**PAVILION**

# NVMe-oF Storage for VMware

## Accelerate VMs in vSphere 7

**Save Space, Time, and Money**

Organizations are embracing modern deployment models and applications for digital transformation. One of these is virtualization, which provides superior operational efficiencies. A DAS-based converged infrastructure prevents many organizations from implementing virtualization in production. Consolidate workloads, accelerate operations, reduce storage over provisioning, accommodate storage growth, and reduce TCO, by disaggregating VM storage with the Pavilion HyperParallel Data Platform. It offers unlimited scale and provides ultra-high performance, and ultra-low latency.

The Pavilion HyperParallel Data Platform shatters expectations with a complete suite of data management features for consolidation of VM sprawl and native Container Storage Interface (CSI) for simplified migration to Docker and Kubernetes Containers. It includes native VMware support for vSphere 7 at release, vCenter, and supports NFS and iSCSI for datastore provisioning.

The Pavilion HyperParallel Data Platform is the most performant, dense, scalable, and flexible data storage platform available, making it ideal for virtualization of all types, such as legacy applications and cloud-like web-scale applications. It supports up to hundreds of thousands of VMs across 72 standard NVMe SSDs (with capacity reaching 2.2 PB), has ultra-high performance (120GB/s throughput and 20M IOPS), ultra-low latency (25µs), provides multiple 100Gb or 200Gb Ethernet and InfiniBand ports.

DAS-based datastores will result in 2-3X overprovisioning and create islands of storage, while a hyperconverged data center using software-defined storage takes CPU resources away from VMs. With the Pavilion HyperParallel Data Platform, VMs get performance and capacity needed with no compromises.

The array requires no proprietary software to be installed on a server farm and uses standard Ethernet and InfiniBand drivers, freeing up host resources for processing, eliminating deployment complexity and increasing VM density. The Pavilion HyperParallel Data Platform with NVMe-oF is fully supported with vSphere 7.

## The Pavilion HyperParallel Data Platform

The Pavilion HyperParallel Data Platform architecture unlocks the power of NVMe to enhance the performance of latency-sensitive VMs all in a compact 4U form factor. We make it simple to integrate with the management platform of your choice: VMware vCenter, REST API, OpenStack, Redfish, Swordfish, and others.

Using Pavilion, organizations can implement a Composable, Disaggregated Infrastructure (CDI) where applications are virtualized or containerized and readily available. This means that compute, network, and storage resources all scale independently to meet a diverse set of application requirements.

**vmware® READY STORAGE**

## Benefits

- NVMe-oF for VMware vSphere 7
- Increase vSphere density 2X
- Petabyte scalability, high-performance, low-latency, and linear scaling maximizes data center efficiency
- Protect your data and your business. Meet evolving requirements for data security and compliance
- Reduces VM storage TCO 50%
- Deployment flexibility using concurrent protocols
- Enterprise design and data integrity validation ensure reliable access to data
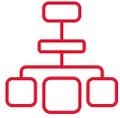- Rack scale/CDI management via vCenter, REST API, Kubernetes CSI, OpenStack, DTMF/Redfish, and Swordfish

## Benefits of Disaggregation

The Pavilion HFA provides high performance and low latency to VMs.

### Scalable & Flexible

Provide up to 2.2 Petabytes, 120GB/s throughput, 20M IOPS, and 25μs of latency to VM datastores with iSCSI, NFS, and S3. Scale without compromising on-going VM I/O operations.

Reduce the amount of raw flash storage needed for virtualization by up to 3X, and save 50% on CapEx compared to DAS SSDs in terms of $/GB/sec. The Pavilion HyperParallel Data Platform is the one platform for your VM needs.

### Fast & Dense

The ultra-high performance, extreme low latency, and multiple storage controllers of the Pavilion HyperParallel Data Platform accelerates VM workflows and boosts time to results.

The Pavilion HyperParallel Data Platform lets VM applications search terabytes of structured and unstructured data over 20 times faster than a DAS NVMe SSD. VM I/O and provisioning a datastore perfromance increases significantly over using iSCSI due to eliminating unnecessary protocol translations while enabling NVMe semantics for low-latency and high IOPS.

Disaggregating high-speed flash storage from each server in a rack eliminates the need to use CPU resources to managing local SSDs or using servers designed for DAS storage. This increases the compute density of a rack by up to 2X, giving more CPU resources to VMs while centralizing storage management enables each server to support more VMs.

No custom software needs to be installed on server nodes, enabling applications to take full advantage of host processing resources as well as simplifying deployment complexity.

### Safe & Secure

Protect SSDs with RAID-6 and Pavilion SwarmController, which leveragess multiple to controllers to rebuild a failed drive at the rate of less then 5 minutes per TB. Pavilion SwarmController ensures that the failure of an SSD does not impact VM operations.

Self-healing bit-rot support for datastores assures every VM gets uncorrupted data. Zero-footprint snapshot with consistency group features speed VM backup and disaster recovery operations.

Pavilion provides end-to-end data integrity, a modular chassis, and has redundancy throughout the storage array to protect your VMs as infrastructures grow. All features come in-the-box, including thin provisioning, snapshots, clones, data at rest encryption and more.

Keep data and snapshots safe with a FIPS-compliant data at rest encryption, the Pavilion HyperParallel Data Platform always-on encryption keeps data secure without impacting
VM performance.

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### Block & File

Connect different vSphere hypervisors using iSCSI, NFS, and S3. With the NVMe-oF driver from VMware, you can provision vSphere using NVMe, iSCSI, S3, and NFS.

### Enterprise Strength & Flexible Management

Your VMs get full speed data services, 24/7 proactive support. end-to-end data integrity, chassis, mixed file size performance, enterprise services, and redundancy throughout the Pavilion HyperParallel Data Platform. No tuning or extra fees required, consolidate all your virtualization workloads and use vCenter to manage VMs with Pavilion HFA, or integrate with other management frameworks, including: vCenter, Kubernetes CSI, RESTful API, OpenStack, DTMF/Redfish, Swordfish, and more.

### Economical

Using a local NVMe SSD is the largest cost for a VM. Why squander the most expensive storage in your data center? Pavilion's OpenChoice storage does not lock you in to any vendor. Use remote NVMe SSDs that have the performance, endurance, capacity, and technology you need for VMs, leveraging existing suppliers or purchasing new NVMe SSDs from Pavilion.

Its thin provisioning reduces TCO also. Pavilion's powerful ability to define arbitrary/large volume sizes to a VM datastore is significantly better than DAS, since the Pavilion array will only allocate physical space when the VM needs it. This can result in physical space savings of up to 75% per server. No wasted capacity, no time spent messing with volume managers or file systems. Just set and forget.

## Find Out More

Pavilion shatters customer expectations and resulting organizational outcomes by revolutionizing data processing for modern AI/ML, HPC, Analytics, Enterprise Edge and other data-driven applications. The Pavilion HyperParallel Data Platform, powered by Pavilion HyperOS, delivers unmatched performance and density, ultra-low latency, unlimited scalability and flexibility, providing customers unprecedented choice and control. Learn why Fortune 500 companies and federal government agencies choose Pavilion. Visit www.pavilion.io or follow the company twitter at https://twitter.com/PavilionData