



Riding the Virtualisation Simplification Wave

Any new wave that causes disruption of IT infrastructure gives districts a chance to reevaluate their choices.

Server virtualisation - which took root in large enterprises with expansive (and expensive) data centers - is now beginning to deliver functional and economic benefits to nearly all classes of organisations willing to take the virtualisation plunge, including Education who are beginning to realise the benefits of VDI (virtual desktop infrastructure). Compared with the traditional approach of buying and managing independent PCs capable of running the latest generation of applications, clients capable of running virtual desktops are less expensive to purchase and managing each user's computing environment centrally on a server can cut IT labour costs a great deal. Instead of traveling to multiple locations, PC maintenance and backup is performed at the Data Centre at a ratio of 1 server for each 30 virtual desktops. Virtualisation automation environments lower labour even further.

In other words, virtualisation software solutions like VMware View 3 or Citrix's XenDesktop with Provisioning Server are rapidly gaining footholds in Education IT departments because they let organisations do more with less.

The disruption obviously affects the purchase of client machines but is pervasive throughout your IT infrastructure. The key opportunity for reevaluation is in storage and the networking of your servers. The desktop virtualisation wave makes a Storage Area Network (SAN) a virtual infrastructure requirement. If you're going to benefit from desktop virtualisation, you need to commit to a SAN. And that means reevaluating the traditional Fibre Channel approach to SANs, because the expense and complexity of Fibre Channel SANs undermine the simplicity and cost savings you're looking for server virtualisation to provide.

What's desktop virtualisation got to do with storage?

In traditional physical PC environments, of course, storage for the operating system and applications and most of a user's data is on the machine itself. Even without virtualisation, a SAN allowed you to control costs and increase network flexibility by pooling and sharing storage capacity as a separate entity from either server or client processing power. A SAN's central, shared storage pool meant you

no longer had an email server that was constantly running out of storage while your web server storage was barely touched. Consolidating all storage resources into a shared central pool brought with it better capacity utilisation, easier management and simplicity for running routine backups. User data was safe and secure on the SAN compared to keeping it on client machines, and far easier to back up and restore.

Fibre channel has been the technology of choice for SANs, delivering high performance and reliability with the downside of very high costs and complexity.

That downside became clear several years ago when Microsoft tested whether IT professionals from midsized organisations could install a Fibre Channel SAN in six hours or less, only to discover that the task was so complex that none of the IT generalists involved could install an FC SAN at all. Based in part on that experience, Microsoft placed its bet on the emerging alternative to Fibre Channel SAN by shipping iSCSI initiators with its operating systems.

The iSCSI SAN is a key part of the disruption that's spreading the benefits of virtualisation beyond the primary data center in large enterprises to data centers in virtually all size organisations including educational entities. iSCSI SANs extend a venerable hard disk access standard across your existing networks to leverage the maturity of your Ethernet familiarity and platform. Moreover, they don't have Fibre Channel's steep price point. The best of the iSCSI bunch have enterprise-class performance, reliability and data availability yet no longer require proprietary knowledge or expensive storage experts. An IT generalist can handle the job, and even experts will appreciate the flexibility they bring to what was an inflexible and labor intensive area of IT infrastructure.

You need to make sure you're getting Fibre Channel class performance and availability, of course. Many iSCSI products serve secondary or near-line applications. For server or desktop virtualisation, iSCSI storage arrays that provide more I/Os per second of processing power and are capable of driving multiple 1- or 10-Gig host network ports at their full line speed are de rigeur. The demands on a SAN that follows the first bell with loading of all student and teacher virtual desktops can be extraordinary, particularly if inefficient setup results in attempting to pull individual desktop images from the SAN for each virtual desktop. With proper storage provisioning, which includes the sharing and streaming of a single golden image, a feature incorporated in both VMware View and Citrix XenDesktop Advanced edition with Provisioning server, a high performance SAN can completely avoid the "VDI boot storm" that has sometimes resulted in hour-long waits for desktops to boot.

The SAN also become educational mission critical in a VDI-based 1:1 computing environment, which makes an absolute necessity of resiliency based on the data protection provided by RAID, the redundancy of power supplies and backup cache batteries, and most importantly dual controllers.

Virtualisation environments not only increase utilisation by putting multiple servers and virtual desktops on a physical box, they also make it easy to move these virtual servers to other physical boxes as demand ebbs and flows. That means that all physical and virtual machines need to have access to the same storage, in other words, they need a SAN.

iSCSI-based SAN technology is great at freeing desktop VMs to move around a virtualised environment while remaining attached to their storage. Whereas Fibre Channel requires administrators to manually rezone switches and change permissions when storage relationships

change, iSCSI's IP-based protocol enables administrators to map virtual machines (VMs) directly to shared storage in the same familiar way they manage the relationship between physical servers and shared storage.

This seamless VM mobility without complex reconfiguration allows IT to respond quickly to workload fluctuations and evolving student populations. And an iSCSI network configured with the proper logical or physical separations has security equal to Fibre Channel..

How D-Link simplifies server virtualisation even further

D-Link made a strategic decision in 1997 to focus its own brand on affordable, manageable networking solutions, focusing R&D innovation on lowering total cost of ownership across its end-to-end networking solutions. D-Link's innovations in its family of iSCSI SAN arrays provide a case in point.

To get the level of data protection and performance appropriate for each application, traditional SANs require a set of disks to be grouped and dedicated to one RAID type and quality of service (QoS). The administrator has to manage a physical drive group for each quality of service class (RAID type, stripe level, and block size) needed to support optimal application performance. Free space in one group is not available to another group.

D-Link overcomes that rigidity with the kind of flexibility virtualised server environments get from being able to move virtual machines on the fly: D-Link's iSCSI innovation, virtualised volumes, can balance the load and expand overall capacity without shutting down mission-critical applications.

D-Link's iSCSI virtual volumes can span all drives within the storage array. A wizard carves out new volumes automatically using any available free space. The wizard assigns the appropriate QoS for the class of application on a granular, volume-by-volume basis. All capacity on all drives is available to all volumes.

Administrators do not have to manage multiple physical RAID groups or add a new set of drives when a group is full; they also can maximise performance. In a traditional architecture, there are fewer potential spindles to spread read/write operations across because each is dedicated to the RAID type of its group. With D-Link's virtual storage volumes, each volume can use as many disks as required for maximum performance.

D-Link's virtualised volumes vastly simplify volume movement, making it as easy as moving virtual servers between physical servers to balance workloads. Migration is difficult on traditional SANs, requiring allocation of a new set of drives even if enough space for the migration exists in current volumes. D-Link allows you to balance the storage load on the fly by moving some application types to higher performance media, changing out drives for a new generation drive technology, or simply expanding a volume without the need to take the SAN and your mission critical applications down.

Finally, D-Link simplifies SANs by not holding you hostage. Traditional SANs force customers to add capacity in sets of these exactly matched proprietary drives at steep prices. D-Link lets you mix and match the latest generations of drives at street prices. That means you're always tapping the latest generation of either high-capacity SATA or higher performance SAS drives to maximise price/performance. Moreover, D-Link requires no expensive support contract. Firmware updates are available on the web for no charge.

A veteran analyst weighs in on D-Link

“D-Link is in a great position right now because of the server virtualisation wave that’s overtaking the world,” says ESG founder and Senior Analyst Steve Duplessie. “If IT can save money and time, and save their hair by not having to rip it out configuring this stuff, they will, and it bodes well for D-Link.”

Duplessie notes that D-Link makes all of the technology necessary for properly revamping the network infrastructure surrounding servers in terms of bandwidth, nuanced security, and flexible storage. “D-Link’s technologies can stuff into every one of these nooks and crannies. It’s paramount that things are simple, and self-maintained. D-Link has iSCSI products with those kinds of easy-to-use, easy-to-install, inexpensive-to-acquire attributes. And yet they’re still not top of mind as a primary or secondary supplier, and they probably should be for almost any application.”



For more information: www.dlink.com