



SMCC

Hardware Platform Guide

Solaris 2.6 Hardware: 5/98

Includes information about installing software from the Solaris CD

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Contents

Preface xi

- 1. Installing Software from the Solaris CD** 1
 - Automatic Installation of Solaris Software 1
 - Manual Installation of Solaris Software 1
 - Platform Names and Groups 2
 - Setting Up Diskless Clients Using Solstice 4
 - Interactive Installation of Solaris Software 4
 - Manual Installation of Packages 6
 - Custom JumpStart Profiles 8

- 2. Solaris 2.6 Hardware: 5/98 on the Sun Enterprise 10000** 11
 - Performing a Fresh-Install 11
 - Creating Additional Domains 11
 - Preparing the SSP for the Fresh-Install 13
 - Installing Solaris 2.6 Hardware: 5/98 15
 - Licensing Your Software 29
 - Performing an Upgrade 31
 - Backing Up Your Domain 31

Preparing the SSP for the Upgrade	34
Preparing the Domain	35
Upgrading the Solaris Operating Environment	36
3. Installing Solaris with the SPARCstorage Array	45
Disk Management Software	45
SPARCstorage Array Firmware	46
Installation and Upgrade Scenarios	46
Scenario 1: New Installation of Solaris 2.6 Hardware: 5/98 on Systems Booting from the SPARCstorage Array Disk	47
Using the FC/S SBus Card	47
Using the Onboard FC Ports	47
Installing Solaris 2.6 Hardware: 5/98 on a SPARCstorage Array Disk	48
Trouble Booting?	49
Checking the FCode Level of Your FC/S SBus Card	50
Scenario 2: New Installation of Solaris 2.6 Hardware: 5/98 on Systems Not Booting from the SPARCstorage Array Disk	52
Scenario 3: Upgrading to Solaris 2.6 Hardware: 5/98	53
4. Alternate Pathing 2.1 on Sun Enterprise Servers	57
Performing a Fresh-Install	57
Performing an Upgrade	60
Reconfiguring the Domain	62
5. Power Management on Sun Hardware	65
SPARCstation 4 Issues	65
Ultra 5 and Ultra 10 System Power-Off Feature	66
Supported Platforms	67
Supported Peripherals	69

Tables

TABLE P-1	Related Manuals	xii
TABLE P-2	Specific Installation Information	xiii
TABLE P-3	Typographic Conventions	xiv
TABLE P-4	Shell Prompts	xiv
TABLE 1-1	Platform Names for SMCC Systems	2
TABLE 1-2	Required Software Clusters and Packages for SMCC Hardware	5
TABLE 1-3	Required Packages for Hardware Platforms and Options	6
TABLE 1-4	Additional Entries for Custom JumpStart Installations	9
TABLE 2-1	SBus Numbers in the <code>devalias</code> File	18
TABLE 2-2	Platform-Specific Information for the <code>suninstall</code> Utility	19
TABLE 2-3	Minimum Partition Sizes	21
TABLE 2-4	Disk Partition Form	22
TABLE 2-5	SMCC Supplemental Packages	27
TABLE 2-6	SunVTS Software Cluster/Packages	28
TABLE 2-7	Upgrading Tasks	33
TABLE 2-8	Sbus Numbers in the <code>devalias</code> File	38
TABLE 2-9	Platform-Specific Information for the <code>suninstall</code> Utility	39
TABLE 2-10	SMCC Supplemental Packages	42
TABLE 2-11	SunVTS Software Cluster/Packages	42
TABLE 3-1	Installation and Upgrade Options	46

TABLE 4-1	AP Software File-System Sizes	58
TABLE 4-2	AP Software File-System Sizes	60
TABLE 5-1	Platform Names and Groups Supported by Power Management	67
TABLE 5-2	Power Management Supported Peripherals	69

Preface

The *SMCC Hardware Platform Guide Solaris 2.6 Hardware: 5/98* contains important information about the Sun Microsystems™ Computer Company (SMCC) hardware supported by this Solaris™ 2.6 Hardware: 5/98 software environment.

Note – For Solaris 2.6 Hardware: 5/98 installation instructions, refer to Chapter 1, “Installing Software from the Solaris CD.”

This manual:

- Provides platform-specific installation instructions for the Solaris 2.6 Hardware: 5/98 software
 - Describes how to install Solaris 2.6 Hardware: 5/98 on a Sun Enterprise 10000 domain
 - Identifies installation issues affecting the SPARCstorage Array
 - Describes hardware and software requirements affecting Power Management software
-

Note – For information about how to install software contained on the SMCC Supplement CD and information about SMCC supported hardware, refer to the following sections in the *SMCC Information Library for Solaris 2.6 Hardware: 5/98*:

- *Vendor Value-Added Software*
- *Supported Hardware*

Where to Find Installation Information

The Solaris 2.6 Hardware: 5/98 software is delivered on two CDs:

- *Solaris 2.6 Hardware: 5/98 SPARC Platform Edition for Sun Microsystems Computer Company* (called the *Solaris CD* throughout this manual)
- *Supplement for Solaris Operating Environment 2.6 Hardware: 5/98 for Sun Microsystems Computer Company* (called the *SMCC Supplement CD* throughout this manual).

Before installing the Solaris 2.6 Hardware: 5/98 software, check TABLE P-1 for listings of manuals with information that may apply to your situation and TABLE P-2 for specific installation information.

Note – All Solaris and SPARC-related documentation can be found on the Documentation CD. All SMCC-specific documentation can be found on the *SMCC Supplement CD*. Some co-packaged products contain documentation on their respective CDs.

TABLE P-1 Related Manuals

Title	Description
<i>Solaris 2.6 SPARC Installation Instructions</i>	Primary installation manual for this release of the Solaris operating environment from the Documentation CD.
<i>Solaris 2.6 Hardware: 5/98 SPARC Information Library</i>	Supplements the <i>Solaris 2.6 SPARC Installation Instructions</i> by providing detailed installation information.
<i>Solaris Advanced Installation Guide</i>	Contains additional information about how to install the Solaris operating environment on Server systems.
<i>Solaris 2.6 Hardware: 5/98 Installation Notes</i>	Contains late breaking news and installation information pertinent to SPARC hardware.

TABLE P-2 Specific Installation Information

Do you want to	Go to
Know more about new products and peripherals?	The <i>Supported Hardware</i> section in the <i>Information Library for Solaris 2.6 Hardware: 5/98</i>
Know about late breaking news?	1. <i>SMCC Release Notes Supplement Solaris 2.6 Hardware: 5/98</i> 2. <i>Solaris 2.6 Hardware: 5/98 Installation Notes</i>
Begin the install process from the Solaris CD?	1. <i>SMCC Hardware Platform Guide Solaris 2.6 Hardware: 5/98</i> 2. <i>Solaris 2.6 SPARC Installation Instructions</i>
Install software for your platform/peripheral from the SMCC Supplement CD, as needed?	The <i>Vendor Value-Added Software</i> section in the <i>Information Library for Solaris 2.6 Hardware: 5/98</i>
Install Solaris on a SPARCstorage Array?	Chapter 3, “Installing Solaris with the SPARCstorage Array” in this manual
Install an AnswerBook from the SMCC Supplement CD, as needed?	The <i>Vendor Value-Added Software</i> section in the <i>Information Library for Solaris 2.6 Hardware: 5/98</i>

How This Book Is Organized

This book is organized as follows:

Chapter 1, “Installing Software from the Solaris CD” supports the *Solaris 2.6 SPARC Installation Instructions* manual by providing additional installation instructions on how to install or upgrade the Solaris 2.6 Hardware: 5/98 software on specific SMCC platforms and hardware options.

Chapter 2, “Solaris 2.6 Hardware: 5/98 on the Sun Enterprise 10000” describes how to install Solaris 2.6 Hardware: 5/98 software on a Sun Enterprise 10000 Domain. It also describes how to upgrade Solaris on a Host Domain.

Chapter 3, “Installing Solaris with the SPARCstorage Array” describes how to install the Solaris 2.6 Hardware: 5/98 software either as a new installation or as an upgrade on systems where the SPARCstorage Array™ may be used as the boot device.

Chapter 4, “Alternate Pathing 2.1 on Sun Enterprise Servers” describes how to install or upgrade Alternate Pathing 2.1 software on Sun Enterprise servers.

Chapter 5, “Power Management on Sun Hardware” describes the hardware and software requirements for running Power Management on Sun hardware.

Typographic Conventions

The following table describes the typographic changes used in this book.

TABLE P-3 Typographic Conventions

Typeface or Symbol	Meaning	Example
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. machine_name% You have mail.
AaBbCc123	What you type, contrasted with on-screen computer output	machine_name% su Password:
AaBbCc123	Command-line placeholder: replace with a real name or value	To delete a file, type <code>rm filename</code> .
AaBbCc123	Book titles, new words or terms, or words to be emphasized	Read Chapter 6 in <i>User's Guide</i> . These are called <i>class</i> options. You <i>must</i> be root to do this.

Shell Prompts in Command Examples

The following table shows the default system prompt and superuser prompt for the C shell, Bourne shell, and Korn shell.

TABLE P-4 Shell Prompts

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

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United Kingdom	0-800-89-88-88	0-800-89-88-87
France	05-90-61-57	05-90-61-58
Belgium	02-720-09-09	02-725-88-50
Luxembourg	32-2-720-09-09	32-2-725-88-50
Germany	01-30-81-61-91	01-30-81-61-92
The Netherlands	06-022-34-45	06-022-34-46
Sweden	020-79-57-26	020-79-57-27
Switzerland	155-19-26	155-19-27
Japan	0120-33-9096	0120-33-9097

World Wide Web: <http://www.sun.com/sunexpress/>

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- Email: smcc-docs@sun.com
- Fax: SMCC Document Feedback
1-415-786-6443

Installing Software from the Solaris CD

Automatic Installation of Solaris Software

For the SMCC hardware listed in this manual, this release of Solaris 2.6 Hardware: 5/98 requires no special installation or upgrade instructions. If you plan to perform an automatic installation of Solaris 2.6 Hardware: 5/98 on your SMCC hardware, refer to the *Solaris 2.6 SPARC Installation Instructions* manual or the *Solaris Advanced Installation Guide* for all your installation needs.

Manual Installation of Solaris Software

If you are installing Solaris 2.6 Hardware: 5/98 using the manual (or interactive) method as described in the *Solaris 2.6 SPARC Installation Instructions* manual, you may need to identify and add some of the software packages and clusters that are required for installing Solaris 2.6 Hardware: 5/98. This section identifies platform-specific installation needs and lists the required software packages and clusters.

Platform Names and Groups

You need to know your system architecture (platform group) if you are performing one of the following:

- Setting up a boot server on a subnet
- Adding clients for network installation (standalone, servers, dataless, diskless)

You also need to know the platform name if you are writing a custom JumpStart installation rules file.

TABLE 1-1 shows the platform names and groups of various SMCC hardware platforms.

TABLE 1-1 Platform Names for SMCC Systems

System	Platform Name	Platform Group
SPARCclassic	SUNW,SPARCclassic	sun4m
SPARCstation SLC	SUNW,Sun_4_20	sun4c
SPARCstation ELC	SUNW,Sun_4_25	sun4c
SPARCstation LX	SUNW,SPARCstation-LX	sun4m
SPARCstation LX+	SUNW,SPARCstation-LX+	sun4m
SPARCstation IPC	SUNW,Sun_4_40	sun4c
SPARCstation IPX	SUNW,Sun_4_50	sun4c
SPARCstation 1	SUNW,Sun_4_60	sun4c
SPARCstation 1+	SUNW,Sun_4_65	sun4c
SPARCstation 2	SUNW,Sun_4_75	sun4c
SPARCstation 4	SUNW,SPARCstation-4	sun4m
SPARCstation 5	SUNW,SPARCstation-5	sun4m
SPARCstation 5Model 170	SUNW,SPARCstation-5	sun4m
SPARCstation 10	SUNW,SPARCstation-10	sun4m
SPARCstation 10SX	SUNW,SPARCstation-10,SX	sun4m
SPARCstation 20	SUNW,SPARCstation-20	sun4m
SPARCstation Voyager	SUNW,S240	sun4m
Ultra 1 Model 140	SUNW,Ultra-1	sun4u
Ultra 1 Model 170	SUNW,Ultra-1	sun4u
Ultra 1 Creator Model 140E	SUNW,Ultra-1	sun4u
Ultra 1 Creator3D Model 140E	SUNW,Ultra-1	sun4u

TABLE 1-1 Platform Names for SMCC Systems (*Continued*)

System	Platform Name	Platform Group
Ultra 1 Creator Model 170E	SUNW,Ultra-1	sun4u
Ultra 1 Creator 3D Model 170E	SUNW,Ultra-1	sun4u
Ultra 1 Creator Model 200E	SUNW,Ultra-1	sun4u
Ultra 1 Creator3D Model 200E	SUNW,Ultra-1	sun4u
Sun Enterprise 1 Model 140	SUNW,Ultra-1	sun4u
Sun Enterprise 1 Model 170	SUNW,Ultra-1	sun4u
Sun Enterprise 1 Model 170E	SUNW,Ultra-1	sun4u
Ultra 2 Creator Model 1170	SUNW,Ultra-2	sun4u
Ultra 2 Creator3D Model 1170	SUNW,Ultra-2	sun4u
Ultra 2 Creator Model 2170	SUNW,Ultra-2	sun4u
Ultra 2 Creator3D Model 2170	SUNW,Ultra-2	sun4u
Ultra 2 Creator Model 1200	SUNW,Ultra-2	sun4u
Ultra 2 Creator3D Model 1200	SUNW,Ultra-2	sun4u
Ultra 2 Creator Model 2200	SUNW,Ultra-2	sun4u
Ultra 2 Creator 3D Model 2200	SUNW,Ultra-2	sun4u
Ultra 2 Creator Model 1300	SUNW,Ultra-2	sun4u
Ultra 2 Creator Model 2300	SUNW,Ultra-2	sun4u
Ultra 5	SUNW,Ultra-5/10	sun4u
Ultra 10	SUNW,Ultra-5/10	sun4u
Ultra 30	SUNW,Ultra-30	sun4u
Ultra 60	SUNW,Ultra-60	sun4u
Ultra 450	SUNW,Ultra-4	sun4u
Sun Enterprise 2 Model 1170	SUNW,Ultra-2	sun4u
Sun Enterprise 2 Model 2170	SUNW,Ultra-2	sun4u
Sun Enterprise 2 Model 1200	SUNW,Ultra-2	sun4u
Sun Enterprise 2 Model 2200	SUNW,Ultra-2	sun4u
Sun Enterprise 2 Model 1300	SUNW,Ultra-2	sun4u
Sun Enterprise 2 Model 2300	SUNW,Ultra-2	sun4u
Sun Enterprise 150	SUNW,Ultra-1	sun4u
Sun Enterprise 250	SUNW,Ultra-250	sun4u

TABLE 1-1 Platform Names for SMCC Systems (*Continued*)

System	Platform Name	Platform Group
Sun Enterprise 450	SUNW,Ultra-4	sun4u
Sun Enterprise 3000	SUNW,Ultra-Enterprise	sun4u
Sun Enterprise 4000	SUNW,Ultra-Enterprise	sun4u
Sun Enterprise 5000	SUNW,Ultra-Enterprise	sun4u
Sun Enterprise 6000	SUNW,Ultra-Enterprise	sun4u
Sun Enterprise 10000	SUNW,Ultra-Enterprise	sun4u1
SPARCserver 1000	SUNW,SPARCserver-1000	sun4d
SPARCcenter 2000	SUNW,SPARCcenter-2000	sun4d

Refer to the *Solaris 2.6 SPARC Installation Instructions* manual for further information on platform groups for all other systems.

Setting Up Diskless Clients Using Solstice

If you are setting up a diskless client on a platform other than a sun4c, sun4d, or sun4m, you need to select `Entire Distribution Plus OEM` as the client OS service.



Caution – If you fail to select this metacluster, you will not be able to boot your sun4u system as a diskless client.

Interactive Installation of Solaris Software

Installing the Solaris 2.6 Hardware: 5/98 software environment from the *Solaris CD* automatically loads all of the required software clusters and packages for your SMCC hardware.

If you choose to customize your Solaris 2.6 Hardware: 5/98 software configuration using the interactive method, refer to TABLE 1-2 and TABLE 1-3 to help identify which software packages and clusters are needed for the Solaris 2.6 Hardware: 5/98 software environment on specific SMCC hardware.

TABLE 1-2 Required Software Clusters and Packages for SMCC Hardware

If Your System is or has	This Cluster or Package is required	Cluster or Package Name
S24 frame buffer	SUNWCt <code>cx</code>	TCX API Support
SX frame buffer	SUNWCs <code>x</code>	SX Support
ZX or TurboZX graphics accelerator	SUNWCle <code>o</code>	le <code>o</code> Device Driver
Creator and Creator3D	SUNWxilv <code>l</code> SUNWCff <code>b</code>	Creator Graphics Device Drivers and Pipelines
Creator and Creator3D (Series 2)	SUNWxilv <code>l</code> SUNWCff <code>b</code>	Creator Graphics Device Drivers and Pipelines
Elite3D	SUNWCaf <code>b</code>	Elite3D Device Drivers and Pipelines
	SUNWafbm <code>n</code>	Elite3D Online Manual Pages
	SUNWxfb. <code>w</code>	Elite3D/FFB (Creator) Common Driver Routines
PGX Graphics Frame Buffer	SUNWCm <code>64</code>	M64 Graphics Support
SPARCstorage Array (Models 100 or 200)	SUNWCssa	SPARCstorage Array Support Software
Sun StorEdge A5000	SUNWClux SUNWses	Sun StorEdge A5000 Support Software
SunSwift SBus Adapter	SUNWChm <code>d</code>	SunSwift SBus Adapter Drivers
SunSwift PCI Adapter	SUNWChm <code>d</code>	SunSwift PCI Adapter Drivers
SPARCstation 4	SUNWCt <code>cx</code>	TCX API Support
SPARCstation 5	SUNWCt <code>cx</code>	TCX API Support
SPARCstation 10SX	SUNWCs <code>x</code>	SX End User
SPARCstation 20	SUNWCs <code>x</code>	SX End User
Ultra 1 Series	SUNWxilv <code>l</code>	VIS/XIL Support
Ultra 1 Creator Series, Ultra 2 Creator Series, and Sun Enterprise X000 Series	SUNWxilv <code>l</code>	VIS/XIL Support
	SUNWCff <code>b</code>	Creator Graphics Device Drivers and Pipelines
	SUNWChm <code>d</code>	SunSwift SBus Adapter Drivers

TABLE 1-2 Required Software Clusters and Packages for SMCC Hardware (Continued)

If Your System is or has	This Cluster or Package is required	Cluster or Package Name
Ultra 5 and Ultra 10	SUNWxilvl	VIS/XIL Support
	SUNWCffb	Creator Graphics Device Drivers and Pipelines
	SUNWCm64	M64 Graphics Support
	SUNWide	EIDE Driver (bootable)
	SUNWpci.u	PCI NEXUS Driver w/enhanced PCI bridge support
Ultra 30	SUNWxilvl	VIS/XIL Support
	SUNWCffb	Creator Graphics Device Drivers and Pipelines
	SUNWCm64	M64 Graphics Support
Ultra 60	SUNWxilvl	VIS/XIL Support
	SUNWCffb	Creator Graphics Device Drivers and Pipelines
	SUNWCm64	M64 Graphics Support
Sun Enterprise 250	SUNWCpd	Drivers for SPARC platforms with PCI bus
	SUNWCw250	Sun Enterprise 250 Environmental Control Driver
Ultra 450	SUNWCpd	Drivers for SPARC platforms with PCI bus
Sun Enterprise 10000	SUNWC4u1	Sun Enterprise 10000 Support

Manual Installation of Packages

TABLE 1-3 lists the required software packages to install if you are installing at the package level for specific hardware.

TABLE 1-3 Required Packages for Hardware Platforms and Options

If You Have	You Must Install
ZX or TurboZX graphics accelerator	SUNWleo.d (if your system architecture is sun4d) SUNWleo.m (if your system architecture is sun4m) SUNWleo.u (if your system architecture is sun4u) SUNWleoo SUNWleor SUNWleow

TABLE 1-3 Required Packages for Hardware Platforms and Options *(Continued)*

If You Have	You Must Install
SX frame buffer	SUNWsxr.m SUNWsx SUNWsxow SUNWxilcg SUNWsxogl
S24 or FSV frame buffer	SUNWtcx.m SUNWtcxu SUNWtcxow
Creator and Creator3D (including Series 2)	SUNWffb.u SUNWffbcf SUNWffbw SUNWffbxg SUNWxilvl
Elite3D	SUNWafb.u SUNWafbcf SUNWafbmn SUNWafbr SUNWafb.w SUNWafb.xg SUNWafb.u
PGX Graphics Frame Buffer	SUNWm64.u SUNWm64w SUNWm64cf
SunSwift SBus Adapter	SUNWhmd SUNWhmdu
SunSwift PCI Adapter	SUNWhmd SUNWhmdu
SPARCstorage Array, model 100/200	SUNWssadv SUNWssaop
Sun StorEdge A5000	SUNWluxal SUNWluxdv.d SUNWluxdv.u SUNWluxdv.u1 SUNWluxmn SUNWluxop SUNWses
Ultra 1 Series	SUNWxilvl

TABLE 1-3 Required Packages for Hardware Platforms and Options (*Continued*)

If You Have	You Must Install
Ultra 1 Creator Series, Ultra 2 Creator Series, and Sun Enterprise X000 Series	SUNWffb.u SUNWfbcf SUNWfbw SUNWfbxg SUNWxlv1 SUNWhmd SUNWhmdu
Ultra 5 and Ultra 10	SUNwide SUNWpci.u
Ultra 60	SUNWpci.u
Sun Enterprise 250	SUNWpd SUNWpdu SUNWw250 SUNWw250h
Ultra 450 and Sun Enterprise 450	SUNWpd SUNWpdu
Sun Enterprise 10000	SUNWcpr.u1 SUNWcvc.u1 SUNWdrr.u1 SUNWecsr.u1 SUNWinxdv.u1

Custom JumpStart Profiles

For information on the availability of the Custom JumpStart™ method at your site, consult your system administrator. TABLE 1-4 lists the platforms as well as the hardware or software options that may require additional entries when a system administrator creates profiles for them, since these clusters might not be installed with the core distribution software group. Refer to the *Solaris 2.6 SPARC Installation Instructions* manual for more information.

When writing Custom JumpStart profiles, be sure to allow sufficient space in the root partition for software from the *SMCC Supplement CD*, such as software for Sun StorEdge A3000 features and SunVTS diagnostics.

Note – For more information about automating Solaris installations, refer to *Automating Solaris Installations: A Custom JumpStart Guide* (Kasper/McClellan), a SunSoft Press/Prentice Hall publication.

TABLE 1-4 Additional Entries for Custom JumpStart Installations

If your system is or has	Add the following lines to the profile:
SX Frame Buffer	<code>cluster SUNWCsx</code>
ZX or TurboZX Graphics Accelerator	<code>cluster SUNWCleo</code>
S24 or FSV Frame Buffer	<code>cluster SUNWCtcx</code>
Creator and Creator3D Graphics (including Series 2)	<code>cluster SUNWCffb</code> <code>package SUNWxilvl</code>
Elite3D	<code>cluster SUNWCafb</code> <code>package SUNWafbmn</code> <code>package SUNWxfb</code>
PGX Graphics Frame Buffer	<code>cluster SUNWCm64</code>
SunSwift SBus Adapter	<code>cluster SUNWChmd</code>
SunSwift PCI Adapter	<code>cluster SUNWChmd</code>
SPARCstation 10SX	<code>cluster SUNWCsx</code>
SPARCstation 20	<code>cluster SUNWCsx</code>
Ultra 5 and Ultra 10	<code>package SUNWide</code> <code>package SUNWpci.u</code>
Ultra 60	<code>package SUNWpci.u</code>
Sun Enterprise 250	<code>cluster SUNWCpd</code> <code>cluster SUNWCw250</code>
Ultra 450 and Sun Enterprise 450	<code>cluster SUNWCpd</code>
Sun Enterprise 10000	<code>cluster SUNWC4u1</code>

Solaris 2.6 Hardware: 5/98 on the Sun Enterprise 10000

This chapter includes fresh-install and upgrade instructions for Solaris 2.6 Hardware: 5/98 on the Sun Enterprise 10000.

Caution – If you are installing Solaris 2.6 Hardware: 5/98 on an Enterprise 10000 domain, your system must have SSP 3.1 running on the SSP. SSP 3.0 does not support domains running Solaris 2.6. Please refer to your SSP Media Kit for instructions on how to install the SSP software.

Performing a Fresh-Install

This section contains procedures for performing a fresh-install of Solaris 2.6 Hardware: 5/98 on a host domain. If you have a new Enterprise 10000 or you want to create a new domain, you must perform all of the procedures in this section. If you are installing Solaris 2.6 Hardware: 5/98 on a newly created, existing, or crashed domain, start at “Setting up the SSP as a Boot Server” on page 14.

Creating Additional Domains

Domains other than the one created by the factory require software to be loaded on a bootable disk. The following instructions assume that you have an SSP window open.

Creating the `eeeprom.image` File

You must have the system identification key and the host ID *before* you perform the following instructions. You can obtain the key and ID from your service provider. This key is used to generate an `eeeprom.image` file.

1. Log in to the SSP as the `ssp` user.
2. When prompted for the `SUNW_HOSTNAME` variable, use either the platform name or the name of an existing domain.
3. Create the `eeeprom.image` file:

```
ssp% sys_id -h hostid -k key \  
-f $SSPVAR/.ssp_private/eeeprom_save/eeeprom.image.domain_name
```

Where *hostid* is the number provided with the key in the form of `0X80A66xxx`, *key* is the EEPROM key number, and *domain_name* is the hostname of the domain.

Note – All key and `host_id` numbers are case sensitive and must be entered exactly as they are received.

4. Execute the following `sys_id` command to check the results:

```
ssp% sys_id -d -f $SSPVAR/.ssp_private/eeeprom_save/eeeprom.image.domain_name
```

In the following example, `49933C54C64C858CD4CF` is the *key* and `0x80a66e05` is the *hostid*:

```
sys8ssp% sys_id -h 0x80a66e05 -k 49933C54C64C858CD4CF \  
-f $SSPVAR/.ssp_private/eeeprom_save/eeeprom.image.domain_name  
sys8ssp% sys_id -d -f $SSPVAR/.ssp_private/eeeprom_save/eeeprom.image.domain_name  
  
IDPROM in eeeprom.image.domain_name  
  
          Format = 0x01  
          Machine Type = 0x80  
          Ethernet Address = 0:0:be:a6:6e:5  
          Manufacturing Date = Wed Dec 31 16:00:00 1997  
          Serial number (machine ID) = 0xa66e05  
          Checksum = 0x3f
```

5. **Back up the SSP `eeprom.image` files to tape or disk where they can be accessed in case of an SSP boot-disk failure.**

Creating a New Domain

This section contains instructions for creating a new domain.

1. **Log in to the SSP as the `ssp` user.**

The default password is `ssp`.

2. **When prompted for the `SUNW_HOSTNAME` variable, specify the name of the domain that you wish to create.**

Ensure that the domain name corresponds with the domain in which the operating system is to be installed. Currently, domain names cannot be longer than 14 characters.

3. **Use the `domain_create(1M)` command to create the domain:**

```
ssp% domain_create -d domain_name -b board_numbers -o OS_version -p platform_name
```

Where *domain_name* is the name of the domain used in Step 2, *board_numbers* is a list of all of the system boards to be included in the domain, *OS_version* is the version of the domain's operating system, and *platform_name* is the name of the platform as defined during the SSP package configuration.

Refer to the *Sun Enterprise 10000 SSP 3.1 User's Guide* for additional information.

4. **Check the power to the domain:**

```
ssp% power
```

5. **If the domain is powered off, power on the domain:**

```
ssp% power -on
```

Preparing the SSP for the Fresh-Install

This section contains instructions for preparing the SSP for the fresh-install. The SSP must be set up as an install server by configuring the domain network information, and the SSP must be set up as a boot server.

Configuring the Domain Network Information

1. Log in to the SSP as superuser.
2. Manually edit the `/etc/hosts` file to include the IP address of the new domain(s).

The correct entries would look similar to the following `/etc/hosts` sample:

```
129.153.49.185  tacos
127.0.0.1      localhost
129.153.49.179  snax-ssp vegetables  loghost
129.153.49.181  snax-cb0
129.153.49.182  snax-cb1
129.153.49.180  pizza
129.153.49.183  chips
129.153.49.1   marvin-49
110.0.0.1      vegetables-priv
110.0.0.5      chips-priv
```

The `/etc/hosts` file is actually a link to `./inet/hosts`.



Caution – If the new domain entry follows any other host or SSP entry, the `add_install_client` command may not work in Step 4 in “Setting up the SSP as a Boot Server” on page 14.”

3. Manually edit the `/etc/ethers` file to include the Ethernet address of the new domain(s).

The correct entries would look similar to the following `/etc/ethers` sample:

```
8:0:20:87:58:a5      snax-ssp vegetables
0:0:be:01:00:1e      snax-cb0
0:0:be:01:00:57      snax-cb1
0:0:be:a6:50:2f      pizza
0:0:be:a6:6f:19      chips-priv
0:0:be:a6:6f:23      nachos
0:0:be:a6:6f:2a      tacos
```

Setting up the SSP as a Boot Server

Perform these instructions for each domain on which the Solaris operating environment will be installed.

1. **Insert the Solaris CD disk.**

After inserting the CD, wait about one minute for the Volume Manager to mount the CD-ROM.

2. **Log in to the SSP as superuser if you skipped the previous section.**

3. **Change to the `Tools` directory:**

```
ssp# cd /cdrom/cdrom0/s0/Solaris_2.6/Tools
```

4. **Set up the host domain as an install client:**

```
ssp# ./add_install_client domain_name sun4u1
```

5. **Exit the superuser level.**

Installing Solaris 2.6 Hardware: 5/98

If a domain's boot disk has crashed and suitable backup files do not exist or if the disk partition is to be changed, you must perform the instructions in this section. These instructions assume that you have an SSP window open.

You can use these instructions to upgrade the Solaris operating environment without saving any previous files. For upgrades that preserve existing files and disk partitions, see "Performing an Upgrade" on page 31.

During the installation, you will use the `suninstall` utility, which has its own instructions. The following instructions are Enterprise 10000-specific. For more information about the `suninstall` utility, refer to the *Installation Instructions for Solaris 2.6 (SPARC Platform Edition) AnswerBook*.

1. **Ensure that `SUNW_HOSTNAME` is set to the proper domain name.**

If the `SUNW_HOSTNAME` variable is not set to the proper domain name, use the `domain_switch(1M)` command, as in the following example.

```
ssp% domain_switch domain_name
```

2. Check for blacklisted components.

If SBus boards have been newly added to a system board, confirm that the processors on those system boards are not blacklisted. Processors are blacklisted at the factory when a system board does not have any SBus cards installed.

During the bring-up process, observe the list of blacklisted components. Alternatively, to retrieve the blacklist file, refer to the `blacklist(1M)` man page.

Blacklisted processors will need to be removed from the blacklist prior to creating a domain that would include those processors.

For instance, you want to create a domain using system boards 14 and 15. Each board in this domain will have an SBus SOC (disk) and hme (network) controller. However, when you check the blacklist at `$$SSPVAR/etc/starfire1/blacklist`, you discover that system boards 14 and 15 have processors on the blacklist, as in the following example.

```
ssp% more $$SSPVAR/etc/starfire1/blacklist
pc 2.2 3.2 5.2 6.2 7.2 10.2 11.2 12.2 13.2 14.2 15.2
```

To remove the processors on system boards 14 and 15 from the blacklist, edit the `$$SSPVAR/etc/starfire1/blacklist` file and remove 14.2 and 15.2 from the `pc` line.

3. Bring up the domain:

```
ssp% bringup -A off
```

If this is the first domain to be brought up, you will be prompted to configure the centerplane. Type `y` to confirm.

```
This bringup will configure the Centerplane. Please confirm (y/n)? y
```

After a few minutes the SSP prompt is displayed.

4. In an SSP window, open a `netcon(1M)` session:

```
ssp% netcon
```

After a few minutes the `ok` prompt is displayed.

5. Check for duplicate devaliases entries in OBP.

The `suninstall` utility may not work properly if you have defined duplicate devaliases in OBP. Use the `devalias` command to check the aliases. The output may resemble the following example.

```
ok devalias
net          /sbus@41,0/qec@0,20000/qe@1,0
ttya        /ssp-serial
ssa_b_example /sbus@40,0/SUNW,soc@0,0/SUNW,pln@b0000000,XXXXXX/SUNW,ssd@0,0:a
ssa_a_example /sbus@40,0/SUNW,soc@0,0/SUNW,pln@a0000000,XXXXXX/SUNW,ssd@0,0:a
isp_example  /sbus@40,0/QLGC,isp@0,10000/sd@0,0
net_example  /sbus@40,0/qec@0,20000/qe@0,0
net          /sbus@41,0/qec@0,20000/qe@0,0
ok
```

Note – If any devaliases are defined twice (“net” is defined twice in the above example), you should remove the extra devalias entries.

6. If any duplicate entries exist in the devalias file, remove them.

The following example removes the last created net devalias. You may have to issue a second `nvunalias` command if the second net alias is the incorrect one. Then issue an `nvalias` command to create the correct net device alias.

```
ok nvunalias net
```

7. If an alias does not exist for the network interface that is on the same subnet as the SSP, you can create one by typing a command similar to the following example:

```
ok nvalias net /sbus@41,0/SUNW,hme@0,8c00000
```

Where `/sbus@41,0` refers to system board 0 and SBus 1. The `/SUNW,hme@0` portion of the device name defines a 100 Base-T network interface installed in Slot 0. Your configuration will vary.

TABLE 2-1 contains the SBus numbers that are used in the `devalias` file.

TABLE 2-1 SBus Numbers in the `devalias` File

system board	sysio 0	sysio 1	system board	sysio 0	sysio 1
0	/sbus@40	/sbus@41	8	/sbus@60	/sbus@61
1	/sbus@44	/sbus@45	9	/sbus@64	/sbus@65
2	/sbus@48	/sbus@49	10	/sbus@68	/sbus@69
3	/sbus@4c	/sbus@4d	11	/sbus@6c	/sbus@6d
4	/sbus@50	/sbus@51	12	/sbus@70	/sbus@71
5	/sbus@54	/sbus@55	13	/sbus@74	/sbus@75
6	/sbus@58	/sbus@59	14	/sbus@78	/sbus@79
7	/sbus@5c	/sbus@5d	15	/sbus@7c	/sbus@7d

The OBP command `watch-net-all` displays the functioning network interfaces.



Caution – The next step starts the `suninstall` utility. During the installation, you will be asked to specify the device name of the boot disk. Do not begin the installation until you have the device name.

8. In the `netcon(1M)` window, boot the system from the network:

```
ok boot net
```

Note – You should have an alias (usually `net`) in OBP for the proper network interface. Use that alias with the `boot(1M)` command, as shown in the example above. Otherwise, you must type in a very long path. If you specify an alias (or path) that does not describe the proper network interface, the `boot(1M)` command will fail.

If you chose to install the operating system on a drive other than the one designated as the bootdrive, the `suninstall` utility displays a warning message similar to the following:

```
Warning
You have an invalid disk configuration because of the condition(s)
displayed in the window below. Errors should be fixed to ensure a
successful installation. Warnings can be ignored without causing
the installation to fail.

> To go back and fix errors or warnings, select Cancel.
> To accept the error conditions or warnings and continue with the
installation, select Continue.

WARNING: The boot disk is not selected or does not have a "/" mount
point (c0t3d0)
```

You can safely ignore this warning and press F2 to continue.

The `boot net` command starts the `suninstall` utility. This utility prompts you to provide site and platform-specific information. Refer to the following table for the platform-specific information you may need to supply. If you have questions about the `suninstall` utility, refer to the *Installation Instructions for Solaris 2.6 (SPARC Platform Edition)* in your media kit.

TABLE 2-2 Platform-Specific Information for the `suninstall` Utility

If you are asked this	Do this
Set the network information	Select the appropriate level of information you want to provide. If you select any option other than <code>None</code> , the <code>suninstall</code> utility displays a series of dialogs that request configuration information. Provide that information.
Select an installation option	Select <code>Initial</code> for fresh-install.
Select software	Select <code>Entire Distribution plus OEM Support</code> .

TABLE 2-2 Platform-Specific Information for the `suninstall` Utility (Continued)

If you are asked this	Do this
Select disks	Select the disk(s) on which the software is to be installed. If you choose a drive other than the one designated as the bootdrive, a warning message appears later in the installation process. At that point, you can choose whether to continue, or not.
Select file system layout options	Select <code>manual</code> and <code>customize</code> as the file system layout options. The <code>suninstall</code> utility enables you to customize the root disk by specifying disk partitions. Use TABLE 2-3 on page 21 in “Customizing the File System” on page 20 as a guide.
Determine if the domain should be mounted as a remote file system	Press F4 if file systems are to be mounted from a remote file server. Press F2 if they are not.
Reboot after installation	Select <code>manual</code> <code>reboot</code> and press F2 to begin the installation. This step, which installs the software and the patches from the Solaris release CD, takes many minutes to complete. When the install ends successfully, the superuser prompt is displayed in the domain's <code>netcon</code> Console window.

Customizing the File System

Two disks are necessary if you are installing on disks smaller than 2-Gbytes. If two disks are used, `/` and `/usr` must be on the device specified in the OBP boot alias.

Sun Microsystems suggests that you use the following minimum sizes (TABLE 2-3) for your disk partitions.

TABLE 2-3 Minimum Partition Sizes

Partition	2.1-Gbyte Disk	4.2-Gbyte Disk	9.0-Gbyte Disk	
0 /	64-Mbyte	128-Mbyte	512-Mbyte	(minimum recommended size)
1 swap	512-Mbyte	512-Mbyte	512-Mbyte	
2 overlap				Actual total disk size
3 /var	512-Mbyte	512-Mbyte	512-Mbyte	
4	2-Mbyte	2-Mbyte	2-Mbyte	This slice must be reserved for the Alternate Pathing and Solstice DiskSuite products. Otherwise, subsequent Alternate Pathing installations will overwrite the operating system.
5 /opt	425-Mbyte	425-Mbyte	425-Mbyte	This may be larger depending upon remaining space.
6 /usr	512-Mbyte	512-Mbyte	512-Mbyte	Asian-language users may need more space here.

Use the Tab key to move the cursor, and use the keyboard to type the size for each partition. Press F2 when you are done.

Note – For systems with a large Volume Manager configuration (100 disks or more), the size of the `root` file system should be increased above the 64-Mbyte and 128-Mbyte recommended sizes. Sizes of approximately 256-Mbyte to 512-Mbyte are recommended to allow for additional space, which will be required for device name entries.

Use TABLE 2-4 to record the actual disk partitions.

TABLE 2-4 Disk Partition Form

Domain Name: _____		Domain Name: _____	
Boot Disk: _____		Boot Disk: _____	
	Partition Name	Size	
0	_____	_____	0
1	_____	_____	1
2	_____	_____	2
3	_____	_____	3
4	_____	_____	4
5	_____	_____	5
6	_____	_____	6
Domain Name: _____		Domain Name: _____	
Boot Disk: _____		Boot Disk: _____	
	Partition Name	Size	
0	_____	_____	0
1	_____	_____	1
2	_____	_____	2
3	_____	_____	3
4	_____	_____	4
5	_____	_____	5
6	_____	_____	6

TABLE 2-4 Disk Partition Form (Continued)

Domain Name: _____		Domain Name: _____	
Boot Disk: _____		Boot Disk: _____	
	Partition Name	Size	
0	_____	_____	0
1	_____	_____	1
2	_____	_____	2
3	_____	_____	3
4	_____	_____	4
5	_____	_____	5
6	_____	_____	6
Domain Name: _____		Domain Name: _____	
Boot Disk: _____		Boot Disk: _____	
	Partition Name	Size	
0	_____	_____	0
1	_____	_____	1
2	_____	_____	2
3	_____	_____	3
4	_____	_____	4
5	_____	_____	5
6	_____	_____	6

Note – Return to TABLE 2-2 on page 19 to continue the `suninstall` installation information.

Configuring the Solaris Operating Environment

1. After the operating system is loaded and the superuser prompt is displayed, list the `devices` entry for your boot disk:

```
# ls -l /dev/dsk/root_partition_device
```

where `root_partition_device` is in the form `cxtxdxsx`.

2. Copy the part of the string that begins with either `/sbus` or `/pci`.

Example:

```
/sbus@65,0/SUNW,fas@1,8800000/sd@3,0:a.
```

Record your string here:

/

3. Shutdown the domain from the `netcon(1M)` window:

```
# init 0
```

4. In the `netcon(1M)` window, assign the string to an alias:

```
ok nvalias bootdisk_name /sbus@48,0/SUNW,soc@0,0/SUNW,pln@a000000,78ca3b/ssd@0,0:a
```

From Step 2

As in this example, the `nvalias` command should be entered on a single line.

5. Set up the default boot device:

```
ok setenv boot-device bootdisk_name
```

6. In an SSP window, verify that the `SUNW_HOSTNAME` variable is set to the proper domain name.

If `SUNW_HOSTNAME` is not set to the proper domain name, use `domain_switch(1M)` to change the value.

7. Bring up the domain:

```
ssp% bringup -A on
```

If this is the first domain to be brought up, you will be prompted to configure the centerplane. Type **y** to confirm.

```
This bringup will configure the Centerplane. Please confirm (y/n)? y
```

8. Change to the Tools directory:

```
ssp# cd /cdrom/cdrom0/s0/Solaris_2.6/Tools
```

9. Remove the host domain as an install client:

```
ssp# ./rm_install_client domain_name
```

10. Remove the Solaris CD from the CD-ROM drive:

```
ssp# cd /  
ssp# unshare /cdrom/cdrom0/s0  
ssp# eject cdrom
```

11. When the system reboots, from the netcon(1M) window, type the superuser password then re-enter the superuser password when prompted:

```
Root password: password  
Please re-enter your root password: password
```

Your entry will become the new superuser (root) password for the domain.

12. Respond to the prompts for Solaris configuration information.

You may be asked for the following items:

- Name service (such as none, NIS, NIS+)
- Net domain name (answer **yes** to subnet question)
- Net domain mask
- Server selection (usually automatic)
- Timezone
- Time

13. Enter the hostname and IP address of the SSP.

The `ssp-config` command displays a possible default hostname of the SSP. If it is correct, press Return. Otherwise, type the correct SSP hostname:

```
Please enter hostname of SSP for Enterprise 10000_host [name-ssp]: namessp
```

The `ssp-config` command automatically tries to determine the IP address of the SSP. If it can, it prompts you to verify it; otherwise, it prompts you to enter it.

14. Verify or type the IP address of the SSP:

```
SSP Host Name: ssp_hostname  
SSP IP Address: nnn.nnn.nn.nn  
  
Is this correct (y or n): y
```

15. Enable `savecore` by editing the `/etc/init.d/sysetup` file to uncomment the `savecore setup`.

Installing the SMCC Supplement Software Packages

You should install the supplement packages as needed from the SMCC Supplement CD.

1. Insert the SMCC Supplement CD.
2. Change to the SSP patches directory and install the SSP 3.1 `libdr` patch.

```
ssp# cd /cdrom/supp_sol_2_6_598_smcc/Patches/105682-03  
ssp# ./installpatch .
```

3. Log in as superuser on the SSP and share the CD-ROM:

```
ssp# share -F nfs -o ro /cdrom/cdrom0
```

4. Log in as superuser in the `netcon(1M)` window.

5. Mount the /cdrom directory and add the SMCC packages:

```
# mkdir /cdrom
# mount ssp_name:/cdrom/cdrom0 /cdrom
# cd /cdrom/Product
# pkgadd -d . SUNWuesab SUNWehea SUNWeman SUNWabhdw
```

Note – Perform this step only for those domains in which you want to use the AnswerBook files, the Enterprise 10000 header files, and the man pages.

In Solaris 2.6, the SUNWxntp package has been replaced by the SUNWntp package, which is installed by the suninstall utility.

The pkgadd(1M) command may 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**.

This will install the following packages (TABLE 2-5):

TABLE 2-5 SMCC Supplemental Packages

Includes Cluster/Package	Description
SUNWuesab	Enterprise 10000 Servers AnswerBook
SUNWehea	Header file extensions
SUNWeman	Enterprise 10000 online manual pages
SUNWabhdw	SMCC hardware AnswerBook

6. If needed, add the Online Validation Test Suite Software (SunVTS™):

```
# pkgadd -d . SUNWvts SUNWvtsmn
```

The SUNWCvts cluster includes the following packages (TABLE 2-6):

TABLE 2-6 SunVTS Software Cluster/Packages

Cluster Name	Includes Cluster/Package	Name	Description
SUNWCvts			SunVTS Cluster
	SUNWvts	Online Validation Test Suite	SunVTS kernel, user interface tests, and tools
	SUNWvtsmn	Online Validation Test Suite Manual Pages	Manual pages for SunVTS utilities and binaries

If you need more information about the SunVTS software, refer to *SunVTS 2.1 User's Guide*.

Note – If you have Sun StorEdge A3000 devices (formerly known as the RSM Array 2000), you must install patch T106249-01. Please contact your service representative to obtain a copy of this patch.

7. If necessary, install and configure the Sun™ Enterprise Volume Manager™ software.

If you need more information about the Sun Enterprise Volume Manager, refer to the *Solaris 2.6 Hardware: 5/98 on Sun Hardware AnswerBook*.

8. If needed, install and configure the preloaded Sun™ Enterprise NetBackup™ software.

The Enterprise NetBackup product has been included with your system. To configure and customize the software to your requirements, refer to the *Sun Enterprise NetBackup and Media Manager Installation Guide*.

9. After the installation is complete, adjust the ntp configuration for your local network.

If you need more information about ntp, refer first to the *SMCC Release Notes Supplement Solaris 2.6 Hardware: 5/98*, then refer to the *Network Time Protocol User's Guide* or to the ntp(1M) man page.

Note – If you plan to install AP 2.1, refer to Chapter 4 “Alternate Pathing 2.1 on Sun Enterprise Servers” now before you remove the SMCC Supplement CD. If you are not planning to install AP 2.1, complete the remaining steps in this section.

10. In the `netcon(1M)` window, unmount the CD:

```
# cd /  
# umount /cdrom
```

11. Log in to the SSP as superuser and remove the SMCC CD from the CD-ROM drive:

```
ssp# cd /  
ssp# unshare /cdrom/cdrom0  
ssp# eject cdrom
```

12. Install and configure any other purchased software packages.
13. Reboot the domain by using the `reboot(1M)` command.

Licensing Your Software

The Enterprise 10000's domain feature requires different approaches to software licensing when compared to systems that cannot be logically partitioned.

FLEXlm-Based Licensing

License management (the license server) is normally tied to a machine host ID. On an Enterprise 10000 system, the license server is tied to the domain host ID. Each domain receives its own domain host ID.

Therefore, if licensing is installed on an Enterprise 10000 system, it must be installed in a domain that will not be removed. Adding or removing processors from the domain will not affect licensing, as long as the domain always has at least one active processor.

If licensing ever needs to be moved from one domain to another, the licenses will need to be regenerated using the new domain host ID. This is identical to the situation when moving the license server from one machine to another. This process is called a *server move*; contact the Sun License Center to request a *server move*.

For more licensing information, use the following Sun License Center URL:

- <http://www.sun.com/licensing>

To obtain the Enterprise 10000 system domain host ID, type `hostid` in a shell window.

SunSoft Software Licensing

The specific SunSoft™ software package being installed provides SunSoft's suggestions on how to go about licensing software on the Enterprise 10000 system. However, every software package within SunSoft is unique with respect to the business terms of their software licensing policy on the Enterprise 10000 system. Each SunSoft software product should have its licensing policy in the price book. If you are unsure how to license SunSoft software, contact the SunSoft product manager for that product directly.

SMCC Storage Management Software Licensing

If you have software licensing issues with storage management software products contact the product manager. These products include Veritas Volume Manager, Veritas Filesystem, and Sun Enterprise Netbackup.

Third-Party Software Licensing

Third-party software vendors also have unique software licensing policies on the Enterprise 10000 system. All major independent service providers have been notified and should have software policies in place. For additional information, contact your service provider.

Performing an Upgrade

This section includes upgrade instructions for Solaris 2.6 Hardware: 5/98 on a host domain. These upgrade instructions are intended only for the Sun Enterprise 10000 server.

Note – You should read this entire section before you attempt to upgrade the domain. The beginning sections contain important information for getting ready to upgrade the domain.

These procedures explain how to upgrade the operating system while preserving existing data and file structures. To install the Solaris operating environment without preserving existing files and disk partitions, see “Performing a Fresh-Install” on page 11.



Caution – If you are installing Solaris 2.6 Hardware: 5/98 on an Enterprise 10000 domain, the SSP must be running SSP 3.1. SSP 3.0 does not support Solaris 2.6. Please refer to your SSP Media Kit for instructions on how to install the SSP software.

Backing Up Your Domain

Always back up an existing domain before you use the `upgrade` option in the `suninstall` utility. The safest backup to perform is a level 0 dump of all of the file systems connected to the domain being upgraded. If you do not have an established backup procedure, see the *System Administration Guide*.



Caution – In Solaris 2.5 and later, the kernel resides in `/platform/arch/kernel/unix`, not in `/kernel/unix`. If you override the boot file location by explicitly setting it to `/kernel/unix`, you can successfully install the Solaris software, but you will not be able to boot the domain.

Using the Upgrade Option

The `Upgrade` option in the `suninstall` utility determines how the Solaris software is copied to the disk. It merges the new version of the Solaris software with the existing files on the domain’s disk, saving as many local modifications as possible.

Note – The `upgrade` option may require deleting software packages if the disk is full; this requires knowledge of packages and dependencies.

Upgrading Installed Patches

You do not need to back out installed patches before you perform the upgrade.

Checking Other Software Documentation

Check the documentation of other software you are running, such as any disk volume managers, before you use the `upgrade` option. There may be additional instructions you need to follow to preserve existing configurations.

Upgrading Important Files

The following files must be present on stand-alone systems, servers, and each diskless client being upgraded:

- `/var/sadm/softinfo/INST_RELEASE`
- `/var/sadm/install/contents`
- `/var/sadm/system/admin/.clustertoc`
- `/var/sadm/system/admin/CLUSTER`

Preserving Local Modifications

During an upgrade, the `suninstall` utility attempts to preserve local modifications to the server whenever possible; however, sometimes local modifications can make an upgrade fail or perform differently than you would expect. TABLE 2-7 includes tasks you should perform before you upgrade the domain.

TABLE 2-7 Upgrading Tasks

What to Do Before Upgrading	How to	Why
Preserve symbolic links	<p>Replace symbolic links that use absolute paths with symbolic links that use relative paths.</p> <p>For example, if <code>/usr/openwin</code> is a symbolic link to</p> <pre>/export/openwin</pre> <p>change the symbolic link to</p> <pre>../export/openwin</pre>	<p>During an upgrade, the <code>suninstall</code> utility cannot reference symbolic links that use absolute paths because the Solaris installation program mounts the root (<code>/</code>) file system at <code>/a</code>. For example, a symbolic link to <code>/export/openwin</code> would fail because during an upgrade, <code>/export/openwin</code> is really <code>/a/export/openwin</code>.</p> <p>When the <code>suninstall</code> utility cannot reference a symbolic link, it will overwrite the symbolic link and install the software (the installation program doesn't think the software exists). As a result, duplicate software will be installed, and the upgrade may fail because of insufficient disk space.</p>
Preserve symbolic links to automounted file systems	<p>Remove packages (by using Software Manager or the <code>pkgrm(1M)</code> command) that will create files or directories currently automounted.</p>	<p>The automounter is not active during an upgrade, so the <code>suninstall</code> utility installs any package's files or directories that are symbolic links to automounted file systems. If a symbolic link is overwritten, the upgrade may fail because of insufficient disk space.</p> <p>(If you cannot remove a package, you can replace the symbolic link after the upgrade is completed.)</p> <p>Note: The <code>/var/mail</code> and <code>/var/news</code> directories, which usually reside on an automounted file system, are not affected by an upgrade.</p>
Prevent unneeded file systems from being mounted	<p>In the <code>/etc/vfstab</code> file, comment out file systems that you do not want mounted during the upgrade.</p>	<p>During an upgrade, the <code>suninstall</code> utility attempts to mount all of the file systems listed in the <code>/etc/vfstab</code> file on the root file system being upgraded. If the Solaris installation program cannot mount a file system, it reports the failure and exits.</p>

Preparing the SSP for the Upgrade

This section contains instructions for preparing the SSP for the upgrade. For existing systems, the SSP should already be configured as an install server; therefore, you will only check to ensure that the information is correct. The SSP must also be set up as a boot server for all Enterprise 10000 domains.

Checking the Domain Network Information

For existing machines, the SSP should already be configured as an install server; however, to ensure that the information is correct, perform the following steps.

1. **Log in to the SSP as superuser.**
2. **Ensure that the Enterprise 10000 host name and host-name IP address are correct in the `/etc/hosts` file.**
3. **Ensure that the Enterprise 10000 host name and Ethernet address are correct in the `/etc/ethers` file.**

Setting up the SSP as a Boot Server

Perform this procedure for each domain on which the Solaris operating environment will be loaded.

1. **Insert the Solaris CD disk.**
The Volume Manager takes about one minute to mount the CD-ROM.
2. **Log in to the SSP as superuser if you skipped the previous section.**
3. **Change to the `Tools` directory:**

```
ssp# cd /cdrom/cdrom0/s0/Solaris_2.6/Tools
```

4. **Set up the host domain as an install client:**

```
ssp# ./add_install_client domain_name sun4u1
```

5. **Exit the superuser level.**

Preparing the Domain

The section contains instructions for preparing the domain to be upgraded to Solaris 2.6 Hardware: 5/98. You must perform the following instructions before you attempt the upgrade.

1. Log in to each domain as superuser and backup the domain.

Using `ufsdump(1M)`, backup all operating-system file systems.

2. Comment out all file systems in the `/etc/vfstab` file except `/`, `/usr`, `/export`, `/var`, `/opt`, `/proc`, `/dev/fd`, `/tmp`, and `swap`.

Note – AP 2.0 is not supported by Solaris 2.6 Hardware: 5/98; therefore, if you have AP 2.0 installed, but you are not upgrading to AP 2.1, you must convert all of the AP metadevices to physical devices. Refer to the *Sun Enterprise Server Alternate Pathing User's Guide* for more information on how to convert metadevices.

3. Comment out all swap partitions that are not on the same controller as the root disk.

During an upgrade, the `suninstall` utility attempts to mount all file systems listed in the `/etc/vfstab` file on the root file system being upgraded. If the `suninstall` utility cannot mount a file system, it reports the failure and exits.

4. If any file systems shown in the `/etc/vfstab` file are metadevices (for example, mirrored, striped, concatenated) for Solstice DiskSuite, Veritas, or Alternate Pathing and have not already been commented out, reconfigure them as non-metadevices for the upgrade.

This step is necessary because the `suninstall` utility cannot handle metadevices. For more information about these products, refer to their respective user's guides.



Caution – Make certain that all metadevices are commented out. If any are not, the upgrade will fail.

5. Save all of the information regarding pathgroups (for example, `apconfig -S` and `apconfig -N`) for later retrieval.

6. Convert any metanetwork to a physical network device.

7. Use the `apboot(1M)` command to convert the AP boot device to a physical device.

8. Reboot the domain:

```
domain_name# init 6
```

9. Remove all of the AP databases.
10. Kill the `ap_daemon` process.
11. Remove all of the AP packages from the domain by using the `pkgrm(1M)` command.
You should remove the following packages from the domain:
 - `SUNWapu`
 - `SUNWapr`
 - `SUNWapdoc`
12. Remove the `SUNWxntp` packages by using the `pkgrm(1M)` command.
13. Shut down the domain before you begin the upgrade:

```
# cd /  
# lockfs -fa1  
# shutdown -i0 -g60 -y
```

1. The `lockfs -fa` command is unnecessary when running 2.5.1 kernel update 103640-12, or later.

14. Log in to the SSP as superuser and remove the `SUNWapssp` package by using the `pkgrm(1M)` command.

Upgrading the Solaris Operating Environment

The steps that follow modify the `suninstall` procedures. For more information, refer to *Installation Instructions for Solaris 2.6 (SPARC Platform Edition) AnswerBook*.

1. In an SSP window, ensure that the `SUNW_HOSTNAME` variable is set to the proper domain name.

If the variable does not have the correct value, use the `domain_switch(1M)` command to set the variable to the proper value.

2. Bring up the domain:

```
ssp% bringup -A off
```

If this is the first domain to be brought up, you will be prompted to configure the centerplane. Type **y** to confirm:

```
This bringup will configure the Centerplane. Please confirm (y/n)? y
```

After a few minutes the SSP prompt is displayed.

3. At the ssp prompt, open a netcon(1M) session:

```
ssp% netcon
```

After a few minutes the ok prompt is displayed.

4. Check for duplicate devalias entries in OBP.

The suninstall utility may not work properly if you have defined duplicate devalias in OBP. Use the devalias command to check the aliases. The output may resemble the following example.

```
ok devalias
net          /sbus@41,0/qec@0,20000/qe@1,0
ttya        /ssp-serial
ssa_b_example /sbus@40,0/SUNW,soc@0,0/SUNW,pln@b0000000,XXXXXX/SUNW,ssd@0,0:a
ssa_a_example /sbus@40,0/SUNW,soc@0,0/SUNW,pln@a0000000,XXXXXX/SUNW,ssd@0,0:a
isp_example  /sbus@40,0/QLGC,isp@0,10000/sd@0,0
net_example  /sbus@40,0/qec@0,20000/qe@0,0
net          /sbus@41,0/qec@0,20000/qe@0,0
ok
```

Note – If any devalias are defined twice (for example, “net” is defined twice in the above example), you should remove the extra devalias entries.

5. If any duplicate entries exist in the `devalias` file, remove them.

The following example removes the last created `net` `devalias`. You may have to issue a second `nvunalias` command if the second `net` alias is the incorrect one. Then issue an `nvalias` command to create the correct `net` device alias.

```
ok nvunalias net
```

6. If an alias does not exist for the network interface that is on the same subnet as the SSP, you can create one by typing a command similar to the following example:

```
ok nvalias net /sbus@41,0/SUNW,hme@0,8c00000
```

Where `/sbus@41,0` refers to system board 0 and SBus 1. The `/SUNW,hme@0` portion of the device name defines a 100 Base-T network interface installed in Slot 0. Your configuration will vary.

TABLE 2-8 contains the SBus numbers that are used in the `devalias` file.

TABLE 2-8 Sbus Numbers in the `devalias` File

system board	sysio 0	sysio 1	system board	sysio 0	sysio 1
0	/sbus@40	/sbus@41	8	/sbus@60	/sbus@61
1	/sbus@44	/sbus@45	9	/sbus@64	/sbus@65
2	/sbus@48	/sbus@49	10	/sbus@68	/sbus@69
3	/sbus@4c	/sbus@4d	11	/sbus@6c	/sbus@6d
4	/sbus@50	/sbus@51	12	/sbus@70	/sbus@71
5	/sbus@54	/sbus@55	13	/sbus@74	/sbus@75
6	/sbus@58	/sbus@59	14	/sbus@78	/sbus@79
7	/sbus@5c	/sbus@5d	15	/sbus@7c	/sbus@7d

The OBP command `watch-net-all` displays the functioning network interfaces.



Caution – The next step starts the `suninstall` utility. During the installation, you will be asked to specify the device name of the boot disk. Do not begin the installation until you have the device name.

7. In the `netcon(1M)` window, boot the system from the network:

```
ok boot net
```

Note – You should have an alias (usually `net`) in OBP for the proper network interface. Use that alias with the `boot(1M)` command, as shown in the example above. Otherwise, you must type in a very long path. If you specify an alias (or path) that does not describe the proper network interface, the `boot(1M)` command will fail.

The `boot net` command starts the `suninstall` utility. This utility prompts you to provide site and platform-specific information. Refer to the following table for the platform-specific information you may need to supply. If you have questions about the `suninstall` utility, please refer to the *Installation Instructions for Solaris 2.6 (SPARC Platform Edition)* in your media kit.

TABLE 2-9 Platform-Specific Information for the `suninstall` Utility

If you are asked this	Do this
Set the network information	Select the appropriate level of information you want to provide. If you select any option other than <code>None</code> , the <code>suninstall</code> utility displays a series of dialogs that request configuration information. Provide that information.
Select an installation option	Select <code>Upgrade</code> .
Select software	Select <code>Entire Distribution plus OEM Support</code> .
Select disks	Select the disk(s) on which the software is to be installed. If you choose a drive other than the one designated as the bootdrive, a warning message appears later in the installation process. At that point, you can choose whether to continue, or not.
Determine if the domain should be mounted as a remote file system	Press <code>F4</code> if file systems are to be mounted from a remote file server. Press <code>F2</code> if they are not.
Select post installation option (manual reboot)	Select <code>manual reboot</code> and press <code>F2</code> to begin the installation. This step, which installs the software and the patches on the Solaris release CD, takes many minutes to complete. When the installation is complete, the <code>suninstall</code> utility does not reboot the domain if you select <code>manual reboot</code> . The Enterprise 10000 host displays the superuser prompt in the <code>netcon(1M)</code> window. Do <i>not</i> use the <code>reboot(1M)</code> command to shut down the domain.

8. Shutdown the domain from the superuser prompt:

```
# init 0
```

9. Remove the Solaris 2.x domain you just upgraded:

```
ssp% domain_remove -d domain_name
```

Answer *y* when prompted to save the directories.

10. Re-create the domain with the new OS version number:

```
ssp% domain_create -d domain_name -o 2.6
```

11. Bring up the domain:

```
ssp% bringup -A on
```

Note – This step assumes that you are upgrading the boot disk that is defined in the boot-device OBP variable. If you are upgrading a different boot disk, you must supply the device's alias as an argument to the command.

12. Change to the `Tools` directory:

```
ssp# cd /cdrom/cdrom0/s0/Solaris_2.6/Tools
```

13. Remove the host domain as an install client:

```
ssp# ./rm_install_client domain_name
```

14. If you are done with the upgrade, remove the Solaris 2.6 Hardware: 5/98 CD:

```
ssp# cd /  
ssp# unshare /cdrom/cdrom0/s0  
ssp# eject cdrom
```

Upgrading the SMCC Supplement Packages

You should upgrade any supplement packages your system needs from the SMCC Supplement CD at this point in the upgrade process.

1. Insert the SMCC Supplement CD.
2. Change to the SSP patches directory and install the SSP 3.1 `libdr` patch.

```
ssp# cd /cdrom/cdrom0/Patches/105682-03
ssp# ./installpatch .
```

3. Log in to the SSP as superuser and share the CD-ROM:

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

4. Mount the `/cdrom` directory and add the SMCC packages:

```
# mkdir /cdrom [if it does not already exist]
# mount ssp_name:/cdrom/cdrom0 /cdrom
# cd /cdrom/Product
# pkgadd -d . SUNWuesab SUNWehea SUNWeman SUNWabhdw
```

Note – Perform this step only for those domains in which you want to use the AnswerBook files, the Enterprise 10000 header files, and the man pages.

In Solaris 2.6, the `SUNWxntp` package is replaced by the `SUNWntp` package, which is installed by the `suninstall` utility.

The `pkgadd(1M)` command may 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**.

This will install the following packages (TABLE 2-10):

TABLE 2-10 SMCC Supplemental Packages

Includes Cluster/Package	Description
SUNWuesab	Enterprise 10000 Servers AnswerBook
SUNWehea	Header file extensions
SUNWeman	Enterprise 10000 online manual pages
SUNWabhdw	SMCC hardware AnswerBook

5. If needed, add the Online Validation Test Suite Software (SunVTS):

```
# pkgadd -d . SUNWvts SUNWvtsmn
```

The `SUNWCvts` cluster includes the following packages (TABLE 2-11):

TABLE 2-11 SunVTS Software Cluster/Packages

Cluster Name	Includes Cluster/Package	Name	Description
SUNWCvts			SunVTS Cluster
	SUNWvts	Online Validation Test Suite	SunVTS kernel, user interface tests, and tools
	SUNWvtsmn	Online Validation Test Suite Manual Pages	Manual pages for SunVTS utilities and binaries

If you need more information about SunVTS, refer to the *SunVTS 2.1 User's Guide*.

Note – If you have Sun StorEdge A3000 devices (formerly known as the RSM Array 2000), you must install patch T106249-01. Please contact your service representative to obtain a copy of this patch.

6. If necessary, install and configure the Sun Enterprise Volume Manager software.

If you need more information about Sun Enterprise Volume Manager, refer to the *Solaris 2.6 Hardware: 5/98 on Sun Hardware AnswerBook*.

7. If needed, install and configure the preloaded Sun Enterprise NetBackup software.

The Enterprise NetBackup product has been included with your system. To configure and customize the software to your requirements, refer to the *Sun Enterprise NetBackup and Media Manager Installation Guide*.

8. After the installation is complete, adjust the `ntp` configuration for your local network.

If you need more information about `ntp`, refer first to the *SMCC Release Notes Supplement Solaris 2.6 Hardware: 5/98*, then refer to the *Network Time Protocol User's Guide* or to the `ntp(1M)` man page.

Note – If you plan to install or upgrade to AP 2.1, refer to Chapter 4 “Alternate Pathing 2.1 on Sun Enterprise Servers” now before you remove the SMCC Supplement CD. If you are not planning to upgrade to AP 2.1, complete the remaining steps in this section.

9. In the `netcon(1M)` window, unmount the CD:

```
# cd /  
# umount /cdrom
```

10. Log in to the SSP as superuser.

11. Remove the SMCC CD from the CD-ROM drive:

```
ssp# cd /  
ssp# unshare /cdrom/cdrom0  
ssp# eject cdrom
```

12. Install and configure any other purchased software packages.

13. Uncomment all file systems in the `/etc/vfstab` file that you commented out when you prepared the domain for the upgrade.

14. Uncomment all swap partitions that are not on the same controller as the root disk.

Installing Solaris with the SPARCstorage Array

This chapter describes how to install Solaris 2.6 Hardware: 5/98 software either as a new installation or as an upgrade on systems where the SPARCstorage Array may be used as the boot device.

Note – The installation instructions in this chapter are specific to systems configured with SPARCstorage Arrays.



Caution – The following installation instructions should be performed by an experienced system administrator. Failure to comply with this requirement may result in a loss of data stored on your disks.

Disk Management Software



Caution – If you are currently running Disk Management Software on your system, refer to your Disk Management Software documentation before proceeding with these instructions or you may lose the data on your disks.

SPARCstorage Array Firmware

In the installation and upgrade scenarios below, you will be instructed to check, and if necessary, upgrade the firmware for your SPARCstorage Array(s).

This Solaris 2.6 Hardware: 5/98 software contains SPARCstorage Array firmware revision level 3.12, which is the latest version of firmware for all SPARCstorage Array models (100 and 200 series).

If your SPARCstorage Array(s) has a firmware revision level below 3.12, you must upgrade the firmware revision level to 3.12 as instructed.

If the firmware revision level on your SPARCstorage Array(s) is at a revision level of 3.12 or higher, you do not need to upgrade your firmware.

Installation and Upgrade Scenarios

This chapter is divided into several installation and upgrade scenarios. Refer to Table 2-1 to select the installation or upgrade method that describes your current situation.

Note – Read through the entire scenario before performing any installation or upgrade. A thorough comprehension of the material is necessary to ensure a successful installation

TABLE 3-1 Installation and Upgrade Options

New Installations:	Go to:
New install of Solaris 2.6 Hardware: 5/98 on a SPARCstorage Array disk	“Scenario 1: New Installation of Solaris 2.6 Hardware: 5/98 on Systems Booting from the SPARCstorage Array Disk” on page 47
New install of Solaris 2.6 Hardware: 5/98 on a non-SPARCstorage Array disk	“Scenario 2: New Installation of Solaris 2.6 Hardware: 5/98 on Systems Not Booting from the SPARCstorage Array Disk” on page 52

TABLE 3-1 Installation and Upgrade Options (Continued)

Upgrades:	Go to:
Upgrading to Solaris 2.6 Hardware: 5/98 from: <ul style="list-style-type: none">• Solaris 2.3• Solaris 2.4 Hardware 11/94• Solaris 2.4 Hardware 3/95• Solaris 2.5• Solaris 2.5.1• Solaris 2.6 Hardware: 3/98	“Scenario 3: Upgrading to Solaris 2.6 Hardware: 5/98” on page 53

Scenario 1: New Installation of Solaris 2.6 Hardware: 5/98 on Systems Booting from the SPARCstorage Array Disk

Using the FC/S SBus Card

If the disk that you intend to use as your boot device is on a SPARCstorage Array that is connected to the system through an FC/S SBus card, note that the FC/S SBus card FCode revision level must be at 1.33 or higher to allow booting.

The following FC/S SBus cards are configured from the factory with an FCode revision level of 1.33 or higher:

- 501-2069-07 or higher
- 501-2553-03 or higher

To check the FCode revision level of your FC/S SBus card, refer to “Checking the FCode Level of Your FC/S SBus Card” on page 50.

Using the Onboard FC Ports

If the SPARCstorage Array is connected to the system through an onboard FC port, it is not necessary to check the FCode revision level; these systems come configured from the factory with the minimum FCode revision level to allow booting.

Installing Solaris 2.6 Hardware: 5/98 on a SPARCstorage Array Disk

1. Install the Solaris software environment with the no reboot option.

Refer to Chapter 1, “Installing Software from the Solaris CD” and the *SPARC: Installing Solaris Software manual* for more information.

Note – Keep track of which disk you select as your boot device as you will need this information to set your boot path.



Caution – Do not select the system to reboot at the end of the Solaris installation setup.

2. Determine which level of SPARCstorage Array firmware is in each SPARCstorage Array. Type:

```
# ssaadm display controller
```

where *controller* is the logical controller name of the SPARCstorage Array (for example, *c1*). Look for the line that gives the firmware revision information, similar to the following:

```
Firmware Rev: 3.12
```

3. If the firmware revision is lower than 3.12, download the new firmware. Type:

```
# ssaadm download -f /usr/lib/firmware/ssa/ssafirmware controller
```

4. Set your boot device. Type:

```
# ssaadm set_boot_dev <boot device pathname>
```

Where *<boot device pathname>* is the path to the device you selected as your boot device in step 1. This command is interactive and requires user confirmation before setting the boot path. This command sets the OBP environmental variable *boot device* to the path of the device you selected as the boot device. It is recommended that you create an OBP *devalias* to keep track of the boot path in case of accidental loss.

5. If you need to upgrade your FCode, use the `ssaadm` command:

```
# ssaadm fc_download
```

6. Halt the system. Type:

```
# /usr/sbin/init 0
```

7. If you downloaded new firmware, press the `SYS OK` button on the back of the SPARCstorage Array(s) to reset.

Note – Before booting your system, wait for the SPARCstorage Array to complete POST.

8. Reset and boot your system.

```
ok reset
ok boot
```

Note – You have completed the new installation of Solaris 2.6 Hardware: 5/98. If you would like to install Disk Management Software, refer to your Disk Management Software documentation.

Trouble Booting?

If your system does not boot, check that:

- Your boot-device environmental variable is correctly set to your boot device.
- The FCode revision level is at 1.33 or higher if you are attempting to boot through an FC/S SBus Card. To check the FCode revision level, refer to “Checking the FCode Level of Your FC/S SBus Card” on page 50.

Checking the FCode Level of Your FC/S SBus Card

1. Determine your FCode level. Type the following at the `ok` prompt:

```
ok setenv fcode-debug? true
ok reset
ok show-devs
```

When you type the `show-devs` command, you should see output similar to this:

```
.
.
.
/iommu@0,10000000/sbus@0,10001000/le@1,c00000
/iommu@0,10000000/sbus@0,10001000/SUNW,soc@0,0
/iommu@0,10000000/sbus@0,10001000/ledma@4,8400010
/iommu@0,10000000/sbus@0,10001000/SUNW,bpp@4,c800000
/iommu@0,10000000/sbus@0,10001000/espdma@4,8400000
/iommu@0,10000000/sbus@0,10001000/SUNW,DBRIe@2,10000/mmcodec
/iommu@0,10000000/sbus@0,10001000/SUNW,soc@0,0/SUNW,pln@a0000800,201cac11
/iommu@0,10000000/sbus@0,10001000/SUNW,soc@0,0/SUNW,pln@a0000800,201cac11/SUNW,ssd
```

2. Look at the output from the `show-devs` command and find the lines for the FC/S card(s) that is attached to the SPARCstorage Array that you wish to boot from.

The output for an FC/S card will be the lines containing `soc@x,x` similar to:

```
/iommu@0,10000000/sbus@0,10001000/SUNW,soc@0,0
/iommu@0,10000000/sbus@0,10001000/SUNW,soc@0,0/SUNW,pln@a0000800,201cac11
/iommu@0,10000000/sbus@0,10001000/SUNW,soc@0,0/SUNW,pln@a0000800,201cac11 SUNW,ssd
```

3. To determine which version of FCode is in the FC/S card, type:

```
ok cd short_path
ok sccsid type
1.33 95/04/19
ok device-end
```

where *short_path* is the shortest line containing *soc@x,x* from the output. Using the previous output as an example, you would enter:

```
ok cd /iommu@0,10000000/sbus@0,10001000/SUNW,soc@0,0
ok sccsid type
1.33 95/04/19
ok device-end
```

If the FCode version is not at 1.33 or higher you must upgrade to the minimum FCode level.

Note – You can upgrade your FCode after installing the Solaris 2.6 Hardware: 5/98 software.

The following part numbers refer to the FC/S SBus Cards that contain the minimum FCode revision level to allow booting:

- 501-2069-07 or higher
- 501-2553-03 or higher

4. Reset your OBP environment variable `fcode-debug?`

```
ok setenv fcode-debug? false
ok reset
```

Scenario 2: New Installation of Solaris 2.6 Hardware: 5/98 on Systems Not Booting from the SPARCstorage Array Disk

1. **Install the Solaris software environment with the no reboot option.**

Refer to Chapter 1, “Installing Software from the Solaris CD” and the *SPARC: Installing Solaris Software* manual for more information.



Caution – Do not select the system to reboot at the end of the Solaris installation setup.

2. **Determine which level of SPARCstorage Array firmware is in each SPARCstorage Array. Type:**

```
# ssaadm display controller
```

where *controller* is the logical controller name of the SPARCstorage Array (for example, *c1*). Look for the line that gives the firmware revision information, similar to the following:

```
Firmware Rev: 3.12
```

3. **If the firmware revision is lower than 3.12, download the new firmware. Type:**

```
# ssaadm download -f /usr/lib/firmware/ssa/ssafirmware controller
```

4. **Halt the system. Type:**

```
# /usr/sbin/init 0
```

5. **If you downloaded new firmware, press the SYS OK button on the back of the SPARCstorage Array(s) to reset.**

Note – Before you proceed, wait for the SPARCstorage Array to complete POST.

6. Boot your system. Type:

```
ok boot
```

Note – You have completed the new installation of Solaris 2.6 Hardware: 5/98. If you would like to install Disk Management Software, refer to your Disk Management Software documentation.

Scenario 3: Upgrading to Solaris 2.6 Hardware: 5/98

If you are currently using one of the Solaris releases below and would like to upgrade to Solaris 2.6 Hardware: 5/98, follow the instructions in this section.

- Solaris 2.3
- Solaris 2.4 Hardware 11/94
- Solaris 2.4 Hardware 3/95
- Solaris 2.5
- Solaris 2.5.1
- Solaris 2.5.1 Hardware 11/97
- Solaris 2.6 Hardware: 3/98



Caution – If you are currently running Disk Management Software on your system, DO NOT follow these instructions or you may lose the data on your disks. Refer to your Disk Management Software documentation for instructions.

1. **Type `su` to become superuser.**
2. **Back up the data on your system.**
Refer to the *System Administration Guide, Volume I* for information.
3. **Stop all processes (database or other applications) that are accessing SPARCstorage Array disks except `/`, `swap`, `/usr`, and `/opt`.**
4. **Insert the Solaris 2.6 Hardware: 5/98 CD into the CD-ROM drive, and upgrade your system to Solaris 2.6 Hardware: 5/98.**

Refer to Chapter 3, "Installing Software from the Solaris CD" and the *SPARC: Installing Solaris Software* manual for more information.



Caution – Do not select the system to reboot at the end of the Solaris installation setup.

5. **Determine which level of SPARCstorage Array firmware is in your SPARCstorage Array(s) by entering the following command at the prompt for each SPARCstorage Array:**

```
# ssaadm display controller
```

where *controller* is the logical controller name of the SPARCstorage Array (for example, c1). Look for the line that gives the firmware revision information, similar to the following:

```
Firmware Rev 3.12
```

6. **If the firmware revision is below 3.12, download the new firmware for each SPARCstorage Array:**

```
# ssaadm download -f /usr/lib/firmware/ssa/ssafirmware controller
```

7. **Halt your system. Type:**

```
# /usr/sbin/init 0
```

8. **If you downloaded new firmware, press the SYS OK button on the back of the SPARCstorage Array(s) to reset.**

Note – Before booting your system, wait for the SPARCstorage Array to complete POST.

9. **Boot your system.**

```
ok boot
```

Note – You have completed the new installation of Solaris 2.6 Hardware: 5/98. If you would like to install Disk Management Software, refer to your Disk Management Software documentation.

Alternate Pathing 2.1 on Sun Enterprise Servers

This chapter includes fresh-install and upgrade instructions for Alternate Pathing 2.1. The fresh-install instructions are intended for all Sun Enterprise servers. The upgrade instructions are intended only for the Sun Enterprise 10000 servers.

Performing a Fresh-Install

The instructions in this section apply to all Sun Enterprise servers; however, because the Enterprise 6x00, 5x00, 4x00, and 3x00 servers do not have an SSP, as the Enterprise 10000 does, some of the steps are platform-specific. For those steps, the platform name appears at the beginning of the step. You should perform only those steps that pertain to your platform and skip those steps that pertain to other platforms. Steps without platform names pertain to all Enterprise servers.

The AP 2.1 release includes one package that must be installed on the SSP if you have an Enterprise 10000 and a set of core packages that must be installed on each Sun Enterprise 10000 domain or on the Enterprise 6x00, 5x00, 4x00, or 3x00 server.

The Sun Enterprise 10000 can have up to eight domains, each of which have a different domain name. The Sun Enterprise 6x00, 5x00, 4x00, and 3x00 servers do not have domains. These machines use server names. In the following instructions, references to Enterprise 10000 domains are equivalent to references to Enterprise 6x00, 5x00, 4x00, and 3x00 servers.

Note – The installation instructions in this section assume that you have already installed Solaris 2.6 Hardware: 5/98.

Installation of the packages on the enclosed CD-ROM requires approximately 2.7-Mbytes of disk space on the host domain for the full installation and 37-Kbytes on the SSP. The following table lists the total size of the AP software by file system:

TABLE 4-1 AP Software File-System Sizes

File System	Size
Host:	
/opt	1.23-Mbytes
/usr	158-Kbytes
/	1.3-Mbytes
SSP:	
/opt	37-Kbytes

Perform the following steps to install a fresh copy of AP 2.1.

1. **Log on as superuser.**
 - a. For Enterprise 6x00, 5x00, 4x00, and 3x00 servers, log in to the server as superuser.
 - b. For Enterprise 10000 servers, log in as superuser on the SSP.
2. **Insert the SMCC Supplements CD into the CD-ROM drive if it is not already in the drive.**
 - a. For Enterprise 6x00, 5x00, 4x00, and 3x00 servers, the CD drive is connected to the server.
 - b. For Enterprise 10000 servers, the CD drive is connected to the SSP.

Volume Manager takes about one minute to mount the CD.

3. **For Enterprise 10000 servers, change to the AP 2.1 directory and execute the `pkgadd(1M)` command to add the AP SSP package onto the SSP.**

```
ssp# cd /cdrom/cdrom0/Product
ssp# pkgadd -d . SUNWapssp
```

4. **Start the `ap_ssp_daemon`:**

```
ssp# init q
```

5. For Enterprise 10000 servers, execute the following `share` command on the SSP to make the CD-ROM usable across the net:

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

6. For Enterprise 10000 servers, log in as superuser on the domain.
7. For Enterprise 10000 servers, create and mount the `/cdrom` directory:

```
domain_name# mkdir /cdrom [if it does not already exist]
domain_name# mount ssp_hostname:/cdrom/cdrom0 /cdrom
```

8. Install the AP 2.1 host packages on the domain.

- a. For Enterprise 10000 servers, use the `/cdrom` mount point:

```
domain_name# pkgadd -d /cdrom/Product . SUNWapdoc SUNWapu SUNWapr
```

- b. For Enterprise 6x00, 5x00, 4x00, and 3x00 servers, use the `/cdrom0` mount point:

```
# pkgadd -d /cdrom/cdrom0/Product . SUNWapdoc SUNWapu SUNWapr
```

The software briefly displays copyright, trademark, and license information for each package, then messages about `pkgadd(1M)` actions taken to install the package, including a list of the files and directories being installed. Depending on your configuration, you may see the following message:

```
This package contains scripts which will be executed with superuser
permission during the process of installing this package.

Do you want to continue with the installation of this package [y,n,?]
```

- a. If so, type `y` to continue.

When this portion of the installation is complete, the AP 2.1 packages have been installed and the superuser prompt is displayed.

9. Reboot the machine.

Performing an Upgrade

This section includes upgrade instructions for Alternate Pathing 2.1 on the SSP and on a domain. The upgrade instructions are intended only for the Sun Enterprise 10000 server. The upgrade process involves removing AP 2.0 on the SSP and on each host domain, if they have not already been removed, and installing one AP 2.1 package on the SSP and a set of core AP 2.1 packages on each domain.

Note – You should read this entire section before you attempt to upgrade the SSP and host domain. The beginning sections contain important information for getting ready to upgrade a host domain.

The instructions in this section assume you have already upgraded the Solaris operating environment to Solaris 2.6 Hardware: 5/98. They also assume that you have already prepared the domain for the upgrade. If not, refer to “Preparing the Domain” on page 35.



Caution – AP 2.0 is not supported by Solaris 2.6 Hardware: 5/98; therefore, if you are not upgrading to AP 2.1, you must not only remove all of the AP 2.0 packages, but you must also convert all of the metadevices to physical devices. Refer to the *Sun Enterprise Server Alternate Pathing User's Guide* for more information on how to convert the metadevices.

Installation of the packages on the enclosed CD-ROM requires approximately 2.7-Mbytes of disk space on the host domain for the full installation and 37-Kbytes on the SSP. The following table lists the total size of the AP software by file system:

TABLE 4-2 AP Software File-System Sizes

File System	Size
Host:	
/opt	1.23-Mbytes
/usr	158-Kbytes
/	1.3-Mbytes
SSP:	
/opt	37-Kbytes

1. Log in as superuser on the SSP.
2. If you have not already removed the `SUNWapssp` package, remove it now by using the `pkgrm(1M)` command.
3. If needed, insert the SMCC Supplements CD into the CD-ROM drive connected to the SSP.

Volume Manager takes about one minute to mount the CD.

4. Change to the AP 2.1 directory and execute the `pkgadd(1M)` command.

```
ssp# cd /cdrom/cdrom0/Product
ssp# pkgadd -d . SUNWapssp
```

5. Start the `ap_ssp_daemon`:

```
ssp# init q
```

6. If needed, execute the following `share` command on the SSP to make the CD-ROM usable across the net:

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

7. Log in as superuser on the host domain.
8. Create and mount the `/cdrom` directory on the domain.

```
domain_name# mkdir /cdrom [if it does not already exist]
domain_name# mount ssp_hostname:/cdrom/cdrom0 /cdrom
```

9. If you have not already removed the AP 2.0 packages on the domain, remove them now by using the `pkgrm(1M)` command.

You should remove the following packages from the domain:

- `SUNWapu`
- `SUNWapr`
- `SUNWapdoc`

10. Install the AP 2.1 host packages on the domain.

```
domain_name# pkgadd -d /cdrom/Product SUNWapdoc SUNWapu SUNWapr
```

If you need more information about installing the Sun Enterprise Servers AnswerBook (SUNWuesab), see the *Software and AnswerBook Installation Guide* in your media box.

The software briefly displays copyright, trademark, and license information for each package, then it displays messages about `pkgadd(1M)` actions taken to install the package, including a list of the files and directories being installed.

Depending on your configuration, you may see the following message:

```
This package contains scripts which will be executed with superuser
permission during the process of installing this package.

Do you want to continue with the installation of this package [y,n,?]
```

a. If so, type `y` to continue.

When this portion of the installation is complete, the AP 2.1 packages have been installed and the superuser prompt (`#`) is displayed.

11. In the `netcon(1M)` window, unmount the CD:

```
# cd /
# umount /cdrom
```

12. Log in to the SSP as superuser.

13. Remove the SMCC Supplements CD from the CD-ROM drive:

```
ssp# cd /
ssp# unshare /cdrom/cdrom0
ssp# eject cdrom
```

Reconfiguring the Domain

The instructions in this section reverse the actions taken in the “Preparing the Domain” on page 35. You should perform these instructions only if you are done upgrading all of the software packages you planned to upgrade.

You may have performed other tasks before you upgraded to Solaris 2.6 Hardware: 5/98 and/or AP 2.1; those tasks should be reversed before you return your Enterprise 10000 to production use.

- 1. Uncomment all file systems in the `/etc/vfstab` file that you commented out when you prepared the domain for the upgrade.**
- 2. Uncomment all swap partitions that are not on the same controller as the root disk.**
- 3. Re-create all of the AP databases.**
- 4. Re-create all of the AP metadevices and metanetworks.**
- 5. Reboot the domain.**

Power Management on Sun Hardware

Computer systems are the fastest-growing electricity load in the business world and are believed to account for five percent of commercial electricity consumption. This share is expected to increase in the future. The U.S. Environmental Protection Agency has launched the Energy Star Computers program to encourage the introduction and use of energy-efficient computer systems and to reduce air pollution associated with energy generation.

In response to this policy, SMCC is providing Power Management software. Your Sun workstation is now capable of entering a lower power state when the display is inactive for a period of time. In short, the Power Management program reduces the amount of power your Sun workstation uses.

SPARCstation 4 Issues

This section describes a limitation of the SPARCstation 4 when used with Power Management, and suggests a workaround.

The AC accessory outlet on the SPARCstation 4 system unit is an unswitched outlet. The AC power switch does not control power flowing through the accessory outlet. If you connect a monitor to the accessory outlet, you cannot turn it off using the system unit power switch. Similarly, if you use Power Management software, the software cannot turn off the monitor automatically. To conserve energy, consider using an Energy Star compliant monitor. Sun offers a variety of Energy Star compliant monitors in its standard SPARCstation 4 system configurations. This information does not apply to SPARCserver 4 configurations. The SPARCserver 4 includes a switched accessory outlet.

Ultra 5 and Ultra 10 System Power-Off Feature

This section describes the Ultra 5 and Ultra 10 system power-off feature.

All Ultra 5 and Ultra 10 models are equipped with a standby switch located on the front of the system. When the system is running (in a windowing environment) and the standby switch is pressed, a GUI appears (see Figure 4-1).

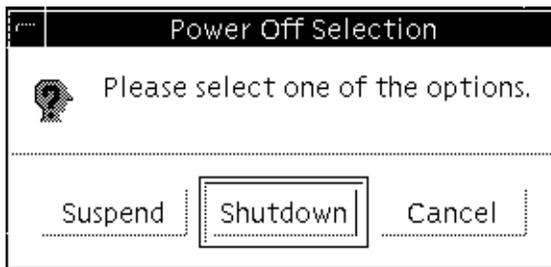


FIGURE 5-1 Ultra 5 and Ultra 10 Power Off Selection GUI

The user now has the option of suspending or shutting down the system. Selecting *Suspend* saves the state of the system to disk, enabling the user to return to the current system environment. Selecting *Shutdown* syncs the disks to a neutral state and effectively shuts down the operating system.

Note – You must be in a windowing environment to use the power-off feature. Pressing the standby switch when you are not in a windowing environment will immediately shutdown the system.

When the system is off, as a result of using the standby switch to suspend or shutdown your system, the standby switch will act as a power switch and can be used to reboot your system.

Note – The standby switch is not meant to replace the main power switch located on the back of the system, but is a convenient feature which allows the user to use it like a power switch after initiating a suspend or shutdown from the GUI.

Supported Platforms

Power Management software supports the sun4m and sun4u platform groups. Software features and defaults may vary between the two platform groups. Refer to the *Using Power Management* document in the Solaris 2.6 User AnswerBook set for more information.

Note – Power Management does not support the sun4c and sun4d platform groups.

TABLE 5-1 Platform Names and Groups Supported by Power Management

System Name	Platform Name	Platform Group
SPARCstation 4	SUNW,SPARCstation-4	sun4m
SPARCstation 5	SUNW,SPARCstation-5	sun4m
SPARCstation 10	SUNW,SPARCstation-10	sun4m
SPARCstation 10SX	SUNW,SPARCstation-10,SX	sun4m
SPARCstation 20	SUNW,SPARCstation-20	sun4m
SPARCstation LX	SUNW,SPARCstation-LX	sun4m
SPARCstation LX+	SUNW,SPARCstation-LX+	sun4m
SPARCclassic	SUNW,SPARCclassic	sun4m
SPARCclassic X	SUNW,SPARCclassic-X	sun4m
SPARCstation Voyager	SUNW,S240	sun4m
Ultra 1 Model 140	SUNW,Ultra-1	sun4u
Ultra 1 Creator Model 140E	SUNW,Ultra-1	sun4u
Ultra 1 Creator3D Model 140E	SUNW,Ultra-1	sun4u
Ultra 1 Model 170	SUNW,Ultra-1	sun4u
Ultra 1 Creator Model 170E	SUNW,Ultra-1	sun4u
Ultra 1 Creator3D Model 170E	SUNW,Ultra-1	sun4u
Ultra 1 Creator Model 200E	SUNW,Ultra-1	sun4u
Ultra 1 Creator3D Model 200E	SUNW,Ultra-1	sun4u
Ultra 5	SUNW,Ultra-5	sun4u
Ultra 10	SUNW,Ultra-10	sun4u
Ultra 30	SUNW,Ultra-30	sun4u

TABLE 5-1 Platform Names and Groups Supported by Power Management *(Continued)*

System Name	Platform Name	Platform Group
Ultra 60	SUNW,Ultra-60	sun4u
Ultra 450	SUNW,Ultra-4	sun4u
Ultra 2 Creator Model 1170	SUNW,Ultra-2	sun4u
Ultra 2 Creator3D Model 1170	SUNW,Ultra-2	sun4u
Ultra 2 Creator Model 2170	SUNW,Ultra-2	sun4u
Ultra 2 Creator3D Model 2170	SUNW,Ultra-2	sun4u
Ultra 2 Creator Model 1200	SUNW,Ultra-2	sun4u
Ultra 2 Creator3D Model 1200	SUNW,Ultra-2	sun4u
Ultra 2 Creator Model 2200	SUNW,Ultra-2	sun4u
Ultra 2 Creator 3D Model 2200	SUNW,Ultra-2	sun4u
Ultra 2 Creator Model 1300	SUNW,Ultra-2	sun4u
Ultra 2 Creator Model 2300	SUNW,Ultra-2	sun4u
Sun Enterprise 1 Model 140	SUNW,Ultra-1	sun4u
Sun Enterprise 1 Model 170	SUNW,Ultra-1	sun4u
Sun Enterprise 1 Model 170E	SUNW,Ultra-1	sun4u
Sun Enterprise 2 Model 1300	SUNW,Ultra-2	sun4u
Sun Enterprise 2 Model 2300	SUNW,Ultra-2	sun4u

Hardware and Software Requirements

Power Management requires the following hardware and software:

- Hardware Options
 - Type 5 or Compact 1 keyboard
 - 17-inch, 20-inch, or 24-inch color monitor
- Software
 - Solaris 2.6 Hardware: 5/98 software environment (already installed)

Supported Peripherals

TABLE 5-2 shows the peripherals supported by Power Management.

TABLE 5-2 Power Management Supported Peripherals

Peripheral	Description
Frame Buffers	Black and white frame buffer driver
	24-bit color frame buffer driver
	Accelerated 8-bit color frame buffer driver
	8-bit color frame buffer driver
	SX graphic driver
	ZX graphics accelerator
	Creator and Creator3D graphics accelerators
	FFB2 graphics
	PGX graphics frame buffer
	ATI graphics (m64)
SBus	SBus driver
	SBus memory driver
	SBus DMA gate array driver
	Sysio SBus driver
SCSI	Emulex Intelligent SCSI Processor driver
	Emulex SCSI Processor host adapter driver
	SCSI disk driver
	SCSI tape driver
	Symbios SCSI host adapter

TABLE 5-2 Power Management Supported Peripherals *(Continued)*

Peripheral	Description
Miscellaneous	Intel 82072/82077 floppy disk driver
	LANCE (Am7990) Ethernet driver
	Zilog 8530 SCC Serial Communications driver
	Serial I/O driver for Multi-Interface Chip (MIC)
	Dual Basic Rate ISDN and audio interface driver
	CS 4231 Audio Chip driver
	AMD AM79C30A Audio Chip driver
	Bi-directional Parallel Port driver
	Profile driver
	SunSwift SBus Adapter drivers
	SunSwift PCI Adapter drivers
	SunFDDI Single-Attach PCI Adapter
	SunFDDI Dual-Attach PCI Adapter
	SUNTRI Token Ring Interface PCI Adapter
	Dual Single-ended UltraSCSI PCI Adapter
	Dual Differential UltraSCSI PCI Adapter

Index

A

AnswerBook
 Supplement CD
 installation, xiii
automounted file system symbolic links,
 preserving, 33

B

backing up
 before upgrading, 31

C

configuration
 packages, 14
 preserving software configurations during
 upgrade installation, 32
custom profiles
 JumpStart, 8

E

Energy Star Computers program, 65

F

files and file systems
 preserving data

 preventing mounting during upgrade, 33
 symbolic links, 33

H

hard disks
 upgrade installation and full disk, 32

I

install patches and upgrade installation, 32
installation
 Solaris CD, xiii
 SunVTS, 28, 42
 upgrade installation, 31

J

JumpStart
 Creator graphics accelerator entry, 9
 custom profiles, 8
 S24 frame buffer entry, 9
 SPARCstation 10SX entry, 9
 SPARCstation 20 entry, 9
 SunSwift SBus adapter entry, 9
 SX frame buffer entry, 9
 TurboZX graphics accelerator entry, 9
 ZX graphics accelerator entry, 9

L

- latest news
 - where to find information, xiii
- links
 - symbolic
 - preserving during upgrade, 33

M

- mail directory, 33

N

- new products
 - where to find information, xiii
- news
 - latest
 - where to find information, xiii
- news directory, 33

O

- OBP entries, 17, 37
- Online Validation Test Suite Software, 28, 42

P

- packages
 - configuration, 14
- paths
 - relative, for symbolic links, 33
- peripherals
 - where to find information, xiii
- Power Management
 - description, 65
- preparing for Solaris installation
 - upgrade installation, ?? to 32
 - preserving local modifications, 33
- preserving data
 - preventing file systems from mounting during upgrade, 33
 - symbolic links, 33
- products

- new
 - where to find information, xiii

S

- S24 frame buffer
 - interactive installation
 - required software cluster, 5
 - manual installation
 - required software packages, 7
- SMCC Supplement CD, 26, 41
- software
 - installing packages, 14
 - Online Validation Test Suite, 28, 42
 - SMCC Supplement CD, 26, 41
 - SunVTS, 28, 42
- Solaris 2.5
 - interactive installation, 4
- SPARCstation 10SX
 - interactive installation
 - required software cluster, 5
- SPARCstation 20
 - interactive installation
 - required software cluster, 5
- SPARCstation 4
 - interactive installation
 - required software cluster, 5
- SPARCstation 5
 - interactive installation
 - required software cluster, 5
- SPARCstorage Array
 - interactive installation
 - required software cluster, 5
 - manual installation
 - required software packages, 7
- SSP
 - configuring, 14
- SunSwift SBus adapter
 - manual installation
 - required software packages, 7
- SunVTS
 - package installation, 28, 42
- Supplement CD, 26, 41
 - contents, 27, 42
 - installation, xiii
- SX frame buffer

- interactive installation
 - required software cluster, 5
- manual installation
 - required software packages, 7
- symbolic links
 - preserving during upgrade, 33
- system
 - architecture
 - determining, 2

T

- TurboZX graphics accelerator
 - interactive installation
 - required software cluster, 5
 - manual installation
 - required software packages, 6

U

- U.S. Environmental Protection Agency, 65
- Ultra 1 Creator Model 170E
 - interactive installation
 - required software cluster, 5
 - manual installation
 - required software packages, 8
- Ultra 1 Creator3D Model 170E
 - interactive installation
 - required software cluster, 5
 - manual installation
 - required software packages, 8
- Ultra 1 Model 140
 - interactive installation
 - required software package, 5
- Ultra 1 Model 170
 - interactive installation
 - required software package, 5
- Ultra Enterprise 10000
 - manual installation
 - required software package, 8
- upgrade
 - Solaris on a domain, 36
- upgrade installation
 - hard disk full, 32
 - install patches, 32
 - preparing, 31 to 33

- backing up, 31
 - preserving local modifications, 33
- preserving other software configurations, 32

V

- vfstab file
 - preventing file systems from mounting during upgrade, 33

Z

- ZX graphics accelerator
 - interactive installation
 - required software cluster, 5
 - manual installation
 - required software packages, 6

