

Benefits

- Dramatically accelerate VMs with NVMe-oF-RoCE and NVIDIA
- Run high performance applications in virtual environments
- NVIDIA tested solution
- More than double IOPs
- Increase throughput by 50%
- Cut latency by more than half

Features

- The Pavilion HyperParallel Data Platform
- NVIDIA Mellanox Spectrum-2 SN3700 Network switch
- NVIDIA Cumulus Linux NOS
- ConnectX@-6 Dx adapters
- VMware vSphere 7.0

Pavilion HyperParallel Data Platform™ and NVIDIA for VMware vSphere 7

Take advantage of NVMe-RoCE to dramatically accelerate performance and cut latency to power virtualized workloads that previously had to be run on bare metal

Virtualization has redefined what can be achieved in the data center. Many would say it has enabled the modern world by being more efficient, easier to manage, and delivering greater uptime. However, the full deployment of a virtualized world has been constrained because applications requiring the highest performance have had to continue being run on bare metal because the performance penalty for virtualization had been too high. Until now.

NVIDIA has demonstrated that taking advantage of the unrivaled performance of the Pavilion HyperParallel Data Platform and NVMe-RoCE, I/O operations can be dramatically accelerated and latency reduced to the point that even high performance applications can now be run in virtual environments.

NVMe-oF and RDMA

NVMe-over-Fabrics (NVMe-oF) extends the NVMe protocol over high speed networks, such as ethernet and InfiniBand. Remote Direct Memory Access enables I/O between storage and servers to occur over a network without consuming CPU cycles and reducing latency. RDMA over Converged Ethernet (RoCE) uses RDMA on converged ethernet networks, which provide extreme high performance, without packet loss.

VMware vSphere 7

VMware vSphere 7 and VMware vSphere 7 with Tanzu was the first version of VMware to support NVMe-oF and RoCE. The inclusion of NVMe-oF and RoCE in this release of VMware vSphere brings the extreme high performance of converged ethernet and InfiniBand networking and the ultra-low latency of RDMA to support VMs and container based environments.

The NVIDIA Tested Solution

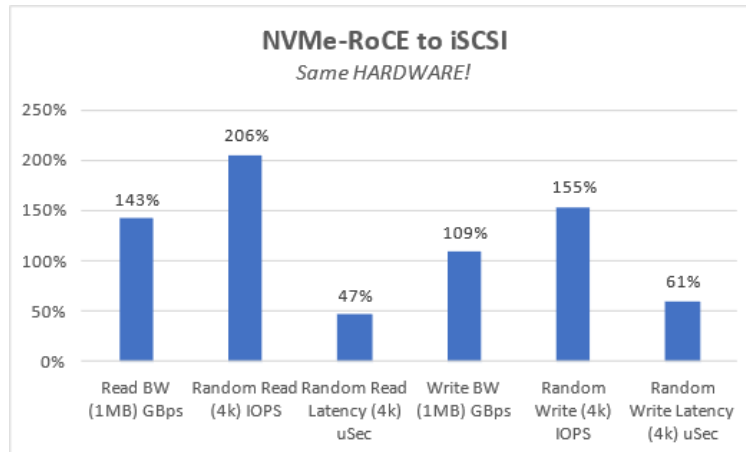
To demonstrate that NVMe-RoCE delivers the performance to run high performance applications in virtual environments, NVIDIA tested the Pavilion HyperParallel Data Platform, one of the first solutions certified to support NVMe-RoCE with VMware vSphere. The testing compared NVMe-RoCE and iSCSI, as both are block level data protocols and both are supported by the Pavilion HyperParallel Data Platform.

The Pavilion HyperParallel Data Platform is uniquely capable of supporting block, file, and object workloads on a single platform, simultaneously. The testing was conducted on the exact same hardware, with the only change being that for one set of tests the Pavilion HyperParallel Data Platform was configured for iSCSI and for the other it was set to use NVMe-RoCE.

The testing consisted of the Pavilion HyperParallel Data Platform, VMware vSphere 7, NVIDIA Mellanox Spectrum-2 SN3700 200GbE Switch with NVIDIA Cumulus Linux NOS, and ConnectX-6 adapter cards.

The Results

By moving from iSCSI to NVMe-RoCE, throughput and IOPS were both increased by more than 50% while latency was cut in half.



This significant performance improvement means that organizations can leverage their existing infrastructure to run more VMs and to power high performance applications in virtual environments that previously would have been run on bare metal. With the Pavilion HyperParallel Data Platform, VMware vSphere 7, and NVMe-RoCE, every application can now take advantage of the benefits of virtualization.

To see the detailed testing, visit: <https://docs.mellanox.com/m/view-rendered-page.action?abstractPagelId=39263579>

The Pavilion HyperParallel Data Platform

The Pavilion HyperParallel Data Platform delivers unrivaled performance, density, scalability, and flexibility. The Pavilion HyperParallel Data Platform is comprised of the Pavilion HyperParallel Flash Array™ and Pavilion HyperOS™. The Pavilion HyperParallel Flash Array leverages a unique, switch-based architecture to create a multi-controller solution that delivers an unmatched combination of high performance, ultra-low latency, and storage density. Pavilion HyperOS is a powerful, purpose built storage operating system designed to unlock the power of the multi-controller Pavilion HyperParallel Flash Array, to deliver scalability and flexibility that no other solution can offer.

Built from the ground up for NVMe-oF, the Pavilion HyperParallel Flash Array provides incredibly low latency of as little as 25µs, measured at the host, enabling customers to get more from their data.

Contact us at 669-263-6900 or info@pavilion.io for more information.