

## Benefits

### Real time performance at scale

- Consistent, predictable, high performance, and ultra-low latency
- Support for block, file, and object storage
- Scale capacity or performance linearly and independently

### Enterprise Features

- Simultaneous NVMe-oF/TCP, NVMe-oF/Ethernet, NVMe-oF/InfiniBand
- Thin Provisioning saves up to 2X on SSDs
- Unified Block, File, and Object Protocols
- Distributed DP Raid with 12X Faster Rebuild Than DAS and Legacy AFAs
- Instant and space-saving snapshots and clones
- 2-3X Lower Storage TCO
- Continuous Operations with Multi-Pathing
- Data at Rest Encryption
- Non-Disruptive Software Upgrades
- Support for iSCSI, NFS v3 and v4, and S3

### Economical

- Start small and grow performance or capacity as needed
- OpenChoice Storage™ avoids vendor lock-in and lowers SSD TCO
- 24/7 Proactive Support

## PavilionOS™

Modern applications deserve a modern storage OS. PavilionOS™ delivers rich enterprise data services for all of your applications, simultaneously. Designed from the ground up for NVMe and NVMe-oF, PavilionOS powers the Pavilion Hyperparallel Flash Array (HFA) to deliver unmatched storage performance without the cost and complexity of legacy solutions. With support for block, file, and object protocols, PavilionOS shatters performance expectations to enable your applications to do more for your organization than ever before.

Built to unlock the power and performance of NVMe and NVMe-oF, PavilionOS enables the HFA to deliver consistent, predictable, high performance, ultra low latency, and linear scalability. Designed for the most demanding environments, PavilionOS combines enterprise class management, security, and data protection features with a highly intuitive GUI to ensure maximum availability and ease of use. An API driven approach ensures that the HFA easily integrates with your ecosystem.

The Pavilion HFA was designed to address the requirements of a modern data center. Today's data centers are pulled in multiple directions; technology is advancing, needs are increasing, complexity is growing, costs have to stay flat, data is exploding, and more.

PavilionOS is 100% standards-compliant. It uses standard Ethernet/InfiniBand networking interfaces, standard NVMe SSDs, standard host software stacks, and more. Pavilion does not require any custom software to be installed on application hosts or network switches. It supports standard 40Gb or 100Gb Ethernet/InfiniBand adapters for NVMe/Ethernet (RoCE v2), NVMe/TCP, NVMe/InfiniBand (RDMA), any v1.x compliant NVMe-Over-Fabrics driver. iSCSI, NFS v3 and v4, and S3 Any or all of these protocols and fabrics can be operational in a single system at the same time.

All storage services, APIs, and advanced data services are built-in and included with every array. Host resources are not required to scale performance, freeing up those resources for scaling applications, not storage.

The Pavilion HFA, powered by the PavilionOS, is redefining storage with a fundamentally new approach to achieving performance at scale.

## Affordability and Data Management



### Thin Provisioning

- Volumes are logical NVMe disks and used as a regular block device. The volume is thin provisioned from the media group. The user receives the provisioned size of the volume, yet space is only allocated as-needed to maximize utilization. Volumes can range from under one TB to 100s of TBs and can be re-assigned or shared between systems as needed.

### OpenChoice Storage™

- Pavilion's OpenChoice Storage™ does not lock you into a vendor. Use NVMe SSDs that have the performance, endurance, capacity, and technology you need for all your applications, leveraging existing suppliers, or purchasing new NVMe SSDs from Pavilion. With the Pavilion HFA, you won't waste SSD space. It only allocates physical space as the application requires/consumes it. Save TCO with no wasted capacity and no time spent messing with volume managers or file systems.
- OpenChoice is only available in select configurations.

### Unified Storage

- PavilionOS enables the HFA to support block, file, and object protocols simultaneously. The entire array can be configured for a single protocol, or capacity can be allocated in any combination across the multiple controllers in the HFA, all while delivering maximum performance to each protocol.

## Data Protection and Availability



### Distributed Dual Parity RAID

- Fully populated, the array organizes NVMe SSDs into 4 groups of 18 drives. Pavilion implements a distributed RAID 6 within a group, resulting in 16+2 RAID 6 protection. The overhead for RAID 6 is less than 12%. Optionally a hot spare can be defined, resulting in 15+2+1 RAID 6 protection.

### Automatic "SWARM" Rebuild

- In the event of a drive failure, multiple controllers swarm the replacement drive in parallel to ensure fast rebuild. A 1TB drive can be recovered in less than 5 minutes. With the Pavilion HFA, an application's SSDs are fully rebuilt with RAID 6 protection up to 12X faster than using DAS or an all-flash array.

### Snapshot/Clones

- Multiple logical crash-consistent copies can be made of any volume and served out to different applications, such as a backup process, individually. These copies are consistent, space-efficient, instant, and writeable. Created instantly without physical data copy activities occurring; blocks are then written as the copy or original is modified over time.

### Continuous Operations with Multi-Pathing

- Achieving the necessary level of availability and reliability for massively parallel modern applications is costly. Underutilized and stranded capacity trapped in servers and the operational overhead of managing these isolated servers is an ongoing challenge for IT. Leveraging the no single point of failure, PavilionOS enables I/O to be performed by multiple storage controllers, increasing data availability.

### Data at Rest Encryption

- Security is a must, so Pavilion implements FIPS-compliant data at rest encryption and ensures the always-on encryption does not impact performance.

### Non-Disruptive Software Upgrades

- Meeting compliance requirements is a fundamental part of the system design. All PavilionOS updates can be applied without disruption to ongoing operations

## Economical & Flexible



### Linear Scalability

- The Pavilion HFA supports the demands of multiple applications with cloud-like scalability. When an application's capacity needs to increase, NVMe SSDs can be added without impacting performance. Conversely, when an application needs more I/O performance, additional storage controllers can be added without impacting capacity.

### Integration

- The Pavilion HFA lets you manage the array as you prefer. Whether you like to use a full-featured Web GUI or a CLI that delivers deep insight into performance metrics at the volume/application, controller, port, or system level. You can also utilize its REST-based API to integrate with DTMF/Redfish and Swordfish or use the Pavilion HFA's OpenStack and vCenter plug-in, or integrate with Kubernetes with its FlexVolume plug-in and CSI support for persistent volumes (PVs).

### Proactive Support

- The Pavilion HFA reports issues to Pavilion's cloud-based support portal for analysis by Pavilion. The support portal enables Pavilion to proactively respond to any issues, performing problem-solving operations remotely.