



EIGHT-PORT SAS/SATA-II TO PCI EXPRESS™/PCI-X® RAID-ON-CHIP

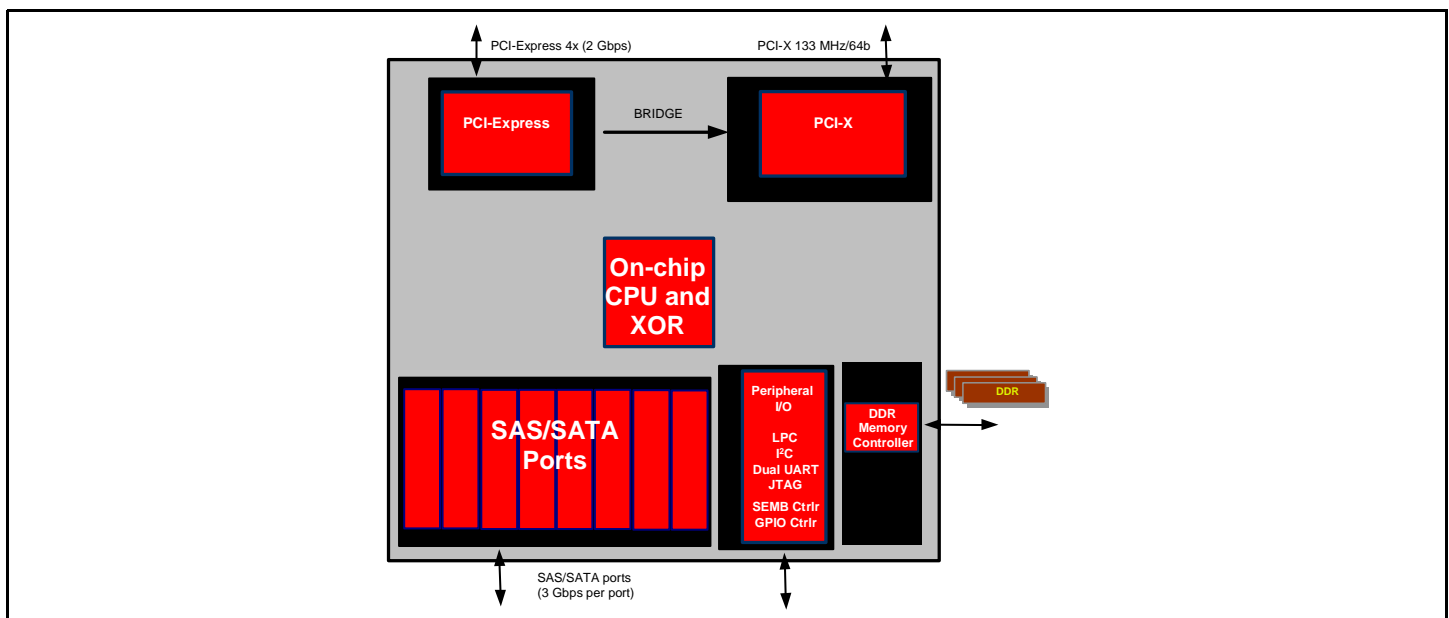
FEATURES

- **Single-chip solution that integrates:**
 - Eight ports of SAS/SATA-II 3 Gbit, including a high-performance PHY
 - On-chip microprocessor
 - DDR memory controller
 - XOR engine for RAID5 hardware assist
- **Host interfaces—PCI-X® 1.0/PCI Express™ (x4)**
- **Broadcom QDMA™ engines**
 - 256 independent command queue entries per port
 - Advanced interrupt coalescing algorithms
- **Supports battery-backed write cache**
- **Hot plug support**
- **Peripheral I/O:**
 - LPC for external Flash/ROM and serial GPIO interface
 - Dual I²C busses—dual UART and JTAG support
- **PCI Express to PCI-X bridge**
- **680-PBGA package**

SUMMARY OF BENEFITS

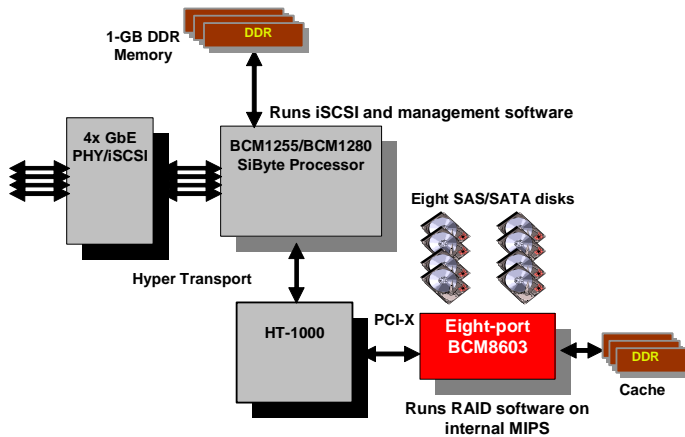
- **Highly integrated solution reduces design time and complexity for faster time-to-market**
- **Data protection in case of power failure with support for battery-backed write cache**
- **Uses high-performance/reliability SAS disk drives and/or cost effective SATA-II 1.5/3-Gbit drives**
- **Flexible PCI based designs of PCI-X, PCI Express, or both, via an internal bridge**
- **Available enterprise-class RAID stack with the XelCore™ Fulcrum™ architecture**
 - RAID 0, 1, 5, 10, 50, 1n, 10n—split mirroring and hiding
 - Online—capacity expansion, RAID level migration, and array creation and deletion
 - Controller spanning—spans up to 4 controllers and 32 drives
 - Hot sparing and drive roaming
 - Windows® and Linux® driver support

Block Diagram



OVERVIEW

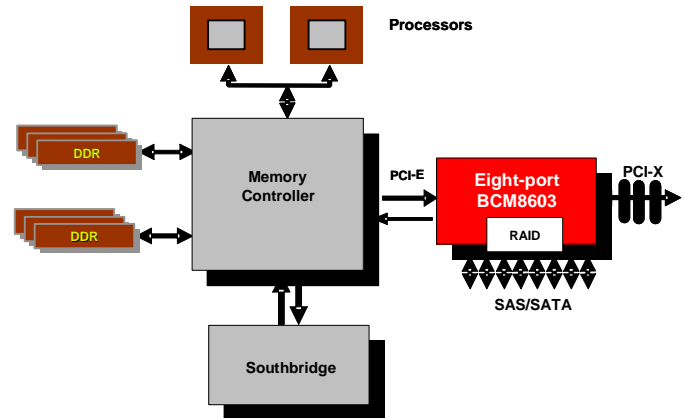
External Storage System



The BCM8603 is a complete PCI-X/PCI-Express to the SAS/SATA-II 3-Gbit RAID-on-chip (ROC) solution that significantly reduces CPU utilization, system design time, and complexity. The high-performance ports support 3-Gbit SAS and 1.5-Gbit/3-Gbit SATA-II disk drives. In addition to integrating all hardware necessary to implement high-performance RAID and multiport SAS/SATA connectivity, the BCM8603 integrates a complete RAID stack that runs on the internal MIPS[®] uP, representing a complete subsystem solution that can be easily integrated into a server or external storage system.

The BCM8603 device communicates with the host using one of two flexible options of x4 PCI-E or PCI-X 1.0. bridging between the PCI-E and PCI-X interfaces enables extra PCI-X slots for I/O expansion, when the PCI-E interface is used as a host interface to the BCM8603. The BCM8603 attaches directly to eight SAS or SATA-II disk drives via a high-performance, integrated 3-Gbit PHY that is capable of driving long-length backplanes. Hot plug capability is also supported, enabling drives to be inserted and removed without affecting system operation.

Server Storage



Support for battery-backed write cache provides data protection and integrity by supplying power to the DDR cache memory containing write data in the case of power failure.

A 1.0 compliant Low Pin Count (LPC) interface is available to connect the BCM8603 to an external Flash/ROM. Four pins are used to implement an SGIO interface for drive activity and general purpose I/O. Dual I²C interfaces running are available to communicate with an external enclosure management device or a serial EEPROM.

Applications

- Server host-based RAID
- Server intelligent RAID
- Virtual disk backup
- Low-cost external storage

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