

NVMe-oF Storage for Research Facilities

Accelerate discoveries without compromise

Deliver new insights with speed and agility

Genomic sequencing, disease understanding, and cure, particle recognition, geospatial analysis, all of these big data analytics require high volume, velocity and varieties of data to be analyzed with precision. But precision no longer has to take days or weeks with the Pavilion Hyperparallel Flash Array (HFA). It has a no compromise design that redefines analytics and AI/ML applications for big data. Achieving rapid insights for outliers in standard deviations was previously considered impossible.

Pavilion makes the impossible, possible with seamless integration into architectures like IBM's Spectrum Scale™, Apache Spark™, and Ceph by leveraging NVMe-Over-Fabrics into a system designed for NVMe SSDs from the ground up. Previously, using NVMe technology for anything other than metadata access was unheard of. However, data processing and storage architectures have evolved rapidly, and Pavilion is at the forefront of Massively Parallel Computing (MPC) and analytics.

Reduce storage over provisioning, accommodate storage growth, consolidate applications, accelerate time to results, and reduce TCO by disaggregating a research application's storage with the Pavilion HFA. It is the industry's first NVMe oF storage array. It scales to over a petabyte of data, provides ultra-high performance, and ultra-low latency, to banking applications, and uses NVMe SSDs.

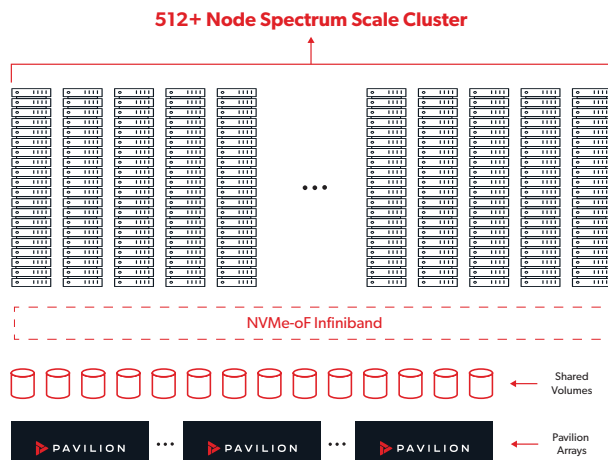
Direct attached storage and legacy all-flash arrays can't analyze this data quickly enough to provide an unrivaled customer experience. NVMe-oF has crossed the chasm and offers the performance, reliability, security, and manageability, and user experience that banks need with no compromises to risk.

The Pavilion Hyperparallel Flash Array

The Pavilion HFA delivers never before seen NVMe performance (90 GB/s throughput, 40µs of latency, and 20M IOPS) and density (1.1 Petabyte) in a compact 4U form factor. It provides banking applications with the performance of locally attached NVMe SSDs, enabling banking organizations to move to a Composable, Disaggregated Infrastructure (CDI) infrastructure, where application resources are

Benefits

- Increases density 2X
- Reduces storage deployed by 75% and storage TCO by half
- Petabyte scalability, high-performance, low-latency, and linear scaling maximizes data center efficiency
- Protects your data and your business. Meets evolving requirements for data security and compliance
- Concurrent block & file protocols for deployment flexibility
- Enterprise design and data integrity validation ensure reliable access to data
- Rack scale/CDI management via Web GUI, vCenter, Kubernetes, RESTful API, OpenStack, DTMF/Redfish, and Swordfish
- Operates with Ceph™ or other object stores as a complete solution for big data analytics



readily available. The Pavilion HFA uses NVMe SSDs and supports multiple block and file protocols with NVMe-oF/RDMA, NVMe-oF/TCP, iSCSI, and NFS.

The Pavilion HFA requires no proprietary software to be installed on a server farm and uses standard NVMe, NVMe-oF, Ethernet, and InfiniBand drivers, freeing up host resources for processing and reducing deployment risk.

Benefits of Disaggregation

The Pavilion HFA delivers high performance and low latency to applications.

Scalable & Flexible



Provide up to 1.1 Petabytes using NVMe-oF, iSCSI, or NFS. Grow performance and capacity linearly without impacting on-going operations.

Fast & Dense



Get an extremely good experience by processing information faster using an ultra-high performance and ultra-low latency storage array. Search data 25 times quicker than with a DAS NVMe SSD, speeding time to results.

Disaggregating flash storage from each server in a rack no longer requires dedicating resources to managing local SSDs. Using servers that don't have to support DAS storage can double the compute density of a rack. No custom software needs to be installed on application servers, enabling them to take full advantage of host processing resources and reduce risk.

Safe & Secure



Protect the SSDs with RAID-6 erasure coding. Its "Swarm Recovery" rebuilds a failed SSD 10X quicker than DAS or an AFA. Get self-healing bit-rot support for data, to assure every process gets uncorrupted data.

Security is a must for every organization. Pavilion uses a FIPS-compliant data at rest encryption based on a 256-bit XTS-AES algorithm. It leverages AES-NI instructions to ensure the always-on encryption does not impact performance. Meeting compliance requirements is a fundamental part of the system design. Use consistent snapshots, encrypt those snapshots, and use standard backup and restore utilities with the confidence that data is safe and secure.

The failure of an SSD, data corruption, or data exposure does not impact banking operations.

Enterprise Strength & Enterprise Support



Get 24/7 proactive support, end-to-end data integrity, a robust and modular chassis, and redundancy throughout the storage array to protect your applications over infrastructures growth. All features come in-the-box, including thin provisioning, snapshots, clones, data at rest encryption and more.

Don't let support concerns prevent the deployment of applications. Pavilion provides 24/7 proactive support and can act as an extension of your IT organization for all applications.

Block & File



Lots of data, resides in silos, unify access and drive collaboration across block and file data. Simultaneously use Ethernet, InfiniBand, NVMe/RDMA, NVMe/TCP, iSCSI, and NFS for all an application's needs.

In a large cluster, setting up shared volumes is easy. Assign NSD hosts to a controller and assign that same set of hosts to another controller and voila! You have a shared NVMe storage. Use standard NVMe-over Fabrics multipathing for failover and you have resiliency. The Pavilion HFA has the processing power to eliminate the need for NSD servers altogether.

Economical & Flexible Management



NVMe SSDs are the most expensive components of an application cluster, why not reduce them? Scale down flash storage deployed by 2-3X, and save 50% over DAS in terms of \$/GB/sec. No wasted capacity, no time spent messing with volume managers or file systems. Just set and forget.

Pavilion's OpenChoice storage does not lock you in to 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 by having no wasted capacity and no time spent messing with volume managers or file systems.

Reduce storage management costs by using the Pavilion HFA Web GUI or integrating with other management frameworks, including: vCenter, Kubernetes, RESTful API, OpenStack, DTMF/Redfish, Swordfish, and more.

Find Out More

Pavilion is defining the future of disaggregated NVMe-oF. Artificial intelligence, machine learning, and deep learning bring new opportunities to create new hypotheses and prove new theories. Pavilion Data offers a storage platform enabling you to deliver greater insights, faster using proven technologies systems and trusted storage management techniques.

Our expertise is in simplifying and optimizing NVMe to make the impossible, possible. When storage is business-critical, there's no substitute for the guaranteed performance, functionality, high availability, and OpenChoice Storage™ support of a Pavilion NVMe-oF storage array. Use the Pavilion Hyperparallel Flash Array with its NVMe over fabrics support and make better decisions, faster! Contact us to learn more.