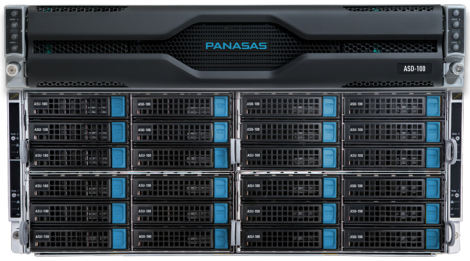
Panasas ActiveStor Ultra

Built for Price/Performance, Engineered for Manageability

The new innovative Panasas® ActiveStor® Ultra scale-out, parallel file system storage appliance delivers the extreme performance, enterprise grade reliability and manageability required to process the large and complex datasets associated with HPC workloads and emerging applications like AI, precision medicine, autonomous driving, AR and VR.

Architected for performance, simplicity and flexibility, ActiveStor Ultra features PanFS 8, a completely re-engineered, portable parallel filesystem deployed on the latest industry standard hardware. The result is a high-performance, cost-effective storage solution capable of seamlessly adapting to new technology advancements, evolving workloads, and dynamic business needs.



ActiveStor Ultra

ActiveStor Ultra goes from dock to data in less than a day with a plug-and-play solution that is easy to install, manage and grow, all while maintaining the industry's lowest total-cost-of-ownership (TCO) at any scale. With its modular architecture and building-block design, enterprises deploying ActiveStor Ultra can start small and scale linearly by scaling metadata performance, bandwidth and capacity independently and without limitations, for faster time to results.

High Performance

Panasas ActiveStor Ultra high-performance storage uses a scale-out architecture that grows storage capacity, DRAM caching, and network bandwidth incrementally and linearly as you add more ActiveStor enclosures. It delivers data from storage nodes in parallel to the application, multiplying the bandwidth an application can achieve to a single file, not just aggregate bandwidth. And data flows directly from our storage nodes to the application without any hops through intermediate servers or even extra network links. ActiveStor Ultra stores metadata on ultra-low-latency NVMe media, small files onto high IOPS, cost-efficient SSDs, and large files onto high-bandwidth, low-cost HDDs.

Placing each type of data onto the right type of device ensures exceptional mixed workload performance.

Surprising Simplicity

Panasas ActiveStor Ultra is a single entity you manage from one graphical user interface (GUI) or command-line interface (CLI), no matter how many ActiveStor enclosures you integrate into it.

Panasas ActiveStor Manager GUI

Even in the largest Panasas deployments, all data resides within a single namespace, with a single management GUI and CLI, delivering data at very high reliability and availability. It is possible to quickly add more ActiveStor enclosures; and each added unit will immediately contribute more capacity and performance.

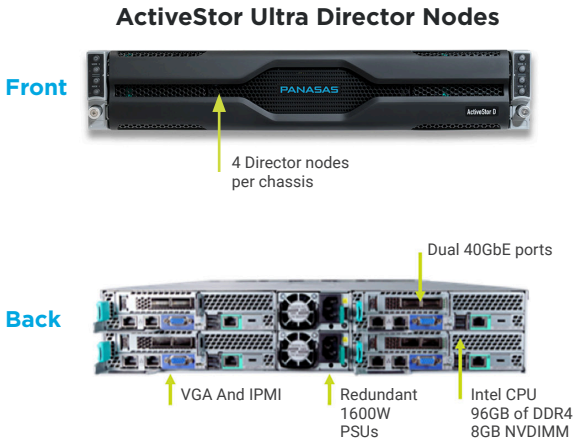
The Panasas ActiveStor solution will automatically rebalance capacity across the ActiveStor enclosures as you add them or if they become unbalanced; automatically reconstruct the full levels of erasure-coded data protection for all files in the event of any failures; and continuously scan all files in the background to scrub out any latent issues.

Predictable and Consistent High-Performance with Dynamic Data Acceleration

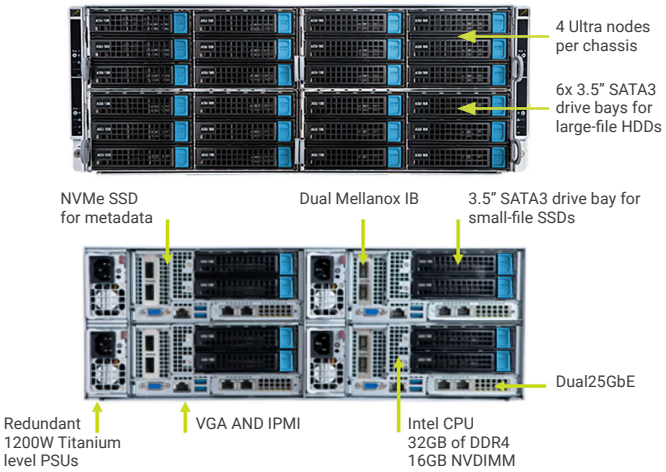
Dynamic Data Acceleration (DDA), a proprietary feature of the PanFS file system, enables a consistently fast, total-performance HPC storage solution that automatically adapts to changing file sizes and mixed workloads, without the need for tuning or manual intervention.

DDA takes the complexity out of tiered HPC storage systems by maximizing the efficiency of all storage media in a seamless, all-hot system where NVMe SSDs store metadata, low-latency SSDs store small files, and large files are stored on high-bandwidth HDDs to deliver the highest possible performance at the lowest cost.

ActiveStor Ultra Director Nodes



ActiveStor Ultra Storage Nodes



ActiveStor Director – Scalable Metadata Services

The Panasas ActiveStor architecture scales data and metadata independently and is purpose-built for adaptability and flexibility to handle a wide range of use cases. The ActiveStor Director functions as the "control plane" of the system, managing metadata services instead of storing user data. The Director controls distributed filesystem operations such as file-level and object-level metadata consistency, client cache coherency, recoverability from interruptions to client I/O, storage node allocation operations, and secure multiuser access to files.

In addition, the Director controls many other aspects of the overall storage system including managing the namespace, health of the system, failure recovery actions, and gateway functionality. The Director also facilitates scalability and virtualizes data objects across all available storage nodes enabling the system to be viewed as a single, easily managed global namespace. The ActiveStor Director nodes can be scaled independently to scale metadata performance.

ActiveStor Ultra Storage Nodes

ActiveStor Ultra Storage Nodes feature a multi-tier intelligent data placement architecture that matches the right type of storage media to each type of data to deliver the highest performance at the lowest cost:

- Small files are stored on high IOPs flash SSDs
- Large files are stored on low-cost, high-capacity, high-bandwidth HDDs
- Metadata is stored in a database on low-latency NVMe SSDs
- An NVDIMM-based intent-log protects both inflight data & metadata operations
- Unmodified data and metadata are cached in DRAM

Low Cost to Own and Operate

ActiveStor Ultra has an affordable cost of acquisition due to use of Linux OS and commodity hardware. In addition, minimal staff are needed to administer and manage the system, with no extensive training required. PanFS automates failure management and supports wide range of mixed workloads without requiring tuning or retuning. It takes only part-time attention from a single person to manage the Panasas ActiveStor solution, no matter how large the storage cluster is.

Timely High-Quality Service and Support

Unlike open-source solutions and even commercial alternatives from broad portfolio vendors, Panasas offers timely world-class L1-L4 support with just one phone call to resolve issues within minutes to hours rather than days and weeks.

Specifications

Per 4U	ActiveStor Ultra
Performance	4GB/s building blocks
Hardware	Industry standard hardware 4 nodes / 4U
Capacity	HDD: 96TB – 384TB SATA SSD: 16TB – 32TB NVMe SSD: 8TB
Network	8 x 25 GbE, 4 x FDR or EDR IB
Protocols	DirectFlow, NFS, SMB

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