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Getting the Most from Your Virtualized Data Center with Converged Systems

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GETTING THE MOST FROM YOUR VIRTUALIZED DATA CENTER WITH CONVERGED SYSTEMS

INTRODUCTION

Consolidating workloads on existing hardware may provide some budget relief, but it's not necessarily going to take your business into the future.

Not since the Industrial Revolution has technology played such a revolutionary role in business. Business trends such as globalization, the remote workforce, and e- and m-commerce, are bolstered by technology solutions such as collaboration, social business, and self-servicing. Hyper-competitiveness and escalating user expectations continue to accelerate the pace of business; heightened security concerns and compliance obligations further raise the stakes, and exacerbate the fallout from failure.

The enterprise IT department sits at the center of the digital revolution—pressured to meet escalating demands from business leaders, customers, partners, and employees, while protecting the business. Budgets are not keeping pace with rising demands. One thing is clear: the old way of running IT just won't work in the new business environment.

To attain efficiencies, most businesses have turned to virtualization. However, many are discovering that simply adding a hypervisor to their existing servers isn't delivering the cost- and process efficiencies they need. Consolidating workloads on existing hardware may provide some budget relief, but it's not necessarily going to take your business into the future.

Truth is, preparing your IT department (and your company) to be agile, cost-efficient, metrics-driven, and flexible will require a change in *how* you operate. It will require new process efficiencies, organizational changes, and even new roles for IT and business managers.

And you will need to implement a solution that supports change—a business process solution that gets IT out of the custom infrastructure maintenance business and into the business of addressing core business issues and outcomes. A solution that automates tasks and simplifies administration; that provides visibility for tracking performance and allocating costs; and that replaces manual, labor-intensive efforts with simple, repeatable systems.

And to support your new business processes, you would do well to turn to a converged system, like HP ConvergedSystems for Virtualization.

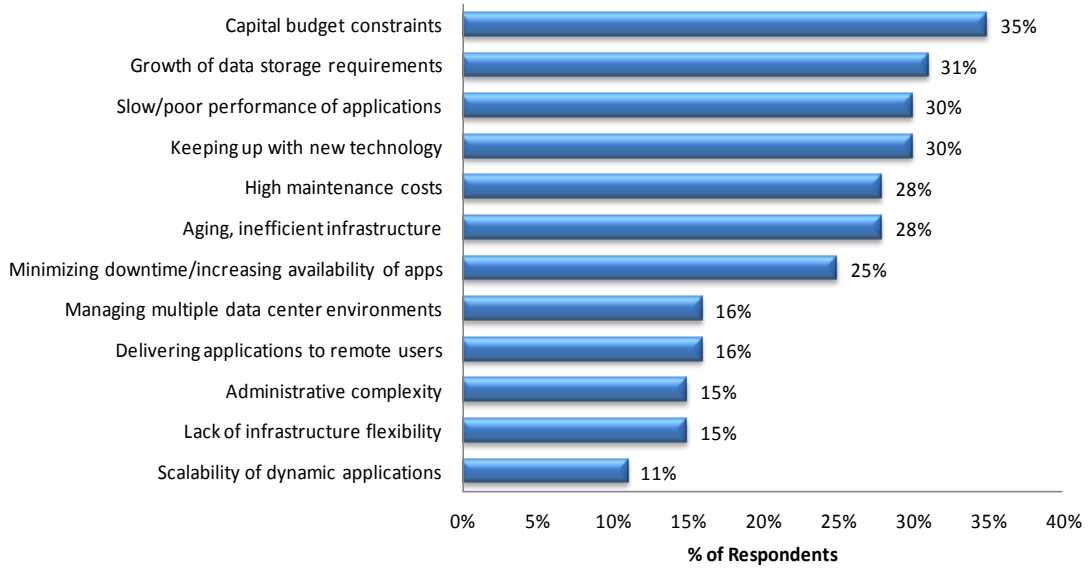
In this paper, we look at the greatest challenges faced by IT departments, and how traditional configurations, processes, and organizations are poorly-equipped to handle today's workplace. We discuss the benefits of converged systems that are engineered to

handle virtualized workloads. Finally, we look at HP ConvergedSystems for Virtualization as a simple and effective way for businesses to optimize their data center infrastructure and processes to better meet business needs.

DATA CENTER CHALLENGES: WHY THE OLD WAY OF DOING THINGS DOESN'T WORK ANYMORE

As they seek to cope with the increasing complexity of the IT ecosystem and escalating business demands, IT decision makers struggle to do more with limited resources. In a recent Stratecast|Frost & Sullivan survey, IT decision makers were asked to name the top three challenges they face in managing their data centers. Results are shown in Figure 1.

Figure 1: Top Data Center Concerns



Source: Stratecast

Capital budget constraints top the list of concerns, cited as a top concern by 35 percent of respondents. Related to capital issues are concerns about exponential **storage growth**, cited by 31 percent of respondents. As part of the drive to become more nimble and market responsive, businesses are reining in their capital expenditures in every area of the business. IT, which has long addressed growing technology needs by building out infrastructure, is now facing flat budgets—a factor that is not expected to change in the next few years.

In addition to capital budget concerns, several of the top issues relate directly or indirectly to the operating budget and available workforce. Concerns about **high maintenance costs** and **administrative complexity** both relate to the increasing cost and effort to manage the data center.

As limited resources squeeze IT from one side, escalating business demands are squeezing from the other. Thirty percent of IT decision-makers are concerned about **slow or poor performance of applications**; and 25 percent cite **minimizing downtime/increasing availability** of apps as a top challenge. Clearly, it is not acceptable for the IT department to point to lack of resources as an excuse for degrading application performance.

Furthermore, IT departments can no longer expect to grow their workforces to deal with the escalating volume and technical complexity. While those surveyed said they did not expect to decrease the size of their team, they do expect their existing technical employees to take on more tasks. That means less time to develop specialized knowledge. IT decision-makers' concerns about **keeping up with new technology** indicate their struggles to free up their own and technical employees' time to focus beyond legacy solutions. Ironically, this means they do not have bandwidth to explore the kind of innovative solutions that can help them meet their objectives more easily. It's like a lumberjack who is so busy chopping down trees that he doesn't have time to sharpen his ax.

BEYOND TECHNOLOGY: WHY YOUR OLD ORGANIZATIONAL AND OPERATIONAL MODELS WON'T WORK

The need to do more without adding technical employees is forcing IT organizations to reassess the way they are organized and the processes they use.

Traditional IT departments were organized strictly by function, in "silos," and are characterized by:

- **Highly specialized staff** – Each vendor and data center component (infrastructure, operating systems, management platforms, applications) required specialized knowledge to procure, install, and maintain them. The problem is that such an inflexible environment leaves no opportunity for cross-training or dynamic allocation of workers. If the "router specialist" is out for the day, the maintenance work needs to wait.
- **"Waterfall" processes** – In "silo'd" organizations, tasks are handed off across departmental lines in a linear fashion. Technicians have little knowledge or interest in how their actions impact "downstream" functions. This leaves little opportunity or incentive for workers to collaborate to streamline and improve processes.
- **Little overall accountability** – When different groups are responsible for different functions, it can be difficult to find an "owner" to take responsibility for the end-to-end project. Consider the deployment of a new application. It is entirely possible for the development team, the testing group, and the provisioning team to each meet their key performance indicators—yet, the months-long deployment time falls well short of business expectations.

Operationally, the traditional IT department is not equipped to support the new business environment. For example:

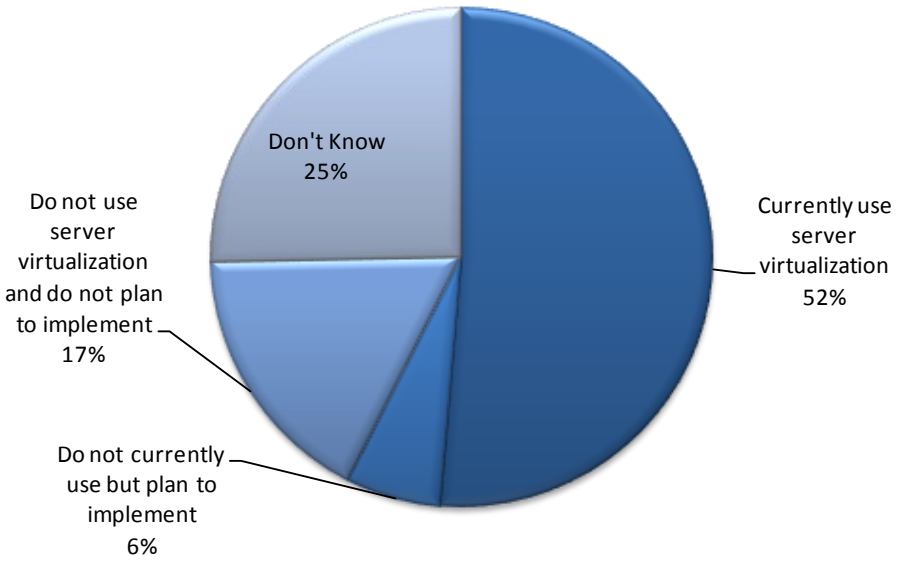
- The old IT department is an asset-management organization, not a service organization. In the old way of thinking, each IT employee is the caretaker of a "thing"—a hardware or software component. But the business of the future will rely less on "things" and more on providing services to employees, customers, and partners.
- The old IT goals do not necessarily align with business goals. In a traditional model, IT was considered a back-office or overhead function. The organization's objectives generally had to do with keeping things running without going over budget. But the new IT is a strategic and integral part of the business. IT leaders sit in the boardroom, and ensure that their organizational goals and metrics are tightly aligned with business goals.
- The old IT department is perceived as a roadblock by LoB employees. Without goal alignment or a service-oriented culture, IT has little reason to collaborate with LoB colleagues. And, as resource constraints mount, it becomes very easy to simply say "no" to new requests.

Overall, there is little in the traditional approach to IT that supports today's need for business agility, efficiency, scalability, and accountability.

THE VIRTUALIZED DATA CENTER

For many IT departments, the first step toward optimizing IT is to implement virtualization into the data center. In fact, the Stratecast|Frost & Sullivan survey shows that nearly half of businesses have incorporated server virtualization, as shown in Figure 2.

Figure 2: Use of Server Virtualization in the Data Center



Source: Stratecast

Virtualization starts to address some of the key challenges cited by IT decision makers. By enabling more efficient use of existing infrastructure, virtualization allows IT to defer some capital investments in new hardware. Because virtual machines (VMs) are easy to move among hypervisor-equipped servers, virtualization can improve uptime of applications: for example, when a server is scheduled for maintenance, IT can simply click-and-move the resident VMs to a spare server.

But simply virtualizing your data center does not guarantee IT efficiency and optimization. In fact, the value you derive from your virtualized data center is less about the virtualization technology itself than about the way the entire data center infrastructure is configured.

Even with virtualization, it can still take months to stand up infrastructure to support your business requirements. Furthermore, a virtualized data center does not eliminate inefficiencies in your operational and organizational models. For example, suppose one IT department is responsible for purchasing, provisioning, upgrading (and testing and tweaking) hardware; another department is responsible for procuring and provisioning (and testing and tweaking) the virtualization platform; and yet another department loads, tests, and tweaks the application. That is a lot of time to complete the entire process of deploying the application. And there's a lot of room for glitches that can impact performance.

Now consider that these steps must be undertaken every time one of the components is refreshed, upgraded, or patched. No wonder many businesses are looking for a better solution—one that will optimize the data center to deliver greater results.

Focus on Systems

For many businesses, the next iteration of the optimized data center will rely on high-functionality, comprehensive systems, rather than a compilation of discrete components. In the systems approach, virtualization technology and all supporting infrastructure are consumed as a complete and extremely efficient system.

A system-based approach recognizes that IT managers no longer have enough time to do design, component selection, and integration (plus testing and tweaking) themselves. Nor are IT leaders interested in deploying their scarce technical resources to perform such mundane tasks. Instead, they want to free up resources and time to focus on new challenges—more applications, new use cases, new workloads. They want data center management to be simple and not require deep expertise in every data center component. They want a highly reliable virtualized infrastructure, with a clear path to cloud as the probable next step. They want simple, repeatable "systems" that can address their needs in a common, scalable way.

The systems approach in data center optimization is embodied by *converged systems*.

WHY CONSIDER CONVERGED SYSTEMS

A converged system built on a converged infrastructure platform is an all-in-one application deployment platform. In a converged system, the hardware components are optimized for the applications and workloads they will be supporting. A converged system is engineered and pre-tested to support infrastructure elements (e.g., virtualization, network, storage) that will be utilized to deliver the workloads to users. Some converged solutions ship with all the software and platform elements already loaded onto the system; others are ready for loading in your data center.

A converged system recognizes that hardware, enablement platforms, and application software are not actually "layers" that sit on top of one another (as commonly depicted); but, in fact, interact at multiple points. In a non-converged or do-it-yourself configuration, the hardware is not "aware" of the specific platforms and software it is running. Thus, the interactions occur at a high level—even though the data bits all pass through the hardware interface points, not all the instructions can be interpreted. As a result, the applications may not perform optimally, and management platforms may not be able to collect and process all the data they were intended to.

In contrast, in a converged system, the hardware and software elements are engineered to work together. In the most sophisticated converged systems, infrastructure, platform, and software engineers from different departments and companies may share specifications, and conduct joint testing to optimize performance, assure reliability, increase visibility, and simplify maintenance.

CONVERGED SYSTEM VERSUS DO-IT-YOURSELF VIRTUALIZATION

As noted, a converged system is pre-integrated for optimal performance. The alternative is to do the integration yourself, with your own or contract technicians. You can assess which option is best for you by considering the following:

- **Time to deploy:** The converged system minimizes time and labor associated with provisioning. Depending on the converged system you choose and the applications you are deploying, this can save months on the deployment process, compared with a do-it-yourself virtualized data center.
- **Error-free infrastructure:** A converged system is factory-engineered and tested for optimal performance. Doing it yourself requires your team to conduct multiple rounds of testing and tweaking for each application or management platform that is loaded or upgraded.
- **High performance:** Selecting a converged system that is designed to handle the high performance computing requirements of a virtualized data center will ensure that your apps always have access to the capacity they need. When you configure

your own virtualized data center, your technicians need to continually monitor server capacity to ensure that apps have sufficient resources.

- **Flexibility:** Some IT leaders fear that a converged system is counter to their goals to bring flexibility into the data center—that is, that the purpose-built and tuned hardware means less freedom to allocate capacity across all workloads. But those that implement a converged system find the opposite is true. A converged system that is optimized for virtualization ensures that you have access to more server capacity for your virtualized workloads than placing a hypervisor on a bare-metal server.
- **Cost:** To accurately compare costs, you need to calculate both capital and operating costs associated with building a service catalogue and deploying apps in a virtualized data center. This includes not just the initial cost of the hardware and software licenses, but also the technical staff time required to provision the hardware and deploy the applications. Furthermore, your business case should include assessments of the business value gained by shaving months off deployment times; for example, you will likely be able to calculate the productivity and revenue gains. After conducting a complete cost assessment, businesses generally find that the return on investment is much more attractive for a converged system than for a labor-intensive, traditional configuration.

HOW A CONVERGED SYSTEM CAN HELP OPTIMIZE YOUR DATA CENTER OPERATIONS

As discussed, meeting the escalating demands of the business goes beyond your data center infrastructure. The right converged system architecture can help you make the organizational and process changes you need to lead your business into the future.

Organizational Efficiencies

A converged system almost forces you to break down the silos that separate your application development and infrastructure teams. Starting from planning and procurement, and extending through implementation, the converged system draws on the expertise from various areas of the IT department. Furthermore, lifecycle management is no longer a series of hand-offs; the engineered system ensures that it will remain optimally tuned, even as software is upgraded.

A converged system also allows you the flexibility you need to manage your IT workforce. Management and administration is simplified, enabling you to minimize training, and allowing you to deploy IT resources wherever they are needed (rather than specializing in a particular system). This allows you to develop "IT generalists" and support cross-functional teams, enabling you to deploy technical resources as needed. In addition, automated provisioning tasks mean fewer staff-hours are devoted to

configuring, testing, and deploying infrastructure resources. That allows you to free up staff to engage in new, strategic projects that serve business goals.

Process Efficiencies

A converged system isn't just about "doing the same thing faster/easier/cheaper." Ideally, it will support a new way to create and deliver IT resources.

- **Greater agility** – Businesses need to move fast to stay competitive. A converged system is the simplest and most effective way to shave time off application deployments.
- **Greater availability** – Customers, partners, and employees expect access to their data and applications at all times—no excuses even for scheduled maintenance. Converged systems allow you to build and maintain a high-availability environment that supports business continuity planning.
- **Greater accountability** – Your LoB colleagues will appreciate internal service level agreements that assure them their apps will be deployed in reasonable timeframes. Converged systems make it easy for you to establish and maintain SLAs for your constituents.
- **Greater visibility** – Converged systems provide a "system level"—not a component level—support experience. With a converged system, it is easy to monitor performance and pinpoint issues. When a problem occurs, there's no finger-pointing; when the problem is visible, it is easier to resolve.

WHY HP CONVERGEDSYSTEMS FOR VIRTUALIZATION?

Businesses looking to maximize the value from their virtualized data center would do well to adopt HP ConvergedSystems for Virtualization. Part of HP's ConvergedSystems line of modular, pre-configured systems optimized for specific workloads, ConvergedSystems for Virtualization ensure highest performance levels and maximum efficiencies for your virtualized workloads. HP ConvergedSystems for Virtualization are integrated systems that support multiple data center deployment models, and provide a pathway from the virtualized data center to the cloud. HP ConvergedSystems are designed so that they are "workload-optimized." This eliminates cycle time and guesswork in provisioning workloads, thus speeding deployment and reducing risks.

The simple, scalable ConvergedSystems for Virtualization are based on open architecture, and support multiple hypervisor technologies and multiple operating systems, allowing you to continue to use the technologies you have in place. To help you get started with ConvergedSystems for Virtualization, HP offers predictable payment options that allow you to "pay as you grow."

When you choose HP ConvergedSystems for Virtualization, you get more than a

powerful, factory-integrated system; you also receive high levels of support and expertise delivered by HP. To implement your engineered system, HP provides on-site installation services and post-installation support. This ensures that your system is correctly integrated into your existing environment, and works optimally from the start, with minimal burden to your own technical staff.

HP offers simplified procurement, lifecycle management and support across all components; with a single point of accountability for hardware, operating system, and even third-party software. In addition, with HP Proactive Care support services, you can get one-stop, proactive care for your ConvergedSystems. This includes automated round the clock monitoring of your ConvergedSystems, recommendations for firmware and software updates, and access to HP technicians who serve as a single point of support for all HP and third-party components.

By relying on HP as a partner for your virtualized data center, you can realize efficiencies that meet both IT goals and business goals. HP ConvergedSystems for Virtualization deliver the technical foundation for optimal application delivery, along with the cost benefits associated with a "pay as you grow" model. Furthermore, HP technical consultants are available to assist you at every step along the way, from evaluating your IT and business needs, designing the appropriate solution (utilizing your existing infrastructure as well as HP ConvergedSystems, as appropriate), implementing the solution, and providing lifecycle support.

Part of the HP Portfolio

As part of the HP portfolio of data center products and services, HP ConvergedSystems for Virtualization are an investment that can propel your data center into the future. With ConvergedSystems for Virtualization, HP leverages its leadership in servers (blade and rack-mount), storage, and networking to provide an enterprise-class integrated solution.

Furthermore, as with all HP products and solutions, ConvergedSystems for Virtualization support open standards, thus allowing you to avoid vendor lock-in. As such, you can utilize ConvergedSystems for Virtualization as the basis for your data center optimization effort, adding other ConvergedSystems upgrade blocks for additional workloads in your virtualized data center. With HP ConvergedSystems for Virtualization, your business is assured of the technology and support it needs to drive business success.

THE LAST WORD

To support today's technology-fueled business environment, IT departments need to become more efficient. Not only do they need to optimize their infrastructure, but they also need to revamp their organizations and operations to ensure they are equipped to deliver on-demand services, quickly and cost-effectively, to the business.

IT leaders looking to gain more business value from their data center infrastructure are moving to the next stage in the virtualized data center: converged systems. Engineered systems, such as HP ConvergedSystems for Virtualization, can help businesses address IT and business requirements, including:

- Business agility: With a converged system, you can provision your virtual infrastructure quickly and easily, allowing you to deliver applications faster, and giving your business a competitive edge in a fast-paced market.
- Optimal application performance: A workload-optimized converged system delivers consistent performance levels throughout the application lifecycle, while minimizing time to deploy and update virtual infrastructure, and reducing the administrative burden.
- Scalability and cost-efficiency: A converged system like HP ConvergedSystems for Virtualization allows you to easily and cost-effectively grow your infrastructure to meet your needs, using a budget-friendly "pay as you grow" model.

Furthermore, the right converged system has benefits that extend well beyond the IT department. By minimizing the time, effort, and budget spent on provisioning, converged systems free up technical resources to focus on solving business goals in innovative ways. This will facilitate necessary shifts in organizational and operational models that can help the business stay competitive.

The successful business of the future needs to become more agile, cost-efficient, and high-performing. Converged systems can help IT get there.

Lynda Stadtmueller

Program Director – Cloud Computing
Stratecast | Frost & Sullivan
lstadtmueller@stratecast.com

For more information about HP ConvergedSystems for Virtualization, click here.

Silicon Valley
331 E. Evelyn Ave., Suite 100
Mountain View, CA 94041
Tel 650.475.4500
Fax 650.475.1570

San Antonio
7550 West Interstate 10, Suite 400
San Antonio, Texas 78229-5616
Tel 210.348.1000
Fax 210.348.1003

London
4, Grosvenor Gardens,
London SWIW ODH,UK
Tel 44(0)20 7730 3438
Fax 44(0)20 7730 3343

877.GoFrost • myfrost@frost.com
http://www.frost.com

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