

# PANASAS® ACTIVESTOR® 16

## Performance Scale-out NAS Appliance Accelerates Time-to-Results for Technical Research and Enterprise Workloads

Panasas® is the leader in performance scale-out NAS, driving industry and research innovation by accelerating unstructured data workloads and simplifying data management. ActiveStor® appliances leverage the patented PanFS® storage operating system and DirectFlow® parallel protocol to deliver high performance and reliability at scale from an appliance that is as easy to manage as it is fast to deploy. With flash technology optimized for small file and metadata performance, ActiveStor provides significantly improved filesystem responsiveness while accelerating time-to-results. Based on a fifth-generation storage blade architecture and the proven Panasas PanFS storage operating system, ActiveStor performance scale-out NAS offers an attractively low total cost of ownership experience for the life sciences, manufacturing, media, government, energy, and university research markets.

### HIGHLIGHTS

#### Extreme Performance

Flash-accelerated for lightning-fast response time and parallel access for high throughput

#### Linear Scalability

Single file system scales to 15.9PB and 195GB/s or 1.7M IOPS

#### Easy Management

Single point of management; no more islands of storage

#### Unsurpassed Data Protection

Per-file distributed RAID 6+ triple parity protection delivers unmatched reliability

#### High Value, Attractive TCO

Outstanding TCO, investment protection, utilization rates, and simplified management

### USE CASES

#### Manufacturing

EDA design and simulation, optical correction, thermal modeling, fluid dynamics

#### Life Sciences

Next-gen sequencing, molecular modeling

#### Media

Video editing, rendering, and production at all SD and HD resolutions

#### Government

Defense, intelligence, weather forecasting

#### University Research

Climate modeling, computational chemistry, high energy physics, life sciences

#### Energy

Seismic processing, migration and interpretation, reservoir simulation



### LINEAR SCALABILITY OF CAPACITY AND PERFORMANCE

ActiveStor eliminates the scalability and performance bottlenecks associated with legacy NAS architectures. Simply scale out the number of blade enclosures to nondisruptively increase the capacity and performance of the global file system as storage requirements grow. Parallel data access and automated load balancing ensure that performance is optimized and hot-spots are eliminated. This makes it easy to linearly scale capacity to over 15.9 petabytes and performance to a staggering 195GB/s or 1.7M IOPS.

### RELIABILITY AND AVAILABILITY AT SCALE

At the core of every ActiveStor solution is an intelligent per-file distributed RAID architecture implemented with erasure codes in software instead of traditional hardware RAID controllers. Data is safeguarded by RAID 6+ with triple parity protection for superior enterprise-class reliability and availability without compromising performance. By optimizing data placement, data reliability on ActiveStor actually increases with scale, rather than decreasing as would normally be expected with traditional storage systems.

### SUPERIOR MANAGEABILITY

A single point of management for a single, scalable file system allows storage administrators to focus on managing data instead of their storage systems. Capacity and performance planning, mount point management, and data load balancing across multiple pools of storage are all common administration problems that are easily solved with Panasas storage. ActiveStor easily integrates into growing heterogeneous IT environments through enterprise-grade multiprotocol support for Linux®, macOS®, and Microsoft® Windows® clients.

### LEADING PRICE/PERFORMANCE AND COMPELLING TCO

ActiveStor appliances provide exceptional performance at an attractive price, storing large files on high capacity SATA drives while leveraging flash technology to accelerate small file and metadata performance for lightning-fast response times. The ActiveStor 16 combines high density with exceptional mixed workload performance (GB/s and IOPS) to provide excellent investment protection, increased storage utilization rates, and simplified management. ActiveStor delivers a compelling total cost of ownership while meeting the needs of the most demanding technical research and enterprise organizations.



# PANASAS ACTIVESTOR PRODUCT SPECIFICATIONS

## PRODUCT ATTRIBUTES

### True Scale-Out Architecture

ActiveStor is a modular NAS appliance with integrated PanFS storage operating system. Simply add storage and director blades to nondisruptively increase capacity and performance. The scale-out architecture integrates into the most complex Linux/macOS/ Microsoft Windows enterprise and research environments for easy deployment and seamless storage growth.

### Hybrid Design for Best Price/Performance

High speed flash drives are used for fast access to metadata and small files. High capacity SATA drives handle large file performance. The result is an optimized solution offering compelling price/performance.

### Fully Integrated Parallel File System

At the heart of the PanFS storage operating system is a next-generation POSIX-compliant parallel file system that delivers a single, global namespace. PanFS eliminates traditional NAS bottlenecks by allowing compute clients to access storage devices directly. Metadata is processed outside the data path to maximize read and write performance.

### Linear Scalability

ActiveStor efficiently scales to 15.9PB and 195GB/s, or 1.7M IOPS of aggregate performance, accessed by thousands of concurrent clients. Performance scales near-linearly with capacity. Automated load-balancing ensures optimal performance and eliminates hot spots.

### Reliability Increases with Scale

Per-file distributed RAID 6+ triple parity protection offers unmatched enterprise grade reliability. Per-file RAID reduces rebuild times by rebuilding specific files rather than entire drives. The distributed approach ensures that RAID reconstructions are performed in parallel to rapidly restore data protection. Because of the intelligent data placement with RAID 6+, ActiveStor reliability increases with scale rather than decreasing as traditional storage products commonly experience.

### Availability

Self-healing technology protects against system wide failures, including blades and power; redundant networking data paths automatically fail over, all to eliminate single points of failure. The Extended File System Availability (EFSA)

feature takes advantage of deeper protection of directory data in RAID 6+ to preserve file system availability even after the highly unlikely event of three simultaneous drive failures.

### Easy Management

Single point of management via GUI or CLI. Enterprise features include snapshots and user & group quotas. ActiveStor can be set up in under ten minutes and scaled without downtime.

### Client Access

PanFS DirectFlow supports Linux and macOS clients. PanFS also supports Linux, macOS, and Microsoft Windows clients via NFS v3, or SMB (CIFS) 1.0, 2.0, and 2.1 protocols. NDMP, SNMP, LDAP, and ADS are also supported.

## BLADE CHASSIS SPECIFICATIONS

PER SHELF SPECIFICATIONS	
Capacity per Shelf <sup>2</sup>	82.4 or 122.4TB
HDD Capacity <sup>2</sup>	80 or 120TB
SSD Capacity <sup>2</sup> (% capacity)	2.4TB (2.9% or 1.9%)
Drive Configuration <sup>2</sup>	20 x 3.5" Enterprise SATA + 10 x MLC SSD
ECC Memory (GB of Cache) <sup>2</sup>	128GB
Max. Throughput, Write/Read <sup>2</sup>	1600 /1500MB/s
Max. IOPS - 4KB File, Random Read <sup>3</sup>	>13,550 IOPS
Supported Blade Configurations (Director Blade + Storage Blade)	1+10, 2+9, or 3+8. Also 0+11 for expansion
Ethernet Connectivity	Two switch modules per shelf. Uplinks per shelf: 2 x 10GbE SFP+/CX4 or 8 x GbE copper, supporting high availability link aggregation with network failover support
InfiniBand Router Capability	Yes
GLOBAL NAMESPACE SPECIFICATIONS	ACTIVESTOR 16
Suitability	Mixed workloads: large file throughput, IOPS performance
Max. System Capacity <sup>1</sup>	15.9PB
Max. System Throughput <sup>1</sup>	195GB/s
Max. System IOPS-4KB File, Random Read <sup>1</sup>	>1,760,000 IOPS

<sup>1</sup> No enforced limits. Max tested configuration: 130 shelves

<sup>2</sup> Per shelf based on a 1+10 blade configuration

<sup>3</sup> Per shelf based on a 2+9 blade configuration

