

White Paper

Benefiting from Server Virtualization

Beyond Initial Workload Consolidation

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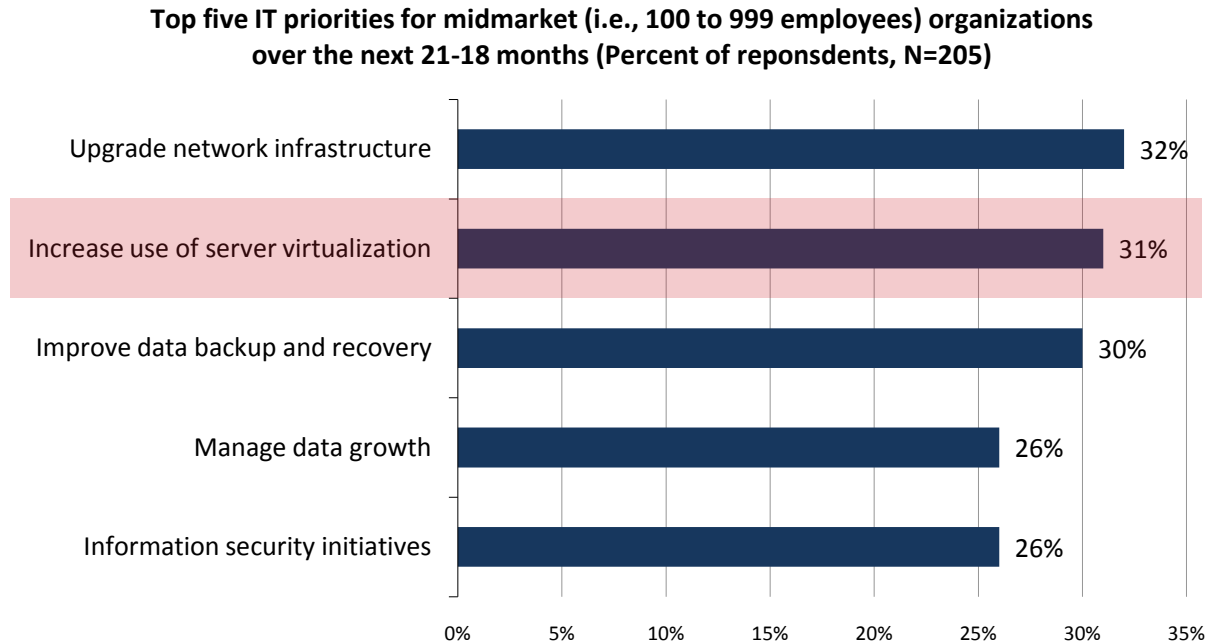
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Server Virtualization Tops IT Priority List

Increasing the use of server virtualization is a top priority for small and medium-sized businesses (SMBs). According to ESG's 2010 Spending Intentions Survey, it is nearly tied as the top priority for SMBs over the next 12 to 18 months (see Figure 1).¹ There are good reasons for this: virtualization can help reduce costs, simplify management, and improve application availability and disaster protection. It is interesting to note that improving data backup/recovery and managing data growth are also top five priorities—both of which are added benefits of server virtualization.

Figure 1. Midmarket IT Priorities



Source: Enterprise Strategy Group, 2010.

Server virtualization is having huge positive financial and operational impacts on organizations of all sizes. The ability to consolidate multiple application workloads on fewer physical servers saves money in equipment, energy, and management, and adding new virtual servers is simple and fast. IT automatically becomes more responsive to users when they can launch new applications in hours instead of weeks. Server virtualization can also increase application availability and make data protection/disaster recovery more affordable and less complex.

IT organizations are constrained by fewer resources and smaller budgets, and are desperately trying to squeeze everything they can from what they have. They may also have less tolerance for application downtime and anything that risks diminished productivity.

VMware is Helping Companies Boost the Value of Server Virtualization

[VMware](#) offers enterprise-class server virtualization solutions that match the goals of IT with those of the business. Business managers continually ask IT to streamline processes and increase functionality on reduced budgets. VMware solutions do just that, by enabling organizations to buy and manage fewer hardware components and streamline IT administration. Businesses also want to be able to respond quickly to changing business conditions—particularly where agility can provide a huge competitive advantage. VMware solutions enhance flexibility and application availability, allowing organizations to quickly launch new applications and temporarily move workloads to different hardware while the applications remain available to end-users. This flexibility improves IT services for

¹ Source: ESG Research Report, [2010 IT Spending Intentions Survey](#), January 2010. All subsequent statistics are from this report unless otherwise stated.

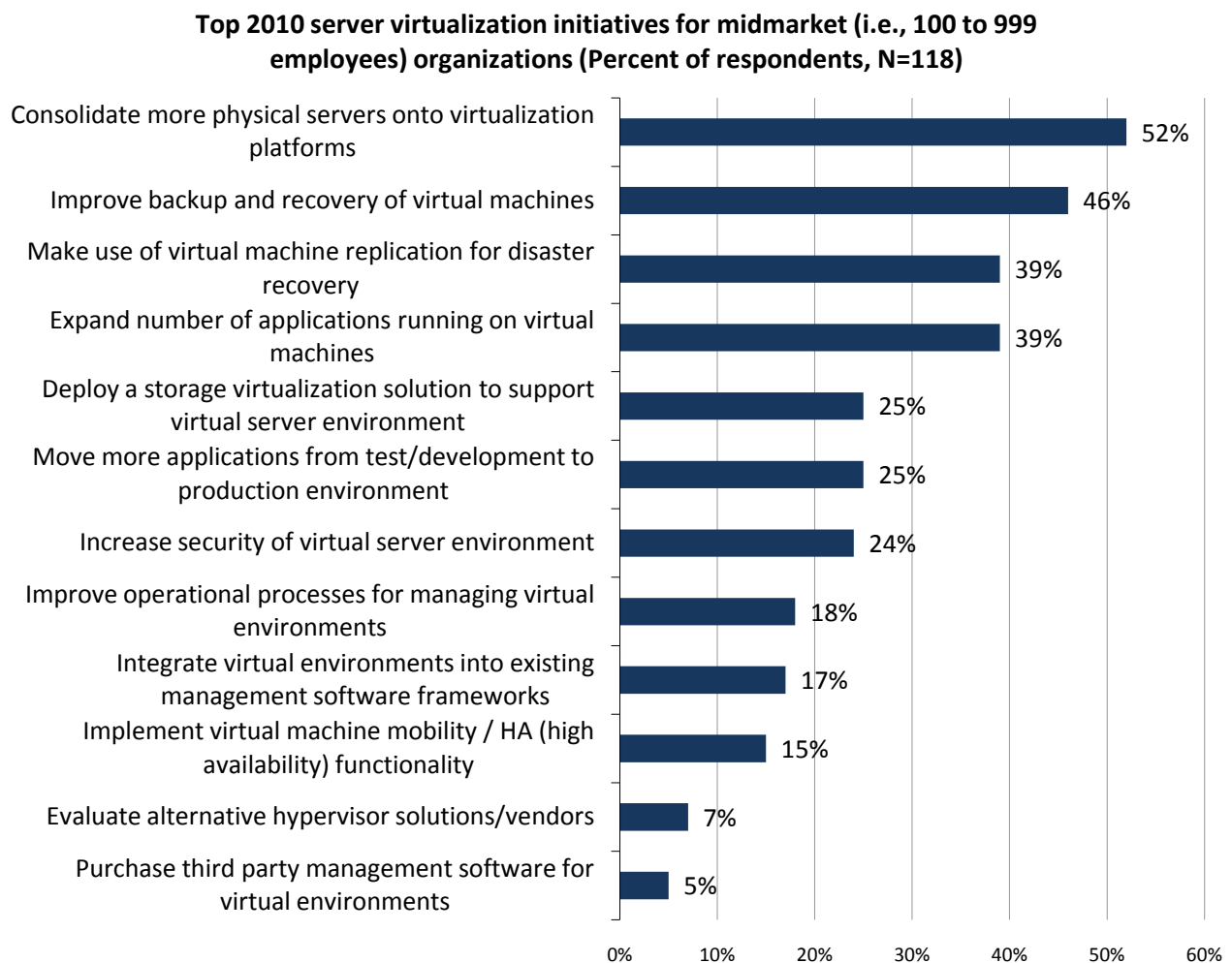
users while making life much simpler for IT staff. Also, VMware makes data protection and disaster recovery simpler and more affordable by including many of these features in their solutions so more companies can get through failures unscathed.

VMware offers solutions designed for ease of use and immediate cost-effectiveness—VMware vSphere 4 Essentials kits are purpose-built for environments that demand feature rich solutions at an affordable price entry point. Two all-inclusive kits are available to help smaller organizations make the leap to server virtualization. Both kits include the VMware ESX or ESXi platform, Virtual SMP, vCenter Agent, vCenter Server for Essentials, and vCenter Upgrade Manager—these include wizard-based deployment and physical-to-virtual conversation, plus performance monitoring and rapid provisioning. The Essentials Plus kit also includes VMware High Availability for hardware-independent virtual machine (VM) failover and VMware Data Recovery for agentless VM backup and recovery. With one-year licenses and optional per-incident support, these kits make it easy and cost effective for companies to take the plunge.

Server Virtualization Benefits Extend Beyond Consolidation

ESG recently asked IT professionals to identify their top server virtualization priorities. As Figure 2 shows, more than half (52%) of midmarket respondents want to consolidate more physical servers onto virtualization platforms.

Figure 2. Server Virtualization Priorities



Source: Enterprise Strategy Group, 2010.

Protecting data was also very important, with 46% indicating a desire to “improve backup and recovery of virtual machines” and 39% selecting “make use of virtual machine replication for disaster recovery.” Another 39% of respondents want to “expand the number of applications running on virtual machines,” indicating that they have realized benefits and want to extend their implementations based on those results. As these organizations realize the benefits of server virtualization they hone in on four key benefits.

Consolidation and Utilization

When each application resides on its own physical server, two things generally occur:

1. Server proliferation quickly gets out of control.
2. Most servers use less than one-third of CPU and storage resources and cannot share them with other devices.

The result is severely underutilized servers that are hard to manage. In contrast, multiple virtual machines can be consolidated on a single physical device, creating fewer physical machines to manage, using much more of the processing and storage resources, and reducing energy costs and data center space. All of this adds up to lower costs that are simple to achieve and provide a swift return on investment.

Reliability

Virtualizing servers makes the environment much more reliable. Because virtual machines are not tied to their underlying hardware, they can be moved without disrupting users. As a result, server maintenance and upgrades don't require application interruption. If an Exchange application is running on a virtual machine and the hardware needs maintenance, simply move the Exchange application to a different machine during maintenance and move it back once the task is complete. Also, VMs make it easy to test new applications before launching them, making the IT environment more stable and predictable. An administrator can utilize spare capacity to run test virtual machines without dedicated hardware resources. This can greatly improve confidence in application rollout and help discover any surprises before the workload is run in production. In addition, server virtualization makes it possible to offer on-demand access to IT resources. Instead of waiting days for re-provisioning or weeks for a new application to be launched, users get what they need rapidly with relatively little IT effort. This makes for a much more agile business environment—IT can respond quickly as the needs of the business grow or change. This kind of flexibility is especially important for remaining competitive and taking advantage of market conditions.

Management

Virtual machines make management dramatically simpler for IT because servers no longer have to be configured and managed one at a time. Virtualization improves management efficiency with advanced tools for workload balancing, capacity planning, live migration of virtual machines, and automated provisioning. Automated management frees IT employees from mundane tasks so they can spend time on more strategic activities that add value to the business.

High Availability, Business Continuity, and Disaster Recovery

Downtime is expensive for any organization, but can have an especially negative impact on business costs as application uptime and productivity are closely tied to an organization's ability to generate revenue—and can have an equally negative impact on peace of mind for IT staff and business managers. Standard business continuity solutions are expensive and difficult to implement, but with VMware, companies can build remote sites with replicated virtual machines that significantly speed recovery.

In addition, with server virtualization, IT can cost-effectively test a disaster recovery site to ensure a fast restart in the case of a site failure. Any server can be provisioned with the VMs needed to test a DR plan in minutes, without requiring like hardware at the secondary site. Without server virtualization, many companies cannot afford the time and effort it takes to build a test server. When disaster strikes, they can only cross their fingers and hope their DR plan works—and if it fails, it may take weeks to get back on track.

It may be worthwhile to assess the current state of application availability. How do maintenance and upgrade tasks impact quality of life and end-user productivity? Which ones could benefit the most from a virtualization implementation that eliminates downtime? What if key business applications could be kept running all the time—how would that impact productivity and the business’s ability to generate revenue? The answers to these questions will help an organization understand the financial and operational benefits of server virtualization.

Lessons Learned

As you consider deploying or extending server virtualization, take note of the lessons that have been learned by others. First and foremost, think of virtualization as a strategy rather than a technology. It’s not like upgrading to the latest server architecture—instead, deploying server virtualization offers a new way of thinking about IT resources and business process. Because it is fast and easy to build and provision new servers, you can improve service levels and user access while lowering costs. The environment is easier to adapt as business requirements change, making management much easier, and allowing you to consider tasks that you might not have previously, such as testing new applications or implementing DR plans. Many companies find that because they are thinking about resources differently, they come up with unexpected new uses and benefits. Many organizations implement a “virtualize first” policy—that is, all new servers are built as virtual machines unless there is a compelling reason for a physical server.

Another important lesson is to optimize the environment before virtualizing. For example, consider the applications/data that need to be available and protected the most, those you could live without for a day and those you might actually want to archive. This information will give you an idea of your virtualization priorities and remote site requirements. In addition, consider retiring old equipment and unused applications before you implement server virtualization, as this will save you unnecessary effort. Create and execute an efficient migration strategy to optimize resources as you add or expand virtualization.

Finally, be aware of the impact that virtualization can have on servers, networks, storage, and staff. Your server infrastructure will obviously change—you’ll be operating fewer physical machines and deploying them more quickly. Most of your physical machines will be more fully utilized. Remember to keep up with maintenance tasks and upgrades—now that applications are on VMs and can be moved during maintenance, you won’t have to postpone these tasks until it’s convenient to take them offline. Recognize that some users will initially resist virtualizing their applications out of fear of a new platform, but once they experience improved availability, faster access to IT resources, and improved data protection, they’ll be onboard.

Mobility of VMs, easier replication for disaster recovery, and faster restore capabilities will require that the network is kept in tip-top shape. Keep an eye on LAN and WAN bandwidth to make sure everyone can be accommodated. Storage is key to virtualization as well, and networked storage offers by far the most effective infrastructure for virtual machines. The advantages of moving virtual machines around will be restricted if DAS is left in place. You might move an application to another server, but without networked storage, you can’t access the data that application needs. Ultimately, a fully virtualized infrastructure—servers, networks, and storage—provides a single pool of IT resources that is separated from its physical constructs. This kind of IT “utility” is better for users and IT.

Be aware that server virtualization may also impact IT jobs. VMware tools let server administrators manage well into the network and storage domains—be sure that your staff is prepared for this. IT staff with individual competencies may need to move closer to being IT generalists with responsibilities throughout the stack to deliver utility computing resources. Virtualization training and certification are key in helping accelerate the adoption and value of the investment in server virtualization.

The Bigger Truth

Server virtualization is an IT strategy that saves money and improves efficiency. By separating applications and operating systems from their underlying hardware, companies can reduce equipment and management expenses, implement high availability and disaster recovery procedures that were previously too expensive and complex, and make the business more responsive—to users, and to change. When considering the benefits of virtualization, don't just look at the cost saving of hardware and energy cost but consider business uptime particularly as downtime that eats away at revenue is virtually eliminated. With these types of benefits, most companies find it easy to justify the cost of implementing virtualization.

VMware provides an enterprise-class virtualization solution with robust management and availability features that automate mundane IT tasks. VMware understands that smaller companies may be more risk averse than large enterprises, and with a smaller window for transition, need to see value more quickly. Still, businesses want to reduce costs and complexity, free up management time, be more responsive to users, and easily rebound from disasters. With this in mind, VMware built the vSphere 4 Essentials ps to make the transition quick, easy, and impactful. IT administrators find VMware simple to install, operate, and maintain, so whether you are new to virtualization or expanding it, VMware delivers measurable value that is difficult to ignore.



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