Sun StorageTek™ Enterprise PCI-X 4 Gb FC Single and Dual Port Emulex Host Bus Adapters

Installation and Basic Interoperability Guide

Sun Microsystems, Inc.
www.sun.com

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Preface

This manual describes how to install, configure, and test the Sun StorageTek™ Enterprise PCI-X 4 Gb Fibre Channel (FC) Single or Dual Port Emulex Host Bus Adapter (HBA). This document is written for technicians, system administrators, authorized service providers (ASPs), and users who have advanced experience troubleshooting and replacing hardware. Additional Sun StorageTek Enterprise PCI-X 4 Gb FC Single and Dual Port Emulex HBAs can be ordered from Sun Microsystems by two marketing part numbers:

Number of Ports	Marketing Part Number
Single	SG-XPCI1FC-EM4-Z
Dual	SG-XPCI2FC-EM4-Z

How This Document Is Organized

Chapter 1 provides an overview of the product.

Chapter 2 describes the operating systems, host platforms, switches, and storage systems that support the HBAs.

Chapter 3 describes how to install the HBAs.

Chapter 4 describes how to download and install the HBA drivers and patches.

Appendix A provides the required product safety information.

Using UNIX Commands

This document does not contain information about basic UNIX® commands and procedures such as shutting down the system, booting the system, and configuring devices. Refer to the following for this information:

- Software documentation that you received with your system
- Solaris™ Operating System documentation, which is at:

  http://docs.sun.com

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. You *must* be superuser to do this. To delete a file, type `rm` *filename*.

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

Related Documentation

The following documents are available at:

`http://www.sun.com/products-n-solutions/hardware/docs/Network_Storage_Solutions/SAN/san_software/index.html and http://docs.sun.com/app/docs/doc/819-0139.`

Title	Part Number
Sun StorEdge SAN Foundation Software 4.4 Guide to Documentation	817-3670-*xx*
Sun StorEdge SAN Foundation Software 4.4 Installation Guide	817-3671-*xx*
Sun StorEdge SAN Foundation Software 4.4 Configuration Guide	817-3672-*xx*
Sun StorEdge Traffic Manager Installation and Configuration Guide	817-3674-*xx*
Sun StorEdge SAN Foundation Software 4.4.9 Release Notes	817-5604-*xx*
Solaris Fibre Channel and Storage Multipathing Administration Guide (contains Sun Solaris 10 Fibre Channel Operating System booting procedure)	817-0139-*xx*

Documentation, Support, and Training

Sun Function	URL
Documentation	http://www.sun.com/documentation/
Support	http://www.sun.com/support/
Training	http://www.sun.com/training/

Third-Party Web Sites

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

Sun StorageTek Enterprise PCI-X 4 Gb FC Single & Dual Port Emulex HBA Installation & Interop Guide, part number 819-5532-12

CHAPTER 1

Product Overview

This chapter provides a basic overview of the Sun StorageTek Enterprise PCI-X 4 Gb FC Single and Dual Port Emulex HBAs (henceforth referred to as *single and dual port HBAs*). It contains the following topics:

Single and Dual Port HBA Features

The single and dual port HBAs consist of a single-slot PCI-X 2.0 bus expansion board that interfaces a 64-bit PCI bus to one or two Fibre Channel (FC) optical media busses. The single and dual port HBAs support 32-bit and 64-bit PCI transfers as a master bus during direct memory access (DMA) transfers and 16-bit transfers as a slave during parallel input/output (PIO) operations, as well as PCI-X 1.0 and 2.0 transactions. The channels of the single and dual port HBAs can act as either initiators or targets. In the dual-port HBA, the two channels operate independently and each supports a separate bus that operates at 4.25 Gbits per second. The single and dual port HBAs are also backward compatible with 2.125-Gbit-per-second and 1.0625-Gbit-per-second busses.

One or two Small Form Factor (SFF) optical transceivers are used to connect to the external FC busses. One Helios FC Controller chip is used to support one or two independent FC busses.

See TABLE 1-1 for a list of the single and dual port HBA features.

TABLE 1-1 Single and Dual Port HBA Features

Feature	Description
PCI signaling environment	3.3-V PCI busses as well as PCI-X 1.0 and 2.0 (mode 2). Incompatible with 5.0-V PCI slots
PCI/PCI-X transfer rate (max)	264 MB/sec burst rate (64 bit @ 33 MHz PCI). 528 MB/sec burst rate (64 bit @ 66 MHz PCI). 1064 MB/sec burst rate (64 bit @ 133 MHz PCI-X) 2128 MB/sec burst rate (64 bit @ 266 MHz PCI-X)
Number of FC busses	One or two
Number of devices supported	126 devices per FC loop
FC bus type (external)	Fiber optic media, short wave, multimode fiber (400-M5 SN-S)
FC transfer rate	400 MB/sec per loop maximum, half duplex 800 MB/sec per loop maximum, full duplex
FC interface chip	Emulex Helios PCI-X to FC
RAM	1.5 MB SRAM
Flash ROM	2/4 MB Flash (2 MB per FC port; 4 MB total on dual-port HBA) containing BIOS, firmware, and Sun FCode. The flash is field programmable.
External connectors	One or two LC duplex connectors, one per channel

TABLE 1-1 Single and Dual Port HBA Features *(Continued)*

Feature	Description
Maximum FC cable length	1 Gbps: 500 meters using 50/125 µm core fiber 300 meters using 62.5/125 µm core fiber 2 Gbps: 300 meters using 50/125 µm core fiber 150 meters using 62.5/125 µm core fiber 4 Gbps: 150 meters using 50/125 µm core fiber 70 meters using 62.5/125 µm core fiber
LED indicators	1 green and 1 yellow light-emitting diode (LED) per FC channel as status indicators
Form Factor	PCI Low Profile Form Factor (MD2) 6.600 in. x 2.536 in.

Minimum System Hardware Requirements

Your system must have an available PCI or PCI-X 64-bit slot to support these single and dual port HBAs.

This product uses +3.3V signaling only, and is incompatible with +5.0-V signaling PCI slots.

Supported Operating Systems

You can use the single and dual port HBAs with the following operating systems:

- Solaris 8, 9, and 10 Operating Systems

  To use the single and dual port HBAs with these operating systems, you must use the Sun driver as described in "Solaris 8, 9, and 10 Operating System Requirements" on page 8.

- Red Hat Enterprise Linux and SuSE Linux Enterprise Server Operating Systems

  To use the single and dual port HBAs with these operating systems, you must use the Emulex driver as described in "Red Hat Enterprise Linux and SuSE Linux Enterprise Server Operating System Requirements" on page 9.

- Windows 2000 and Windows Server 2003 Operating Systems

  To use the single and dual port HBAs with this OS, you must use the Emulex driver as described in "Windows 2000 and Windows Server 2003 Operating System Requirements" on page 10.

CHAPTER 2

Supported System Configurations

This chapter describes the operating systems, host platforms, storage, and infrastructure configurations that support the Sun StorageTek Enterprise PCI-X 4 Gb FC Single and Dual Port Emulex HBAs (henceforth referred to as *single and dual port HBAs*). It contains the following topics:

Basic Interoperability

This section provides information about platform, storage, and switch compatibility permitting a heterogeneous Fibre Channel network design with the single and dual port HBAs. This section contains the following topics:

Host Platform Support

The single and dual port HBAs are supported by the platforms and operating systems listed in TABLE 2-1.

TABLE 2-1 Sun Solaris 8, 9, and 10; Red Hat Enterprise Linux and SuSE Enterprise Linux; and Windows 2000 and Windows Server 2003 Host Platform Support

Platform	Supported OS
Sun Blade™ 1000, 1500, 2000, and 2500 workstations	Sun Solaris
Sun Fire™ V210, V240, and V250 servers	Sun Solaris
Sun Fire V440 server	Sun Solaris
Sun Fire V480, V490, V880, and V890 servers	Sun Solaris
Sun Fire V1280, and E2900 servers	Sun Solaris
Sun Fire 4800, 4810, and E4900 servers	Sun Solaris
Sun Fire 6800 and E6900 servers	Sun Solaris
Sun Fire 12K and E20K servers	Sun Solaris
Sun Fire 15K and E25K servers	Sun Solaris
Sun Fire 280R server	Sun Solaris
Netra™ 20, 240, 440, 1280, and t1400/t1405 servers	Sun Solaris
Sun Fire T2000 server	Sun Solaris
Sun Fire V20z and V40z servers	Sun Solaris, Linux, and Windows
Sun Fire X4100, X4200, and X4200 M2 servers	Sun Solaris, Linux, and Windows

Storage System Support

The single and dual port HBAs support the storage systems are listed below.

- Sun StorEdge™ 3510 and 3511 FC arrays
- Sun StorEdge 6020, 6120, and 6320 arrays
- Sun StorEdge 6130 array
- Sun StorEdge 6920 system
- Sun StorEdge L25 and L100 tape libraries
- Sun StorEdge C4 tape library
- Sun StorEdge L500 tape library
- Sun StorEdge L180 and L700 tape libraries
- Sun StorEdge L5500 and L8500 tape libraries

Fibre Channel Switch Support

The single and dual port HBAs support the Fibre Channel switches listed below.

- QLogic SANbox 5200 2 Gb switch
- Sun StorEdge Network 2 Gb switch
- QLogic SANbox 5600 and 5602 Stackable 4 Gb FC Switches
- Sun StorEdge Network 2 Gb Brocade SilkWorm 3200 and 3800 switches
- Sun StorEdge Network 2 Gb Brocade SilkWorm 3250 and 3850 switches
- Sun StorEdge Network 2 Gb Brocade SilkWorm 3900 switch
- Sun StorEdge Network 2 Gb Brocade SilkWorm 12000 and 24000 Core Fabric switches
- Sun StorEdge Network 4 Gb Brocade SilkWorm 4100 switch
- Sun StorEdge Network 4 Gb Brocade SilkWorm 48000 and 200E switches
- Sun StorEdge Network 2 Gb McDATA Sphereon 4300 switch
- Sun StorEdge Network 2 Gb McDATA Sphereon 4500 switch
- Sun StorEdge Network 2 Gb McDATA Intrepid 6064 director
- Sun StorEdge Network 2 Gb McDATA Intrepid 6140 director

Solaris 8, 9, and 10 Operating System Requirements

This section contains information about using the single and dual port HBAs with the Solaris OS.

Minimum Operating System Levels

- Solaris 8 SPARC® OS Update 4/01 with the recommended patch cluster
- Solaris 9 SPARC OS with the recommended patch cluster
- Solaris 10 for SPARC and x64/x86 with the recommended patch cluster

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Note – Refer to your host platform documentation to determine minimum Solaris version required for your HBA installation.

Red Hat Enterprise Linux and SuSE Linux Enterprise Server Operating System Requirements

This section contains information about using the single and dual port HBAs in Red Hat Enterprise Linux and SuSE Linux Enterprise operating systems.

Minimum OS Levels

- Red Hat Enterprise Linux (RHEL) 3
- Red Hat Enterprise Linux (RHEL) 4
- SuSE Linux Enterprise Server (SLES) 8
- SuSE Linux Enterprise Server (SLES) 9

The Linux drivers and HBA diagnostic and management utilities supporting the single and dual port HBAs with the Linux OS are available for download at the Sun designated page:

http://www.emulex.com/ts/docoem/framsun/10k.htm

Drivers that support the Linux 2.4 and 2.6 kernels are provided. The Linux 2.4 kernel is used in Red Hat Enterprise Linux (RHEL) 3 and SuSE Linux Enterprise Server (SLES) 8. The Linux 2.6 kernel is used in RHEL 4 and SLES 9.

Note – Refer to your host platform documentation and the Emulex web site to determine minimum RHEL and SLES version required for your HBA installation.

Windows 2000 and Windows Server 2003 Operating System Requirements

This section contains information about using the single and dual port HBAs in Windows 2000 and Windows Server 2003 operating systems.

Minimum OS Levels

- Windows 2000
- Windows Server 2003

Note – Refer to your host platform documentation and the Emulex web site to determine minimum Windows 2000 and Windows Server 2003 versions required.

Known Issues and Bugs

The following HBA issues exist at this time.

- **CR 6266132.** Booting from the Sun StorEdge 3500 family array fails with the single and dual port HBAs in certain configurations.

  Workaround: None; booting from a Sun StorEdge 3500 family array is not supported at this time.

- **CR 6350753.** Packet timeout. (chip abort: sbp=600064a1e10 iotag=0. Completing.)

  Workaround: None at this time. A fix is targeted for the Sun StorEdge SAN Foundation Software release 4.4.10 for Sun Solaris OS 8 and 9 SPARC, patches 120222-10 (S10_SPARC), and 120223-10 (S10_x86).

- **CR 6367185.** Performing I/O operations on HBA ports 0 and 1 intermittently stops when using Emulex 10k cards with the Sun StorEdge 3500 family arrays.

  Workaround: None at this time. A fix is being investigated.

- **CR 6313136.** A Sun StorEdge 3510 FC Array 0x47 SCSI parity error occurs when the Emulex HBA is connected to Sun StorEdge 3510 JBOD FC Array.

  Workaround: None at this time. A fix is currently under investigation.

- **CR 6381138.** Sun StorEdge 3511 and 3510 Arrays can experience a SCSI transport failure for a'timeout' reason.

  Workaround: None at this time. A fix is being investigated.

- **CR 6352189.** OBP probe gives unexpected output for unmapped channel / Sun StorEdge 3500 family arrays. This only occurs on the first probe-SCSI-all after a reset.

  Workaround: Perform another probe-scsi-all after a reset. The second try will yield correct results.

  A fix will be made available in the next FCode release after version 1.50a8.

- **CR 6306640.** Enabling the BIOS of the "LP10000" card causes the system to fail to boot. Enabling the HBA BIOS hangs up all boot processes.

  Workaround: None at this time. A fix is currently under investigation.

  Disable the single or dual port HBA BIOS (default setting) and boot from the system disk, or other supported boot device.

CHAPTER 3

Hardware Installation

This chapter provides instructions for installing the Sun StorageTek Enterprise PCI-X 4 Gb FC Single and Dual Port Emulex HBAs (henceforth referred to as *single and dual port HBAs*) in your system. It contains the following topics:

Caution – Damage to the HBA can occur as the result of careless handling or electrostatic discharge (ESD). Always handle the HBA with care to avoid damage to electrostatic sensitive components.

To minimize the possibility of ESD-related damage, Sun strongly recommends using both a workstation anti-static mat and an ESD wrist strap. You can get an ESD wrist strap from any reputable electronics store or from Sun as part number #250-1007. Observe the following precautions to avoid ESD-related problems:

- Leave the HBA in its antistatic bag until you are ready to install it in the system.
- Always use a properly fitted and grounded wrist strap or other suitable ESD protection when handling the HBA and observe proper ESD grounding techniques.
- Hold the HBA by the edge of the PCB or mounting bracket, not the connectors.
- Place the HBA on a properly grounded antistatic work surface pad when it is out of its protective antistatic bag.

▼ To Verify the Packaging Contents

- **Confirm that the single or dual port HBAs are shipped with the following items:**

- Sun StorageTek Enterprise PCI-X 4Gb FC Single or Dual Port Emulex HBA
- Alternate PCI bracket
- Accessing Documentation, 819-1209-*xx*

▼ To Install the HBA Hardware

To install the single and dual port HBAs, you must open the system and identify an empty PCI or PCI-X slot. The single and dual port HBAs are keyed to prevent installation in +5.0-V signaling PCI slot types. If necessary, consult your system manual for instructions on removing the system cover.

1. **Record IEEE and serial numbers.**

Each HBA is shipped with at least one unique 64-bit identifier called the *IEEE address*. The Fibre Channel industry uses a World Wide Name (WWN) derived from the IEEE address. This number is needed for FC connectivity. Because the dual-port HBA has two ports, it has two IEEE addresses. The IEEE address is used for configuring your system. The serial number is used for communicating with Sun. All numbers are clearly marked on the board. Record these numbers before installation.

2. **Shut down, power off, and unplug the system.**
3. **Remove the system case.**
4. **Remove the blank panel from an empty PCI or PCI-X slot.**
5. **If needed, replace the low-profile PCI bracket with the standard mounting bracket by performing the following steps:**

Note – The single and dual port HBAs are shipped with a low-profile PCI bracket installed. This bracket is approximately 3.11 in. (7.9 cm) long. A standard mounting bracket, which is approximately 4.75 in. (12.6 cm), is provided with each X-option order.

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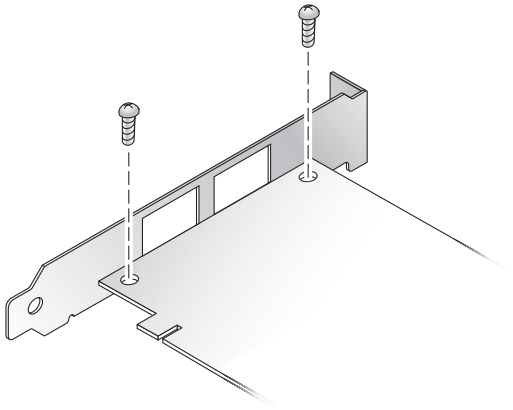
   a. **Remove the mounting bracket screws from the single and dual port HBAs (see** FIGURE 3-1**).**

FIGURE 3-1 Removing the Bracket Screws



b. Remove the bracket and store it for future use.

c. Align the new mounting bracket tabs with the holes in the HBA.

Note – Be careful not to push the bracket past the transceiver housing's grounding tabs. Ensure that the LEDs are properly aligned with the holes in the bracket.

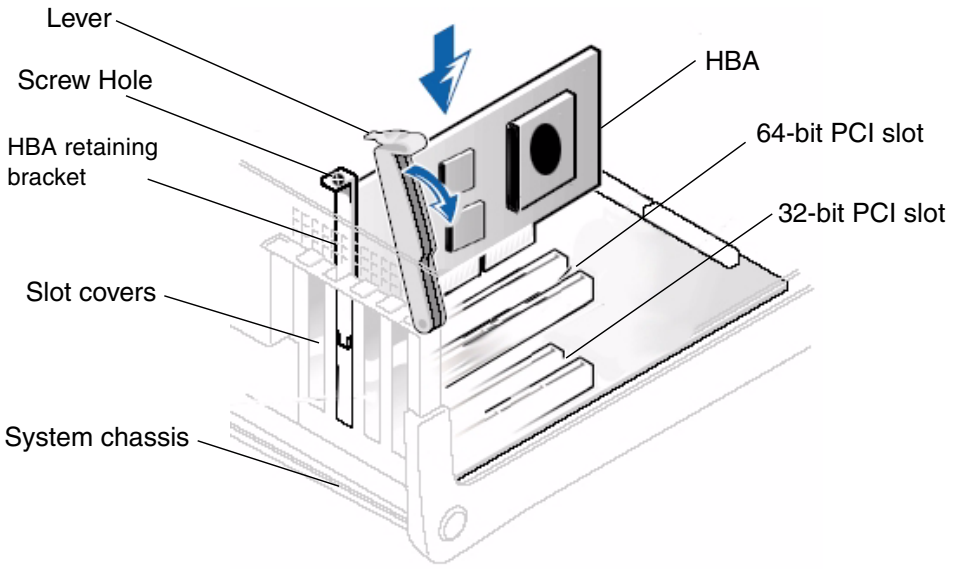
---

d. Replace the screws that attach the HBA to the bracket.

6. **Insert the HBA into the empty PCI or PCI-X slot. Press firmly until the adapter is seated. See** FIGURE 3-2**.**
7. **Secure the HBA mounting bracket to the case with the panel screw or clip.**
8. **Replace the system case and tighten the case screws.**

The HBA is now installed in the system and is ready for the optical cable attachment.

FIGURE 3-2 Installing the Single and Dual Port HBAs



Note – FIGURE 3-2 is a typical installation, which may differ from your installation.

▼ To Attach the Optical Cable

Note – The single and dual port HBAs do not allow normal data transmission on an optical link unless it is connected to another similar or compatible Fibre Channel product (that is, multimode to multimode).

Use multimode fiber-optic cable, intended for short-wave lasers, that adheres to the specifications in TABLE 3-1.

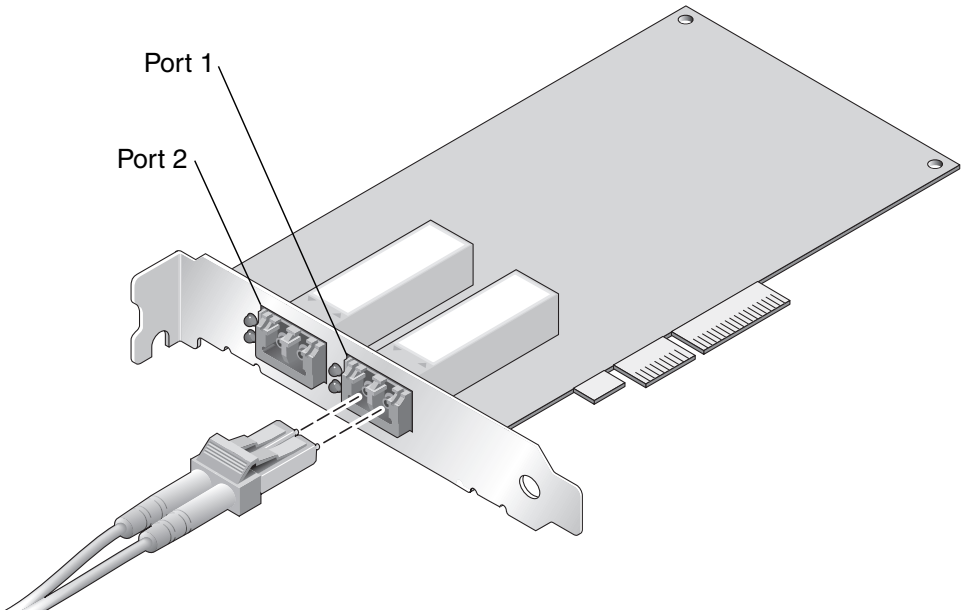
TABLE 3-1 Optical Cable Specifications

Fiber-Optic Cable	Maximum Length	Minimum Length	Connector
62.5/125 µm (multimode)	300 meters at 1.0625 Gbit/sec 150 meters at 2.125 Gbit/sec 70 meters at 4.25 Gbit/sec	2 meters	LC
50/125 µm (multimode)	500 meters at 1.0625 Gbit/sec 300 meters at 2.125 Gbit/sec 150 meters at 4.25 Gbit/sec	2 meters	LC

Follow these steps when attaching the optical cable:

1. **Connect the fiber-optic cable to an LC connector on the dual port HBA (**see FIGURE 3-3**).**

FIGURE 3-3 Attaching the Optical Cable



2. **Connect the other end of the cable to the Fibre Channel device.**

After the optical cable is connected to the HBA, you are ready to apply power to the system.

▼ To Apply Power

1. **Verify that the HBA is securely installed in the system.**
2. **Verify that the correct optical cable is attached.**
3. **Plug in and power on the system.**
4. **Observe the status of light-emitting diodes (LEDs) for the power-on self-test (POST) results as shown in** TABLE 3-2**.**

   TABLE 3-2 summarizes LED indicator combinations. The LEDs can be seen through the openings in the HBA's mounting bracket. Each port has a corresponding set of LEDs that provide a visual indication of the operating state.

   The slow blink rate is 1 Hz; the fast blink rate is 4 Hz; the flashing state is an irregular on/off appearance reflecting program activity. For the Link Rate, between each group of fast blinks (1, 2, or 3), there is a 1-Hz pause when the LED is off. You should observe the LED sequence for several seconds to ensure that the pause is correctly identified.

TABLE 3-2 LED Indicator Status Definitions

Green LED	Yellow LED	State
Off	Off	Wake Up Failure (Dead Board)
Off	On	POST Failure (Dead Board)
Off	Slow Blink	Wake-Up Failure Monitor
Off	Fast Blink	Failure in POST
Off	Flashing	POST Processing in Progress
On	Off	Failure While Functioning
On	On	Failure While Functioning
On	1 Fast Blink	1-Gb Link Rate – Normal, link up
On	2 Fast Blink	2-Gb Link Rate – Normal, link up
On	3 Fast Blink	4-Gb Link Rate – Normal, link up
Slow Blink	Off	Normal - Link Down
Slow Blink	On	Not defined
Slow Blink	Slow Blink	Offline for Download
Slow Blink	Fast Blink	Restricted Offline Mode (Waiting for Restart)

TABLE 3-2 LED Indicator Status Definitions *(Continued)*

Green LED	Yellow LED	State
Slow Blink	Flashing	Restricted Offline Mode, test active
Fast Blink	Off	Debug Monitor in Restricted Mode
Fast Blink	On	Not defined
Fast Blink	Slow Blink	Debug Monitor in Test Fixture Mode
Fast Blink	Fast Blink	Debug Monitor in Remote Debug Mode
Fast Blink	Flashing	Not defined

▼ To Verify Proper Installation in SPARC Platforms

1. Enter the `show-devs` command at the `ok` prompt to list the installed devices.

The single and dual port HBAs can be identified in the output containing the `SUNW,emlxs@n` and SUNW,emlxs@n,1 node names, where n is usually a single-digit number from 0 to 9.

2. **To positively identify the port as a Sun StorageTek 4 Gb FC port, access the** `SUNW,emlxs@N` **entries and enter** `.properties` **as shown in the example that follows.**

   In this example, there is one Dual Channel SG-XPCI2FC-EM4-Z adapter installed:

TABLE 3-3

```
{1} ok .properties
assigned-addresses       83000910 00000000 00104000 00000000 00002000
                         83000918 00000000 00106000 00000000 00002000
                         81000920 00000000 00000400 00000000 00000100
                         82000930 00000000 00180000 00000000 00040000
port_wwn                  10 00 00 00 c9 50 96 3f
node_wwn                  20 00 00 00 c9 50 96 3f
alternate-reg            01000920 00000000 00000000 00000000 00000100
reg                      00000900 00000000 00000000 00000000 00000000
                         03000910 00000000 00000000 00000000 00001000
                         03000918 00000000 00000000 00000000 00000100
                         02000930 00000000 00000000 00000000 00020000
compatible                pci10df,fc10
clock-frequency           02625a00
#size-cells               00000000
#address-cells            00000002
copyright                 Copyright (c) 2005 Emulex
model                     LP11002-S
name                      SUNW,emlxs
device_type               scsi-fcp
manufacturer              Emulex
fcode-version             1.50a8
fcode-rom-offset          0000c000
66mhz-capable
fast-back-to-back
devsel-speed              00000001
class-code                000c0400
interrupts                00000002
latency-timer             00000040
cache-line-size           00000010
max-latency               00000000
min-grant                 000000ff
subsystem-id              0000fc12
subsystem-vendor-id       000010df
revision-id               00000001
device-id                 0000fc10
vendor-id                 000010df
```

▼ To Verify the Attached Storage

- **If online storage is connected to the HBA installed in a SPARC system, use the** `apply show-children` **command to list the attached storage.**

In the example that follows, a storage JBOD has twelve targets attached to one port of the dual-ported HBA.

TABLE 3-4

```
{0} ok apply show-children  /pci@7c0/pci@0/pci@9/SUNW,emlxs@0
Device  ALPA b6  WWPN 215000c0ff00223d
   LUN  0     ESI Device    SUN     StorEdge 3510F D1046
Link attention
Device  ALPA b9  WWPN 2100000c50c30555
   LUN  0     Disk     SEAGATE ST3146807FC     0006
Device  ALPA ba  WWPN 2100000c50c30525
   LUN  0     Disk     SEAGATE ST3146807FC     0006
Device  ALPA bc  WWPN 500000e010172831
   LUN  0     Disk     FUJITSU MAP3147F SUN146G0301
Device  ALPA c3  WWPN 2100000c50c3051b
   LUN  0     Disk     SEAGATE ST3146807FC     0006
Device  ALPA c5  WWPN 2100000c50c30567
   LUN  0     Disk     SEAGATE ST3146807FC     0006
Device  ALPA c6  WWPN 500000e0101727d1
   LUN  0     Disk     FUJITSU MAP3147F SUN146G0301
Device  ALPA c7  WWPN 21000004cf64f1db
   LUN  0     Disk     SEAGATE ST336752FSUN36G 0508
Device  ALPA c9  WWPN 2100000c50c30513
   LUN  0     Disk     SEAGATE ST3146807FC     0006
Device  ALPA ca  WWPN 500000e0101727b1
   LUN  0     Disk     FUJITSU MAP3147F SUN146G0301
Device  ALPA cb  WWPN 2100000c50c3050e
   LUN  0     Disk     SEAGATE ST3146807FC     0006
Device  ALPA cc  WWPN 21000004cf64dc04
   LUN  0     Disk     SEAGATE ST336752FSUN36G 0508
Device  ALPA cd  WWPN 21000004cf5728c0
   LUN  0     Disk     SEAGATE ST373307FSUN72G 0407
{0} ok
```

Note – You may need to use the `reset-all` command before entering `apply show-children`.

▼ To Verify Proper Installation in x64 Based Systems

- **Follow the instructions in the BIOS documentation provided with your system.**

Service Contact Information

If you need help installing or using this product, call 1-800-USA-4SUN, or go to:

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

CHAPTER 4

Software Installation

After you have completed the hardware installation and powered on the computer, follow the instructions listed for your operating system to install the single and dual port HBA driver and any other utilities required for your installation. The following sections contain the instructions for installing software and the driver for the single and dual port HBAs.

This chapter contains the following topics:

Installing the HBA Driver With Solaris Operating Systems

You must first install the latest available patch clusters for your Solaris OS.

This section contains the following topics:

▼ To Download Solaris Patch Clusters

1. **Go to the SunSolve site at:** `http://sunsolve.sun.com.`
2. **Click on Patch Portal under Recommended and Security Patches.**
3. **Click on Recommended Patch Clusters under Recommended Solaris Patch Clusters, J2SE, and Java Enterprise System Clusters.**
4. **Select and download the patch cluster applicable to your installation.**

Install this patch cluster before installing single and dual port HBA driver packages and patches.

Downloading HBA Driver Packages and Patches for Solaris 8 and 9 for SPARC

The single and dual port HBAs are supported on the Sun Solaris 8 and 9 Operating Systems. The drivers for the single and dual port HBAs are delivered as packages and patches on Solaris 8 and 9 OS. The Sun StorEdge SAN Foundation Software version 4.4.8 must be installed as a minimum.

Note – Packages are required only for Sun Solaris for SPARC 8 and 9 releases. Later Sun Solaris for SPARC releases do not require the installation of these packages.

The packages and patches are available either bundled as a script posted in the Sun Download Center (SDLC), or as individual packages and patches. Sun recommends using the `install_it` script, see "To Run An `install_it` Script Installation" on page 25. To install the packages and patches manually, see "To Do A Manual Installation" on page 26.

▼ To Run An `install_it` Script Installation

The packages and patches are available from the Sun Download Center (SDLC).

1. **Go to `http://www.sun.com/storage/san`.**

The Storage Area Networks (SAN) page displays.

2. **Scroll to the bottom of the page and under Get the Software, click the "Sun StorEdge SAN 4.4 release Software/Firmware Upgrades and Documentation" link.**

If you are not already logged in, the Login page displays.

3. **Enter your User Name and Password and click Login.**

If you have not already registered, click Register Now before proceeding.

4. **Accept the License Agreement.**

The Download page is now available.

5. **Locate and click the download file `install_it` script, SAN 4.4.x, README, English, and print the instructions.**

6. **Locate and click the download file `install_it` script, SAN 4.4.8, English**

You will be prompted for a download directory. Sun suggests that you download the packages to your `/tmp` directory.

7. **Unzip the downloaded file.**

8. **Locate the executable file `install_it` and run it.**

The necessary packages and patches install.

9. **Reboot the system after installing all patches.**

This completes the driver installation.

▼ To Do A Manual Installation

Optionally, for Solaris 8 and 9, if you do not want to use the `install_it` script, install the driver by adding the following packages and then patches.

Packages

The packages are available from the Sun Download Center (SDLC).

1. **Go to** `http://www.sun.com/storage/san`**.**

The Storage Area Networks (SAN) page displays.

2. **Scroll to the bottom of the page and under Get the Software, click the "Sun StorEdge SAN 4.4 release Software/Firmware Upgrades and Documentation" link.**

If you are not already logged in, the Login page displays.

3. **Enter your User Name and Password and click Login.**

If you have not already registered, click Register Now before proceeding.

4. **Accept the License Agreement.**

The Download page is now available.

5. **Locate and click the appropriate download file:**

- Solaris 8 SFS Base Packages, English
- Solaris 9 SFS Base Packages, English

6. **Provide the path to a directory location for the download file.**

7. **Follow the README instructions to install the packages.**

The following package names are contained in both Solaris 8 and 9 download files and must be installed in the order given below.

- `SUNWemlxs`
- `SUNWemlxsx`
- `SUNWemlxu`
- `SUNWemlxux`

Patches

Perform the following steps to download the Solaris 8 and 9 patches.

1. **Go to** http://sunsolve.sun.com**.**

The SunSolve Online license agreement page displays.

2. **Accept the License Agreement.**

The SunSolve Online page displays.

3. **Under Patches and Updates, click PatchFinder.**

4. **Download the appropriate patches for your system from** TABLE 4-1**.**

   Type each patch ID (one at a time, and without the dash number) in the Enter Patch ID box and click Find Patch.

5. **Follow the instructions in the patch README to install each patch. The patches must be installed in the order shown.**

6. **Reboot your system after installing all the patches.**

TABLE 4-1 Sun Solaris 8 and 9 Patches

Patch Type	Solaris 8 Patch Number	Solaris 9 Patch Number
fctl/fp/fcp	111095-25	113040-17
fcip	111096-13	113041-10
qlc	111097-20	113042-13
MPxIO	111412-18	113039-12
luxadm	111413-18	113043-12
cfgadm	111846-08	113044-05
FCSM driver	114475-05	114476-06
SUNWsan	111847-08	111847-08
FC HBA API Lib	113766-04	114477-03
SNIA FC HBA Lib	113767-08	114478-07
JNI FC HBA	114877-10	114878-10
Emulex FC HBA	119913-07	119914-07

Downloading HBA Driver Packages and Patches for Solaris 10 for SPARC or x64/x86

There is no install_it script available to install the drivers for Solaris 10. If you are using the Sun Solaris OS 10 01/06 or a later release, only the patch is required. Otherwise, you must first install the packages and then the patch.

Note – The packages and patches must be installed in the order given.

▼ To Download the Packages

Perform the following steps to download the Solaris 10 packages.

1. **Go to** `http://www.sun.com/download/products.xml?id=42c4317d.`

The Products Download page displays.

2. **Under Platform, click Download.**

The Login menu displays.

3. **Type your User Name and Password and click Login.**

The Download page displays with two items available in the table.

Description	File Name
Solaris 10 Sun StorEdge Enterprise 4Gb FC Single and Dual Port HBA, English	`s10_emlxs_pkgs.tar.Z`
Sun StorEdge Enterprise 4 Gb FC Single and Dual Port Host Adapter README file, English	`README_s10_emlxs_pkgs.txt`

4. **Read the license agreement and accept or decline.**

5. **Click the download item that is appropriate for this 4-Gbit adapter.**

The following packages are contained in the zipped file:

- `SUNWemlxs`
- `SUNWemlxu`

6. **Click the second item and print the driver README installation instructions.**

7. **Follow the README instructions.**

▼ To Download the Patches

Perform the following steps to download the Solaris 10 patches.

1. **Go to** `http://sunsolve.sun.com`**.**

The SunSolve Online license agreement page displays.

2. **Accept the License Agreement.**

The SunSolve Online page displays.

3. **Under Patches and Updates, click PatchFinder.**
4. **Download one of the following patches by typing the patch ID (without the dash number) in the Enter Patch ID box and click Find Patch.**

- 120222-08 (or above) Sun OS 5.10: Emulex-Sun Fibre LightPulse Channel Adapter driver
- 120223-08 (or above) Sun OS 5.10_x86: Emulex-Sun Fibre LightPulse Channel Adapter driver

5. **Follow the instructions in the patch README to install the patch.**
6. **Reboot your system after installing the patch.**

Diagnostic Support

Diagnostic support for the Sun StorageTek Enterprise PCI-X 4 Gb FC Single and Dual Port Emulex HBAs is available with SunVTS™ software, and the required patches are listed in TABLE 4-2.

TABLE 4-2 Required Patches

Operating System	SunVTS Version	Patch Number
Solaris 8 for SPARC	5.1	121422-01
Solaris 9 for SPARC	5.1	121422-01
Solaris 10 for SPARC	6.0	119838-03
Solaris 10 for SPARC	6.1	None required
Solaris 10 for x64/x86	6.0	119839-03
Solaris 10 for x64/x86	6.1	None required

Installing the HBA Driver With Red Hat and SuSE Operating Systems

The Red Hat Enterprise Linux (RHEL) 3 and 4 and the SuSE Linux Enterprise Server (SLES) 8 and 9 operating systems are supported on the single and dual port HBAs. Before installing the drivers for Linux, you must have the relevant Linux OS installed on your hard disk. The driver and utilities are available for download at the Emulex web page dedicated to Sun products, the driver as a `.gz` package and the utilities as a `.tar` file. The installation documentation is available from the same web page as the driver and utilities.

▼ To Download and Install the Packages

Perform the following steps to download the packages.

1. **Go to** `http://www.emulex.com/ts/docoem/Sun/10k.htm`.

   The Emulex main download page for Sun StorageTek Fibre Channel Host Bus Adapters is displayed.

2. **Click the SG-XPCI1FC-EM4-Z and SG-XPCI2FC-EM4-Z Host Adapters link.**

   The Emulex Sun StorageTek SG-XPCI1FC-EM4-Z and SG-XPCI2FC-EM4-Z Host Adapters web page is displayed.

3. **In the Latest Released Driver for Linux - 2.4 or 2.6 Kernel section, click the download link for the Driver kit.**

4. **Click the Download link for the Application kit.**

5. **For the Complete Manual, click the Manual link to open the Emulex driver and utilities for Linux.**

6. **Follow the instructions in the manual to install the HBA driver and the Application Helper Module Kit.**

Note – To create a Linux boot disk, see "Creating a Linux Boot Disk" on page 31.

Red Hat and SuSE OS Diagnostic Support

Diagnostic support is provided by the Emulex `lputil` and HBAnyware utilities. They support the following functions:

- List adapters
- Adapter information
- Firmware maintenance
- Reset adapters

To verify the installation, follow the instructions provided in the "View HBA Information using lputil" section of the Emulex Driver manual.

Creating a Linux Boot Disk

Emulex adapters enable you to load and boot the Linux operating system from a SAN-attached drive. You can use either the Emulex driver for Linux provided on your Linux distribution CD or, if you are using a different Linux driver, create a driver disk.

To boot from SAN directly using your distribution CD, follow the directions included with that CD. Refer to the Emulex web site for additional requirements to boot from a SAN.

Installing the HBA Driver With Windows 2000 or Windows Server 2003 Operating Systems

The Windows 2000 and Windows Server 2003 operating systems are supported on the single and dual port HBAs. Before installing the drivers for Windows, you must have the relevant Windows OS installed on your hard disk. The driver kit, which includes utilities, is available for download as a self-extracting `.exe` file at the Emulex web page dedicated to Sun products. The installation documentation is available from the same page as the driver kit.

The SCSIport Miniport driver supports the 32-bit Windows 2000 and Windows Server 2003 only. The Storport Miniport driver can run on 32-bit and 64-bit Windows Server 2003.

▼ To Install the HBA Driver

Follow these steps to download and install the Windows HBA Driver Kit.

1. **Go to** `http://www.emulex.com/ts/docoem/Sun/10k.htm`**.**

   The Emulex main download page for Sun StorageTek Fibre Channel Host Bus Adapters is displayed.

2. **Click the SG-XPCI1FC-EM4-Z and SG-XPCI2FC-EM4-Z Host Adapters link.**

   The Emulex Sun StorageTek SG-XPCI1FC-EM4-Z and SG-XPCI2FC-EM4-Z Host Adapters web page is displayed.

3. **In the Latest Released Driver for Windows section, under Windows Server 2003 and Windows Server 2000, click the download link for the driver kit.**

4. **For the Complete Manual, click the Manual link to open the Emulex Storport Miniport Driver or SCSIport Miniport driver.**

5. **Follow the instructions in the manual to install the HBA driver.**

Note – To create a Windows boot disk, see "To Create a Windows Boot Disk" on page 33.

▼ To Install the Diagnostic and Management Utilities

Diagnostic support is provided by the Emulex `lputil` and HBAnyware utilities. They support the following functions:

- List adapters
- Adapter information
- Firmware maintenance
- Reset adapters

To verify the installation, follow the instructions provided in the "View HBA Information using lputil" section of the Emulex Driver manual.

▼ To Create a Windows Boot Disk

1. **Go to** `http://www.emulex.com/ts/docoem/framsun/10k.htm`**.**

   The Emulex main download page for Sun StorageTek Fibre Channel Host Bus Adapters is displayed.

2. **Click the SG-XPCI1FC-EM4-Z and SG-XPCI2FC-EM4-Z Host Adapters link.**

   The Emulex Sun StorageTek SG-XPCI1FC-EM4-Z and SG-XPCI2FC-EM4-Z Host Adapters web page is displayed.

3. **For the manual, click the Manual link to open the Emulex Universal Boot Version 5.01a9 user manual.**

4. **Follow the instructions in the manual to create a Windows boot disk.**

Service Contact Information

If you need help installing or using this product, call 1-800-USA-4SUN, or go to:

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

APPENDIX **A**

Declaration of Conformity, Regulatory Compliance, and Safety Statements

This appendix contains the following information that applies to the Sun StorageTek Enterprise 4 Gb Fibre Channel Single and Dual Port Host Bus Adapter:

Declaration of Conformity

Compliance Model Number: **LP-XXXXX**
Product Family Name: **Sun StorageTek Enterprise PCI-X 4 Gb Fibre Channel Single and Dual Port Emulex HBA**
(SG-XPCI1FC-EM4-Z, SG-XPCI2FC-EM4-Z)

EMC

USA—FCC Class A

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This equipment may not cause harmful interference.
2. This equipment must accept any interference that may cause undesired operation.

European Union

This equipment complies with the following requirements of the EMC Directive 89/336/EEC:

As Telecommunication Network Equipment (TNE) in Both Telecom Centers and Other Than Telecom Centers per (as applicable):

EN 300 386 V.1.3.2 (2003-05) Required Limits:	
EN 55022:1994 +A1:1995 +A2:1997	ClassA
EN 61000-3-2:2000	Pass
EN 61000-3-3:1995 +A1:2000	Pass
IEC 61000-4-2	6 kV (Direct), 8 kV (Air)
IEC 61000-4-3	3 V/m 80-1000MHz, 10 V/m 800-960 MHz, and 1400-2000 MHz
IEC 61000-4-4	1 kV AC and DC Power Lines, 0.5 kV Signal Lines
IEC 61000-4-5	2 kV AC Line-Gnd, 1 kV AC Line-Line and Outdoor Signal Lines, 0.5 kV Indoor signal Lines > 10m.
IEC 61000-4-6	3 V
IEC 61000-4-11	Pass

As Information Technology Equipment (ITE) Class A per (as applicable):

EN 55022:1994 +A1:1995 +A2:1997	Class A
EN 61000-3-2:2000	Pass
EN 61000-3-3:1995 +A1:2000	Pass
EN 55024:1998 +A1:2001 +A2:2003 Required Limits:	
IEC 61000-4-2	4 kV (Direct), 8 kV (Air)
IEC 61000-4-3	3 V/m
IEC 61000-4-4	1 kV AC Power Lines, 0.5 kV Signal and DC Power Lines
IEC 61000-4-5	1 kV AC Line-Line and Outdoor Signal Lines, 2 kV AC Line-Gnd, 0.5 kV DC Power Lines
IEC 61000-4-6	3 V
IEC 61000-4-8	1 A/m
IEC 61000-4-11	Pass

Safety: *This equipment complies with the following requirements of the Low Voltage Directive 73/23/EEC:*

EC Type Examination Certificates:	
EN 60950-1:2001, 1st Edition, +A11	TÜV Rheinland Certificate No. R 72050152
IEC 60950-1:2001, 1st Edition Evaluated to all CB Countries	CB Scheme Certificate No. US/7598C/UL
UL 60950-1:2003, 1st Edition, CSA C22.2 No. 60950-1-03	File: E133173-A1-UL-1

Supplementary Information: This product was tested and complies with all the requirements for the CE Mark. This equipment complies with the Restriction of Hazardous Substances (RoHS) directive 2002/95/EC.

/S/

Dennis P. Symanski DATE
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/S/

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Regulatory Compliance Statements

Your Sun product is marked to indicate its compliance class:

- Federal Communications Commission (FCC) — USA
- Industry Canada Equipment Standard for Digital Equipment (ICES-003) — Canada
- Voluntary Control Council for Interference (VCCI) — Japan
- Bureau of Standards Metrology and Inspection (BSMI) — Taiwan

Please read the appropriate section that corresponds to the marking on your Sun product before attempting to install the product.

FCC Class A Notice

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

FCC Class A Parts

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help.

Modifications: Any modifications made to this device that are not approved by Sun Microsystems, Inc. may void the authority granted to the user by the FCC to operate this equipment.

ICES-003 Class A Notice - Avis NMB-003, Classe A

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

ICES-003 Class A Notice - Avis NMB-003, Classe A Parts

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

VCCI 基準について

クラス A VCCI 基準について

クラス A VCCI の表示があるワークステーションおよびオプション製品は、クラス A 情報技術装置です。これらの製品には、下記の項目が該当します。

この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

クラス B VCCI 基準について

クラス B VCCI の表示  があるワークステーションおよびオプション製品は、クラス B 情報技術装置です。これらの製品には、下記の項目が該当します。

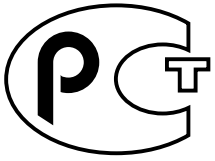
この装置は、情報処理装置等電波障害自主規制協議会 (VCCI) の基準に基づくクラス B 情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。取扱説明書に従って正しい取り扱いをしてください。

BSMI Class A Notice

The following statement is applicable to products shipped to Taiwan and marked as Class A on the product compliance label.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用
時，可能會造成射頻 干擾，在這種情況下，
使用者 會被要求採取某些適當的對策。

GOST-R Certification Mark



Safety Agency Compliance Statement

Read this section before beginning any procedure. The following text provides safety precautions to follow when installing a Sun Microsystems product.

Safety Precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions and instructions marked on the equipment.
- Ensure that the voltage and frequency of your power source match the voltage and frequency inscribed on the equipment's electrical rating label.
- Never push objects of any kind through openings in the equipment. Dangerous voltages may be present. Conductive foreign objects could produce a short circuit that could cause fire, electric shock, or damage to your equipment.

Symbols

The following symbols may appear in this book:

Caution – There is a risk of personal injury and equipment damage. Follow the instructions.

Caution – Hot surface. Avoid contact. Surfaces are hot and may cause personal injury if touched.

Caution – Hazardous voltages are present. To reduce the risk of electric shock and danger to personal health, follow the instructions.

Depending on the type of power switch your device has, one of the following symbols may be used:

On – Applies AC power to the system.

Off – Removes AC power from the system.

Standby – The On/Standby switch is in the standby position.

Modifications to Equipment

Do not make mechanical or electrical modifications to the equipment. Sun Microsystems is not responsible for regulatory compliance of a modified Sun product.

Placement of a Sun Product

Caution – Do not block or cover the openings of your Sun product. Never place a Sun product near a radiator or heat register. Failure to follow these guidelines can cause overheating and affect the reliability of your Sun product.

Noise Level

Declared noise emissions in accordance with ISO 9296, A-weighted, operating and idling:

Measure and Environment	
L_{wAd} (1B = 10 dB)	
at or below 25ºC	8.0 B
at max ambient	8.4 B
L_{pAm} bystander	
at or below 25ºC	66 dB
at max ambient	69 dB

SELV Compliance

Safety status of I/O connections comply to SELV requirements.

Power Cord Connection

Caution – Sun products are designed to work with power systems having a grounded neutral (grounded return for DC-powered products). To reduce the risk of electric shock, do not plug Sun products into any other type of power system. Contact your facilities manager or a qualified electrician if you are not sure what type of power is supplied to your building.

Caution – Not all power cords have the same current ratings. Do not use the power cord provided with your equipment for any other products or use. Household extension cords do not have overload protection and are not meant for use with computer systems. Do not use household extension cords with your Sun product.

注意 – 添付の電源コードを他の装置や用途に使用しない
添付の電源コードは本装置に接続し、使用することを目的として設計され、その安全性が確認されているものです。決して他の装置や用途に使用しないでください。火災や感電の原因となる恐れがあります。

The following caution applies only to devices with a Standby power switch:

Caution – The power switch of this product functions as a standby type device only. The power cord serves as the primary disconnect device for the system. Be sure to plug the power cord into a grounded power outlet that is nearby the system and is readily accessible. Do not connect the power cord when the power supply has been removed from the system chassis.

The following caution applies only to devices with multiple power cords:

Caution – For products with multiple power cords, all power cords must be disconnected to completely remove power from the system.

Battery Warning

Caution – There is danger of explosion if batteries are mishandled or incorrectly replaced. On systems with replaceable batteries, replace only with the same manufacturer and type or equivalent type recommended by the manufacturer per the instructions provided in the product service manual. Do not disassemble batteries or attempt to recharge them outside the system. Do not dispose of batteries in fire. Dispose of batteries properly in accordance with the manufacturer's instructions and local regulations. Note that on Sun CPU boards, there is a lithium battery molded into the real-time clock. These batteries are not customer replaceable parts.

System Unit Cover

You must remove the cover of your Sun computer system unit to add cards, memory, or internal storage devices. Be sure to replace the cover before powering on your computer system.

Caution – Do not operate Sun products without the cover in place. Failure to take this precaution may result in personal injury and system damage.

Rack System Warning

The following warnings apply to Racks and Rack Mounted systems.

Caution – For safety, equipment should always be loaded from the bottom up. That is, install the equipment that will be mounted in the lowest part of the rack first, then the next higher systems, etc.

Caution – To prevent the rack from tipping during equipment installation, the anti-tilt bar on the rack must be deployed.

Caution – To prevent extreme operating temperature within the rack insure that the maximum temperature does not exceed the product's ambient rated temperatures.

Caution – To prevent extreme operating temperatures due to reduced airflow consideration should be made to the amount of air flow that is required for a safe operation of the equipment.

Laser Compliance Notice

Sun products that use laser technology comply with Class 1 laser requirements.

Class 1 Laser Product
Luokan 1 Laserlaite
Klasse 1 Laser Apparat
Laser Klasse 1

CD and DVD Devices

The following caution applies to CD, DVD, and other optical devices.

Caution – Use of controls, adjustments, or the performance of procedures other than those specified herein may result in hazardous radiation exposure.

Conformité aux normes de sécurité

Veuillez lire attentivement cette section avant de commencer. Ce texte traite des mesures de sécurité qu'il convient de prendre pour l'installation d'un produit Sun Microsystems.

Mesures de sécurité

Pour votre sécurité, nous vous recommandons de suivre scrupuleusement les mesures de sécurité ci-dessous lorsque vous installez votre matériel:

- Suivez tous les avertissements et toutes les instructions inscrites sur le matériel.
- Assurez-vous que la tension et la fréquence de votre source d'alimentation correspondent à la tension et à la fréquence indiquées sur l'étiquette de la tension électrique nominale du matériel
- N'introduisez jamais d'objets quels qu'ils soient dans les ouvertures de l'équipement. Vous pourriez vous trouver en présence de hautes tensions dangereuses. Tout objet étranger conducteur risque de produire un court-circuit pouvant présenter un risque d'incendie ou de décharge électrique, ou susceptible d'endommager le matériel.

Symboles

Vous trouverez ci-dessous la signification des différents symboles utilisés:

Attention – Vous risquez d'endommager le matériel ou de vous blesser. Veuillez suivre les instructions.

Attention – Surfaces brûlantes. Evitez tout contact. Les surfaces sont brûlantes. Vous risquez de vous blesser si vous les touchez.

Attention – Tensions dangereuses. Pour réduire les risques de décharge électrique et de danger physique, observez les consignes indiquées.

Selon le type d'interrupteur marche/arrêt dont votre appareil est équipé, l'un des symboles suivants sera utilisé:

Marche – Met le système sous tension alternative.

Arret – Met le système hors tension alternative.

Veilleuse – L'interrupteur Marche/Veille est sur la position de veille.

Modification du matériel

N'apportez aucune modification mécanique ou électrique au matériel. Sun Microsystems décline toute responsabilité quant à la non-conformité éventuelle d'un produit Sun modifié.

Positionnement d'un produit Sun

Attention – Evitez d'obstruer ou de recouvrir les orifices de votre produit Sun. N'installez jamais un produit Sun près d'un radiateur ou d'une source de chaleur. Si vous ne respectez pas ces consignes, votre produit Sun risque de surchauffer et son fonctionnement en sera altéré.

Niveau de pression acoustique

Declared noise emissions in accordance with ISO 9296, A-weighted, operating and idling:

Measure and Environment	
L_{wAd} (1B = 10 dB)	
at or below 25ºC	8.0 B
at max ambient	8.4 B
L_{pAm} bystander	
at or below 25ºC	66 dB
at max ambient	69 dB

Conformité SELV

Le niveau de sécurité des connexions E/S est conforme aux normes SELV.

Connexion du cordon d'alimentation

Attention – Les produits Sun sont conçus pour fonctionner avec des systèmes d'alimentation équipés d'un conducteur neutre relié à la terre (conducteur neutre pour produits alimentés en CC). Pour réduire les risques de décharge électrique, ne branchez jamais les produits Sun sur une source d'alimentation d'un autre type. Contactez le gérant de votre bâtiment ou un électricien agréé si vous avez le moindre doute quant au type d'alimentation fourni dans votre bâtiment.

Attention – Tous les cordons d'alimentation ne présentent pas les mêmes caractéristiques électriques. Les cordons d'alimentation à usage domestique ne sont pas protégés contre les surtensions et ne sont pas conçus pour être utilisés avec des ordinateurs. N'utilisez jamais de cordon d'alimentation à usage domestique avec les produits Sun.

L'avertissement suivant s'applique uniquement aux systèmes équipés d'un interrupteur Veille:

Attention – L'interrupteur d'alimentation de ce produit fonctionne uniquement comme un dispositif de mise en veille. Le cordon d'alimentation constitue le moyen principal de déconnexion de l'alimentation pour le système. Assurez-vous de le brancher dans une prise d'alimentation mise à la terre près du système et facile d'accès. Ne le branchez pas lorsque l'alimentation électrique ne se trouve pas dans le châssis du système.

L'avertissement suivant s'applique uniquement aux systèmes équipés de plusieurs cordons d'alimentation:

Attention – Pour mettre un système équipé de plusieurs cordons d'alimentation hors tension, il est nécessaire de débrancher tous les cordons d'alimentation.

Mise en garde relative aux batteries

Attention – Les batteries risquent d'exploser en cas de manipulation maladroite ou de remplacement incorrect. Pour les systèmes dont les batteries sont remplaçables, effectuez les remplacements uniquement selon le modèle du fabricant ou un modèle équivalent recommandé par le fabricant, conformément aux instructions fournies dans le manuel de service du système. N'essayez en aucun cas de démonter les batteries, ni de les recharger hors du système. Ne les jetez pas au feu. Mettez-les au rebut selon les instructions du fabricant et conformément à la législation locale en vigueur. Notez que sur les cartes processeur de Sun, une batterie au lithium a été moulée dans l'horloge temps réel. Les batteries ne sont pas des pièces remplaçables par le client.

Couvercle de l'unité

Pour ajouter des cartes, de la mémoire ou des périphériques de stockage internes, vous devez retirer le couvercle de votre système Sun. Remettez le couvercle supérieur en place avant de mettre votre système sous tension.

Attention – Ne mettez jamais des produits Sun sous tension si leur couvercle supérieur n'est pas mis en place. Si vous ne prenez pas ces précautions, vous risquez de vous blesser ou d'endommager le système.

Mise en garde relative au système en rack

La mise en garde suivante s'applique aux racks et aux systèmes montés en rack.

Attention – Pour des raisons de sécurité, le matériel doit toujours être chargé du bas vers le haut. En d'autres termes, vous devez installer, en premier, le matériel qui doit se trouver dans la partie la plus inférieure du rack, puis installer le matériel sur le niveau suivant, etc.

Attention – Afin d'éviter que le rack ne penche pendant l'installation du matériel, tirez la barre anti-basculement du rack.

Attention – Pour éviter des températures de fonctionnement extrêmes dans le rack, assurez-vous que la température maximale ne dépasse pas la fourchette de températures ambiantes du produit déterminée par le fabricant.

Attention – Afin d'empêcher des températures de fonctionnement extrêmes provoquées par une aération insuffisante, assurez-vous de fournir une aération appropriée pour un fonctionnement du matériel en toute sécurité

Avis de conformité des appareils laser

Les produits Sun qui font appel aux technologies lasers sont conformes aux normes de la classe 1 en la matière.

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Périphériques CD et DVD

L'avertissement suivant s'applique aux périphériques CD, DVD et autres périphériques optiques:

Attention – L'utilisation de contrôles et de réglages ou l'application de procédures autres que ceux spécifiés dans le présent document peuvent entraîner une exposition à des radiations dangereuses.

Einhaltung sicherheitsbehördlicher Vorschriften

Lesen Sie vor dem Ausführen von Arbeiten diesen Abschnitt. Im folgenden Text werden Sicherheitsvorkehrungen beschrieben, die Sie bei der Installation eines Sun Microsystems-Produkts beachten müssen.

Sicherheitsvorkehrungen

Treffen Sie zu Ihrem eigenen Schutz bei der Installation des Geräts die folgenden Sicherheitsvorkehrungen:

- Beachten Sie alle auf den Geräten angebrachten Warnhinweise und Anweisungen.
- Stellen Sie sicher, dass Spannung und Frequenz der Stromversorgung den Nennleistungen auf dem am Gerät angebrachten Etikett entsprechen.
- Führen Sie niemals Fremdobjekte in die Öffnungen am Gerät ein. Es können gefährliche Spannungen anliegen. Leitfähige Fremdobjekte können einen Kurzschluss verursachen, der einen Brand, Stromschlag oder Geräteschaden herbeiführen kann.

Symbole

Die Symbole in diesem Handbuch haben folgende Bedeutung:

Achtung – Gefahr von Verletzung und Geräteschaden. Befolgen Sie die Anweisungen.

Achtung – Heiße Oberfläche. Nicht berühren, da Verletzungsgefahr durch heiße Oberfläche besteht.

Achtung – Gefährliche Spannungen. Befolgen Sie die Anweisungen, um Stromschläge und Verletzungen zu vermeiden.

Je nach Netzschaltertyp an Ihrem Gerät kann eines der folgenden Symbole verwendet werden:

Ein – Versorgt das System mit Wechselstrom.

Aus– Unterbricht die Wechselstromzufuhr zum Gerät.

Wartezustand – Der Ein-/Standby-Netzschalter befindet sich in der Standby-Position.

Modifikationen des Geräts

Nehmen Sie keine elektrischen oder mechanischen Gerätemodifikationen vor. Sun Microsystems ist für die Einhaltung der Sicherheitsvorschriften von modifizierten Sun-Produkten nicht haftbar.

Aufstellung von Sun-Geräten

Achtung – Geräteöffnungen Ihres Sun-Produkts dürfen nicht blockiert oder abgedeckt werden. Sun-Geräte sollten niemals in der Nähe von Heizkörpern oder Heißluftklappen aufgestellt werden. Die Nichtbeachtung dieser Richtlinien kann Überhitzung verursachen und die Zuverlässigkeit Ihres Sun-Geräts beeinträchtigen.

Lautstärke

Declared noise emissions in accordance with ISO 9296, A-weighted, operating and idling:

Measure and Environment	
L_{wAd} (1B = 10 dB)	
at or below 25ºC	8.0 B
at max ambient	8.4 B
L_{pAm} bystander	
at or below 25ºC	66 dB
at max ambient	69 dB

SELV-Konformität

Der Sicherheitsstatus der E/A-Verbindungen entspricht den SELV-Anforderungen.

Anschluss des Netzkabels

Achtung – Sun-Geräte sind für Stromversorgungssysteme mit einem geerdeten neutralen Leiter (geerdeter Rückleiter bei gleichstrombetriebenen Geräten) ausgelegt. Um die Gefahr von Stromschlägen zu vermeiden, schließen Sie das Gerät niemals an andere Stromversorgungssysteme an. Wenden Sie sich an den zuständigen Gebäudeverwalter oder an einen qualifizierten Elektriker, wenn Sie nicht sicher wissen, an welche Art von Stromversorgungssystem Ihr Gebäude angeschlossen ist.

Achtung – Nicht alle Netzkabel verfügen über die gleichen Nennwerte. Herkömmliche, im Haushalt verwendete Verlängerungskabel besitzen keinen Überlastschutz und sind daher für Computersysteme nicht geeignet. Verwenden Sie bei Ihrem Sun-Produkt keine Haushalts-Verlängerungskabel.

Die folgende Warnung gilt nur für Geräte mit Standby-Netzschalter:

Achtung – Beim Netzschalter dieses Geräts handelt es sich nur um einen Ein/Standby-Schalter. Zum völligen Abtrennen des Systems von der Stromversorgung dient hauptsächlich das Netzkabel. Stellen Sie sicher, dass das Netzkabel an eine frei zugängliche geerdete Steckdose in der Nähe des Systems angeschlossen ist. Schließen Sie das Stromkabel nicht an, wenn die Stromversorgung vom Systemchassis entfernt wurde.

Die folgende Warnung gilt nur für Geräte mit mehreren Netzkabeln:

Achtung – Bei Produkten mit mehreren Netzkabeln müssen alle Netzkabel abgetrennt werden, um das System völlig von der Stromversorgung zu trennen.

Warnung bezüglich Batterien

Achtung – Bei unsachgemäßer Handhabung oder nicht fachgerechtem Austausch der Batterien besteht Explosionsgefahr. Verwenden Sie bei Systemen mit austauschbaren Batterien ausschließlich Ersatzbatterien desselben Typs und Herstellers bzw. einen entsprechenden, vom Hersteller gemäß den Anweisungen im Service-Handbuch des Produkts empfohlenen Batterietyp. Versuchen Sie nicht, die Batterien auszubauen oder außerhalb des Systems wiederaufzuladen. Werfen Sie die Batterien nicht ins Feuer. Entsorgen Sie die Batterien entsprechend den Anweisungen des Herstellers und den vor Ort geltenden Vorschriften. CPU-Karten von Sun verfügen über eine Echtzeituhr mit integrierter Lithiumbatterie. Diese Batterie darf nur von einem qualifizierten Servicetechniker ausgewechselt werden.

Gehäuseabdeckung

Sie müssen die Abdeckung Ihres Sun-Computersystems entfernen, um Karten, Speicher oder interne Speichergeräte hinzuzufügen. Bringen Sie vor dem Einschalten des Systems die Gehäuseabdeckung wieder an.

Achtung – Nehmen Sie Sun-Geräte nicht ohne Abdeckung in Betrieb. Die Nichtbeachtung dieses Warnhinweises kann Verletzungen oder Geräteschaden zur Folge haben.

Warnungen bezüglich in Racks eingebauter Systeme

Die folgenden Warnungen gelten für Racks und in Racks eingebaute Systeme:

Achtung – Aus Sicherheitsgründen sollten sämtliche Geräte von unten nach oben in Racks eingebaut werden. Installieren Sie also zuerst die Geräte, die an der untersten Position im Rack eingebaut werden, gefolgt von den Systemen, die an nächsthöherer Stelle eingebaut werden, usw.

Achtung – Verwenden Sie beim Einbau den Kippschutz am Rack, um ein Umkippen zu vermeiden.

Achtung – Um extreme Betriebstemperaturen im Rack zu vermeiden, stellen Sie sicher, dass die Maximaltemperatur die Nennleistung der Umgebungstemperatur für das Produkt nicht überschreitet

Achtung – Um extreme Betriebstemperaturen durch verringerte Luftzirkulation zu vermeiden, sollte die für den sicheren Betrieb des Geräts erforderliche Luftzirkulation eingesetzt werden.

Hinweis zur Laser-Konformität

Sun-Produkte, die die Laser-Technologie verwenden, entsprechen den Laser-Anforderungen der Klasse 1.

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CD- und DVD-Geräte

Die folgende Warnung gilt für CD-, DVD- und andere optische Geräte:

Achtung – Die hier nicht aufgeführte Verwendung von Steuerelementen, Anpassungen oder Ausführung von Vorgängen kann eine gefährliche Strahlenbelastung verursachen.

Normativas de seguridad

Lea esta sección antes de realizar cualquier operación. En ella se explican las medidas de seguridad que debe tomar al instalar un producto de Sun Microsystems.

Medidas de seguridad

Para su protección, tome las medidas de seguridad siguientes durante la instalación del equipo:

- Siga todos los avisos e instrucciones indicados en el equipo.
- Asegúrese de que el voltaje y frecuencia de la fuente de alimentación coincidan con el voltaje y frecuencia indicados en la etiqueta de clasificación eléctrica del equipo.
- No introduzca objetos de ningún tipo por las rejillas del equipo, ya que puede quedar expuesto a voltajes peligrosos. Los objetos conductores extraños pueden producir cortocircuitos y, en consecuencia, incendios, descargas eléctricas o daños en el equipo.

Símbolos

En este documento aparecen los siguientes símbolos:

Precaución – Existe el riesgo de que se produzcan lesiones personales y daños en el equipo. Siga las instrucciones.

Precaución – Superficie caliente. Evite todo contacto. Las superficies están calientes y pueden causar lesiones personales si se tocan.

Precaución – Voltaje peligroso. Para reducir el riesgo de descargas eléctricas y lesiones personales, siga las instrucciones.

En función del tipo de interruptor de alimentación del que disponga el dispositivo, se utilizará uno de los símbolos siguientes:

Encendido – Suministra alimentación de CA al sistema.

Apagado – Corta la alimentación de CA del sistema.

Espera – El interruptor de encendido/espera está en la posición de espera.

Modificaciones en el equipo

No realice modificaciones de tipo mecánico ni eléctrico en el equipo. Sun Microsystems no se hace responsable del cumplimiento de normativas en caso de que un producto Sun se haya modificado.

Colocación de un producto Sun

Precaución – No obstruya ni tape las rejillas del producto Sun. Nunca coloque un producto Sun cerca de radiadores ni fuentes de calor. Si no sigue estas indicaciones, el producto Sun podría sobrecalentarse y la fiabilidad de su funcionamiento se vería afectada.

Nivel de ruido

Declared noise emissions in accordance with ISO 9296, A-weighted, operating and idling:

Measure and Environment	
L_{wAd} (1B = 10 dB)	
at or below 25ºC	8.0 B
at max ambient	8.4 B
L_{pAm} bystander	
at or below 25ºC	66 dB
at max ambient	69 dB

Cumplimiento de la normativa para instalaciones SELV

Las condiciones de seguridad de las conexiones de entrada y salida cumplen los requisitos para instalaciones SELV (del inglés *Safe Extra Low Voltage*, voltaje bajo y seguro).

Conexión del cable de alimentación

Precaución – Los productos Sun se han diseñado para funcionar con sistemas de alimentación que cuenten con un conductor neutro a tierra (con conexión a tierra de regreso para los productos con alimentación de CC). Para reducir el riesgo de descargas eléctricas, no conecte ningún producto Sun a otro tipo de sistema de alimentación. Póngase en contacto con el encargado de las instalaciones de su empresa o con un electricista cualificado en caso de que no esté seguro del tipo de alimentación del que se dispone en el edificio.

Precaución – No todos los cables de alimentación tienen la misma clasificación eléctrica. Los alargadores de uso doméstico no cuentan con protección frente a sobrecargas y no están diseñados para su utilización con sistemas informáticos. No utilice alargadores de uso doméstico con el producto Sun.

La siguiente medida solamente se aplica a aquellos dispositivos que dispongan de un interruptor de alimentación de espera:

Precaución – El interruptor de alimentación de este producto funciona solamente como un dispositivo de espera. El cable de alimentación hace las veces de dispositivo de desconexión principal del sistema. Asegúrese de que conecta el cable de alimentación a una toma de tierra situada cerca del sistema y de fácil acceso. No conecte el cable de alimentación si la unidad de alimentación no se encuentra en el bastidor del sistema.

La siguiente medida solamente se aplica a aquellos dispositivos que dispongan de varios cables de alimentación:

Precaución – En los productos que cuentan con varios cables de alimentación, debe desconectar todos los cables de alimentación para cortar por completo la alimentación eléctrica del sistema.

Advertencia sobre las baterías

Precaución – Si las baterías no se manipulan o reemplazan correctamente, se corre el riesgo de que estallen. En los sistemas que cuentan con baterías reemplazables, reemplácelas sólo con baterías del mismo fabricante y el mismo tipo, o un tipo equivalente recomendado por el fabricante, de acuerdo con las instrucciones descritas en el manual de servicio del producto. No desmonte las baterías ni intente recargarlas fuera del sistema. No intente deshacerse de las baterías echándolas al fuego. Deshágase de las baterías correctamente de acuerdo con las instrucciones del fabricante y las normas locales. Tenga en cuenta que en las placas CPU de Sun, hay una batería de litio incorporada en el reloj en tiempo real. Los usuarios no deben reemplazar este tipo de baterías.

Cubierta de la unidad del sistema

Debe extraer la cubierta de la unidad del sistema informático Sun para instalar tarjetas, memoria o dispositivos de almacenamiento internos. Vuelva a colocar la cubierta antes de encender el sistema informático.

Precaución – No ponga en funcionamiento los productos Sun que no tengan colocada la cubierta. De lo contrario, puede sufrir lesiones personales y ocasionar daños en el sistema.

Advertencia sobre el sistema en bastidor

Las advertencias siguientes se aplican a los sistemas montados en bastidor y a los propios bastidores.

Precaución – Por seguridad, siempre deben montarse los equipos de abajo arriba. A saber, primero debe instalarse el equipo que se situará en el bastidor inferior; a continuación, el que se situará en el siguiente nivel, etc.

Precaución – Para evitar que el bastidor se vuelque durante la instalación del equipo, debe extenderse la barra antivolcado del bastidor.

Precaución – Para evitar que se alcance una temperatura de funcionamiento extrema en el bastidor, asegúrese de que la temperatura máxima no sea superior a la temperatura ambiente establecida como adecuada para el producto.

Precaución – Para evitar que se alcance una temperatura de funcionamiento extrema debido a una circulación de aire reducida, debe considerarse la magnitud de la circulación de aire requerida para que el equipo funcione de forma segura.

Aviso de cumplimiento de la normativa para la utilización de láser

Los productos Sun que utilizan tecnología láser cumplen los requisitos establecidos para los productos láser de clase 1.

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Dispositivos de CD y DVD

La siguiente medida se aplica a los dispositivos de CD y DVD, así como a otros dispositivos ópticos:

Precaución – La utilización de controles, ajustes o procedimientos distintos a los aquí especificados puede dar lugar a niveles de radiación peligrosos.

Nordic Lithium Battery Cautions

Norge

Advarsel – Litiumbatteri — Eksplosjonsfare. Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten. Brukt batteri returneres apparatleverandøren.

Sverige

Varning – Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion.

Danmark

Advarsel! – Litiumbatteri — Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kun ske med batteri af samme fabrikat og type. Levér det brugte batteri tilbage til leverandøren.

Suomi

Varoitus – Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.