

Moving to Virtualization: A Guide to What's Possible from VMware



Did you know that over the next year, 50% of small and mid-sized businesses are moving to virtualization?

That's because virtualization allows businesses to run multiple operating systems and applications simultaneously on the same server – delivering a range of great benefits. With VMware virtualization you can:

- Automate your IT and save time managing it
- React more quickly to business opportunities or system outage
- Dramatically cut costs on hardware purchase, IT support and energy

According to Forrester's Survey, 74% of SMBs choose x86 virtualization from VMware.
Learn why.*

IF ONLY
virtualisation was
more affordable

It is with VMware. VMware delivers reliable, enterprise class solutions at a price your business can afford.

IF ONLY
virtualisation was
easy to deploy

VMware delivers a solution that's simple to deploy and manage.

IF ONLY
virtualisation delivered
business continuity

VMware helps you create a more robust, highly available infrastructure at a low cost.

Read our guide to learn how you can get started quickly with VMware.

*Survey of 208 North American and European SMB x86 server virtualization decision-makers. "Enterprise And SMB Hardware Survey, North America And Europe, Q3 2009" from "The State Of Emerging SMB Hardware: 2009 to 2010," Forrester Research, Inc., December, 2009.

Spotlight on the Benefits



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Today's ambitious SMBs need to find not just small, one-time savings and improvements within how they work. They also need to consider whole new ways of utilizing IT to help the business grow and compete more efficiently over time. Virtualization is a key tool in that quest and VMware is the industry-leader for growing organizations looking to move to virtualization.

Great reasons to move to VMware virtualization

Standardization.

Virtualization software runs on industry-standard AMD and Intel x86-based hosts, no matter what operating system you use.

Resource accessibility.

It offers access to all physical server resources, including CPU, memory, storage, networking and peripherals – even components that reside on other networked servers and devices.

Efficiency.

Because multiple virtual machines can be run on a single server, you can optimize how your hardware is used.

Mobility.

Each virtual machine is contained within its own software 'compartment', which means that virtual machines can be provisioned, copied, backed up and restored as easily as any other software – even when the machines are running other processes. This allows system managers to maintain availability and reduce costly downtime.

Flexibility.

By running legacy operating systems on a virtual machine, the IT team can continue to support older, mission-critical applications without maintaining separate older, slower servers running proprietary operating systems or systems that are no longer supported.

Speed.

Without having to deploy a physical server for each new application, IT can quickly test and then deploy new applications.



Six practical ways that VMware virtualization helps IT Managers

1. Provisioning.

Because virtualization allows you to consolidate multiple applications on a single server, you can avoid using servers running at less than maximum capacity. You also can reduce the time-consuming and cumbersome process of ordering, configuring and provisioning them on your network.

2. Application deployment.

Similarly, virtualization simplifies application deployment while protecting your production systems. Implement applications quickly, test them in a virtual sandbox and deploy them into production – all without configuring a new physical server. You can bring new IT services to users faster, while managing risk better.

3. Data mobility.

One of the key benefits of virtualization is its ability to automatically take advantage of capacity elsewhere on the network. This allows you to spend less time monitoring applications. It also means that you can take advantage of network resources regardless of their physical location – optimizing capacity across your entire network.

4. Disaster recovery.

By automatically rolling over to available network resources – whether that's I/O or storage – the uptime and availability of both individual applications and the network as a whole are improved. This also makes it easier to establish disaster recovery and business continuity contingencies. Previously, companies needed to create exact duplicates of their hardware to accommodate disaster recovery. Virtualization eliminates this time-consuming requirement, making it easier to set up an offsite system for this purpose. Of course, small companies may choose to use a hosted service instead.

5. Management.

Virtualization technology incorporates monitoring and management tools, that let you either automate tasks or handle them manually, based on usage or threshold alerts. This gives you back more time for other activities.

6. No unplanned downtime.

With virtualization you can move your virtual machines between servers so, before updating or patching a server, you can shift its virtual machines or other resources. That means you can conduct maintenance without bringing the system down during working hours or forcing your staff to work after hours, or on weekends.

Critical Factors to Consider



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Virtualization offers many advantages to the SMB, but it also entails some challenges that need to be addressed when choosing the right solution.

Application performance.

Analysts have noted that some IT administrators are concerned that workloads with large amounts of input/output – such as a database – may not perform as well in a virtual environment as on a dedicated machine. Occasionally, these applications may encounter issues when contending for shared processor and memory resources. VMware’s virtualization software allows administrators to account for these potential conflicts and provides tools to monitor ongoing system performance, so they can meet your desired performance levels.

Virtual machine sprawl.

While administrative responsibilities are reduced with virtualization, they don’t completely disappear. Your IT team must still monitor activity on the network. Once physical barriers to adoption are removed, VMs tend to grow uncontrollably inside and outside of IT. Keep an eye out for this and make sure your virtualization vendor offers monitoring tools so that you can maintain operational efficiency. VMware does.

Security.

Because virtualization leads to fewer servers and a simpler infrastructure, your security vulnerabilities are also proportionally reduced. Still, you shouldn’t overlook the security aspects of virtualization. Because it works so intimately with operating systems, virtualization software must include capabilities to ensure data is protected, especially when it’s transferred across a network. Again, when you choose a solution from VMware, you’re covered.

Getting Started: The Essentials

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The goal of your business is to support your customers and ultimately make a profit. For virtualization to make sense for your small or mid-sized business or environment, it needs to incur minimal cost, be able to run on top of your existing infrastructure and directly support your goals of servicing your customers and making a profit.

Below is a list of hardware and software components you'll need to get started. These are the minimum required to build a lightweight and no added cost virtualization infrastructure.

You'll see that specific server components are required as well as elements at the network and storage layers. In addition to the right hardware, certain software components are required or optionally suggested.

Your IT environment is likely to have most of these components already in place, which means that repurposing them for use with virtualization will be the first step in your implementation.

What you'll need to conduct a basic virtualization implementation with optional added hardware and software.

Physical Servers

Two or more servers preferred

Two or more processors

- 2.0GHz or faster Intel or AMD
- x64 architecture preferred

Two gigabytes or more of memory

- Four or more preferred

Onboard SAS/SATA disk storage

- Two gigabytes required for server installation
- Additional space equal to sum of virtual machines require

Two or more Network Interface cards

- Four or more required
- Gigabit speed highly recommended



Networking

Business class network hardware required

- Gigabit speed highly recommended
- Support for NIC teaming highly recommended
- VLAN support recommended

Storage

Direct-attached storage required

- Capacity equal to the sum of VM disk size

Storage Area Network Hardware optionally recommended

- iSCSI-based SAN is often more cost-effective
- Support for multipathing highly recommended
- Support for concurrent host access highly recommended
- Support for storage virtualization recommended
- Support for storage-level backups recommended

Software

Virtualization platform software required

- Virtualization management software recommended
- External monitoring software recommended

Virtual backup software optionally recommended

Replication software optionally suggested for disaster recovery

Finding the Right Solution



VMware solutions simplify IT operations

VMware solutions simplify IT operations.

As the IT decision maker of a small or mid-sized business, your expertise lies in improving the technology that runs your business. With virtualization, you can decrease costs, increase IT productivity and protect corporate assets.

From the desktop to the datacenter, VMware is the clear global leader in virtualization solutions for SMBs. Customers rely on VMware to reduce capital and operating expenses, improve business continuity, strengthen security and go green.

Why VMware vSphere?

VMware vSphere™ is the most trusted and reliable virtualization platform in the industry. It delivers high availability, performance and reliability of the VMware platform together with cost-effective, full functionality packages designed for small IT environments.

Don't let server sprawl and platform dependencies prevent your organization from achieving its goals. Take control of your IT infrastructure with VMware vSphere.

- **Reduce hardware and operating costs by as much as 50% and energy costs by 80%**
- **Reduce the time it takes to provision new servers by up to 70%**
- **Decrease downtime and improve reliability with business continuity and built-in data disaster recovery**
- **Deliver IT services on-demand now and in the future, independent of hardware, OS, application or infrastructure providers**

Why SMBs choose VMware.

Perhaps the most important factor to consider in your virtualization purchase decision is the vendor you select. Increasingly, SMBs are choosing VMware as their virtualization vendor based on a variety of factors: reliability, ease of implementation and management, ability to deliver high-performance for applications, market leadership, and lower operating costs.

Let's look at these factors individually, based on Management Insight Technologies' 2009 blind market virtualization study of SMBs in North America, Europe and the Middle East*. The first three attributes were rated as the most important factors in selecting a virtualization vendor, and VMware has a significant lead over other competitors in all of these areas.



1. Reliability.

When you deploy an infrastructure platform like virtualization throughout your IT environment, you must rely on that technology to be a stable and dependable part of your business 24/7. 92% of SMBs believe VMware to be a reliable virtualization vendor compared with 59% for the next closest competitor.

2. Ease of implementation and management.

Unless it is easy for you to deploy and manage a technology, it won't bring value. Management Insight found that 85% of SMBs rate VMware highly on this attribute, compared with only 64% for the next competitor.

3. Performance.

88% of SMBs cited VMware as delivering high performance solutions, compared to 55% for the next competitor. This is a crucial insight, because while virtualization improves capacity utilization on servers, it also has performance implications. VMware has developed technologies to maintain and enhance performance, as well as tools to help you benchmark and troubleshoot your servers to ensure the best results.

4. Market leadership.

VMware pioneered virtualization for x86-based systems in 1998 and continues to lead in virtualization innovation. For example, VMware provides the fundamental virtualization technology that Intel and AMD build into their processors. Even more important, among SMBs in the Management Insight study, 91% cited VMware for leadership in the server virtualization market, compared to only 30% for the next leading competitor.

5. Lowest cost of ownership.

It is 5-29% less expensive to run applications (the true 'apples-to-apples' virtualization cost comparison) on VMware vSphere than with Microsoft Hyper-V technology, according to the Taneja Group**. vSphere is less expensive primarily because it can run more virtual machines per physical host than other virtualization vendors, lowering the cost of hardware and related infrastructure costs.

When compared to a similar study Management Insight conducted in 2007, VMware has actually increased in customer satisfaction and preference relative to the next leading brand.

*Research conducted by Management Insight Technologies, 2009.

** Taneja Group 'Optimizing Data Protection Operations in VMware Environments' April 2009.

[Note: Brand attribute ratings are based on top-two box (i.e. 4 or 5) ratings for the following question: Please rate X brand on a set of attributes using a scale of 1 to 5, where 1 means 'The statement does not apply to the brand at all' and 5 means 'The statement totally applies to the brand.']

Compare vSphere Kits for Small Businesses

	vSphere Hypervisor	Essentials Kit	Essentials Plus Kit	Advanced Acceleration Kit	Midsize Acceleration Kit (w/Enterprise)	Enterprise Plus Acceleration Kit
Product Components						
Centralized Management	None	vCenter for Essentials	vCenter for Essentials	vCenter Foundation	vCenter Standard	vCenter Standard
Memory/Physical Server	256GB	256GB	256GB	256GB	256GB	No Memory Limit
Cores per Processor	6	6	6	12	6	12
Processor Support	No processor limit or requirement per single server	3 servers with up to 2 processors each	3 servers with up to 2 processors each	3 servers 6 processors total	6 processors	8 processors
Product Features						
Thin Provisioning	✓	✓	✓	✓	✓	✓
Update Manager		✓	✓	✓	✓	✓
vStorage APIs for Data Protection		✓	✓	✓	✓	✓
Data Recovery			✓	✓	✓	✓
High Availability			✓	✓	✓	✓
vMotion			✓	✓	✓	✓
Virtual Serial Port Concentrator				✓	✓	✓
Hot Add				✓	✓	✓
vShield Zones				✓	✓	✓
Fault Tolerance				✓	✓	✓
vStorage APIs for Array Integration					✓	✓
vStorage APIs for Multipathing					✓	✓
Storage vMotion					✓	✓
Distributed Resources Scheduler (DRS), Distributed Power Management (DPM)					✓	✓
Storage I/O Control						✓
Network I/O Control						✓
Distributed Switch						✓
Host Profiles						✓
		Includes license. Support and subscription additional.	Includes license. Support and subscription additional.	Includes license, basic support and subscription for 1 year.	Includes license, basic support and subscription for 1 year.	Includes license, basic support and subscription for 1 year.

Glossary

Centralized Management

vCenter Standard: Provides large scale management of VMware vSphere deployments for rapid provisioning, monitoring, orchestration, and control of virtual machines.

vCenter Foundation: Provides powerful management tools for smaller environments (up to 3 vSphere hosts) looking to rapidly provision, monitor, and control virtual machines.

vCenter for Essentials: Provides the same features as vCenter Foundation, integrated with the Essentials and Essentials Plus kits.

Thin Provisioning

Reduce storage needs by utilizing dynamic storage that expands to meet the requirements of the virtual machine with no performance degradation.

Update Manager

Reduce time spent on routine remediation by automating the tracking, patching and updating of your vSphere hosts, as well as the VM's applications and operating systems.

vStorage APIs for Data Protection

Achieve scalable backup without disrupting applications or users by leveraging supported 3rd party backup software that leverages these APIs. Through this integration supported 3rd party backup software can perform centralized VM backups without the disruption and overhead of running backup tasks from inside each virtual machine.

Data Recovery

Protect your data through fast agent-less backups to disk, with de-duplication to minimize use of backup disk space.

High Availability

Minimize downtime with automated restart of your VMs following physical machine failure.

vMotion

Eliminate application downtime from planned server maintenance by migrating running VMs between hosts.

Virtual Serial Port Concentrator

Connect over the network via the serial port concentrator to the serial port console on any server.

Hot Add

Increase capacity by adding CPU and memory to virtual machines when needed without disruption or downtime.

vShield Zones

Simplify security management by configuring and maintaining your multiple zones of security within software among shared hosts rather than across separate siloed physical environments.

Fault Tolerance

Provide continuous availability for applications with zero data loss in the event of server failures.

vStorage APIs for Array Integration

Improve performance and scalability by leveraging efficient array-based operations.



Glossary (continued)

vStorage APIs for Multipathing

Improve performance and reliability of IO from vSphere to storage by leveraging third party storage vendor multi-path software capabilities.

Storage vMotion

Avoid application downtime for planned storage maintenance by migrating live VM disk files across storage arrays.

Distributed Resources Scheduler (DRS), Distributed Power Management (DPM)

Align resources usage with business priority by automatically load balancing across hosts and optimize power consumption by turning off hosts during lower load periods.

Storage I/O Control

Prioritizes storage access by continuously monitoring I/O load of a storage volume and dynamically allocating available I/O resources to virtual machines according to business needs.

Network I/O Control

Prioritizes network access by continuously monitoring I/O load over the network and dynamically allocating available I/O resources to specific flows according to business needs.

Distributed Switch

Centralize provisioning, administration, and monitoring using cluster-level network aggregation.

Host Profiles

Simplify host deployment and compliance by creating VMs from configuration templates.

Resources - Making the Move



Resources - Making the Move

[Download additional VMware self-service resources help you install, configure and troubleshoot VMware vSphere.](#)

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