LSISASx12

12-Port 3Gb/s SAS Expander

LSI's Serial Attached SCSI Expander is Ideal for Servers and Storage Systems in Storage Environments Requiring High-Performance, Scalability, and Flexibility in Design

APPLICATIONS

- **Enterprise servers**
  - 1U/2U rack mount servers
  - Blade servers
  - Tower servers
- **Storage subsystems**
  - RAID
  - JBOD

FEATURES

- **Edge expander with routing tables**
- **GigaBlaze™ integrated transceivers**
- **G*flx*™ process technology**
- **12 fully-independent SAS and SATA ports**
- **One GigaBlaze integrated transceiver per port**
  - Auto-negotiation on ports (SAS only)
  - SAS or SATA target
- **Ports are non-denominational**
  - Initiator or target connect
- **Transport support**
  - SSP protocol
  - SMP protocol
  - STP protocol
  - SATA protocol
- **Routing modes**
  - Direct
  - Subtractive decode
  - Table routing

Overview

The LSISASx12 is the industry's first 3Gb/s Serial Attached SCSI (SAS) expander. It is fully compliant with the ANSI Serial Attached SCSI specification, with benefits including improved performance, simplified cabling, smaller connectors, a lower pin count, and lower power requirements. The LSISASx12 expander supports the Serial Attached SCSI Protocol (SSP), the Serial ATA Tunneling Protocol (STP), and the SAS Management Protocol (SMP) as defined in the SAS specification as well as the Serial ATA (SATA) protocol as defined in the Serial ATA standard. The LSISASx12 expander supports 1.5 and 3Gb/s data transfer rates per port. The LSISASx12 12-port expander provides storage environments with the functionality of connecting multiple targets and initiators through a switched device. This is ideal for today's data centers and storage subsystems, leveraging existing SCSI infrastructure for investment protection and ease of migration and implementation.

LSI's SAS expanders comply with the SAS standard which includes the proven SCSI command set, while allowing for point-to-point connection, increased device bandwidth, higher availability with dual-ported drives, and enhanced reliability when compared to parallel SCSI. In addition, SAS leverages an electrical and physical connection interface that is compatible with SATA technology. This interface compatibility allows for greater customer choice in drive connection, including the 2.5" hard disk drive small form factor.

The LSISASx12 expander supports STP, which extends the ATA protocol that is popular in many desktop configurations. The point-to-point SATA architecture eliminates inherent difficulties created by the legacy ATA master-slave architecture while maintaining compatibility with existing ATA firmware. The LSISASx12 enables addressing of multiple SATA targets by a single initiator and enables multiple initiators to address a single SATA target.

The LSISASx12 SAS expander supports both initiator and target connections on any link for both SAS and SATA devices. Direct, subtractive, and table routing address modes allow for 144 end devices. The internal table routing support allows for the construction of larger end node topologies using the expander as a building block. The LSISASx12 expander requires minimal external support components including a reference clock and a Serial EEPROM device. The expander also includes an interface to an optional external enclosure management processor.

Applications

The LSISASx12 offers high performance, high disk drive connectivity, scalability, and flexibility in various storage environments as an alternative to today's expensive and complex offerings. The LSISASx12 SAS expander is ideal for high availability and scalable server clustering environments and front-end storage subsystems used in clusters, SAN, and NAS environments.

Block Description

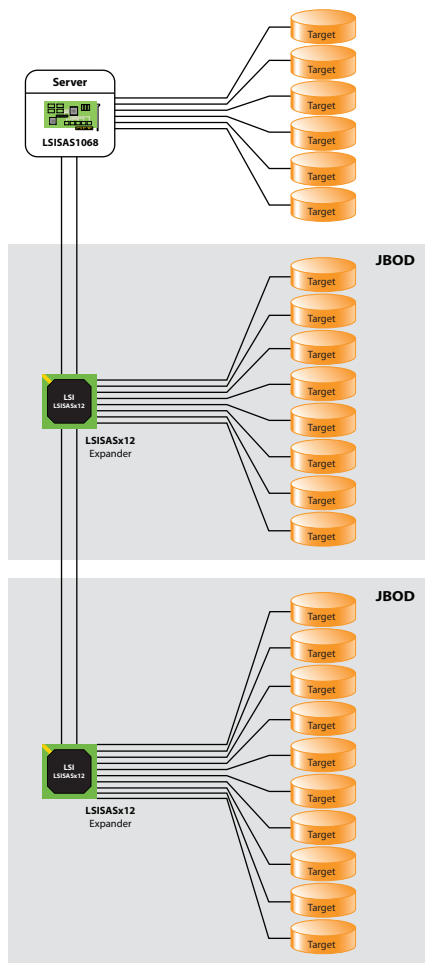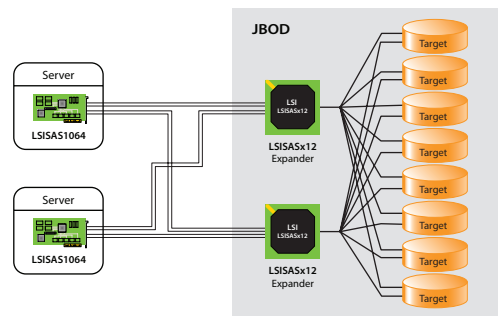**Figure 1. SAS Topology Offers Scalability and High Disk Drive Connectivity**

Figure 2. SAS Topology Offers Flexible Link Configuration and Redundancy