

# LSISAS1068

## 8-Port 3Gb/s SAS Controller

<http://lsilogic.com/storage>



**EXTENDS 20 YEARS OF SCSI TECHNOLOGY TO NEXT GENERATION PRODUCT PLATFORMS FOR HIGH PERFORMANCE, SCALABILITY, FLEXIBILITY AND RAID CAPABILITY.**

### OVERVIEW

The LSI Logic Serial Attached SCSI (SAS) 3Gb/s integrated controller is based on Fusion-MPT™ (Message Passing Technology) architecture, the industry's leading high-performance interface technology. The LSISAS1068 eight-port controller provides 1.5 and 3Gb/s data transfer rates per port and enables Integrated RAID solutions in storage environments including servers and external storage systems. The LSI Logic SAS controller is ideal for today's data centers and leverages existing SCSI infrastructure for investment protection. The serial interface allows for point-to-point connection, increased device bandwidth, higher availability with dual ported drives, and enhanced reliability when compared to parallel SCSI.

LSI Logic SAS controllers comply with the SAS standard which includes improved performance, simplified cabling, smaller connectors, a lower pin count, and lower power requirements. The eight-port controller provides an aggregate bandwidth of 2.4GB/s and also runs in full duplex. In addition, the LSI Logic SAS controllers leverage an electrical and physical connection interface that is compatible with Serial ATA technology. This provides users with unprecedented choices for servers and storage sub-systems. SAS controllers support command queuing to maximize drive performance. Interrupt coalescing is another advanced feature of the controllers that improves system performance by reducing the number of interrupts per I/O to less than one.

### APPLICATIONS

- Entry-level servers
  - 1U/2U rack mount servers
- Mid-range, high-end servers
- Storage subsystems

### FEATURES

- 64-bit, 133MHz PCI-X host interface
  - Backward compatible with 33/66 PCI
- Integrated controller solution
- 1.5 and 3Gb/s per port, full duplex
- 8-port controller
- Port independent auto-negotiation
- ARM® 9 processor
- GigaBlaze® integrated transceivers
- Point-to-point SAS/SATA drive connection
- Fusion-MPT architecture
- Supports SGPIO (SFF-8485)
- Gflx™ technology
- RAID Levels
  - Integrated Mirroring™ and Integrated Striping
  - Zero channel RAID support

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### FEATURES (Continued)

- Hot plug/hot swap support
- Supports SSP, SMP, STP, and SATA protocols
- PCI power management (D0, D3hot, D3cold)
- Supports 3.3V signaling levels
- Interrupt coalescing
- Independent power states per port
- Flash and local memory interface
- 636 EPBGA package

### OS SUPPORT

- Windows® Server 2003
- Windows® 2000
- Windows® XP
- Linux™ RedHat 6.X, Suse, Turbo
- Solaris SPARC™ 7.X
- UnixWare™
- NetWare®

### SGPIO INTERFACE

The LSISAS1068 provides two serialized general purpose I/O (SGPIO) interfaces that are compliant with the SFF-8485 specification. The SGPIO interfaces enable the user to control LED pattern generation, device information, and general purpose data.

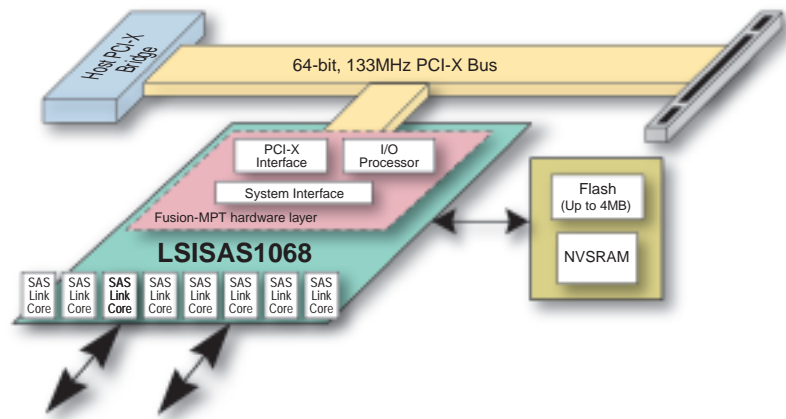


Figure 1. SAS controller block diagram

Combined with LSI Logic SAS expanders, the controllers support topologies requiring greater connectivity within server and storage environments – up to 252 devices.

### LSI LOGIC INTEGRATED RAID

LSI Logic's Integrated RAID is a highly integrated, low cost RAID solution made possible by Fusion-MPT architecture. Integrated RAID is a processor-based, hardware RAID solution designed for system environments requiring redundancy and high availability where a full-featured RAID implementation is not desired or might be cost prohibitive. By providing RAID at the processor level, the host CPU is off-loaded allowing for more efficient operation.

LSI Logic's advanced Integrated RAID includes Integrated Mirroring™ and Integrated Striping options. Integrated Mirroring allows for fault tolerant, high availability data by simultaneously mirroring up to 2 drives. It also extends mirroring capability to 8 drives for high-end applications, providing greater volume capacity.

LSI Logic's write journaling feature allows for quick data recovery in the event of a failure by automatically verifying that all drives in the Integrated Mirroring volume are synchronized and have identical data. In the event of a system failure, an automatic resynchronization is performed in the background while

I/Os continue. Integrated Striping is ideal for today's data intensive applications, such as video streaming and document imaging, that require greater system performance and storage efficiency with reduced latency of the drives. LSI Logic's Integrated Striping supports up to 8 drives. Integrated RAID is easy to install and configure. Other benefits include bootability, greater error protection, OS independence, and no need for special drivers.

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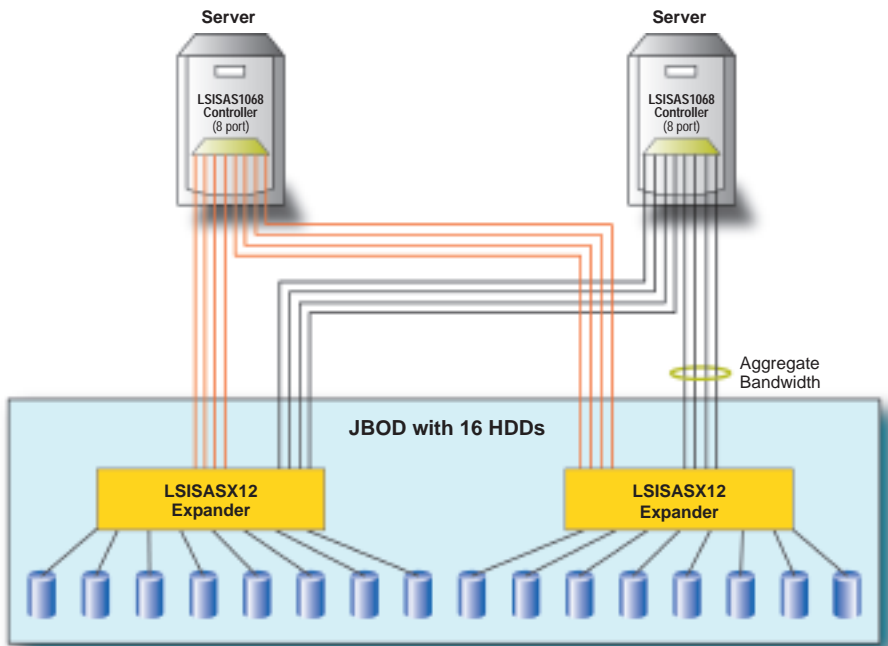


Figure 2. SAS topology offers flexible link configuration and redundancy

## INDUSTRY STANDARD ARM 9 PROCESSOR

The LSI SAS1068 controller uses an ARM® 9 processor for high performance, and to manage the Fusion-MPT interface and integrated RAID functions. This allows the host CPU to perform other processing activities while maximizing overall I/O performance. The controller manages I/Os from start to finish without host intervention.

## MEMORY INTERFACES

The LSI SAS1068 controller supports up to 4 MB of external expansion ROM through an 8-bit interface. For ease of software development and field upgrades of the ROM, the interface supports local programming of FLASH memory. When utilizing LSI Logic's Integrated Mirroring, the addition of NVSRAM is required to support write journaling.

## INTEGRATED RAID FEATURES

- Hardware based RAID
- Single virtual drive presented to OS
- Bootable
- OS independent
- Low host CPU utilization
- Supports drives of different types/capacities
- Simple configuration utility
- Error notification
- Non-volatile write journaling for mirroring
- Hot swap capability for mirroring
- Floating hot spare for additional fault tolerance for mirroring

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### FUSION-MPT ARCHITECTURE

LSI Logic's Fusion-MPT architecture provides unparalleled performance, binary compatibility of host software with LSI Logic's Ultra320 SCSI, Serial Attached SCSI, and Fibre Channel products, and significantly reduces software development time. With advanced architecture, the LSI Logic product family can be quickly adapted to respond to emerging I/O interfaces.

The LSISAS1068 controller incorporates LSI Logic's Fusion-MPT to deliver industry-leading performance. Fusion-MPT is based on industry standard ARM® technology to control the system interface and the hardware assisted SAS ports. The controller frees the host CPU for other processing tasks while maximizing overall I/O performance. The processing power of the Fusion-MPT architecture also allows for advanced embedded features such as LSI Logic's Integrated RAID.

Fusion-MPT is a message passing architecture that provides an open programming interface for developers and has a single binary device driver. The Fusion-MPT OS driver suite supports all major operating systems. High performance, easy adoption, and an open programming interface allow for reduced software development, seamless integration and certification time, and reduced time to market benefits.

For more information please visit the LSI Logic web site at:

<http://lsilogic.com/storage>

<http://adapters.lsilogic.com>

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#### ISO 9001 Certified

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#### Warranty

For more than 15 years, LSI Logic host adapters have been providing high-performance SCSI solutions to leading server, disk array and computer systems worldwide. Each host adapter carries a powerful chip built in LSI Logic's ISO 9001-certified fabrication facilities. Using only the highest quality components, LSI Logic host adapters are assembled and tested in world-class facilities to assure superior product reliability and performance. Because of stringent quality management programs, our host adapters carry a three-year limited warranty.



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