HOUR 1

Introducing Microsoft Windows Server 2008

What You'll Learn in This Hour:

- Introducing Windows Server 2008
- Improvements and Additions to Windows Server 2008
- The Different Flavors of Windows Server 2008

In this hour, you are introduced to the latest version of Microsoft's network operating system (NOS) platform: Microsoft Windows Server 2008. You'll learn about the features that Windows Server 2008 has inherited from its predecessors and some of the new features provided by this NOS. We also look at the different editions of Windows Server 2008.

Introducing Windows Server 2008

Microsoft Windows Server 2008 is the latest version of Microsoft's server network operating system. Windows Server 2008 builds on the features found in Windows Server 2003 and also offers a number of enhancements. Windows Server 2008 was part of the development cycle that produced Microsoft's Windows Vista desktop operating system.

During the development cycle, Longhorn, now known as Windows Server 2008, incorporated the best of what was found in the Windows Server 2003 environment and also adapted some of the new bells and whistles that are also found in the Windows Vista operating system. Windows Server 2008 also provides a number of improvements over Windows Server 2003, while still providing a scalable enterprise networking platform that can be easily expanded as a company or organization grows.

In terms of features adopted from Windows Vista, you will find that Windows Server 2008 shares a number of similarities with Windows Vista, including the Start Menu, desktop, and Windows Control Panel. Thanks to Windows Vista, Windows Server 2008 also now provides a better native backup utility: the Windows Server Backup snap-in (see Figure 1.1). This

backup utility runs in the Microsoft Management Console (as do many other snap-ins available in Windows Server 2008) and enables you to back up and restore server files to backup media including DVDs.

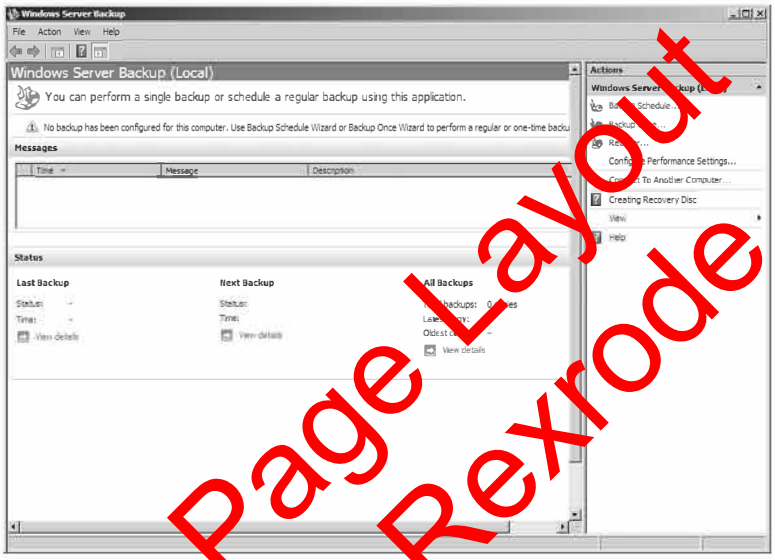

FIGURE 1.1 The Windows Server Backup snap-in.

Windows Server 2008 also takes advantage of Windows BitLocker drive encryption, which is a new encryption feature that was created during the development cycle that produced Windows Vista and Windows Server 2008. BitLocker encrypts all the data on the volume. It can be used to encrypt all the data on the volume that contains the Windows operating system, including paging files, applications, and data used by applications.

Although Windows Server 2008 has adopted some Windows Vista features and also provides many new features of its own, you shouldn't find the Windows Server 2008 administrative environment totally alien if you have used other versions of the network operating system such as Windows Server 2003 (or even the earlier version of this product, Windows 2000 Server). Many of the features and tools that were made available in Windows Server 2003 are also found in Windows Server 2008, including these:

- **The Active Directory**—Known as the Active Directory for Domain Services (AD DS) in Windows Server 2008, this directory service provides the hierarchical directory of objects on the network (such as users, computers, and printers). AD DS also provides the logical hierarchy for your enterprise forests and child domains and the physical hierarchy for sites.
- **Group Policy**—Group Policy provides a way to control the user and computer environment found on the network. Application deployment, client desktop

settings, and policies related to administrative controls such as auditing can all be configured in Group Policy (Group Policy is discussed in Hour 11, "Deploying Group Policy and Network Access Protection").

- **High-level security**—The same security options that you found in Windows Server 2003 are also available in Windows Server 2008, such as data encryption, certificates, and a number of other security enhancements, such as the IP Security Protocol. Windows Server 2008 builds on these security features and offers even greater security than its predecessor, including features such as BitLocker drive encryption and the new Network Access Protection service (discussed in Hour 11).
- **Web server capabilities**—Windows Server 2008 provides the newest version of Microsoft's Internet Information Server—version 7 (IIS7)—which incorporates content delivery platforms such as ASP.NET and SharePoint services into one easy-to-manage web platform. IIS7 also supplies a new management snap-in that can be run in the Microsoft Management Console or MMC (see Hour 23, "Using the Internet Information Service," for more about IIS7).

> **By the Way**
>
> Windows Server 2008 builds on the security that was provided by Windows 2003 Server and now provides a way to limit network access based on health policies related to Windows Update and the configuration of the Windows Firewall. For more information see Hour 11.

In addition to features gleaned from the development of Windows Vista and the solid foundation provided by Windows Server 2003, Windows Server 2008 provides many enhancements, more enhancements than can be covered in one book. Let's take a look at some of the improvements and new features provided by Windows Server 2008.

Improvements and Additions to Windows Server 2008

A number of improvements and additions have been made to Windows Server 2008. As already mentioned, Windows Server 2008 shares some of the look and feel provided by Windows Vista. Windows Server 2008 also supplies a number of new tools; one of the most dramatic of these new tools in terms of managing a Windows server is the Server Manager.

In Windows Server 2003, a number of the administrative tools ran as snap-ins in the MMC. As you added a role to the server, such as DNS or DHCP, a new snap-in would

be available. The new Server Manager provides easy access to nearly all the configuration, monitoring, and troubleshooting snap-ins that you will need to use as you manage your Windows server (see Figure 1.2).

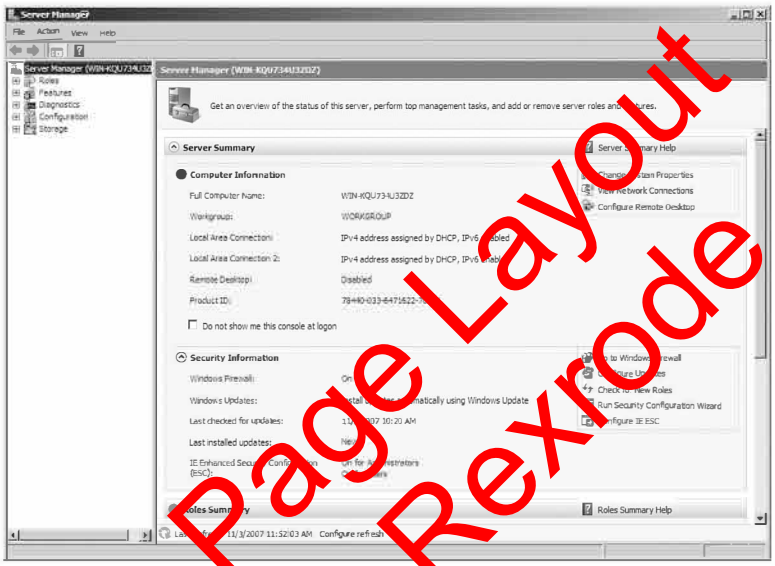

FIGURE 1.2
The Server Manager provides quick access to your server management tools.

The Server Manager not only provides quick access to many of the management snap-ins, but it also includes quick access to the Add New Roles Wizard and enables you to view the services that are installed and running in association with a particular server role. The Server Manager is introduced in Hour 3, "Configuring Windows Server 2008 Basic Settings," and is used extensively throughout the book to manage the various roles provided by Windows Server 2008.

Another important change to Windows Server 2008 is how it approaches installing new roles and services on a server. When you boot the server, Windows Server 2008 loads the Initial Configuration Tasks window. This utility enables you to view the roles that are currently installed on the server and also provides easy access to setting such as the time zone, the computer name and domain membership, automatic updates, and the server's network interfaces.

More importantly, both the Initial Configuration Tasks window (and the Server Manager) provide quick access to the Add Roles Wizard. The Add Roles Wizard (see Figure 1.3) not only makes it easy for you to install a new role such as the domain controller role, DNS role, or the Active Directory Certificate Services role, it also makes sure that you install all the necessary services required for that role to function appropriately.

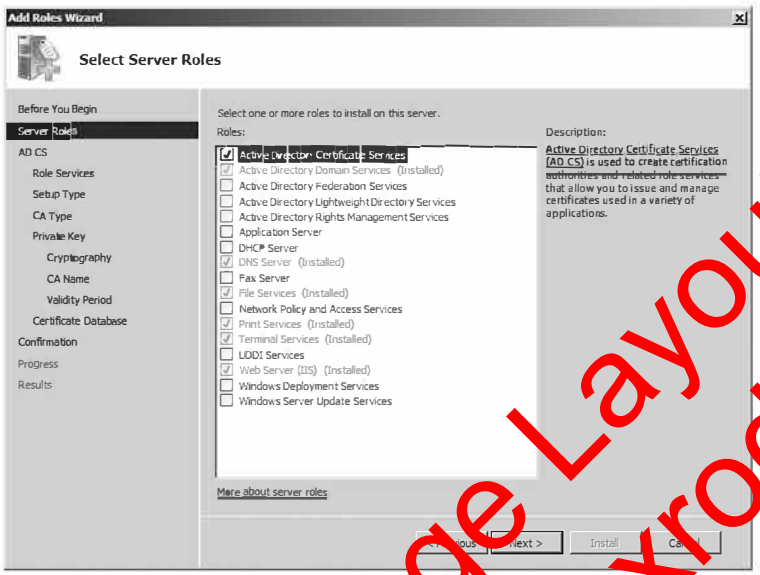

FIGURE 1.3
The Add Roles Wizard enables you to add roles and also helps to make sure that required services for the role are installed.

For example, if you are installing the Certification Authority Web Enrollment service (a web interface where users can request and renew certificates) as part of the Active Directory Certificate Services (a server role), the Add Roles Wizard alerts you to the fact that this service requires IIS7 and that it will be installed during the process of adding the role to your server.

Another improvement provided by Windows Server 2008 is that you can now deploy read-only domain controllers. This enables you to deploy a domain controller in a less secure environment such as a branch office. Read-only domain controllers contain a read-only copy of the Active Directory, which provides much more security in these environments.

Windows Server 2008 also enables you to perform a core installation of the network operating system. A core installation is a minimal or stripped-down installation of Windows Server 2008 that is managed from the command line (the Windows GUI interface is not installed) and can supply certain services and server roles to the client computers on your network. A core installation can provide services such as print services and file services. A server with a core installation can also function in roles such as a DHCP server and DNS server (Windows Server 2008 installations are discussed in Hour 2, "Installing and Configuring Windows Server 2008").

In Windows Server 2003, a number of new command-line tools were added, such as DiskPart (a disk partitioning tool) and the `dfscmd` Distributed File System utility that

enables you to create DFS roots from the command line. Windows Server 2008 takes the command-line utility one step further with the Windows PowerShell (also available in Windows Vista), which provides a powerful set of command-line tools (called *cmdlets*) and a full-fledged scripting language. PowerShell (see Figure 1.4) is added to Windows Server 2008 as a feature, and although it is not covered in this book (we concentrate on the snap-ins that run in the Server Manager and the MMC), it provides you with an alternative to the various snap-ins and other GUI tools provided by the network operating system.

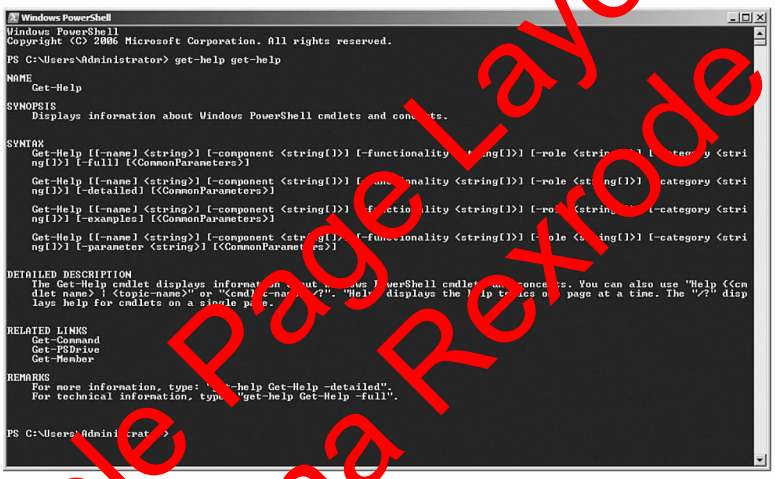

FIGURE 1.4 PowerShell is a new command-line and scripting tool.

Windows Server 2008 also makes the management of printers and print servers easier in your domain. The new Print Management snap-in (see Figure 1.5) enables you to view print servers and the printers that they provide for the domain. You can even locate (using filters) printers that currently have print jobs and printers that are not ready (meaning paused or offline).

The discussion here only scratches the surface of new features found in and the improvements made to the Windows Server 2008 platform. The lists that follow provide a quick look at some of the most important new features and the improvements found in the Windows Server 2008 network operating system platform.

New features:

- **Read-only domain controllers**—This feature enables you to deploy read-only domain controllers in your domain for added security and branch office or other remote location access to the Active Directory database.

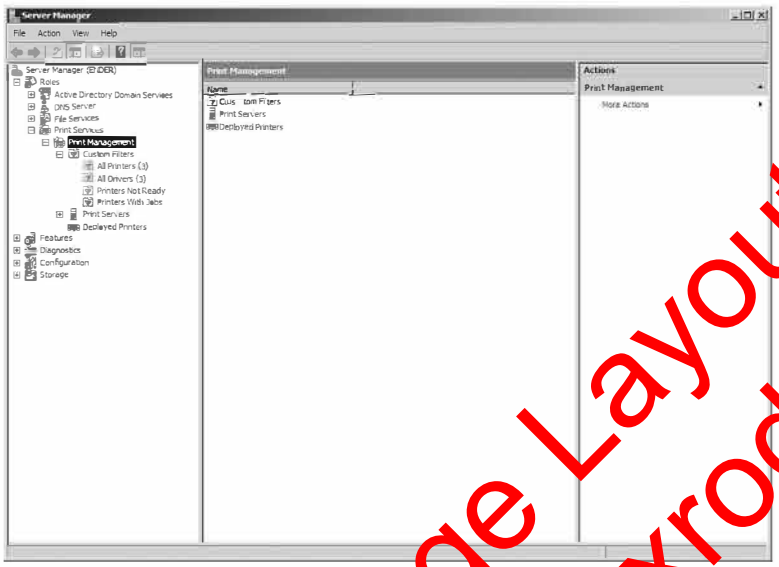

FIGURE 1.5 The Print Management snap-in.

- **Internet Information Services 7 (IIS7)**—IIS7 provides an easily managed platform for a number of web-based technologies, including ASP.NET and SharePoint services. IIS7 also enables you to manage your web servers, using a web browser.
- **Windows Server 2008 core installation**—The stripped-down core installation enables you to deploy server services and roles on server hardware that does not meet the hardware requirements (such as RAM) for a full Windows Server 2008 installation.
- **Internet Protocol version 6**—Windows Server 2008 installs IPv6 by default and allows you to run IPv4 and IPv6 in tandem on your network interfaces.
- **Server virtualization**—Windows Server 2008 provides Hyper-V, which is a software virtualization technology that enables you to run multiple virtual servers on a single server.

Improved features:

- **Windows Deployment Services**—Windows Deployment Services (WDS) replaces the Remote Installation Services (RIS) provided by Windows Server 2003. WDS allows you to install both Windows Server 2008 and client operating systems (including Windows Vista and Windows XP) using an image-based installation. WDS is discussed in Hour 5, "Implementing Windows Deployment Services."

- **Windows Firewall**—The new Windows Firewall with Advanced Security found in Windows Server 2008 offers you greater management control of the firewall in the new Windows Firewall with Advanced Security snap-in. IPSec has also been added to the Windows Firewall to provide greater IP traffic security.
- **Reliability and Performance Monitor**—The new Reliability and Performance Monitor enables you to monitor server performance in real time. You can monitor hardware and application performance and create threshold alerts and performance reports.

We will be working with a number of the new features and improvements found in the Windows Server 2008 operating system. These features are discussed throughout the book in the context of the appropriate subject matter.

The Different Flavors of Windows Server 2008

The Windows Server 2008 family consists of several different network operating systems that are designed to serve businesses of different sizes and different needs.

The members of the Windows Server 2008 family are listed here and discussed in the sections that follow:

- Standard Edition
- Enterprise Edition
- Datacenter Edition
- Web Edition

Standard Edition

Standard Server is considered the entry-level version of Windows Sever 2008 (if there is such a thing as "entry-level" with server platforms). It is suitable for smaller businesses and organizations ("smaller" meaning users in the hundreds, not thousands, although multiple standard servers in a tree or trees would certainly accommodate even the largest of companies).

Standard Server supplies all the features discussed in this hour, including Hyper-V virtualization, and IIS7. It also provides for Network Address Translation and

multihomed servers (servers with more than one network interface) that allow multiple network clients to share the same Internet connection in a small business setting.

Standard Server supports multiple processors (four cores on both x86 and x64 systems) and up to 4GB of RAM on an x86-based server and 32GB of RAM on an X64-based server. Standard Server provides a maximum of 250 Remote Access connections and 250 Terminal Services connections.

By the Way

Because this book is an introduction to and survey of installing and administering a Windows network environment, we primarily cover the tools and features found in Windows Server 2008 Standard Edition. These features and server roles would also be available in the Windows Server 2008 Enterprise Edition. The Web Edition is intended as a web server product and does not contain many of the standard features for deploying a domain.

Enterprise Edition

The Enterprise Edition supplies all the features and tools provided by the Standard Edition. The major difference is that the Enterprise Edition is considered a workhorse platform for very large enterprisewide networks.

To provide the processing power needed for larger networks, the Enterprise Edition can support up to eight processors and also supports server clustering (up to 16 cluster nodes, meaning that 16 servers can be tied together using the clustering feature and thus can act as one megaserver).

The Enterprise Edition on an x86-based server allows up to 64GB of RAM and up to 2TB on an x64-based system. This edition also provides for unlimited connections by Remote Access and Terminal Services clients.

Datacenter Edition

The Datacenter Edition provides all the features found in the other editions and allows you to deploy servers with a great deal of hardware muscle. The Datacenter Edition provides for multiple processors (32 x86 and 64 x64) and has the same potential RAM capacity as the Enterprise Edition (64GB on x86 and 2TB on X64).

The Datacenter Edition provides for unlimited Remote Access and Terminal Services connections. It also grants you unlimited deployment of virtual servers, whereas the limit with the Enterprise Edition is four and with the Standard Edition is one. The Datacenter Edition is considered the appropriate platform for very large-scale networks requiring access to large databases and real-time transaction validation.

Web Edition

The Web Edition is considered the ideal platform for web hosting; it is a scaled-down version of Windows Server and does not provide tools for deploying a domain-based network. The Web Edition provides IIS7 as its web platform.

The Web Edition supports multiple processors (four on both x86 and x64 systems) and up to 4GB of RAM on an x86-based server and 32 GB of RAM on an x64-based server. As a product intended for delivery of web-based content, the Web Edition does not support common server services such as Remote Access or Terminal Services.

By the Way

Microsoft also provides two additional versions of Windows Server 2008: Windows Server 2008 for Itanium-based systems and Windows HPC Server 2008. The Itanium version is designed for networks that require large databases and custom applications. The HPC version is designed for high-performance computing (thus the HPC) environments using server clustering. Bottom line: Both of these versions are for big, high-capacity networks.

All the versions of Windows Server 2008, except for the Web Edition, include the Hyper-V virtualization platform. However, you can also purchase the Standard, Enterprise, and Datacenter versions of Windows Server 2008 without the Hyper-V technology. Obviously, Microsoft provides enough flavors of Windows Server 2008 that you can select the edition that will work best for your networking needs.

Summary

This hour covered the latest version of Microsoft's network operating system: Windows Server 2008. Windows Server 2008 provides the services and featured offered in the previous Windows Server 2003 networking platform and also provides a number of improvements and new features.

Windows Server 2008 was developed in the same development cycle as Windows Vista and so shares some new features first seen at the release of Vista, such as the new desktop and Control Panel look. Windows Server 2008 now includes a new more robust backup utility called Windows Server Backup. Windows Server 2008 also includes the Windows PowerShell, first introduced with Windows Vista.

Windows Server 2008 provides new administrative tools such as the Server Manager, which supplies access to most of the role management snap-ins used to manage server roles and services. Windows Server 2008 also provides greater security possibilities than its predecessors, including a new Windows Firewall, IPSec, the BitLocker drive encryption, and the new Network Access Protection Service.

New server deployment possibilities such as read-only domain controllers and the Windows core installation provide you with flexibility for client access to the Active Directory Domain Services and services such as DHCP and DNS. The Hyper-V virtualization technology enables you to run multiple server deployments on a single computer.

The Windows Server 2008 provides a family of network server products, including the Standard, Enterprise, Datacenter, and Web Editions. The Standard Edition is considered the entry-level version of this powerful server platform and can be purchased with or without the new Hyper-V virtualization platform.

Q&A

Q. ***What are some of the new tools and features provided by Windows Server 2008?***

A. Windows Server 2008 now provides a desktop environment similar to Microsoft Windows Vista and includes tools also found in Vista, such as the new backup snap-in and the BitLocker drive encryption feature. Windows Server 2008 also provides the new IIS 7 web server and the Windows Deployment Service.

Q. ***What are the different editions of Windows Server 2008?***

A. The entry-level version of Windows Server 2008 is the Standard Edition. The Enterprise Edition provides a platform for large enterprisewide networks. The Datacenter Edition provides support for unlimited Hyper-V virtualization and advanced clustering services. The Web Edition is a scaled-down version of Windows Server 2008 intended for use as a dedicated web server. The Standard, Enterprise, and Datacenter Editions can be purchased with or without the Hyper-V virtualization technology.