



summit

Virtualization delivers IT and business benefits for SMBs

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Virtualization delivers IT and business benefits for SMBs

After years of vendor hype about virtualization, customers are realizing real-life business and IT benefits from implementing this technology. By moving away from the traditional 'siloe'd' approach of linking applications to specific IT infrastructure, towards an approach that creates shared pools of virtualized server, storage and network resources, customers can dynamically assign the pooled resources wherever and whenever needed.

Although many vendors have focused their selling and marketing efforts on the virtualization benefits for enterprise-class customers, more and more SMB customers are reaping virtualization rewards as well. Nonetheless, a good portion of SMBs still view IT virtualization as something that can only be attained by large enterprises, and as a technology that has little relevance in their comparatively smaller IT operations. However, virtualization's benefits of increased utilization, improved service reliability and the positive impact on both internal and external business processes can apply to SMB as well as to enterprise-class operations.

Virtualization leader VMware, an independent EMC subsidiary, has been a pioneer in both enterprise and SMB virtualization deployments, particularly in server virtualization. VMware's products logically 'break' each physical server into several independent virtual servers, allowing customers to run multiple operating systems and applications on a single machine simultaneously. Each virtual server is independent of the others, so failure in one will not affect others. Furthermore, the workload from the failed virtual server can be reassigned to another virtual machine.

In June 2006, VMware launched its VMware Infrastructure 3 bundled solutions, packaging together the company's older and newer product functionality into several easily digestible bundles. This initiative included some entry-level pricing designed to put virtualization in reach of a wider array of enterprises and, notably, SMB customers grappling with various IT management and disaster recovery issues.

This paper profiles the virtualization experience of two VMware SMB-size customers, and provides a window into the 'real-life' impact of virtualization for IT managers juggling the dual priorities of remaining competitive and keeping costs in check.

WTC Communications discovers virtualization's value for efficient IT management

WTC Communications is a small telephone company in rural Kansas that provides telephone, cable and Internet services to about 8,000 customers. Starting in 2000,

when it began branching into new areas such as Internet access, the company's IT infrastructure grew rapidly, from only a few Intel-based servers to almost 15. Although a small number by enterprise standards, keep in mind WTC has only about 25 employees, and only two dedicated to maintaining its servers and keeping the IT infrastructure up with an expanding business. As the head of the company's IT department states, 'it was really becoming a headache [to manage]'.

After considering different options, in early 2005, WTC decided to deploy VMware ESX Server. ESX Server functions as a virtualization layer (commonly called a hypervisor) that abstracts the processor, memory, storage and networking resources on one x86 Intel-based server into multiple virtual machines. This deployment allowed the company to reduce its physical 15-server environment to three servers supporting 25 virtual machines among them. The virtual machines, in turn, run everything from internal billing systems to customer email and web hosting services. Most of the virtual machines run Windows, although some run Linux.

Although WTC has not performed a detailed financial analysis, its executives believe the company has saved thousands of dollars in hardware costs, and has freed up precious IT man hours to focus on other projects. 'We know that we're doing better than if we were doing it the other way', says one WTC IT manager.

Since its initial deployment, WTC upgraded to the VMware Infrastructure 3 suite, taking advantage of the \$1,000 pricing of the two-CPU Starter edition, as well as some additional features in other VMware Infrastructure 3 editions. Among the benefits WTC cites are:

- automated resource allocation: with the dynamic allocation functions of VMware Distributed Resource Scheduler (DRS), administrators no longer have to manually allocate more server resources depending on end-user or application needs. WTC can set rules and priorities ahead of time, and can change or alter them with no interruption to services
- consolidated back-up: in the past, system or server crashes meant hours or days spent rebuilding server configurations. WTC can now perform virtually instantaneous restores, accessing back-up files and leveraging other technologies in the VMware Infrastructure 3 suite such as VMware Consolidated Backup functionality
- centralized management: VMware VirtualCenter allows WTC's IT managers to make alterations or changes, where needed, without internal users or customers being aware that anything has occurred
- ongoing support from VMware: according to WTC, it has never felt that VMware treats it poorly just because it is a smaller customer, and praises VMware's ongoing technical support processes. The vendor provides ongoing training on new product features, as well as timely and accurate information on any patches, fixes

or bugs. In fact, WTC has actively participated in VMware's customer councils to help VMware identify ways to improve its products.

Bowdoin College achieves more effective data center management and disaster recovery

Bowdoin College is a well-known private liberal arts college in Brunswick, Maine. Bowdoin's IT infrastructure has grown rapidly over the years to serve the needs of its diverse academic community, which currently stands at about 1,700 students and more than 850 faculty and staff. The IT department is responsible for everything from maintaining custom administrative, admissions and instructional applications, to managing the college's website (through which students and staff can access customized portals), to running data archiving solutions for the college's three museums.

In early 2004, Bowdoin's IT department realized it was quickly running out of data center space due to its need to run different operating systems (including multiple versions of Windows, Red Hat Linux and Sun Microsystems Solaris). The growth of servers also stressed its data center power and cooling systems. For example, as one IT administrator described it, its uninterruptible power supply (UPS) for back-up was at 92% capacity. 'We were right at the edge of boiling the thing up,' he said.

What's more, the college at the time had an inadequate disaster recovery plan, with no remote storage or back-up capabilities. In the event of a disaster, Bowdoin faced the prospect of needing weeks or months to fully recover everything in its IT infrastructure.

To begin addressing these problems, the college purchased its first VMware ESX Servers in mid 2004 for some web server applications, with the intention to build from there. The initial deployment was so successful that the IT department decided that when servers reached end-of-life or were to be retired, Bowdoin would migrate to VMware virtual environments running on blades, rather than purchasing one new physical server for each application.

Three years on, Bowdoin now has more than 100 virtualized environments on 11 ESX Servers, running on three racks of blades from Hewlett-Packard, with room to grow if necessary. The college uses VirtualCenter and VMware DRS for dynamic management and resource allocation across its virtualized servers, to respond to the fluctuating needs of various college departments. Bowdoin's IT department estimates about 70% of its server environment is now virtualized, and says the use of virtualized blades has allowed the college to save on power and cooling costs.

Virtualization has also allowed the college to implement a unique disaster recovery program. Bowdoin teamed up with Loyola Marymount University in Los Angeles –

which also utilizes data center virtualization – to co-host virtual machines for each other’s Web, DNS and Windows Active Directory servers. Each college, in effect, acts as a cross-country remote disaster recovery site for the other, using a dedicated network tunnel to send regular updates between the two.

Bowdoin has purchased, and is currently testing, VMware Infrastructure 3, and plans to migrate to the new suite fairly soon. It wants to move ahead on VMware Infrastructure 3 because of the positive IT and business outcomes realized since its VMware deployment three years ago, including:

- substantial cost savings. The college estimates it has saved at least \$1 million in three years on the purchase of physical servers by utilizing virtualized blades. It has also achieved a higher degree of energy efficiency and saved on power and cooling
- the ability for IT staff to concentrate on other critical IT projects, including a planned voice-over-IP (VoIP) implementation and an upgrade of its email infrastructure
- the peace of mind in knowing that the college now has an innovative and bulletproof disaster recovery plan. In the event of a failure, Bowdoin and its partner college will be able to recover more quickly than under their previous programs.

SMBs share common needs for virtualization deployment

Both WTC Communications and Bowdoin College had common needs and shared some common approaches as they implemented VMware’s virtual infrastructure.

- The need to consolidate and better utilize their server environments due to ongoing cost pressures, which entailed an assessment and inventory of their overall IT environments. Virtualization allows SMB IT managers to optimize their current server environments, without the need for additional or extensive hardware investments. (Some organizations such as Bowdoin College can decide to migrate to newer blade-based systems for additional efficiencies; others want to maintain the servers they have, but to utilize them more effectively with virtualization.)
- A new approach to disaster recovery and/or improved back-up capability. Many SMBs have come to realize that they need enterprise-class recovery procedures in order to be properly prepared for unforeseen disasters or, in some cases, for regulatory compliance. However, many SMBs lack the financial resources or personnel to implement a complex disaster recovery solution. Through virtualization, IT managers can restore virtual servers on any physical hardware device, ensuring faster recovery capabilities.

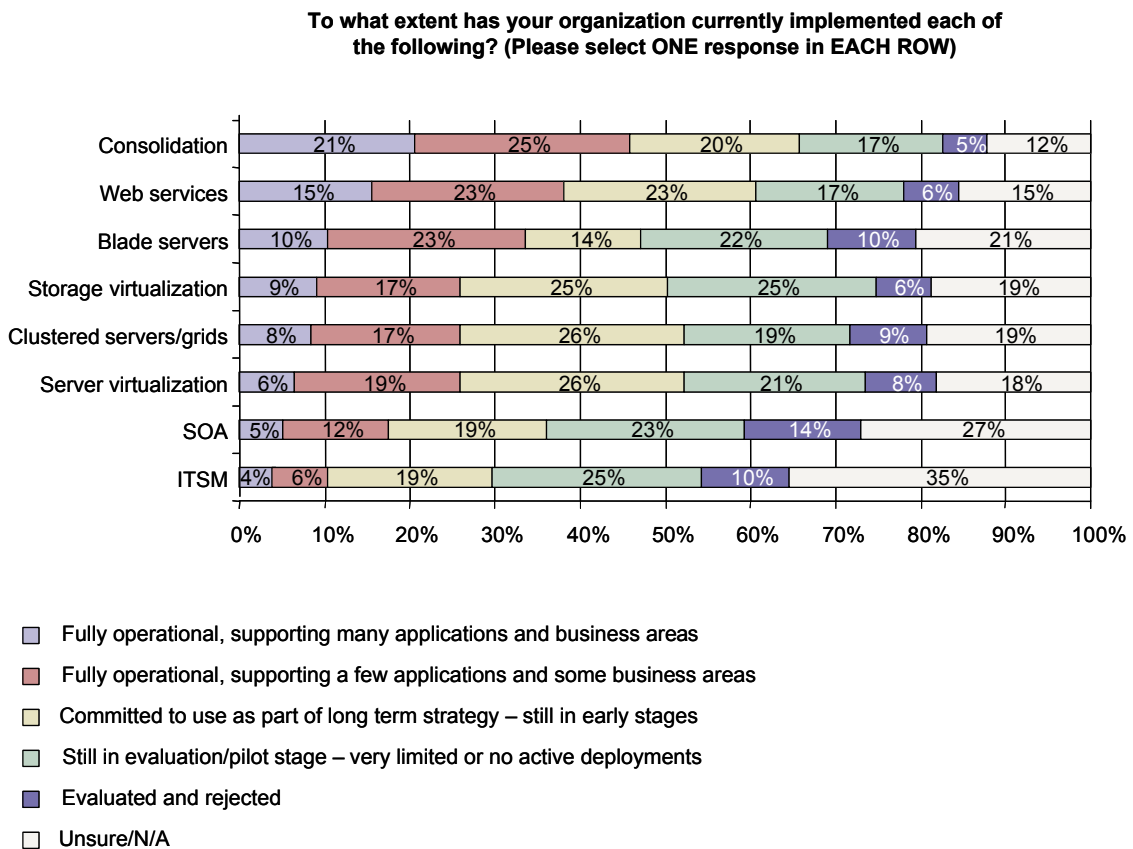
- A means to reduce their overall energy costs by reducing their physical data center server count, which in turn lowers their overall power and cooling costs. With skyrocketing energy prices and maxed-out power grids, leveraging consolidation projects and virtualization technologies to impact energy requirements is emerging as an important decision-making driver.
- A desire to free up IT staff from time-consuming server administration duties, and leverage automated management functions as ways to make IT a business driver, rather than solely a cost center.
- A way to ratchet up application availability and scalability 'on the fly' in order to meet unexpected demands on IT resources, which requires IT and business leaders working together to plan for potential resource demands, priorities and allocations.
- An IT approach that would allow their operations to grow (in terms of applications, data and transactions), while maintaining a reduced and predictable IT cost structure. In fact, the ability to work with VMware to 'start small' with limited and controlled virtualization testing and deployments – and grow as necessary – was an attractive option for both of the SMB-sized organizations profiled here.

Survey data supports virtualization's spread among SMBs

A recent survey conducted by Ovum Summit makes clear that a wider variety of small and mid-sized customers – in addition to traditional enterprise clients – are experiencing the benefits of virtualization more than ever before. Other SMBs, in particular mid-sized businesses, plan to introduce virtualization into their IT environments as part of their future strategies, according to some of our survey data.

As shown in *Figure 1*, out of more than 150 mid-sized businesses surveyed (we categorize 'mid-sized' as customers with 100–999 employees), 26% said that storage virtualization was fully operational within their organizations, supporting either many or a few applications and business areas; 25% of respondents said the same of server virtualization, and 46% said they were involved in consolidation projects. In more and more cases, virtualization is seen as a key technology to successful and cost-effective data center consolidation within SMBs as they attempt to contain costs and optimize their current data center environments; some SMBs in fact turn to virtualization as a method of avoiding large-scale, expensive hardware investments.

Figure 1 Mid-sized businesses technology adoption

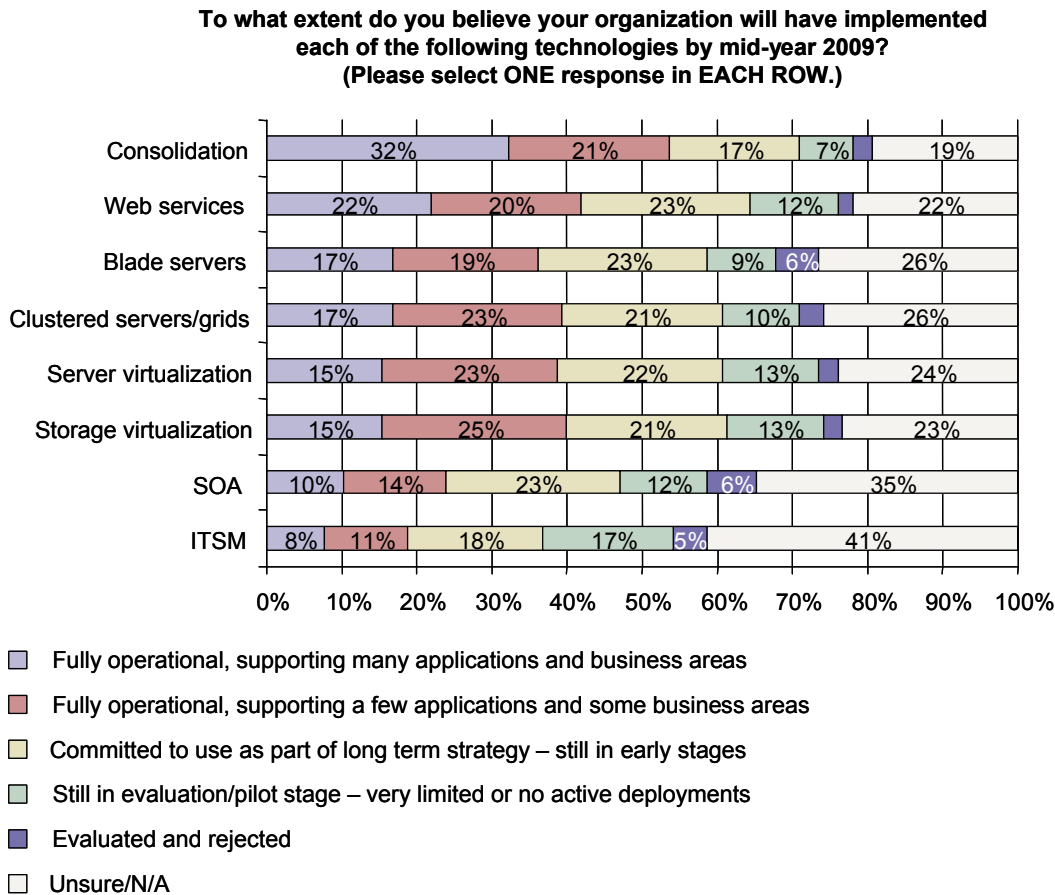


All mid-sized businesses: N = 155

Source: Ovum Summit

When asked about the extent to which certain technologies would be implemented in their organizations by mid-2009, a full 40% of mid-sized businesses earmarked storage virtualization, supporting either many or a few applications and business areas. In addition, 38% of mid-sized businesses earmarked server virtualization as a technology priority. More than half of mid-sized respondents said they would be involved in an IT consolidation initiative in the same time frame (see Figure 2).

Figure 2 **Projected technology adoption – mid-sized businesses**



All mid-sized businesses: N = 155

Source: Ovum Summit

Done properly, virtualization can lower SMBs’ overall IT costs, enable more efficient IT operations, improve disaster recovery/business continuity, advance overall business productivity, and deliver energy savings for SMBs’ data center power and cooling needs. It can also serve as a good foundation for other critical IT projects such as implementing new service-oriented architecture (SOA)-related services, and result in more satisfied employees, customers and suppliers, thanks to improved levels of availability and reliability.

SMBs that still think of virtualization as something that is too expensive or too unwieldy to implement can take a lesson from their counterparts at WTC Communications and Bowdoin College. Whether looking for cost effective consolidation or robust disaster recovery solutions, VMware's various technologies and management capabilities can help SMBs achieve enterprise-class IT and business benefits that may have previously been out of reach.

This paper was commissioned by VMware.

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