

STORAGE SWITZERLAND REPORT

VIRTUAL STORAGE INFRASTRUCTURE – CAN SOFTWARE TAKE CENTER STAGE?



We've been conditioned to think of infrastructure as hardware. Is it time to rethink? The emulation of server hardware through software virtualization can be thought of as the first step in that transformation. It gives us new, more powerful and flexible ways to harness and optimize processing resources in the data center. In a similar vein, it is possible that the approach to storage can evolve to gain additional hardware independence, better use of disk capacity and major cost reductions, creating a Virtual Storage Infrastructure.

The process starts by moving the focus away from individual disk arrays and onto software-defined logical resources made possible by storage virtualization. Through the combined use of server and storage virtualization software the benefits of an end-to-end virtualization strategy may be better realized.

Storage virtualization software can help simplify how IT assets are provisioned and managed. It redirects the attention away from the details of physical variations between different models and generations of equipment, allowing for concentration on the more general capacity, availability and performance characteristics. As a result the collection of mixed hardware can be addressed as a dynamic pool, capable of handling shifting workloads rather than being married to specific applications. In doing so, it removes some of the limitations represented by the four walls of the data center and the sheet metal enclosures around servers and disk drives, which is in essence the cornerstone of this type of virtualization.

The business and technical rationale for deploying storage virtualization software is motivated by the benefits that data centers enjoy with server virtualization; dramatic improvements in utilization, ease of management, simpler non-disruptive

upgrades, higher availability and lower costs through the commoditization of hardware.

Some storage virtualization implementations can actually provide faster read/write access to disks through SAN-wide caching. A transition to a virtual storage software infrastructure is one that should be considered by data centers of all sizes. As IT planners realize all the cost reductions and operational efficiencies of deploying server and desktop virtualization into the enterprise, they will find that applying the same capabilities and benefits to their backend storage resources will be equally compelling and certainly should be explored.

What will Speed Adoption?

Prior to the introduction of SAN technology, storage purchases had largely been governed by embedded feature/functions within the array and by physical hardware attributes like scalability and reliability. Once SANs had been widely adopted, customers faced with a variety of models and brands urged the major storage suppliers to provide some form of common management umbrella. In response, several of them announced initiatives to support potentially competitive storage devices under a unified management console.

But those efforts proved rather narrow and prohibitively expensive as reflected in very insignificant adoption rates. So despite all the marketing of major vendor support for heterogeneous storage management, storage-buying patterns remain largely unaltered, and to a wide degree, storage remains a separate island in the data center – underutilized and isolated.

IT buyers tired of paying a premium for hardware – only to be locked into one hardware vendor, are looking for ways to increase their options for purchasing storage and more importantly, seamlessly integrating the new gear alongside their existing environments cost-effectively.

This is propelling them to consider the adoption independent, 3rd party storage virtualization software on which to base their infrastructure. As IT budgets remain static or shrink, organizations are pressed to seek out viable ways to manage more storage with less people, all while driving down capital and operational expenditures. Indeed, when observing the technology-refresh purchases taking place in today's economy, it is fairly obvious that IT decision makers are not merely adding compute or storage capacity with updated bells and whistles. Instead, IT managers are looking for solutions which deliver needed physical resources while actually delivering tangible hard economic savings through device-independent, software intelligence that would otherwise not be achievable or sustainable.

Breaking Free

Comprehensive storage virtualization software offerings like those from [DataCore Software](#), a pioneer in the storage virtualization space, offer a superset of the advanced feature/functionality found on high-end storage systems, yet can be utilized across disparate disk resources and centrally managed. The same rich set of functions cover direct-attached and SAN-connected storage arrays, regardless of model or manufacturer. This software typically runs on standard x86/x64 servers and is fully portable between hardware generations so that customers are not faced with the usual obsolescence of proprietary storage appliances.

This capability provides data center managers with a number of distinct advantages.

Firstly, whenever a storage asset needs to be retired or upgraded, the migration process is non-disruptive and greatly simplified. The new array is presented to the storage virtualization engine and the data that was contained on the old array is transparently moved to the new array. No scheduled downtime is necessary.

Secondly, since command and control of the storage environment is in the hands of the overarching storage virtualization software, the backend storage can be purchased “bare bones”, without all

the costly embedded firmware licenses. This has the effect of commoditizing storage and empowering the IT buyer to negotiate very aggressive discounts from multiple storage vendors.

Another interesting advantage of software-based storage virtualization kicks in when the software leverages “Moore's Law” through the use of increasingly faster CPUs to speed up I/O processing. In effect, the storage virtualization server puts its internal processors and memory to use as high-speed caches for accelerating disk I/Os from anywhere in the virtual storage pool. Furthermore, this extra processing capacity helps offload advanced functions from the application hosts and the disk subsystems to ensure better quality of service across the board. This insulates the business from needing to incur costly proprietary disk controller storage upgrades and helps greatly extend the usable life of all storage assets on the data center floor.

What's more, certain storage virtualization software can run as a virtual machine (VM) instance, alongside application VMs helping customers to further improve server resource utilization and truly maximize efficiencies throughout the data center.

V for SaVings

Through the software virtualization of the server and storage infrastructure, organizations can drive significantly lower TCO throughout their entire computation complex; less physical assets to house, power and cool, manage and procure. The financial and operational advantages are immediate. In fact, anyone considering a server virtualization rollout should schedule the inclusion of storage virtualization software from day one. Many are repurposing application servers freed during server consolidation to run the storage virtualization software.

Over the last five years a shift has occurred with how data centers deploy computing resources. Through server virtualization, organizations are benefiting from higher processor utilization, ease of management and lower overall costs of computation. This model has been highly adopted industry-wide and shows no signs of abating. Given that the hardware-oriented approach towards managing server resources has been replaced with a software-centric methodology, it is time for the same model to be aggressively applied to the management of disparate storage resources in the data center.

About Storage Switzerland

Storage Switzerland, is an analyst firm focused on the virtualization and storage marketplaces. For more information please visit our web site: <http://www.storage-switzerland.com>.