

## ▶ PRODUCT OVERVIEW

Marvell® offers a range of Serial Attached SCSI (SAS) host controller silicon and software solutions for desktops, workstations, servers and external storage systems. The controller silicon incorporates Marvell industry-leading 6 Gb/s SAS/Serial ATA (SATA) PHY technology and 5 GT/s PCI Express 2.0 (PCIe) PHY cores, which combine the best jitter performance and lowest per-port power consumption available today. Additionally, Marvell has invested heavily in the development of a full suite of high-performance, highly scalable, fault-tolerant RAID and storage management software.

The Marvell SAS 6Gb/s host controllers support four or eight SAS/SATA ports, including native 6Gb/s SATA interface support, and as many as eight lanes of PCIe 2.0 connectivity, delivering up to 4GB/s bandwidth to the host system for high-performance demanding applications. It incorporates a RAID offload engine to reduce CPU utilization when running at RAID configurations, thereby increasing overall system performance. The devices are offered with Windows/Linux non-RAID binary drivers and Linux open source driver for ease-of-use and fast product development.

## ▶ BLOCK DIAGRAM

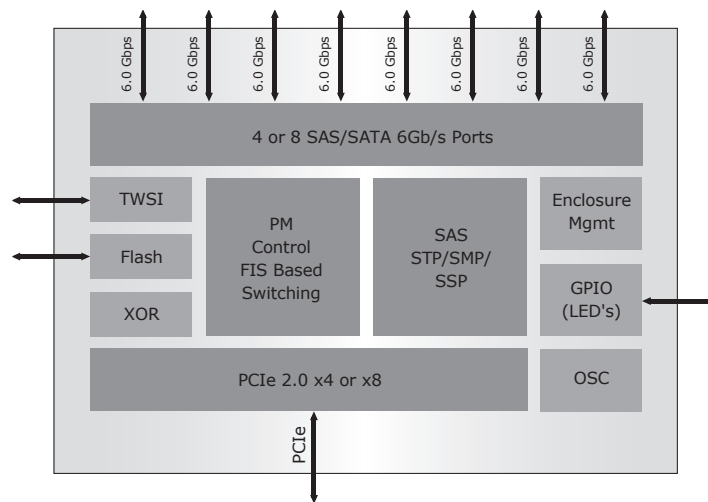


Figure 1. Block Diagram

## ▶ KEY FEATURES

MODEL	88SE9485	88SE9445
• 6Gb/s SAS/SATA Ports	8	4
• PCIe 2.0 Compliant (5 GT/s)	X8	X4
• SATA 6Gb/s Compliant	6Gb/s SATA PHY with speed negotiation to backward support 1.5Gb/s and 3Gb/s	
• Concurrent IOs per Chip	4096	2048
• Native Command Queuing	32 outstanding commands per port for high performance	
• eSATA Support	Flexible SATA ports support internal or external SATA links	
• Programmable Signaling Levels	Gen1x, Gen2i, Gen2x and Gen 3i	
• SAS 2.0 Compliant	Support SSP, SMP, STP and wide port	
• T10 End-to-End Data Protection	Complete data path protection between host and HDD	
• Enclosure Management	SGPIO and SES-2 over I2C support	
• Two-Wire Serial Interface (TWSI)	Interface for external EEPROM containing configuration information	
• GPIO Support	Up to 34 GPIO pins	
• SPI Flash Interface	External Flash containing configuration data and/or boot code	

# Marvell 88SE9485/9445

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MODEL	88SE9485	88SE9445
• FIS-Based Switching	Better performance with simultaneous connection	
• Power Consumption	5.5W	3.8W
• Package Size	23mm x 23mm	19mm x 19mm
• Package Type	484-Ball HSBGA	481-Ball TFBGA

## ▶ APPLICATIONS

The Marvell SAS/SATA RAID controllers are flexible and powerful solutions for data storage. Fully programmable on-chip transceivers support SATA, eSATA, and xSATA at 1.5Gb/s, 3Gb/s and 6Gb/s, as well as SAS at 3Gb/s and 6Gb/s. Native SATA ports allow mixing of SAS and SATA drives and offer superior SATA compatibility as pure SATA controllers. Wide (4x to 8x) SAS ports provide a high-performance interconnect to SAS storage systems. Built-in support for SATA Port Multipliers with FIS-based switching ensures simultaneous connections with SATA drives to deliver better performance and creates a cost-effective solution for high-capacity SATA JBOD applications, like DAS, NAS, DVR, and NVR.

The small footprint of the device and the very few required external components takes up a minimal amount of board space, easing system design and reducing cost. Embedded enclosure management further reduces system cost. The lowest power consumption of any SAS 6Gb/s controllers in the world makes this device a perfect fit for electricity-sensitive data center deployment for cloud computing applications.

The Marvell 88SE9485/9445 is targeted for storage server, enclosure system, cloud computing and HBA applications. The device is available with a complete software development kit, including a programming register specification and open source Linux driver. It provides the flexibility for customers to develop their own RAID drivers or use with Marvell Non-RAID software packages to meet various market requirements.

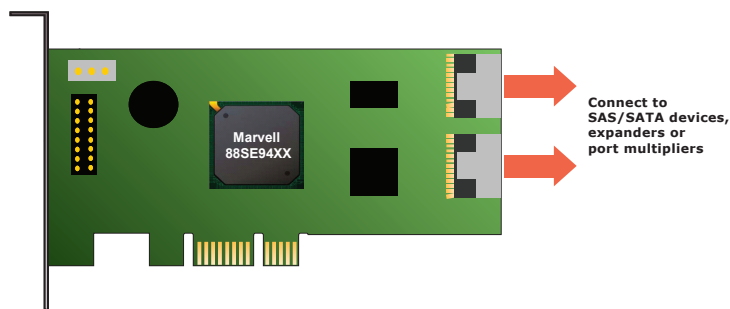


Fig 2. HBA (Host Bus Adapter) Application

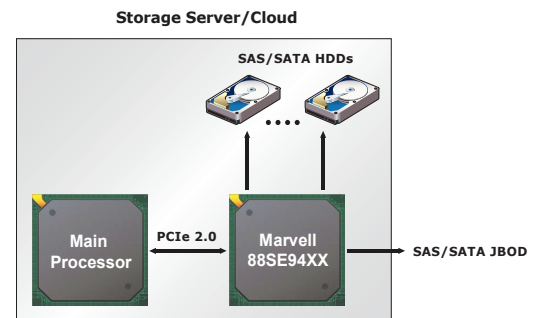


Fig 3. Storage Server/Cloud Storage Applications

**THE MARVELL ADVANTAGE:** Marvell chipsets come with complete reference designs which include board layout designs, software, manufacturing diagnostic tools, documentation, and other items to assist customers with product evaluation and production. Marvell's worldwide field application engineers collaborate closely with end customers to develop and deliver new leading-edge products for quick time-to-market. Marvell utilizes world-leading semiconductor foundry and packaging services to reliably deliver high-volume and low-cost total solutions.

**ABOUT MARVELL:** Marvell is a leader in storage, communications, and consumer silicon solutions. Marvell's diverse product portfolio includes switching, transceiver, communications controller, processor, wireless, power management, and storage solutions that power the entire communications infrastructure, including enterprise, metro, home, storage, and digital entertainment solutions. For more information, visit our Web site at [www.marvell.com](http://www.marvell.com).



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