What's New in Windows Server 2008 R2?
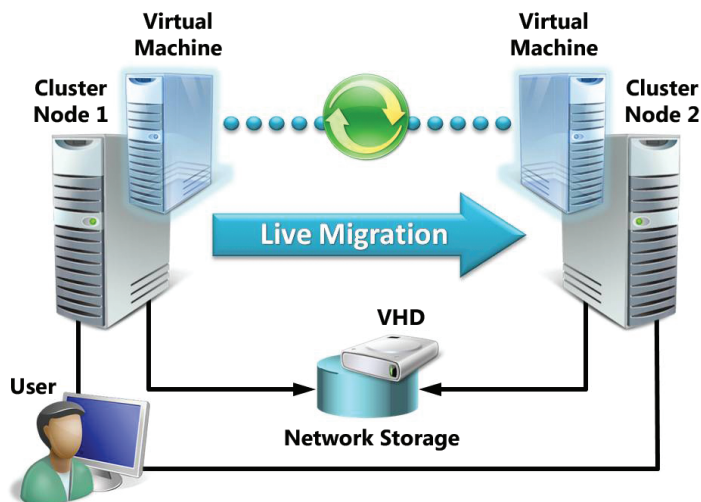
The new *Windows Server® 2008 R2* operating system provides a productive and cost-effective server platform with low-cost virtualization, power-saving capabilities, and a superior experience for end users. It gives IT professionals more control over the server and network infrastructure and provides an enterprise-class platform for efficiently handling business workloads through streamlined management and increased uptime, improved worker productivity at branch or mobile locations, improved virtualization, and power management.

STREAMLINED MANAGEMENT AND INCREASED UPTIME

Virtualization allows organizations to dramatically reduce operational costs and power consumption. Hyper-V™, an improved hypervisor technology included in Windows Server 2008 R2 Standard, Windows Server 2008 R2 Enterprise, and Windows Server 2008 R2 Datacenter, is designed to augment existing virtual machine (VM) management as well as to address specific IT challenges, especially around server consolidation and high availability. Windows Server 2008 R2 enhances Hyper-V with Live Migration, a feature that moves VMs between physical targets in mere milliseconds, so that migration operations can occur with no user-perceived downtime. Also, Hyper-V in R2 can speed administration and increase uptime with the ability to start from virtual hard disks (VHD) and to add and remove VHDs without requiring a restart.

Virtual Machine — **Virtual Machine**
Cluster Node 1 — **Cluster Node 2**
Live Migration
VHD
User
Network Storage

Customers who employ Microsoft® System Center Virtual Machine Manager 2008 with the Hyper-V role in Windows Server 2008 R2 will enjoy management and orchestration capabilities. These include the new VM-oriented Performance and Resource Optimization feature to take advantage of 64 logical processors on the host and to boost CPU performance with host support for Second-Level Address Translation (SLAT). Also, the new Processor Compatibility mode reduces IT headaches by allowing VM migration between physical servers using different processors from Intel or AMD as long as those CPUs are in the same processor family–Xeon to Xeon or Opteron to Opteron, whereas previously, VM migrations could only occur between servers with the same exact classes of processors.

PRODUCTIVITY BOOST WITH WINDOWS 7

Windows Server 2008 R2 includes two new features that enhance worker productivity using Windows® 7-based clients at remote locations.

DirectAccess

DirectAccess™ provides a powerful way for remote users to seamlessly access corporate resources without requiring a traditional virtual private network (VPN) connection and client software. With DirectAccess, users are no longer required to distinguish between local and remote connections, which saves them significant time and effort. IT professionals retain precise access control and full perimeter security, helping to ease desktop security and management headaches on both sides of the connection.

"With DirectAccess, CCO is saving about $40,000 a year by eliminating its VPN and all its associated hardware, software, licensing, and carrier charges."

— Rand Morimoto, President, Convergent Computing

BranchCache

BranchCache™ is a new content access solution that improves the response times for employees at remote and branch offices. With BranchCache, clients who request access to data or files from the organization's network can reach the content on the local (branch office) network, provided the file has been requested previously and is therefore stored locally. BranchCache increases remote user productivity with improved application responsiveness, reduced file transfer wait times, and more efficient use of the bandwidth between the sites. BranchCache is optimized for HTTP, SMB, and BITS protocals; helps reduce wide-area network (WAN) utilization costs; and helps free up network bandwidth for other uses.

"Taking advantage of the BranchCache feature in Windows Server 2008 R2, we can spend $20,000 rather than $50,000 per year on bandwidth."

— David Feng, IT Director, Sporton International

INCREASED REMOTE ACCESS AND VIRTUALIZATION CAPABILITIES

Microsoft has been investing in two key features to increase remote access capabilities: VDI and Remote Desktop Services (RDS).

VDI is a centralized desktop delivery architecture that allows businesses to centralize the storage, execution, and management of a Windows desktop in the datacenter. It enables Windows and other desktop environments to run and be managed on VMs on a centralized server.

Terminal Services will now be called Remote Desktop Services (RDS). RDS incorporates and expands on all of the features that were previously included in Terminal Services. Microsoft has improved management and performance features to RDS enhancing the flexibility of presentation virtualization.

Microsoft is making great progress in improving the end user experience through new Remote Desktop Protocol (RDP) capabilities. These new capabilities, enabled with Windows Server 2008 R2 in combination with Windows 7 Enterprise and Ultimate, significantly improve the experience of remote users, making it similar to the experience that is enjoyed by users who access local computing resources.

Active Directory® policies integrate RDS Remote Application Deployment (RAD) and Virtual Desktop Infrastructure (VDI) desktop and application virtualization features to allow administrators to save time by deploying virtualized applications and desktops based on policy. These features are integrated so tightly with Windows 7 that in most cases users won't be able to tell the difference between a locally installed application and a virtualized application.

"Windows Server 2008 R2 with the improved Hyper-V can support more than 30 [workloads]. From a fixed capital asset perspective alone, that's a savings of $60,000 to $80,000 per Hyper-V server."

- Jason Foster, Systems Architect and Director of Technology, Continental Airlines
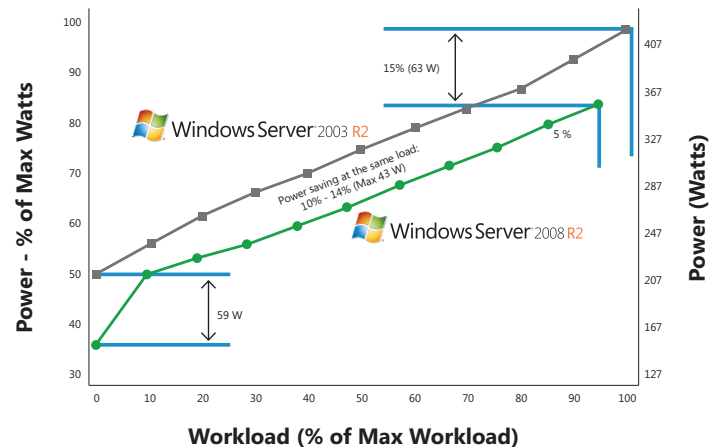
IMPROVED POWER MANAGEMENT

Windows Server 2008 R2 builds on the platform of Windows Server 2008 by expanding existing technology and by adding new features to extend an organization's ability to reduce the power consumption of individual servers and to manage power consumption across the entire server environment.

Enhancements to Windows Server 2008 R2 power management include:

- Enhanced processor power management engine and settings.
- Core parking, which allows for consolidating workloads onto fewer cores of a processor at low utilization, resulting in power savings while some cores are idle.
- Power metering capabilities, including the ability to view power consumption or collect it across a datacenter through WMI, scripts, or tools like System Center.
- Power budgeting capabilities.
- More efficient storage using a centralized Storage Area Network (SAN).
- Up to an 18 percent improvement in power efficiency on identical hardware, compared to Windows Server 2003.

"With virtualization, we will save about 50 percent of our annual energy budget for cooling and electricity"

- Lukáš Kučera, IT Services Manager LukOil Oil Company

Also, Windows Server 2008 R2 introduces the Enhanced Power Management Additional Qualifier (AQ) for the Windows Server logo which helps customers identify servers from OEMs working closely with Microsoft to optimize power efficiency.

IMPROVED HARDWARE CAPABILITIES

Windows Server 2008 R2 now supports up to 256 logical processor cores for a single operating system instance. Hyper-V can make use of up to 64 logical processors in a single VM. These improvements make the most of hardware capabilities while offering better reliability.