Implementing server virtualization can help small businesses control hardware costs and simplify their infrastructure. It can also be a building block to a disaster recovery plan.

According to a recent study conducted by VMware, small businesses are adopting virtualization to consolidate and manage new workloads. It is also being used to accommodate business needs and reduce the risk of IT outages.

In the 2009 survey, 33 percent of the 309 small businesses participating had experienced a significant outage in the past two years. Those outages were caused by a disaster or emergency such as a power outage, server crash, storage failure, cooling failure, fire, flood, earthquake, hurricane or tornado.

In addition, 21 percent had lost critical business data due to an accident, disaster or emergency in the past two years. Of these, 62 percent lost sales or customers as a result.

“Smaller companies are looking to control hardware costs and simplify their infrastructure while maintaining high uptime,” says Wendy Perilli, director of product marketing for VMware. “Simplifying network infrastructure also offers a way to manage systems without a lot of staff.”

According to the experts, server virtualization is one of the few types of IT projects that is getting rapid approval these days — in all sizes of companies. The reason: it helps to achieve a lower Total Cost of Ownership (TCO) along with an easily demonstrable Return on Investment (ROI).

VM Defined
Virtualizing a server means migrating a workload or workloads running on a physical server to a virtual server. Virtual machines, or VMs, essentially house multiple server environments on a single piece of physical hardware.

Not only does server virtualization increase efficiency of server hardware, but it makes management and disaster recovery much easier. Applications are immediately recoverable, for example, because a virtual machine is essentially a large file that can be backed up or even e-mailed anywhere.

Most small businesses might have 10 or 15 servers that are underutilized. Servers that are not virtualized are often running at only 10 to 15 percent of capacity.

That means the company is spending extra money on those servers, the space to put those servers and the power to run them. These are dollars that can be better used elsewhere.

Virtualization allows pooling of computing resources and sharing them across applications. The number of servers is reduced by putting several different applications on one physical server.

The result: more efficient use of processing power. In fact, it’s not uncommon to see server virtualization save 20 to 30 percent on the cost of running the environment.

Planning to Virtualize
Often firms decide on creating a virtual infrastructure without any kind of planning or foresight into what the environment will be like when built out. To get started, it’s important to analyze the impact of virtualization on operational resources.

Smaller businesses do not have the luxury of supporting inefficient IT processes. Therefore, they need to look for features that can speed up the implementation process and streamline ongoing support activities.

“It’s important to look at all the applications and services supported,” says virtualization expert and consultant, Anil Desai. “And be sure to complete this process from a number of standpoints.”
He suggests:

- Looking at the resource requirements
- Considering the number of users to support
- Reviewing the memory, storage requirements and network requirements

Also factor in some of the business requirements. These can include such things as availability and liability.

When it comes to actual Physical-to-Virtual (P2V) migration, small companies should look at the servers they have today and what utilization they’re getting out of those units.

The firm may find a database application on one server. And it is using the majority of the processing power to run the application.

In that case, this server may not be a good candidate for virtualization. Other servers, that are not quite as fully utilized, would likely be more suitable for virtualization technology.

For example, an organization that communicates with its customers regularly is likely to have a certain server that has to be up 99.9 percent of the time. Or there might be mission-critical applications where downtime would be costly. These may be more appropriate for virtualization.

**Take Inventory**

The experts recommend taking an inventory of everything that has to be supported and then determine if those workloads (applications or services) are compatible with virtualization. If so, estimate the resource requirements to support those workloads. The more critical the application, the more likely it is a candidate for virtualization.

Keep in mind, there are some caveats to using existing servers. An older server might have less memory expandability, making it a poorer choice for virtualization.

Most of the modern hypervisors require relatively recent processors with Intel VT or AMD-V technology to have full functionality. Also, if you want to complete P2V migration of existing workloads, have the older servers powered up to effectively migrate the workload over using P2V tools.

Server refresh should also be considered as part of a virtualization initiative. According to a report from IDC, the server installed base has aged, while VM densities on those systems have increased sharply. New infrastructure may be needed to handle those increased loads.

One cost-effective option for small businesses is Microsoft’s Hyper-V Server 2008 R2. The latest version offers support for physical computers with up to eight physical processors, support for 64 logical processors and for running up to 384 virtual machines with up to 512 virtual processors.

It also offers support for clustering and live migration. These are features that were lacking in earlier versions.

Intel’s Xeon 5500 (Nehalem) processor includes improvements that will allow businesses to efficiently deploy more virtual machines on each physical host server, says Desai. “The Nehalem chip provides additional CPU-related optimization, so it makes it more efficient to switch between multiple VMs that are sharing workloads on the server.”

In addition, the latest generation of HP ProLiant servers, based on Intel Xeon 5500 microprocessors, features HP Thermal Logic Technology for a 20X improvement in performance per watt versus previous generations, according to Frances Guida, manager for virtualization at HP. “These combined technologies enable 11-to-1 consolidation ratios and a 90 percent reduction in physical servers.”

**Virtual Security**

When it comes to a virtualized environment, small business should treat virtual machines as they would physical machines. When in a production environment, VMs need to be patched and may require special compliance rules or data security considerations.
“Basically all the applications running on VMs need to be treated as if they were running on a physical server,” says Desai. In addition to that, there are other concerns that companies need to keep track of with virtualization. For example, keeping track of VMs if they’re moved, copied or renamed.

Virtualization resolves some security concerns, but it also raises some new ones. For the most part, virtual machines themselves are portable. That allows them to run in self-contained isolated environments that should remain secure, according to Desai.

“This level of isolation improves security from an architecture standpoint,” he adds. “If a virtual machine were to be compromised, it wouldn’t necessarily lead to the compromise of other physical or virtual machines in the same environment.”

From a security standpoint, however, there are issues that don’t occur with physical servers. For example, finding ways to manage virtual machines that are not connected to a network at all times.

Virtual machines temporarily powered down need to be kept up to date and regularly patched. Most patch management tools and network monitoring tools use the network for regular updates.

With physical servers, they’re generally always connected to the network, even though some services might be shut down. If you put a management tool out on the network and tell it to find everything that’s out there, it only finds those machines that are up and running.

For VMs that are temporarily powered off or that are just powered up on demand, management tools may not detect their presence. “If there’s a VM that’s been off the network for a few months and then it’s powered on, that’s a potential security liability,” says Desai. “It likely has not been patched over that entire time it was off the network.”

Here’s where virtualization-aware monitoring tools can assist. “You can’t always use the existing monitoring tools,” Desai says. “They typically treat virtual machines as if they were physical ones.”

There are also potential vulnerabilities when moving and copying virtual machines. When you move VMs from one host to another, the security policy of the host machine may become inherited by the VM.

What needs to happen is that the security setting for the VM follows it from host to host. There is some consensus that smaller businesses don’t always consider the details of monitoring virtual network switches and network security settings until they get involved with in-depth virtualization monitoring.

Virtualization is not inherently insecure. However, when putting an application onto a virtual machine, even though it shares the server resources with other applications, it behaves as if it were on its own dedicated server.

“With two applications on the same server, security is always an issue,” HP’s Guida says. “Virtualization helps with that by putting a wrapper around the application, where the application itself believes that it’s the only thing on that server.

“It has no way of knowing there’s anything else being processed on that server,” he adds. “It’s the virtual machine layer that knows it’s playing a trick on the application.”

**Easing IT Management**

Ultimately, virtualization should simplify the data center. But if businesses are not prepared to manage both physical and virtual environments together, then they face virtual sprawl issues that can pose business risks.

With the proper management tools, like HP Insight Dynamics, or tools from VMware and Citrix, small businesses can manage their physical and virtual environments in the same way. This can substantially reduce the management issues associated with virtualization.

Small businesses face many of the same IT challenges as larger businesses in trying to accommodate increasing demand for new IT capabilities and services. And like bigger firms, small businesses can reap the benefits of server virtualization including the cost savings, reduced IT administrator costs and ability to react to the changing needs.
There are other server virtualization benefits that small businesses may want to explore. For example, it allows for easier maintenance and movement within the network environment.

There will be times when the company’s servers, applications and even operating systems need maintenance. Each time that something has to be completed within the IT infrastructure can mean downtime for the business.

Virtualization allows easier movement of applications between different servers within the environment. If a server needs to be taken down for maintenance, applications can be moved to another server. That allows the app and the business to stay up and running.

**Virtual Caveat**

Smaller businesses need to take the same precautions with virtualization as large enterprises. Because the process of setting up VMs is fairly simple, small firms can run the risk of server sprawl without proper management and planning.

“Server virtualization has tremendous potential, if deployed properly, to reduce costs and simplify administration,” says Desai. But if it is implemented poorly and without any oversight, virtualization can be a much bigger liability than benefit.

It’s important to set up VMs with standardized best practices and policies for configuring them. Small businesses that plan it out, deploy the right management tools, monitor the virtual environment and keep track of where virtual machines are deployed, will stand to benefit significantly from server virtualization.

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**Server Virtualization: Benefits to Small Business**

- **Slash capital costs.** This is accomplished through consolidating servers and containing additional hardware spends.

- **Enhance staff productivity.** Virtualization solutions provide IT professionals with the freedom to be released from menial tasks, enabling them to take a more strategic role in the enterprise.

- **Improve business continuity.** Take advantage of complete data protection, truly continuous application availability and automated disaster recovery across physical sites.

- **Improve business responsiveness.** Managing a virtual infrastructure allows IT professionals to quickly connect and better manage resources to meet business needs. Examples: faster provisioning of new applications and acceleration of change request response times.

- **Improve application quality and deployment.** With server virtualization small businesses can test more applications by optimizing preproduction staging environments, resulting in less downtime for the applications that run and drive the business.

- **Strengthen Security.** Server virtualization enables automated patch management of server hosts and virtual machines and an integrated firewall that maintains security policies across the mobile, flexible environment. It also decreases the operational costs of managing them.

Source: VMware

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CDW has implemented server virtualization solutions that have proven successful for businesses of all sizes. Call 800.800.4CDW to talk to a specialist today.