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Panasas ActiveStor Ultra 100

High-Performance, Mixed Workload Storage Node

The ActiveStor Ultra 100 (ASU-100) is Panasas'® hybrid mixed workload storage appliance. ASU-100 is built on industry-standard hardware chosen for its carefully balanced architecture, with emphasis on mixed media storage and is available in sets of four nodes per enclosure.

ASU-100 storage nodes are powered by PanFS®, the Panasas parallel file system, and are capable of serving up to hundreds of gigabytes of data per second from a single namespace. Together with ActiveStor® director nodes and the DirectFlow® driver on client systems, PanFS provides parallel and redundant access to ASU-100 storage nodes to deliver the highest performance with unlimited scalability, enterprise reliability, and ease of management.

PanFS enables ASU-100 storage nodes to deliver high performance for mixed file size, HPC, and AI/ ML workloads. Delivering the mixed-file performance and scalability required to process datasets of the size and complexity associated with high-performance computing in manufacturing, life sciences, energy, financial services, media & entertainment, and university & government research, the ASU-100 is the ideal choice for a high performance, mixed workload storage node.

ASU-100 Enclosure

The ASU-100 enclosure is a 4U, 19" rackmount, four-node chassis. The enclosure comes fully populated with four ASU-100 nodes per enclosure (as shown in Figure 1) for a total enclosure HDD storage capacity of up to 384 TB, SATA SSD capacity of up to 30.72 TB, and M.2 NVMe SSD capacity of 15.36 TB. Each enclosure also includes four titanium-level, 96% energy efficient, redundant power supplies.

ASU-100 Node

The ASU-100 node is a server node running the PanFS parallel file system. The node's design has been selected for its form factor, drive accessibility, and overall quality and reliability. The ASU-100 node has been configured with a balanced architecture focused on mixed-file storage, including CPU strength, DRAM capacity, self-encrypting drives (SEDs), drive performance, and networking bandwidth. The capacity of HDDs and SATA SSDs can vary and are specified by the ASU-100 model number ordered.

Figure 1. ASU-100 enclosure with four storage nodes.

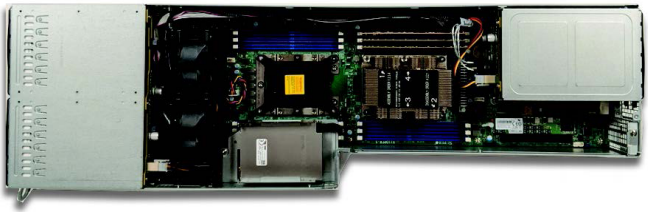

Figure 2. ASU-100 storage node top view.

Predictable and Consistent High Performance

The ASU-100 is the industry's best price/performance parallel file system solution. Because PanFS has a scale-out architecture, the system's storage capacity, DRAM caching, and network bandwidth all grow incrementally and linearly as you add more storage nodes.

The PanFS file system delivers data in parallel from storage nodes to the application, multiplying the bandwidth an application can achieve to a single file. Data flows directly from storage nodes to the application without any hops through intermediate servers or extra network links.

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Dynamic Data Acceleration and Mixed Workloads

PanFS Dynamic Data Acceleration (DDA) technology takes the complexity out of tiered high-performance storage systems by maximizing the efficiency of all storage media in a seamless, all-hot system that matches I/O patterns. DDA automatically adapts to changing file sizes and mixed workloads without the need for tuning or manual intervention. To provide this combination of excellent performance and low cost per TB, ASU-100 nodes optimize use of a balanced set of media to store the component objects that PanFS uses to manage files:

- DRAM is used as an extremely low latency cache of the most recently read or written data and metadata.
- NVDIMMs are the lowest latency type of storage and are used to store metadata transaction and user data logs.
- M.2 NVMe SSDs provide low-latency access and high-bandwidth storage for the metadata database.
- SATA SSDs provide cost-effective and high-bandwidth storage and store small component objects.
- HDDs provide high-bandwidth data storage at a low cost and are used to store large component objects.

Hardware-based Encryption at Rest

Using both industry-standard self-encrypting SATA SSDs and hard disk drives (SEDs), ASU-100 nodes provide hardware-based encryption with zero performance impact and support complete cryptographic erasure of both types of SEDs upon command.

Surprising Simplicity

ASU-100 nodes are managed as part of the PanFS solution. No matter how many ASU-100 nodes you add, all nodes in the realm are managed from one graphical user interface (GUI) or command-line interface (CLI).

Low Cost to Own and Operate

The ASU-100 has a low cost of acquisition due to its large capacity storage architecture on commodity hardware. In addition, PanFS reduces operational complexity—only minimal staff are needed to administer and manage the system, with no extensive training required.

ASU-100 Specifications

ASU-100 Enclosure	
Hardware	19" rackmount chassis with rails
Power Supplies	4x 1200 W titanium-level
Height	6.96 inches (177 mm)–4 rack units
Width	17.63 inches (448 mm)
Depth	29.00 inches (737 mm)
Operating Temp.	10–35°C (50–95°F)
Non-operating Temp.	-40–60°C (-40–140°F)
Operating Humidity	8–90% (non-condensing)
Input Line Voltage	110–240 VAC, 50–60 Hz

ASU-100 Node	
Storage Capacity	TCG-SED HDDs: 48–96 TB TCG-SED SATA SSDs: 3.84 or 7.68 TB M.2 NVMe SSD: 3.84 TB
Memory	2x 16 GB DDR4 ECC RDIMMs
NVDIMM	1x 16 GB DDR4 ECC NVDIMM-N
SSD	1x M.2 NVMe SSD 1x or 2x TCG-SED SATA SSD
HDD	6x TCG-SED HDD
NIC	25 GbE Dual SFP28 Network SIOM
Other	Integrated BMC, IPMI, VGA, USB

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.

More Information and Ordering Details

For more information and ASU-100 ordering details, contact your local Panasas representative or visit **panasas.com/products/activestor-ultra**.

About Panasas

Panasas, the data engine for innovation, provides purpose-built data solutions for high-performance and AI applications in manufacturing, life sciences, energy, media, financial services, and government. The company's flagship PanFS® parallel file system and ActiveStor® solutions uniquely combine ease of management with extreme performance, scalability, security, and reliability for modern workloads. The Panasas data engine solves the world's most challenging problems: curing diseases, designing the next jetliner, creating mind-blowing visual effects, and using AI to predict new possibilities.

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