

## Removing Storage-Related Barriers to Server and Desktop Virtualization



**Carla Arend**

*European Storage Software and Services, IDC EMEA*

### What makes server, desktop, and storage virtualization attractive?

Virtualization is among the technologies that have become increasingly attractive in the current economic climate, with good reason. Organizations are implementing virtualization solutions to obtain the following benefits:

- **Focus on efficiency and cost reduction.** Virtualization technologies are implemented to increase the utilization of servers and storage in order to run the IT infrastructure more efficiently and at a lower cost. Organizations are consolidating many dispersed systems on fewer, larger, and centrally managed systems to obtain better control and increased flexibility of the infrastructure.
- **Simplify management and maintenance.** European organizations are using virtualization to reduce (planned) downtime by relocating workloads before systems undergo planned maintenance or upgrades. The speed of provisioning is increased by migrating virtual machines and desktops between physical platforms without impacting users. Peak workloads can be balanced between several servers to avoid performance bottlenecks.
- **Improve availability and disaster recovery.** Through the use of virtualization, two of the main obstacles for disaster recovery (DR) are overcome. European organizations can have fewer systems at the DR site to run the virtual machines and recovery can be done on dissimilar hardware, which both significantly reduce the cost of the DR site.

### What are the Challenges to Implementing Virtualization?

Despite its many uncontested benefits, virtualization is a transformational technology, which often presents organizations with a number of challenges as they move from a physical environment to a virtual one. These include:

- **Shared storage is required.** Before virtual machines and virtual desktops can freely move between different hardware platforms, they must have common access to shared storage. They rely on shared storage to transfer the running state of workloads between physical servers. This is generally accomplished by replacing direct-attached disks with storage area networks (SANs) that interconnect to multiple servers.

- **Everything is connected.** Whereas storage disruptions and slowdowns in physical machines are usually isolated to a single server or a single application, they are far more crippling in the virtual world. Any bottlenecks or single points of failure in a centralized SAN ripple across the entire set of interconnected servers and potentially hundreds of virtual machines and thousands of desktops.
- **Unforeseen project costs.** When organizations start to launch server or desktop virtualization projects, they are often surprised to find that the anticipated savings are consumed by a significant upfront investment in the required shared storage infrastructure. Much of the additional cost stems from the higher availability and performance requirements of centralized operations, particularly when they entail replacing existing, direct-attach disks with new, high-end storage devices and separately-priced SAN features.

When faced with these challenges, many organizations react by either:

- Settling for less capable equipment that exposes them to frequent downtime and bottlenecks,
- Postponing virtualization initiatives in the hope that future storage infrastructure costs will drop substantially, or
- Reducing the scope of their initial rollout to test and development scenarios that fit within their current budget.

### Extending Virtualization to the SAN

This IDC Viewpoint discusses an alternative to costly investments in high-end storage systems. It proposes using storage virtualization software to create scalable, robust SANs using equipment already in place. This hardware-independent approach complements server and desktop virtualization without compromising availability, speed, or project schedules. Properly implemented, value-added functions like replication and snapshots can be used in a heterogeneous storage environment across storage model and manufacturer boundaries. Just as importantly, it can significantly lower capital and operational expenditure for physical and virtual environments alike, making such transitional initiatives viable.

## Key Considerations When Choosing a Storage Virtualization Software Solution

- **Repurpose existing hardware.** Repurposing existing hardware, rather than ripping out and replacing hardware, saves a large portion of the virtualization budget. Look for storage virtualization software that lets you construct a SAN using servers and disks decommissioned during server consolidation. The software should be capable of turning a pair of existing servers into dedicated, highly available SAN controllers.
- **Aging hardware.** As they age, drives and disk arrays in the virtual pool can move down the tiers of storage to prolong their useful life. Virtualization software should also become more valuable, as the servers used to host it and the underlying storage hardware are being refreshed.
- **Diversity.** Chances are that you have a mixture of older and newer arrays, as well as different manufacturer brands in your environment. You also have different availability and performance needs for different parts of your environment. Central management of such a heterogeneous environment is key to ensuring the efficiency of the infrastructure. This can be achieved by standardizing on one vendor, or by deploying a software layer that masks the heterogeneous infrastructure and presents it as a homogeneous storage pool, thus adding value to the whole infrastructure.

- **Performance.** Some software designs merely redirect I/Os. They slow down applications by adding latency. Sophisticated storage virtualization solutions implement SAN-wide caching techniques to eliminate I/O bottlenecks. They effectively improve the performance realized from the assets in the storage pool.
- **Licensing.** Depending on the growth pattern of your data and the rate of change in your environment, you need to determine the most appropriate licensing model. Capacity licenses make it easy to plan for license cost, if you know your capacity growth per year. Beware of licenses locked to a particular hardware appliance or subsystem, which become obsolete as the underlying platform ages.

### IDC recommends:

- Choose storage virtualization software that is not tied to any one hardware vendor so that you will have the most latitude when selecting future devices.
- Ensure that the storage virtualization software you pick for virtual systems also addresses your physical servers and competing server virtualization platforms. Otherwise, you may end up fragmenting the IT environment that you are eager to consolidate.

This IDC research document was published as part of an IDC continuous intelligence service, providing written research, analyst interactions, telebriefings, and conferences. Visit [www.idc.com](http://www.idc.com) to learn more about IDC subscription and consulting services. To view a list of IDC offices worldwide, visit [www.idc.com/offices](http://www.idc.com/offices). Please contact the IDC Hotline at 800.343.4952, ext. 7988 (or +1.508.988.7988) or [sales@idc.com](mailto:sales@idc.com) for information on applying the price of this document toward the purchase of an IDC service or for information on additional copies or Web rights.

Copyright 2009 IDC. Reproduction is forbidden unless authorized. All rights reserved.



IDC is a subsidiary of IDG, one of the world's top information technology media, research and exposition companies.

Visit us on the Web at [www.idc.com](http://www.idc.com)

To view a list of IDC offices worldwide, visit [www.idc.com/offices](http://www.idc.com/offices)

IDC is a registered trademark of International Data Group.