

Sun StorageTek™ SAS RAID Host Bus Adapter, External

Advanced RAID data protection for
Sun Storage J4000 arrays



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

Highlights

- RAID levels 0, 1, 10, 1E, 5, 6, 50, 5EE, 60
- Connects to SAS, SATA and SATA II drives
- 3 Gb/s throughput per port
- Two x4 external 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 specifically for the latest high-speed PCI Express-based Sun servers, this 8-channel HBA couples advanced RAID data protection with 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.

By supporting both SAS and SATA disk drives as well as advanced hardware RAID, these HBAs offer small-to-mid-sized enterprises exceptional flexibility to deliver advanced data protection and the ability to scale their direct-attached and external storage solutions.

The StorageTek SAS RAID HBA, External is especially well suited to environments with SAS-based servers and storage enclosures 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, External 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, External provides full hardware RAID support of RAID levels 0, 1, 10, 1E, 5, 6, 50, 5EE and 60, as well as JBOD enclosure management using SES2 and SGPIO protocols. 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, reliability and flexibility, SAS can deliver benefits typically reserved for the largest enterprise environments. Each StorageTek SAS RAID HBA, External supports as many as eight direct-attached point-to-point SAS, SATA, and/or SATA II disk drives — and scales up to 128 drives using the Sun ST4000 Series. This flexibility offers customers unprecedented choice to connect SAS and SATA devices to their Sun servers and configure storage solutions that accommodate a range of cost and performance considerations.

Intel IOP-based hardware RAID support

In a marketplace where performance and data protection are imperative, Sun is delivering a solution based on the 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, External 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 disk drives in a customer's storage environment. The

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

software enables storage 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 HBA, External 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™ X2100 M2 Sun Fire X2200 M2
- Sun Fire X4600 Sun Fire X4600 M2
- Sun Fire X4100 M2 Sun Fire X4200 M2
- Sun Fire X4140 Sun Fire X4240

Sun SPARC® systems

- Sun SPARC Enterprise T5120 server
- Sun SPARC Enterprise T5220 server
- Sun Fire™ V445 server
- Sun Fire V215 server
- Sun Fire V245 server
- Sun SPARC T1000 server
- Sun SPARC T2000 server
- Sun Ultra™ 45 SPARC workstation
- Sun SPARC Enterprise M4000 server
- Sun SPARC Enterprise M5000 server
- Sun SPARC Enterprise M8000 server
- Sun SPARC Enterprise M9000 server 32/64

Supported expansion platforms

- Sun Storage J4200
- Sun Storage J4400
- Sun Storage J4500

Storage management tools

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

Part numbers

- Xoption SGXPCIESAS-R-EXT-Z
- ATO SG-PCIESAS-R-EXT-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)	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Eight 3 Gb/s SAS channels
Connectors	<ul style="list-style-type: none"> • Two x4 internal mini SAS (compliant with SFF-8086 and SFF-8087)
LEDs	<ul style="list-style-type: none"> • Two (activity and fault)
Form Factor	<ul style="list-style-type: none"> • Low-profile MD2 PCIe card
Dimensions	<ul style="list-style-type: none"> • 168 mm x 68 mm

Environmental specifications

Temperature

Operating	<ul style="list-style-type: none"> • 0° to +40°C, non-condensing
Storage	<ul style="list-style-type: none"> • -40° to +70°C, non-condensing

Relative Humidity

Operating	<ul style="list-style-type: none"> • 10% to 90%, non-condensing
Storage	<ul style="list-style-type: none"> • 93%
Power Dissipation	<ul style="list-style-type: none"> • 15W maximum

Regulatory agency compliance (EMI)

US	<ul style="list-style-type: none"> • FCC Title 47 Part 15, Subpart J, Class "B"
Canada	<ul style="list-style-type: none"> • ICES-003, Class B
Europe	<ul style="list-style-type: none"> • CE EMC Directive 89/336/EEC EN55022
Japan	<ul style="list-style-type: none"> • VCCI CISPR22, Class B
Taiwan	<ul style="list-style-type: none"> • BSMI CNS13438, Class B
Australia/New Zealand	<ul style="list-style-type: none"> • AUSTEL AS/NZS CISPR22, Class B
Korea	<ul style="list-style-type: none"> • RRL MIC Notice No. 1997-41 (EMC), 1997-42 (EMI)
International	<ul style="list-style-type: none"> • CISPR 22