

ActiveStor Ultra 100XL

High-Performance, Large-Capacity Storage Node

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

ASU-100XL 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-100XL storage nodes to deliver the highest performance with unlimited scalability, enterprise reliability, and ease of management.

PanFS enables ASU-100XL storage nodes to deliver high performance for large-file workloads, HPC and AI/ML workloads with cooler and reference datasets, and long-term data retention. Delivering the large-file performance and scalability required to process datasets of the size and complexity associated with high-performance computing in seismic resource exploration, manufacturing, life sciences, financial services, media & entertainment, and university & government research, the ASU-100XL is the ideal choice for a high-performance, large-capacity storage node.

ASU-100XL Enclosure

The ASU-100XL enclosure is a 4U, 19" mount, four-node chassis. The enclosure comes fully populated with four ASU-100XL nodes per enclosure (as shown in Figure 1) for a total enclosure HDD storage capacity of 640 TB and M.2 NVMe SSD capacity of 15.36 TB. For a rack with nine ASU-100XL enclosures, the aggregate rack raw storage capacity is 5.76 PB of HDDs and 138.24 TB of M.2 NVMe SSDs. Each enclosure also includes four titanium-level, 96% energy efficient, redundant power supplies.

ASU-100XL Node

The ASU-100XL 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-100XL node has been configured with a balanced architecture focused on large-capacity storage,



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



Figure 2. ASU-100XL storage node top view.

including CPU strength, DRAM capacity, self-encrypting drives (SEDs), NVMe SSD performance, and networking bandwidth.

Predictable and Consistent High Performance

The ASU-100XL is the industry's best price/TB large-capacity parallel file system solution and complements the ASU-100 and the ASF-100 in a PanFS deployment. 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.

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-100XL nodes optimize use of their large-capacity hard disk drives and M.2 NVMe SSDs to store 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.
- NVMe SSDs provide low-latency access and high-bandwidth storage to store small component objects and the metadata database.
- 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 M.2 NVMe SSDs and SATA hard disk drives (SEDs), ASU-100XL nodes provide hardware-based encryption with zero performance impact and support complete cryptographic erasure of both types of SEDs upon command.

Surprising Simplicity

ASU-100XL nodes are managed as part of the PanFS solution. No matter how many ASU-100XL 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-100XL 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-100XL Specifications

ASU-100XL 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-100XL Node	
Storage Capacity	TCG-SED HDDs: 160 TB M.2 NVMe TCG-SED SSD: 3.84 TB
Memory	2x 16 GB DDR4 ECC RDIMMs
NVDIMM	1x 16 GB DDR4 ECC NVDIMM-N
M.2 NVMe	1x M.2 NVMe TCG-SED SSD
HDD	8x 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-100XL ordering details, contact your local Panasas representative or [visit **panasas.com/products/activestor-ultra-xl**](https://www.panasas.com/products/activestor-ultra-xl).

About Panasas



Panasas builds a portfolio of data solutions that deliver exceptional performance, unlimited scalability, and unparalleled reliability – all at the best total cost of ownership and lowest administrative overhead. The Panasas data engine accelerates AI and high performance applications in manufacturing, life sciences, energy, media, financial services, and government. The company's flagship PanFS® data engine and ActiveStor® storage solutions uniquely combine extreme performance, scalability, and security with the reliability and simplicity of a self-managed, self-healing architecture. 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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