

# Business Storage 8-bay Rackmount NAS

Technology Paper

## Beyond the Status Quo: Raising the Bar for Capacity, Usability and Reliability

Nothing makes SMB IT managers gnaw their fingernails like needing to add a new storage system to a server rack. Beyond software considerations, they need to find the perfect alignment of capacity (scalability, density), usability (performance, easy maintenance), reliability (effective cooling, high-quality components, data security), and total cost of ownership (TCO). Traditionally, it's been incredibly challenging to walk this tightrope, because no single rackmount NAS clearly stands out from the pack according to these criteria. Until now.

The recently announced Seagate® Business Storage 8-bay Rackmount NAS addresses each of these problems, delivering a competitive combination of storage density, usability and reliability at an affordable cost. It refutes commonly held assumptions about such challenges as how much storage can fit on a 1U rack, how easy it is to perform maintenance, and how reliably a NAS stores and serves business-critical data.



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## Stretching Storage Density

### Addressing Rack Storage Density Limitations

It is the IT manager's responsibility to ensure every inch—or shelf in a rack—is used optimally. Rackmount storage has traditionally come in two vertical sizes, 1U and 2U. In the past, 1U storage permitted a maximum of four 3.5-inch drives, providing a maximum of 16TB per 1U shelf with 4TB on each drive. The 8-bay Rackmount NAS doubles the number of drives to eight, effectively doubling storage density. Now IT managers can get up to 32TB in a single 1U rack. Consolidating hardware into a compact space saves money and makes it easier to manage multiple NAS appliances.

### Providing for Future Capacity Demand

Demand for capacity never stops. The challenge for IT managers when purchasing storage is to limit initial investment while ensuring that future capacity demand can be satisfied in a financially prudent way. While it's relatively easy to simply purchase a new rackmount appliance as demand increases, this is an incredibly expensive strategy.

A better approach is to purchase a partially populated NAS and add drives as additional capacity is required. The Seagate 8-bay Rackmount NAS is available in full and half-populated four-drive configurations, giving IT managers the flexibility to add additional drives as the need arises. The Seagate NAS OS features SimplyRAID™ technology that makes volume expansion incredibly easy just by adding additional drives. Regardless of the number of installed drives, SimplyRAID technology automatically manages installed drives to provide the optimal blend of capacity and redundancy. Adding additional drives to a secure RAID volume (5, 6, 5 plus spare, etc.) is as easy as physically installing the drive and clicking a button in the user interface to add the drive to the array. Data stays intact while the new drives are added, so no downtime occurs during the upgrade.

The additional benefit of SimplyRAID technology is that as higher-capacity drives become available, users can replace the existing ones, thereby growing total capacity. No downtime or manual data migration needed. With up to eight drives in a 1U form factor, SimplyRAID technology and compatibility for future higher-capacity drives, the Seagate 8-bay Rackmount NAS is a game changer in its class for storage density and scalability.

## Painless Maintenance

### User-Serviceable

Hardware maintenance can be a pain for IT managers and often means system downtime. And when server rooms are congested, these tasks are even more challenging.

With the 8-bay Rackmount NAS, chassis design innovation has made it dramatically easier to access and replace internal components. Hard drives, chassis cooling fans and PSU are user-serviceable and hot-swappable. This prevents system downtime due to single hardware failure. These components also feature tool-free installation for even faster maintenance.

Accessing internal components is as easy as sliding out the tray and clicking a small latch to release the top panel. To replace a drive, simply undock it from the SATA port and connect the new one. No cables means no tangling or confusion. Remove and replace a fan, as needed, in the same way. Similarly, the power supply units (PSU) slide out with ease. These types of chassis innovations make it dramatically easier to replace user-serviceable components.

### Cable Management

An additional challenging aspect of rack storage has been cable management. Especially when as many as 10 or 20 units are installed, tangling Ethernet cables drape down the rear of server racks, making cable-related tasks complex. The 8-bay Rackmount NAS provides an intuitive, out-of-box solution with its included sliding rail kit and best-in-class cable management arm. As the user slides the chassis out of the rack, the arm extends while keeping all the cables together.

### ID Button

When a number of rackmount NAS units are installed in a rack, it can be incredibly difficult to know which unit needs maintenance. The 8-bay Rackmount NAS addresses this challenge with an ID button on both the front and rear panels. Pressing the ID button on the front of the unit makes a corresponding LED on the back panel (or vice-versa) flash and beep, allowing users to clearly and quickly locate which NAS unit may need attention. No more guesswork or counting screws. This ID feature is also available from the NAS OS interface.

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## Enterprise-Class Reliability

From the user's perspective, the ideal NAS provides on-demand, uninterrupted data availability. Advances in hardware and software have dramatically improved file server reliability, but even first-rate products suffer from single or multiple vulnerabilities. Nearly all rackmount storage devices feature RAID redundancy to protect against data loss in the case of hard drive failure. But data loss and downtime can occur as a result of many different factors.

### Data Integrity

Errors during storage or transmission can cause unexpected system reboot and even data corruption. The 8-bay Rackmount NAS features enterprise-class error-correcting codes (ECC), which prevent the most common types of errors. It maximizes system availability for multi-user file servers, and is a must-have for critical data storage in scientific, financial and other applications.

The 8-bay Rackmount NAS also comes prepopulated with Seagate® Constellation® ES.3 enterprise-class drives. Designed for business-critical data, these drives feature fewer platters, higher-quality spindles, rotational vibration sensors (RVS) and low density. They also ensure robust performance thanks to dual-core processors and ramp load technology. All in all, these enterprise-class drives deliver superb reliability and predictable performance for sustained speeds.

### Optimal Network Throughput

Another related challenge for storage systems is ensuring full performance during multi-client simultaneous access. To address this challenge, the 8-bay Rackmount NAS features an Intel Dual-Core 2.3GHz Ivy Bridge Processor and redundant LAN. The dual network ports can be configured for link aggregation for increased throughput, or failover for fault tolerance. Together these features ensure optimal network throughput, even during high demand.

## Redundant PSU

Another potential vulnerability for network storage is the power supply unit (PSU). When a PSU fails, significant downtime results as the IT manager identifies the problem, then acquires and replaces the failed component. When data is business-critical, PSU failure must be accounted for. As a result, the 8-bay Rackmount NAS features dual redundant, hot-swappable PSUs. In the unlikely case one fails, the other one seamlessly takes over. Furthermore the system will send an alert to the administrator reporting the failure for quick replacement, resulting in zero downtime. Dual PSU also prolongs the lifespan of the PSU, since the workload is shared by both units.

## Sufficient Cooling

Excessive heat can cause components to fail in a NAS, resulting in downtime. Heat can also reduce the lifespan of components, diminishing long-term reliability value. As a result, the 8-bay Rackmount NAS features an innovative airflow scheme and redundant fans to dramatically improve cooling over the competition. A metal sheet beneath the drives dissipates heat, and cool air flows under the sheet to drain hot air away. Above and between the two rows of drives, air flows from front to back, conducting heat away from sensitive components. This pioneering cooling system ensures full performance and long-term reliability.

## Conclusion: Aligning Priorities

Until now, it's been incredibly difficult to find a rackmount NAS that delivers on a trifecta of storage capacity, usability and reliability. The innovative Seagate Business Storage 8-bay Rackmount NAS, especially its fully enterprise-class hardware design, sets itself apart from the crowd. Coupled with the award-winning NAS OS software, the Rackmount 8-bay NAS delivers a perfect balance of benefits to help ensure data security and a superb long-term investment.

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