

Panasas ActiveStor Hybrid 100

Network-Attached Scale-out Storage Appliance Offers Flexibility to Optimize Performance

The Panasas® ActiveStor® Hybrid 100 high-performance scale-out network-attached storage (NAS) appliance combines our broadest, highest density, and most flexible range of flash and hard disk drive (HDD) options with the proven Panasas PanFS® parallel file system to deliver performance that is as easy to scale as it is to deploy. It is built on a new Intel system-on-chip (SoC) foundation that seamlessly integrates with the most complex commercial, high-performance enterprise and research applications. With flash technology optimized for small file and metadata performance, and HDD capacity optimized for large file sequential performance, ActiveStor Hybrid 100 provides industry-leading file system responsiveness while accelerating time-to-results. With ActiveStor Hybrid 100, performance and capacity increase by the same factor with nearly perfect scaling. As the system scales, reliability and availability increase and administrative overhead remains low.

Highlights

Extreme Performance

Flash-accelerated for optimum small file access time combined with high-performance parallel access for sequential data.

Linear Scalability

Single file system scales to 57PB and 360GB/s and 2.6M IOPS.

Easy Deployment and Scale

Simple to set up and configure; fully operational in less than an hour; expand namespace in minutes when adding more ActiveStor nodes to existing namespace.

Unsurpassed Data Protection

Erasure coding technology with triple parity protection delivers reliability that scales with capacity; snapshots and replication.

Attractive Value

Low operational costs, both at deployment and as namespace grows.

Use Cases

Manufacturing

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

Life Sciences

Next-generation sequencing, bioinformatics

Media

VFX rendering, video editing, content delivery, production at HD and 4K 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 Hybrid 100 eliminates the scalability and performance bottlenecks associated with legacy NAS architectures. Start small and scale out the number of ActiveStor enclosures to nondisruptively increase the capacity and performance of the global file system as your 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 more than 57PB and performance to 360GB/s and 2.6M IOPS.

Reliability and Availability at Scale

At the core of the ActiveStor solution is the PanFS operating environment, with an intelligent erasure-coding-based per-file distributed RAID architecture, with data protection implemented 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, reliability on the ActiveStor appliance increases with scale rather than decreasing as with traditional storage systems. The PanFS operating environment includes enterprise data services such as snapshots, quotas, easy management, high availability, and SiteSync replication, all at no extra cost.

Superior Manageability

A single point of management for a scale-out file system allows the storage administrator to focus on core business tasks instead of the storage system. Panasas easily addresses capacity and performance planning, mount point management, and data load balancing across multiple pools of storage. The ActiveStor Hybrid 100 system easily integrates into growing heterogeneous environments through multiprotocol support for Linux, macOS, and Microsoft Windows clients while also introducing high-performance Panasas DirectFlow® protocol support for Linux and Mac that's easy to deploy and monitor.

Leading Price/Performance and Compelling TCO

The ActiveStor Hybrid 100 provides exceptional performance and extremely low total cost of ownership (TCO), storing large files on high capacity HDDs while leveraging flash technology to accelerate small file and metadata performance for optimized small file workload response times. The ActiveStor Hybrid 100 platform provides maximum flexibility offering a wide variety of flash and HDD options for outstanding price/performance on both small file and large file workloads. With increased storage utilization rates and simplified management, ActiveStor Hybrid 100 exceeds the performance needs of the most demanding industry and research organizations.

Panasas ActiveStor Product Specifications

True Scale-out Architecture

ActiveStor Hybrid 100 is a performance scale-out NAS appliance with the integrated PanFS parallel file system. Simply add ActiveStor enclosures to nondisruptively increase capacity and performance. The scale-out architecture integrates into performance-oriented Linux/macOS/Microsoft Windows environments for easy deployment and seamless storage growth.

Hybrid Design for Best Price/Performance

High density flash drives are used for fast access to metadata and small files while high-density HDDs handle large file performance. The result is an optimized solution offering compelling price/performance.

Integrated Parallel File System

At the heart of the PanFS storage operating environment is a next-generation POSIX-compliant parallel file system that delivers a single global namespace. The Panasas DirectFlow protocol eliminates traditional scale-out NAS bottlenecks by allowing compute clients to access all ActiveStor storage blades directly, eliminating hot spots. Metadata is

processed outside the data path to maximize read/write performance.

Linear Scalability

ActiveStor Hybrid 100 efficiently scales to more than 57PB and 360GB/s or 2.6M IOPS of aggregate performance, accessed by thousands of concurrent clients. Performance scales linearly with capacity. Automated load balancing ensures optimal performance by evenly distributing data across ActiveStor enclosures.

Enterprise-Grade Reliability

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

Availability

Automatic data rebuild protects against systemwide failures. Redundant networking data paths automatically fail over. All components are hot swapped for easy field servicing.

The Extended File System Availability (EFSA) feature takes advantage of deeper protection of directory data in RAID 6+ to preserve file system integrity and accessibility.

Easy Management

A single point of management is delivered via graphical user interface (GUI) or command-line interface (CLI). Enterprise data service features such as snapshots, user and group quotas, and SiteSync replication are included. The ActiveStor system can be set up in less than an hour and scaled without downtime.

Client Access

The DirectFlow protocol supports Linux and macOS clients. The PanFS system supports Linux, macOS, and Microsoft Windows clients via the Network File System (NFS) v3 protocol or the Server Message Block (SMB) protocol. NDMP, SNMP, LDAP, and ADS are also supported.

Blade Chassis Specifications

| Per-shelf | Specifications |
|---|--|
| Capacity | 93 or 285TB |
| HDD capacity | 88 or 264TB |
| SSD capacity | 5.3 or 21TB |
| Drive configuration | 22 x 3.5" enterprise SATA + 11 x 2.5" SSD |
| ECC memory (GB of cache) ¹ | 176GB |
| Maximum throughput, write/read ¹ | 1700/1800MB/s |
| Maximum IOPS, 4KB file, random read ¹ | >13,000 IOPS |
| Ethernet connectivity | Two switch modules per shelf; uplinks per shelf: 2 x 10GbE SFP/CX4 supporting high-availability link aggregation with network failover support |
| InfiniBand router capability | Yes |
| Global Namespace | Panasas ActiveStor Hybrid 100 |
| Suitability | Mixed workloads: small and large file throughput, IOPS performance, lowest cost per TB |
| Maximum system capacity ² | 57PB |
| Maximum system throughput ² | 360GB/s |
| Maximum system IOPS, 4KB file, random read ² | >2,600,000 IOPS |

¹ Per-shelf based on a 0+11 blade configuration

² No enforced limits. Maximum tested configuration: 200 shelves

