Storage Virtualization: Its Changing Definition

Companies of all sizes, operating in global markets are producing enormous amounts of business-critical information that needs to be stored, protected and more importantly, rapidly retrieved. The voluminous content comes from many sources – enterprise applications, company-wide email, corporate databases, e-commerce transactions and visual media. The growth of data storage is staggering, and it's showing no signs of slowing down.

It's no surprise, then, that companies are struggling for the best method to contain the costs of managing this exploding demand for highly reliable, available, easily accessible repositories. Many have been intrigued by the buzz around storage virtualization: the promise of truly open, cross-platform storage control that hides the rigid characteristics of physical devices under more flexible and manageable logical objects. Still, they find themselves wondering: What exactly is it – and is it too good to be true?

I Can't Spell it But I Am One

What is storage virtualization? Why is there a huge gap between what some vendors say they'll deliver – and what end-users actually get. This article will explore some of the key issues and questions around virtualization to help end-users ascertain if the products they're considering constitute true virtualization. If nothing else, a suggested 'litmus test' should help weed out those who merely masquerade as virtualization solutions.

Interpreting the Signals

As a company considering virtualization, it's important to read between the lines to determine the orientation of the advocate of storage virtualization. For example, those dominant vendors most threatened by a technology are most likely to define a long list of desirable features not likely to be achieved in our lifetimes. While this allows them to share in the limelight, it also has the effect of postponing buying decisions until that vendor can come around with an alternative. On the other hand, vendors that invented the innovative technology and their immediate followers may have more genuine interest in having the approach validated, and can point to live customers taking advantage of its benefits today.

The Bottom Line: Economics

Evaluating virtualization alternatives can be relatively easy – it boils down to a few key questions (see Litmus test below). But in larger enterprises, getting buy-in from the decision-makers on a relatively new methodology may be the bigger challenge.

At the end of the day, it's not the techno-jargon that will convince the holders of the purse strings to move to virtualization – they either want to know what the solution will save them, or how it will make them money. With virtualization at the advent of widespread acceptance, only experienced suppliers are in a position to quantify the economic consequences of a virtualized environment.

To ensure tangible benefits, companies assessing a virtualization solution should look for return on investment (ROI) and total cost of ownership (TCO) analyses that can distinguish the financial projections from competing approaches. It soon becomes clear that only advanced virtualization alternatives can combine savings in time and labor, reclaimed opportunity costs, and enhanced application performance, to defend their compelling claims.

Who are the immediate beneficiaries?

While virtualization brings wide ranging operational and economic value to an organization, it stands to deliver the most significant time and effort savings to system administrators and indirectly to the business applications they control. To the system administrator, ideal virtual disks can be reassigned effortlessly from a central location without making time-consuming physical modifications to the hardware or disrupting running applications. To the user or application, a virtual disk appears to be an ordinary local disk. The better virtualization choices make this ordinary disk perform extraordinary feats with substantially faster response.

The result? A storage infrastructure that shields applications from the day-to-day storage management dynamics – sparing end-users downtime and I/O delays, while eliminating much of the labor-intensive handholding that would be required without it.

The Span of Virtualization

Given the growing concern over information asset protection, can a company look to virtualization to assist it in business continuance and disaster recovery across distant sites? In some cases, the answer is a definite 'Yes.'

With the proliferation of remote and mobile workers and their data scattered among multiple sites, it becomes more and more important for virtualized environments to span the scope of a company's network – be it a campus, a state, a distant branch**.** Virtualization has no reason to be confined to a box or a room. In fact, it should supply affordable redundant copies of vital information in separate locations for consistent access to the same data by any number of authorized users. Virtualization should be independent of the LANs, WANs and SANs that link storage pools together. That is the whole idea behind divorcing the applications from the storage hardware.

Is it File Sharing?

The subject of networks brings up another source of confusion- the distinction between block virtualization and file sharing. Sometimes these activities are pitted as competitors, when they are complementary. Storage virtualization has generally been associated with the handshake between computers and disk blocks. Most users, on the other hand, deal with file names and shared folders, completely unaware of the translations taking place on their behalf.

Some companies redefine file sharing as a virtualization offering, when in fact, file sharing is simply one of many applications that can benefit from a virtualized pool of disk resources. Therefore, it would not be unusual to see a collection of Network Attached Storage (NAS) filers running alongside database servers and messaging applications, being fed by a common virtual disk pool. At the end of the day, all these "servers" need well-behaved disk supplied to them on-demand by the block virtualization facility.

Impersonators or Impostors: Don't Get 'Locked In'

Think of virtualization as a layer that insulates applications from the undesirable characteristics of mixed disks, arrays, host bus adapters and even fancy storage controllers. Ideally, one would be able to change the underlying hardware on either side of this divide and continue business as usual – regardless of the brand of hardware and its technology base.

Using this model, the introduction of a different server supplier and a different operating system should not compromise a company's ability to take advantage of a virtualized storage pool. Even opting for a different make of host bus adapters should be inconsequential.

With some virtualization alternatives, there is a real danger of being locked in to specific hardware suppliers – and costly capital equipment contracts. In effect, such approaches depend on proprietary characteristics intended to perpetuate a vendor's hardware product lines. This can severely limit a company's choices and negotiating power, when the next buying cycle comes around.

Sometimes, suppliers cloud the lack of openness under the guise of certification – in other words, if the other platforms that a customer wants to virtualize doesn't have the brand sticker or proprietary certification, it is forbidden from 'playing' in the virtualization scheme.

Virtualization should imitate disks. No special rules required. If the virtualization choice that a company is considering is imposing new rules, new certifications and new stickers, it could be just an impostor.

Virtualization For All?

At its best, virtualization leverages all of a company's storage investments, delivers enormous savings in time, labor and management required to administer storage, and provides scalability and flexibility to accommodate change and future growth.

When a data-driven company with a mix of storage hardware in place faces a serious increase in the volume of information it stores, the time is right to consider virtualization. Indeed, because of virtualization, companies have new options – available today – that manage their storage more simply and demonstrate a very healthy benefit to their bottom line.

The Litmus Test: What Can I Get Out of Virtualization?

One way to navigate the morass of virtualization definitions is to ignore the "features" promised by vendors and instead concentrate on the "benefits." In other words, assess the true, real-life results of competitive virtualization offerings rather than be swayed by vague feature descriptions.

Companies considering virtualization as a storage consolidation strategy can make their way through the turbulent waters by asking the following questions. The answers can be eye opening:

- Is the virtualization solution in production today or merely a statement of future direction?
- Can a particular solution virtualize anyone's disks or just those from that particular virtualization supplier?
- Are virtualized disks better behaved than the real ones?
- Must I settle for the slow behavior of my existing devices, or can virtualization improve their performance?
- Which elements of my infrastructure need to "co-operate" in order for this virtualization solution to work?
- Am I managing a pool of virtual resources, or really just fragments in individual boxes?
- Does the virtualized environment grow and shrink to match my business needs now – and in the foreseeable future?
- Do I have to toss my current disks out to make virtualization work for me?

For more information on SAN virtualization contact DataCore Software Corporation at www.datacore.com or email us at info@datacore.com.