Nov. 01, 2008

*From the Nov. 2008 Issue*

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

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

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

- 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

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?

Technology