

Software Defined Storage

Building your own storage solution involves server-side software that provides many of the features typically found in flash arrays. Software Defined Storage eliminates paying for the same features multiple times and makes software upgrades less painful. Features may include:

- End-to-end checksum protection
- Self-healing
- Copy-on-write
- Automated storage tiering
- Block storage support
- Thin-provisioning
- Deduplication and compression
- IP-based replication
- RAID protection

All-flash storage arrays vs. SSDs

All-flash arrays are typically all-in-one proprietary systems that package software, flash memory and hardware in a single box and leave little room for expansion outside of the vendor's proprietary ecosystem. But with prices for SSD drives dropping, high performance storage controllers like the ATTO FibreBridge 7500 now provide a viable alternative by allowing users to build their own, open storage solution using SSDs from leading manufacturers paired with off-the-shelf enclosures and Software Defined Storage software.

Build Your Own High Performance Shared SSD Flash Storage

Challenge

When building out a virtualized data center, the stress that virtual machines (VM) place on primary storage needs to be taken into account. Any increase in VM density can drag down application performance — a problem aggravated by the I/O Blender Effect, where multiple simultaneous I/O requests issued to a hypervisor by multiple VMs adds latency. Other challenges include the high cost of storage arrays designed specifically for virtualized environments, along with the proprietary data formats that such arrays use for storage management services.

Solution

Even with their added cost and complexity, flash storage arrays are seeing increased use in virtualized environments. Compared with regular hard disk drives, flash is extremely efficient in responding to application requests. Flash arrays also minimize the I/O Blender effect through the use of high-performance SSDs to cache read/write data.

Fortunately, the advent of Software Defined Storage has created new possibilities for assembling high performance, low cost per-gigabyte flash storage solutions that combine storage controllers with commodity SSDs. ATTO Storage Controllers provide the flexibility to use off-the-shelf SAS JBOD or JBOF enclosures that aggregate up to 240 drives while adding Enterprise Fibre Channel for network connectivity. And since Software Defined Storage software manages features and services, ATTO Storage Controllers remain agnostic with no proprietary data format written to the attached storage arrays.

With consistent latency measured at under 4 microseconds, ATTO's 7500 Storage Controller has the lowest latency of any advertised storage product on the market. It also provides the fastest way to create a shared pool of storage for a large number of servers, each with a direct connection for immediate access to data. ATTO Storage Controllers allow multiple servers to share SSD storage at very high rates of speed — up to 1.47 million IOPS. This eliminates the need for each server to have its own high-priced, dedicated, non-sharable SSD or flash storage.

ATTO Storage Controllers are undergoing VMware Ready certification and will support the vStorage API for Array Integration (VAAI) framework from VMware. This allows tasks such as ATS, Clone Blocks, XCOPY, Full Copy, Block Zero, Write Same, Native Snapshot Support and Thin Provisioning to be offloaded from the VMware server virtualization hardware to the Storage Controller hardware.



