



## Benefits

- Unifies block, file, & object applications
- 50% reduction in east-west network traffic and storage CapEx
- Eliminate DAS 2X storage penalty
- Utilize 20% more server resources
- Cut storage CapEx in half
- Apply 25-50% more server resources to Windows Server applications
- Storage management cost is 50% of DAS
- Future-proof design halves networking costs
- 50% of the rack size of the nearest competitor
- Eliminate storage silos
- Mitigate storage bottlenecks
- Accelerate time-to-results through high storage concurrency
- Avoids BC/DR impact to operations

## Features

- Up to 2.2PB of NVMe SSDs per system
- Space-saving snapshots speed backup & DR operations
- RAID-6/erasure coding algorithms
- Fast "SWARM" recovery of failed drive
- Data integrity validation
- NFS & S3 Global Namespace spanning an unlimited number of systems
- Intuitive management via Web GUI, Kubernetes, REST API, OpenStack, DTMF/Redfish, and Swordfish

## NVMe-oF Storage for Windows Server

### Eliminate Costs, Slash Storage Bottlenecks

Today, every environment is becoming diverse, creating unprecedented challenges, opportunities, and complexity. From web-scale cloud-native workloads to legacy enterprise applications, Pavilion seamlessly handles your unified and growing data scale requirements today...and into tomorrow.

Many organizations use a Direct Attached Storage (DAS) configuration for their Windows Server that is easy to deploy but is complex and hard to scale. A DAS-based design is a single-point-of-failure, which requires IT to copy data to another server, more than doubling east-west traffic and storage. DAS-based servers lack enterprise features and centralized storage management, so IT must perform enterprise operations and storage management to overcome this lack of functions. It is complex to unleash the performance capabilities of a DAS-based NVMe SSD, limiting the benefit of NVMe flash storage, resulting in increased Windows Server costs and IT overhead.

Moving to software-defined storage (SDS) is not the answer. It provides enterprise storage services and centralized storage management. Still, it consumes up to a fifth of each server's resources to do so, impacting Windows' application performance and increasing licensing costs.

An alternative to SDS is a SAN-attached all-flash array (AFA). Most have NVMe SSDs, enterprise features, and centralized storage management, making AFAs the predominant Windows storage solution in most data centers today. But many AFAs do not unlock the full performance of an NVMe SSD due to limitations in their controller architecture. Some AFAs are also derived from legacy architectures or based on fibre channel technology that is double the price of Ethernet and lacks the future growth and performance of the Ethernet-based design used by Pavilion.

### Scalable and Flexible NVMe-oF Windows Server Performance

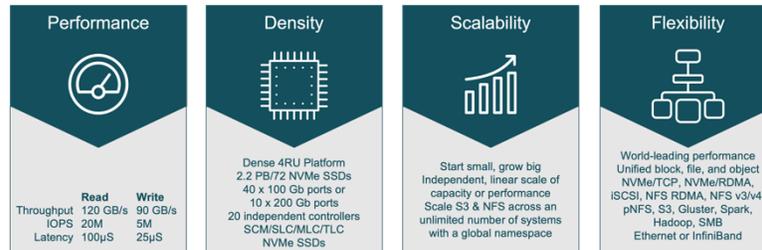
There is a better way. The Pavilion HyperParallel Flash Array (HFA) is an AFA that uses NVMe-over-Fabrics (NVMe-oF) for Windows Server applications. It unlocks the power of NVMe via certified NVMe/TCP and NVMe/RDMA drivers. Its high performance removes application bottlenecks, boosting performance and supporting 25-50% more concurrent users than DAS or SDS. It reduces storage management costs by 50% over DAS and saves money by lowering licensing, server hardware, and data center space. With Pavilion, a Windows Server application gets the performance of a direct-attached NVMe SSD with the enterprise features and management characteristics of a SAN.

Pavilion leads the industry in its support of [NVMe-oF](#) and is built for NVMe from the ground up. NVMe is not shoe horned-in like many other vendors. The Pavilion HFA is superior to DAS, SDS, and AFAs and provides near-native NVMe performance to Windows Server applications like OLTP, BI, and analytics. Pavilion speeds applications like SQL Server as well as VMware and Hyper-V VMs, enabling customers to derive actionable insights in a short amount of time from big and fast data workloads.

The patented architecture of the Pavilion HFA provides its high-performance and ultra-low latency in a compact form factor that is more than twice as small as the nearest competitor. Its ultra-low latency and ultra-high performance boost operations, making it ideal for running applications on Windows or VMware. The snapshot also removes the need to quiesce an application for operations like backup, replication, business continuance, and DR, accelerating time-to-results.

The Pavilion HFA's architecture lets you better use server resources, reducing rack space, power, and HVAC costs. Its multi-controller design enables customers to architect their applications to avoid hot-spots, support more users/processes, achieve continuous operations, and shatter backup windows.

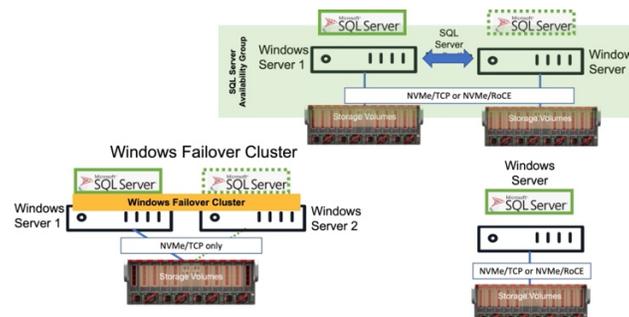
The Pavilion HFA needs no custom drivers; instead, customers access the Pavilion HFA's NVMe SSDs with the certified NVMe/TCP or NVMe/RDMA (RoCE v2) initiator or iSCSI, NFS, SMB, and S3 protocols, getting ultra-high performance and ultra-low latency for all their Windows Server applications. It eliminates the need for separate storage silos for block, file, and object applications by supporting all three simultaneously. It supports Windows 10, Windows Server 2012 R2+, 2016/2019's deployment of scalable clusters of SQL Server, Spark, HDFS containers running on Kubernetes, and other data-intensive applications. Now users can combine and analyze relational, unstructured data and S3 object data for AI/ML and other data analysis.



Microsoft Windows Server is one of the most pervasive operating environments on the planet. Pavilion's NVMe-oF support will reduce license and hardware costs, simplify management, and deliver unmatched performance to enable high-volume data movement.

## Flexibility in Deployment Options –From Standalone to Multiple HA Configurations

Deploying applications on Windows Server and leveraging the power and flexibility of the Pavilion HFA provides you with multiple deployment options. For example, an application (like SQL Server) using the NVMe/TCP block protocols to Pavilion, you can optimize Microsoft Windows Server Failover Cluster and leverage NVMe-TCP to the Pavilion storage array. Pavilion also supports VMware and Hyper-V with NVMe/TCP and NVMe/RoCE. A Windows Server Failover Cluster (WSFC) is a group of independent servers that work together to increase the availability of applications and services. For example, SQL Server takes advantage of WSFC services and capabilities to support Always On availability groups and SQL Server Failover Cluster Instances. Using the WHQL certified NVMe/TCP driver ensures that data is available after a failover.



The Pavilion HFA provides iSCSI storage to a Windows Server Failover Cluster (WSFC) for use with Hyper-V it will also use the NVMe-over-TCP initiator for WSFC, which provides a special type of storage called Cluster Shared Volumes (CSV) that enables Virtual Machines to be moved between cluster nodes "live." The Pavilion HFA supports WSFC and Hyper-V clusters.

With its WHQL certified NVMe/TCP initiator, customers using Pavilion are assured that their storage seamlessly integrates with Windows Infrastructure with support of globally acceptable protocols and high performance. WHQL certification is evidence of thorough, independent verification of functional and operational stability with and without MPIO. With the Pavilion [Windows NVMe-oF](#) initiator, customers can:

- Create an eco-system for Windows without having any specific hardware as the TCP/IP stack is hardware agnostic.
- Provide MMC/CLI-based management capabilities to manage NVMe-oF storage devices.
- Offer MPIO support for High Availability even in the case of one path failure.
- Deploy Windows Server with VMware, Hyper-V, WSFC, and CSVs.
- Deliver a high-performance initiator solution for NVMe-oF with has single initiator performance of 9.5GB/s for reads and 11.4GB/s for writes and scales linearly as you add controllers or volumes up to 120GB/s Reads and 90GB/s Writes.

## Learn More

Pavilion is powered by NVMe-oF and provides enterprises with a data analytics acceleration platform. This enables customers to derive greater value from their data—faster, simpler, and at scale. The Pavilion HyperParallel Flash Array, powered by Pavilion HyperOS™, uses certified NVMe/TCP and NVMe/RDMA drivers for unmatched performance and density, ultra-low latency, unlimited scalability, and flexibility. The Pavilion HyperParallel Flash Array is the perfect complement for virtualized, containerized, or Windows applications, such as SQL Server, AI/ML, HPC, analytics, edge, GPU-based computing platforms, and other data-driven applications. Learn why Fortune 500 companies and federal government agencies rely on Pavilion, email [info@pavilion.io](mailto:info@pavilion.io), call 669-263-6900, visit [www.pavilion.io](http://www.pavilion.io), or follow the company on [LinkedIn](#).