ATTO TECHNOLOGY
TECHNOLOGY BRIEF

SAN vs. Hyperconverged Storage

Why SAN Storage excels over Hyperconverged Infrastructures for Performance, Latency and Capacity

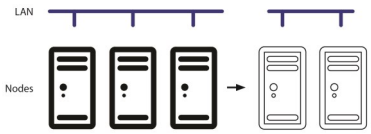
Benefits of ATTO XstreamCORE™ Storage Controller connected SAN based storage

- ATTO XstreamCORE™ storage controllers quickly and cost effectively converts direct-attached SAS RAID, JBOD or JBOF storage to high performance storage area network (SAN) technology enabling load balancing and a faster backbone
- Improves redundancy, as well as application and network performance, by enabling all servers to connect to and share all storage at up to 12GB/s throughput or 3M 4K IOPS per controller pair with very low latency (less than four microseconds)
- Increased utilization of storage: Maximizes storage while reducing the total cost of ownership by aggregating direct attached storage devices on one shared storage network
- Scale up storage without disruption: Allows IT administrators to add storage capacity without server reboots. Servers can also be scaled as needed
- Increase uptime: Works independent of servers so storage is not required to be taken offline during maintenance or server failure
- Enhances storage visibility and network performance: Allows IT administrators to grant storage access to specific servers and clients and assign unique boot drives to physical servers
- Decreases amount of time transferring data between nodes: The SAN storage created with the ATTO XstreamCORE is not affected by Ethernet traffic or local disk bottlenecks
- Capitalize on the benefits of Fibre Channel SAN, including higher throughput, lower latency and greater security because it's a purpose-built technology that is lossless and congestion-free

Hyperconverged storage scalability and performance limitations

There has been a movement toward hyperconverged storage in today's storage market. This methodology, which ties together software, compute, memory and storage in a single package, has been desirable for many as its promise of simplified storage management has meant easier integration. This method is also referred to as hypervisor-converged due to the reliance on the hypervisor platform.

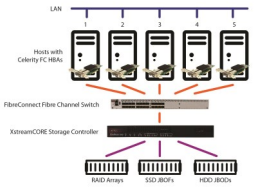
When you architect a hyperconverged solution, you start with multiple nodes for data protection and add storage, memory, compute and network throughput as needed. When you need to expand one of these components, you must add all of them, even if you just need extra storage capacity.



The ability to scale out is beneficial but the interconnectivity that ties server nodes together is commonly done via an Ethernet network. This network has contention for regular network traffic, so if you require moving data between nodes you are competing with email, video and other network traffic so that data between nodes does not have priority and suffers from latency and performance limitations of the network. If you need to build large capacity storage systems which transfer data between all attached storage at an equal rate of speed, such as 4K/8K editing or high performance computing, then this is not a valid option, as video editing systems are most efficient when they are able to access the data as block level storage.

Architecting an open Fibre Channel SAN Storage solution simply and cost-effectively

There has been a demonization of traditional storage for several reasons: hardware and licensing costs, hardware complexity, lack of knowledgeable IT resources and lack of flexibility. However, with the advent of software-defined storage (SDS) and advances in open hardware technology, much of this can be dispelled. In fact, there has never been a better time to architect storage solutions based on storage area network (SAN) technology. Industry standard servers, serial -attached storage (SAS) JBODs, JBOFs and even RAID arrays are at such a price that building a solution using open SDS packages and external storage controllers like the ATTO XstreamCORE are easier and more affordable than ever. IT administrators can architect a solution using components they already own or design to a reference architecture without much budget or specialized skills.



Harness the performance of SSD Flash and reduce latency with Fibre Channel

If you require solid-state drives (SSDs) to enhance performance, there are few protocols that can harness SSD speed and latency as well as Fibre Channel. If making an investment in SSD technology with a focus on speeding up a high-performance data center, low latency technology that can harness SSD capabilities is vitally

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ABOUT ATTO TECHNOLOGY, INC.

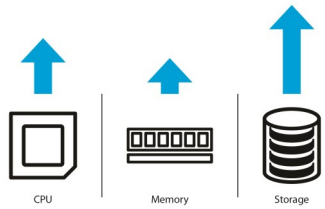
For 30 years, ATTO Technology, Inc. has been a global leader across the IT and media & entertainment markets, specializing in storage and network connectivity and infrastructure solutions for the most data-intensive computing environments. ATTO works with partners to deliver end-to-end solutions to better store, manage and deliver data. Working as an extension of customer's design teams, ATTO manufactures host and RAID adapters, network adapters, storage controllers, Thunderbolt™ adapters, and software. ATTO solutions provide a high level of connectivity to all storage interfaces, including Fibre Channel, SAS/SATA, iSCSI, Ethernet, NVMe, NVME over Fabrics and Thunderbolt. ATTO is the Power Behind the Storage.

important. You can build your own solution using new industry standard JBOF (just a box of flash) enclosures that were assigned the big data flash category by IDC. These enclosures provide a SAS interface that presents each device to the outside world. The ATTO XstreamCORE™ can take hard-disk drives (HDDs) and SSD SAS devices and assign LUNs so that servers can pool and share them at a high rate of speed with very little added latency. You can also choose from pre-configured all-flash arrays that combine compute, flash, software and memory in a chassis in a similar method to hyperconverged storage arrays.

KEEP STORAGE, COMPUTE, MEMORY, AND NETWORKING SEPARATE FOR MORE CONTROL OVER BUDGET AND ARCHITECTURE

Many of today's storage solutions require a virtual storage appliance of some kind that requires compute and memory resources usually in the form of a closed hardware platform (i.e. a physical server) and software provided by the vendor. By placing storage, compute and memory in the same box, organizations lose flexibility while needing to spend more budget dollars on the combined package. On initial implementation, multiple hyperconverged nodes need to be purchased to provide data protection, then when a storage or compute upgrade is needed another complete node needs to be purchased in order to scale.

By keeping these components separate, IT administrators have more control over their budget and architecture. They can add storage or servers as needed instead of adding storage, compute and memory all at once, when not all components are needed. When you utilize this model a higher performing storage network is also enabled to move data faster between nodes than hyperconverged storage solutions.



With the ATTO XstreamCORE storage controller, administrators can build a storage solution as budget and user demand dictates by using any server, storage, software and hypervisor. The open, modular configuration of the XstreamCORE storage controller gives IT administrators the freedom to architect a solution based on their needs while providing industry leading performance.

MOVE DATA. FAST.

The ATTO XstreamCORE storage controller features a hardware acceleration engine that accelerates all reads and writes to achieve 3M 4K IOPS and 12GB/s throughput when attached to off-the-shelf SAS storage. Since the XstreamCORE decouples storage from servers, IT administrators can scale up storage using SSD and HDD devices of their choosing while also adding compute on an as-required basis. Additionally, the XstreamCORE features hardware data mover technology that is VMware Ready certified with support for VAAI. You will see instant benefits in VM environments when adding the XstreamCORE in front of new or existing SAS storage.