STORAGE SWITZERLAND REPORT

VIRTUALIZATION IS THE ALTERNATIVE TO 'RIP AND REPLACE' FOR UPGRADING STORAGE

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Many IT organizations treat storage arrays as disposable, albeit relatively costly, equipment that must be frequently replaced to keep up with data growth and the need for performance and new features. And with each new purchase they 'are reminded just how disruptive and expensive it can be to throw away last year's model to make way for the shiny new one.

But two major developments should make them think twice before they 'rip and replace' any more disk subsystems. One is the current economic climate and the other is the power of virtualization. Together, they've made storage virtualization software from companies like DataCore an essential building block of modern IT infrastructures.

Storage virtualization from independent software vendors can effectively extend the useful life and value of existing storage assets while bridging functional gaps between different models and suppliers of storage hardware. The result is more room for growth, better uptime, faster performance and broader feature/function coverage - without throwing away the current investment. Just as important, the software lets you swap out storage devices behind the scenes when they fail or become obsolete without upsetting applications. This takes much of the pain out of upgrades and modernization.

Implementing a storage virtualization system like this is typically done by relocating all direct-attached and SAN-based storage devices behind a pair of standard servers where the storage virtualization software runs. The devices being pooled don't have to be compatible with each other, or even be from the same manufacturer. Some customers also run the software on virtual machines.

Adding storage virtualization in front of a new or existing array can provide a number of significant improvements, and help satisfy the needs that drove the upgrade in the first place. Some of these benefits that virtualization can bring to a heterogeneous storage infrastructure include:

Provisioning

Virtualization consolidates storage pools on different platforms and makes it available for allocation, when and where it's needed. This 'use what you need' model, the cornerstone of virtualization technology, enables capacity to be allocated independent of the storage containers it physically comes from, resulting in lower administration costs, higher utilization and postponed storage purchases.

Storage Tiering
This fundamental efficiency strategy is enabled by virtualization. Pools of lower tier storage can be provisioned to the applications that can use them, easily replacing storage from higher tiers and reducing costs. Software virtualization solutions are particularly effective with storage tiering because they can accommodate different classes of storage from different manufacturers. Adding a high-capacity or 'economy tier' to an existing storage infrastructure is one of the most common implementations of storage tiering.

Performance
Software virtualization solutions harness the memory and CPU resources from the general purpose servers on which they run to provide high-speed disk caching. They can also load balance storage I/O across available disk resources and overcome storage-related bottlenecks.

Flexibility
Capacity expansion and allocation are simple and non-disruptive in a virtualized environment. With the storage resources independent of users or processing, expansion can occur in a number of ways using many different sources. Unlike traditional disk systems, a new storage array can simply be added to the environment and the new capacity pooled for use in minutes.

Improved Uptime
Storage virtualization software can eliminate storage-related downtime, planned or unplanned. Single points of failure are reduced by synchronously mirroring critical data between physically separate nodes in the next room, next campus, or possibly on the other side of the city. Each node is fully capable of fulfilling I/O requests from any of the applications.

Disaster Recovery
Asynchronous, remote replication, included by some of the software suppliers, can get copies of critical data off-site for DR compliance. With storage virtualization software, different models of storage equipment can be employed at the DR site than is used at the primary site. This practice can also take advantage of disk arrays that have been 'retired' from the main data center.

Simplified Maintenance
As virtualization abstracts the physical storage arrays from logical users, it makes maintenance of these resources transparent to applications. When upgrades or system repair are required, users' volumes can be retrieved from their redundant physical locations non-disruptively.

Thin Provisioning
Thin provisioning allows the logical 'over-subscription' of storage space to applications, like databases, enabling the growth of these applications without actually committing the storage and incurring the cost. It also saves significant amounts of administration time and data movement tasks associated with traditional expansion methods. A storage virtualization solution can implement this technology in a system that includes disk arrays from any vendor.

Centralized Management
Virtualization can bring all disk array management tasks into a single 'pane of glass'. Since all storage in the virtualized environment is controlled by the software, SAN-wide reports can be produced, simplifying management and reducing admin tasks. This enables analysis of resource consumption and utilization to support capacity planning and efficient storage purchases.

Most typically, storage virtualization software is implemented into an environment on one of three occasions: 1) before a major storage upgrade, 2) in conjunction with server virtualization, or 3) when revisiting a business continuity plan. This approach fits with the common sequence of architectural, operational and budgeting steps and leads to a smooth implementation.

Storage virtualization is a fundamental resource utilization and management efficiency technology that's common to the disk array industry. Software based virtualization solutions, being independent of the disk arrays themselves, offers the ability to add significant capability to an existing infrastructure, without 'ripping and replacing' assets. This enhancement strategy can provide multi-platform storage tiering, flexible storage provisioning, effective business continuity, simple remote DR solutions and a number of advanced storage technologies while preserving the current investment.