



## The Virtues of Virtualization

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Most agree that the number one IT investment organizations are making is virtualized server consolidation. Virtualization is one of the hottest industry trends, for good reason. It has the ability to increase efficiency, reduce or eliminate downtime, and deliver truly remarkable cost savings.

Virtualization is actually not a new phenomenon – in fact the concept is just about as old as the computer itself. IBM was virtualizing its extremely expensive mainframes in the 1960s to allow for multiple corporate users. In the 1980s IBM's central mainframe was replaced with a distributed, client-server computer system based on inexpensive servers and desktops that each ran specific applications. So virtualization became obsolete...for a while.

About 10 years ago, when the proliferation of servers became nearly unmanageable, engineers began to take a second look at virtualization – adapting the IBM model to the current needs of organizations. This new generation of highly sophisticated virtual servers (referred to as virtual machines or VMs) is credited to the developer and current market leader VMware. Other providers include Citrix, Microsoft, IBM, and RedHat.

This time virtualization is here to stay. So the question for organizations isn't *whether* to virtualize, but *why not* virtualize?

### What Exactly is Virtualization?

The term *virtualization* most commonly refers to server virtualization - running multiple operating systems on a single physical computer. While most computers only have one installed operating system, server virtualization software allows a computer to run several operating systems off the primary system at the same time by giving other systems access to the computer's hardware - such as the RAM, CPU, and video cards. And, because each virtual server is isolated from other virtualized servers, if one crashes, it doesn't affect the others.

Virtualization works by inserting a thin layer of software directly on the computer hardware or on a host operating system. This layer contains a virtual machine monitor – a hypervisor - that directs hardware resources. For instance, a virtualized Windows computer could run Linux within the Windows interface. Or a Mac could run Windows within the Mac OS X interface.

In addition to server virtualization, there are four other types of virtualization:

- Network Virtualization clusters actual computing resources into a single virtual network.
- Storage Virtualization consolidates storage from multiple network storage devices into a single virtual storage device.
- Application Virtualization separates applications from the hardware and the operating system, allowing relocation without disrupting other systems.
- Centralized Desktop Virtualization uses a central server to remotely manage individual desktops - this lets IT staff allocate, manage, patch, and upgrade desktops virtually.

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## The Very Real Cost Benefits of Virtualization

It's not hard to imagine that by reducing the quantity of servers, organizations immediately realize a significant cost savings. VMware reports that their clients typically save 50% - 70% on overall IT costs. Some of the big ways virtualization saves money include:

- Increasing energy efficiency by accomplishing the same work with fewer machines. Analysts estimate that, without virtualization, most servers use only 5 to 25 percent of their total capacity.
- Reducing labor costs by increasing the server to administrator ratio
- Creating a highly efficient computing pool that will reduce the amount of future hardware expenditures
- Allowing growing organizations to open up valuable rack space without adding more machines

## Other Important Benefits of Virtualization

Applications are almost never created for a single operating system anymore and this is where virtualization shines. It allows developers to write and test code that crosses through an array of operating systems using a single workstation.

Virtualization creates powerful business agility. Organizations that use virtualization to cluster, partition, and manage workloads by configuring server groups into flexible resource pools are perfectly positioned to respond like a cat to changing marketplace demands.

Virtualization fundamentally changes the way IT managers interface with computing resources. Instead of wasting time monitoring 100s of machines, they can turn their focus to innovating - fully exploiting the capabilities and services the technology offers.

With virtualization, you can:

- Run multiple operating systems on a single computer
- Optimize enterprise applications for the highest performance and availability
- Save energy by reducing the number of physical servers and the energy required to power them
- Save time by performing routine tasks such as deployment, backup, archiving, and recovery more quickly
- Create flexibility - in virtualized environments, it's easier to move things around, to encapsulate, to archive, and to optimize
- Improve enterprise desktop management with central control, faster desktop deployment, and fewer application conflicts

With virtualization, the typical IT staff can handle up to triple the number of servers without compromising service quality.

## The Best Virtualization Solution for You

If you're considering virtualization, you'll need software with easy-to-use tools for:

- Managing,
- Monitoring
- Measuring use
- Optimizing
- Gathering statistics
- Applying resource allocation policies

Look for software that provides cross-platform systems management for both the virtual and physical machines. Also look for the ability to transfer (without modification) your organization's legacy applications and existing operating systems onto virtual partitions. The software should also support the integration of virtualization into legacy management tools. In addition:

- Look for a system that has been specifically designed for your needs. For example, a larger organization may need modular virtualization, but a smaller organization may not.
- Resist the temptation to go with the least expensive solution, which is often a hodgepodge of low-end components. The end result will likely be something that is overly complex and not scalable.
- Instead, go with a fully integrated and scalable virtualization package. You'll want the ability to grow your virtual servers with your organization.
- Look for the ability to repurpose existing hardware where possible.
- Look for high availability - solutions that provide continuous real-time replication, ensuring that data is always available – through every type of failure, including a hardware crash.
- Find virtualization solutions that simplify your overall environment. This means a solution that is easy to implement and requires little training.
- Choose an experienced, knowledgeable provider that you trust to sell you only what you need and nothing more – a company with a track record of providing excellent post-sale support.
- Investigate the latest products. The next-generation products - available now - are all about management. For example, they put everything—servers, storage and the network—into a single resource pool. They streamline CPUs, memory, networking, storage, applications, and more.

Virtualization isn't magic, but it comes close. An added bonus is that as time goes on, installed virtualization continues to build value by opening up new applications. For most organizations, the many cost and efficiency advantages will make virtualization one of the best investments they've ever made.

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#### About B2B Computer Products

Award-winning B2B Computer Products LLC was identified by *Inc.* magazine as one of the fastest growing businesses of its type in the U.S. and by Crain's as one of the largest privately held companies in the Chicago metro area. B2B Computer is a single-source provider of products and manufacturer-certified services that include virtualization, VoIP systems, data deduplication, disaster recovery, SAN storage, server consolidation, energy-efficiency improvement, and testing environment implementation. B2B Computer's engineers can design, configure, install, and/or manage the products and systems they sell to their clients. As a national business-to-business reseller of computer hardware and software representing hundreds of manufacturers – B2B guarantees a best practice combination of competitively priced customized products and expert services. In addition to its Addison, Illinois headquarters and multiple distribution points, B2B Computer's offices are in Chicago; New York; Davenport, Iowa; Philadelphia; and San Francisco. To contact B2B Computer, call 1-877-222-8857 or visit [www.B2BComp.com](http://www.B2BComp.com).

Virtualization services, providers, and products available through B2B Computer include:

#### B2B Computer's Virtualization Services

- Architecture
- Implementation
- Support

B2B Computer has dedicated server virtualization specialists that offer both pre and post-sale expertise. B2B Computer's sales and engineering specialists are highly qualified to architect virtualization solutions as well as to implement and support these solutions after the sale.

#### VMware, Inc.

- Server Consolidation (ESX)
- Desktop Virtualization (View)
- Disaster Recovery (SRM)

VMware is the leader in server virtualization; VMware vSphere is the industry's first cloud operating system. In addition to consolidating servers, VMware also offers products to virtualize the desktop - improving the ability to support remote users and extending the life of desktop hardware. In addition to ease of management and consolidation, VMware products enable disaster recovery and even help to automate failover with products like Site Recovery Manager (SRM).

EMC Corporation

- Shared Storage
- Remote Replication

EMC's SAN and NAS products enable many of VMware's core high availability features. EMC's remote replication technologies also enable VMware technologies such as Site Recovery Manager (SRM).

CommVault Systems, Inc.

CommVault's Simpana platform offers tightly integrated support for backup of VMware Guest Operating Systems both from a virtual machine and VMware ESX server perspective.