White
Paper

The Data Center
of the Future

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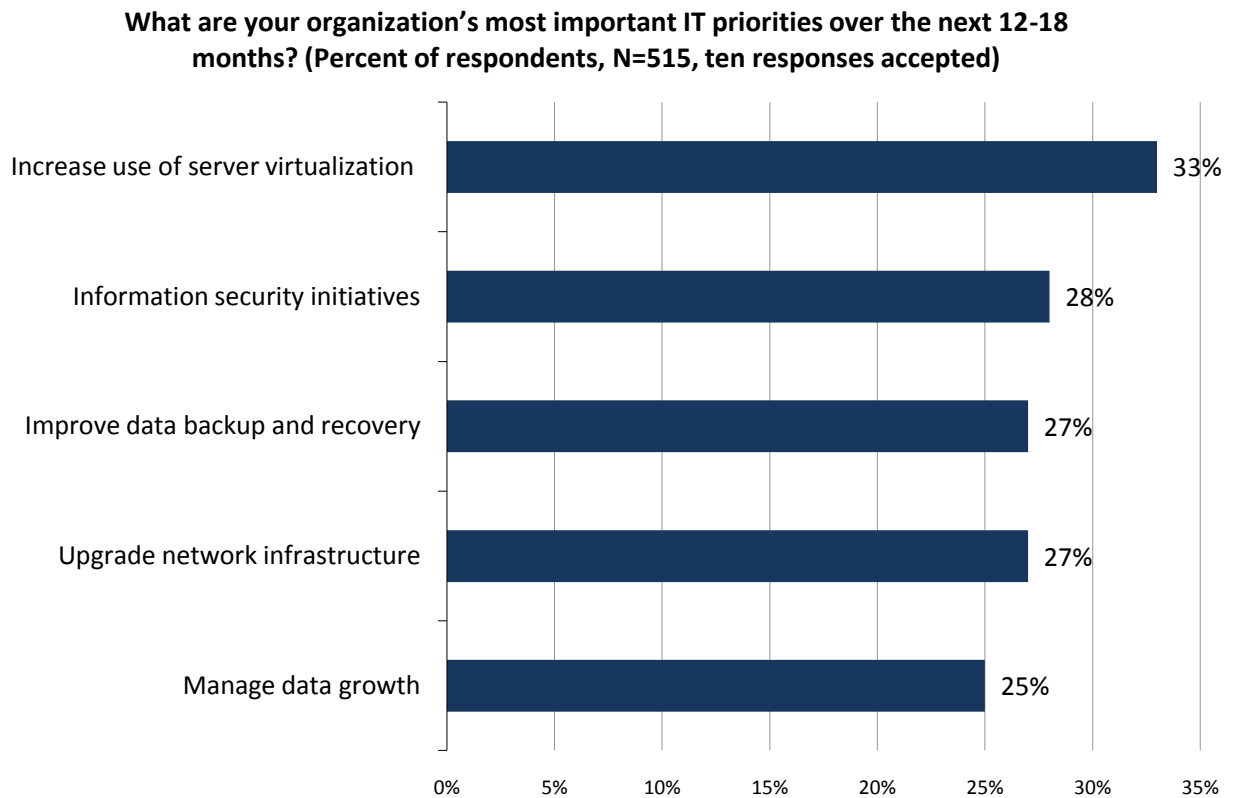
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The Next Generation Data Center

Next generation data centers will not tolerate the inefficiencies of today. The data center of the future will do away with the physical ties that hold us back from meeting top business priorities. Perhaps more importantly, nothing in the data center will be useless. Business decisions will drive application choices and policies. The applications will provide their requirements to the virtualized platform and that platform will instantly respond. The virtualized platform will consist of processors running at different speeds connected by network connections of different bandwidths and protocols to storage and data that spans different storage systems on different continents. All components are disposable and will run at or near 100% utilization.

In the future, protection, security, and performance will be policy-driven and based on data in order to reduce cost and optimize the utilization of assets. Data will be moved from place to place and assigned changing attributes based on its lifecycle, requirements, and usefulness. Management and maintenance as we know will cease to exist.

According to recent ESG research, increasing server virtualization usage was the top overall IT priority facing organizations over the next 12-18 months (see Figure 1).[1] Server virtualization is one of the key ingredients needed to build the data center of the future.

Figure 1. Top 5 IT Priorities Over the Next 12-18 Months

What are your organization's most important IT priorities over the next 12-18 months? (Percent of respondents, N=515, ten responses accepted)

Priority	Percent
Increase use of server virtualization	33%
Information security initiatives	28%
Improve data backup and recovery	27%
Upgrade network infrastructure	27%
Manage data growth	25%

Source: Enterprise Strategy Group, 2010.

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[1] Source: ESG Research Report, *2010 IT Spending Intentions Survey*, to be published January 2010.

Figure 2. Top 5 Server Virtualization Initiatives for 2010

Which of the following would you consider to be your organization's top server virtualization initiatives for 2010? (Percent of respondents, N=345, five responses accepted)
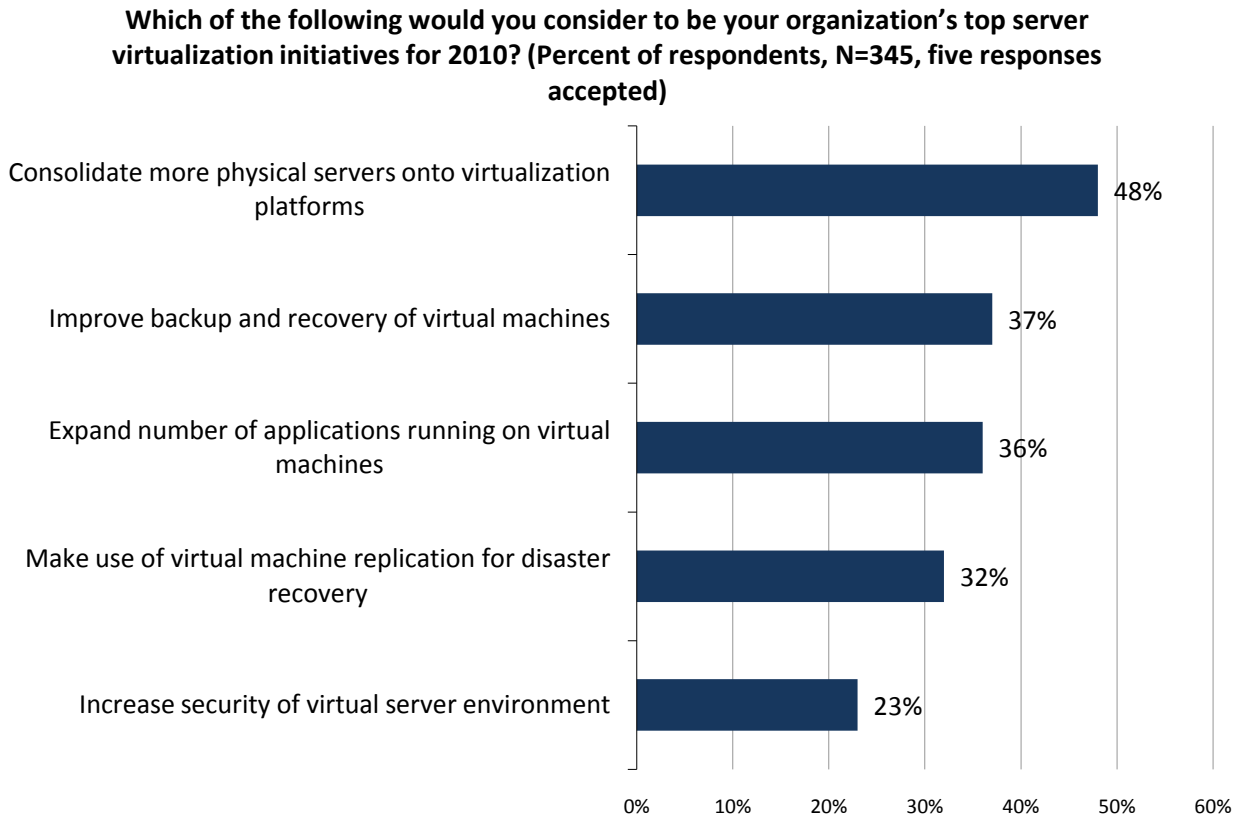
Source: Enterprise Strategy Group, 2010.

The increased usage of server virtualization is a key component and first step to achieving a highly automated and efficient data center. Consolidation and improved resource utilization remain two of the top drivers, but ESG increasingly finds data protection and disaster recovery rising to the top of the priority list. ESG research respondents cited the needs to "improve backup and recovery of virtual machines" and "make use of virtual machine replication for disaster recovery" as top server virtualization initiatives this year (see Figure 2).[2]

The benefits of server virtualization have become clear. Now, the question is: how do we achieve peak efficiency and continue to drive adoption of mission critical applications within the virtualized platform?

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[2] Source: ESG Research Report, *2010 IT Spending Intentions Survey*, January 2010.

Avoid Common Pitfalls

Businesses are falling short of their initial virtualization goals and objectives. The initial consolidation of IT-owned workloads was a relatively simple task for most companies, but the cost efficiency it promised is being lost. Too many companies start virtualizing as many applications as possible without considering the greater impact on the data center as a whole. They are missing tools and best practices that diagnose and measure efficiency (or lack thereof) and, as a result, find themselves faced with new challenges. These companies are unable to transition to the next phase of virtualization and end up continuing to mission critical applications on physical servers.

> **Top Virtualization Considerations**
> - Data protection
> - Visibility and reporting
> - Management integration

Too many companies "virtualize" before considering the optimization that leads to greater efficiency gains. Data protection is often an afterthought and this lack of consideration has brought many virtualization initiatives to a screeching halt. Companies that continue to successfully achieve their virtualization goals consider:

- **Tools that continuously tune and optimize** the IT infrastructure and the distribution of workloads. Based on data collected from several surveys over the last few years, ESG finds that, on average, consolidation ratios of virtual machines to physical servers are about 3.5:1. In order to achieve success, IT should consider tools that help drive up consolidation ratios and give them the confidence to run at higher CPU and memory utilization rates.

- **Cohesive management solutions** that recover wasted capacity, further improve utilization, and drive down costs. A management solution should complement the native administration tools of the virtualization solution as well as integrate with existing data center operations management platforms. Visibility and reporting are essential in a highly virtualized environment when workloads are sharing a common pool of resources.

- **Data protection strategies** that are optimized for a virtualized environment. Server virtualization opens the door for IT to improve service levels, RPOs (recovery point objectives), and RTOs (recovery time objectives). IT will need choose a data protection solution early in the virtualization deployment to ensure that it will scale to match addition of mission critical applications to the virtualized platform.

False Promises of Virtualization

In order to achieve the many benefits of server virtualization, one has to be able to recognize and work through its complexities. This, in itself, is one of the great benefits of server virtualization: it is a catalyst for change inside IT. Server virtualization is an opportunity to reevaluate and consider alternative processes and solutions in order to simplify and improve overall efficiency, but it comes at a cost.

Server virtualization investments should consider the entire IT infrastructure and include business processes such as business continuity and disaster recovery. Server virtualization impacts server, network, and storage infrastructure at a scale that is often misjudged from the beginning and leaves IT stumbling. IT operations can quickly end up lacking visibility into the infrastructure, being unable to fully leverage new server and storage investments, and failing to deliver on its "virtualize first" policy where any new server request is deployed as virtual machines. One hundred percent virtualization is a great goal, but is IT ready to scale efficiently while maintaining high confidence and improved IT service?

Veeam Helps Safeguard Virtualization Investments

Veeam has rallied around server virtualization and built solutions that extend the benefits of virtualization into the business in addition to helping organizations scale deployments with confidence. Veeam recognizes that server virtualization is a top priority for IT and is working with leading server virtualization technology partners to better serve the IT community with management and data protection software designed to reduce costs, increase productivity, and mitigate risk.

Veeam's solutions include:

- **Data protection and disaster recovery**, which provide native support for advanced functionality in server virtualization platform integration. Veeam combines backup and data replication into a single product, making it easier to consume and deploy for IT administrators.

- **Monitoring and reporting tools** that provide data collection and analytics to discover, document, and report on virtualized infrastructure. The solutions also include performance monitoring, capacity planning, and troubleshooting—all of which are key components to any virtualization investment.

- **Management connectors** that bridge the gap between VMware virtual infrastructure and enterprise systems management tools from Microsoft and HP. These management connecters integrate with Microsoft System Center Operations Manager and HP Operation Manager.

As previously discussed, server virtualization deployments bring new challenges as IT finds itself up against a brick wall and unable to maximize their return on investment. Veeam is helping its customers fill in the gaps to ensure they can transition efficiently from the initial consolidation phase.

Backup and Replication

ESG consistently reaffirms its belief that backup/recovery and disaster recovery solutions are a key initial consideration before IT can begin deploying server virtualization at scale. Server virtualization introduces many potential improvements in data protection and disaster recovery strategies, but IT has to ensure the proper tools and processes are in place before they begin committing to improved service levels. ESG also sees where improved data protection and disaster recovery are used as a leading value proposition when IT approaches line of business and application owners to discuss the benefits of server virtualization. IT operations will use improved service levels as a primary motivator to build confidence in the application owner. For example, the application owner may have only had tape backups as a DR strategy for their application—here, server virtualization has the potential to dramatically improve an application's availability in the event of an outage.

Veeam Backup and Replication 4.1 is currently targeted at VMware environments. The product has been developed from the ground up with server virtualization in mind and both backup and replication are included in a single license. Veeam Backup and Replication also provides an instant view of the virtualized environment and reports into the virtualized environment to show the "ifs," "whens," and "wheres" of virtual machine protection. Product highlights include:

- Leveraging Windows Volume Shadow Copy Service (VSS) functionality to ensure consistent backups of the applications within live running virtual machines.

- "Single pass" file-level restore from a VM-level backup, eliminating the need to restore the entire VM.

- Agentless image level backup, which eliminates the need to maintain agents in each virtual machine.

- Native VMware vSphere and vStorage API for data protection support, and full ESXi support that does not require VCB (VMware consolidated backup).

Performance Monitoring

ESG finds that businesses are delaying further server virtualization investments due to lack of visibility, analytics, and performance monitoring. Native virtualization management tools can't give an accurate picture of the environment and virtual machines end up playing hide and seek with the storage system, network, and physical server management tools. Successful server virtualization deployments have a process in place that allows IT administrators to proactively make business decisions without further investment in the virtualization platform.

Veeam Monitor 4.5 is a standalone capacity planning and trend reporting solution that collects data and provides reports and alerting based on performance metrics. The solution is more granular than what VMware vCenter provides and offers a greater breadth and depth of alerting capability, including storage and hardware monitoring. Veeam Monitor has visibility into VMware volumes and shows errors and latency, which can be like striking gold when trying to troubleshoot an application, trying to achieve higher consolidation ratio, or determining where to place the next workload. Currently, Veeam Monitor 4.5 is designed for a VMware only environment.

Veeam also offers management connectors for HP Operations Manager and Microsoft System Center Operations Manager. Customers with existing or planned investments in these enterprise management systems will have the advantage of consolidating everything down to a single pane of glass with a single view into the IT infrastructure. This type of integration is imperative as IT scales its virtualization deployments and moves more mission-critical applications to the platform.

Discovery and Documentation

Avoiding VM sprawl quickly becomes one of IT's first challenges with a server virtualization deployment. ESG has received feedback from some companies that got a little too excited about virtualization and started moving production SQL workloads to the virtual platform without a backup in place. The company made some quick changes, but it is a good example of how IT needs to be ready to support workloads as they come online in the virtualized environment. IT needs to always look to optimize the environment and understand what workloads are running and where.

Veeam Reporter Enterprise 3.5 for VMware arms IT with a snapshot of the environment that can be used to review and act on any problems. The tool is commonly used to keep track of inventory and for change control. Instead of opening up the VMware vCenter console and hunting for a problem or randomly searching through VMs for current status, administrators can use Veeam Reporter Enterprise to quickly show results and then jump back into VMware vCenter to drill into the issue.

Veeam Reporter Enterprise 3.5 has the ability to produce reports in PDF and Excel formats as well as Visio diagrams. An administrator report provides a level of detail that is important to daily IT operations and an executive report provides a quick graphical visualization to quickly call out any high impact issues or plan for future investments. Veeam's reporting function can also provide data for chargeback. This will provide IT with a level of cost visibility and ability to create templates based on the data generated from a report.

Business Alignment

Veeam's solutions are focused on solving problems to improve efficiency and maximize an investment in server virtualization. Each product helps align the virtualization solution with the goals of the company to improve overall IT efficiency and simplify IT operations. Veeam can help define VMs by business asset and report on them to show usage in terms of compute and storage capacity. Administrators can tag VMs within a category to help maintain control of the environment and VMs can also be tagged based on a naming convention, allowing for easy monitoring for performance activity. This helps IT establish a baseline of activity that can be used to report to the line of business owner to help justify the initial migration to the virtualized platform as well as any additional server virtualization investments.

The Bigger Truth

Businesses are finding themselves falling short of initial virtualization goals and promises. They can quickly achieve the benefits of consolidation and improved resource utilization, but end up hitting roadblocks that have the potential to rapidly degrade the benefits of any investments. Arming IT with tools to help deliver further efficiency and optimization of the virtualization platform can certainly prove to be a worthy investment.

Solutions from Veeam provide visibility into the virtualized environment and help organizations maximize their investments and even defer additional infrastructure spending. Veeam's reporting and monitoring capabilities help achieve and maintain efficiency at all tiers of the infrastructure, helping businesses avoid wasted capacity from the beginning and enabling IT to run at peak capacity. With solutions from Veeam, IT can continually utilize the optimum tier of server, network, and storage with confidence. This will also help encourage the migration of business-critical applications to the platform with confidence.