

Reduce Costs and Increase Performance with Software Defined Storage

The rise of e-commerce, social media and the Internet of Things has contributed to an explosion in data—800% growth is expected over the next five years alone. Data is an organization's most valuable commodity, but provisioning for intensive data growth can strain the budgets of IT departments, especially ones with a traditional, infrastructure-centric mindset.

A transition is underway from standard data center infrastructures to cloud-enabled, software-defined ones that permit resources to be scaled in response to evolving business needs. And with IT managers under pressure to trim expenses, there's a new openness to flexible system architectures that sidestep vendor lock-in. Virtualization created the first step in this direction by providing software tools to maximize computing hardware resources. And now Software Defined Storage (SDS) extends those same benefits to storage infrastructure.

SDS enables a modular approach that abstracts the software layer from hardware while adding management and automation capabilities. As with virtualization in the compute realm, heterogeneous storage resources are presented as a combined pool. The SDS software then enables features including provisioning, replication, deduplication and compression—all of which are removed from the physical storage where they invariably increase latency and decrease overall performance by taking up processing resources.

A 2015 survey by Research and Markets (www.researchandmarkets.com) projected a compound annual growth rate of 34.6% from 2014 to 2019 for SDS. At this point, major players in the SDS market include a growing list of small companies and startups, as well as major storage manufacturers including EMC, IBM, NetApp, Dell and HP.

There are two types of Software Defined Storage solutions:

- Software-only (software providing storage-related services and features is user-installed on commodity computer hardware)
- Bundled (software providing storage-related services comes bundled on vendor-supplied appliance with server, network and storage)

Key benefits to Software-only solutions include flexibility and cost-savings: Users can select their own hypervisor as well as mix and match commodity off-the-shelf hardware server and storage resources, with the SDS software enabling high-level functions including thin provisioning, access control and data movement.

With Bundled solutions, users benefit from the ease of deployment that comes with purchasing a pre-packaged system. In this case, scaling is a matter of buying additional appliances to increase compute power and storage capacity. With all components coming from the same vendor, there is the additional benefit of a single source for hardware and software support.

Storage Controllers and SDS

Storage controllers are key to unlocking the full potential of SDS. The storage controller traditionally performs the compute functions in a storage system and has typically been deployed as an integrated component delivering services such as volume creation, data protection and data movement. Over time, high-speed networks such as 16Gb Fibre Channel have increased performance demands on storage controllers. More recently, advanced services such as thin provisioning and automated tiering strategies utilizing SSDs have further increased the requirements for processing horsepower.

ATTO Technology's FibreBridge 7500 Storage Controller represents a new product category that provides a high-performance hardware platform for building out a Software Designed Storage ecosystem. The 7500 brings 16Gb Fibre Channel SAN connectivity to commodity SAS drives, enabling multiple servers to share the same pool of low-latency storage. And with its ability to accelerate all reads and writes in hardware, the 7500 is ideal for demanding applications including Big Data Analytics, Large Archives, Media & Entertainment Services and Hyperscale.

What's unique about the FibreBridge 7500 is its open architecture. Unlike traditional storage controllers, it has no server-like compute functionality to run applications. Users integrate the 7500 directly with their SSD or HDD storage shelves, and depend on the Software Defined Storage application running on an attached server or virtual machine to provide features and services. With no onboard storage, OEMs and systems integrators can architect build-it-yourself storage solutions based on the performance needs of a particular application. With up to 1.47M 4K IOPs and <4 microseconds latency, the 7500 provides industry leading performance. In addition, ATTO's management tools complement the automation and tuning features that SDS software provides.

Three Reasons Why You Need SDS— and ATTO's FibreBridge 7500

#1: Lower Capex and Opex

An SDS infrastructure based around ATTO's FibreBridge 7500 storage controller can lower Capex by enabling users to build high performance storage solutions with low-cost commodity hardware. The 7500 also permits scaling up storage capacity simply and cost-effectively by aggregating up to 240 SAS SSDs/HDDs. With all SSDs, the FibreBridge 7500 accommodates up to 384TB of storage capacity today using 1.6TB SSD drives for as low as \$.79/GB. When mixing SSDs with HDDs, the FibreBridge 7500 enables OEMs and systems integrators to build hybrid storage solutions for as little as \$.14/GB. Capacity when using 6TB HDDs (216 total) alongside 1.6TB SSDs (24 total) currently reaches up to 1.3PB.

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Another advantage to SDS is simplified management, which reduces the cost of maintaining storage infrastructure. Services can be automated, and policies created per application to meet service-level agreements. With ATTO's 7500 seated at the hub of an SDS-based storage infrastructure, users additionally benefit from ExpressNAV™ Storage Manager, a remote management interface that complements the management features of SDS with storage controller configuration and diagnostics. ExpressNAV's capabilities include troubleshooting, logging and tools to monitor performance parameters such as latency, throughput and IOPs throughout the whole system.

#2: Enhanced agility and performance

The open, modular ecosystem that SDS creates allows for organizations to quickly adapt storage infrastructure for particular business needs and applications. There are also significant performance benefits that come with migrating features and services out from the physical hardware to a software layer above storage.

When used as an SDS platform, ATTO's FibreBridge 7500 permits storage resources to be pooled, centralized and aggregated in response to workload changes. The 7500 additionally gives users the flexibility to customize the proportion of SSD/HDD drives to meet performance and/or capacity requirements. And with control software decoupled from the underlying hardware, features such as deduplication, data protection and compression are separated from the storage array where they limit performance by taking up CPU resources and increasing latency.

With over 1.47M 4K IOPS and a high rate of throughput, dual controller FibreBridge 7500 configurations provide sufficient performance for the most demanding applications. And the 7500 only adds a consistent latency of <4 microseconds, making it one of the fastest controllers available. When used to build a storage solution with off the shelf components, \$/IOP cost is as low as .09 per IOP for All-SSD implementations, and an even lower \$.05/IOP for SSD/HDD combinations.

#3: Easy Upgrades

Another way SDS brings agility to storage infrastructures is by allowing for easy software and hardware upgrades. With the FibreBridge 7500, hardware refreshes can be executed with a high degree of customization. A key benefit here is improved storage utilization, which in turn means an overall lower TCO. It also eases data migration since the movement of data between storage tiers can be carried out in a non-disruptive manner.

ATTO has already qualified the 7500 with a range of third-party hardware and software vendors, including Dell, HP, Intel, Supermicro, HGST, AIC, Qlogic, Quanta and Emulex, and the list of company alliances continues to grow.

To learn more about the FibreBridge 7500, visit attotech.com/products/product.php?cat=21&scat=40&prod=132&sku=FCBR-7500-DPS. To learn more about ATTO Technology's full range of network and storage connectivity products, visit attotech.com



ATTO FibreBridge 7500 Storage Controller