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# Virtualization Management Survey Analysis White Paper

August 2008

Over a six week period during the summer of 2008, NetIQ® conducted a worldwide survey to understand more about what organizations are virtualizing, which hypervisors they are standardizing, and how they are managing and securing those virtual environments.

With over 1,000 respondents, we were able to learn which hypervisors are dominating the market, how most organizations are utilizing their traditional systems and security management tools across the enterprise, and further gauge the impacts of security on the virtual infrastructure.



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## Survey Overview

In an effort to continue gathering data from organizations to better understand this growing and ever-changing IT environment, NetIQ conducted a survey in North America and the United Kingdom; however, posting to the Web, we ultimately gathered data from a worldwide audience. With 1,053 individual respondents from 883 government, enterprise and small-to-medium organizations, we were able to determine some key characteristics and opportunities for improvement in management within virtual environments.

The survey consisted of 13 questions: eight questions providing a single-answer option, four questions offering multiple answers, and one open-ended question. These questions were developed by NetIQ, with direction from an expert in the virtualization industry. The survey was conducted over a six-week period, from mid-May through the end of June 2008, and was promoted online through the NetIQ Web site and two third-party, multi-media Web sites in North America and in the United Kingdom.

While the majority of respondents were from the United States and Canada, 20 percent of the total respondents were from other countries including the United Kingdom, Netherlands, Germany, Spain, Australia, and Japan.

## How This Paper Is Organized

This paper is divided into two clear sections: a presentation and analysis of the survey results and an overview of suggestions that will ease management of the virtualized environment.

The survey results and analysis begin with an overview of those who responded to the survey. Rather than go through the results of the 13 questions in order, as some of the questions relate to one another across a common area, we have elected to group the survey responses into five categories:

- The virtual environment – what the make-up is of the respondent environments
- Determining applications to migrate – how respondent organizations identify systems and applications for migration to the virtual environment
- Ensuring performance and availability – what management tools are deployed currently by the respondents with respect to hypervisor, the hybrid environment and application performance management
- Reporting – what level of reporting respondents currently have for their virtual environment
- Securing the virtual environment – how respondents are planning to address securing the systems, applications and data migrated to virtual machines (a relatively new discussion for virtualization)

The paper will conclude with a brief synopsis on the overall survey findings and the impact of IT taking the steps needed to ensure they are getting the most out of their investment in virtual technology.

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# Survey Results and Observations

## About the Respondents

To gain a better understanding of the respondents, we asked questions regarding the size of the organizations in order to gauge how many organizations participating in the survey actively deploy virtualization technology in production.

Interestingly, 55 percent of the respondents are enterprise class organizations and 55 percent have deployed virtualization technology into production with another 13 percent in test and development. Clearly, the small and medium business (SMB) market is also beginning to invest in and actively use virtualization technology. It is no longer only for the large enterprise-class datacenter environment.

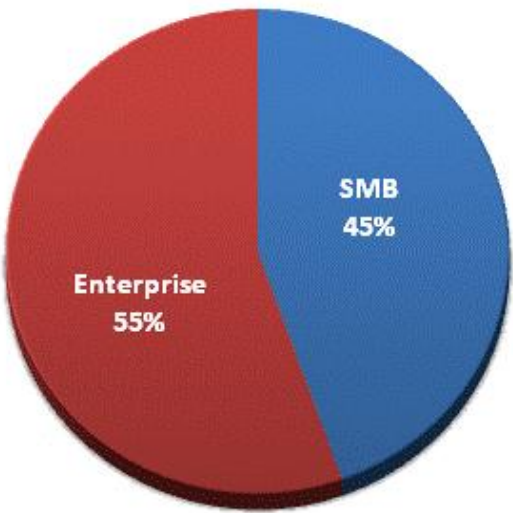


Figure 1 – Breakdown between SMB and Enterprise organizations

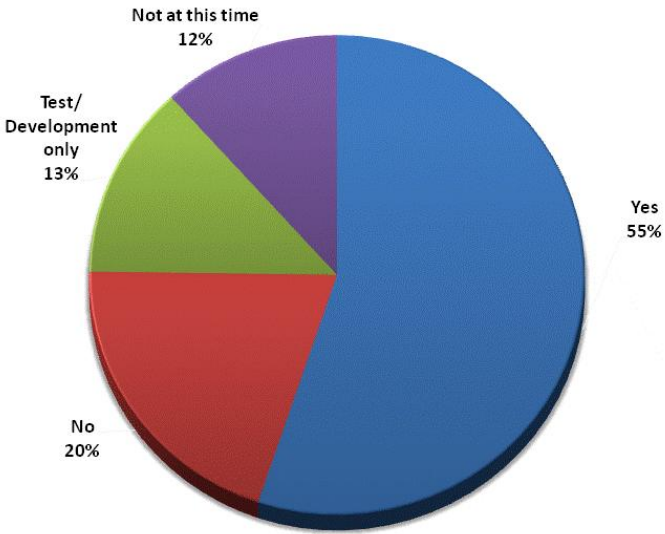
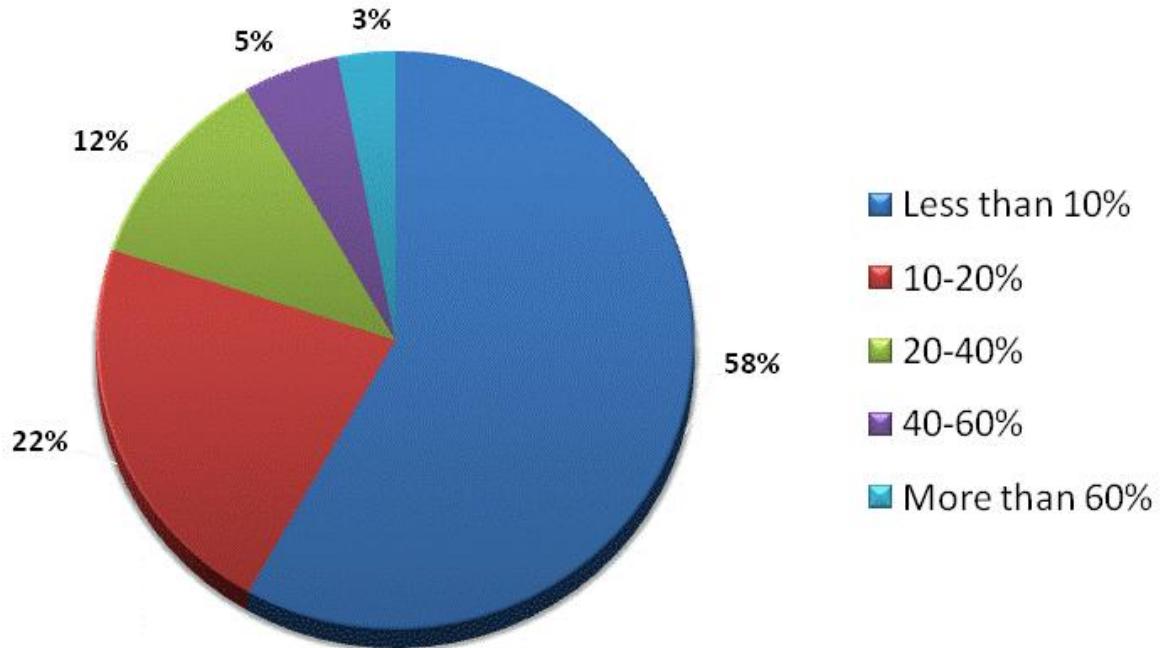


Figure 2 – Organizations currently deploying virtualization in production

## The Virtual Environment

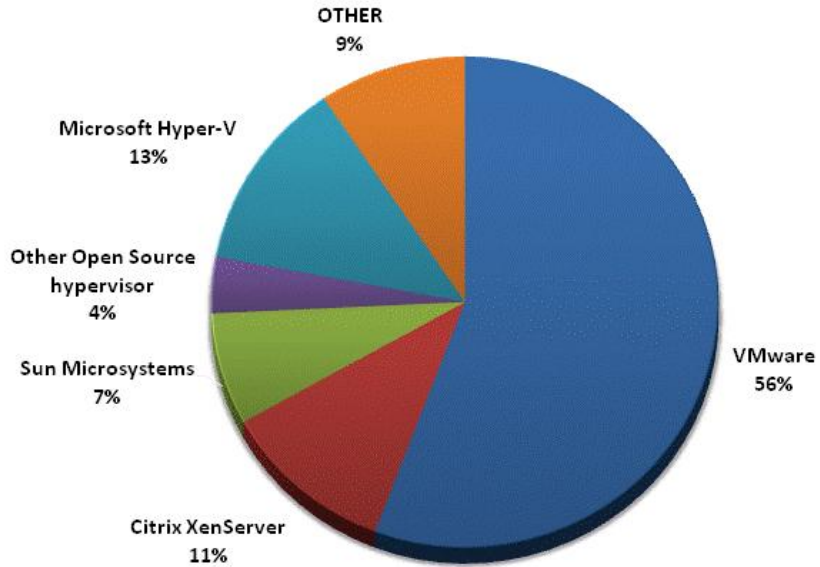
To understand what organizations are doing to manage virtualization technologies, we need to have a clearer picture of what the virtual environments look like. What percent of the entire IT environment is virtualized and which hypervisor technologies are most widely deployed? We took this one step further and asked specifically about VMware® ESX Server – how many hosts are deployed on average in the virtualized environment and approximately how many virtual machines are relied upon day to day?



**Figure 3 – Percentage of virtualization in the environment**

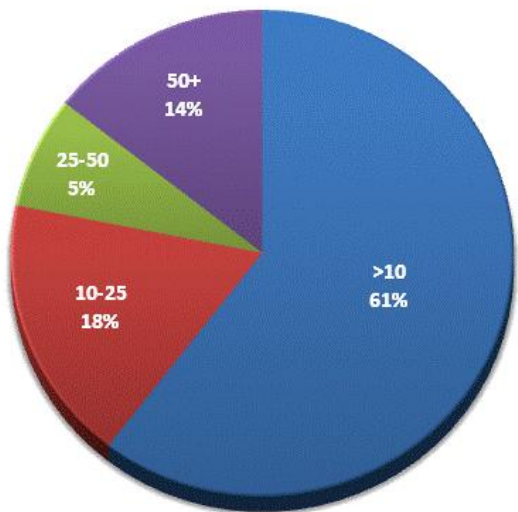
Most respondents who are deploying virtual technology are taking their time in virtualizing their production environments. This was not surprising because the technology remains relatively new for many and only becoming a more mainstream technology within the last two to three years. In IT that seems like a long period of time, but consider the enormity of this shift to the underlying technology. Many organizations will virtualize as their previous technology investments begin to end of life. This will continue to lengthen the time it takes for some companies to have a significant portion of their IT deployment virtualized.

And the most deployed hypervisor is...

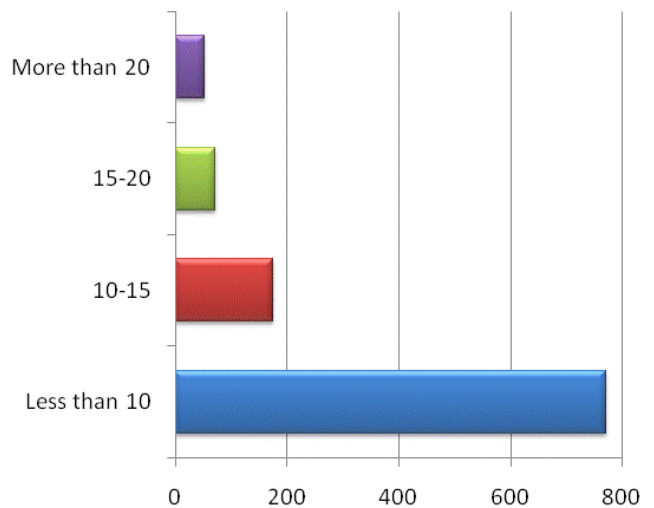


**Figure 4 – Hypervisors currently in production**

...well, for this survey – VMware is in production more than any other individual hypervisor. But unlike most other industry reports, VMware’s share is nearly 20-30 percent less and Microsoft Hyper-V is on the rise. With the official introduction of Hyper-V coming after the close of this survey, it begs the question of how many respondents were choosing to deploy the Hyper-V beta into production.



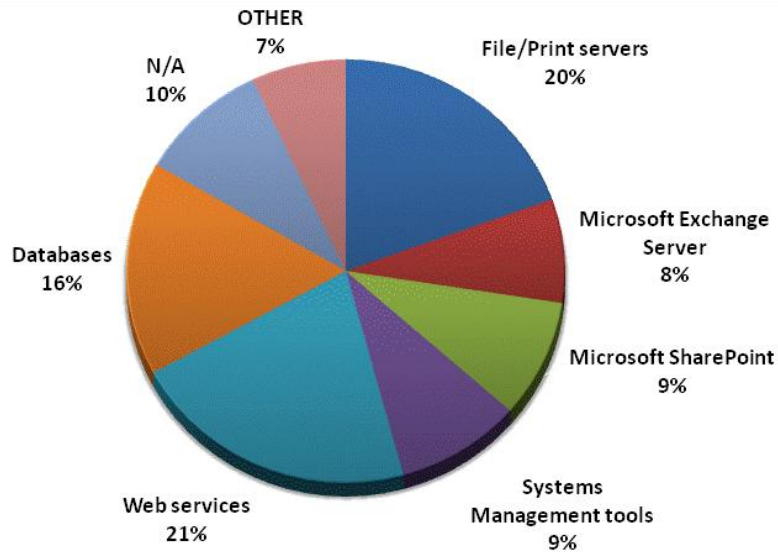
**Figure 5 – Average VMware ESX servers deployment**



**Figure 6 – Average number of machines per VMware ESX virtual host**

Further supporting the somewhat cautious adoption rate of virtualization is the number of organizations with fewer than ten ESX servers in production and the conservative number of virtual machines (VMs) per host.

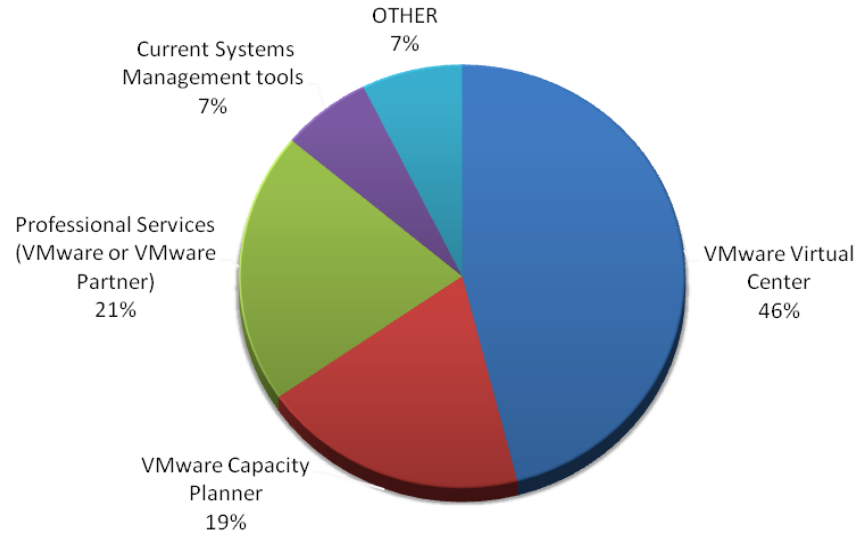
What is more interesting though is what is being virtualized to the hosts and VMs above. Although not an exhaustive list of applications deployed throughout the datacenter, Figure 7 shows the “usual suspects” (Web services and file/print servers) as popular systems to virtualize. But there were also a large number of respondents virtualizing databases. The lower numbers for Microsoft Exchange Server and the systems management tools are in line with other reports from around the industry, and still noticeable was the 8% that are virtualizing Microsoft Exchange Server.



**Figure 7 – Virtualized applications**

## Determining Applications to Migrate

So now that we know what is being virtualized, we wanted to know how organizations were selecting and prioritizing these systems and applications for migration to the virtual infrastructure.

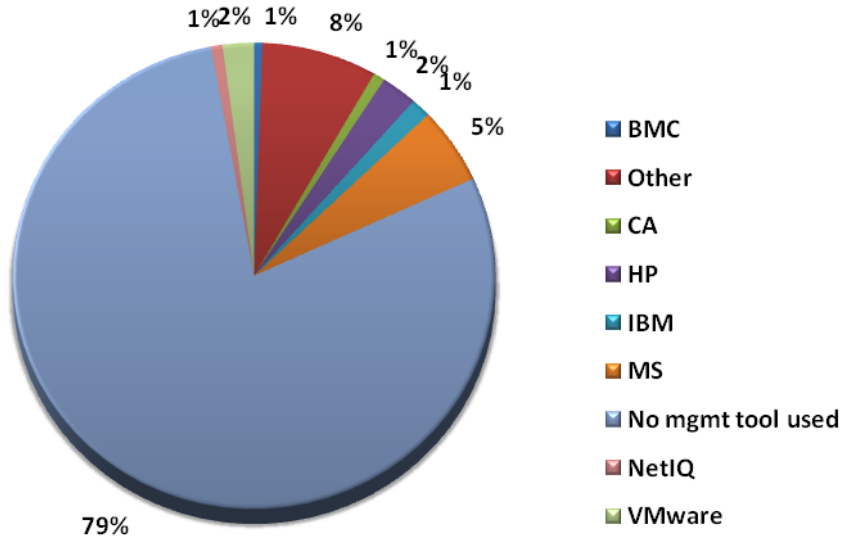


**Figure 8 – Tools/services currently used to identify virtualization candidates**

As expected most organizations are using VMware tools such as Capacity Planner and VMware Services engagements, but many are also relying on metrics provided by VMware VirtualCenter Server as well. A smaller percentage of respondents are using their current systems management tools to provide data to determine what applications and systems are candidates for virtualization.

## Ensuring Performance and Availability

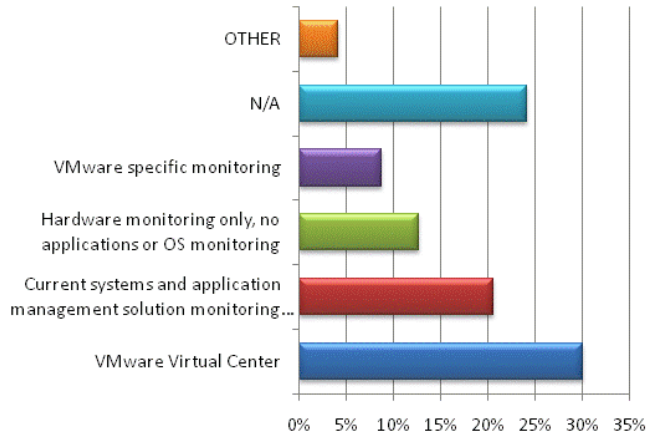
Systems and applications management was one of the final pieces of the puzzle for the physical data center deployment some years ago. The same phenomenon seems to be occurring with respect to the virtual environment as well. The belief was that what came with the system or software from the vendor should provide the uptime and performance promised “on the package.” Then something failed, an army dissected machines and networks, and when it was all said and done, there were robust systems and applications management solutions in the data center.



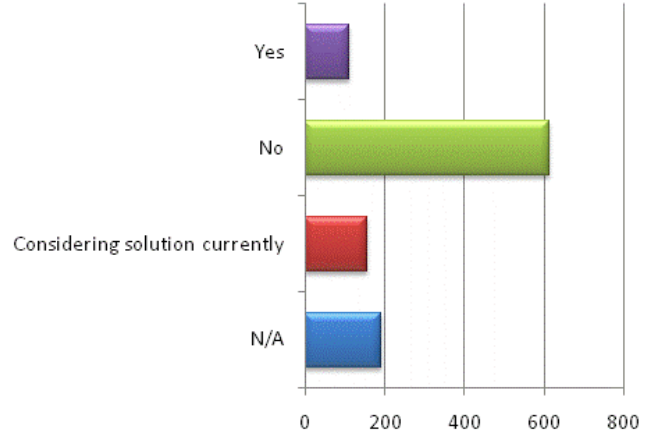
**Figure 9 – Current system management tools**

Only 21 percent of our respondents are currently deploying systems management solutions for their virtual infrastructure (see Figure 9). In addition, roughly 27 percent are managing the performance and availability of their virtual systems with the same tools they use for they physical systems; 17 percent are doing only basic monitoring of the hardware and operating systems; and between the 10 percent currently proactively measuring end-user response time and another 15 percent merely considering a solution for it, that leaves 75 percent of respondents with no way to measure the user experience of virtualized applications.

By not extending application and end-user response time monitoring to virtual systems and hybrid environments, organizations have little visibility into IT service performance and limited accuracy in gauging an end user’s experience with those applications and services. This limits the ability of IT to fulfill service-level agreements (SLAs), threatens process continuity and minimizes the potential return on virtualization investments.



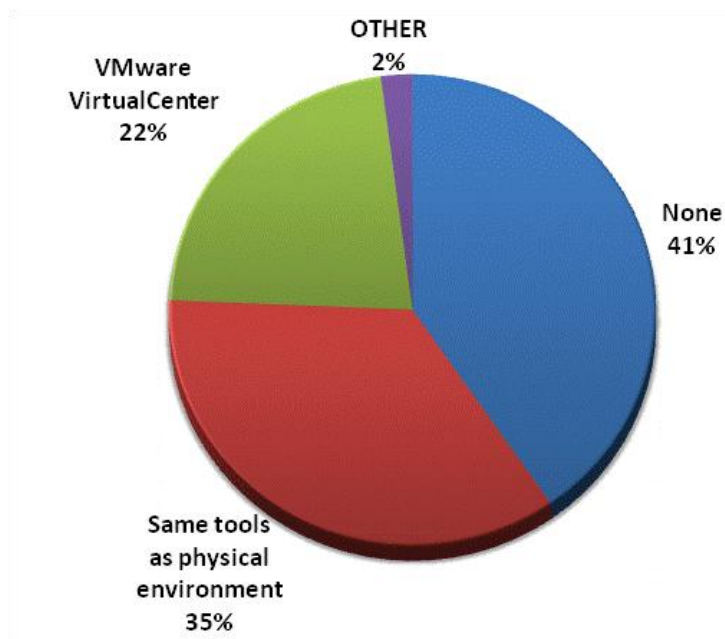
**Figure 10 – Currently deploying tools to proactively gauge end-user response time pre- and post-virtualization**



**Figure 11 – Current systems management tools to ensure system performance and availability within your virtual infrastructure**

## Reporting

A key component of 360-degree monitoring is a comprehensive reporting solution. Reporting occurs at multiple levels of the organization to measure success, determine the ability to meet service agreements and demonstrate performance and availability for both systems and applications. Many organizations have taken this a step further to the end users and measure application and network response times to better understand the experience in hopes of proactively addressing incidents before users can submit trouble tickets.



**Figure 12 – Tools currently used to report on virtual environments**

It was noticeable when the survey revealed that more than 40 percent of respondents are not reporting on the performance of their virtualized environment in any measurable way. Without this reporting on the applications, operating systems, hardware and virtual infrastructure, organizations will have a difficult time proving the return on their virtual environment, effectively demonstrating their success to key stakeholders and simply managing a record and account of their hybrid environment.

## Securing the Virtual Infrastructure

With the more recent questions around the vulnerabilities of the virtual infrastructure, there has been a push to develop and deploy robust security solutions that are as effective in a hybrid environment as they are in a traditional physical data center. With that in mind, we were interested in how respondents were securing their virtual environments.

Not surprising were the results that many organizations are doing something to secure their virtual environment. When presented with only the options below and limited to one choice though, more than half of the respondents are not currently securing their virtual infrastructure. The expectation is that as more solutions come to the market, these numbers will shift significantly. The key point here was that nearly half of the respondents are using their traditional security solutions across the data center regardless if physical or virtual.

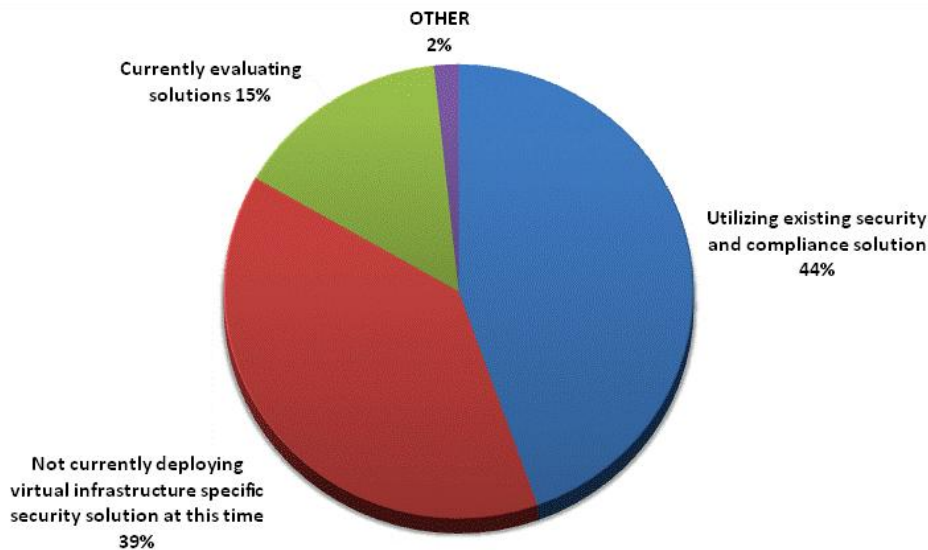


Figure 13 – Approaches considered for securing virtual environments

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## Conclusion

The results of this survey confirmed that the rate of adoption for virtualization technologies is continuing, but which hypervisor technologies will end up being favored will be an interesting horse race to watch over the months to come.

With respect to systems, applications and security management, as organizations expand their virtual environments and migrate a greater number of critical applications; the need to apply proven management capabilities will continue to increase. Application performance, end-user experience and correlating metrics between the physical and virtual components are crucial to success in a hybrid data center. Virtualization is about driving down costs, but poor management can have an adverse affect towards that end. Without a more rapid adoption of comprehensive and robust monitoring and reporting solutions deployed with virtual technologies, IT is simply repeating the reactive firefighting approach to systems management.

Organizations, as they continue to virtualize, should consider that solid management solutions will ensure continued investment and continued savings by lowering IT costs, reducing the IT operations learning curve, provide the data for both systems and applications, reducing IT incidents, and reporting on the success of virtualizing IT.

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## About NetIQ

### **Integrate. Automate. NetIQ Solutions.**

NetIQ, an Attachmate business, is a global leader in systems and security management. With more than 12,000 customers in over 60 countries, NetIQ solutions maximize technology investments and enable IT process improvements to achieve measurable cost savings. For more information on NetIQ's portfolio of award-winning products for IT Process Automation, Systems Management, Security Management, Configuration Audit and Control, Enterprise Administration and Unified Communications, please visit [www.netiq.com](http://www.netiq.com) or contact [sales@netiq.com](mailto:sales@netiq.com).

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## About Attachmate

### **Extend. Manage. Secure.**

Attachmate enables IT organizations to extend mission critical services and assure they are managed, secure, and compliant. Our goal is to empower IT organizations to deliver trusted applications, manage services levels, and ensure compliance by leveraging knowledge, automation, and secured connectivity. To fulfill that goal, we offer solutions that include host connectivity and systems and security management.