

ActiveStor Flash 100

High-Performance, All-Flash Storage Node

The ActiveStor® Flash 100 (ASF-100) is Panasas® all-flash storage appliance. ASF-100 is built on industry-standard hardware chosen for its high-density form factor, NVMe SSD support, and a carefully balanced hardware architecture that enables outstanding scratch and small- and random-file storage performance, enhanced support for AI/ML projects, and higher rack density than other ActiveStor storage nodes.

ASF-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 ASF-100 storage nodes to deliver the highest performance with unlimited scalability, enterprise reliability, and ease of management. For a PanFS deployment, ASF-100 all-flash storage nodes complement ASU-100 mixed-workload and ASU-100XL large-capacity storage nodes. The combination of PanFS and ASF-100 storage nodes delivers the ideal price/performance ratio required for all-flash HPC and AI/ML workloads in life sciences, semiconductor design, manufacturing, financial services, media & entertainment, academia and government.

ASF-100 Enclosure

The ASF-100 enclosure is a 4U, 19" rackmount, eight-node chassis. The enclosure comes either fully populated with eight ASF-100 storage nodes (as shown in Figure 1) or half-populated with four ASF-100 storage nodes. Note that a minimum of one fully-populated ASF-100 enclosure is required before a half-populated enclosure can be added. Each enclosure also includes four titanium-level, 96% energy efficient power supplies.

ASF-100 Node

The ASF-100 storage node is a server node running the PanFS parallel file system. The node has been selected for its form factor, drive accessibility, and overall quality and reliability. The ASF-100 storage node has been configured



Figure 1. ASF-100 enclosure and nodes.

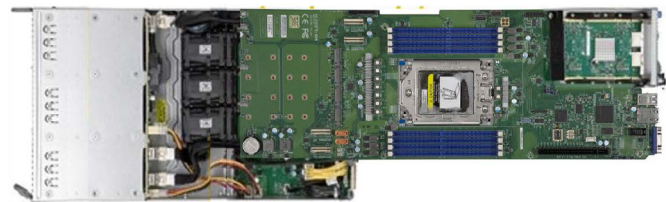


Figure 2. ASF-100 node, top view.

and tested with focus on the strength of CPU, DRAM capacities, NVMe solid-state self-encrypting drives (SEDs), and networking bandwidth.

Predictable and Consistent High Performance

PanFS with ASF-100 storage nodes is the industry's best price/TB and price/GB/s all-flash parallel file system solution and complements the ASU-100 and ASU-100XL storage nodes in a PanFS deployment. Because all PanFS high-performance data appliances use 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 even 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 node 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 cost, all-flash ASF-100 storage nodes optimize use of their NVMe SSDs to store the component objects that PanFS uses to store files:

- DRAM is used as an extremely low latency cache of the most recently read or written data and metadata.
- NVDIMM is the lowest latency type of storage and is used to store user data and metadata transaction logs.
- M.2 NVMe SSD provides low latency access and is used to store the metadata database.
- U.2 NVMe SSDs provide high-bandwidth data storage at low cost and store all component objects.

Hardware-based Encryption at Rest

Using industry-standard NVMe SSD self-encrypting drives (SEDs), the ASF-100 storage nodes provide hardware-based encryption with zero performance impact and supports complete cryptographic erasure of the SED upon command.

Surprising Simplicity

ASF-100 storage nodes are managed as part of the PanFS solution. No matter how many ActiveStor storage 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 ASF-100 has the most affordable cost of acquisition for an all-flash parallel file system solution. In addition, PanFS reduces complexity – only minimal staff are needed to administer and manage the system, with no extensive training required.

ASF-100 Specifications

ASF-100 Enclosure	
Hardware	19" rackmount chassis with rails
Power Supplies	4x 2200 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

ASF-100 Node	
Storage Capacity	U.2 NVMe SSDs: 23–46 TB M.2 NVMe SSD: 3.84 TB
Memory	4x 16 GB DDR4 ECC RDIMMs
NVDIMM	1x 16 GB DDR4 ECC NVDIMM-N
M.2 NVMe	1x M.2 NVMe SSD
U.2 NVMe	6x 2.5" Enterprise NVMe SED
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 ASF-100 ordering details, contact your local Panasas representative or visit panasas.com/products/activestor-flash.

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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