

## SATA – Creating an Evolution in NAS

### IT PROFESSIONALS CONTINUALLY

face the “do more with less” challenge. When Network Attach Storage (NAS) came on the market in the late 1990’s, IT departments were enthralled with the ability to quickly, easily and inexpensively expand their storage capacity. 2003 is going to be a banner year for IT professionals as SATA unlocks new potential for NAS solutions. Key advantages of SATA based NAS solutions include integration with existing infrastructure, ease of implementation, and a lower total cost of ownership than has been experienced before. When businesses require secure, constant, low cost data access, they will turn to SATA based NAS.

### The NAS Advantage

IT organizations and small to medium business owners are under increased pressure to keep systems up and running and accessible to their respective users 24 hours/day x 7 days/week. In a traditional LAN environment storage is deployed as part of the server installation or added via a host attached storage enclosure. For businesses that require data availability around the clock, this model of direct attach storage can be complex and costly, not to mention disruptive to the business.

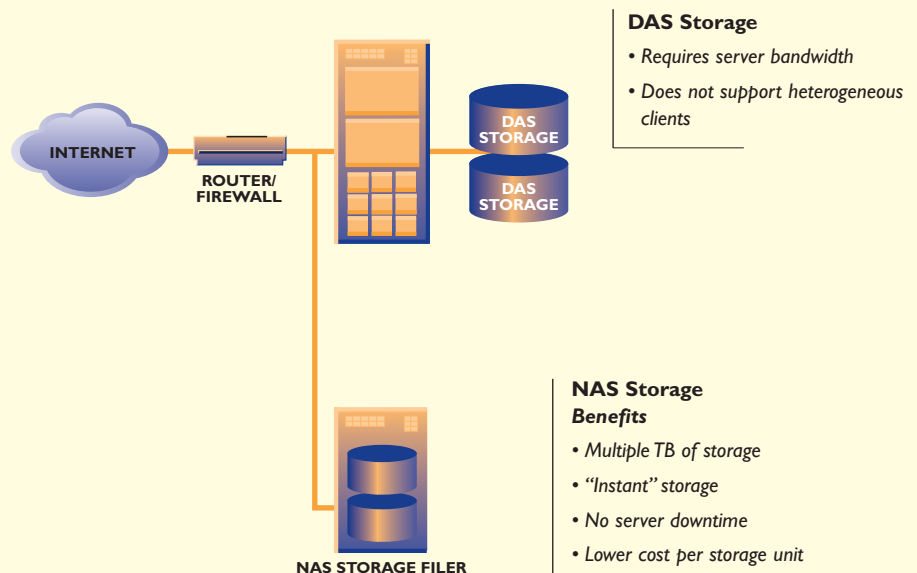
Enter NAS solutions. Adding a NAS appliance to an existing network typically takes no more than 15 minutes. NAS solutions are easy to install, require no additional client or server software, and integrate into existing networks without disrupting other servers. Network users will have access to all of their files and network resources during the installation process.

Network Attach Storage devices effectively move storage off of the server and put it directly on the network. NAS appliances attach directly to the existing LAN using their own network interface card. Because a NAS device doesn’t require a file server, any user with access rights, anywhere on a heterogeneous network, can directly access stored data immediately.

NAS appliances are typically sold by manufacturers as turnkey solutions — ready to be installed upon purchase. Because they operate on non-proprietary network protocols, NAS products can support file operations for Unix, Windows NT, and NetWare clients, and are interoperable with network infrastructure products from different vendors. Users can buy NAS devices from a variety of manufacturers and install them anywhere on their networks with confidence that they will operate with disparate network operating systems.



### DIRECT ATTACH STORAGE VS. NETWORK ATTACH STORAGE



The primary candidates for NAS products are workgroups and small to medium businesses. However, any IT shop faced with tight budgets, short time to complete an installation, or with limited IT resources, will appreciate the benefits of NAS.

### KEY HARDWARE DESIGN CONSIDERATIONS FOR NAS

- 1U - 3U form factor; scalable to accommodate multiple Terabytes of SATA storage
- Provides high data availability via multiple RAID levels including RAID 5
- Hot-swappable disk drives
- Dual Gigabit Ethernet network interface with failover capability
- Additional interface ports for Tape and Optical media applications
- Redundant FRU's (power supplies, fans, etc.)

### Key features include:

- Cross-platform file sharing
- Seamless integration with popular management tools
- Extensive backup software support
- Hardware redundancy

### Advanced capabilities:

- Data replication
- Data aggregation
- Storage Virtualization
- Security and firewall applications
- Directory Services

## The Advent of Serial ATA

The storage industry was challenged to provide a storage device for fixed content data that combined the advantages of a scalable storage architecture, advanced performance, operating system heterogeneity, and a lower cost of ownership. The challenge has been met and the answer is Serial ATA.

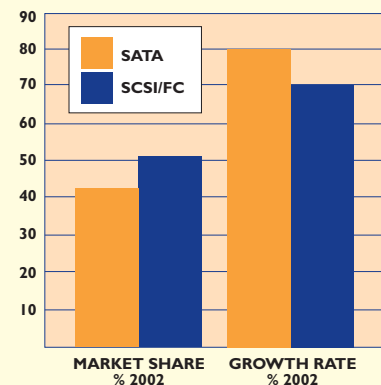
### SATA Design Advantages

- Single drive interface for multiple applications
- Lower per GB cost of storage resulting in an attractive TCO
- Point-to-point architecture which improves fault isolation and drive addition/removal
- Improved silicon design with low voltage characteristics which reduces heat thus enabling high-density storage configurations
- Speed enhancements through improved data transmission signaling
- 8B/10B serial encoding, a requirement for data integrity and high-speed transmissions
- High data integrity protection level (exceeds Parallel ATA and is comparable to both SCSI and Fibre Channel)
- Thin cables with small connectors, simple to route and install

SATA supports a point-to-point RAID architecture, a key functional benefit for NAS. The use of a point-to-point serial architecture improves fault isolation and provides scalable performance by integrating high speed low latency internal busses that can theoretically support the aggregate bandwidth of all drives attached to the controller (minus some minimal overhead).

Now that Serial ATA disk drives are available in volume to NAS suppliers, the shift from SCSI/FC to Serial ATA will accelerate for cost conscious IT professionals. The continuing hunger for larger amounts of accessible data and the economics of cost-effective storage will make SATA the alternative of choice for NAS appliances.

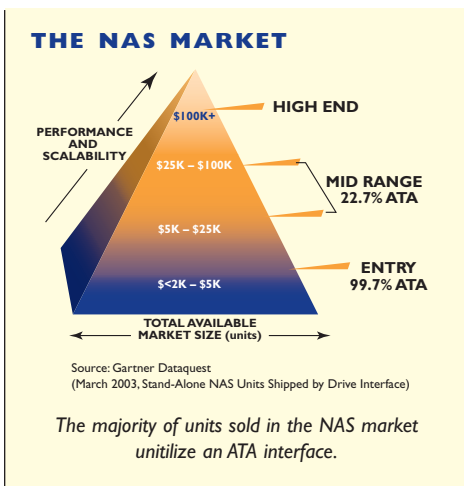
### MARKET SHARE AND GROWTH RATE FOR SATA



Source: Gartner Dataquest (March 2003)

### NAS Moving Forward

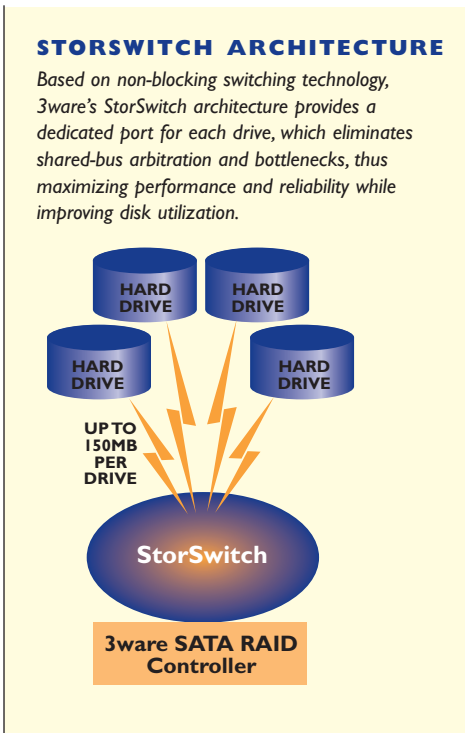
Two primary advantages of Network Attach Storage are ease of installation and lower cost of ownership. Using SATA drives in NAS optimizes the solution. On average, a SCSI drive costs approximately five times more per Gigabyte than a SATA drive. The practical design consideration for the majority of the NAS market plays very nicely into the most compelling argument for SATA — the cost of the component! This amounts to mass storage for fewer dollars.



According to industry analysts, market growth in 2003 for NAS storage appliances is projected to be 16% compounded annual growth. Enterprise spending in this space is projected to reach \$3B by 2007. A portion of this growth is fueled by the introduction of Serial ATA to NAS solutions. The majority of mid and low-end storage solution providers are currently utilizing ATA drives. As Serial ATA drives replace ATA throughout the industry, they are positioned to become the de facto standard for high capacity NAS storage.

### Completing a SATA NAS Solution with 3ware

A core element in the SATA NAS solution is the SATA storage controller. 3ware is the technology leader in high-capacity SATA RAID storage solutions, delivering reliable, enterprise class RAID storage controllers. 3ware's patented StorSwitch™ architecture applies network packet switching to storage controllers, eliminating the bottleneck found in traditional storage architectures. 3ware solutions are designed to meet the explosive demand for cost-effective, scalable storage, driven by high-capacity enterprise applications.



### In Summary

NAS has become part of our common storage language and few products in recent years have gained acceptance as quickly. NAS has been growing by double digits every year and is expected to continue this phenomenal growth. The ease of use and low cost of NAS has made it a popular choice for companies needing additional storage capacity. Complementing this successful technology solution is Serial ATA, which will be the dominant disk drive interface for the foreseeable future. With the emergence of SATA RAID solutions and 250GB SATA disk drives, the marriage of SATA and NAS will set the storage industry on fire.



455 West Maude Avenue  
 Sunnyvale, CA 94085  
 T 408.523.1000  
 Toll Free 1.877.883.9273  
 F 408.523.1001  
 sales@3ware.com  
 www.3ware.com