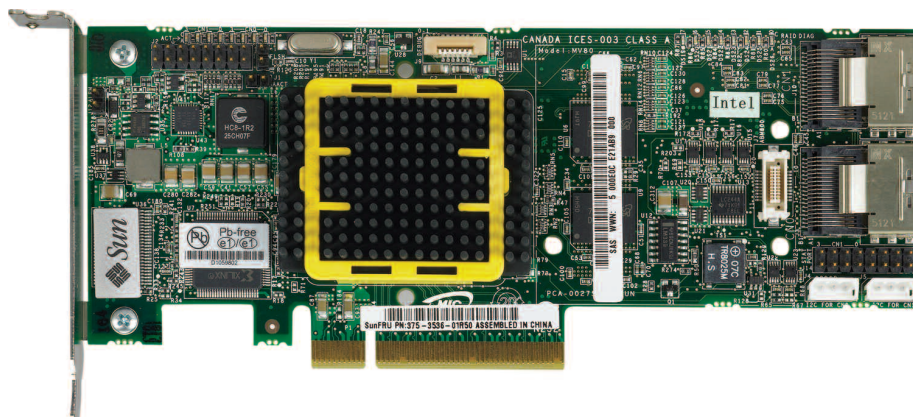


Sun StorageTek™ SAS RAID

Host Bus Adapter, Internal



➤ The Sun StorageTek™ SAS RAID Host Bus Adapter (HBA), Internal brings cost-effective enterprise-class RAID functionality to Sun customers who need secure, performance optimized data storage and retrieval solutions.

Highlights

- RAID levels 0, 1, 10, 1E, 5, 6, 50, 5EE, 60
- SAS, SATA and SATA II compliant
- 3 Gb/s throughput per port
- Two x4 internal mini SAS connectors
- PCI Express x8 host bus interface
- Embedded RAID-on-chip SAS controller
- Easy-to-use Sun StorageTek RAID Manager software
- 256 MB 533 MHz DDR2 cache memory
- Low-profile MD2 form factor
- Operating system support for Solaris,™ Linux, and Windows
- Includes battery backup module

Designed for high-speed PCI Express-based Sun servers with 8 to 16 internal hard drives, this 8-channel HBA upgrades systems with both advanced RAID data protection and the next generation connectivity of 3 Gb/s Serial Attached SCSI (SAS), the interface of choice for storage administrators who place high priority on bandwidth and availability. This makes StorageTek SAS RAID HBAs ideal for small-to-mid-sized enterprises seeking a direct attached storage (DAS) solution with superior data protection, reliability and performance.

The StorageTek SAS RAID HBA, Internal is especially well suited to environments with SAS-based servers that require high levels of performance and mission-critical reliability, for example, businesses that rely on applications such as Exchange Server databases, transaction processing databases or Web hosting databases.

The StorageTek SAS RAID HBA, Internal features a fast, highly integrated Intel® I/O processor that offloads RAID functions from the host CPU to enhance performance, as well as a GUI-based storage management application to enable easy RAID array setup, configuration, monitoring and troubleshooting.

Advanced RAID data protection

StorageTek SAS RAID HBAs offer a robust set of advanced RAID functionality to meet the requirements of business-critical applications such as databases, OLTP, e-mail, Web and media. The StorageTek SAS RAID HBA, Internal provides full hardware RAID support of RAID levels 0, 1, 10, 1E, 5, 6, 50, 5EE and 60.

Advanced features supported include improved hot spare performance, striped mirror functionality and dual drive failure protection. The RAID feature set also includes support for array sizes as large as 512 TB.

Connecting with the advantages of SAS

With attributes such as optimized performance, robustness and reliability, SAS can deliver benefits typically reserved for the largest enterprise environments. The StorageTek SAS RAID HBA, Internal connects as many as eight direct-attached point-to-point internal SAS disk drives, with support for 16 drives using an expander. Customers can also use high-performance SAS drives or higher-capacity, lower-cost SATA drives in a server to accommodate changing storage application requirements.

Intel IOP-based hardware RAID support

In a marketplace where performance and data protection are imperative, Sun is delivering a solution based on the high performance, flexible Intel® IOP348 Storage Processor. The Intel IOP348 is a flexible, efficient storage processor that integrates an 800 MHz I/O processor with a 3 Gb/s SAS/SATA I/O controller, combining advanced RAID and enterprise class SAS technologies to deliver a new level of data protection and performance to StorageTek SAS RAID HBAs.

A choice of storage management tools

The Sun StorageTek SAS RAID HBA, Internal supports multiple options for creating and managing RAID arrays, including a full-featured software application, a BIOS-based utility and a command line utility. To enable GUI-based management, the HBAs ship with StorageTek RAID Manager software, a single-view tool that supports simple, secure, centralized configuration and monitoring of all HBAs and internal disk drives in a customer's storage environment. The software enables storage

Learn More

For additional information on this product, go to sun.com/storagetek/networking.jsp

administrators to group disk drives into logical arrays and build in redundancy to safeguard business-critical data and improve system performance.

Sun StorageTek SAS RAID Specifications

Supported operating systems

- Solaris™ 10 x64 32-/64-bit
- Solaris 10 SPARC®
- Red Hat Enterprise Linux 4.0, 5.0 (32-/64-bit)
- SUSE Linux Enterprise Server 9.0, 10.0
- VMware ESX Server 3.x
- Microsoft Windows Standard/Enterprise Server 2003 (32-/64-bit)

Supported server platforms

Sun X64 systems

- Sun Fire™ X4140
- Sun Fire X4150
- Sun Fire X4240
- Sun Fire X4440
- Sun Fire X4450

Sun SPARC® systems

- Sun SPARC Enterprise T5120
- Sun SPARC Enterprise T5220
- Sun SPARC Enterprise T5140
- Sun SPARC Enterprise T5240

Supported storage expansion

- LSI LSISASx28 SAS Expander (16-drive configuration)

Storage management tools

- StorageTek RAID Manager GUI-based software
- BIOS-level configuration utility
- Uniform command line interface (UCL) utility

Part numbers

- Xoption SGXPCIESAS-R-INT-Z
- ATO SG-PCIESAS-R-INT-Z

RAID features

RAID levels	<ul style="list-style-type: none"> • RAID 0, 1, 10, 5, 50 • Advanced RAID 1E (striped mirror) • Advanced RAID 5EE (hot spare) • Advanced RAID 6/60 (dual drive failure protection)
Drive/volume support	<ul style="list-style-type: none"> • Up to 24 volumes • Up to 16 hard disk drives (with expander) • Up to 10 arrays per drive • 16 KB to 1 MB stripe size • Up to 512 TB array sizes • 128 MB metadata storage
RAID functions	<ul style="list-style-type: none"> • Online array optimization • Capacity expansion • RAID level migration • Stripe size configuration • Array roaming • Optimized disk utilization • Configurable hot spare (dedicated, pooled or global) • Copyback hot spare • Hot swap disk support • Patrol read • Snapshot backup • Flexible logical drive initialization schemes • Native Command Queuing (NCQ) support

Technical specifications

Host interface	• PCI Express x8
Standards compliance	<ul style="list-style-type: none"> • PCI Express Base Specification 1.0a • PCI Express Card Electromechanical Specification 1.1 • PCI Express hot-plug support • ANSI INCITS 417-2006 Serial Attached SCSI – 1.1 (SAS-1.1) • BIOS Boot Specification Version 1.01 • IEEE 1275-1994 • OpenBoot • RoHS-6

Physical specifications

Ports	• Eight 3 Gb/s SAS channels
Connectors	• Two x4 internal mini SAS (compliant with SFF-8086 and SFF-8087)
LEDs	• Two (activity and fault)
Form factor	• Low-profile MD2 PCIe card
Dimensions	• 168 mm x 68 mm

Environmental specifications

Temperature

Operating	• 0° to +40°C, non-condensing
Storage	• -40° to +70°C, non-condensing

Relative humidity

Operating	• 10% to 90%, non-condensing
Storage	• 93%
Power dissipation	• 15W maximum

Regulatory agency compliance (EMI)

US	• FCC Title 47 Part 15, Subpart J, Class "B"
Canada	• ICES-003, Class B
Europe	• CE EMC Directive 89/336/EEC EN55022
Japan	• VCCI CISPR22, Class B
Taiwan	• BSMI CNS13438, Class B
Australia/New Zealand	• AUSTEL AS/NZS CISPR22, Class B
Korea	• RRL MIC Notice No. 1997-41 (EMC), 1997-42 (EMI)
International	• CISPR 22