Solaris™ 9 12/02 Sun™ Hardware Platform Guide

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Preface

The Solaris 9 12/02 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 12/02 software
- Describes software provided on the Solaris 9 12/02 Software Supplement CD and explains how to install product software
- Describes hardware and software requirements affecting Power Management™ software

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Note – For general Solaris 9 12/02 operating environment installation instructions, refer to Chapter 1. For information about how to install software contained on the Solaris 9 12/02 Software Supplement CD and information about supported hardware, refer to Chapter 3, “Installing Software from the Solaris 9 12/02 Software Supplement CD”.

Where to Find Installation Information

Before installing the Solaris 9 12/02 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.

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 environment on server systems

TABLE P-2 Specific Installation Information

If you want to	Go to
Know more about new products and peripherals	Chapter 3 in this manual
Know about late breaking news	1. *Solaris 9 12/02 Release Notes Supplement for Sun Hardware* 2. *Solaris 9 12/02 Release Note*s
Begin the installation process from the Solaris CD	1. *Solaris 9 12/02 Sun Hardware Platform Guide* 2. *Solaris 9 12/02 Start Here card*
Install software for your platform or peripheral from the Supplement CD	Chapter 3 in this manual

How This Book Is Organized

This book is organized as follows:

Chapter 1 supports the Solaris 9 12/02 Start Here card by providing additional installation instructions on how to install or upgrade to the Solaris 9 12/02 software on specific Sun platforms and hardware options.

Chapter 2 lists supported Sun hardware.

Chapter 3 describes how to install the software for Sun platforms and hardware options, and describes value-added software provided to users of Sun hardware.

Chapter 4 describes the locations and formats for the documentation on the Supplement CD.

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

Chapter 6 describes new OpenBoot™ emergency procedures for some systems.

Chapter 7 describes installation of the Solaris 9 12/02 operating environment on the Sun Fire™ 6800/4810/4800/3800 systems.

Typographic Conventions

Typeface or Symbol	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.*

Accessing Sun Documentation

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

`http://www.sun.com/documentation`

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`docfeedback@sun.com`

Please include the part number (816-7582-10) of your document in the subject line of your email.

CHAPTER 1

Installing Software From the Solaris Disk

This chapter covers the following topics:

- "Automatic Installation of Solaris Software" on page 1
- "Platform Names and Groups" on page 2
- "32-bit Kernel—Default on 200MHz or Lower UltraSPARC Systems" on page 5
- "System Kernel Support" on page 6

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

Automatic Installation of Solaris Software

For the Sun hardware listed in TABLE 1-1, the Solaris 9 12/02 release requires no special installation or upgrade instructions. If you plan to perform an automatic installation of the Solaris 9 12/02 operating environment on your Sun hardware, refer to the *Solaris 9 Installation Guide* for all your installation needs.

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 shows the platform names and platform groups of various Sun hardware systems.

TABLE 1-1 Platform Names for Sun Systems

System	Platform Name	Platform Group
Desktop Systems		
Sun Blade 1000	SUNW,Sun-Blade-1000	sun4u
Sun Blade 2000	SUNW,Sun-Blade-1000	sun4u
Sun Blade 100	SUNW,Sun-Blade-100	sun4u
Sun Blade 150	SUNW,Sun-Blade-100	sun4u
Ultra 1	SUNW,Ultra-1	sun4u
Ultra 2	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 80	SUNW,Ultra-80	sun4u
Ultra 450	SUNW,Ultra-4	sun4u
SPARCstation 4	SUNW,SPARCstation-4	sun4m
SPARCstation 5	SUNW,SPARCstation-5	sun4m
SPARCstation 10	SUNW,SPARCstation-10	sun4m

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

System	Platform Name	Platform Group
SPARCstation 20	SUNW,SPARCstation-20	sun4m
SPARCclassic	SUNW,SPARCclassic	sun4m
SPARCstation LX	SUNW,SPARCstation-LX	sun4m
SPARCstation LX+	SUNW,SPARCstation-LX+	sun4m
Entry/Workgroup Servers		
Sun Fire V1280	SUNW,Netra-T12	sun4u
Sun Fire V880	SUNW,Sun-Fire-880	sun4u
Sun Fire V480	SUNW,Sun-Fire-480	sun4u
Sun Fire 280R	SUNW,Sun-Fire-280R	sun4u
Sun Fire V120	SUNW,UltraAX-i2	sun4u
Sun Fire V100	SUNW,UltraAX-i2	sun4u
Sun Enterprise 420R	SUNW,Ultra-80	sun4u
Sun Enterprise 220R	SUNW,Ultra-60	sun4u
Sun Enterprise 450	SUNW,Ultra-4	sun4u
Sun Enterprise 250	SUNW,Ultra-250	sun4u
Sun Enterprise 150	SUNW,Ultra-1	sun4u
Sun Enterprise Ultra 5S	SUNW,Ultra-5_10	sun4u
Sun Enterprise Ultra 10S	SUNW,Ultra-5_10	sun4u
Sun Enterprise 2	SUNW,Ultra-2	sun4u
Sun Enterprise 1	SUNW,Ultra-1	sun4u
Mid-Range and Mid-Frame Servers		
Sun Fire 6800	SUNW,Sun-Fire	sun4u
Sun Fire 4810	SUNW,Sun-Fire	sun4u
Sun Fire 4800	SUNW,Sun-Fire	sun4u
Sun Fire 3800	SUNW,Sun-Fire	sun4u

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

System	Platform Name	Platform Group
Sun Enterprise 6500	SUNW,Ultra-Enterprise	sun4u
Sun Enterprise 5500	SUNW,Ultra-Enterprise	sun4u
Sun Enterprise 4500	SUNW,Ultra-Enterprise	sun4u
Sun Enterprise 3500	SUNW,Ultra-Enterprise	sun4u
Sun Enterprise 6000	SUNW,Ultra-Enterprise	sun4u
Sun Enterprise 5000	SUNW,Ultra-Enterprise	sun4u
Sun Enterprise 4000	SUNW,Ultra-Enterprise	sun4u
Sun Enterprise 3000	SUNW,Ultra-Enterprise	sun4u
High End Servers		
Sun Fire 15K	SUNW,Sun-Fire-15000	sun4u
Sun Fire 12K	SUNW,Sun-Fire-12000	sun4u
Sun Enterprise 10000	SUNW,Ultra-Enterprise	sun4u
Netra Servers		
Netra 20	SUNW,Netra-T4	sun4u
Netra 120	SUNW,UltraAX-i2	sun4u
Netra 1280	SUNW,Netra-T12	sun4u
Netra T1 AC200/DC200	SUNW,UltraAX-i2	sun4u
Netra X1	SUNW,UltraAX-i2	sun4u
Netra ct800	SUNW,UltraSPARC-IIi-Netract	sun4u
Netra ct400	SUNW,UltraSPARC-IIi-Netract	sun4u

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

System	Platform Name	Platform Group
Netra t 1400 & t 1405	SUNW,Ultra-80	sun4u
Netra t 1120 & t 1125	SUNW,Ultra-60	sun4u
Netra t1 100 & t1 105	SUNW,UltraSPARC-IIi-cEngine	sun4u

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 200MHz 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 may 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 12/02 operating environment includes both 32-bit and 64-bit versions of system libraries.)

The following lists indicate 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.

32-bit kernel/driver only platforms:

- SPARCclassic, SPARCstation LX
- SPARCstation 4, 5, 10, 20
- SPARCengine CP1200

64-bit platforms that can boot a 32-bit kernel/driver:

Note – These 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.

- Ultra 1, 2, 5, 10, 30, 60, 80, 450
- Sun Enterprise 1, 2, 150, 220R, 250, 420R, 450
- Sun Enterprise 3000, 4000, 5000, 6000, 3500, 4500, 5500, 6500
- Sun Enterprise 10000
- Netra t1, t1120, t1125, t1400, t1405
- Ultra AX, AXi, AXdp, AXmp, AXmp+, AXe
- SPARCengine CP1400, CP1500

64-bit platforms that do not support a 32-bit kernel/driver:

- Sun Blade 100, 150, 1000, 2000
- Sun Fire 280R, V480, V880
- Sun Fire V100, V120

- Sun Fire 3800, 4800, 4810, 6800
- Sun Fire 15K / 12K
- Netra X1, T1, 20, 120,1280

CHAPTER 2

Supported Sun Hardware

Supported Platforms

TABLE 2-1 lists the Sun systems that are supported in the Solaris 9 12/02 release:

TABLE 2-1 Supported Platforms

Desktop	Entry/Workgroup Servers	Mid-Range and Mid-Frame Servers	High End Servers	Netra Servers
Sun Blade™ 1000	Sun Fire™ V1280	Sun Fire 6800	Sun Fire 15K	Netra™ 20
Sun Blade 2000	Sun Fire V880	Sun Fire 4810	Sun Fire 12K	Netra 120
Sun Blade 100	Sun Fire V480	Sun Fire 4800	Sun Enterprise™ 10000	Netra 1280
Sun Blade 150	Sun Fire 280R	Sun Fire 3800		Netra T1 AC200/DC200
Ultra™ 1	Sun Fire V120	Sun Enterprise 6500		Netra X1
Ultra 2	Sun Fire V100	Sun Enterprise 5500		Netra ct800
Ultra 5	Sun Enterprise 420R	Sun Enterprise 4500		Netra ct400
Ultra 10	Sun Enterprise 220R	Sun Enterprise 3500		Netra t 1400 and t 1405
Ultra 30	Sun Enterprise 450	Sun Enterprise 6000		Netra t 1120 and t 1125
Ultra 60	Sun Enterprise 250	Sun Enterprise 5000		Netra t1 100 and t1 105
Ultra 80	Sun Enterprise 150	Sun Enterprise 4000		

TABLE 2-1 Supported Platforms *(Continued)*

Desktop	Entry/Workgroup Servers	Mid-Range and Mid-Frame Servers	High End Servers	Netra Servers
Ultra 450	Sun Enterprise Ultra 5S	Sun Enterprise 3000		
SPARCstation™ 4	Sun Enterprise Ultra 10S			
SPARCstation 5	Sun Enterprise 2			
SPARCstation 10	Sun Enterprise 1			
SPARCstation 20				
SPARCclassic				
SPARCstation LX				
SPARCstation LX+				

The following Sun board level products are supported in the Solaris 9 12/02 release:

- Ultra AX
- Ultra AXi
- CP1400
- CP1500
- UltraAX-MP
- UltraAX-MP+
- UltraAXe
- UltraAX-e2
- CP2020
- CP2040
- CP2060
- CP2080
- Netra AX 1105
- Netra AX 2200

CHAPTER 3

Installing Software from the Solaris 9 12/02 Software Supplement CD

This chapter describes the contents of the software on the CD labeled Solaris 9 12/02 Software Supplement. This CD is referred to in this document as the Supplement CD.

TABLE 3-1 lists each type of software on the Supplement CD, and whether that software is installed by default or by option.

TABLE 3-1 Solaris 9 12/02 Supplement CD Content and Installation Status

Software	Solaris 9 12/02 Version	Installed by Default?
Java 3D™ software	1.2.1_04	Yes
OpenGL® software	1.2.3	Yes
PC launcher software	1.0.2	Yes
Sun Remote System Control (RSC) for Sun Enterprise Servers	2.2.1	Yes
SunATM™ driver	5.1	Yes
SunForum™ software	3.1	Yes
SunHSI™ PCI driver	3.0	Yes
SunVTS™ software	5.1 Patch Set 1	Yes
Lights Out Management software	2.0	No
Netra™ ct Platform software	1.0	No
Netra t11 Alarms software	2.0	No
ShowMe TV™ software	1.3	No
Sun Enterprise 10000 Capacity On Demand (COD) software	1.0	No
Sun Enterprise 10000 SSP software	3.5	No

TABLE 3-1 Solaris 9 12/02 Supplement CD Content and Installation Status

Software	Solaris 9 12/02 Version	Installed by Default?
SunFDDI™ Sbus and PCI drivers	7.0/3.0	No
SunHSI™ SBus driver	3.0	No
System Management Services software for the Sun Fire 15K/12K systems	1.2	No
WBEM-based Dynamic Reconfiguration (WDR)	1.0	No

The following table lists the versions of the software in the current Solaris 9 12/02 release, compared to past Solaris 9 releases.

TABLE 3-2 Solaris 9 12/02 Supplement CD Version History

Software	Solaris 9	Solaris 9 9/02	Solaris 9 12/02
Sun Enterprise 10000 Capacity on Demand	1.0	1.0	1.0
Java 3D	1.2.1_04	1.2.1_04	1.2.1_04
Netra ct Platform	1.0	1.0	1.0
Netra t11xx Alarms	2.0	2.0	2.0
Lights Out Management	2.0	2.0	2.0
OpenGL	1.2.2	1.2.3	1.2.3
PC launcher	1.0.1	1.0.1	1.0.2
PC file viewer	1.0.1	1.0.1	n/a
Sun Remote System Control (RSC) for Sun Enterprise Servers	2.2.1	2.2.1	2.2.1
ShowMe TV	1.3	1.3	1.3
SunATM	5.1	5.1	5.1
SunFDDI PCI	3.0	3.0	3.0
SunFDDI SBus	7.0	7.0	7.0
SunForum	3.1	3.1	3.1
SunHSI PCI	3.0	3.0	3.0
SunHSI SBus	3.0	3.0	3.0
SunVTS	5.0	5.1	5.1 Patch Set 1
Sun Enterprise 10000 System Service Processor	3.5	3.5	3.5
System Management Services software for the Sun Fire 15K/12K systems	1.2	1.2	1.2
WBEM-based Dynamic Reconfiguration (WDR)	n/a	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, you should 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 slightly different depending on whether you install from CD or from DVD.

The Installer CD displays a predefined set of products that are installed by default from the Software Supplemental CD.

The DVD installation does not select any Supplement CD software by default. You can choose whether you want to install all contents from the Software Supplemental CD, or install only the products you select.

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 environment.

▼ 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, select Next.**
4. **Choose the language locale you want to install, and select 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 labelled "No Install" if you don't want a default component, or select "Custom Install" to add non-default components. These software components are listed in TABLE 3-1.

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 3-3 and *package_names* are the package names from TABLE 3-3.

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 3-3 Software and Packages

Software	Version	Directory	Packages
Validation Test Suite Software (SunVTS)	5.1 Patch Set 1	SunVTS_5.1_PS1/	SUNWvts SUNWvtsmn SUNWvtsx
OpenGL Runtime Libraries	1.2.3	OpenGL_1.2.3/	SUNWafbgl SUNWafbgx SUNWffbgl SUNWffbgx SUNWifbgl SUNWifbgx SUNWgfbgl SUNWgfbgx SUNWgldoc SUNWglh SUNWglrt SUNWglrtu SUNWglrtx SUNWglsr SUNWglsrx SUNWglsrz
PC Launcher	1.0.2	PC_launcher_1.0.2/	SUNWdtpcp
Sun Remote System Control Server	2.2.1	RSC_2.2.1/	SUNWrsc SUNWrscd SUNWrscj
ShowMe TV	1.3	ShowMeTV_1.3/	SUNWsmtvh SUNWsmtvr SUNWsmtvt SUNWsmtvu
SunForum	3.1	SunForum_3.1	SUNWdat SUNWdatu

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

Software	Version	Directory	Packages
SunFDDI PCI driver	3.0	SunFDDI_PCI_3.0/	SUNWpfd SUNWpfh SUNWpfm SUNWpfu
SunFDDI SBus driver	7.0	SunFDDI_SBus_7.0/	SUNWnfd SUNWnfh SUNWnfm SUNWnfu
SunHSI PCI driver	3.0	SunHSI_PCI_3.0/	SUNWhsip SUNWhsipm SUNWhsipu
SunHSI SBus driver	3.0	SunHSI_SBus_3.0/	SUNWhsis SUNWhsism SUNWhsisu
Java 3D	1.2.1_04	Java3D_1.2.1_04/	SUNWj3doc SUNWj3dem SUNWj3drt SUNWj3dut
SunATM 5.1	5.1	SunATM_5.1/	SUNWatm SUNWatma SUNWatmu
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

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

Software	Version	Directory	Packages
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
System Management Services software for the Sun Fire 15K/12K systems	1.2	System_Management_Services_1.2/	SUNWSMSdf SUNWSMSjh SUNWSMSlp SUNWSMSmn SUNWSMSob SUNWSMSod SUNWSMSop SUNWSMSpd SUNWSMSpo SUNWSMSpp SUNWSMSr SUNWSMSsu SUNWscdvr.u SUNWufrx.u SUNWufu
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 – 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?
```

Respond with either `yes`, `no`, or `quit`.

Validation Test Suite Software (SunVTS 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 3-4 describes the main features of the SunVTS environment.

TABLE 3-4 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 is designed to run 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.

TABLE 3-4 SunVTS Diagnostic Tool Features *(Continued)*

Feature	Description
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. It 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 3-5 provides a list of SunVTS packages needed to run the SunVTS diagnostic tool.

TABLE 3-5 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 13.

Using SunVTS Software

To use SunVTS software, refer to the SunVTS documentation in the Solaris 9 12/02 on Sun Hardware documentation set located on the Solaris Software Supplement CD. 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*, the *SunVTS 5.1 Patch Set 1 Test Reference Manual Supplement*, 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 1.2.3 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 frame buffers are supported on the OpenGL 1.2.3 software: the TCX, SX, GX, Creator, Elite3D, Expert3D, XVR-500, and XVR-1000 families of frame buffers. This includes Ultra desktop, Sun Enterprise, and the legacy SPARCstation family.

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 3-6 lists the packages that are provided with the Sun OpenGL software for Solaris.

TABLE 3-6 OpenGL Packages

Package Name	Description	Default Install Location
SUNWglh	OpenGL header files	/usr
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

TABLE 3-6 OpenGL Packages *(Continued)*

Package Name	Description	Default Install Location
SUNWglsrz	OpenGL UltraSPARC software renderer	/usr/openwin/platform/sun4u/lib/GL
SUNWafbgl	OpenGL device pipeline for Elite3D graphics accelerators	/usr/openwin/lib/GL/devhandlers
SUNWffbgl	OpenGL device pipeline for Creator and Creator3D graphics accelerators	/usr/openwin/lib/GL/devhandlers
SUNWifbgl	OpenGL device pipeline for Expert3D graphics accelerator	/usr/openwin/lib/GL/devhandlers
SUNWgfbgl	OpenGL 32-bit device pipeline for XVR-1000 graphics accelerator	/usr/openwin/lib/GL/devhandlers
SUNWgfbgx	OpenGL 64-bit device pipeline for XVR-1000 graphics accelerator	/usr/openwin/lib/sparcv9/GL/devhandlers
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
SUNWafbgx	OpenGL 64-bit device pipeline for Elite3D graphics accelerator	/usr/openwin/lib/sparcv9/GL/devhandlers
SUNWffbgx	OpenGL 64-bit device pipeline for Creator and Creator3D graphics accelerators	/usr/openwin/lib/sparcv9/GL/devhandlers
SUNWifbgx	OpenGL 64-bit device pipeline for Expert3D graphics accelerator	/usr/openwin/lib/sparcv9/GL/devhandlers

Installing OpenGL

See “Installing Supplement CD Software” on page 13.

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 1.2.3 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 only allows 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 may 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 via 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, follow these steps:

▼ To Give All Local Users Access to DGA

1. **Become superuser:**

```
% su
Password: superuser password
```

2. **Edit permissions to allow 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 that your system is no longer secure.

PC Launcher

Audience

PC launcher is designed for Solaris users who have access to Windows ‘98, ME, NT, or 2000 based PC environments.

What is PC Launcher?

PC launcher provides you with the capability to view and edit PC files and attachments by launching the associated Windows applications and files in the PC environment. PC launcher enables you to launch attachments and files created in the Windows environment.

PC Launcher Installation Requirements

PC Launcher requires the Solaris 9 12/02 Software Supplement CD for installation. If you don’t have the Supplement CD, contact your Sun service representative.

System Requirements

Sun Workstation

- Solaris 9 12/02 operating environment
- CDE 1.5
- 32 MB RAM

Network PC Environment with one of the following:

- SunPCi™ card
- Software environment
- PC Hardware with Windows ‘98, ME, NT, or 2000 (PCNFS™/Solstice™ Network Client)

PC Launcher Installation

SunPCi Requirements

In order for PC launcher to work, SunPCi and its host workstation must be able to ping each other by ‘name’. To do this, you must have:

- IP connectivity between the two.
- Name services (whatever you happen to be using) set up on each so that you can look up the other’s name and get its IP address.

Because of the network architecture of SunPCi and the way it shares Ethernet access with its host, the SunPCI and host cannot see each other on the network.

To work around this, use an IP routing system (a "real" router, another Sun system, an NT system, etc.) on the same subnet to act as a proxy router.

Note – You must have account access to the IP router you have selected, since you must add two routes to it.

For example, based on following setup:

- SunPCi IP = 10.0.0.1
- Host workstation IP = 10.0.0.2
- Router IP = 10.0.0.3

you need to do the following:

1. **On the host workstation:**

   route add 10.0.0.1 10.0.0.3 1

   Note – You can add an `/etc/rc` script to make this happen at every reboot.

   ---

2. **On the routing proxy:**

   route add 10.0.0.2 10.0.0.3 0

   route add 10.0.0.1 10.0.0.3 0 (or the equivalent)

Caution – You must add routes to all three systems in this fashion in order for this to work. Do NOT assume that "standard network default routers" or anything else will provide similar functionality; they will not.

After doing this, verify that the SunPCi can ping its host by IP, and vice versa. Once that works, make sure the systems can ping each other by name; add entries to the appropriate naming services if they cannot. On UNIX, examples of naming services are `DNS` or `/etc/hosts`. Windows can use DNS or the hosts file as well. Consult your system administrator to add these entries, based on your setup. Once the systems can ping each other by name, PC launcher installs.

For further assistance with installation of SunPCi, refer to the following publications:

- *SunPCi Installation Guide*
- *SunPCi Release Notes*
- *SunPCi 2.1 Windows NT Installation Guide*

Installing PC Launcher Packages

See “Installing Supplement CD Software” on page 13.

Configuring PC Launcher

Configure PC launcher by specifying your setup in the three steps on the PC launcher Configuration window.

Before configuring, you must have the following:

- A network host name and network connectivity between your Solaris and Windows environments.
- Your UNIX home directory mapped in your Windows environment.

▼ To Configure PC Launcher for PCi

1. **From the CDE Toolbar, start the Application Manager.**
2. **Click Configure PC launcher under the Desktop controls. The PC launcher Configuration window is displayed. Answer the questions in the following three steps.**

   a. On-Board PC Emulator and SunPCI (default)

   b. Enter your Sun PCi’s hostname (default)

   c. Let PC Emulator handle the file
3. **Click OK.**

Note – PC-type documents can be opened for viewing and editing through the Sun PCi card whenever you double-click a document. If you want to do "quick" viewing, select Let Solaris handle the file and PC file viewer is invoked. For editing, use the right-mouse button and select Open In Emulator.

4. **From SunPCi, run** `h: \.dt\bin\win9x\intel\sdtpcactiond.exe`**. This step assumes** `h:` **is mapped to your UNIX home directory.**

▼ To Configure PC Launcher for the Software Environment

1. **From the CDE toolbar, start the Application Manager.**
2. **Click Configure PC launcher under the Desktop controls then select or enter the following:**
   a. **On-Board PC Emulator and SoftWindows.**
   b. *Hostname*
   c. **Let Solaris handle the file**

Note – PC-type documents can be opened for viewing and editing with a right-mouse double-click. If you selected "Let Solaris handle the file" when you configured PC launcher, then double-clicking on a file will launch PC file viewer.

3. **Click OK.**
4. **From the software environment run:**

```
h: \.dt\bin\win9x\intel\sdtpcactiond.exe
```

This step assumes `h:` is mapped to your UNIX home directory.

▼ To Configure PC Launcher for a Deskside PC

1. **From the CDE toolbar, start the Application Manager.**
2. **Click Configure PC launcher under the Desktop Applications then select or enter the following:**
   a. **Standalone PC**
   b. *Hostname*
   c. **Let the Standalone PC handle the file**

Note – PC-type documents can be opened for viewing and editing with a right-mouse double-click. If you selected Let Solaris handle the file when you configured PC launcher, then double-clicking on a file will launch PC file viewer.

3. **Click OK.**

4. **From Deskside PC run:**

```
h: \.dt\bin\win9x\intel\sdtpcactiond.exe
```

This step assumes `h:` is mapped to your UNIX home directory.

Using PC Launcher

The CDE front panel and CDE workspace can be populated with an icon representing the PC environment, such as SunPCi. To do this, drag and drop OpenInSunPCi from the Desktop Applications in Application Manager, onto the Front Panel.

If you did not configure PC launcher, then the first time you open PC launcher, the PC launcher Configuration window will display. You only need to configure PC launcher once.

Working With Windows Files

Identification of many popular PC file formats in CDE allows you to select and launch them in your preferred PC environment, such as SunPCI. A right mouse click on these files gives you the three following choices in the menu:

- Open—the double-click action.
- OpenInEmulator—launches the file in your preferred hardware, such as SunPCi (or any software emulator).
- OpenInRemotePC—launches the file in a standalone networked PC.

You can drag and drop Windows shortcuts onto the front panel. You can also put shortcuts on the CDE workspace by creating a Windows short cut in your UNIX home directory and using `dtfile` to drag and drop. Refer to Windows help on creating shortcuts, and CDE help to get more information on drag and drop.

▼ To Open an Application or Datafile

- **Double-click on the shortcut from the Solaris desktop.**

  The associated applications must be available to you. This procedure makes the Solaris desktop act like a Windows desktop. You can keep all your relevant applications inside the Solaris CDE front panel and CDE workspace and run them by double-clicking on them.

▼ To Run Windows Binary Files

- **Double-click on the file (**exe**) and run inside the PC environment (for example, SunPCi).**

▼ To Copy and Paste Text

1. **Highlight the text you want to copy and select Copy from the Edit menu.**
2. **Click the place you want to paste the text, and select Paste from the Edit menu.**

▼ To View a File

- **Click on the file and select View.**

▼ To Search for a File

1. **Select Find/Change from the Edit menu.**
2. **Enter the filename into the Find field and click Find.**

▼ To Print Files

- **Select Print from the File menu.**

  The file prints out on the PC printer.

Other Features

▼ To Display the Windows Start Menu in CDE

Using manual steps, you can get to all of the Windows Start Menu choices in the CDE Application Manager.

1. **Start Windows Explorer.**
2. **Copy** `C: \Window\StartMenu\` **to** `H: \.dt\appmanager`**.**

3. **Start Application Manager.**
4. **Go to the desktop controls.**
5. **Click Reload Application.**

▼ To Log On to a Different Machine

- **Reconfigure PC launcher on the Configuration window.**

▼ To Reconfigure PC Launcher

- **Remove the PC's hostname in Step 2 on the PC launcher Configuration window.**

▼ To Switch Between Targets

- **Change your selection in Step 1 on the PC launcher Configuration window.**

Getting Help for PC Launcher

Help for PC launcher is available through the Help menu at the bottom of the PC launcher Configuration window.

ShowMe TV 1.3 Software

ShowMe TV is a television system for local- and wide-area networks. You can use it to view and broadcast live or prerecorded video programs on your network. Here are some examples of how you can use ShowMe TV:

- Broadcast and view training courses
- Lectures
- Corporate messages
- Monitor important news events

ShowMe TV contains the following components:

- ShowMe TV Receiver
- ShowMe TV Transmitter
- ShowMe TV Address Book

ShowMe TV Packages

TABLE 3-7 lists the packages that are provided with ShowMe TV.

TABLE 3-7 ShowMe TV Packages

Package Name	Description	Default Install Location
SUNWsmtvh	Online help binaries and documentation	/opt/SUNWsmtv
SUNWsmtvr	ShowMe TV receiver application and support files	/opt/SUNWsmtv
SUNWsmtvt	ShowMe TV transmitter application and support files	/opt/SUNWsmtv
SUNWsmtvu	Support utilities	/opt/SUNWsmtv

Removing Old Packages

If you have ShowMe TV 1.1, 1.2, or 1.2.1 installed, you need to remove it before installing ShowMe TV 1.3.

- **To remove ShowMe TV 1.1, type:**

```
# pkgrm SUNWsmUt1 SUNWstv SUNWstvs
```

If you have a release of ShowMe TV 1.2 installed, you need to remove it before installing any new software packages.

- **To remove ShowMe TV 1.2 or 1.2.1, type:**

```
# pkgrm SUNWsmtvt SUNWsmtvu SUNWsmtvr SUNWsmtvh
```

Installing ShowMe TV

See “Installing Supplement CD Software” on page 13.

Translated Documentation

The Supplement CD contains the *ShowMe TV User's Guide* in the following languages:

- French
- German
- Spanish
- Italian
- Swedish
- Japanese
- Korean
- Simplified Chinese
- Traditional Chinese

▼ To Access the ShowMe TV User's Guide

The `/cdrom/cdrom0/ShowMeTV1.3/Docs/UserGuide` directory on the Supplement CD contains the following files:

TABLE 3-8 ShowMe TV Translated Documents

File Name	Description
`UG_en.ps`	English PostScript™ file
`UG_de.ps`	German PostScript file
`UG_fr.ps`	French PostScript file
`UG_es.ps`	Spanish PostScript file
`UG_it.ps`	Italian PostScript file
`UG_sv.ps`	Swedish PostScript file
`UG_ja.ps`	Japanese PostScript file
`UG_ko`	Korean HTML files
`UG_zh`	Simplified Chinese HTML files
`UG_zh_TW`	Traditional Chinese HTML files

- **To view the desired PostScript manual, type the following at the command line:**

```
# sdtimage filename
```

- **To print the manual, either use the File menu in Image Tool or type the following at the command line:**

```
# lp filename
```

- **To view the manuals in HTML format, use a Web browser and type the following in the address field:**

```
file:/cdrom/cdrom0/ShowMeTV1.3/Docs/UserGuide/directory
```

If you have copied the HTML files to a different directory, type in the path to that directory. Open the table of contents to determine which file to open.

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, or Sun Fire V480 server over modem lines and over a network, using Solaris operating environment 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 13. 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 the 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 13.

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 12/02 Media Kit:

- SunFDDI PCI driver software
- SunFDDI SBus driver software
- SunHSI PCI driver software
- SunHSI SBus driver software
- SunATM software

Note – SunFDDI supports booting from the 32-bit kernel or the 64-bit kernel. SunFDDI will attach to whichever you choose to boot from with no special user interaction.

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 13.

Platform Notes for Network Adapter Drivers

Refer to the following platform notes for more information:

- *Platform Notes: Sun FDDI Adapters*
- *Platform Notes: The Sun GigabitEthernet Device Driver*
- *Platform Notes: The SunHSI/P Device Driver*
- *Platform Notes: The SunHSI/S 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

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 (`ce0`, `ce1`, `ce2` and so on), 512 possible VLANs can be created. Because IP subnets are commonly used, it's best to 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 will belong 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 3-1 shows the Ethernet Tag Header format.

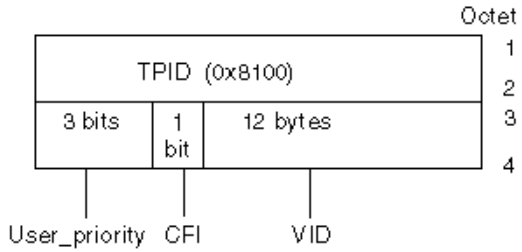

FIGURE 3-1 Ethernet Tag Header Format

▼ To Configure Static VLANs

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

   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 a member of two VLANs, with VID 123 and 224, you would use `ce123000` and `ce224000`, 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
```

The output of `ifconfig -a` on a system having VLAN devices `ce123000` and `ce224000` is described here:

```
# 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
```

3. **On the switch, set VLAN tagging and set VLAN ports to coincide with the VLANs you've set up on the server. Using the examples in Step 2, you would set up VLAN ports 123 and 224 on the switch.**

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

Java 3D 1.2.1_04 API

The Java 3D 1.2.1_04 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

- OpenGL software, any version from 1.1 through 1.2.3

Installing Java 3D 1.2.1_04 API

See “Installing Supplement CD Software” on page 13.

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 4

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.

AnswerBook2 Documentation and the Solaris 9 12/02 Release

None of the documentation about the Solaris 9 12/02 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 12/02 release.

The Solaris 9 12/02 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_1202_doc_1of2/index.html`

The contents of the Solaris 9 12/02 Documentation CDs and the Solaris 9 12/02 Software Supplement CD are also contained on the Solaris 9 12/02 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 4-1 lists the document packages.

TABLE 4-1 Solaris 9 12/02 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 13 for details.

These documentation sets include manuals that were part of separate AnswerBook2-format collections in releases earlier than the Solaris 9 12/02 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 12/02 on Sun Hardware Documentation Set

This set includes general manuals as well as Platform Notes, which are manuals that cover use of Solaris 9 12/02 software with specific Sun hardware products.

TABLE 4-2 Solaris 9 12/02 on Sun Hardware Document Collection

Part Number	Title	Content
816-7582	Solaris 9 12/02 Sun Hardware Platform Guide	Contains information about installing software from the Supplement CD and other system products hardware issues.
816-1914	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 12/02 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.
805-4479	SunForum 3.1 Software User's Guide	Describes how to use SunForum 3.1 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.
816-7702	SunVTS 5.1 Patch Set 1 Test Reference Manual Supplement	Supplemental information added to the base VTS version via 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 4-2 Solaris 9 12/02 on Sun Hardware Document Collection *(Continued)*

Part Number	Title	Content
806-4647	Platform Notes: Sun Enterprise 6x00, 5x00, 4x00, and 3x00 Systems	Sun Enterprise X000-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.
816-2350	Platform Notes: SunFDDI Adapters	Information about how to configure the SunFDDI driver software and use the SunFDDI network utilities.
816-3157	Platform Notes: Sun GigabitEthernet Device Driver	Information on how to configure the Sun GigabitEthernet driver software.
816-2347	Platform Notes: The SunHSI/S Device Driver	Describes how to configure the SunHSI SBus 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	Contains configuration information for Dynamic Configuration on the Sun Enterprise 10000 system.
806-5231	Sun Enterprise 10000 IDN Error Messages	Describes error messages for IDN on the Sun Enterprise 10000 system.

TABLE 4-2 Solaris 9 12/02 on Sun Hardware Document Collection *(Continued)*

Part Number	Title	Content
806-5230	Sun Enterprise 10000 IDN Configuration Guide	Contains configuration information for IDN on the Sun Enterprise 10000 system.
816-1465	Sun Fire 880 Dynamic Reconfiguration User's Guide	Contains 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.
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 Users 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.
816-4958	Sun Fire 15K/12K Software Overview Guide	Overview of software for the Sun Fire 15K system software.
816-5261	System Management Services (SMS) 1.2 Installation Guide and Release Notes for Sun Fire 15K/12K Systems	Installation and release note information for System Management Services 1.2 software.
816-5259	System Management Services (SMS) 1.2 Administrator Guide for Sun Fire 15K/12K Systems	System administrator information for System Management Services 1.2 software.
816-5260	System Management Services (SMS) 1.2 Reference Manual for Sun Fire 15K/12K Systems	Man pages for System Management Services 1.2 software.
816-5075	Sun Fire 15K/12K Dynamic Reconfiguration (DR) User Guide	Contains information about how to use Dynamic Reconfiguration software features on the Sun Fire 15K and 12K systems.

TABLE 4-2 Solaris 9 12/02 on Sun Hardware Document Collection *(Continued)*

Part Number	Title	Content
816-3284	Sun Fire 15K/12K Dynamic Reconfiguration Release Notes	Release note information for Dynamic Reconfiguration on Sun Fire 15K/12K systems.
816-5076	System Management Services (SMS) 1.2 Dynamic Reconfiguration User Guide	Dynamic Reconfiguration information for System Management Services 1.2 software.
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	Provides instructions for installing the WDR software on Sun Fire 15K, 6800, 4810, 4800, and 3800 servers.
816-3315	Sun Remote System Control (RSC) 2.2 Release Notes	Release note information for RSC software.
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.
806-6783	Sun Fire 6800, 4810, 4800, and 3800 Systems Dynamic Reconfiguration User Guide	Information about how to use Dynamic Reconfiguration on Sun Fire 6800, 4810, 4800, and 3800 systems.

Sun Computer Systems Manual Page Packages

Manual pages for products you install using Solaris Web Start 2 are automatically installed. If you want to install a man page for a product but do not want to install the product, you can use `pkgadd` to install the man page.

TABLE 4-3 Sun Computer Systems Manual Page Packages on the Supplement CD

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

Installing Sun Computer Systems Manual Pages

See “Installing Supplement CD Software” on page 13.

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 12/02 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 4-4 Other Documents on the Supplement CD

Path	Comment
`Docs/README/README_en.html`	Readme file for Solaris 9 12/02 Sun Computer Systems Supplement CD

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

CHAPTER 5

Power Management on Sun Hardware

The United States Environmental Protection Agency has 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. In order 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.

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 *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 5-1 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 5-1. The default behavior in Power Management functions varies on systems, as described in TABLE 5-2.

TABLE 5-2 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 may 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 6

OpenBoot Emergency Procedures

The introduction of USB keyboards with the newest Sun desktop systems 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.

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.
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

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

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. They 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 will power 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
```

CHAPTER 7

Commands for the Sun Fire 6800 / 4810 / 4800 / 3800 Systems

This section describes the Solaris operating environment specific information for this family of mid-range systems:

- Sun Fire 6800 system
- Sun Fire 4810 system
- Sun Fire 4800 system
- Sun Fire 3800 system

This section covers the following topics:

- "Installing, Booting, and Halting the Solaris Operating Environment" on page 59
- "IP Multipathing (IPMP) Software" on page 60
- "Sun StorEdge Traffic Manager Software" on page 61
- "Sun Management Center Software for the Sun Fire 6800 / 4810 / 4800 / 3800 Systems" on page 61
- "`syslog` Loghost" on page 62
- "Displaying System Configuration Information" on page 62

Installing, Booting, and Halting the Solaris Operating Environment

To install and boot the Solaris operating environment for the first time, refer to the "System Power On and Setup" chapter of the *Sun Fire 6800/4810/4800/3800 Systems Platform Administration Manual*.

After you have installed the Solaris operating environment, to power on one of the the Sun Fire 6800/4810/4800/3800 systems, which includes booting the Solaris operating environment, refer to the "Maintenance" chapter of the *Sun Fire 6800/4810/4800/3800 Systems Platform Administration Manual.*

▼ To Halt the Solaris Operating Environment

1. **Enter the system controller domain console for the domain you want to halt.**

   Refer to the chapter "System Controller Navigation" or to the chapter "Maintenance" in the *Sun Fire 6800/4810/4800/3800 Systems Platform Administration Manual,* which is shipped with your system.

2. **From the domain console, as superuser, halt the Solaris operating environment for each domain, by typing** `init 0`**.**

```
root# init 0
ok
```

IP Multipathing (IPMP) Software

The Solaris operating environment implementation of IPMP provides the following features(TABLE 7-1).

TABLE 7-1 IPMP Features

Feature	Description
Failure detection	Ability to detect when a network adaptor has failed and automatically switches over network access to an alternate network adaptor. This assumes that you have configured an alternate network adapter.
Repair detection	Ability to detect when a network adaptor that failed previously has been repaired and automatically switches back (failback) the network access from an alternate network adaptor. This assumes that you have enabled failbacks.
Outbound load spreading	Outbound network packets are spread across multiple network adaptors without affecting the ordering of packets in order to achieve higher throughput. Load spreading occurs only when the network traffic is flowing to multiple destinations using multiple connections.

The IP Network Multipathing (IPMP) software provides three important features:

- If your system is configured with an alternate network adapter, then it can failover from one network path to another.
- It can also failback to the original network adapter, after it is repaired.
- The IP Network Multipathing software also spreads out the outbound network load between the two network adapters, to achieve higher throughput. Load spreading only occurs when the outbound network traffic is flowing to multiple destinations using multiple connections.

For more information on IP network multipathing (IPMP), refer to the *System Administration Guide: IP Services*, which is available with your Solaris operating environment release. The *System Administration Guide: IP Services* explains basic IPMP features and network configuration details. This book is available online with your Solaris operating environment release.

Sun StorEdge Traffic Manager Software

The Sun StorEdge™ Traffic Manager software provides multipath configuration management, I/O load balancing, failover support, and single instance multipath support. For details on these software features, refer to the *Sun StorEdge Traffic Manager Software Installation and Configuration Guide*, available on the Sun Storage Area Network (SAN) Solutions website:

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

Sun Management Center Software for the Sun Fire 6800/4810/4800/3800 Systems

The Sun Management Center software for the Sun Fire 6800/4810/4800/3800 systems is the graphical user interface for managing these mid-range systems.

To optimize the effectiveness of the Sun Management Center software for the Sun Fire 6800/4810/4800/3800 systems, you must install it on a separate system. The Sun Management Center software for the Sun Fire 6800/4810/4800/3800 systems has the capability to logically group domains and the system controller into a single manageable object, to simplify operations.

The Sun Management Center software for the Sun Fire 6800/4810/4800/3800 systems, once configured, is also the recipient of SNMP traps and events.

To use the Sun Management Center software for the Sun Fire 6800/4810/4800/3800 systems, you must attach the System Controller board to a network. With a network connection, you can view both the command line interface and the graphical user interface. To attach the System Controller board Ethernet port, refer to the installation documentation that was shipped with your system.

For instructions on how to use the Sun Management Center software for the Sun Fire 6800/4810/4800/3800 systems, refer to the *Sun Management Center 3.0 Software Supplement for Sun Fire 6800/4810/4800/3800 Systems*, which is available online.

`syslog` Loghost

For information on how to set up the `syslog` loghost using the system controller software, refer to the chapter "System Power On and Setup" of the *Sun Fire 6800/4810/4800/3800 Systems Platform Administration Manual.* This is part of the system controller `setupplatform` system controller command, which is run when you set up the platform.

For more details on the `setupplatform` command, refer to the `setupplatform` command in the *Sun Fire 6800/4810/4800/3800 System Controller Command Reference Manual* and to the chapter "System Power On and Setup" in the *Sun Fire 6800/4810/4800/3800 Systems Platform Administration Manual*. Both of these books are available online at:

`http://www.sun.com/documentation`

Displaying System Configuration Information

To display system configuration parameters, use the following Solaris operating environment commands:

`prtconf` Command

The Solaris operating environment `prtconf` command prints the system configuration information. The output includes:

- Total amount of memory
- Configuration of the system peripherals formatted as a device tree

This command has many options. For the command syntax, options, and examples, see the `prtconf` man page.

`prtdiag` Command

The Solaris operating environment `prtdiag` (1M) command displays the following information to the domain of your Sun Fire 6800/4810/4800/3800 system:

- Configuration
- Diagnostic
- Total amount of memory

For more information on this command, see the `prtdiag` (1M) man page.

`sysdef` Command

The Solaris operating environment `sysdef` utility outputs the current system definition in tabular form. It lists:

- All hardware devices
- Pseudo devices
- System devices
- Loadable modules
- Values of selected kernel tunable parameters

This command generates the output by analyzing the named bootable operating system file (*namelist*) and extracting configuration information from it. The default system *namelist* is `/dev/kmem`.

For command syntax, options, and examples, see the `sysdef` man page.

`format` Command

The Solaris operating environment utility, `format`, which is used to format drives, can also be used to display both logical and physical device names. For command syntax, options, and examples see the `format` man page.

APPENDIX **A**

Localized Packages on the Supplement CD

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
ShowMe TV	SUNWjasmt	ShowMe TV Japanese (ja-EUC) localization files
	SUNWjpsmt	ShowMe TV Japanese (ja-PCK) localization files
	SUNWjusmt	ShowMe TV Japanese (ja-UTF8) localization files
PC launcher	SUNWjdpcv	Japanese (Common) PC launcher help
	SUNWjepcp	Japanese (EUC) PC launcher message
	SUNWjppcp	Japanese (PCK) PC launcher message
	SUNWjupcp	Japanese (UTF-8) PC launcher message

TABLE A-1 Japanese Localized Packages *(Continued)*

Software Product	Package Name	Description
SunFDDI	SUNWjenfm	Japanese (EUC) SunFDDI SBus Man Pages
	SUNWjepfm	Japanese (EUC) SunFDDI PCI Man Pages
	SUNWjpnfm	Japanese (PCK) SunFDDI SBus Man Pages
	SUNWjppfm	Japanese (PCK) SunFDDI PCI Man Pages
	SUNWjunfm	Japanese (UTF-8) SunFDDI SBus Man Pages
	SUNWjupfm	Japanese (UTF-8) SunFDDI PCI Man Pages
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

German Localized Packages

TABLE A-2 German Localized Packages

Software Product	Package Name	Description
SunForum	SUNWdedat	German SunForum
PC launcher	SUNWdepcp	PC launcher German messages
Remote System Control	SUNWdersc	German Remote System Control
	SUNWdrscd	German Remote System Control User Guide
	SUNWdrscj	German Remote System Control GUI
ShowMe TV	SUNWdesmt	ShowMe TV German localization files
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
PC launcher	SUNWitpcp	PC launcher Italian messages
Remote System Control	SUNWitrsc	Italian Remote System Control
	SUNWirscd	Italian Remote System Control User Guide
	SUNWirscj	Italian Remote System Control GUI
ShowMe TV	SUNWitsmt	ShowMe TV Italian localization files

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

Software Product	Package Name	Description
Netra ct	SUNWitcte	Italian (EUC) localization for Netra ct
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
PC launcher	SUNWfrpcp	PC launcher French messages
Remote System Control	SUNWfrrsc	French Remote System Control
	SUNWfrscd	French Remote System Control User Guide
	SUNWfrscj	French Remote System Control GUI
ShowMe TV	SUNWfrsmt	ShowMe TV French localization files
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
PC launcher	SUNWespcp	PC launcher Spanish messages
Remote System Control	SUNWesrsc	Spanish Remote System Control
	SUNWerscd	Spanish Remote System Control User Guide
	SUNWerscj	Spanish Remote System Control GUI
ShowMe TV	SUNWessmt	ShowMe TV Spanish localization files
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
PC launcher	SUNWsvpcp	PC launcher Swedish messages
Remote System Control	SUNWsvrsc	Swedish Remote System Control
	SUNWsrscd	Swedish Remote System Control User Guide
	SUNWsrscj	Swedish Remote System Control GUI
ShowMe TV	SUNWsvsmt	ShowMe TV Swedish localization files
Netra ct	SUNWsvcte	Swedish (EUC) localization for Netra ct

TABLE A-6 Swedish Localized Packages *(Continued)*

Software Product	Package Name	Description
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
PC launcher	SUNW5pcp	PC launcher Traditional Chinese (zh_TW-BIG5) messages
	SUNWhcpcp	PC launcher Traditional Chinese (common) messages
	SUNWhdpcp	PC launcher Traditional Chinese (zh_TW-EUC) messages
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
ShowMe TV	SUNW5smt	ShowMe TV Traditional Chinese (zh_TW-Big5) localization files
	SUNWhsmt	Traditional Chinese (zh_TW-EUC) localization files for ShowMe TV
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
PC launcher	SUNWccpcp	PC launcher Simplified Chinese (common) messages
	SUNWcdpcp	PC launcher Simplified Chinese (zh-EUC) messages
	SUNWgpcp	PC launcher Simplified Chinese (zh-GBK) messages
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
ShowMe TV	SUNWcsmt	ShowMe TV Simplified Chinese (zh-EUC) localization files
	SUNWgsmt	ShowMe TV Simplified Chinese (zh-GBK) localization files
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
PC launcher	SUNWkcpcp	PC launcher Korean (common) messages
	SUNWkdpcp	PC launcher Korean (ko) messages
	SUNWkupcp	PC launcher Korean (ko.UTF-8) messages
Remote System Control	SUNWkrsc	Korean (EUC) Remote System Control
	SUNWkrscd	Korean (EUC) Remote System Control User Guide
	SUNWkrscj	Korean (EUC) Remote System Control GUI
ShowMe TV	SUNWkosmt	ShowMe TV Korean (ko-EUC) localization files
	SUNWkusmt	ShowMe TV Korean (ko-UTF-8) localization files
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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