# PAS 8

## KEY FEATURES

- **Outstanding Performance:** scalable performance in the 100,000's of I/Os and 100's of GB/sec.
- **Massive Scalability:** modular hardware architecture that grows with your storage needs.
- **Superior Manageability:** fast setup and configuration. Dramatically reduces administration overhead, and lowers TCO.

## USE CASES

- **Finance:** Risk Analysis, MonteCarlo Simulations, Tickdata Capture, Algorithm Development
- **Energy:** Seismic Processing, Migration and Interpretation, Reservoir Simulation
- **Bio/Pharmaceutical:** BioInformatics, Computational Chemistry, Molecular Modeling
- **Industrial Manufacturing:** EDA Simulation, Optical Correction, Thermal Mechanics

# High Performance Scale-Out NAS

The Panasas family of scale-out NAS solutions enables enterprise customers to rapidly solve complex computing problems, speed innovation and bring new products to market faster. The PAS 8 is a high performance scale-out NAS solution designed to support heavy computational workloads for scientific and technical applications, delivering the highest levels of performance, scalability and manageability. PAS 8's efficient design provides up to 44 TB of raw capacity in a compact 4U rack-unit (7") shelf, and virtually any number of shelves can be networked together to create scalable, high performance storage pools.

Utilizing the patented PanFS™ storage operating system, PAS 8 complements the entire PAS family of scale-out NAS solutions to create a single pool of storage under a global namespace. This provides customers with the flexibility to support multiple applications and workflows in a single storage system, blazing performance for complex technical applications and massive capacity to support growth, eliminating multiple islands of storage which dramatically reduces system cost and complexity.

Industry leaders worldwide are using Panasas scale-out NAS systems to:

- Improve time-to-market
- Extend research, science, and knowledge
- Solve critical and complex problems at lower cost
- Increase the certainty of research and investments
- Investment protection
- Minimize risk for better returns
- Improve predictability
- Deliver unprecedented ROI

### Performance

The PAS 8 supports a broad range of application performance profiles for NFS, Parallel NFS and CIFS data access protocols which seamlessly integrate into the existing infrastructure, accelerating return on investment. PAS 8 delivers scalable performance in the 100,000's of I/Os and 100's of GB/sec in a single disk system. Simply add individual shelves, or racks, to achieve aggregate performance and capacity. All aggregated shelves are presented as a single system featuring a global name space providing unified management.

### Scalability

The PAS 8 provides extremely high scalability through a modular "pay only for what you need" hardware architecture that grows with your storage needs. The PanFS operating system provides a global namespace and a single pool of storage that scales throughput and capacity symmetrically. PAS 8 also provides unique horizontal and vertical parity that isolates and repairs media errors at the disk level helping to prevent the need for performance-robbing RAID rebuilds. In addition, PAS 8's modular architecture allows for simple removal or replacement of components, and capacity can be added without disruption.

### Manageability

All Panasas scale-out NAS systems utilize a graphical user interface that offers a single, comprehensive view of your entire storage pool. A single mount point and administrative interface avoids the incremental system administration that burdens traditional storage alternatives, dramatically reducing administration overhead and providing a low total cost of ownership (TCO). As the system scales, administrators continue to view a single, easy to manage namespace and the console operates with the simplicity of an appliance. PAS 8 provides fast set-up and configuration utilities that allow storage capacity to be added and available in less than 15 minutes. In addition, PAS 8 provides redundant load-sharing controls, power and cooling that automatically and transparently transition to redundant resources in the event of a malfunction.

## Panasas PAS 8 Product Specifications

### PRODUCT ATTRIBUTES

| | |
|---|---|
| **Clustered Architecture** | Parallel clustered file system that turns files into smart data objects and then dynamically distributes and load balances data transfer operations across a networked blade architecture. |
| **Modular Design** | Self-contained nodes includes operating and file system, network connectivity, redundant and hot swappable metadata director and storage blade servers, power supplies and battery backup. |
| **File System** | Panasas PanFS distributed file system creates a cluster with a single file system and single global namespace. Fully journaled, fully distributed, globally coherent write/read cache. |
| **Scalability** | Up to 12,000 clients, over 50GB/sec, and 100,000's of IOPS aggregate production reliability performance of multiple nodes per single name space. |
| **High Availability** | No single point of failure. Self-healing design protects against disk or node failure including back end intracluster failover. Redundant instances of metadata service nodes. End-to-end data parity. Redundant network data path with failover option. |
| **Advanced RAID Protection** | Intelligent system assigned RAID level based on file size providing performance optimization. Single object high performance reconstruction with parallel rebuild reads from RAID stripe. Disk drive sector RAID parity rebuild. |
| **Data Protection** | Compatible with Panasas Snapshots and Panasas Asynchronous Replication. Protocol Support Panasas Parallel NFS Client, NFS v3 (UDP or TCP), CIFS, NDMP, SNMP, LDAP, ADS |
| **Client Support** | Red Hat and SuSE Linux on x86, x86-64, IA64, and IBM POWER6, UNIX, Microsoft Windows |

### NODE/SHELF HARDWARE ATTRIBUTES

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|---|---|
| **Capacity** | 16TB to 44TB per shelf |
| **Hard Drives (3.5" SATA)** | Sixteen (16), Eighteen (18), Twenty (20), or Twenty-two (22) 1TB or 2TB Hard Drives per node/shelf. |
| **ECC Memory** | 16GB to 44GB per node/shelf |
| **Integrated Network Switch** | 1Gbe x 4, 10Gbe x1 (CX4 or SFP+ or Twinax) Second switch optional. |
| **External Indicators** | Cluster status and alert (LED) |
| **Optional Network Connectivity** | InfIniBand DDR & QDR |

### NODE/SHELF SOFTWARE ATTRIBUTES

| | |
|---|---|
| **File System** | Panasas PanFS File System |
| **Parallel NFS Client** | Panasas DirectFLOW Clients |
| **High Availability** | Panasas Network and Volume Failover |
| **Data Protection** | Panasas Snapshot |
| **Optional Data Protection** | Panasas Replicator Asynchronous Replication |

### ENVIRONMENTAL SPECIFICATIONS

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|---|---|
| **Power Supply** | Dual redundant hot swappable, Output power rating 950W each, Input power rating 1200W each, 100V to 240V self regulating voltage, Typical operating current 4.4A @208VAC, Maximum in rush current 30A, Maximum current 7A @208VAC |
| **Backup Battery** | Self charging, hot swappable, several minutes of system backup power |
| **Operating Environment** | Ambient Operating temperature +10C to +35C, Operating relative humidity 10% to 90%, Altitude 0m to 2440m |
| **Non-Operating** | Non-operating temperature -20C to 70C. Non-operating relative humidity 5% to 95%, Altitude 0m to 2440m |

### About Panasas

Panasas, Inc., the leader in high performance parallel storage for business-critical applications, enables customers to rapidly solve complex computing problems, speed innovation and accelerate new product introduction. All Panasas storage products leverage the patented Panasas® PanFS™ parallel file system to deliver superior performance, data protection, scalability, and manageability. Panasas systems are optimized for demanding storage applications in the energy, government, finance, manufacturing, bioscience, and higher education industries.

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