

GETTING READY FOR MICROSOFT WINDOWS SERVER 2008

The Microsoft® Windows Server® 2008 OS promises to supercharge enterprise computing by providing a solid foundation to support critical workloads and deliver rich Web-based experiences—all in an exceptionally secure, industry-standard operating environment. Dell smooths the way by providing business-ready platforms optimized for Windows Server 2008 together with Structured Solution Designs to make the migration flexible, simple, and green.



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Microsoft Windows Server 2008 marks the biggest upgrade in the Microsoft server OS in years. Despite considerable planning challenges, there are compelling reasons to make the switch. The revamped platform can help enterprises address data security concerns, identify potential legal exposures, and streamline compliance efforts. It can help simplify support for a heterogeneous or legacy technology environment—especially if user demand is outpacing the current data center's ability to support key applications.

The new OS provides a solid foundation for workloads with advanced technologies and features such as the Server Core installation option, Windows® PowerShell, Windows Deployment Services, and enhanced networking and clustering technologies. It helps enterprises deliver rich Web-based experiences efficiently and effectively through outstanding administration, diagnostic, development, and application tools. The OS offers security innovations including Network Access Protection, Federated Rights Management, and read-only domain controllers.

Moreover, Windows Server 2008 virtualization capabilities promise to help support green IT initiatives and increase hardware utilization, optimize performance, and improve server availability. This powerful virtualization technology incorporates strong management and security features that enable enterprises to increase agility and system availability for production server consolidation, disaster recovery, testing, and development. Transitioning to Windows Server 2008 also facilitates consolidation and virtualization that can lead to a reduced data center footprint and simplified control for mission-critical applications. (For more information on the benefits of migrating to Windows Server 2008, see the "Top 10 reasons to migrate" sidebar in this article.)

REDUCING IT COMPLEXITY

Dell™ tools and processes are designed to enable automation and simplify adoption of Windows Server 2008. Dell has performed rigorous platform compatibility testing to optimize its products and services for the transition and help ensure that its servers and storage controllers are interoperable with Windows Server 2008. Integration of the latest drivers and security updates into Dell products enables organizations to simplify configuration and deployment to complete their migrations rapidly and securely.

Dell offers comprehensive, end-to-end migration services that are rightsized to the specific migration requirements of each client engagement. Having completed more than 5 million Microsoft Active Directory® and Exchange migrations, Dell has well-honed expertise to meet the needs of millions of users with diverse IT infrastructures. To that end, Dell develops a Structured Solution Design based on specific requirements for a particular organization—including functional testing on a pre-built IT infrastructure before implementing Windows Server 2008 in an actual production environment.¹

SUPPORTING CRITICAL ENTERPRISE WORKLOADS

Windows Server 2008 provides a rock-solid foundation for critical enterprise workloads. New Windows PowerShell functionality offers a task-based command-line shell that provides comprehensive control and automation for Windows administrators. In addition, an enhanced TCP/IP stack uses an algorithm called Compound TCP to aggressively adjust the sender's TCP window size—leading to significantly increased file copy speeds, particularly over high-latency connections. Highly I/O-intensive applications such as the Microsoft SQL Server® database platform can benefit from the native support for TCP/IP Offload Engine (TOE) cards and

¹To learn more about how the Dell Infrastructure Consulting Microsoft Practice can help organizations make the transition, see "Simplify Migration to Microsoft Windows Server 2008," in *Dell Power Solutions*, May 2008, DELL.COM/Downloads/Global/Power/ps2q08-20080290-DellSvcs.pdf.

TOP 10 REASONS TO MIGRATE

1. Windows Server 2008 offers a **world-class Web and application platform** designed to provide security and ease of management for developing and reliably hosting enterprise applications and services.
2. The platform offers **improved networking performance** to harness the power of today's multi-gigabit networks and help IT organizations secure and control network traffic.
3. Every aspect of Windows Server 2008 is designed with **enhanced security and strict compliance** in mind. In addition, Network Access Protection features help enforce policies designed to ensure that any computer connecting to the network meets corporate requirements for system health.
4. By migrating to Windows Server 2008 now, organizations can **maximize the OS cycle** and take full advantage of the financial and technical benefits of powerful new functionality.
5. Windows Server 2008 provides **outstanding control over remote infrastructure** with enhancements to the Microsoft Active Directory directory service, including read-only domain controllers and administrative role separation.
6. The platform provides **simplified server management** through the Server Manager console—a tool that helps streamline management of server configurations, status reporting, and role management.
7. **Superior scripting and task automation** enable IT organizations to automate common tasks and easily control system administration.
8. Windows Server 2008 supports **presentation virtualization**, enabling secure access to internal applications through firewall-friendly ports.
9. **Hyper-V virtualization technology** facilitates production server consolidation, fast disaster recovery, and simplified management of dynamic data centers. Virtualization technology also allows IT departments to run legacy operating systems on the latest platforms as a virtual instance—allowing them to avoid compatibility issues.
10. Windows Server 2008 helps businesses leverage **the power of the Windows Vista® OS**. The two platforms share several networking, storage, security, and management technologies.

enhanced disk access routines. The advanced Microsoft Windows Imaging (WIM) format enables administrators to cut disk-based installation times dramatically.

Powerful management tools and security enhancements offer outstanding control over servers and networks while providing advanced protection for key applications and data. For example, to help avoid single points of failure, failover clustering features provide streamlined setup, a built-in LocalSystem account, and new alternatives for the cluster node quorum model.

STREAMLINING DEPLOYMENT WITH PRESENTATION VIRTUALIZATION

Presentation virtualization also helps simplify IT by allowing administrators to centralize application management in a distributed environment, providing access to applications through the reengineered Windows Server 2008 Terminal Services. By isolating processing tasks from graphics and I/O—for example, screens and dialog boxes—presentation virtualization lets users run applications in one location while they are controlled in another. This approach also enables remote and highly mobile users to access internal applications securely through firewall-friendly ports.

Terminal Services has been significantly enhanced for application virtualization with the Terminal Services RemoteApp and Terminal Services Web Access features, which enable individual applications to be virtualized for seamless presentation on a remote user endpoint in lieu of the entire desktop, while retaining traditional Remote Desktop Protocol (RDP) access to remote server and client nodes. Additionally, Terminal Services Gateway facilitates similar secure access to applications—while not requiring deployment of a virtual private network infrastructure.

DELIVERING RICH WEB EXPERIENCES

Windows Server 2008 is also designed to deliver rich Web-based experiences

efficiently and effectively. It can help IT departments increase the flexibility of their server infrastructures while offering developers a robust Web and applications platform for building connected applications and services.

Microsoft Internet Information Services (IIS) 7.0 is designed to provide ease of management and advanced security technologies for developing and reliably hosting Web applications and services. Its modular architecture enables organizations to reduce or grow their IIS instance to exactly the size they need and no larger. The software does not require ubiquitous Microsoft Visual Basic® applications or scripts for installation—just a two-line batch file to start the package manager and then a copy of the ApplicationHost.config file from a central network share to the local system.

An enhanced HTTP compression engine with processor limiting and compressing content through Multipurpose Internet Mail Extensions (MIME) type instead of extensions help ensure that service is consistent, even during processor-intensive events. Centralized configuration allows multiple Web servers to share a single ApplicationHost.config file to help ensure that configurations are manageable and identical between servers.

The new delegated configuration feature allows application and Web site owners to share some of the configuration of their sites in IIS through local Web.config files. This approach helps eliminate concerns about keeping track of settings from one environment to the next—and also allows developers and other non-administrators some visibility into environments without compromising security.

PROVIDING SECURITY FROM THE GROUND UP

Windows Server 2008 supports key applications and Web-based platforms with exceptional security. One major advance: a Server Core installation option offers minimal, lightweight installation with

SIMPLIFY MIGRATION WITH THE DELL READINESS ADVISOR TOOL

The Dell Windows Server 2008 Readiness Advisor is a free online tool that automates and centralizes the collection and reporting of information required to determine whether organizations are ready for Windows Server 2008 deployment. It identifies key requirements and finds unsupported devices through wizard-based support while performing advanced business logic to complete the inventory processes (see Figure A). The Readiness Advisor tool uses Active Directory Services, standard network protocols, and Windows Management Instrumentation (WMI) as follows:

- Active Directory Services:** Finds computers on the network that are joined to an Active Directory domain using Active Directory Domain Services
- Standard network protocols:** Finds computers on the network that are not joined to an Active Directory domain using standard network protocols; administrators inventorying systems in work groups or in Windows Server 2003 domains that include computers also joined to an Active Directory domain must run both inventory methods specifying the same results file
- Local system evaluation:** Performs evaluation directly on the server running the tool, allowing administrators to evaluate systems that may not be connected to a network
- Server evaluation:** Performs evaluation on a specified server on the network, by designating either computer name or IP address

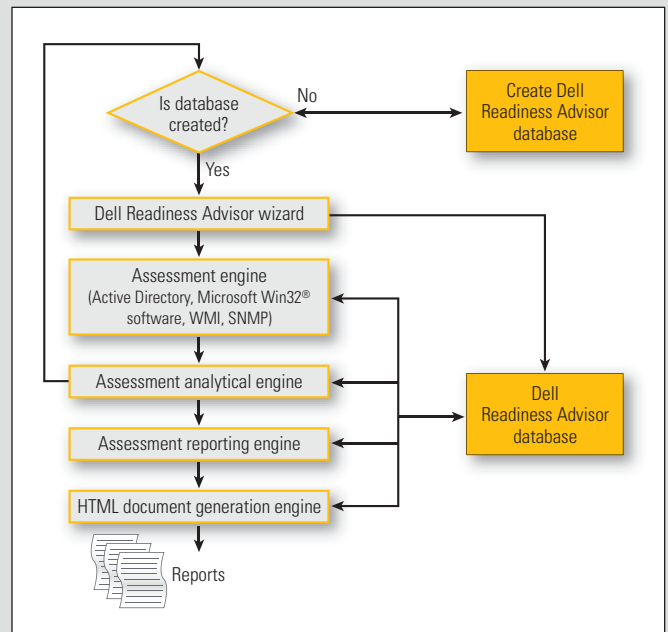


Figure A. Dell Windows Server 2008 Readiness Advisor tool solution architecture

Regardless of whether administrators use Active Directory Domain Services or standard network protocols to discover computers, the Dell Readiness Advisor tool uses WMI to connect to each computer and collect hardware and software information. The results file output allows administrators to specify a location and name for the evaluation reports. For more information, visit DELL.COM/WindowsServer2008.

limited functionality but high security. Server Core installations contain only a subset of executable files and server roles. This option is designed for organizations that have many servers, some of which need to perform only dedicated tasks but with outstanding stability, or for environments where high security requirements require a minimal attack surface on the server. Server Core installations can participate in Microsoft clusters, use network load balancing, host UNIX applications, and use encrypted drives with Microsoft BitLocker™ technology; administrators can remotely manage them using Windows PowerShell on a client system, and monitor them through Simple Network Management Protocol (SNMP).

Other security features include enhanced networking capabilities such

as Receive Window Auto-Tuning, Receive Side Scaling, and Quality of Service (QoS) technologies that enable organizations to take advantage of multi-gigabit networks. Server hardening helps provide OS file protection, reduces the size of high-risk layers, segments services, and provides increased firewall protection through Windows Firewall with Advanced Security.

Group Policy objects and Public Key Infrastructure (PKI) have been improved in Windows Server 2008 to help organizations centralize and automate management of systems across the business. Server Manager tools provide out-of-the-box support for adding, configuring, and managing server roles, while integrated IP security (IPsec) and Windows Firewall with Advanced Security provide

organizations with heightened protection and control over the flow of network traffic. Administrators may install only the services required for the role the server is performing.

Network Access Protection features are designed to check system health and restrict access for systems that are not in compliance. For enterprises with branch office deployments, the platform offers additional protection through a read-only domain controller that by default does not store any passwords. As a result, if the controller is compromised, IT managers do not have to worry about someone gaining access to the entire network with the information stored on that server. BitLocker drive encryption—an integral security feature—can also help protect servers at remote locations. In addition, Dell

IMPLEMENTATION STUDY: HOW DELL DEPLOYED WINDOWS SERVER 2008 TO SIMPLIFY ITS OWN IT

Simplifying IT is job number one at Dell, and Microsoft Windows Server 2008 is playing a pivotal role in accomplishing that objective—in the work Dell does for itself as well as its customers. After working closely with Microsoft to optimize Dell products for Windows Server 2008, Dell became an early adopter of the new OS, which projections indicate should reduce server setup time, trim application deployment time, and help significantly reduce IT labor costs.

Dell had been experiencing many of the same pain points that its customers were reporting. For example, the servers that run **DELL.COM** had expanded at a rate of approximately 15 percent annually, consuming data center space and driving up power and cooling costs. With 3.2 billion page requests and 420 million visitors per quarter, the Web site required nearly 80 new servers each year to handle new content, new applications, and additional high-growth regional sites—all while keeping response times under 4 seconds globally. The IT staff was spending roughly 10 hours to set up, configure, test, and deploy applications

on each new server implementation—time that was unavailable for creating new applications and online services to advance the business.

The **DELL.COM** infrastructure had been running on the Windows Server 2003 OS and Microsoft Internet Information Services (IIS) 6.0 Web server software. When Microsoft introduced Windows Server 2008, Dell was interested in taking advantage of new server configuration, administration, and diagnostic tools in IIS 7.0, a key component of Windows Server 2008.

AUTOMATED, POLICY-BASED MANAGEMENT

Dell installed Windows Server 2008 Enterprise Edition on Dell PowerEdge 2950 servers, each configured with two quad-core Intel® Xeon® processors. Using the distributed configuration features of IIS 7.0, the Dell IT staff plans to create a new e-commerce management platform to fully automate server and application deployment. The team intends to have six to eight hefty Windows Server 2008–based servers

PowerEdge™ servers are designed to help protect the confidentiality, integrity, and availability of enterprise data with pre-installed Microsoft security updates, Trusted Platform Modules (TPMs), network interface cards, and Secure Sockets Layer (SSL) adapters for enhanced server security.

HELPING DATA CENTERS GO GREEN

Dell complements Windows Server 2008 power management features with PowerEdge Energy Smart servers, energy-efficient PowerEdge M-Series blade servers, and energy-efficient data center solutions.² For example, running Windows Server 2008 on PowerEdge M-Series blade servers can lead to significant energy savings compared with similarly configured competitive systems. A recent study demonstrated that the PowerEdge M-Series blade server tested consumed up to 10 percent less power per blade and achieved up to 21 percent better performance per watt than the HP BladeSystem

c-Class in the maximum blades configuration. This study also showed that compared with the IBM® BladeCenter H (8852), the PowerEdge M-Series blade server consumed up to 11 percent less power per blade and achieved up to 28 percent better performance per watt in the maximum blades configuration.³ In addition, virtualization-ready platforms such as Dell PowerEdge R805,⁴ PowerEdge R900, and PowerEdge R905 servers help simplify the process of consolidation, which can in turn help reduce power consumption and optimize overall data center operations.

FOLLOWING BEST PRACTICES FOR A SMOOTH TRANSITION

Dell has identified five keys to a smooth migration to Windows Server 2008 based on extensive testing of OS features; driver hardware interaction; general OS validation; platform, storage, and peripheral qualification; and Dell OpenManage™ compatibility and analysis:

- 1. Strongly consider using Windows Server 2008 only as a 64-bit OS:** Making the transition to Windows Server 2008 typically requires considerable integration testing to migrate applications and services. While this effort is underway, organizations should also take the opportunity to migrate to the highly scalable 64-bit platform.
- 2. Check to ensure that the targeted hardware is supported in Windows Server 2008:** To get started, see the “Simplify migration with the Dell Readiness Advisor tool” sidebar in this article.
- 3. Work out the logistics around key infrastructure software:** Imaging software, antivirus clients, platform monitoring, patch deployment, and any required third-party applications must be verified before organizations can begin to roll out Windows Server 2008 in their environments.

² For more information about Dell's comprehensive strategy for going green, including power and cooling optimization, virtualization, and consolidation onto energy-efficient systems, see “The Energy Smart Data Center,” by John Pflueger, Ph.D., and Albert Esser, Ph.D., in *Dell Power Solutions*, February 2008, DELL.COM/Downloads/Global/Power/ps1q08-20080179-CoverStory.pdf.

³ “Windows Server 2008 SPECjbb2005 Performance and Power Consumption on Dell, HP, and IBM Blade Servers,” Principled Technologies report commissioned by Dell, February 2008, www.principledtechnologies.com/clients/reports/Dell/Win2K8_blades0208.pdf.

⁴ For more information, see “Introducing the Dell PowerEdge R805 with VMware Integrated Virtualization,” by Balasubramanian Chandrasekaran, Brent Douglas, Joseph Rispoli, and David Schmidt, in *Dell Power Solutions*, May 2008, DELL.COM/Downloads/Global/Power/ps2q08-20080153-Chandrasekaran.pdf.

that route traffic to back-end application servers. Dell can then write business rules that dynamically point and redirect traffic as needed. "Windows Server 2008 and IIS 7.0 are absolutely the cornerstone to how all this would work," says Ben May, senior systems engineer at Dell. "We will no longer have to touch individual machines; we'll have a cloud of servers that we can direct in an automated way."

By upgrading its **DELL.COM** systems to Windows Server 2008 and IIS 7.0, Dell expects to simplify server management, reduce costs, consolidate servers, and improve site performance. "With Windows Server 2008, server OS installation is as much as an hour faster per server, thanks to the native usage of the Windows Imaging Format over a traditional install that can take 90 minutes or more to complete," says May. Dell also estimates that it will be able to save 10–15 hours per server each quarter in software upgrades, hot fixes, and reduced individual system-by-system maintenance during application changes—a significant savings. In addition, Dell expects to realize savings by consolidating Web servers onto powerful 64-bit Windows Server 2008–based systems. Over a two-year period, Dell expects to retire 250 or more Web servers and thereafter eliminate or mitigate deployment of about 80 systems per year.



“Our vision for the **DELL.COM architecture absolutely requires the new features in Windows Server 2008, which is key to our ability to simplify our online commerce environment.”**

— Ben May
Infrastructure architect at Dell
February 2008


4. Get network engineers on board during the planning stages: Windows Server 2008 can easily maximize a Gigabit Ethernet port when interfacing with other Windows Server 2008 or Windows Vista systems. Over time, combined with a growing server footprint, internal routers and switches may start to hit capacity during peak usage.

5. Keep the operations team in the loop: Working with a Windows Server 2008 console can be jarring to uninitiated administrators. Train operations teams on how to use the Server Manager and IIS consoles before deployment.

For details on how Dell migrated to Windows Server 2008, see the “Implementation study: How Dell deployed Windows Server 2008 to simplify its own IT” sidebar in this article.

ADVANCING BOTTOM-LINE BUSINESS OBJECTIVES

By running Microsoft Windows Server 2008 on Dell servers, organizations can reduce data center cost, complexity, and power consumption. Dell Infrastructure Consulting can help

ensure a seamless transition to the new OS with well-honed best practices driving a validated, repeatable migration process. Features such as Server Core installation, Windows PowerShell, and Windows Deployment Services together with enhanced networking and clustering technologies allow enterprises to develop versatile and reliable platforms for the most demanding workloads and application environments. Advanced virtualization, Web services, and security technologies enable high availability with increased flexibility to respond quickly and securely to changing business requirements. 

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