



Why Virtualization? Because It Makes Business Sense

Special Feature

By [Randy Johnston](#)

Virtual machine technologies enable one physical workstation or server to run multiple [operating systems](#) and related applications at the same time. Think of a virtual machine as a software machine running within a physical hardware machine. A virtual machine uses virtualization software and selected hardware devices to create an emulated operating environment. This all sounds pretty geeky, so is it worth considering or worth the effort? Software publishers have made the choice less expensive and more reliable in 2008.

[Be sure to also check out "[Implementing Virtualization](#)"]

For [servers](#), EMC's VMware reduced the single-server version price from \$495 to free. We're sure they are trying to sell the more expensive versions of the product, but many of you won't need this. Hyper-V is included in three versions of the new Windows Server 2008, and the incremental cost is small. For desktops, VMware's Workstation authoring tool is \$189. Microsoft's Virtual PC 2007 is a free download. Both of these tools allow us to create a virtual desktop that runs and acts like a regular personal computer. Logically, you could consider that there are five types of things you can virtualize. You may choose to do one, two or all five.

USE VIRTUALIZATION:

On desktops to overcome incompatibilities between an OS and legacy applications or hardware, such as those experienced with Windows Vista. For example, most publishers have concluded that they will not update older software to run under Vista. Older versions of tax software or QuickBooks can be placed in a desktop virtual machine, allowing us to process older years when a client comes to us and hasn't filed a tax return in five years.

On servers to reduce the number of physical servers to improve utilization, performance and reliability while reducing IT costs. For example, Exchange and Microsoft [SQL servers](#) can run on a single physical server. Since most publishers want dedicated servers for their applications, we can isolate that server as a virtual machine.

To replace or augment terminal servers implementing Virtual Desktop Interface technology, allowing desktop images to run on centralized servers or on desktops and laptops while reducing desktop maintenance and improving remote access. Xen and VMware have this feature available today. Microsoft will have this capability next year. If you'd like to have a laptop or desktop image that is stored on the server, this can be completely duplicated to your laptop and used offline while traveling. When you return to the office, your changes are automatically duplicated back to the server image. You get all of the advantages of terminal services control, plus the advantage of local speed.

For storage to consolidate server disks for better performance, easier backup, and greater reliability through Storage Area Networks (SANs) and Network Attached Storage (NAS) devices. Instead of having multiple servers backed up through a very complex back routine, a SAN or NAS provides one place for all

data, which can be backed up easily. New generation appliances back up these files as they are changed, virtually eliminating the possibility of lost work or lost data.

To package applications with an OS and all utilities to make them easier to install, deploy and update. Instead of needing to install an application, picture that a single file can be copied to your system that is preconfigured, ready to run, and will not be affected by any other updates. Further, these applications run faster because there is less system overhead.

SO WHY MAKE THE CHANGE?

On desktops you can:

- Run multiple desktop OS platforms and related applications to overcome incompatibilities:
 - Vista natively and XP virtually
 - Mac natively and XP virtually
 - XP natively and Vista virtually
 - XP natively and Linux virtually
- Test upgrades when received without affecting a production machine by installing on a copied VM.
- Demonstrate or test software without danger of contaminating the host system.
- Save stable versions of desktop environments and distribute to other users.
- Use as a means of protection from viruses, Trojans and other malware.

Don't overlook the license issues. Just because you received a copy of Windows with your machine does not mean that you can legally use it to run in a virtual machine on the same hardware, nor on any other hardware. You must convert OEM (original equipment manufacturer) licenses to portable licenses, which is usually done through the Microsoft Open License agreement.

On servers you can:

- Run multiple desktop OS platforms and related applications to overcome incompatibilities.
- Server natively and multiple simultaneous instances of server virtually
- Virtual OS hypervisor natively an multiple [servers](#) simultaneously
- Mix and match servers of different types such as Linux, Windows and NetWare

Tactical benefits:

- Reduce costs through [server consolidation](#)
- Reduce server requirements – less disk, less network cables and switch ports
- Reduce physical plant – less racks, less power, less electricity and less cooling in large installations
- Operational efficiency – reduce server load/rebuild time, less staff hours required
- Improve backup efficiency and effectiveness
- Improve speed
- Improve reliability – on VMware servers, applications can be moved from one server to another while in use by end users
- Applications demanding more performance should receive it
- Servers can be shut down for maintenance in an orderly fashion, repaired and put back in service with no interruption to the end user other than a minor decrease in performance
- Shorten rebuild and recovery time if needed

Strategic benefits:

- [Business continuity](#)
- Desktop management if Virtual Desktop Infrastructure is implemented
- Software Lifecycle and maintenance
- Provisioning of new servers radically shorter, typically moving from weeks to minutes
- Change, Service Level and Resource management
- Higher server availability

With today's backup technologies, like NetRescue, you can backup all server disks and virtual machines as well as desktop changed files in short time intervals like every 15 minutes, and restart a virtual machine on the appliance if needed in less than 15 minutes. The backup can be replicated off-site securely. If needed, the backed up virtual machines can be run from the off-site location as a virtual machine.

CONSIDER A FEW MORE SCENARIOS AS TO WHY VIRTUAL MACHINES MIGHT MAKE SENSE

- Virtual machines can be stored and run from USB (thumb drives) or USB removable hard drives. This gives you the ability to take your desktop almost anywhere that there is a machine with a USB port.
- You get a new machine, but would like to keep the old machine's applications available. Virtualize the old machine. In VMware, there is a utility that will convert a physical machine to a virtual machine, so no re-installation of software is required.
- You have a disaster in your primary location. As long as you have a reasonable backup of the Virtual machines, and a reasonably good machine, you can temporarily run your servers on substitute machines. These substitutes could be old servers or powerful desktops.
- You run operations in the United States and have employees in India. You can use licenses pooled by the virtual machines during the day, and the Indian users can use them during the night.
- You want to prototype a new application. Traditionally, you would have to buy a new server to test this application. Instead, just create a new virtual server on an existing server to do the prototyping.
- You have an application that doesn't play well when installed with earlier versions of the same product or with other products. An example of this might be QuickBooks. Isolate these types of applications in separate virtual machines. Many firms have purchased servers just to run these applications that could have easily run in a virtual machine.
- You want to duplicate every-thing you are doing in your office at your home or off-site in another office or back-up facility. Virtualization makes this process radically easier.

Finally, virtualization can be cheaper. A typical two-server office configuration done with traditional methods of installing file and print services on one machine and Terminal Services (or Exchange or SQL, etc.) on another is typically more expensive than installing these servers as virtual machines. Plus, you have the peace of mind knowing that one physical server could take over the job of all virtual servers.

Reliability, greater speed, less expensive, business continuity, test environment, safer to update applications and more. What's not to love about virtualization?