



Sun StorageTek™ ExpressModule SAS HBA Installation Guide

For HBA Model SG-XPCIE8SAS-EB-Z

Sun Microsystems, Inc.
www.sun.com

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Preface

This installation guide describes how to install the PCI-E, eight-channel Sun StorageTek™ ExpressModule™ Serial Attached SCSI (SAS) host bus adapter (HBA). It also describes how to install the drivers and patches necessary to support the HBA. This document is intended for experienced system administrators.

Before You Read This Book

Before you install and use the HBA as described in this manual, read and understand the following documents.

- *SunVTS 6.X Users Guide*
- *SunVTS 6.X Reference Manual*

You can find these documents by performing a search at <http://docs.sun.com..>

How This Book Is Organized

- [Chapter 1](#) describes the Sun StorageTek ExpressModule SAS HBA.
- [Chapter 2](#) explains how to install the HBA, connect it to a storage device, and test it. It also includes instructions on how to remove the HBA.
- [Chapter 3](#) describes driver requirements and utility software for the supported operating systems.
- [Chapter 4](#) provides any known issues with the product.
- [Appendix A](#) contains the specifications for the HBA.
- [Appendix B](#) provides Declaration of Conformity, safety, and regulatory compliance information about the product.

Using UNIX Commands

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

- Software documentation that you received with your system
- Solaris[™] operating environment documentation, which is at <http://docs.sun.com>

Shell Prompts

Shell	Prompt
C shell	<i>machine-name%</i>
C shell superuser	<i>machine-name#</i>
Bourne shell and Korn shell	\$
Bourne shell and Korn shell superuser	#

Accessing Sun Documentation

Go to <http://docs.sun.com> to do the following:

- View, print, or purchase a broad selection of Sun documentation, including localized versions.
- Access the Solaris OS usage documents listed under “Using UNIX Commands” on page x and the SunVTS™ software documents listed in “Before You Read This Book” on page ix.

To access HBA documentation, go to:

<http://docs.sun.com/app/docs/prod/storage.net?l=en>

Note – Viewing and printing documents in Adobe® Portable Document Format (PDF) requires Adobe Acrobat Reader, which is downloadable for free from: www.adobe.com/products/acrobat/readstep.html.

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Sun StorageTek ExpressModule SAS HBA Installation Guide, part number 820-3214-11.

HBA Overview

This chapter provides a basic overview of the PCI Express, eight-port Sun StorageTek ExpressModule Serial Attached SCSI (SAS) host bus adapter (HBA), which uses LSI™ technology. The chapter also describes the various operating systems, host platforms, storage, and infrastructure configurations that support the HBA.

This chapter contains the following topics:

- [“Kit Contents” on page 1](#)
- [“HBA Features” on page 1](#)
- [“Operating System and Technology Requirements” on page 3](#)
- [“System Interoperability” on page 4](#)
- [“Environmental Requirements” on page 6](#)

Kit Contents

- Sun StorageTek ExpressModule SAS HBA
- *Accessing Documentation* document (part number: 820-2299-xx)

HBA Features

The Sun StorageTek ExpressModule SAS HBA (SG-XPCIE8SAS-EB-Z) provides a low-cost PCI Express SAS solution for computer manufacturers. The HBA includes hot-plug architecture that enables convenient insertion in and removal from any

ExpressModule-compliant enclosure. The card is packaged in a singlewide PCI Express Module that conforms to the *PCI Express ExpressModule Electromechanical Specification, Rev. 1.0*.

The PCI Express interface of the HBA has eight PCI Express PHYs that operate at 2.5 Gb/s in each direction, yielding a total bandwidth of 5Gb/s for each of the eight full-duplex lanes. This host interface provides a possible host-side maximum transmission and reception rates of up to 4GB/s.

The HBA supports x8 PCI Express link widths. The connection is made through the edge connector J1. The signal definitions and pin numbers conform to the PCI ExpressModule specifications.

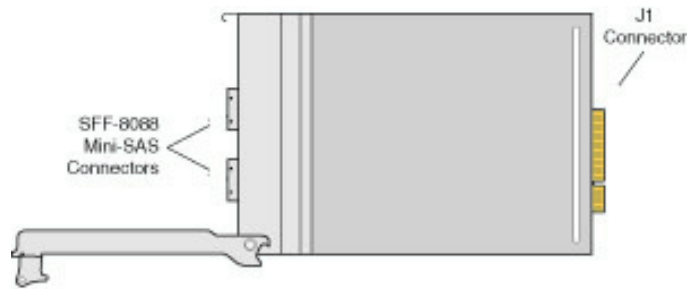
The two external x4 mini-SAS connectors on the HBA allow you to connect to SAS and SATA (serial ATA) devices. The HBA host adapter has a 2-Mbyte Flash ROM for the BIOS and firmware, an NVSRAM, and a PBSRAM memory device for storing SAS address port information. The LEDs on the host adapters report fault conditions and activity. Fusion-MPT firmware operates the host adapter.

The LSISAS1068E controller chip provides the functionality of the HBA. This controller chip integrates eight high-performance SAS/SATA PHYs. Each PHY is capable of 1.5Gbit/sec and 3.0Gbit/sec link rates.

The HBA supports the following features:

- Narrow and wide ports
- SSP, STP, and SMP, as defined in the *Serial Attached SCSI (SAS) Specification, version 1.0*
- SATA target devices, as defined in the *Serial ATA Specification, version 1.0a*
- Hot-plug insertion in ExpressModule enclosures, as defined in the *PCI Express ExpressModule Electromechanical Specification, version 1.0*
- Configurable drive spin-up sequencing on a per-PHY basis
- Simplified cabling with a serial point-to-point architecture
- Transfer of data using SCSI information units
- Several LEDs routed through the end of the enclosure: an Activity LED and Fault LED for each mini-SAS connector and a Power LED and Attention LED for the HBA

FIGURE 1-1 Sun StorageTek ExpressModule SAS HBA



Operating System and Technology Requirements

The HBA requires the operating system (OS) and technology levels, at minimum, listed in [TABLE 1-1](#).

TABLE 1-1 Supported Operating System Versions

Operating System/Technology	Supported Versions (minimum)
Solaris 10 OS for the x64 and x86 (32-bit and 64-bit) platforms	Solaris 10 8/07 (s10u4) and patch* 125082-16 (or later)
Solaris 10 OS for the SPARC® (64-bit) platform	Solaris 10 8/07 (s10u4) and patch 125081-16 (or later)
Linux OS	Red Hat Enterprise Linux (RHEL) 4 and 5 SUSE Linux Enterprise Server (SLES) 9 AMD-64 SP3 SUSE OS Linux Enterprise Server (SLES) 10 AMD-64
Microsoft Windows OS	Windows Server 2003 Enterprise Edition x86 and x64 Windows Server 2003 Standard Edition x86 and x64 Windows MPIO
VMware Technology	ESX Server, version 3.0.1

* Patches are available at <http://sunsolve.sun.com>.

System Interoperability

This section provides host platform, storage, and software support information. This section contains the following topics:

- “Host Platform Support” on page 4
- “Storage System Support” on page 5
- “Software Support” on page 5

Host Platform Support

The HBA is supported by the platforms listed in [TABLE 1-2](#).

TABLE 1-2 Host Platform Support

Platform	Supported OS/Technology
SPARC Servers	
Sun Blade T6300	Solaris
Sun Blade T6320	Solaris
Sun x64 Servers	
Sun Blade X8400	Solaris, Linux, VMware, and Windows
Sun Blade X8420	Solaris, Linux, VMware, and Windows
Sun Blade X6250	Solaris, Linux, VMware, and Windows
Sun Blade X6220	Solaris, Linux, VMware, and Windows
Sun Blade X6450	Solaris, Linux, VMware, and Windows

Storage System Support

The HBA supports the following arrays:

- Sun StorageTek 2530
- Sun Storage J4000
- Sun Storage J4200
- Sun Storage J4400
- Sun Storage J4500

Software Support

Install, Flash, and BIOS configuration utilities are provided. The HBA uses the Fusion-MPT architecture for all major operating systems, which allows for thinner drivers for better performance. To obtain a device driver that supports your operating system, go to <http://www.lsi.com>.

The HBA is supported by the software applications listed in [TABLE 1-3](#).

TABLE 1-3 Software Support

Software (minimum version)	Supported OS
Sun Cluster 3.x	Solaris
Sun StorEdge™ Enterprise Backup Software 6.0B	Solaris, Linux, and Windows Note: Supported with the following restrictions: <ul style="list-style-type: none">• Backup client only on Solaris 10 x64/x86• Backup server only on Linux x64 while storage node in RHEL 3.0 x86 (32-bit)• Backup server only on Windows server x64 while storage node in Windows 2000 or 2003 x86 (32-bit)
VERITAS Volume Manager (VxVM) 3.5, 4.0, and 6.5	Solaris
VERITAS File System 5.0	Solaris
VERITAS NetBackup 6.0	Solaris, Linux, and Windows

TABLE 1-3 Software Support

Software (minimum version)	Supported OS
VERITAS Software Foundation 5.0 MP1	Solaris
MaxQ	Solaris, Linux, and Windows
WHQL Qualified	Linux and Windows

Environmental Requirements

The HBA environmental requirements are listed in [TABLE 1-4](#).

TABLE 1-4 HBA Environmental Requirements

Specification	Operating	Non-Operating
Temperature	0° to 43°C, noncondensing, 16 hour dwells at extremes	-43°C to 73°C, noncondensing, 16 hour dwells at extremes
Humidity	7% to 93% RH, noncondensing, 40°C, 16 hour dwells at extreme	93% RH, noncondensing, 40°C max, 120 hours
Altitude	3200m at 40°C, 4 hour dwell	12,200m at 0°, 4 hour dwell
Vibration	0.25G in all axes swept for 5-500-5 Hz, 5 sweeps in all at 1 octave/min	1.2G in all axes swept for 5-500-5 Hz, 5 sweeps in all at 1 octave/min
Shock	5.5G, 11 ms half-sine, 10 shocks in x-, y-, and z-axes	33G, 11 ms half-sine, 3 shocks in x-, y-, and z-axes

Hardware Installation and Removal

The Sun StorageTek ExpressModule SAS HBA is packaged in a single-wide PCI ExpressModule. This chapter explains how to install the HBA in a PCI Express slot of an ExpressModule-compliant enclosure. You do not need to turn off system power or disconnect power cords during the installation, since these enclosures fully support hot-plugging.

This chapter contains the following topics:

- “Observing ESD and Handling Precautions” on page 7
- “Installing the HBA” on page 8
- “Testing the HBA Installation” on page 11
- “Booting Through the HBA” on page 17
- “Removing the HBA” on page 20

Observing ESD and Handling Precautions



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, use both a workstation antistatic 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 ES protection when handling the HBA and observe proper ESD grounding techniques.
- Always hold the HBA by the metal enclosure.
- Place the HBA on a properly grounded antistatic work surface pad when it is out of its protective antistatic bag.

Installing the HBA

Before you start, read the instructions in this section as well as the installation instructions for the storage devices to be connected to the HBA. This section contains the following topics:

- [“To Prepare for Hardware Installation” on page 8](#)
- [“To Install the HBA” on page 9](#)

▼ To Prepare for Hardware Installation

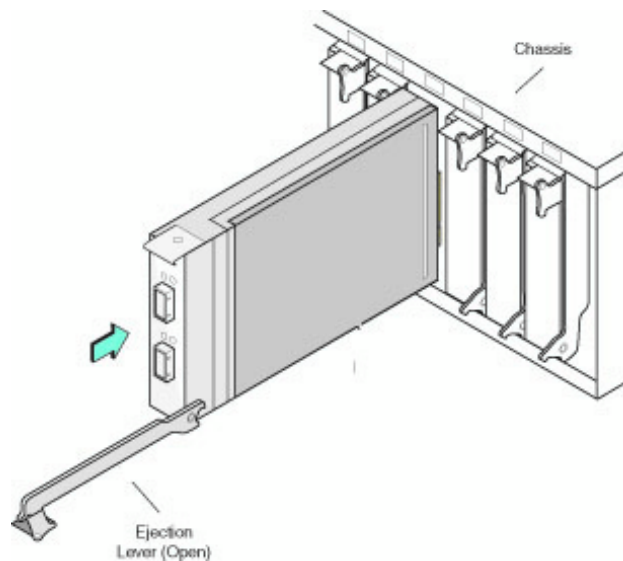
1. **Read and observe the safety information for this product.**
See [“Safety Agency Compliance Statements” on page 35](#).
2. **Unpack the box containing the HBA in a static-free environment and inspect it for damage.**

Note – Leave the HBA in the protective bag until you are ready to install it. If there is damage, contact Sun customer support.

▼ To Install the HBA

1. Remove the cover from the system's chassis.
2. Attach an antistatic wrist strap.
See [“Observing ESD and Handling Precautions”](#) on page 7.
3. Grasp the button at the top of the ejection lever on the front of the HBA and pivot the lever downwards.
4. Insert the HBA into an available PCI Express slot in the ExpressModule-compliant enclosure, as shown in [FIGURE 2-1](#).

FIGURE 2-1 Installing the HBA into a PCI-E Slot



Note – The configuration of the enclosure may not be the same as shown in this illustration.

5. When the HBA is fully inserted in the slot, pivot the ejection lever up to the locked position.

6. Connect SAS cables to the two external x4 mini-SAS connectors and attach them to disk drives or other SAS/SATA devices, per your requirements.

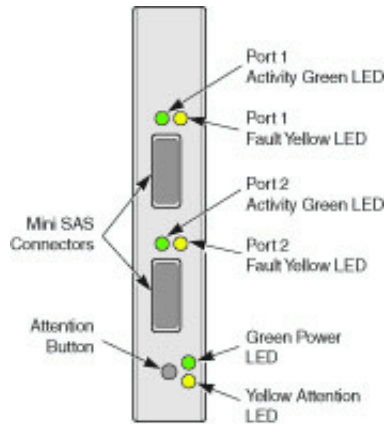
Use only Sun-provided SAS cables (530-3887-01), available for purchase at <http://www.sun.com>.

The HBA hardware installation is complete.

LEDs

The HBA has six LEDs that are visible on the end of the HBA. FIGURE 2-2 shows the external connectors and LEDs.

FIGURE 2-2 External Connectors and LEDs



The LEDs next to each mini-SAS connector adapter are green for Activity and yellow for Fault for the 4 PHYs associated with each SAS connector. The yellow Attention LED and green Power LED are next to the Attention button.

The states of the Attention and Power LEDs are listed in TABLE 2-1

TABLE 2-1 Attention and Power LEDs

State	Meaning
Attention LED	
Off	Operations are normal.
On	There are operational problems at the slot.
Blinking	The slot is being identified at the user's request.
Power LED	
Off	Insertion or removal of the HBA is permitted.
On	Insertion or removal of the HBA is not permitted.
Blinking	Removal of the HBA is not permitted because a hot-plug operation is in progress.

Testing the HBA Installation

This section describes the various ways to test the installation in a Solaris environment. This section contains the following topics:

- [“To Test the Installation Using the SPARC OBP `probe-scsi-all` Command” on page 11](#)
- [“To Test the Installation Using the Solaris `format` Command” on page 13](#)
- [“To Test the Installation Using the SunVTS Software” on page 16](#)

▼ To Test the Installation Using the SPARC OBP `probe-scsi-all` Command

Note – This procedure is not valid in a Solaris 10 for x64/x86 environment. Instead, use the `format` command to verify the installation of the HBA before attempting to use it in a Solaris 10 for x64/x86 environment. See [“To Test the Installation Using the Solaris `format` Command” on page 13](#).

1. Bring the system down to the `ok` prompt at run level 0.

Note – If the host starts to reboot, interrupt the reboot process by pressing the Stop and A keys simultaneously.

2. At the ok prompt, use the probe-scsi-all command to verify that the system recognizes the HBA.

The probe-scsi-all command displays the SCSI devices that are connected to the host, as shown in the following screen example.

```
ok probe-scsi-all
/pci@7c0/pci@0/pci@1/pci@0,2/LSILogic,sas@2
MPT Version 1.05, Firmware Version 1.06.00.00
Target 0
  Unit 0   Disk      FUJITSU MAY2073RCSUN72G 0401      143374738 Blocks, 73 GB
  SASAddress 500000e0118dd3e2  PhyNum 0
Target 1
  Unit 0   Disk      FUJITSU MAY2073RCSUN72G 0401      143374738 Blocks, 73 GB
  SASAddress 500000e0115c3ec2  PhyNum 1

/pci@780/pci@0/pci@8/LSILogic,sas@0
MPT Version 1.05, Firmware Version 1.18.00.00
Target 1
  Unit 0   Disk      SUN      LCSM100_S      9617      2048000 Blocks, 1048 MB
  Unit 1   Disk      SUN      LCSM100_S      9617      2457600 Blocks, 1258 MB
  SASAddress 500a0b82804a8008  PhyNum 0
```

This example shows two SAS controllers. The first (sas@2) is the SAS controller resident on the motherboard. The second SAS controller (sas@0) has one disk drive connected (Target 1). The disk consists of two logical unit numbers (LUNs), Unit 0 and Unit 1.

▼ To Test the Installation Using the Solaris format Command

Use the following procedure to test the HBA installation using the `format` command on the Solaris 10 for x64/x86 platform.

1. Become a root user and use the `format` command.

```
# format
Searching for disks...done
AVAILABLE DISK SELECTIONS:
 0. c1t0d0 <DEFAULT cyl 24611 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@a/pci17c2,10e4/sd@0,0
 1. c1t1d0 <DEFAULT cyl 24810 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@a/pci17c2,10e4/sd@1,0
 2. c3t8d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@8,0
 3. c3t9d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@9,0
 4. c3t10d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@a,0
 5. c3t11d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@b,0
 6. c3t12d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@c,0
 7. c3t13d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450@b/pci1000,10c0@1,1/sd@d,0
Specify disk (enter its number):
```

2. When prompted, type the number of the disk drive that is attached to the HBA card you just installed and press Enter.

```
# format
Searching for disks...done
AVAILABLE DISK SELECTIONS:
 0. c1t0d0 <DEFAULT cyl 24611 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450a/pci17c2,10e4/sd@0,0
 1. c1t1d0 <DEFAULT cyl 24810 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450a/pci17c2,10e4/sd@1,0
 2. c3t8d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450b/pci1000,10c0@1,1/sd@8,0
 3. c3t9d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450b/pci1000,10c0@1,1/sd@9,0
 4. c3t10d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450b/pci1000,10c0@1,1/sd@a,0
 5. c3t11d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450b/pci1000,10c0@1,1/sd@b,0
 6. c3t12d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450b/pci1000,10c0@1,1/sd@c,0
 7. c3t13d0 <DEFAULT cyl 24619 alt 2 hd 27 sec 107>
    /pci@0,0/pci1022,7450b/pci1000,10c0@1,1/sd@d,0
Specify disk (enter its number): 2
selecting c3t8d0
[disk formatted]
```

The Format menu is displayed.

3. Type **analyze** to select the type of test.

```
FORMAT MENU:
  disk- select a disk
  type- select (define) a disk type
  partition- select (define) a partition table
  current- describe the current disk
  format- format and analyze the disk
  fdisk- run the fdisk program
  repair- repair a defective sector
  label- write label to the disk
  analyze- surface analysis
  defect- defect list management
  backup- search for backup labels
  verify- read and display labels
  save- save new disk/partition definitions
  inquiry- show vendor, product and revision
  scsi- independent SCSI mode selects
  cache- enable, disable or query SCSI disk cache
  volname- set 8-character volume name
  !<cmd>- execute <cmd>, then return
  quit
format> analyze
```

4. Type **read** to further define the type of test, and then type **y** to continue.

```
ANALYZE MENU:
  read- read only test (doesn't harm SunOS)
  refresh- read then write (doesn't harm data)
  test- pattern testing (doesn't harm data)
  write- write then read (corrupts data)
  compare- write, read, compare (corrupts data)
  purge- write, read, write (corrupts data)
  verify- write entire disk, then verify (corrupts data)
  print- display data buffer
  setup- set analysis parameters
  config- show analysis parameters
  !<cmd>- execute <cmd> , then return
  quit
analyze> read
Ready to analyze (won't harm SunOS). This takes a long time,
but is interruptable with CTRL-C. Continue? y
pass 1

Total of 0 defective blocks repaired.
analyze>
```

5. Verify that no error occurred, as indicated by the output line Total of 0 defective blocks repaired.
6. Contact your service provider if an error occurs.
7. Type **q** twice to quit the test and the Format menu.

```
analyze> q
FORMAT MENU:
  disk - select a disk
  type - select (define) a disk type
  partition - select (define) a partition table
  current - describe the current disk
  format - format and analyze the disk
  fdisk - run the fdisk program
  repair - repair a defective sector
  label - write label to the disk
  analyze - surface analysis
  defect - defect list management
  backup - search for backup labels
  verify - read and display labels
  save - save new disk/partition definitions
  inquiry - show vendor, product and revision
  scsi - independent SCSI mode selects
  cache - enable, disable or query SCSI disk cache
  volname - set 8-character volume name
  !<cmd> - execute <cmd>, then return
  quit
format> q
#
```

The Sun StorageTek ExpressModule SAS HBA is ready for use.

▼ To Test the Installation Using the SunVTS Software

Use the SunVTS software to test a disk on a newly attached disk array to verify that the HBA is properly installed.

For details about running the SunVTS software, refer to the *SunVTS 6.X User's Guide* and the *SunVTS 6.X Test Reference Manual*.

Note – Refer to the SunVTS documentation to determine whether the host platform is supported.

1. As superuser, open the SunVTS window.

```
# /opt/SUNWvts/bin/sunvts
```

2. From the System Map, select a disk drive that is in an array connected to the HBA.
3. Start the disk test.
4. Verify that no errors have occurred by checking the SunVTS status window.

Note – If problems occur, contact your service provider for assistance.

5. If no problems occur, stop the SunVTS software.

The HBA is now ready to run applications.

Booting Through the HBA

The Sun StorageTek ExpressModule SAS HBA uses the Solaris `mpt` device driver, which is included with Solaris patches 125082-16 (x64) and 125081-16 (SPARC). The patches are available for download at <http://sunsolve.sun.com..>

▼ To Boot an x86 Server From an External Disk Drive

1. **Initiate a system boot.**

The BIOS initialization screen is displayed.

2. **Immediately press Control-C.**

The LSI Logic MPT SCSI Setup Utility menu is displayed.

```

LSI Logic Config Utility      v6.12.00.00 (2006.10.31)
Adapter List Global Properties
Adapter      PCI  PCI  PCI  PCI  FW Revision      Status  Boot
              Bus  Dev  Fnc  Slot
SAS1064     07  04  00  00  1.00.01.00-IR    Enabled  0
SAS1060     07  01  00  01  1.18.00.00-IT    Enabled

```

Esc = Exit Menu F1/Shift+1 = Help
Alt+N = Global Properties -/+ = Alter Boot Order Ins/Del = Alter Boot List

In this example, the first line (SAS1064) is the SAS controller that is resident on the motherboard. The HBA (SAS1068) is installed in PCI Express slot 01.

3. To change the boot options, use the arrow keys to move the grey highlighted field to the Boot Order field and use the following keys.

Key	Function
Insert	Enable booting
Del	Disable booting
Plus (+)	Increase the numeric value to change the boot order
Minus (-)	Decrease the numeric value to change the boot order

4. To change other options, move the grey highlighted field to the appropriate HBA, and press Enter.

Details for the selected adapter are displayed, as shown in the following example.

```
LSI Logic Config Utility      v6.12.00.00 (2006.10.31)
Adapter Properties -- SAS1068

Adapter                SAS1068
PCI Slot                01
PCI Address(Bus/Dev/Func) 07:01:00
MPT Firmware Revision   1.18.00.00-IT
SAS Address             50060500:00252900
NVDATA Version          25.0B
Status                  Enabled
Boot Order
Boot Support            [Enabled BIOS & OS]

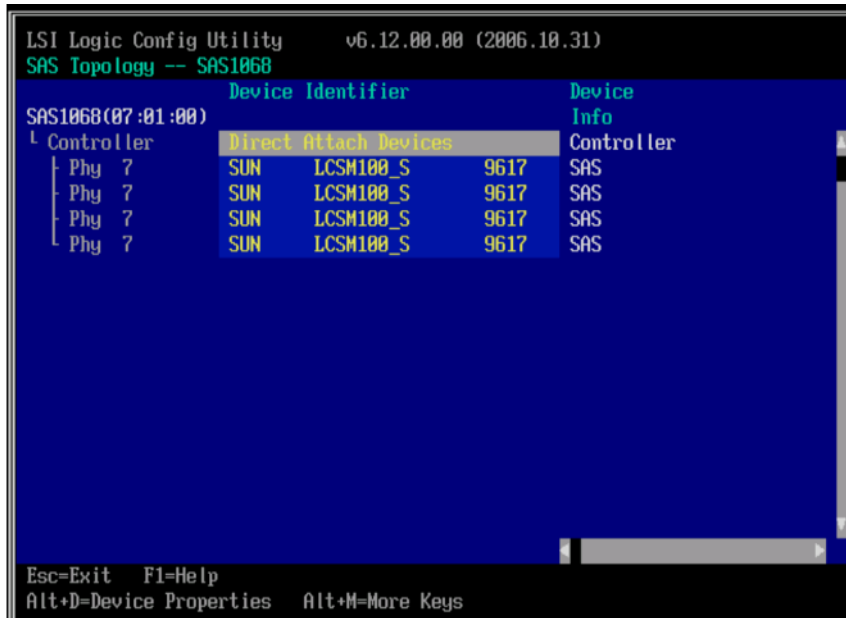
[SAS Topology]

[Advanced Adapter Properties]

Esc = Exit Menu      F1/Shift+1 = Help
Enter = Select Item  -/+ = Change Item
```

5. To view the devices attached to this adapter, highlight SAS Topology and press Return.

The following screen is displayed.



```
LSI Logic Config Utility      v6.12.00.00 (2006.10.31)
SAS Topology -- SAS1068
SAS1068(07:01:00)
├─ Controller
│   └─ Direct Attach Devices
│       ├── Phy 7  SUN  LCSM100_S  9617  SAS
│       ├── Phy 7  SUN  LCSM100_S  9617  SAS
│       ├── Phy 7  SUN  LCSM100_S  9617  SAS
│       └─ Phy 7  SUN  LCSM100_S  9617  SAS
└─ Info
    └─ Controller

Esc=Exit  F1=Help
Alt+D=Device Properties  Alt+M=More Keys
```

6. In this example, a single SAS RAID array is attached to the adapter. The array has four bonded PHYs.
7. To exit this screen, press the Escape key.
8. Use the arrow key to highlight Exit the Configuration Utility and press Enter.

Saving global properties...
Global properties saved. Hit any key to reboot.

9. Press any key to reboot the system.

Removing the HBA

Follow these steps to remove the HBA from an enclosure:

1. Prepare your operating system for HBA removal.
2. Disconnect all SAS cables from the external mini-SAS connectors.

3. Press the Attention button on the exposed end of the HBA (see [FIGURE 2-2](#)).
4. When the green Power LED next to the Attention button goes out, pull the ejection lever downwards.

Note – If you decide after pressing the Attention button that you do not want to remove the HBA, you can cancel the operation by pressing the button again within 5 seconds of when the power LED starts blinking.

5. Pull the HBA out of its slot in the enclosure.

HBA Software Installation

After you have completed the hardware installation and powered on the computer, follow the instructions listed in this chapter for your operating system to install the HBA driver and any other utilities required for the installation.

This chapter contains the following topics:

- “Downloading and Installing the Solaris Driver and Firmware” on page 23
- “Downloading and Installing the Linux Driver and Firmware” on page 24
- “Downloading and Installing the Windows Server 2003 Driver and Firmware” on page 25
- “Downloading and Installing the VMware Driver and Firmware” on page 26

Downloading and Installing the Solaris Driver and Firmware

The latest driver (mpt) for this HBA is included with Solaris 10 8/07 (s10u4) patches 125082-16 (x64) and 125081-16 (SPARC). The patches are available for download at <http://sunsolve.sun.com>.

Diagnostic Support

Solaris diagnostic support for the HBA is included in the SunVTS software beginning with version 6.3. The SunVTS software is included with the Solaris 10 8/07 (s10u4) OS. The SunVTS software is also available for download at <http://www.sun.com/oem/products/vts>

Firmware Updates

Use the Solaris `raidctl` utility to update the firmware. For information about updating firmware/fcode/BIOS, see the `raidctl(1M)` man page.

Downloading and Installing the Linux Driver and Firmware

Consult the Sun hardware platform document to determine which Linux releases are supported on your specific host platform.

The Linux driver required to run the HBA with the Linux OS is available for download at the Sun designated page at:

<http://www.lsillogic.com/support/sun>

Consult the Sun hardware platform documentation to determine which Linux releases are supported on each specific platform.

▼ To Download and Install the Linux Driver

1. Log in to the host.
2. In a browser, go to <http://www.lsillogic.com/support/sun>.
3. Select #SG-XPCIE8SAS-EB-Z.
4. Select and download the Linux driver that is supported by the Linux release (Red Hat Enterprise Linux or SuSE Linux Enterprise Server) on your hardware platform.
5. Select and download the corresponding Readme file for the Linux driver, and follow the instructions in the Readme file to complete the driver installation.

▼ To Download and Update the Linux Firmware

1. Log in to the host.
2. In a browser, go to <http://www.lsillogic.com/support/sun>.
3. Select SG-XPCIE8SAS-EB-Z.

4. Under Utilities, click Linux to download the Linux utility program, `lsiutil`.
5. Under Firmware, download the firmware zip file and corresponding Readme file.
6. Unzip the firmware file and follow the instructions in the Readme file to update the firmware.

Downloading and Installing the Windows Server 2003 Driver and Firmware

Consult the Sun hardware platform document to determine which Windows releases are supported on your specific host platform.

The Windows Server 2003 driver required to run the HBA is available for download at the Sun designated web page at <http://www.lsilogic.com/support/sun>.

See the Sun hardware platform documentation to determine which Windows releases are supported.

▼ To Download and Install the Windows Driver

1. Log in to the host.
2. In a browser, go to <http://www.lsilogic.com/support/sun>.
3. Select SG-XPCIE8SAS-EB-Z.
4. Select and download the specific Windows driver that is supported by the Windows release on your hardware platform.
5. Select and download the corresponding Readme file for the Windows driver, and follow the instructions in the Readme file to complete the driver installation.

▼ To Download and Update the Windows Firmware

1. Log in to the host.
2. In a browser, go to <http://www.lsillogic.com/support/sun>.
3. Select SG-XPCIE8SAS-EB-Z.
4. Under Utilities, click Windows to download the Windows utility program, `lsiutil`, and download the corresponding Readme file.
5. Under Firmware, download the firmware zip file and the corresponding Readme file.
6. Unzip the firmware file and follow the instructions in the Readme file to update the firmware.

Downloading and Installing the VMware Driver and Firmware

The HBA driver is included as part of the VMware ESX Server installation. The VMware ESX Server installation requires nothing from the user.

Known Issues

This chapter contains the latest supplementary information for the preceding chapters in this guide.

This chapter contains the following sections:

- [“You Cannot Perform Hot-Plugging With the Sun Blade T6300 Server” on page 27](#)
- [“The HBA is Not Detected When it is Installed in the Sun Blade X6250 Server \(6662381\)” on page 27](#)

You Cannot Perform Hot-Plugging With the Sun Blade T6300 Server

Workaround – This feature is not supported. There is no workaround.

The HBA is Not Detected When it is Installed in the Sun Blade X6250 Server (6662381)

If you install the HBA in a Sun Blade X6250 server, you may have issues detecting the HBA after installation.

Workaround – Download and install the latest system BIOS (version 1.3) for the Sun Blade X6250 server.

HBA Specifications

The chapter contains the specifications for the Sun StorageTek ExpressModule SAS HBA.

This appendix contains the following topics:

- [“Physical Dimensions” on page 29](#)
- [“PCI Performance” on page 29](#)

Physical Dimensions

The PCI Express module enclosure is 198mm x 120mm x 21.5mm and its weight is approximately 0.8 lbs. The PCI Express x8 connection is made through the edge connector J1. The design of the HBA follows the *PCI Express ExpressModule Electromechanical Specification, Rev. 1.0*.

PCI Performance

The PCI Express features of the HBA include the following:

- Provides a scalable interface
 - Single-lane aggregate bandwidth of up to 0.5-GB/s (500MB/s)
 - Quad-lane aggregate bandwidth of up to 2GB/s (2000MB/s)
 - 8-lane aggregate bandwidth of up to 4.0GB/s (4000MB/s)
- Supports serial point-to-point interconnections between devices
- Supports lane reversal and polarity inversion

- Supports PCI Express Hot-Plug and PCI power management 1.2
- Supports active state power management (ASPM), including the L0, L0s, and L1 states
- Contains a replay buffer that preserves a copy of the data for retransmission in case of CRC error
- Supports the PCI Express advanced error reporting capabilities
- Uses a packetized and layered architecture
- Achieves a high bandwidth per pin with low overhead and low latency
- PCI Express is software compatible with PCI and PCI-X software
 - Leverages existing PCI device drivers
 - Supports the memory, I/O, and configuration address spaces
 - Supports memory read/write transactions, I/O read/write transactions, and configuration read/write transactions
- Provides 4-KB of PCI configuration address space per device
- Supports posted and nonposted transactions
- Provides quality of service (QOS) link configuration and arbitration policies
- Supports traffic class 0 and class 1 virtual channel
- Supports message signaled interrupts (both MSI and MSI-X) as well as INTx interrupt signaling for legacy PCI support
- Supports end-to-end CRC (ECRC) and advanced error reporting

Declaration of Conformity, Safety, and Regulatory Statements

The appendix contains the specifications for the Sun StorageTek ExpressModule SAS HBA.

This appendix contains the following topics:

- [“Declaration of Conformity” on page 33](#)
- [“Safety Agency Compliance Statements” on page 35](#)
- [“Regulatory Compliance Statements” on page 47](#)

Declaration of Conformity

To receive a copy of the latest Declaration of Conformity (DoC) for the product, either contact your local Sun sales representative, or create an online request at:

https://www2.sun.de/dct/forms/reg_us_1607_755_0.jsp

Safety Agency Compliance Statements

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.

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。

Caution



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

Veillez 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.



Arrêt – 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.

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.

Class 1 Laser Product
Luokan 1 Laserlaitte
Klasse 1 Laser Apparat
Laser Klasse 1

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 Fremdoobjekte in die Öffnungen am Gerät ein. Es können gefährliche Spannungen anliegen. Leitfähige Fremdoobjekte 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.

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 ausgetauscht 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.

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

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.

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.

Class 1 Laser Product
Luokan 1 Laserlaite
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Laser Klasse 1

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.

Nordic Power Distribution Cautions

English



Caution – This product is also designed for an IT power distribution system with phase-to-phase voltage of 230V.

Danmark



Advarsel! – Dette produkt er også beregnet til et IT-strømfordelingssystem med en fase-til-fase spænding på 230 V.

Nordic Grounded Socket Cautions

English



Caution – The appliance must be connected to a grounded socket.

Norge



Advarsel – Apparatet må tilkoples jordet stikkontakt.

Sverige



Varning – Apparaten skall anslutas till jordat uttag.

Suomi



Varoitus – Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan.

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
- 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.

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.

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。

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。



Korean MIC Mark



LSI-SAS3801E (A)