

SERVER VIRTUALIZATION:



# THE BUZZ FOR SMALL BIZ

Find out how virtualization can help improve hardware utilization, cut IT costs and increase application availability.

Maybe yours is a company with significant computing needs, far too many servers and ever-increasing IT costs. If this is the case, no one needs to tell you that investing in IT infrastructure is one of the biggest expenses a small business can make.

Spending big dollars in a fluctuating economy can be gut-wrenching and have you looking for a bigger bang for your IT buck. That bigger bang could come in the form of server virtualization, a technology that is leaving an imprint on businesses both large and small.

The technology involves getting more use out of existing servers and software; spending less money on space, housing infrastructure and IT consultants; and reducing the time and manpower invested in maintaining systems. It's critical that a business be able to do all this while using cutting-edge IT that delivers as advertised.

Sound like a tall order? Server virtualization is steadily proving that it can meet these demands. And small businesses are increasingly becoming convinced of the benefits of switching from purely physical server operations to virtualized server environments.

### Virtualization Defined

Server virtualization is the partitioning of a physical server into several virtual servers or machines. Each virtual machine, or VM, can interact independently with other devices, applications, data and users as though it were a separate physical resource.

Different VMs can run different operating systems and multiple applications while sharing the resources of the single physical computer. And, because each VM is isolated from the others, if one goes down, none of the others are affected.

In the past, many people thought that server virtualization was more appropriate for big enterprises. But over the past couple of years, that view has changed and vendors are seeing small and midsize businesses adopt virtualization at an increasing rate, says Tim Mueting, virtualization solutions product manager at AMD.

Of course, there are no hard-and-fast benchmarks relating firm size to server-virtualization worthiness. In fact, tiny firms in web hosting, financial services, law and other sectors can find themselves with large IT requirements plus the budget and staff to make server virtualization pay off.

### More Money in the Bank

The price tag for running a server typically hovers around \$4,000 a year, says Timothy Stephan, senior director of product marketing for VMware. That's the cost of power, cooling, support, maintenance and other associated operating costs, which are completely separate and do not include the cost of the hardware itself.

For a small- to medium-sized business (SMB), that's a lot of money. "Small businesses keep critical applications on a separate host to make sure they have the capacity they need," Stephan says. "As a result, we can often see utilization rates of physical servers as low as 5 percent.

"We see consolidation ratios between six to nine VMs per physical server host per small business," he adds. For a small business

running three physical servers instead of 20, say, that would mean up to nearly \$70,000 in savings.

Utilization rates can also be increased without incurring additional risk to any of the virtualized applications. In fact, according to VMware, many small businesses increase their utilization rates for x86 servers from 5 to 15 percent to 60 to 80 percent after introducing virtualization.

### Computing Environment Improvement

A virtual server environment can improve the computing environment of a business, regardless of size. In the past, large companies tended to deploy lots of big servers, with each server devoted to specific business applications.

In the long run, this was a highly inefficient model. Those servers were typically utilized at rates of anywhere from 10 to 20 percent, Stephan says. The result is a relatively common inefficiency called server sprawl. Specifically, grossly underutilized and over provisioned servers populate the data center.

Virtualization allows a business to get more out of its hardware infrastructure. Ideally, no matter how large the computing environment, virtualization should allow the business to better maximize servers and customize the data center to meet needs more dynamically.

For large enterprises, this can mean millions of dollars in energy savings each year. For a small business, virtualization of servers means that it can invest in fewer machines and then set a plan to scale IT operations as aggressively as needed to meet growth.

"Virtualization allows the headroom to grow within your current infrastructure, react to changing business requirements and plan for growth by purchasing servers

equipped with the latest and greatest virtualization capabilities,” AMD’s Mueting says.

Moreover, virtualization lets businesses expand and add new servers even if they don’t have the physical data center space. “Virtualization means you can increase your overall computing capacity and save precious data center real estate,” he adds.

Server virtualization also allows the firm to consolidate applications, says John Humphreys, senior director of product marketing at Citrix Systems. “It’s really about the applications that are in the physical server and boosting your server utilization. Going from 6 percent utilization to 60 percent is great.”

Virtualization security has also greatly improved. All of the major virtualization software providers — Citrix, Red Hat, Microsoft and VMware — have enterprise-level security features for SMBs built directly into their programs.

# 52%

of IT professionals in small and midsize businesses already use virtualization in their networks, up 18% from those using it in the first half of 2010!

### Protected From Disaster

Business continuity and disaster recovery are also critical concerns for small business. As a hedge against a costly outage, an SMB can deploy virtualization as a disaster recovery strategy.

Implementing a disaster recovery plan for a virtual environment is the same as a typical physical-server environment. Essentially, a business backs up data by taking snapshots of the virtual machines that it wants to protect, at whatever frequency the business demands.

As is typical, this can be weekly, daily or several times a day for some quick-turn retail companies. But Murphy’s Law eventually applies to most things, and at some stage, the disaster recovery plan for a physical server may fail.

When you operate from a virtual server, it

doesn’t matter what is happening at physical primary and secondary storage sites, explains Humphreys. That’s because of the fact that the server is virtualized and all the data can be abstracted from the virtual server. “You save all the energy and management time that you’d spend making sure that your primary and secondary sites work effectively,” he adds.

A virtual server also offers high availability. This means that should a server go down for any reason, whether it’s a broken cooling fan, hard drive failure or power outage, you can automatically failover the latest snapshot of the VM to another server and maintain operations. And this can all be completed without any human intervention.

### Virtualization Candidates

There’s no minimum size for a company considering server virtualization, Humphreys says. “We’ve seen companies as small as six employees implement a low-cost virtualized disaster recovery solution.”

Any business that wants to improve its hardware utilization, cut IT costs, increase application availability, streamline data center management or protect against a potential disaster is ready for virtualization, VMware’s Stephan says.

The one must is that a company’s IT staff needs to be capable of managing a virtual infrastructure. “Virtualization management has come a long way,” AMD’s Mueting notes. “However, there are still nuances to server virtualization that an IT staff needs to be aware of and able to navigate.” These include areas such as load balancing and disaster recovery, he adds.

Brett Waldman, senior research analyst of system software at IDC agrees. “IT in small- and medium-sized businesses is usually made up of generalists rather than specialists,” he explains. “Therefore, being able to leverage existing skills and not have a steep learning curve when moving to a virtualized environment is key in the SMB market.”

Another consideration when working out whether a business is ready for server virtualization is whether or not it’s time to refresh the physical servers. Although a business can use existing hardware, a refresh cycle is the perfect time to evaluate virtualization and ensure that the business is preparing for the future.

### Beginning the Process

Virtualization can serve as the foundation for a small business’ IT environment, so it’s an important purchase. The key factor in evaluating solutions therefore hinges on identifying proven effective approaches that work in all types of environments.

The technology must be proven, the benefits must be proven and the chosen vendor must have plans to be a long-term partner. The strategy created from day one must detail how virtualization will support the business’ IT requirements today, plus how the solution will evolve as the business’ needs evolve.

As with any IT investment, overall value is key. “To be clear, that is not synonymous with cheap,” Mueting says. “Value is a combination of cost, performance and energy savings.” When looking to implement server virtualization, most businesses do so to achieve great overall efficiency — not just reduce hardware

## Six Tips to Better Server Virtualization

### 1. Conduct a comprehensive assessment of your server environment.

This process will help to identify which pieces of hardware you can and should virtualize. Use free tools from vendors such as VMware and Microsoft to help identify exactly which parts of the IT infrastructure are good candidates for consolidation and virtualization.

### 2. Ensure that applications are compatible with virtualization software.

Most virtualization software vendors will help a business determine if its server environment and applications are suitable for virtualization.

### 3. Choose a virtualization platform that best suits your hardware platforms.

Make an informed decision about which hypervisor will operate most effectively with your hardware platforms and meet your specific business needs. The hypervisor acts like the train conductor on the host system to make sure that the VMs don't collide or overload the hardware. Technology advances quickly, and the virtualization platform selected may not be compatible with the server hardware in the environment. The most commonly used hypervisors, provided by Citrix, Microsoft and VMware, are very distinct platforms.

### 4. Revisit the terms and conditions of your current backup contract.

Many vendors offer enhanced backup products for a virtual infrastructure, some priced by the number of virtual servers on a machine (also called a "socket" or "host"). These can reduce costs considerably. But a business needs to consider whether making a change will break an existing contract it may already have if the business is tied to a long-term maintenance contract for its current data backup infrastructure. Breaking the contract could result in financial penalties.

### 5. Implement a plan that eliminates as many physical servers as possible.

By eliminating as many physical servers as possible, a business will obviously realize the quickest cost savings and return on its investment. Turn off and recycle or sell unused servers: That's where the most savings materialize up front.

### 6. Train your staff.

Invest in training about maintaining a virtual infrastructure. Improperly maintained virtual environments can cost much more in repairs and lost functionality.

costs, he notes.

As to server performance, the most important aspect is processor specification. "Memory capacity and total number of cores, in particular, have a significant impact on virtualization performance," he says. Because of that, memory bandwidth, input/output speed and core count should be high priorities when shopping for servers.

In terms of capacity planning, or load balancing on the server, that's fully dependent on the applications a small business runs. "A lot of firms often ask, 'How many virtual machines are too many?'" Mueting says. "Most administrators like to stay within 50 percent to 65 percent utilization of their physical servers."

With that capacity, a business has the necessary headroom to absorb a sudden increase in activity. And it can create policies to automatically balance VMs to handle processing spikes.

Look to CDW for server virtualization solutions that lower costs, optimize performance and simplify management.

## Implementing Virtualization

The first step when deploying virtualization, of course, is to ensure employees experience as little downtime as possible. Ideally, this should be no downtime at all.

This requires working with the vendor to ensure a seamless process. It also requires that the IT staff has been trained extensively before the new technology goes online.

The implementation process is not overly complex, and a business won't have to wait long to have its systems up and running, Humphreys says. "Typically, when you buy a physical server, it can take between two to four weeks before it's up and running.

"On the other hand, you can create a new virtual environment or convert physical environments to virtual machines within minutes," he adds. "From there, it is just like managing your existing environment, only easier."

From a licensing and support perspective, though, the vast majority of software providers treat virtual machines exactly the same as physical hosts. What that means is that a business must understand the user load so it can negotiate the appropriate licenses.

This can be one of the trickier parts of virtualization if IT does not prepare adequately by inventorying software and validating the business' users. Often, organizations moving to virtual environments find that they are actually over-licensed for some applications, so the implementation process can help rightsize a business' application portfolio. ♦