

VMware Virtual SAN and Storage Virtualization

Virtual SAN Benefits:

- **Software-defined** – Leverages industry standard hardware for lower TCO
- **Converged** – Lets you to create dense, building block-style solutions
- **Flash-optimized** – Built-in caching using server-side flash devices accelerates I/O and reduces storage latency
- **Flexible** – Elastic, non-disruptive scale-up and scale-out: Just add more disks or more hosts
- **Simple** – Integration with vSphere 6.0 provides single pane of glass management
- **Automated** – Per virtual machine policy based management automates provisioning of storage resources

About ATTO Technology

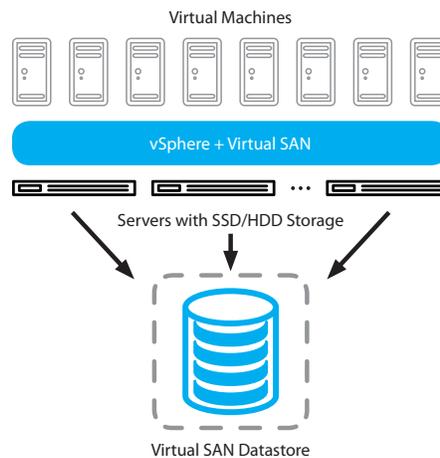
ATTO Technology, Inc. is a global leader of storage and network connectivity and infrastructure solutions for data-intensive computing environments. ATTO manufactures Host Bus Adapters, RAID adapters, network adapters, RAID storage controllers, Thunderbolt™-enabled Desklink™ devices, bridges, switches and software. ATTO solutions provide a high level of connectivity to interfaces including Fibre Channel, SAS, SATA, iSCSI, 10GbE, FCoE and Thunderbolt.

About VMware

VMware is the leader in virtualization and cloud infrastructure solutions that enable businesses to thrive in the Cloud Era. Customers rely on VMware to help them transform the way they build, deliver and consume Information Technology resources in a manner that is evolutionary and based on their specific needs.

The speed, availability and predictable performance provided by Fibre Channel Storage Area Networks have made them a go-to solution for enterprises that require resilient data storage. But Fibre Channel SANs aren't a perfect fit for all organizations. Small-to-medium businesses in particular will benefit from an alternative solution—one that offers lower TCO, reduced complexity and an ability to easily scale resources in response to evolving business needs.

For such organizations, VMware® Virtual SAN™ can provide that alternative. Virtual SAN is VMware's native version of Software Defined Storage (SDS), a hypervisor-based distributed platform that enables the convergence of compute and storage resources. Designed to be deployed on standard x86 servers in a heterogeneous hardware environment, Virtual SAN significantly reduces storage TCO while offering the flexibility to use all-flash or hybrid flash/HDD configurations depending on performance requirements. In addition, Virtual SAN simplifies and speeds up storage provisioning through policy based management with virtual machine-level granularity.



ATTO Technology Virtual SAN Solution Components

ATTO Technology's ExpressSAS™ HBAs and FastFrame™ NICs provide key enabling technology for VMware Virtual SAN solutions.

ExpressSAS HBAs*

ATTO's ExpressSAS family of HBAs provide users with up to 12Gb SAS/SATA connectivity while enabling scalability for next-generation platforms and infrastructures. ExpressSAS HBAs are optimized for high-bandwidth data transfers and feature a wide variety of

port configurations to ensure flexibility for demanding applications. They additionally benefit from Advanced Data Streaming (ADS™), a proprietary ATTO technology that reduces latency by managing data acceleration to maximize the number of transactions the host's CPU can process.

- Qualified with major SAS/SATA SSDs and HDDs
- Mixed SSD/HDD workload support
- Handles greater than 256 queue depths
- Connects up to 2048 unique devices
- Proprietary ADS technology to minimize latency
- Efficiently handles both large and small block transfers
- VMware driver support
- Advanced Format storage media support (512e, 4Kn)

FastFrame 10GbE NICs*

The ATTO family of FastFrame NICs deliver high performance I/O connectivity and lossless Ethernet support where guaranteed data delivery rates are required. Designed for rigorous data transfer and reliability, the FastFrame product line provides Linux®, Mac®, Windows® and VMware vSphere® driver support and is available in single, dual and quad-port configurations.

- Up to 30% lower power consumption than competition
- VMware driver support
- Single, dual and quad-port configurations

ATTO Technology vConfigTool

ATTO's vConfigTool™ for VMware vCenter Server is a software plug-in that integrates centralized management and monitoring of Celerity™ Fibre Channel and ExpressSAS™ SAS/SATA HBAs into VMware virtual environments. The foundation for this virtualization management utility is built upon ATTO's well-established ConfigTool™ manager, a powerful tool designed to help IT administrators optimize storage connectivity performance. With vConfigTool for VMware vCenter Server, IT administrators using vSphere 5.5 and later web clients can accelerate adapter deployments, optimize configurations, improve system availability and reduce VMware host infrastructure cost.

(*VMware Virtual SAN-compatible Hardware Certification pending.)

