

StorSwitch™ Architecture

Figure 2: StorSwitch's scalable non-blocking switching technology provides an always-available high-speed data path for each drive; bottlenecks associated with shared-bus arbitration are minimized. Data is packetized into optimally sized chunks to maximize overall bandwidth utilization.

- Superior subsystem performance**
 Hardware-based non-blocking packet switching allows each drive to send and receive data without being impacted by shared-bus arbitration
- Assured data availability**
 A pool of DMA channels that can be assigned to any drive assures that no drive waits for another drive to complete a transaction
- Efficient data transfer**
 Data is packetized into optimally sized chunks to balance the traffic load to and from the host PCI bus and drive data paths
- Improved overall performance**
 The high-speed internal data path provides scalable performance by aggregating the bandwidth of all individual drive ports

AMCC
STORAGE

StorSwitch™

AMCC's unique non-blocking switched fabric architecture allows 3ware SATA RAID controllers to concurrently communicate to all SATA drives for unparalleled performance and data availability

StorSwitch Scalability

StorSwitch is a non-blocking switched fabric architecture that scales to allow use of the aggregate bandwidth of the combined SATA ports. StorSwitch communicates with SATA drives through a pool of direct memory access (DMA) channels. The result is superior overall system performance compared to non-scalable "hub-based" systems that share the bandwidth of a single DMA channel.

Shared-Bus Architecture Limitations

Hub architecture suffers from fundamental performance challenges including the effects of latency and limited throughput because shared DMA channels must complete an outstanding I/O transaction before another can proceed. Adding drives to a shared DMA channel increases I/O latency resulting in lower aggregate performance and diminished bandwidth for attached devices (see Figure 1).

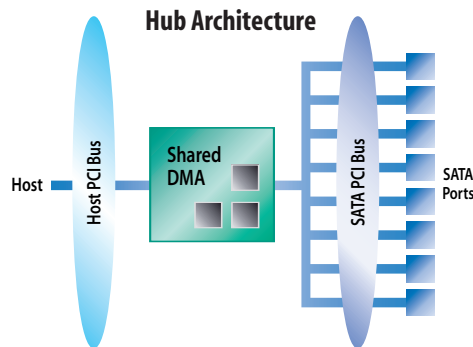


Figure 1: "Hub" architecture limits the rate of I/O transfers to the bandwidth of the hub.

Non-blocking Switched Fabric Architecture

StorSwitch connects the PCI buses to a high-speed internal switch and uses a packet-switched fabric to route data between the two. AMCC's 3ware controllers with StorSwitch employ silicon-based switching technology that enables the high-speed internal switch to simultaneously exploit the aggregate bandwidth of the combined data paths (see Figure 2).

StorSwitch efficiently moves data by dynamically packetizing data blocks into either larger or smaller chunks in order to take full advantage of the available bandwidth of the data paths. Multiple data paths are utilized to transfer packetized data with optimum efficiency. Routing requests are made to any available DMA channel so that no drive waits for another drive to complete an I/O transfer before completing its own.

The Benefits of StorSwitch

Performance

Managing data transactions with silicon-based packet switching dramatically boosts system performance, increases bandwidth, and shortens transaction latency. The internal switch effortlessly manages concurrent traffic from all data paths via a high-speed interface to each port to achieve unmatched SATA performance.

Assured Data Reliability and Availability

StorSwitch isolates each drive on the storage switch and assures more robust scalability and reliability than traditional hub storage models. Switching technologies maximize accessibility, reliability and performance and StorSwitch delivers to these demands.

The Best Solution in SATA Storage

StorSwitch, teamed with other differentiating RAID features from AMCC like StorSave and StreamFusion, delivers enterprise-level performance and reliability to the most demanding storage applications. Silicon-based StorSwitch proves that RAID 5 protected SATA storage is highly reliable and can exceed the aggressive performance, reliability, and availability goals of storage installations that require full-time data access and performance.

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