



VMware makes HP's global IT consolidation a reality



KEY HIGHLIGHTS

INDUSTRY: **TECHNOLOGY**

CHALLENGE

Intangible consolidation To date, HP has done what many other companies have done—as server infrastructures grow, the common strategy has been to add another server or piece of hardware to the system.

SOLUTION

Adding VMware ESX to HP's Data Center Consolidation program was the most cost-effective way to leverage an investment and add flexibility to its environment.

RESULTS

- Reduced server provisioning time in half, from 6 hours to 3 hours
- Substantially increased server utilization
- Consolidated servers 20:1
- Reduced data center rack space 8:1
- Increased quality and reliability of IT environments through built-in redundancy
- Improved response time to customers

“The VMware implementation eliminates a large amount of costs for hardware contracts and ups the utilization of the servers; so HP ends up getting a better bang for the buck.”

HP-IT S&S, Windows Service Engineering
Project Manager, Paul Bennett, Hewlett-Packard (HP)

Hewlett-Packard

In recent years, corporations worldwide have struggled to squeeze more value from information technology investments and it's no different even for one of the world's largest IT corporations: Hewlett-Packard. Commonly known as HP, the over 65 year-old company is headquartered in Palo Alto, California, and has a global presence (Americas, Europe, Middle East, Africa and Asia-Pacific regions) in the fields of computing, printing, and digital imaging, and also provides software and services.

HP's global IT infrastructure is growing rapidly and the need to explore successful strategies such as consolidation, enhanced service delivery and cost reduction are all critical to their business goals. It becomes an attempt, as with any other company, to find the right combination of agility to meet evolving requirements and control over technology standards and expenses.

The challenge: intangible consolidation To date, HP has done what many other companies have done—as server infrastructures grow, the common strategy has been to add another server or piece of hardware to the system. And, each new application server, mail server and firewall in that environment calls for another piece of hardware, or several, depending on power and failover requirements. The new hardware then needs to be configured and integrated into the IT environment. This “server sprawl” situation can be costly, both in terms of underutilized hardware and augmented management requirements.

Currently, HP has over 20,000 HP ProLiant servers installed worldwide, but the IT company has a distinct goal to dramatically reduce this number as part of its Data Center Consolidation (DCC) program. Over the last four years Paul Bennett, HP's IT Server & Storage, Windows Service Engineering Project Manager, has been leading the internal server virtualization initiative in an attempt to do more with less, reduce costs and achieve higher service levels.

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- “Primarily our challenges were that we are a very large company and extremely enterprise-focused.

We’ve got a number of very large business units that make up the company. And HP is also worldwide-focused; very driven by regional components. For the most part, a large part of our applications were executed individually by regions, and consequently we would implement the infrastructure in each region, then each region’s IT manager would carry out its management. We would act as a consolidating function, trying to put the overall standards across the regions and then they would complete the implementation.” HP realized that they could benefit from moving towards a centralized type of environment rather than individual regional standardizations. The idea was that if they could consolidate as much as possible, then there would be aspects of fixed costs HP could reduce. Consolidating into an industry-standard enterprise infrastructure could maximize both hardware and software capabilities while reducing management and maintenance tasks. Bennett adds, “We needed to be confident in a solution that was not a fly-by-night type of technology.”

- “Everything was basically on individual physical servers, all the way from small 2-CPU servers, up to large 8 socket servers on the Windows side, and significantly it was the same type of deal with HP-UX: HP’s own Unix operating system. What we had found is that a large amount of test development servers, and even production servers based on those test/dev servers, including each application had their own server. That’s what drove us to acquiring well over 20,000 servers in the infrastructure.” The result of that finding was that a lot of HP’s servers were at a very low utilization level, both at the central processing unit (CPU) and at memory utilization. But most notable was the underutilization of the CPU in terms of performance as the speed of the processors picked up. Moreover, dedicated servers could impose a risk of under-servicing the business because it is very difficult to reassign resources quickly. Bennett and his team at HP needed to positively impact overall utilization numbers and ultimately optimize service levels.

The solution and success: solidify a worldwide standard solution In that time, HP began to look for solutions basically to alleviate a lot of the expanding infrastructure costs. The most likely option was implementing an IT consolidation strategy that uses virtualization by applying VMware Inc.’s virtual machine software (VMware) to create virtual machines (VM). After a proof-of-concept, HP began using VMware two years ago in both production and test development servers worldwide.

- “VMware has been a leading aspect of virtualization now for many, many years. They are considered the cream of the industry in this area; they’ve been doing most of the driving of the technology. They have proven themselves to us prior to being involved with them, and they have proven themselves afterwards.” VMware solutions consists of a virtual machine that can execute its own guest operating system, such as (but not limited to) Windows 2003 and Red Hat Enterprise Linux. In simple terms, VMware allows one physical machine to run numerous operating systems simultaneously. Other HP and VMware products [Virtual Machine Management (VMM) Pack, Server Migration Pack (SMP) from HP and VMotion and VirtualCenter from VMware] help manage or migrate VMware virtual machines across multiple host machines.
- “With VMware we’ve found a 25-30% reduction in actual costs of the physical servers... We’ve also found a fairly good average of overall utilization. So the actual physical hardware is now showing up to 40-50% utilization levels of each overall unit.” Today there are approximately 70 HP ProLiant DL760 G2 8 socket servers running VMware with about 1,000 virtual machines across HP’s physical servers globally. VMware ESX is being used to virtualize physical servers into virtual machines. These VMs run a wide range of applications from development machines, Web hosting, internally developed applications and database solutions such as Microsoft SQL Server. The solution is used primarily to consolidate under-utilized servers into virtual machine implementations. A typical HP ProLiant DL760 G2 server now has 20 virtual machines running, with more headroom to add additional virtual machines as needed.

In the future scope, Bennett and his team are planning to move into production with HP’s comprehensive and powerful HP ProLiant DL585 (4 socket, AMD dual-core) Host servers and an HP BladeSystem solution. And as any infrastructure is upgraded to a newer hardware platform, it may be advantageous to keep existing applications running under their current operating systems. With virtualization, HP can now upgrade and run their applications without modification inside a virtual machine.

Much like VMware Inc., HP continues to take a cutting edge role in the technology industry. By using VMware internally, HP is most significantly taking that leading role once again. Adding virtualization to HP’s Data Center Consolidation program was the most cost-effective way to leverage an investment and add flexibility to its environment. VMware is important to HP because it gives the IT infrastructure teams the ability to achieve the aggressive consolidation plans going forward and to reach the levels of flexibility required to service a complex global company like Hewlett-Packard.

About HP, HP is a technology solutions provider to consumers, businesses and institutions globally. The company’s offerings span IT infrastructure, global services, business and home computing, and imaging and printing. For the four fiscal quarters ended Jan. 31, 2006, HP revenue totaled \$87.9 billion. More information about HP (NYSE, Nasdaq: HPQ) is available at <http://www.hp.com>.

- Simplicity
- Reduced costs through fewer required servers, less demands for data center space, and less power and cooling
- Improved management
- Agility
- Increased utilization of physical servers
- Reduced complexity of moving VMs from one system to another using zero-downtime VMotion technology
- Reduced time-to-deploy VMs vs. a physical server
- Value
- Breadth of support with HP systems and storage
- Simplified management with existing OpenView and other management software
- Increased service levels globally
- Reduced application downtime via VMotion and SANs
- Consolidating a standards-based global IT infrastructure

*This customer's results depended upon its unique business and IT environment, the way it used HP products and services and other IT factors. These results may not be typical; your results may vary.

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