

### **General Information**

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## **Real IT Problems In Virtual Environments**

### **Taking A Look At Common Problems & The Solutions**



According to research from Gartner, the number of virtual machines is expected to reach 4 million by 2009 and become pervasive throughout IT by 2015. Considering that in 2007 the number of virtual machines was estimated by Gartner at 540,000, that amount of growth will produce a variety of growing pains.

Originally, many of the problems plaguing virtual environments were licensing, support, and emerging technologies, but as more players have entered the field and active installations go live, these initial challenges are taking a backseat to emerging challenges.

#### **■ Complexity**

**&**

#### **Management**

Often cited as the top problem by those who have already deployed virtualization products within their organization is how to effectively manage a complex environment. There are a number of points where virtualization can be installed—servers, networks, applications, and storage.

“As companies implement virtualized environments, one of the first problems they encounter [is] all the layers under the operating system, especially with storage,” explains Rob Peglar, Xiotech ([www.xitech.com](http://www.xitech.com)) CTO, who considers storage to be the last bastion of virtualization. Many traditional storage solutions have yet to add support for virtualized environments because they lack the technology required to virtualize the physical hardware, such as disks, ports, and controllers. Peglar suggests that organizations closely examine their storage infrastructures first to see how well they fit within virtualized server and network components.

Dave McCrory, founder and CTO of Hyper9 ([www.hyper9.com](http://www.hyper9.com)), sees virtualization starting to take off in the mainstream and data centers. “They are starting to adopt virtualization a great deal, especially with VMware, a production-class platform, along with Microsoft and Zen trying hard to catch up to VMware’s level of market share.” McCrory cites that the majority of problems in virtual environments revolve around keeping track of the virtual machines themselves. “One of the biggest problems in the virtualization space [is] all of the management tools were designed for physically oriented systems, and they aren’t well-adapted to deal with virtual systems,” he notes.

This is due to the very nature of virtual systems, which are able to dynamically move from one physical machine to another based upon resources and performance. Additionally, virtual machines can be paused, suspended, archived, and reactivated.

“You have things happening inside the virtual machine where it’s running applications and an operating system and the VM itself is running on a virtualization platform—the hypervisor—which has to be managed, as well, and then you have the actual hardware that has to be managed so now you have a more complex ecosystem,” explains McCrory. Although he believes there are some solutions available, he doesn’t see many really good solutions that provide adequate management for thousands or even tens of thousands of virtual assets. “Even in a small shop, you could easily see beyond 25 all the way up to 100 virtual machines. That’s a fair number, and you can literally create new virtual machines with the click of a button.”

“You can virtualize your resources to a very high degree—operating systems, applications, storage, networks—that’s all great, but how do you manage all of it?” questions Peglar. “I think there’s really only one answer, and that’s standardization with Web services, such as XML and SOAP.” While many virtualization vendors offer proprietary tools and utilities for management, Peglar believes that these don’t scale well and, ultimately, are more an inhibitor in virtual environments. “Using standardized methods is the architecturally correct way to manage your virtual infrastructure; otherwise, you’re left with a piecemeal environment, which is very prone to error. We’ve gone from hundreds of physical resources to thousands of virtual resources, so the need for standardization has been multiplied tenfold.”

Smaller IT shops that have delved into virtualization need a solution to their growing management challenges right now. In an effort to maintain order over their infrastructure, McCrory sees a move to maintain a homogeneous virtual environment. “They’ll go with the vendor that’s providing the virtualized environment. With a small to medium IT shop, the staff is not going to be incredibly large, and there’s going to be even more pressure to do more with less. The willingness to invest in multiple management systems isn’t going to be very high.”

## ■ Capacity

## Planning

Capacity planning also presents issues when implementing virtualization. McCrory points out that most virtualization tools currently available are centered around implementing processes, provisioning, cloning, and copying virtual machines and management. “Capacity planning is challenging now that you are slicing up servers and virtualizing them,” says McCrory.

To overcome these challenges, Peglar suggests automation. “If you don’t know what you have or you don’t know what your infrastructure is doing, you’re just guessing as to what your asset utilization could be. If you automate, you have predictable behavior, which allows you to extrapolate forward in time. I think that virtualization makes capacity planning easier because there are a lot of techniques that allow for intelligent provisioning, essentially a feedback mechanism. Let the resources tell the humans what the needs are instead of trying to go in and figure out what the resources are actually doing.”

Automation within virtual environments offers predictable and repeatable processes that, in the long run, are key to reducing errors. “Because so many things are virtualized now, it’s hard for a human to keep track of everything. Automating function and processes is extremely important. Instead of having to hand-drill operations in a data center, now operators set policy and automated processes to implement those policies. That way you get very consistent performance,” adds Peglar.

## ■ Security

As with any computing environment that processes, transmits, or stores information, security is a must. Due to the dynamic nature of virtualization, a number of new security issues have arisen. “If you think about user accounts and sessions inside of a virtual machine, what happens when that virtual machine is paused, archived, and reactivated in three months? People have come and gone, permissions have changed, so when the machine is brought back, it will have all the old policy settings.” posed McCrory.

Additionally, in virtualized environments there are also more points that need to be secured, such as the hypervisor and virtual hard disk files. McCrory advises that it is critical to understand all virtual machines running against virtual hard disks must be secured just as much as physical hard disks in a cabinet.

However, security researchers have long utilized virtual machines to achieve reproducible computing environments, independent of the operating system, for a number of years before virtualization in production environments gained favor. Compared to traditional information security products, this transference of this knowledge into commercial security solutions specifically addressing virtual environment has been quick to market. ■

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### Key Points

There are a number of common problems organizations encounter when deploying virtualization within their infrastructure. Both users and vendors are addressing these challenges through best practices and new solutions.

### Top Problem: Lack Of Management Tools For Virtualized Environments

Despite a growing number of virtualization solutions, IT professionals cite a lack of management tools as the top problem. Administrators are looking for better ways to manage and track dynamic virtual machines, licenses, performance, and security.

These issues are being addressed through standardization and vendors—both industry giants, such as IBM and Microsoft, as well as emerging companies—developing innovative technologies to meet the demands of virtual environments.