SOLUTION BRIEF

ATTO Celerity™ Fibre Channel HBAs

VMware environments leveraging ATTO Celerity Fibre Channel HBAs with Single Root I/O Virtualization (SR-IOV) support can experience a range of benefits, including:

Benefits

- Enhanced performance
- Improved scalability
- Optimized resource utilization
- Flexible virutal machine management
- Enhanced reliability and stability
- Cost Efficiency
- Better quality of service (QoS)
- Simplified managment

Celerity™ Fibre Channel Host Bus Adapters support Single Root I/O Virtualization

Background

Cloud service providers (CSP) rely on virtualization technology and VMware as the backbone for their services. Without the ability to create many virtual devices out of a single device they would be severely limited in what they could present to their customers. Virtualization also protects them from system failures, takes the hassle out of data transfers, lowers their total cost of ownership (TCO), and reduces costly downtime. Producing an overall smoother, more efficient and productive IT operation. CSP's utilize ATTO Celerity™ Fibre Channel Host Bus Adapters (HBAs) virtualizing single adapters into several virtual adapters and present them to their clients as Fibre Channel storage.

Challenge

CSPs are renowned for their robust virtualization solutions, however, the efficiency and performance of these workloads are highly dependent on the I/O operations. Historically N_Port ID virtualization (NPIV) was the Fibre Channel standard that was used to create multiple virtual ports on a single physical port. Each virtual port appears as its own unique identity to the Fibre Channel network but all of these virtual ports share the physical resources of the adapters. While using NPIV excessive traffic on some virtual ports can starve others. We refer to this problem as "noisy neighbors". CSPs need to be able to share the load effectively with all of their customers and this method is not ideal.

Solution

ATTO Introduces support for SR-IOV on Celerity® Fibre Channel HBAs. Single Root I/O Virtualization (SR-IOV) is a hardware-based technology that enables the partitioning of a single Physical Function (PF) into multiple Virtual Functions (VFs) within a network adapter. This technology allows a single Fibre Channel HBA to be shared by multiple virtual machines (VMs) or workloads without the performance overhead typically associated with traditional virtualization methods.

Why SR-IOV

Guaranteed Bandwidth - ATTO SR-IOV virtualizes the PCIe interface, or the entire adapter, and in turn, the downstream FC port. The physical adapter resources are split evenly among the virtualized adapters and locked in. This mitigates the noisy neighbor problem. SR-IOV offers more control over each virtual adapter in each virtual machine to guarantee certain level of bandwidth

Performance Optimization - VMware environments are known for their agility in managing virtual workloads. However, the efficiency and performance of these workloads are highly dependent on the I/O operations. SR-IOV significantly enhances network and storage I/O performance by dedicating a VF to each VM, thereby reducing the overhead typically associated with software-based virtualization.

Improved Scalability - Scalability is a crucial consideration in modern data centers. SR-IOV allows VMware environments to scale efficiently, ensuring that more VMs can be accommodated without compromising performance. This is particularly important in scenarios where the demand for virtualized resources can fluctuate significantly.

Why ATTO Celerity Fibre Channel Adapters

Unparalleled Performance - ATTO Fibre Channel HBAs, combined with SR-IOV, deliver exceptional performance by reducing I/O latency. With dedicated Virtual Functions for each VM, storage access becomes more efficient, allowing VMs to operate at peak performance levels.

Flexibility - ATTO HBAs provide VMware administrators with the flexibility to allocate resources as needed. The ability to partition a physical HBA into multiple virtual functions ensures that resources are assigned to VMs precisely when they are required, eliminating resource contention. ATTO provides a robust set of CLI tools for VMware administrators to setup and configure ATTO adapters to their workloads.

Enhanced Virtual Machine Mobility - In VMware environments, VM mobility is a common requirement. With SR-IOV support, VMs can be live-migrated with minimal disruption. ATTO SR-IOV-enabled HBAs facilitate seamless VM migration, ensuring that the performance of mission-critical applications is maintained even during live VM transfers.

Best-in-Class Reliability - ATTO has a strong reputation for providing reliable and robust solutions. Our Fibre Channel HBAs with SR-IOV support are built to withstand the demands of high-availability environments, ensuring consistent performance and data integrity. ATTO Celerity HBAs have the highest mean time between failure (MTBF) in the industry which allows ATTO users get the best return on their investment (ROI).

ATTO Engineering –For more than 35 years, ATTO's dedicated team of engineers has been working tirelessly at our Buffalo, New York office to provide our customers with the most advanced connectivity products in the market. ATTO has been offering Fibre Channel connectivity for over two decades, and we are proud to produce the highest-performing and most reliable HBAs that minimize latency better than any other vendor. We provide direct engineering development with frequent updates for ATTO SR-IOV support, and we are committed to both virtualization and SR-IOV now and in the future. In addition to supporting Fibre Channel in initiator mode, we offer several target mode options for select OEMs.

Industry-Leading Support - ATTO Technology is highly respected in the industry for their exceptional technical assistance and engineering support. With a team of dedicated field application engineers and a detailed escalation process, ATTO guarantees fast response times, which not only increases your ROI but also helps to avoid costly downtime. Additionally, ATTO maintains a comprehensive list of certified solutions and a robust interoperability list, so you can connect with confidence.

ATTO Fibre Channel Host Bus Adapters

CTFC-321P	Celerity® 32G Fibre Channel HBA, Single port, PCIe 4.0	VMware Certified
CTFC-322P	Celerity® 32G Fibre Channel HBA, Dual port, PCIe 4.0	VMware Certified
CTFC-324P	Celerity® 32G Fibre Channel HBA, Quad port, PCIe 3.0	VMware Certified
CTFC-641E	Celerity® 64G Fibre Channel HBA, Single port, PCIe 4.0	VMware Certified
CTFC-642E	Celerity® 64G Fibre Channel HBA, Dual port, PCIe 4.0	VMware Certified
CTFC-161P	Celerity® 16G Fibre Channel HBA, Single Port, PCIe 3.0	VMware Certified
CTFC-162P	Celerity® 16G Fibre Channel HBA, Dual Port, PCIe 3.0	VMware Certified
CTFC-164P	Celerity® 16G Fibre Channel HBA, Quad Port, PCIe 3.0	VMware Certified

How to Buy

Channel Sales: +1.716.691.1999 Ext. 240
int'l Sales: +1.716.691.1999 Ext. 239
OEM Sales: +1.716.691.1999 Ext. 241

VAR + System Integrators:
www.atto.com/howtobuy

Direct Sales:
www.attostore.com

About ATTO

For 35 years ATTO Technology, Inc. has been a global leader specializing in network and storage connectivity and infrastructure solutions for the most data-intensive computing environments. ATTO works closely with its partners to create the world's best end-to-end data delivery, management and storage solutions. ATTO manufactures host adapters, SmartNICs, storage appliances and controllers, intelligent bridges, Thunderbolt™ adapters, and software. ATTO solutions enable high-performance connectivity to all storage interfaces, including Fibre Channel, SAS, SATA, iSCSI, Ethernet, NVMe and Thunderbolt. ATTO is the Power Behind the Storage.