



IDG IT Optimization Blog

Infrastructure Optimization is Critical to Virtualization and Private Cloud Success

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Moving into 2012, as CIOs and IT management look beyond consolidation and basic server virtualization, top priorities include streamlining and optimizing IT operations. Building on the accomplishments of virtualization, organizations are looking at how to expand virtualization and its benefits and move toward private cloud. Interestingly, although over 90% of organizations have implemented server virtualization to some degree, only 25-35% of the total server population has been virtualized. If the benefits of virtualization are so strong, why is it that the percentage of servers that are virtualized is still so low?

The answer is that as organizations attempt to expand virtualization and move down the road to private cloud, there are a number of pain points that present barriers to that expansion. For several years, the top pain points reported by IT managers have consistently included storage and backup. These are still high on the list of pain points, but in the last few years, according to our ongoing FOCUS Research studies, performance issues became the number one pain point. Of course, performance issues are often directly tied to storage issues. Networking issues have also jumped up in the top five pain points, also often at the root of performance issues.

We see these issues play out in multiple ways in different IT organizations, but there is generally one common factor – lack of optimization (backup, storage, and networking) for today's dynamic virtual world. Most organizations jumped on the virtualization bandwagon for consolidation benefits, and moved quickly to virtualize the low-hanging fruit – web servers, file servers, print servers, etc. These initial virtualization projects were very focused on the servers, and generally did not address changes to the infrastructure, other than what was necessary to provide connectivity and the required storage.

Backup procedures were generally unchanged, and simply used the existing backup software, running inside virtual machines. As hypervisors improved, and consolidation ratios increased however, these old backup methods became bottlenecks, often limiting the number of VMs that could be consolidated on one server while still meeting the backup window. Many new virtualization-aware backup solutions are now available to solve this issue, and for anyone who has not yet addressed their virtual backup strategy, optimizing the backup infrastructure for virtualization should be one of the first steps towards expansion.

In addition, one of the reasons that performance has become a more critical factor is that organizations are now virtualizing more of their business-critical and mission-critical applications. Delivering optimal performance for these virtualized applications puts more strain on the storage and networking infrastructure in several ways. First, the infrastructure needs to keep up with increasing I/O demands across many virtual paths and the underlying physical storage and network devices. Second, it also requires new levels of intelligence for features like 1) Quality of service (QOS) for differing priorities of applications running virtualized, and 2) Adaptability and agility to handle the mobility created by vMotion and Distributed Resource Scheduler (DRS).

For most organizations, the storage and networking options that were available when they first virtualized were very limited compared to the options available today. There is a multitude of new capabilities in the latest hypervisors (such as VAAI, VADP, Storage and Network I/O Control, improved iSCSI support, distributed virtual switches, etc.). New features have also emerged in storage and networking hardware and software solutions, including native capabilities like storage tiering and deduplication, and of course, the ability to leverage all the improved hypervisor capabilities. These new capabilities can significantly reduce I/O overhead, fine tune I/O performance, and create an infrastructure that can adapt to the rapid changes and mobility of VMs across the infrastructure.

In order to succeed in 2012, it will be critical for organizations to optimize their data center infrastructure, including storage and networking, to deliver both the performance and the agility required for the new dynamic world of virtualization/cloud.

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