PANASAS® ACTIVESTOR®

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

Panasas® ActiveStor® with PanFS® 6.0 is the only no-compromise hybrid scale-out NAS solution designed to deliver performance, reliability and manageability at scale. With flash technology speeding small file and metadata performance, ActiveStor provides significantly improved file system responsiveness while accelerating time-to-results. Based on a fifth-generation storage blade architecture and the Panasas PanFS storage operating system, ActiveStor offers an attractive low total cost of ownership for the energy, finance, government, life sciences, manufacturing, media, 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 12PB and 150GB/s or 1.3M 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

Energy
Seismic processing, migration and interpretation, reservoir simulation

Finance
Risk analysis, monte carlo simulations

Government
Defense, intelligence, weather forecasting

Life Sciences
Next-gen sequencing, molecular modeling

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

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

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

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 non-disruptively 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 12 petabytes and performance to a staggering 150GB/s or 1.3M 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, Unix, and 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. This fifth-generation platform is available in two models—ActiveStor 16 combines high density with exceptional mixed workload performance (GB/s and IOPS) while ActiveStor 14 delivers high price/performance for large file throughput workloads. Both models offer 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 non-disruptively increase capacity and performance. The scale-out architecture integrates into the most complex Linux/Unix/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 12PB and 150GB/s, or 1.3M 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

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

BLADE CHASSIS SPECIFICATIONS

SYSTEM SPECIFICATIONS	ACTIVESTOR 14	ACTIVESTOR 16
Suitability	Large file throughput	Mixed workloads: large file throughput and IOPS performance
Max. System Capacity[1]	8.12PB	12.24PB
Max. System Throughput[1]	150GB/s	150GB/s
Max. System IOPS–4KB File, Random Read[1]	1,300,000 IOPS	>1,300,000 IOPS
PER SHELF SPECIFICATIONS		
Capacity per Shelf[2]	81.2TB	82.4 or 122.4TB
HDD Capacity[2]	80TB	80 or 120TB
SSD Capacity[2] (% capcity)	1.2TB (1.5%)	2.4TB (2.9% or 1.9%)
Drive Configuration	20 x 3.5" Enterprise SATA + 10 x MLC SSD	
ECC Memory (GB of Cache)[2]	92GB	128GB
Max. Throughput, Write/Read[2]	1600 / 1500MB/s	1600 / 1500MB/s
Max. IOPS - 4KB File, Random Read[3]	13,550 IOPS	>13,550 IOPS
Supported Blade Configurations (Director Blade + Storage Blade)	1+10, 2+9, or 3+8. Also 0+11 for expansion	
Networking 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	

[1] No enforced limits. Max tested configuration–100 shelves
[2] Per shelf based on a 1+10 blade configuration
[3] Per shelf based on a 2+9 blade configuration

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