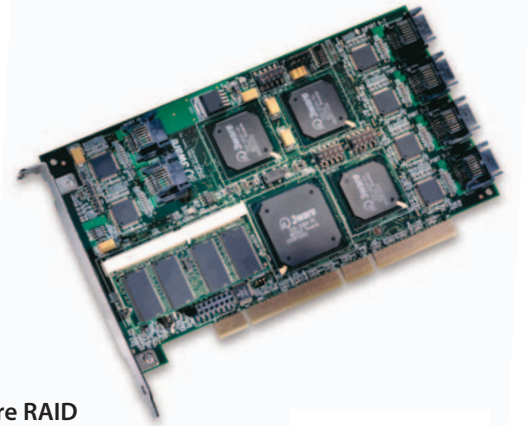


Comparing Hardware and Software RAID solutions



All 3ware RAID products incorporate an on-board processor for true hardware RAID performance. Software RAID schemes use the system processor, occupy host memory, and consume CPU cycles. RAID reliability is compromised with software RAID, as the RAID system is vulnerable to an operating system corruption or crash. Performance measurements demonstrate that software RAID can rob the system of as much as 25% of its CPU cycles processing the RAID calculations, instead of managing your applications.

- | | |
|----------------------|--|
| True RAID | Dedicated controller board with full RAID functionality <ul style="list-style-type: none">• All RAID functions performed by the controller hardware freeing up CPU and system memory for background and end user applications.• Utilizes on-board I/O processor (CPU)• Utilizes on-board XOR off-load engine• Utilizes dedicated cache memory |
| Software RAID | Software RAID uses generic OS based routines to perform the array functions consuming valuable system resources. <ul style="list-style-type: none">• Uses host system CPU resources• Uses host system memory• All RAID functions done in operating system device driver |

DATA PROTECTION

- | | |
|----------------------|---|
| True RAID | Sophisticated data protection algorithms throughout the data path. <ul style="list-style-type: none">• Dedicated ECC protected cache memory• Dedicated battery backup to protect data in cache• Error logging• Device verification and event notification• Highly integrated processor, firmware and software• Protection for the OS itself through mirrored boot device |
| Software RAID | <ul style="list-style-type: none">• Generalized software algorithms• No dedicated ECC protected data path• No dedicated BBU• No protection for OS system crashes• Limited event notification and error logging |

SCALABILITY

- | | |
|----------------------|--|
| True RAID | <ul style="list-style-type: none">• Lower CPU usage for better utilization of system resources; allows CPU resources to be available for background and user applications• Integrated solution: hardware, firmware and software• Supports extensive list of operating systems including: Windows, Linux, Unix (32b and 64b) and open source models (Linux)• Available with 2, 4, 8, 12 ports. Plus able to scale across all available PCI slots |
| Software RAID | <ul style="list-style-type: none">• Component focused, OS dependent which limits overall system CPU performance• Limited OS support• Limited to the ports available on the motherboard or dongle |

Why 3ware RAID

3ware 9000 Series Features

Available on True Hardware RAID Only

- **Optimized hardware XOR RAID 5 engine provides true hardware based RAID and intelligent drive management functions**
- **128 MB of ECC protected SDRAM, upgradable to 256 MB**
- **Battery Backup Unit (BBU)**
- **StorSwitch point-to-point, non-blocking switched architecture for highest performance**
- **Host controller and drive command queuing for highest performance**

Other 3ware Features

- Supports RAID levels 0, 1, 10, 5, 50, Single Disk (JBOD)
- Single array capacity scales to over 4.8 TB per controller (64-bit LBA support)
- AMCC StorSave Platform for maximum reliability without sacrificing performance
- Online Capacity Expansion ready²
- Bootable array support for greater fault tolerance
- Variable stripe size for performance tuning by application
- Multiple array background initialization for immediate data redundancy
- Multiple card support (up to 4) within a system for large storage requirements
- Multiple logical volumes and RAID levels can exist on one card for maximum configuration flexibility
- Legacy and SATA II out of band (OOB) staggered drive spin-up support
- Hot-swap and hot-spare support for data availability
- Dynamic sector repair for robust data protection
- S.M.A.R.T. disk drive monitoring for reliability
- SMTP support for email/pager notification
- Emergency Flash Recovery protects against power failure during firmware upgrades
- Support for drive activity LED
- Flexible task scheduling for increased useability
- Multi-lane connectors based on the Infiniband SFF-8470 specification

- Complete configuration management suite
 - 3ware BIOS Manager (3BM) – BIOS configuration tool
 - 3ware Disk Manager 2 (3DM® 2) – browser-based management tool
 - Command Line Interface (CLI) – scriptable configuration tool

Operating System Support

- Microsoft® Windows® 2003/XP/2000, RedHat® Linux, SuSE® Linux, FreeBSD
- For complete OS listing, go to: www.3ware.com/support/OS-support

3ware 9000 Series Specifications

- PCI 2.2 compliant 64-bit/66MHz bus master
- Serial ATA Specification 1.0a compliant
- BIOS PnP (plug and play) and BBS (BIOS boot specification) support
- Operating Temperature

Without BBU:	0°C to 50°C
With BBU:	10°C to 40°C
- Power Requirements

8.72W max. on +5 V
250mW max. on +3.3 V
250mW max. on -12V, +12 V not used
- Dimensions

PCI MD2 Low Profile:	9500S-4LP	7.475"L x 2.300"H	(18.987cm x 5.842cm)
PCI Half Length:	9500S-8	7.475"L x 3.875"H	(18.987cm x 9.843cm)
	9500S-12	7.475"L x 3.875"H	(18.987cm x 9.843cm)
	9500S-8MI	7.430"L x 3.875"H	(18.872cm x 9.843cm)
	9500S-12MI	7.430"L x 3.875"H	(18.872cm x 9.843cm)

Service and Support

- 3-year warranty
- Support via the web at www.3ware.com/support
- For latest motherboard and hard drive compatibility listing go to: www.3ware.com/products/compatibility_sata.asp

Accessories

- RDC-400-SATA: Serial ATA RAID Internal Drive Cage
- CBL-SATA-39: 1m Serial ATA Cable
- CBL-SATA-24: 0.61m Serial ATA Cable
- CBL-IB-05M: 0.5m Serial ATA Multi-lane (4x) Cable
- CBL-IB-10M: 1m Serial ATA Multi-lane (4x) Cable
- BBU-9500S-01: Battery Backup Unit

3ware 9000 Series Selection Guide

Model	9500S-4LP	9500S-8	9500S-12	9500S-8MI	9500S-12MI
Drive Support	Up to 4 Serial ATA	Up to 8 Serial ATA	Up to 12 Serial ATA	Up to 8 Serial ATA	Up to 12 Serial ATA
RAID Levels	0,1,10,5, Single Disk (JBOD)	0,1,10,5,50, Single Disk (JBOD)	0,1,10,5,50, Single Disk (JBOD)	0,1,10,5,50, Single Disk (JBOD)	0,1,10,5,50, Single Disk (JBOD)
Target Markets	Departmental Servers, Video Editing	Departmental Servers, Security and Surveillance, Super Computing, Video On-Demand, NAS Storage	Security and Surveillance, Super Computing, Video On-Demand, Disk-to-Disk Backup, NAS Storage	Departmental Servers, Security and Surveillance, Super Computing, Video On-Demand, NAS Storage	Security and Surveillance, Super Computing, Video On-Demand, Disk-to-Disk Backup, NAS Storage

¹ Tested using Intel's Iometer benchmark program on a dual processor Intel Xeon (2.4GHz) system with PhoenixBIOS, 512 MB system RAM, Microsoft Windows 2000 Advanced Server, the 3ware 9500S-8 66MHz SATA RAID controller and Maxtor 7Y250MQ, 250GB, 7200 RPM drives

² Available winter 2004.



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