Virtually possible.

Efficiency and agility spring forth when you combine the right hardware with the right virtualization platform.

By Sandra Gittlen

J ames Martin faced a daunting task in 2006. He had to gracefully merge two firms' networks to create a single, cohesive enterprise. Martin, principal and CTO of the now combined architectural and engineering firm TRO Jung/Brannen Inc., says it was virtualization that made the merger a breeze. "I cannot stress enough how much virtualization has been a transformative technology in our environment," Martin says. "Whenever we run into a problem, probably 50% or 75% of the time we find a solution that involves virtualization technology."

Like many of his peers in mid-size organizations, Martin was able to capitalize on the enormous benefits of virtualization to ease the burden of consolidating and managing his server and storage environment. In fact, a February IDG Research Study, sponsored by Dell, found that 83% of mid-size organizations are currently investing in server virtualization and 41% in storage virtualization.

With virtualization, companies can place multiple virtual machines (VMs), or operating system instances, on a single physical server. Each one of those VMs can then run multiple applications. For many mid-size companies, this means an incredible cost savings as hardware, power and cooling, real estate and staffing expenses are reduced.

However, for virtualization to truly show a return on investment, companies must adopt solutions that avoid complexity, ease integration and simplify ongoing management, according to Antonio Julio, director for SMB Enterprise Product Management at Dell. They need their hardware, operating systems, hypervisors and applications to work in concert and not cause more headaches than the physical server environment.

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Physical pains

For many organizations, the concept of one physical server housing a single operating system and few applications is familiar. They feel it streamlines operations and steadies management. But there are many flaws with this approach that become evident as a mid-size company grows.

In most cases, as a mid-size company scales, so does its server and storage needs. What doesn't tend to grow as rapidly is IT staff. The same number of people are trying to buy, provision, configure, update, patch and troubleshoot a widening pool of physical servers. This becomes exhausting as the server farm expands.

Another problem such growth throws at mid-size companies is an increased footprint. More physical servers require more floor space, power and cooling. Companies that used to be able to house their data centers in a small area of their building will quickly have to search for new space or add to HVAC and power supplies.

At the same time mid-size companies are increasing their facilities' needs, they are often underutilizing each physical server, Julio says. In fact, nonvirtualized servers tend to run in the 10% to 20% utilization range – a waste of increasingly expensive resources and an incredibly non-eco-friendly strategy.

Physical servers also pose challenges because they take time to purchase, configure, test and deploy. This is time that most mid-size companies in highly competitive markets don't have to spare. And for all this effort, physical server environments do not innately provide the business continuity and disaster recovery that businesses of all sizes require.
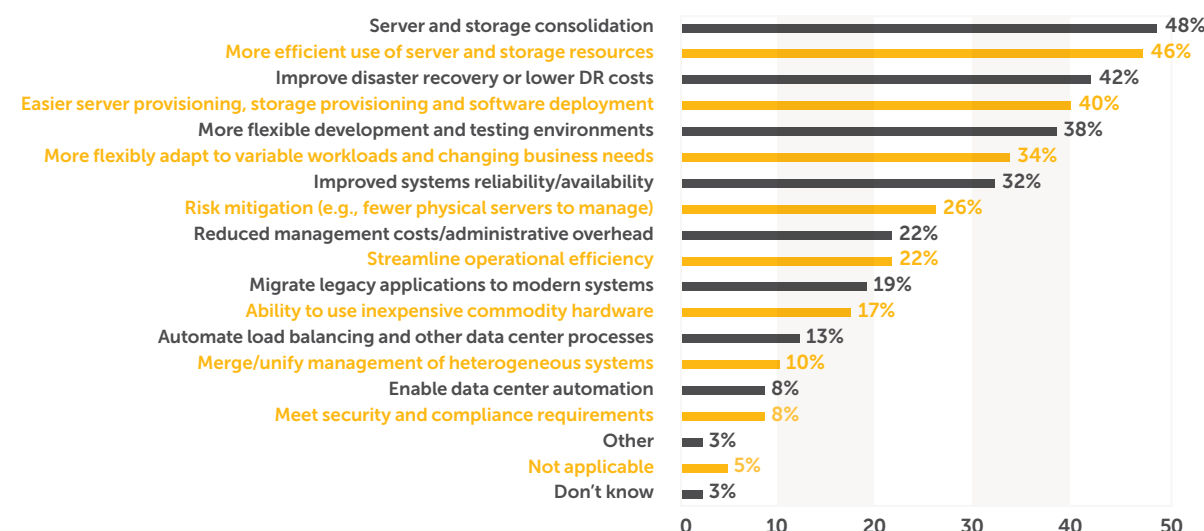
Potential benefits from virtualization yielding greatest return (112 qualified respondents) — IDG Research Services. January 2010

Benefit	%
Server and storage consolidation	48%
More efficient use of server and storage resources	46%
Improve disaster recovery or lower DR costs	42%
Easier server provisioning, storage provisioning and software deployment	40%
More flexible development and testing environments	38%
More flexibly adapt to variable workloads and changing business needs	34%
Improved systems reliability/availability	32%
Risk mitigation (e.g., fewer physical servers to manage)	26%
Reduced management costs/administrative overhead	22%
Streamline operational efficiency	22%
Migrate legacy applications to modern systems	19%
Ability to use inexpensive commodity hardware	17%
Automate load balancing and other data center processes	13%
Merge/unify management of heterogeneous systems	10%
Enable data center automation	8%
Meet security and compliance requirements	8%
Other	3%
Not applicable	5%
Don't know	3%

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The valor of virtualization

As TRO Jung/Brannen's Martin found, virtualization solves a lot of these issues. Using VMware® ESX™ 3.0, he created new virtual environments and a new instance of Active Directory, into which he migrated data from the Active Directory® repositories of the two merging companies. Then he could easily provision all required applications and services, such as mail, file and print.

"Then we just cut over everything during the course of a weekend," Martin says. "And we didn't have to buy any additional hardware." The IDG Research study found that Martin's excitement is not unique. More than 70% of respondents report more efficient use of server and storage resources as a major driver for their virtualization initiatives.

What makes virtualization so different from a physical-only server environment is the ability to create a standard, compliant virtual machine on the fly. IT simply calls up a management tool, enters the operating system, memory and storage specs for the virtual machine, and within minutes it is ready to go. That virtual machine image can then be standardized and cloned across the enterprise, alleviating the risk of human configuration errors and noncompliance.

Rather than having to call up separate management windows, the virtual environment can be managed through a single console. For instance, updates, patches and licensing can be monitored and pushed to VMs from this centralized management tool.

Parceling the workload

There is also automation that handles certain tasks and reduces the burden on IT. If a physical server runs low on resources, IT can be alerted that VMs will be shifted to other servers, or they can add more processing power. IT can also easily track the life cycle of VMs, ensuring that ones that have gone unused for a certain period of time are turned off and their resources returned to the pool.

This efficiency ensures that mid-size companies can safely increase the utilization rate on each physical server above the 50% mark – some reach as high as 90%. Virtualization also facilitates consolidation,

meaning IT has fewer physical servers to manage and can consume less energy and maintain a smaller footprint.

Perhaps most important, virtualization provides IT with built-in disaster recovery, business continuity and security. The IDG Research study found that 46% of respondents are currently using virtualization to support their business continuity efforts, but that number is expected to climb to 63% within 12 months. It's no wonder. VMs can automatically be checked for software versions, vulnerabilities and out-of-date licenses. Also, if a physical server suffers an outage or needs to be brought down for maintenance, VMs can be shifted to another physical host, Julio says.

Virtualization done right

While all these benefits are there to be had, mid-size companies can go off-track and out of budget if they don't choose the right solution. Mid-size companies need to find integrated solutions that make use of their in-house skills and seamlessly blend the management of the hardware, operating system and virtual environment. Otherwise, they'll spend time switching between the physical server and virtual server management windows, combating complexity and trying to develop work arounds for interoperability issues. In fact, 40% of survey respondents say that complexity is a challenge and 33% cite inadequate skills and training.

Dell has worked closely with the leading hypervisor and virtualization software developers to create Business Ready servers and storage. These preconfigured solutions offer customers flexibility to choose their preferred virtualization environment, utilize in-house IT skills and unify the management of physical and virtual servers. Dell also offers consulting services and references for mid-size companies so they can cut the cost of implementations. "We've taken the risk and complexity out of virtualization," Dell's Julio says.

These advances prove that, like TRO Jung/Brannen's Martin, you can find success with virtualization. "We absolutely would not go back. If someone offered me new physical servers to replace all of our virtual machines, I simply wouldn't take them," he says.

Sandra Gittlen is a technology writer and former senior editor at *Network World*.

Power couples.

Pairing Dell hardware with the leading virtualization platforms delivers the goods.

Dell and Microsoft Windows Server 2008 R2 with Hyper-V

For mid-size businesses, the coupling of Microsoft Windows Server 2008 R2 with Hyper-V and Dell's PowerEdge and EqualLogic servers provides a tremendous opportunity to save on hardware, software and training.

The Dell/Microsoft combo takes advantage of in-house skills that mid-size businesses using Microsoft products already have. The user interface is similar to Microsoft® Office, SQL Server and other solutions so IT can immediately feel comfortable.

In addition, the Hyper-V hypervisor is built into Windows Server 2008 R2 so IT only needs to turn it on to start deploying a virtual environment. Using Microsoft® System Center Virtual Machine Manager, Microsoft® System Center and Dell OpenManage™, organizations can monitor, manage and maintain their physical and virtual environments from the same tool.

Dell and Microsoft together have engineered their hardware, operating systems, hypervisor and applications to work seamlessly and provide incredible efficiency in server and storage environments. The outcome: IT spends less time trying to make their server and storage platforms interoperate with their virtual environment and more time deploying strategic projects.

The team has also amassed an estimable pool of resources and references for mid-size businesses to tap as they do their own installations. This pool includes best practices, innovative tools and automated analysis to ease the transition from all-physical environments.

Finally, Dell and Microsoft allow other popular hypervisors to coexist in their virtual environment and have certified a broad range of server and storage products that will work optimally within their environment.

Dell and VMware vSphere

Dell has spent a lot of engineering, lab and field time working with VMware to create an energy-efficient product lineup that eases the burden on mid-size businesses and makes virtualization a fast and simple proposition.

The two companies have interwoven their products so that users can protect critical data, increase application availability to support 24/7 operations, and reduce complexity within the data center. For instance, with VMware Data Recovery atop Dell servers, IT gains optimized, integrated backup. Protection is enhanced when mid-size businesses use Dell's data protection software, which has been integrated with VMware vSphere.

IT also is assured of high availability through the VMware's Dell-certified Fault Tolerance feature. Mid-size businesses stuck trying to troubleshoot tricky problems can rely on the Dell ProSupport service model designed for IT professionals like you for quick resolution. Dell ProSupport for IT provides 24/7 direct access to Dell Expert Centers, fast-track dispatch for Dell-certified technicians and escalation management through Dell's Global Command Centers.

Dell and VMware have sped up deployments by embedding VMware ESXi into Dell's PowerEdge servers. VMware ESXi has also been blended with Dell OpenManage so that IT can have comprehensive and cohesive physical and virtual server management.

The VMware alliance has resulted in strong support not only for servers, but also for storage via the integrated data management in VMware's vStorage APIs. These APIs are able to multipath with Dell EqualLogic and Dell/EMC storage solutions.

Dell and VMware continue to improve their affordable product line, boosting significant performance increases generation over generation.

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> Fast-track dispatch for Dell-certified technicians

> Escalation management through Dell's Global Command Centers

Check: www.dell.co.nz/prosupport for customization options.

More Information @ ▶ www.dell.co.nz/business/virtualization