticlts/hosts  
  
/etc/net/ticlos/hosts  
  
/etc/net/ticotsord/hosts
```

3. Reboot the domain or SC.
4. Change the hostname in the following files, if applicable:
etc/defaultdomain (only if your NIS domain name has changed)
etc/hostname.* (only if you hostname is specified in the file)
etc/hostname6.* (only if you hostname is specified in the file)
5. If the hostname was changed in the SC, run `smsconfig -m`.

▼ To Activate the Domain

Note – To install the Solaris operating environment and SMS on a new system controller, you must have a valid `idprom.image` file in `/var/opt/SUNWSMS/data/domain_id/idprom.image`, where *domain_id* is A through R. If you do *not* have this file already, contact your Sun service representative.

SMS contains a virtual key switch for each domain, which controls the states of the domain. The `showkeyswitch(1M)` command displays the position of the virtual key switch, and the `setkeyswitch(1M)` command changes the position of the virtual key switch. The valid positions of the virtual key switch are `on`, `standby`, `off`, `diag`, and `secure`. For more information refer to the *System Management Services (SMS) 1.4.1 Reference Manual*.

1. Display the domain status.

```
sc0:sms-user:> showkeyswitch -d domain_id
```

where:

domain_id is the ID of the domain (A through R) for which you want to check status. For example, the following command shows the status of domain A.

```
sc0:sms-user:> showkeyswitch -d A
```

2. Activate the domain as a user with Domain Administrator (dmnaadmin) privileges.

```
sc0:sms-user:> setkeyswitch -d domain_id position
```

where:

domain_id is the ID of the domain (A through R) you want to activate
position is whether you want the virtual keyswitch in the *on* (activate), *off* (deactivate), *standby*, *diag*, or *secure* position.

For example, the following command activates domain A.

```
sc0:sms-user:> setkeyswitch -d A on
```

3. If you need to deactivate a domain, set the *position* of the virtual keyswitch to *off*.

For example, the following command deactivates domain A.

```
sc0:sms-user:> setkeyswitch -d A off
```

▼ To Bring Up a Console for the Domain

The conditions required for network console are as follows:

- The network was properly installed and configured on both the SC and the domain in question using the *Sun Fire 15K/12K System Site Planning Guide* and *smsconfig*.
- A network connection exists between the SC and the domain in question.

- IPsec configuration on both SC and the domain in question were properly installed and configured using `smsconfig`. For more information on IPsec, see the `kmd(1M)` man page and Chapter 3, “SMS Internals” in the *System Management Services (SMS) 1.4.1 Administrator Guide*.

1. Bring up an active console window for the domain

```
sc0:sms-user:> console -d domain_id
```

where:

`domain_id` is the ID of the domain (A through R) for which you want to bring up a console.

For example, the following command brings up a console for domain A.

```
sc0:sms-user:> console -d A
```

In the domain `console` window, `vi(1)` runs properly and the escape sequences (tilde commands) work as intended only if the environment variable `TERM` has the same setting as that of the console window.

For example:

```
domain_id:sms-user:> setenv TERM xterm
```

For more information on domain console refer to the *System Management Services (SMS) 1.4.1 Administrator Guide* and the `console` man page.

Index

A

addboard, 85, 89, 90
addtag, 86

C

commands
 addboard, 85, 89, 90
 addtag, 86
 console, 88, 91
 deleteboard, 86, 89
 deletetag, 87
 setkeyswitch, 87, 90
 showkeyswitch, 87, 91
console, 88, 91

D

deleteboard, 86, 89
deletetag, 87
domain
 activating, 87, 88, 90, 91
 as install client, 76
 console, 88, 91
 creating, 83, 89
 deactivating, 88, 91
 displaying status, 87, 91
 installing Solaris, 75, 77
 using addboard, 85, 89, 90
 using addtag, 86
 using deleteboard, 86, 89

 using deletetag, 87

domain admin
 activating a domain, 88, 91
 deactivating a domain, 88, 91

F

from CD-ROM, 14, 27, 45, 53

I

installing on a domain, 75

M

MAN
 configuring the network, 17, 30

N

network install server
 installing on the SC, 76

O

OpenBoot PROM environment variables, 79

R

reinstall

- manual, 14, 27, 45, 53

S

setkeyswitch, 87, 90

showkeyswitch, 87, 91

SMS

- activating domain, 88, 91

- activating the domain, 87, 90

- console, 88, 91

- creating a domain, 83, 89

- deactivating domain, 88, 91

- displaying domain status, 87, 91

- setting up OpenBoot PROM environment

 - variables, 79

- starting, 69, 70

- using addboard, 85, 89, 90

- using addtag, 86

- using deleteboard, 86, 89

- using deletetag, 87

SMS groups

- adding users, 61

smsconfig

- configuring the network, 17, 30

software

- installing additional packages, 67

Solaris, 75

- installing on a domain, 77

- network install server, 76

- setting up the domain, 76