Solaris™ 9 9/04 Sun™ Hardware Platform Guide

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Contents

Preface

The *Solaris 9 9/04 Sun Hardware Platform Guide* contains important information about the Sun hardware supported by the Solaris™ 9 operating environment.

This manual:

- Provides platform-specific installation instructions for the Solaris 9 9/04 software
- Describes software provided on the Solaris 9 9/04 Software Supplement CD and explains how to install product software
- Describes hardware and software requirements affecting Power Management™ software

Note – For general Solaris 9 9/04 operating environment installation instructions and information about supported hardware, see Chapter 1. For information about how to install software contained on the Solaris 9 9/04 Software Supplement CD, see Chapter 2.

Where to Find Installation Information

Before installing the Solaris 9 9/04 software, check TABLE P-1 for listings of manuals with information that might apply to your situation and TABLE P-2 for specific installation information.

TABLE P-1 Related Documentation

Title	Description
Start Here card	Primary installation manual
Solaris 9 Installation Guide	Contains additional information about how to install the Solaris Operating System on server systems

TABLE P-2 Specific Installation Information

If You Want To	Go To
Know more about new products and peripherals	Chapter 1 in this manual
Know about late-breaking news	1. *Solaris 9 9/04 Release Notes Supplement for Sun Hardware* 2. *Solaris 9 9/04 Release Notes*
Begin the installation process from the Solaris CD	1. Chapter 1 in this manual 2. *Solaris 9 9/04 Start Here* card
Install software for your platform or peripheral from the Supplement CD	Chapter 2 in this manual

How This Book Is Organized

This book is organized as follows:

Chapter 1 supplements the *Solaris 9 9/04 Start Here* card by providing additional installation instructions on how to install or upgrade to the Solaris 9 9/04 software on specific supported Sun platforms and hardware options. This chapter also supplements the *Solaris Handbook for Sun Frame Buffers* by listing additional supported frame buffer cards.

Chapter 2 describes how to install the software for Sun platforms and hardware options, and describes value-added software provided to users of Sun hardware.

Chapter 3 describes the locations and formats for the documentation on the Supplement CD.

Chapter 4 describes the hardware and software requirements for running the Power Management software on Sun Hardware.

Chapter 5 describes new OpenBoot™ emergency procedures for some systems.

Note – The information previously found in this document regarding Sun Fire™ 6800/4810/4800/3800 systems is now included in the *Sun Fire Midrange Systems Platform Administration Manual*.

Shell Prompts

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

Typographic Conventions

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

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

Accessing Sun Documentation

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

http://www.sun.com/documentation

Contacting Sun Technical Support

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

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

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

Solaris 9 9/04 Sun Hardware Platform Guide, part number 817-6357-10.

CHAPTER 1

Installing Software From the Solaris Disk

This chapter covers the following topics:

Note – For initial instructions on installing this Solaris release, see the *Start Here* card provided with the discs. For more detailed instructions, see the *Solaris 9 Installation Guide*.

Upgrading Firmware on Sun Fire and Netra Servers Before Installation (Bug ID 4747307, 4799331)

To install the Solaris 9 9/04 operating environment on specific Sun Fire and Netra™ servers, you must first update the firmware on the server. If you do not update the firmware before you install the Solaris 9 9/04 software, the server panics. This problem affects the following servers:

- Sun Fire 3800 server
- Sun Fire 4800 server

- Sun Fire 4810 server
- Sun Fire 6800 server
- Sun Fire V1280 server
- Netra 1280 server

If this problem occurs, the following error message is displayed:

```
panic[cpu0]/thread=140a000: BAD TRAP: type=34 rp=147e9e0
addr=5586ee326973add3 mmu_fsr=0
```

The `ok` prompt is displayed.

Workaround:

For Sun Fire 3800, 4800, 4810, or 6800 servers, apply the most current version of the firmware patches available, for example, firmware update 5.15.4 or 5.15.3.

For Sun Fire V1280 or Netra servers, apply the most current version of the firmware patch available, for example, 5.13.0014.

Firmware update patches are available at:

`http://sunsolve.sun.com`

Be sure to download and apply the most current version of the patch.

Automatic Installation of Solaris Software

Other than the firmware note listed in the previous section, the Sun hardware listed in TABLE 1-1 requires no special installation or upgrade instructions for the Solaris 9 9/04 release. If you plan to perform an automatic installation of the Solaris 9 9/04 operating environment on your Sun hardware, refer to the *Solaris 9 Installation Guide* for all your installation needs.

Supported Platform Names and Groups

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

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

If you are writing a custom JumpStart™ installation rules file, you need to know the platform name.

TABLE 1-1 lists and categorizes the supported platform names and platform groups of various Sun hardware systems for the Solaris 9 9/04 release.

TABLE 1-1 Platform Names for Sun Systems

System	Platform Name	Platform Group	32-Bit Only*	32- & 64-Bit†	64-Bit Only‡
Workstation Systems					
Sun Blade™ 100	SUNW,Sun-Blade-100	sun4u			X
Sun Blade 150	SUNW,Sun-Blade-100	sun4u			X
Sun Blade 1000	SUNW,Sun-Blade-1000	sun4u			X
Sun Blade 1500	SUNW,Sun-Blade-1000	sun4u			X
Sun Blade 2000	SUNW,Sun-Blade-1000	sun4u			X
Sun Blade 2500	SUNW,Sun-Blade-1000	sun4u			X
Ultra™ 1	SUNW,Ultra-1	sun4u		X	
Ultra 2	SUNW,Ultra-2	sun4u		X	
Ultra 5	SUNW,Ultra-5_10	sun4u		X	
Ultra 10	SUNW,Ultra-5_10	sun4u		X	
Ultra 30	SUNW,Ultra-30	sun4u		X	
Ultra 60	SUNW,Ultra-60	sun4u		X	
Ultra 80	SUNW,Ultra-80	sun4u		X	
Ultra 450	SUNW,Ultra-4	sun4u		X	
SPARCstation™ 4	SUNW,SPARCstation-4	sun4m	X		
SPARCstation 5	SUNW,SPARCstation-5	sun4m	X		
SPARCstation 10	SUNW,SPARCstation-10	sun4m	X		
SPARCstation 20	SUNW,SPARCstation-20	sun4m	X		
SPARCclassic	SUNW,SPARCclassic	sun4m	X		
SPARCstation LX	SUNW,SPARCstation-LX	sun4m	X		
SPARCstation LX+	SUNW,SPARCstation-LX+	sun4m	X		

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

System	Platform Name	Platform Group	32-Bit Only*	32- & 64-Bit†	64-Bit Only‡
Entry/Workgroup Servers					
Sun Fire V100	SUNW,UltraAX-i2	sun4u			X
Sun Fire V120	SUNW,UltraAX-i2	sun4u			X
Sun Fire V210	SUNW,Sun-Fire-V210	sun4u			X
Sun Fire V240	SUNW,Sun-Fire-V240	sun4u			X
Sun Fire V250	SUNW,Sun-Fire-V250	sun4u			X
Sun Fire 280R	SUNW,Sun-Fire-280R	sun4u			X
Sun Fire V440	SUNW,Sun-Fire-V440	sun4u			X
Sun Fire V480	SUNW,Sun-Fire-480	sun4u			X
Sun Fire V880	SUNW,Sun-Fire-880	sun4u			X
Sun Fire V890	SUNW,Sun-Fire-890	sun4u			X
Sun Fire B100s	SUNW,Serverblade1	sun4u			X
Sun Fire B10n	SUNW,Serverblade1	sun4u			X
Sun Enterprise™ 1	SUNW,Ultra-1	sun4u		X	
Sun Enterprise 2	SUNW,Ultra-2	sun4u		X	
Sun Enterprise Ultra™ 5S	SUNW,Ultra-5_10	sun4u		X	
Sun Enterprise Ultra 10S	SUNW,Ultra-5_10	sun4u		X	
Sun Enterprise 150	SUNW,Ultra-1	sun4u		X	
Sun Enterprise 250	SUNW,Ultra-250	sun4u		X	
Sun Enterprise 450	SUNW,Ultra-4	sun4u		X	
Sun Enterprise 220R	SUNW,Ultra-60	sun4u		X	
Sun Enterprise 420R	SUNW,Ultra-80	sun4u		X	
Mid-Range and Mid-Frame Servers					
Sun Fire V1280	SUNW,Netra-T12	sun4u			X
Sun Fire 3800	SUNW,Sun-Fire	sun4u			X

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

System	Platform Name	Platform Group	32-Bit Only*	32- & 64-Bit†	64-Bit Only‡
Sun Fire 4800	SUNW,Sun-Fire	sun4u			X
Sun Fire 4810	SUNW,Sun-Fire	sun4u			X
Sun Fire 6800	SUNW,Sun-Fire	sun4u			X
Sun Fire E2900	SUNW,Sun-Fire	sun4u			X
Sun Fire E4900	SUNW,Sun-Fire	sun4u			X
Sun Fire E6900	SUNW,Sun-Fire	sun4u			X
Sun Enterprise 3000	SUNW,Ultra-Enterprise	sun4u		X	
Sun Enterprise 4000	SUNW,Ultra-Enterprise	sun4u		X	
Sun Enterprise 5000	SUNW,Ultra-Enterprise	sun4u		X	
Sun Enterprise 6000	SUNW,Ultra-Enterprise	sun4u		X	
Sun Enterprise 3500	SUNW,Ultra-Enterprise	sun4u		X	
Sun Enterprise 4500	SUNW,Ultra-Enterprise	sun4u		X	
Sun Enterprise 5500	SUNW,Ultra-Enterprise	sun4u		X	
Sun Enterprise 6500	SUNW,Ultra-Enterprise	sun4u		X	
High-End Servers					
Sun Fire E20K	SUNW,Sun-Fire-Enterprise-20K	sun4u			X
Sun Fire E25K	SUNW,Sun-Fire-Enterprise-25K	sun4u			X
Sun Fire 12K	SUNW,Sun-Fire-12000	sun4u			X
Sun Fire 15K	SUNW,Sun-Fire-15000	sun4u			X
Sun Enterprise 10000	SUNW,Ultra-Enterprise	sun4u		X	
Netra Servers					
Netra 20	SUNW,Netra-T4	sun4u			X
Netra 120	SUNW,UltraAX-i2	sun4u			X
Netra 240	SUNW,Netra-240	sun4u			X

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

System	Platform Name	Platform Group	32-Bit Only*	32- & 64-Bit†	64-Bit Only‡
Netra 1280	SUNW,Netra-T12	sun4u			X
Netra T1 AC200/DC200	SUNW,UltraAX-i2	sun4u			X
Netra X1	SUNW,UltraAX-i2	sun4u			X
Netra ct400	SUNW,UltraSPARC-IIi-Netract	sun4u			X
Netra ct800	SUNW,UltraSPARC-IIi-Netract	sun4u			X
Netra ct820	SUNW,Netra-CP2300	sun4u			X
Netra t1 100	SUNW,UltraSPARC-IIi-cEngine	sun4u		X	
Netra t1 105	SUNW,UltraSPARC-IIi-cEngine	sun4u		X	
Netra t 1120	SUNW,Ultra-60	sun4u		X	
Netra t 1125	SUNW,Ultra-60	sun4u		X	
Netra t 1400	SUNW,Ultra-80	sun4u		X	
Netra t 1405	SUNW,Ultra-80	sun4u		X	

* Platforms that only support a 32-bit kernel or driver.

† 64-bit platforms that can boot a 32-Bit kernel or driver. The systems support 32-bit applications and drivers on a 32-bit kernel, and support 32-bit or 64-bit applications and 64-bit drivers on a 64-bit kernel.

‡ 64-bit platforms that do not support a 32-bit kernel or driver.

Refer to the *Solaris 9 Installation Guide* for further information on platform groups for all other systems.

32-Bit Kernel—Default on 200MHz or Lower UltraSPARC Systems

On UltraSPARC™ systems with 200 MHz or lower processors, it is possible for a user to run a 64-bit program designed to exploit a problem that could cause a processor to stall. Since 64-bit programs cannot run on the Solaris 32-bit kernel, the Solaris 32-bit kernel is booted by default on these systems.

The code sequence that exploits the problem is very unusual, and is not likely to be generated by a compiler. Assembler code had to be specifically written to demonstrate the problem. It is highly unlikely that a legitimate handwritten assembler routine would use this code sequence.

Users willing to assume the risk that a user might accidentally or deliberately run a program that was designed to cause a processor to stall may choose to run the Solaris 64-bit kernel on these systems.

You can determine the speed of your processor(s) by typing:

```
# /usr/sbin/psrinfo -v
```

You can change the default kernel from 32-bit on a system by modifying the `boot` policy file. Edit the `/platform/`*platform-name*`/boot.conf` file so that it contains an uncommented line with the variable named `ALLOW_64BIT_KERNEL_ON_UltraSPARC_1_CPU` set to the value `true` as shown in the example that follows:

```
ALLOW_64BIT_KERNEL_ON_UltraSPARC_1_CPU=true
```

See `boot`(1M) for more information about changing the default kernel.

You may also purchase an upgrade to your system. Contact your Sun representative for details.

System Kernel Support

All SPARC® systems can run 32-bit applications. Systems using newer SPARC processors (that is, UltraSPARC based systems) can boot and run a full 64-bit kernel, which allows those systems to run 32-bit and 64-bit applications concurrently.

Systems running a 64-bit kernel require 64-bit versions of drivers and other software modules that load directly into the kernel. A small number of applications might be dependent on such components and thus would require versions of these components specific to a 32-bit or 64-bit kernel. Also, 32-bit applications cannot link to 64-bit libraries and vice versa. (The Solaris 9 9/04 Operating System includes both 32-bit and 64-bit versions of system libraries.)

TABLE 1-1 indicates which systems can run 64-bit as well as 32-bit applications and which systems can boot a 32-bit kernel, a 64-bit kernel, or both.

Supported Graphics

The *Sun Graphics Platform Matrix* lists the graphics accelerators and the Sun hardware and software platforms supported by each.

You can access all graphics accelerator documentation, including the *Sun Graphics Platform Matrix*, at:

`http://www.sun.com/desktop/products/graphics`

See the *Solaris Handbook for Sun Frame Buffers* for information on previously released cards.

CHAPTER 2

Installing Software From the Solaris 9 9/04 Software Supplement CD

This chapter describes the contents of the software on the CD labeled Solaris 9 9/04 Software Supplement. This CD is referred to in this document as the Supplement CD.

This chapter includes the following topics:

Supplement CD Software

TABLE 2-1 lists each type of software on the Supplement CD, and whether that software is installed by default or by option.

TABLE 2-1 Solaris 9 9/04 Supplement CD Content and Installation Status

Software	Solaris 9 9/04 Version	Installed by Default?
Java 3D™ software	1.3.1	Yes
OpenGL® software	1.3	Yes
Sun Remote System Control (RSC) for Sun Enterprise Servers	2.2.2	Yes
SunATM™ driver	5.1	Yes
SunForum™ software	3.2	Yes
SunHSI™ PCI driver	3.0	Yes
SunVTS™ software	5.1 Patch Set 6	Yes
Lights Out Management software	2.0	No
Netra ct Platform software	1.0	No
Netra t11 Alarms software	2.0	No
Sun Enterprise 10000 Capacity On Demand (COD) software	1.0	No
Sun Enterprise 10000 SSP software	3.5	No
Sun Fire B10n content load balancing blade	1.1	No
WBEM-based Dynamic Reconfiguration (WDR)	1.0	No

The following table lists the versions of the software in the current Solaris 9 9/04 release, compared to past Solaris 9 releases.

TABLE 2-2 Solaris 9 9/04 Supplement CD Version History

Software	Solaris 9	Solaris 9 9/02	Solaris 9 12/02	Solaris 9 4/03	Solaris 9 8/03	Solaris 9 12/03	Solaris 9 4/04	Solaris 9 9/04
Sun Enterprise 10000 Capacity on Demand	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Java 3D	1.2.1_04	1.2.1_04	1.2.1_04	1.2.1_04	1.3	1.3.1	1.3.1	1.3.1
Netra ct Platform	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Netra t11xx Alarms	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

TABLE 2-2 Solaris 9 9/04 Supplement CD Version History

Software	Solaris 9	Solaris 9 9/02	Solaris 9 12/02	Solaris 9 4/03	Solaris 9 8/03	Solaris 9 12/03	Solaris 9 4/04	Solaris 9 9/04
Lights Out Management	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
OpenGL	1.2.2	1.2.3	1.2.3	1.3	1.3	1.3	1.3	1.3
PC launcher	1.0.1	1.0.1	1.0.2	1.0.2	1.0.2	1.0.2	n/a	n/a
PC file viewer	1.0.1	1.0.1	n/a	n/a	n/a	n/a	n/a	n/a
Sun Remote System Control (RSC) for Sun Enterprise Servers	2.2.1	2.2.1	2.2.1	2.2.1	2.2.1	2.2.2	2.2.2	2.2.2
ShowMe™ TV	1.3	1.3	1.3	1.3	1.3	n/a	n/a	n/a
SunATM	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1
SunFDDI™ PCI	3.0	3.0	3.0	n/a	n/a	n/a	n/a	n/a
SunFDDI SBus	7.0	7.0	7.0	n/a	n/a	n/a	n/a	n/a
SunForum	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.2
SunHSI PCI	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
SunHSI SBus	3.0	3.0	3.0	n/a	n/a	n/a	n/a	n/a
SunVTS	5.0	5.1	5.1 Patch Set 1	5.1 Patch Set 2	5.1 Patch Set 3	5.1 Patch Set 4	5.1 Patch Set 5	5.1 Patch Set 6
Sun Enterprise 10000 System Service Processor	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Sun Fire B10n content load balancing blade	n/a	n/a	n/a	n/a	n/a	1.1	1.1	1.1
System Management Services software for the Sun Fire high-end systems	1.2	1.2	1.2	1.3	1.3	1.3	1.4	n/a
WBEM-based Dynamic Reconfiguration (WDR)	n/a	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Installing Supplement CD Software

There are three ways to install software from the Supplement CD:

- As part of a Solaris installation
- Solaris Web Start
- `pkgadd`

Before Installing Supplement CD Software

If you have installed any of the Supplement CD software from a previous release, remove the packages associated with that software before installing the new software.

Installing Supplement CD Software as Part of a Solaris Installation

During the Solaris installation, you are asked to choose either Default Installation or Custom Installation. The Default settings are the same whether you install from CD or from DVD.

The installation process displays a predefined set of products that are installed by default from the Software Supplemental CD. Choosing Custom Installation enables you to change these settings.

Installing Supplement CD Software Using Solaris Web Start

You can use Solaris Web Start to install Supplement CD software after you have installed the Solaris Operating System.

▼ To Install Supplement CD Software Using Solaris Web Start

1. **Insert the Supplement CD into your CD-ROM drive.**
2. **In a shell, type:**

```
# cd /cdrom/cdrom0
# ./installer
```

3. **When the Solaris Web Start GUI is displayed, click Next.**
4. **Choose the language locale you want to install, and click Next.**

5. **Select which software components to install from the displayed list, and select Next.**

   All Supplement CD software components are listed, with "Default Install" software already selected. You can also select the radio buttons labeled "No Install" if you do not want a default component, or select "Custom Install" to add nondefault components. These software components are listed in TABLE 2-1.

6. **If you chose any Custom Install software, follow the next screens to choose which components you want to download for each.**

   Some Custom Install software gives you the choice to install specific components, such as client versions versus server versions.

Installing Supplement CD Software on a Standalone System Using `pkgadd`

▼ To Install Packages for Supported Products From the Supplement CD Using `pkgadd`

1. **Insert the Supplement CD into your CD-ROM drive.**

   The File Manager window is displayed.

2. **In a shell, become superuser using the `su` command and the superuser password.**

3. **Type:**

```
# /usr/sbin/pkgadd -d /cdrom/cdrom0/directory/Product package_names
```

   or:

```
# cd /cdrom/cdrom0/directory/Product
# pkgadd -d . package_names
```

   Where *directory* is the software product directory from TABLE 2-3 and *package_names* are the package names from TABLE 2-3.

   The argument to the `-d` option must be a full path name to a device or directory. If you do not specify the device on which the package resides, `pkgadd` checks the default spool directory (`/var/spool/pkg`). If the package is not there, installation fails.

To install a particular product, choose the appropriate packages:

TABLE 2-3 Software and Packages

Software	Version	Directory	Packages

ValidationTest Suite Software (SunVTS)	5.1 Patch Set 6	`SunVTS_5.1_PS6/`	`SUNWvts`
			`SUNWvtsmn`
			`SUNWvtsx`

OpenGL Runtime Libraries	1.3	`OpenGL_1.3/`	`SUNWgldoc`
			`SUNWgldp`
			`SUNWgldpx`
			`SUNWglh`
			`SUNWglrt`
			`SUNWglrtu`
			`SUNWglrtx`
			`SUNWglsr`
			`SUNWglsrx`
			`SUNWglsrz`

Sun Remote System Control Server	2.2.2	`RSC_2.2.2/`	`SUNWrsc`
			`SUNWrscd`
			`SUNWrscj`

SunForum	3.2	`SunForum_3.2/`	`SUNWdat`
			`SUNWdatu`
			`SUNWkeep`
			`SUNWphone`

SunHSI PCI driver	3.0	`SunHSI_PCI_3.0/`	`SUNWhsip`
			`SUNWhsipm`
			`SUNWhsipu`

Java 3D	1.3.1	`Java3D_1.3.1/`	`SUNWj3doc`
			`SUNWj3dem`
			`SUNWj3drt`
			`SUNWj3dut`

SunATM 5.1	5.1	`SunATM_5.1/`	`SUNWatm`
			`SUNWatma`
			`SUNWatmu`

TABLE 2-3 Software and Packages *(Continued)*

Software	Version	Directory	Packages

Sun Enterprise 10000 SSP	3.5	`System_Service_Processor_3.5/`	`SUNWsspue`
			`SUNWsspst`
			`SUNWsspr`
			`SUNWssppo`
			`SUNWsspop`
			`SUNWsspob`
			`SUNWsspmn`
			`SUNWsspid`
			`SUNWsspfp`
			`SUNWsspdr`
			`SUNWsspdo`
			`SUNWsspdf`

Sun Enterprise 10000 Capacity On Demand (COD) software	1.0	`Capacity_on_Demand_1.0/`	`SUNWcod` `SUNWcodmn`
Sun Fire B10n content load balancing blade software	1.1	`Sun_Fire_B10n_Load_Balancing_Blade_1.1/`	`SUNWclbut` `SUNWclbx.u`

Netra ct Platform software	1.0	`Netra_ct_Platform_1.0/`	`SUNW2jdrt`
			`SUNWctac`
			`SUNWcteux`
			`SUNWctevx`
			`SUNWctmgx`

Netra t11xx Alarms software	2.0	`Netra_t11xx_Alarms_2.0/`	`SUNWtsalm`
			`SUNWtsalr`
			`SUNWtsalu`

Lights Out Management software	2.0	`Lights_Out_Management_2.0/`	`SUNWlomm`
			`SUNWlomr`
			`SUNWlomu`

WBEM-based Dynamic Reconfiguration (WDR)	1.0	`WBEM_DR_1.0/`	`SUNWWDRcfg`
			`SUNWWDRr`
			`SUNWmcfg`

Solaris On Sun Hardware Documentation	1.0	`Solaris_On_Sun_Hardware_Documentation/`	`SUNWdhshw` `SUNWdpshw`

Note – Packages for the SMS software are no longer included on the Supplement CD. For information on installing SMS, and use of the `smsinstall` command, refer to the *System Management Services Installation Guide*.

Note – For names and descriptions of localized packages, see Appendix A.

If a problem occurs during package installation, information about the problem is displayed, followed by this prompt:

```
Do you want to continue with this installation?
```

Type either **yes**, **no**, or **quit**.

Validation Test Suite Software

The SunVTS validation test suite is a diagnostic tool designed to test Sun hardware. By running multiple diagnostic hardware tests, the SunVTS software verifies the connectivity and functionality of most SPARC hardware controllers and devices in a 32-bit or 64-bit Solaris operating environment.

SunVTS provides an infrastructure for programmers to develop their own tests and run them using the SunVTS interface.

You can find the software and documentation for the SunVTS application on the Solaris Software Supplement CD.

TABLE 2-4 describes the main features of the SunVTS environment.

TABLE 2-4 SunVTS Diagnostic Tool Features

Feature	Description
SunVTS kernel (`vtsk`)	The SunVTS kernel controls all aspects of the testing. It is a daemon designed to stay in the background, and to be used when needed. Upon starting, the SunVTS kernel probes the hardware configuration of the system under test and waits for instructions from a SunVTS user interface. During testing, the SunVTS kernel coordinates the running of individual tests, and manages all the messages (informational and error messages) sent by these tests.
SunVTS CDE user interface (`vtsui`)	This interface runs on top of the Common Desktop Environment (CDE). This user interface provides the means to configure, run, and monitor SunVTS test sessions for local and remote hosts.
SunVTS TTY user interface (`vtstty`)	Because not every system has a monitor, SunVTS has a TTY interface. This ASCII menu-based interface accepts various key sequences to control the test options and the test sessions. SunVTS can be used from a terminal, a shell tool, or a remote login session through a modem.
Running an individual test from the command line	Besides being run from a SunVTS user interface, each individual hardware test can be run from a UNIX® command line. Running a test alone can be helpful to validate only one piece of hardware.
Custom test support	A SunVTS user can run third-party executable test binaries under the SunVTS environment in the way that the test, rather than the SunVTS kernel, fully controls its input argument list and output log files. A user can simply modify the `.customtest` file provided by SunVTS to make it loosely coupled to the environment.

SunVTS Packages

TABLE 2-5 provides a list of SunVTS packages needed to run the SunVTS diagnostic tool.

TABLE 2-5 SunVTS Packages on the Supplement CD

Includes Packages	Name	Description
SUNWvts	Validation Test Suite	SunVTS kernel, user interface (UI), tests and tools
SUNWvtsmn	Validation Test Suite Manual Pages	Manual pages for SunVTS utilities/binaries
SUNWvtsx	Validation Test Suite	64-Bit Validation Test Suite software

Installing SunVTS

See "Installing Supplement CD Software" on page 11.

Using SunVTS Software

To use SunVTS software, refer to the SunVTS documentation in the Solaris 9 9/04 on Sun Hardware documentation set located on the Solaris Software Supplement CD. For new features, tests, and test enhancements for this release, refer to the *SunVTS 5.1 Patch Set 6 Documentation Supplement*. For overall test configuration modes, interfaces, and options, refer to the *SunVTS User's Guide*. For individual test and quick reference information, refer to the *SunVTS Test Reference Manual* and the *SunVTS Quick Reference Card*.

OpenGL Software

The Sun OpenGL software for Solaris is the Sun native implementation of the OpenGL application programming interface (API). The OpenGL API is an industry-standard, vendor-neutral graphics library. It provides a small set of low-level geometric primitives, and many basic and advanced 3D rendering features, such as modeling transformations, shading, lighting, anti-aliasing, texture mapping, fog, and alpha blending.

Supported Platforms

The Sun OpenGL 1.3 software for Solaris supports the following devices:

- Creator Graphics, Creator3D Graphics, Elite3D Graphics, Expert3D Graphics, XVR-500, and XVR-1000 Graphics—OpenGL functionality is accelerated in hardware.
- SX, GX, GX+, TGX, TGX+, S24—OpenGL functionality is performed in software.
- All Sun SPARC systems equipped with the following graphics accelerators are supported on the OpenGL 1.3 software: the TCX, SX, GX, Creator, Elite3D, Expert3D, XVR-500, and XVR-1000 families of graphics accelerators. This includes the Ultra workstation, the Sun Enterprise, and the legacy SPARCstation families.

Removing Old Packages

If you have older versions of the Sun OpenGL software for Solaris packages, you must use the `pkgrm` command to remove them.

▼ To Remove Old Packages

1. **Check to see whether any older versions of the OpenGL packages are installed using the `pkginfo` command.**

   The `pkginfo | egrep -i "OpenGL"` command lists any existing OpenGL packages that you have installed.

```
% pkginfo | egrep -i "OpenGL"
application SUNWffbgl     Creator Graphics (FFB) OpenGL Support
application SUNWglrt      OpenGL Runtime Libraries
application SUNWglrtu     OpenGL Platform Specific Runtime Libraries
application SUNWafbgl     Loadable pipeline for UPA Bus Elite3D graphics
application SUNWgldoc     Solaris OpenGL Documentation and Man Pages
application SUNWglh       Solaris OpenGL Header Files
application SUNWglut      Solaris OpenGL Utilities and Example Programs
```

2. **To remove the packages, become superuser:**

```
% su
Password: superuser_password
```

3. **Run `pkgrm` to remove all existing Sun OpenGL software for Solaris packages.**

```
# pkgrm SUNWglrt SUNWglh...
```

OpenGL Packages

TABLE 2-6 lists the packages that are provided with the Sun OpenGL software for Solaris.

TABLE 2-6 OpenGL Packages

Package Name	Description	Default Installation Location
SUNWglh	OpenGL header files	/usr
SUNWgldp	OpenGL 32-bit loadable pipelines for Creator, Creator3D, Elite3D, Expert3D, Expert3D-Lite, XVR-500, XVR-1000, XVR-1200, and XVR-4000 graphics accelerators	/usr/openwin/lib/GL/devhandlers
SUNWgldpx	OpenGL 64-bit loadable pipelines for Creator, Creator3D, Elite3D, Expert3D, Expert3D-Lite, XVR-500, XVR-1000, XVR-1200, and XVR-4000 graphics accelerators	/usr/openwin/lib/sparcv9/GL/devhandlers
SUNWglrt	OpenGL client-side runtime libraries	/usr/openwin/lib
SUNWglsr	OpenGL generic SPARC software renderer	/usr/openwin/lib
SUNWglrtu	OpenGL libraries specific to UltraSPARC	/usr/openwin/platform/sun4u/lib/GL
SUNWglsrz	OpenGL UltraSPARC software renderer	/usr/openwin/platform/sun4u/lib/GL
SUNWgldoc	OpenGL documentation and man pages	/usr/openwin/share
SUNWglrtx	Sun OpenGL 64-bit Runtime Libraries	/usr/openwin
SUNWglsrx	OpenGL 64-bit UltraSPARC software renderer	/usr/openwin/platform/sun4u/lib/sparcv9/GL

Installing OpenGL

See "Installing Supplement CD Software" on page 11.

After Installing the Packages

After installing the packages, do the following:

▼ To Verify Package Installation

1. **Exit the window system and restart it so that the window system loads the newly installed GLX server extension.**
2. **To verify that the OpenGL libraries are installed correctly, run** `ogl_install_check`**.**

   The `ogl_install_check` test program prints the version of the OpenGL library and renderer used, and renders a rotating wheel. The program returns the following output when it is run on an UltraSPARC Creator3D:

```
OpenGL Vendor:              Sun Microsystems, Inc.
OpenGL Version:             Sun OpenGL 1.3 for Solaris
```

   For diagnostic purposes, the following values should be noted if Solaris OpenGL software problems are seen:

```
OpenGL Renderer:                Creator 3D, VIS
OpenGL Extension Support:       GL_EXT_texture3D
                                GL_SGI_color_table
                                GL_SUN_geometry_compression
                                GL_EXT_abgr
                                GL_EXT_rescale_normal
OpenGL GLX Server:              Detail Status Report
     GLX:     Context is direct.
     GLX:     OpenGL Rendering in use
     GLX:     Double Buffering in use
     GLX:     Color Buffer (GLX_BUFFER_SIZE) = 24 bits
     GLX:     Depth Buffer (GLX_DEPTH_SIZE) = 28 bits
     GLX:     Stencil Buffer (GLX_STENCIL_SIZE) = 4 bits
     GLX:     RGBA (True Color/Direct Color) Visual in use
OpenGL Library:                 Detail Status Report
     Number of color bits (R/G/B/A): 8/8/8/0
     Frame Buffer Depth (GL_DEPTH_BITS):28
```

Unexpected Slow Local Rendering

Whenever possible, Sun OpenGL software for Solaris renders directly to the frame buffer, bypassing the X server. This is enabled by Sun's DGA mechanism for locking portions of the screen. However, a Solaris security feature enables only the user who originally logged in to the window system to use DGA to lock portions of the screen. Only owners of the window system have access to DGA.

If you notice poor performance when rendering locally, the cause might be this Solaris security feature. For example, if you start the window system, and another user at the workstation changes to that user's own environment using `su`, the application will not run by means of DGA even though the second user is running the application locally.

If you notice slow local rendering, run the `ogl_install_check` diagnostic program (found in `/usr/openwin/demo/GL`) to determine whether the application is running via DGA. If the OpenGL GLX server status report from the `ogl_install_check` program says that the GLX context is indirect, edit the login permissions to enable DGA access for all users.

▼ To Give All Local Users Access to DGA

1. **Become superuser:**

```
% su
Password: superuser_password
```

2. **Edit permissions to enable world read/write access to the following devices:**

```
% chmod 666 /dev/mouse /dev/kbd /dev/sound/* /dev/fbs/*
```

This enables DGA access for all users for the duration of the current window system session (subject to X authorization, see `xhost`(1)).

3. **Edit the `/etc/logindevperm` file and change the default permissions of all devices listed in the file to `0666` to allow world read/write access.**

For example, in the following lines in `logindevperm`, change 0600 to 0666 so that the next time you log in and restart your window system, it will still be accessible by all users.

```
/dev/console     0600     /dev/mouse:/dev/kbd
/dev/console     0600     /dev/sound/*       # audio devices
/dev/console     0600     /dev/fbs/*         #frame buffers
```

Note – Your system is no longer secure.

Sun Remote System Control for Sun Servers

Sun Remote System Control (RSC) is a secure server management tool that lets you monitor and control a Sun Enterprise 250, Sun Fire 280R, Sun Fire V880, Sun Fire V890, or Sun Fire V480 server over modem lines and over a network, using Solaris Operating System or Microsoft Windows clients. RSC can also notify you when server problems occur. RSC provides remote system administration for geographically distributed or physically inaccessible systems. All hardware functionality required to support RSC is already included with your Sun Enterprise 250, Sun Fire 280R, Sun Fire V880, or Sun Fire V480 server.

The Sun Remote System Control for Sun Servers software is provided on the Supplement CD. For installation information, see "Installing Supplement CD Software" on page 11. For configuration information for Remote System Control, see the *Remote System Control (RSC) User's Guide*.

To install RSC client software on a computer running Microsoft Windows 98, Windows NT 4.0, or Windows 2000 operating environment, load the Supplement CD into the system's CD-ROM drive. The InstallShield application starts automatically, prompts you for a directory name, and installs the RSC executable in the location that you specify.

SunForum

SunForum is a data conferencing product for Sun workstations. It is based on the T.120 standard, which enables your Sun system to conference over intranets and the Internet with other T.120 products, such as Microsoft NetMeeting and PictureTel LiveShare Plus, version 4.0.

SunForum includes the following features:

- View and control applications shared from other UNIX or PC machines that are based on the T.120 protocol.
- Share local Solaris applications, which can be viewed and controlled by any conference participant.

- Exchange ideas and data using the whiteboard, clipboard, chat, and file transfers.

Installing SunForum

See "Installing Supplement CD Software" on page 11.

The *SunForum Software Installation Guide* and *SunForum Software User's Guide* can also be found in the SunForum directory described in "Installing Supplement CD Software on a Standalone System Using `pkgadd`" on page 13, and in SunForum's `Docs` directory as PostScript™ and PDF files.

Online Help

You can read information about SunForum online. You can access help from the Help menu located on any SunForum menu bar.

Network Adapter Drivers Included on the Supplement CD

The following software is provided on the Supplement CD contained in your Solaris 9 9/04 Media Kit:

- SunHSI PCI driver software
- SunATM software

Installing the Drivers

Note – Before installing driver software from the Supplement CD, make sure that you have already installed the adapter hardware. Refer to the appropriate Platform Notes for more information.

See "Installing Supplement CD Software" on page 11.

Platform Notes for Network Adapter Drivers

Refer to the following platform notes for more information:

- *Platform Notes: The Sun GigabitEthernet Device Driver*
- *Platform Notes: The SunHSI/P Device Driver*
- *Platform Notes: SunATM Driver Software*
- *Platform Notes: The* `hme` *FastEthernet Device Driver*
- *Platform Notes: The* `eri` *FastEthernet Device Driver*
- *Platform Notes: Sun GigaSwift Ethernet Device Driver*
- *Platform Notes: Sun Quad FastEthernet Device Driver*

Configuring VLANs

Virtual Local Area Networks (VLANs) are commonly used to split up groups of network users into manageable broadcast domains, to create logical segmentation of workgroups, and to enforce security policies among each logical segment. With multiple VLANs on an adapter, a server with a single adapter can have a logical presence on multiple IP subnets. By default, 512 VLANs can be defined for each VLAN-aware adapter on your server.

If your network does not require multiple VLANs, you can use the default configuration, in which case no further configuration is necessary.

VLANs can be created according to various criteria, but each VLAN must be assigned a VLAN tag or VLAN ID (VID). The VID is a 12-bit identifier between 1 and 4094 that identifies a unique VLAN. For each network interface (for example, `ce0`, `ce1`, `ce2`, and so on; or `bge0, bge1, bge2, and so on`), 512 possible VLANs can be created. Because IP subnets are commonly used, use IP subnets when setting up a VLAN network interface. This means that each VID assigned to a VLAN interface of a physical network interface belongs to different subnets.

Tagging an Ethernet frame requires the addition of a tag header to the frame. The header is inserted immediately following the Destination MAC address and the Source MAC address. The tag header consists of two bytes of Ethernet Tag Protocol Identifier (TPID, 0x8100) and two bytes of Tag Control Information (TCI). FIGURE 2-1 shows the Ethernet Tag Header format.

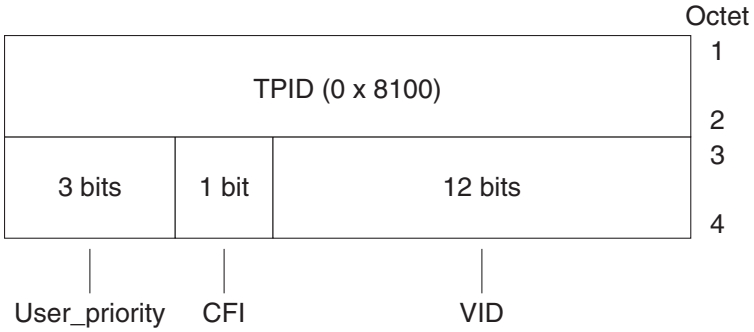

FIGURE 2-1 Ethernet Tag Header Format

▼ To Configure Static VLANs

1. **Create one** `hostname.ce`*num* **file (**`hostname6.ce`*num* **file for IPv6) for each VLAN that will be configured for each adapter on the server.**

   The network adapter on your system might not be referred to by the letters `ce`. For example, it might identify itself using the letters `hme`, `bge`, or something else. To find out, type the following (in this example, the output is from a system containing an `hme` adapter):

```
# ifconfig -a
lo0: flags=1000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4> mtu 8232 index 1
        inet 127.0.0.1 netmask ff000000
hme0: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 2
        inet 129.156.200.77 netmask ffffff00 broadcast 129.156.200.255
```

   Use the following naming format that includes both the VID and the physical point of attachment (PPA):

   VLAN logical PPA = 1000 * *VID* + *Device PPA*
   `ce123000 = 1000*123 + 0`

   Example: `hostname.ce123000`

   VLAN logical PPA = 1000 * *VID* + *Device PPA*
   `bge11000 = 1000*11 + 0`

   Example: `hostname.bge11000`

   This format limits the maximum number of PPAs (instances) you can configure to 1000 in the `/etc/path_to_inst` file.

   For example, on a server with the Sun GigabitEthernet/P 3.0 adapter having an instance of 0, that belongs to two VLANs with VIDs 123 and 224, you would use `ce123000` and `ce224000`, respectively, as the two VLAN PPAs.

   For a system containing a Broadcom Gigabit Ethernet adapter having an instance of 0, that belongs to two VLANs with VIDs 10 and 11, you would use bge10000 and bge11000, respectively, as the two VLAN PPAs.

2. **Use the `ifconfig(1M)` to configure a VLAN virtual device, for example:**

```
# ifconfig ce123000 plumb up
# ifconfig ce224000 plumb up
```

or:

```
# ifconfig bge10000 plumb up
# ifconfig bge11000 plumb up
```

The output of `ifconfig -a` on a system with VLAN devices `ce123000` and `ce224000`:

```
# ifconfig -a
lo0: flags=1000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4> mtu 8232 index 1
        inet 127.0.0.1 netmask ff000000
hme0: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 2
        inet 129.144.131.91 netmask ffffff00 broadcast 129.144.131.255
        ether 8:0:20:a4:4f:b8
ce123000: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 3
        inet 199.199.123.3 netmask ffffff00 broadcast 199.199.123.255
        ether 8:0:20:a4:4f:b8
ce224000: flags=1000843<UP,BROADCAST,RUNNING,MULTICAST,IPv4> mtu 1500 index 4
        inet 199.199.224.3 netmask ffffff00 broadcast 199.199.224.255
        ether 8:0:20:a4:4f:b8
```

The output of `ifconfig -a` on a system with VLAN devices `bge10000` and `bge11000`:

```
# ifconfig -a
lo0: flags=1000849<UP,LOOPBACK,RUNNING,MULTICAST,IPv4> mtu 8232 index 1
        inet 127.0.0.1 netmask ff000000
bge0: flags=1004843<UP,BROADCAST,RUNNING,MULTICAST,DHCP,IPv4> mtu 1500 index 2
        inet 129.156.205.172 netmask ffffff00 broadcast 129.156.205.255
        ether 0:3:ba:29:f0:de
bge10000: flags=201000842<BROADCAST,RUNNING,MULTICAST,IPv4,CoS> mtu 1500 index
 3
        inet 10.0.0.2 netmask ffffff00 broadcast 10.0.0.255
        ether 0:3:ba:29:f0:de
bge11000: flags=201000842<BROADCAST,RUNNING,MULTICAST,IPv4,CoS> mtu 1500 index
 4
        inet 10.0.1.2 netmask ffffff00 broadcast 10.0.1.255
        ether 0:3:ba:29:f0:de
```

3. **On the switch, set VLAN tagging and set VLAN ports to coincide with the VLANs you have set up on the server.**

   Using the examples in Step 2, you would set up VLAN ports 123 and 224 on the switch or VLAN ports 10 and 11.

   Refer to the documentation that came with your switch for specific instructions for setting VLAN tagging and ports.

Java 3D 1.3.1 API

The Java 3D 1.3.1 API is a set of classes for writing three-dimensional graphics applications and 3D applets. It gives developers high-level constructs for creating and manipulating 3D geometry, and for constructing the structures used in rendering that geometry. Application developers can describe very large virtual worlds using these constructs, which provide Java 3D software with enough information to render these worlds efficiently.

Installation Dependencies

The Java 3D 1.3.1 API requires OpenGL software, any version from 1.1 through 1.3.

Installing Java 3D 1.3.1 API

See "Installing Supplement CD Software" on page 11.

Sun Enterprise 10000 SSP Software

For SSP installation and update procedures, as well as SSP release notes, see the *Sun Enterprise 10000 SSP Installation and Release Notes*, a printed copy of which is included in your media kit.

Sun Enterprise 10000 Capacity on Demand 1.0 Software

For Capacity on Demand software installation, as well as release notes, see the *Sun Enterprise 10000 Capacity on Demand 1.0 Installation Guide and Release Notes*, a printed copy of which is included in your server media kit.

Netra ct Platform Software

The Netra ct Platform 1.0 software on the Supplement CD contains the software required to support environmental monitoring, alarms (RSC software), and SNMP monitoring of the Netra ct servers.

The two current Netra ct servers are the Netra ct800 and the Netra ct400.

The software should not be installed on servers that are not Netra systems.

CHAPTER 3

Documents on the Supplement CD

This chapter describes where to find the documents on the Supplement CD, and ways you can install and read the online manuals.

Note – The manuals provided on the Supplement CD, both English and localized, are also available at the `http://docs.sun.com` website.

This chapter includes the following topics:

AnswerBook2 Documentation and the Solaris 9 9/04 Release

None of the documentation about the Solaris 9 9/04 release is supplied in AnswerBook2™ format. If you have AnswerBook2 documentation collections for other products, you can continue to use the AnswerBook2 server software with the Solaris 9 9/04 release.

The Solaris 9 9/04 Documentation CDs in the kit provide the greater part of Solaris manuals in PDF and HTML formats. For information about reading the contents of those CDs, load the Documentation CD for English and European language documents and read the following file:

```
/cdrom/sol_9_904_doc_1of2/index.html
```

The contents of the Solaris 9 9/04 Documentation CDs and the Solaris 9 9/04 Software Supplement CD are also contained on the Solaris 9 9/04 Operating Environment DVD.

Documentation on the Supplement CD

Documentation packages containing files in PDF and HTML format are provided on the Supplement CD in the following directory:

`Solaris_On_Sun_Hardware_Documentation/Product`

TABLE 3-1 lists the document packages.

TABLE 3-1 Solaris 9 9/04 Document Directories on the Supplement CD

Language	Format	Package	Comments
English	PDF	`SUNWdpshw`	Most complete set of manuals
English	HTML	`SUNWdhshw`	Subset of the manuals in `SUNWdpshw`
French	PDF	`SUNWdpfrshw`	Most complete set of French manuals
French	HTML	`SUNWdhfrshw`	Subset of the manuals in `SUNWdpfrshw`
German	PDF	`SUNWdpdeshw`	Most complete set of German manuals
German	HTML	`SUNWdhdeshw`	Subset of the manuals in `SUNWdpdeshw`
Italian	PDF	`SUNWdpitshw`	Most complete set of Italian manuals
Italian	HTML	`SUNWdhitshw`	Subset of the manuals in `SUNWdpitshw`
Spanish	PDF	`SUNWdpesshw`	Most complete set of Spanish manuals
Spanish	HTML	`SUNWdhesshw`	Subset of the manuals in `SUNWdpesshw`
Swedish	PDF	`SUNWdpsvshw`	Most complete set of Swedish manuals
Swedish	HTML	`SUNWdhsvshw`	Subset of the manuals in `SUNWdpsvshw`
Japanese	PDF	`SUNWdpjashw`	Most complete set of Japanese manuals
Japanese	HTML	`SUNWdhjashw`	Subset of the manuals in `SUNWdpjashw`
Korean	PDF	`SUNWdpkoshw`	Most complete set of Korean manuals
Traditional Chinese	PDF	`SUNWdphshw`	Most complete set of Traditional Chinese manuals
Simplified Chinese	PDF	`SUNWdpcshw`	Most complete set of Simplified Chinese manuals

In a normal Solaris installation, the document packages are installed by default. The English document packages are always installed. If you are performing a localized installation, the localized document packages for that language are also installed.

You can install any of these packages separately, after a Solaris installation, as you would any other software on the Supplement CD. See "Installing Supplement CD Software" on page 11 for details.

These documentation sets include manuals that were part of separate collections in AnswerBook2 format contained in releases earlier than the Solaris 9 9/04 release. These older AnswerBook2 collections include the following:

- Solaris on Sun Hardware Collection (`SUNWabhdw`)
- Sun Enterprise 10000 SSP Collection (`SUNWuessp`)
- Sun Enterprise 10000 Capacity-On-Demand Collection (`SUNWcodbk`)
- OpenBoot Collection (`SUNWopen`)

The `Product` directory also contains a package named `SUNWsdocs`, which contains software used during installation as needed to provide an easy-to-use link for the PDF and HTML documentation sets you install.

You can also read PDF and HTML documents directly from the Supplement CD. At the top level of this CD, the `Docs` directory contains a file named `index.html` that links to all collections.

Accessing Documents From the Installed Packages

Each of the document packages you install contains a file named `booklist.html`. When you read this HTML file in a browser, it provides links to each of the books in that directory.

When you install a PDF or HTML documentation set in any language, a link to the `booklist.html` file for that set is automatically added to the following file:

```
/var/opt/sun_docs/sundocs.html
```

View that HTML file in your browser and follow the links to any documentation set installed on your system.

Note – If you need software that can display PDF-format files, you can download or order the Adobe® Acrobat Reader program from `http://www.adobe.com`.

Solaris 9 9/04 on Sun Hardware Documentation Set

This set includes general manuals as well as platform notes, which are manuals that cover use of Solaris 9 9/04 software with specific Sun hardware products.

TABLE 3-2 Solaris 9 9/04 on Sun Hardware Document Collection

Part Number	Title	Content
817-6357	*Solaris 9 9/04 Sun Hardware Platform Guide*	Contains information about installing software from the Supplement CD and other system products hardware issues.
817-3901	*Solaris on Sun Hardware Reference Manual Supplement*	Information to help you find a compilation of manual pages provided in packages on the Supplement CD. Includes man pages that cover SunVTS software.
816-4468	*Solaris Handbook for Sun Peripherals*	Overview of documents about installing drives and other peripherals for use with the Solaris 9 9/04 software environment. Covers issues such as configuring SCSI addresses.
817-0438	*Solaris Handbook for Sun Frame Buffers*	Information on how to use features of the TurboGXPlus, SX, PGX (m64), and Creator graphics accelerator frame buffers. Also explains how to configure multiple monitors on a system.
816-1114	*SunForum 3.2 Software User's Guide*	Describes how to use SunForum 3.2 software.
816-5144	*SunVTS 5.1 User's Guide*	Basic instructions on using the SunVTS diagnostic software.
816-5145	*SunVTS 5.1 Test Reference Manual*	Information about each test provided with the SunVTS diagnostic software.
817-6318	*SunVTS 5.1 Patch Set 6 Documentation Supplement*	Supplemental information added to the base VTS version through a patch set.
816-5146	*SunVTS Quick Reference Card*	A quick reference card for the SunVTS diagnostic software.
816-5074	*Platform Notes: Using* `luxadm` *Software*	Instructions on using the `luxadm` administrative program with the Sun StorEdge™ A5000, the SPARCstorage™ Array, and the Sun Fire V880 internal storage array.
816-2348	*Platform Notes: The* `hme` *FastEthernet Device Driver*	Information on how to configure the `hme` device driver for use with the Ultra workstation series platform, Sun Enterprise servers, SunSwift™ SBus adapter, SunSwift PCI adapter, and PCI SunFastEthernet™ card.

TABLE 3-2 Solaris 9 9/04 on Sun Hardware Document Collection *(Continued)*

Part Number	Title	Content
806-4647	*Platform Notes: Sun Enterprise 6x00, 5x00, 4x00, and 3x00 Systems*	Sun Enterprise *x*000-specific OpenBoot commands, including those for board hot-plug operations. Also contains board hot-plug procedures, and miscellaneous related information.
806-3991	*Platform Notes: Sun Enterprise 250 Server*	New OpenBoot commands, configuration variables, and disk drive hot-plug procedures. Also provides procedures for mapping between logical and physical device names for internal storage devices.
806-3992	*Platform Notes: Sun Ultra 450 Workstation and Sun Enterprise 450 Server*	New OpenBoot commands, configuration variables, and disk drive hot-plug procedures. Also provides procedures for mapping between logical and physical device names for internal storage devices.
816-3157	*Platform Notes: Sun GigabitEthernet Device Driver*	Information on how to configure the Sun GigabitEthernet driver software.
816-2346	*Platform Notes: The SunHSI/P Device Driver*	Describes how to configure the SunHSI PCI driver software.
816-1915	*Platform Notes: The SunATM Driver Software*	Describes how to configure the SunATM driver software.
806-3984	*Platform Notes: Sun Enterprise 6x00, 5x00, 4x00, 3x00 Systems Dynamic Reconfiguration User's Guide*	Information about how to use Dynamic Reconfiguration software features on these Sun Enterprise servers.
816-2349	*Platform Notes: The Sun Quad FastEthernet Device Driver*	Describes how to configure the Sun Quad FastEthernet™ driver software.
816-2351	*Platform Notes: Sun GigaSwift Ethernet Device Driver*	Describes how to configure the Sun GigaSwift Ethernet driver software.
816-2127	*Platform Notes: The* `eri` *FastEthernet Device Driver*	Describes how to configure the `eri` FastEthernet driver software.
816-2128	*Platform Notes: The* `dmfe` *Fast Ethernet Device Driver*	Describes how to configure the `dmfe` FastEthernet driver software.
816-3630	*Sun Enterprise 10000 DR Configuration Guide*	Configuration information for Dynamic Configuration on the Sun Enterprise 10000 system.
806-5231	*Sun Enterprise 10000 IDN Error Messages*	Error messages for IDN on the Sun Enterprise 10000 system.
806-5230	*Sun Enterprise 10000 IDN Configuration Guide*	Configuration information for IDN on the Sun Enterprise 10000 system.
816-1465	*Sun Fire 880 Dynamic Reconfiguration User's Guide*	Information about how to use Dynamic Configuration software features on the Sun Fire V880 system.
816-3626	*Sun Enterprise 10000 SSP 3.5 Installation Guide and Release Notes*	Installation and release note information for the Sun Enterprise 10000 SSP 3.5 software.

TABLE 3-2 Solaris 9 9/04 on Sun Hardware Document Collection *(Continued)*

Part Number	Title	Content
816-3624	*Sun Enterprise 10000 SSP 3.5 User Guide*	User information for Sun Enterprise 10000 System Service Processor (SSP) software.
806-7614	*Sun Enterprise 10000 SSP 3.5 Reference Manual*	Man pages for Sun Enterprise 10000 System Service Processor (SSP).
816-3627	*Sun Enterprise 10000 Dynamic Reconfiguration User's Guide*	Contains information about how to use Dynamic Configuration software features on the Sun Enterprise 10000 system.
806-7617	*Sun Enterprise 10000 Dynamic Reconfiguration Reference Manual*	Man pages for Sun Enterprise 10000 Dynamic Reconfiguration.
806-4131	*Sun Enterprise 10000 InterDomain Networks User Guide*	User information for Sun Enterprise 10000 InterDomain Networks (IDN) software.
806-2283	*Sun Enterprise 10000 Capacity on Demand 1.0 Installation Guide and Release Notes*	Installation and release note information for Capacity on Demand on the Sun Enterprise 10000 server.
806-2190	*Sun Enterprise 10000 Capacity on Demand 1.0 Administrator Guide*	System administrator information for Capacity on Demand on the Sun Enterprise 10000 server.
806-2191	*Sun Enterprise 10000 Capacity on Demand 1.0 Reference Manual*	Man pages for Capacity on Demand on the Sun Enterprise 10000 server.
817-4586	*Sun Fire High-End Systems Dynamic Reconfiguration (DR) User Guide*	Contains information about how to use Dynamic Reconfiguration software features on the Sun Fire High-End systems.
806-2906	*OpenBoot 2.x Command Reference Manual*	Descriptions and information about OpenBoot 2.*x* commands.
806-2907	*OpenBoot 2.x Quick Reference*	Brief descriptions of OpenBoot 2.*x* commands.
806-1377	*OpenBoot 3.x Command Reference Manual*	Descriptions and information about OpenBoot 3.*x* commands.
806-2908	*OpenBoot 3.x Quick Reference*	Brief descriptions of OpenBoot 3.*x* commands.
816-1177	*OpenBoot 4.x Command Reference Manual*	Descriptions and information about OpenBoot 4.*x* commands.
806-1379	*Writing FCode 3.x Programs*	Information about writing FCode programs.
816-1984	*WDR Developer's Guide (Creating System Management Applications)*	Provides system administrators with the information they need to develop WBEM-based applications that perform dynamic reconfiguration operations.
816-4820	*WDR Installation Guide*	Instructions for installing the WDR software on Sun Fire 15K, 6800, 4810, 4800, and 3800 servers.
816-3995	*Sun Remote System Control (RSC) 2.2.2 Release Notes*	Release note information for RSC software.

TABLE 3-2 Solaris 9 9/04 on Sun Hardware Document Collection *(Continued)*

Part Number	Title	Content
806-3987	*Sun Remote System Control (RSC) Installation Guide*	Installation information about RSC software.
816-3314	*Sun Remote System Control (RSC) 2.2 User's Guide*	Information about how to use RSC software.
817-4585	*Sun Fire Midrange Systems Dynamic Reconfiguration User Guide*	Information about how to use Dynamic Reconfiguration on Sun Fire Midrange systems.

Sun Computer Systems Manual Page Packages

When you install products using the Solaris Web Start Installer, the products' man pages are automatically installed. Use `pkgadd` if you want to install a man page for a product but do not want to install the product.

TABLE 3-3 Sun Computer Systems Manual Page Packages on the Supplement CD

Package	Name	Description
`SUNWvtsmn`	Validation Test Suite Manual Pages	Man pages for SunVTS drivers/binaries
`SUNWhsipm`	SunHSI/P Manual Pages	Man pages for SunHSI PCI
`SUNWsspmn`	SSP Manual Pages	Man pages for SSP
`SUNWcodmn`	Capacity on Demand Manual Pages	Man pages for COD
`SUNWrsc`	Remote System Control	Man pages for `rscadm` included in this package with the software

Installing Sun Computer Systems Manual Pages

See "Installing Supplement CD Software" on page 11.

Using Sun Computer Systems Manual Pages

To view the man pages you have installed, use the `man` command as you would for the man pages installed as part of the Solaris operating environment installation. These additional man pages are also available in the *Solaris on Sun Hardware Reference Manual Supplement* in the Solaris 9 9/04 on Sun Hardware collection.

Other Documents on the Supplement CD

The following table lists the documents on the Supplement CD that are not part of Solaris on Sun Hardware Collection and are not man pages:

TABLE 3-4 Other Documents on the Supplement CD

Path	Comment
`Docs/README/README_en.html`	Readme file for Solaris 9 9/04 Sun Computer Systems Supplement CD

Note – The `_en` indicates an English language document. Other languages might be indicated, depending on locale.

CHAPTER 4

Power Management on Sun Hardware

The United States Environmental Protection Agency created the Energy Star® guidelines for computer products to encourage the use of energy-efficient computer systems and to reduce air pollution associated with energy generation.

To meet these guidelines, Sun Microsystems, Inc. designs hardware to use power efficiently; also, it provides Power Management software with which to configure the power management settings. To reduce power consumption, your Sun workstation and devices are capable of entering a lower-power state when they have been inactive for a period of time.

This section supplements the Power Management section in the *Solaris Common Desktop Environment: User's Guide*, found in the Solaris 9 User Collection. The chapter covers the following topics:

Supported Platforms and System Distinctions

Power Management software supports the sun4m and sun4u platform groups. Software features and defaults may vary between the two platform groups. Refer to the *Solaris Common Desktop Environment: User's Guide* in the Solaris 9 User Collection for more information when you identify the platform group that applies to your system.

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

TABLE 4-1 Platform Names and Groups Supported by Power Management

Sun 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
Ultra 1 (all models)	SUNW,Ultra-1	sun4u
Ultra 5	SUNW,Ultra-5	sun4u
Ultra 10	SUNW,Ultra-10	sun4u
Ultra 30	SUNW,Ultra-30	sun4u
Ultra 60	SUNW,Ultra-60	sun4u
Ultra 80	SUNW,Ultra-80	sun4u
Ultra 450	SUNW,Ultra-4	sun4u
Ultra 2 Creator (all models)	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
Sun Blade 100	SUNW,Sun-Blade-100	sun4u
Sun Blade 150	SUNW,Sun-Blade-100	sun4u
Sun Blade 1000	SUNW,Sun-Blade-1000	sun4u
Sun Blade 2000	SUNW,Sun-Blade-1000	sun4u

Note – The SPARCstation Voyager™ is a sun4m-architecture system, but it is not supported in this Solaris release.

System Architecture Distinctions and Default Settings

The SPARC architecture of a workstation determines which Power Management features are available. To determine your system's architecture, see TABLE 4-1. The default behavior in Power Management functions varies on systems, as described in TABLE 4-2.

TABLE 4-2 Supported Power Management Features in Different SPARC Architectures

Power Management Features	sun4m	sun4u (Ultra)/ Energy Star 2.0	sun4u (Sun Blade)/ Energy Star 3.0	Servers
Display PM Available	Yes	Yes	Yes	Yes
Display PM by Default	Yes	Yes	Yes	Yes
Device PM Available	No	No	Yes	No
Device PM by Default	N/A	N/A	Yes	N/A
Suspend-Resume Available	Yes	Yes	Yes	No
Suspend-Resume by Default	No	Yes	No	N/A
AutoShutDown Available	No	Yes	Yes	No
AutoWakeup by Default	N/A	Yes	No	N/A

Note – Some devices might not support all available Power Management features on a given architecture.

SPARCstation 4 Issues

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

The AC accessory outlet on the SPARCstation 4 system 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.

CHAPTER 5

OpenBoot Emergency Procedures

The introduction of USB keyboards with the newest Sun workstations has made it necessary to change some of the OpenBoot emergency procedures. Specifically, the Stop-N, Stop-D, and Stop-F commands that are available on systems with standard (non-USB) keyboards are not supported on systems that have USB keyboards. The following sections describe the OpenBoot emergency procedures for systems with standard keyboards and for newer systems with USB keyboards:

OpenBoot Emergency Procedures for Systems With Standard (Non-USB) Keyboards

When issuing any of these commands, press the keys immediately after turning on the power to your system, and hold the keys down for a few seconds until the keyboard LEDs flash.

TABLE 5-1 OpenBoot Emergency Commands for Non-USB Keyboards

Command	Description
Stop	Bypass POST. This command does not depend on security mode. (Note: Some systems bypass POST as a default. In such cases, use Stop-D to start POST.)
Stop-A	Abort.

TABLE 5-1 OpenBoot Emergency Commands for Non-USB Keyboards

Command	Description
Stop-D	Enter the diagnostic mode (set `diag-switch?` to `true`).
Stop-F	Enter Forth on TTYA instead of probing. Use `fexit` to continue with the initialization sequence. Useful if hardware is broken.
Stop-N	Reset NVRAM contents to default values.

OpenBoot Emergency Procedures for Systems With USB Keyboards

The following paragraphs describe how to perform the functions of the Stop commands on systems that have USB keyboards.

Stop-A Functionality

Stop-A (Abort) works the same as it does on systems with standard keyboards, except that this command does not work during the first few seconds after the system is reset.

Stop-N Functionality

▼ To Use a Stop-N Equivalent

1. **After turning on the power to your system, wait until the front panel power button LED begins to blink and you hear an audible beep.**

2. **Quickly press the front panel power button twice (similar to the way you would double-click a mouse).**

   A screen similar to the following is displayed to indicate that you have successfully reset the NVRAM contents to the default values:

```
Sun Blade 1000 (2 X UltraSPARC-III) , Keyboard Present

OpenBoot 4.0, 256 MB memory installed, Serial #12134241.

Ethernet address 8:0:20:b9:27:61, Host ID: 80b92761.




Safe NVRAM mode, the following nvram configuration variables have

been overridden:

  'diag-switch?' is true

  'use-nvramrc?' is false

  'input-device', 'output-device' are defaulted

  'ttya-mode', 'ttyb-mode' are defaulted



These changes are temporary and the original values will be
restored

after the next hardware or software reset.



ok
```

   Note that some NVRAM configuration parameters are reset to their defaults. These defaults include parameters that are more likely to cause problems, such as TTYA settings. These NVRAM settings are only reset to the defaults for this power cycle. If

you do nothing other than reset the machine at this point, the values are not permanently changed. Only settings that you change manually at this point become permanent. All other customized NVRAM settings are retained.

Typing `set-defaults` discards any customized NVRAM values and permanently restores the default settings for all NVRAM configuration parameters.

Note – Once the power button LED stops blinking and stays lit, pressing the power button again powers off the system.

Stop-F Functionality

The Stop-F functionality is not available in systems with USB keyboards.

Stop-D Functionality

The Stop-D (diags) key sequence is not supported on systems with USB keyboards. However, the Stop-D functionality can be closely emulated by using the power button double-tap (see Stop-N Functionality), since this temporarily sets `diag-switch?` to `true`. If you want the diagnostic mode turned on permanently, type:

```
ok setenv diag-switch? true
```

APPENDIX **A**

Localized Packages on the Supplement CD

This chapter includes the following sections:

Japanese Localized Packages

TABLE A-1 Japanese Localized Packages

Software Product	Package Name	Description
SunForum	SUNWjadat	Japanese (ja-EUC) SunForum
	SUNWjpdat	Japanese (ja-PCK) SunForum
Remote System Control	SUNWjersc	Japanese (EUC) Remote System Control
	SUNWjrscd	Japanese (EUC) *Remote System Control User Guide*
	SUNWjrscj	Japanese (EUC) Remote System Control GUI
SunVTS	SUNWjpvtm	Japanese (PCK) SunVTS man pages
	SUNWjuvtm	Japanese (UTF-8) SunVTS man pages
	SUNWjvtsm	Japanese (EUC) SunVTS man pages
Netra ct	SUNWjecte	Japanese (EUC) manual pages and messages for Netra ct Platform Software
Solaris on Sun Hardware Documentation	SUNWdpjashw	Solaris on Sun Hardware documentation in PDF
	SUNWdhjashw	Solaris on Sun Hardware documentation in HTML
Lights Out Management	SUNWjlomu	Japanese localization for utilities and daemon
Sun Fire B10n Content Load Balancing Blade	SUNWjeclbut	Japanese (EUC) Sun Fire B10n man pages
	SUNWjpclbut	Japanese (PCK) Sun Fire B10n man pages
	SUNWjuclbut	Japanese (UTF-8) Sun Fire B10n man pages

German Localized Packages

TABLE A-2 German Localized Packages

Software Product	Package Name	Description
SunForum	SUNWdedat	German SunForum
Remote System Control	SUNWdersc	German Remote System Control
	SUNWdrscd	German *Remote System Control User Guide*
	SUNWdrscj	German Remote System Control GUI
Netra ct	SUNWdecte	German (EUC) localization for Netra ct
Solaris on Sun Hardware Documentation	SUNWdpdeshw	Solaris on Sun Hardware documentation in PDF
	SUNWdhdeshw	Solaris on Sun Hardware documentation in HTML
Lights Out Management	SUNWdlomu	German localization for utilities and daemon

Italian Localized Packages

TABLE A-3 Italian Localized Packages

Software Product	Package Name	Description
SunForum	SUNWitdat	Italian SunForum
Remote System Control	SUNWitrsc	Italian Remote System Control
	SUNWirscd	Italian *Remote System Control User Guide*
	SUNWirscj	Italian Remote System Control GUI
Netra ct	SUNWitcte	Italian (EUC) localization for Netra ct

TABLE A-3 Italian Localized Packages *(Continued)*

Software Product	Package Name	Description
Solaris on Sun Hardware Documentation	SUNWdpitshw	Solaris on Sun Hardware documentation in PDF
	SUNWdhitshw	Solaris on Sun Hardware documentation in HTML
Lights Out Management	SUNWilomu	Italian localization for utilities and daemon

French Localized Packages

TABLE A-4 French Localized Packages

Software Product	Package Name	Description
SunForum	SUNWfrdat	French SunForum
Remote System Control	SUNWfrrsc	French Remote System Control
	SUNWfrscd	French *Remote System Control User Guide*
	SUNWfrscj	French Remote System Control GUI
Netra ct	SUNWfrcte	French (EUC) localization for Netra ct
Solaris on Sun Hardware Documentation	SUNWdpfrshw	Solaris on Sun Hardware documentation in PDF
	SUNWdhfrshw	Solaris on Sun Hardware documentation in HTML
Lights Out Management	SUNWflomu	French localization for utilities and daemon

Spanish Localized Packages

TABLE A-5 Spanish Localized Packages

Software Product	Package Name	Description
SunForum	SUNWesdat	Spanish SunForum
Remote System Control	SUNWesrsc	Spanish Remote System Control
	SUNWerscd	Spanish *Remote System Control User Guide*
	SUNWerscj	Spanish Remote System Control GUI
Netra ct	SUNWescte	Spanish (EUC) localization for Netra ct
Solaris on Sun Hardware Documentation	SUNWdpesshw	Solaris on Sun Hardware documentation in PDF
	SUNWdhesshw	Solaris on Sun Hardware documentation in HTML
Lights Out Management	SUNWelomu	Spanish localization for utilities and daemon

Swedish Localized Packages

TABLE A-6 Swedish Localized Packages

Software Product	Package Name	Description
SunForum	SUNWsvdat	Swedish SunForum
Remote System Control	SUNWsvrsc	Swedish Remote System Control
	SUNWsrscd	Swedish *Remote System Control User Guide*
	SUNWsrscj	Swedish Remote System Control GUI
Netra ct	SUNWsvcte	Swedish (EUC) localization for Netra ct
Solaris on Sun Hardware Documentation	SUNWdpsvshw	Solaris on Sun Hardware documentation in PDF
	SUNWdhsvshw	Solaris on Sun Hardware documentation in HTML
Lights Out Management	SUNWslomu	Swedish localization for utilities and daemon

Traditional Chinese Localized Packages

TABLE A-7 Traditional Chinese Localized Packages

Software Product	Package Name	Description
SunForum	SUNW5dat	Traditional Chinese (zh_TW-BIG5) SunForum
	SUNWhdat	Traditional Chinese (zh_TW-EUC) SunForum
Remote System Control	SUNWhrsc	Traditional Chinese (EUC) Remote System Control
	SUNWhrscd	Traditional Chinese (EUC) *Remote System Control User Guide*
	SUNWhrscj	Traditional Chinese (EUC) Remote System Control GUI

TABLE A-7 Traditional Chinese Localized Packages *(Continued)*

Software Product	Package Name	Description
Netra ct	SUNWhcte	Traditional Chinese (EUC) localization for Netra ct
Solaris on Sun Hardware Documentation	SUNWdphshw	Solaris on Sun Hardware documentation in PDF
Lights Out Management	SUNWhlomu	Traditional Chinese localization for utilities and daemon

Simplified Chinese Localized Packages

TABLE A-8 Simplified Chinese Localized Packages

Software Products	Package Name	Description
SunForum	SUNWcdat	Simplified Chinese (zh-EUC) SunForum
Remote System Control	SUNWcrsc	Simplified Chinese (EUC) Remote System Control
	SUNWcrscd	Simplified Chinese (EUC) *Remote System Control User Guide*
	SUNWcrscj	Simplified Chinese (EUC) Remote System Control GUI
Netra ct	SUNWccte	Simplified Chinese (EUC) localization for Netra ct
Solaris on Sun Hardware Documentation	SUNWdpcshw	Solaris on Sun Hardware documentation in PDF
Lights Out Management	SUNWclomu	Simplified Chinese localization for utilities and daemon

Korean Localized Packages

TABLE A-9 Korean Localized Packages

Software Product	Package Name	Description
SunForum	SUNWkodat	Korean SunForum
Remote System Control	SUNWkrsc	Korean (EUC) Remote System Control
	SUNWkrscd	Korean (EUC) *Remote System Control User Guide*
	SUNWkrscj	Korean (EUC) Remote System Control GUI

TABLE A-9 Korean Localized Packages *(Continued)*

Software Product	Package Name	Description
Netra ct	SUNWkocte	Korean (EUC) localization for Netra ct
Solaris on Sun Hardware Documentation	SUNWdpkoshw	Solaris on Sun Hardware documentation in PDF
Lights Out Management	SUNWklomu	Korean localization for utilities and daemon

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