

Hands-On Microsoft Windows Server 2008

Chapter 1 *Introduction to Windows Server 2008*

Objectives

- Identify the key features of each Windows Server 2008 edition
- Understand client systems that can be used with Windows Server 2008
- Identify important general features of Windows Server 2008
- Plan a Windows Server 2008 networking model
- Understand and implement networking protocols used by Windows Server 2008

Windows Server 2008 Platforms

- The Windows Server 2008 platforms are as follows:
 - Windows Server 2008 Standard Edition
 - Windows Server 2008 Enterprise Edition
 - Windows Web Server 2008
 - Windows Server 2008 Datacenter Edition
 - Windows Server 2008 for Itanium-Based Systems
 - Windows Server 2008 Standard Edition w/o Hyper-V
 - Windows Server 2008 Enterprise Edition w/o Hyper-V
 - Windows Server 2008 Datacenter Edition w/o Hyper-V

Windows Server 2008 Standard Edition

- The most basic server version on which the other versions are based
- Designed to meet the everyday needs of small to large businesses
- Provides file and print services, secure Internet connectivity, and centralized management of network resources
- Supports multiprocessor computers and multiprocessor clients

Windows Server 2008 Standard Edition (continued)

- **Symmetric multiprocessor (SMP) computer**
 - A multiprocessor computer
- **Hyper-V**
 - Enables Windows Server 2008 to offer a **virtualization** environment
- Advantages of Hyper-V compared with Microsoft's earlier Virtual Server 2005 R2
 - Can run 32-bit and 64-bit operating systems at the same time
 - Can run on SMP computers
 - Can access larger memory segments

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Windows Server 2008 Enterprise Edition

- Designed to meet the everyday needs of networks with applications and Web services
 - Requiring high-end servers and a high level of productivity
- Intended for midsized and large organizations that want the option to continue scaling their server operations upward
- Can also handle SMP computers
- Enables clustering

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Windows Server 2008 Enterprise Edition (continued)

- **Clustering**

- The ability to increase the access to server resources and provide fail-safe services
 - By linking two or more discrete computer systems so they appear to function as though they are one
- Advantages
 - Increases computer speed to complete server tasks faster
 - Provides more computing power for handling resource-hungry applications

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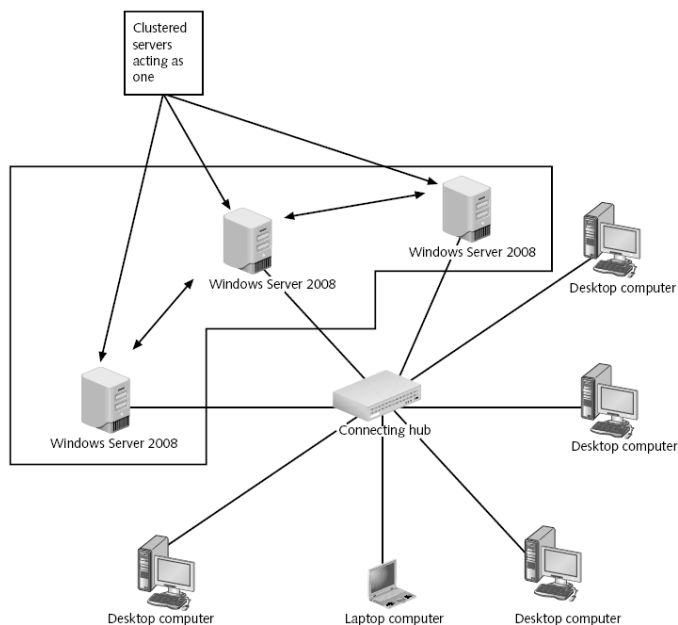


Figure 1-1 Three servers acting as one in a cluster

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Windows Server 2008 Enterprise Edition (continued)

- **Hot-add memory**
 - The ability to add RAM without shutting down the computer or operating system
- **Fault tolerant memory sync**
 - Enables memory to resynchronize after transient memory problems so there is no interruption to current computing activities

Windows Server 2008 Enterprise Edition (continued)

- Microsoft Metadirectory Services
 - Facilitate multiple directory services to track and manage access to such resources as user accounts, shared folders, and shared printers
- Another option in Enterprise Edition is the ability to have unlimited numbers of users remotely access a server

Windows Web Server 2008

- Designed for hosting and deploying Web services and applications
- Supports multiple processors for scalability
- Particularly optimized to run Microsoft Internet Information Services
- Intended for small to large companies, or departments within an organization that develop and deploy a single Web site
- Cannot be used to manage directory resources via hosting Active Directory

Windows Server 2008 Datacenter Edition

- Designed for environments with mission-critical applications, very large databases, and information access requiring high availability
- Offers support for clustering with up to 16 computers
 - For SMP computers, offers support for 2 to 64 processors
- Enables hot-add memory for increased server availability

Windows Server 2008 Datacenter Edition (continued)

- **Hot-add processor**
 - Can be added to an empty processor slot while the system is running
- **Hot-replace processor**
 - Can replace a processor in an SMP system without taking the system down

Windows Server 2008 for Itanium-Based Systems

- The maximum RAM supported by Windows Server 2008 for Itanium-Based Systems is 2 TB
- Supports hot-add memory, hot-add processor, hot-replace processor, and SMP computers
- Supports server clustering for up to eight servers in one cluster
- Intended for resource-intensive applications

Windows Server 2008 Versions Without Hyper-V

- The following non-Hyper-V versions of Windows 2008 are available:
 - Windows Server 2008 Standard Edition without Hyper-V
 - Windows Server 2008 Enterprise Edition without Hyper-V
 - Windows Server 2008 Datacenter Edition without Hyper-V
- When you purchase a version without Hyper-V, the cost savings is very small

Using Windows Server 2008 with Client Systems

- The client workstation operating system most compatible with Windows Server 2008 is Windows 7
- **Client**
 - A computer that accesses resources on another computer via a network
- **Workstation**
 - A computer that has its own central processing unit (CPU) and can be used as a stand-alone or network computer

Using Windows Server 2008 with Client Systems (continued)

- The overall goal of Microsoft is to achieve a lower **total cost of ownership (TCO)**
 - TCO is the full cost of owning a network, including hardware, software, training, maintenance, and user support costs
- **Domain**
 - A grouping of network objects, such as computers, servers, and user accounts, that provides for easier management
 - Computers and users in a domain can be managed to determine what resources they can access

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Using Windows Server 2008 with Client Systems (continued)

- Advantages of using Windows Server 2008 and Windows 7 together include the following:
 - New capabilities to recover from many types of network communications problems
 - Newly written code for more efficient network communications
 - More network diagnostic capabilities
 - New code for better use of the network communications protocols
 - Use of Windows PowerShell commands and scripts in both Windows Server 2008 and 7

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Using Windows Server 2008 with Client Systems (continued)

- **Active Directory**
 - Database of computers, users, groups of users, shared printers, shared folders, and other network resources
- Windows Server 2008 supports UNIX and Linux clients using the **Subsystem for UNIX-based Applications (SUA)**

Windows Server 2008 Features

- Features include:
 - Server Manager
 - Security
 - Clustering
 - Enhanced Web services
 - Windows Server Core
 - Windows PowerShell
 - Virtualization
 - Reliability
 - Multitasking and multithreading

Server Manager

- **Server Manager**
 - Enables the server administrator to manage critical configuration features from inside one tool
- Server Manager is used to:
 - View computer configuration information.
 - Change properties of a system
 - View network connections
 - Configure Remote Desktop
 - Configure security, including the firewall and how to obtain updates

Server Manager (continued)

- Server Manager is used to: (continued)
 - Configure a multitude of server roles, from a basic file server to advanced network services
 - Add and remove features
 - Run diagnostics
 - Manage storage and backups

Security

- **Network Access Protection (NAP)**
 - An umbrella of security protection features that monitor and manage a server and its clients
- NAP has the following capabilities:
 - Identifies clients and other computers on a network that do not comply with the security policies
 - Limits access by noncompliant computers
 - Automatically updates or configures a noncompliant computer to match the security policies
 - Continuously checks throughout the entire network and server connection session

Security (continued)

- When you install Windows Server 2008, add a feature, or install a Windows component
 - An essential level of security is automatically implemented
- Windows Server 2008 also comes with the Security Configuration Wizard (SCW)
 - Simplifies security configuration

Security (continued)

- Other security features include:
 - File and folder permissions
 - Security policies
 - Encryption of data
 - Event auditing
 - Various authentication methods
 - Server management and monitoring tools

Clustering and Clustering Tools

- Windows Server 2008 offers tools to:
 - Test a cluster to ensure it is set up to accomplish the tasks for which it is intended
 - Migrate configuration settings from one cluster to another
 - Quickly configure a cluster and troubleshoot problems
 - Set up storage used in a cluster
 - Create better cluster storage performance and reliability
 - Secure a cluster and enable it to use new network capabilities

Enhanced Web Services

- Microsoft **Internet Information Services (IIS)**
 - Transforms Windows Server 2008 into a versatile Web server
- IIS has been redesigned to:
 - Include over 40 modules
 - Intended to enable IIS to have a lower attack surface
 - Provide easier application of IIS patches
 - Make it easier for network programmers to write network applications and configure applications for the Web


Windows PowerShell

- **Windows PowerShell**
 - A command-line interface that offers a **shell**
 - A customized environment for executing commands and scripts
- Can perform the following tasks with PowerShell:
 - Work with files and folders
 - Manage disk storage
 - Manage network tasks
 - Set up local and network printing options
 - Install, list, and remove software applications

Windows PowerShell (continued)

- Can perform the following tasks with PowerShell:
 - View information about the local computer, including user accounts
 - Manage services and processes
 - Lock a computer or log off
 - Manage IIS Web services
- Windows PowerShell offers over 130 command-line tools, also called **cmdlets**

Windows PowerShell (continued)



```
Select Windows PowerShell
Windows PowerShell
Copyright (C) 2006 Microsoft Corporation. All rights reserved.

PS C:\Users\Administrator> get-childitem

    Directory: Microsoft.PowerShell.Core\FileSystem::C:\Users\Administrator

Mode                LastWriteTime         Length Name
----                -
d-r--              2/13/2008 12:46 PM             Contacts
d-r--              2/13/2008 12:46 PM             Desktop
d-r--              2/13/2008 12:46 PM             Documents
d-r--              2/13/2008 12:46 PM             Downloads
d-r--              2/13/2008 12:46 PM             Favorites
d-r--              2/13/2008 12:46 PM             Links
d-r--              2/13/2008 12:46 PM             Music
d-r--              2/13/2008 12:46 PM             Pictures
d-r--              2/13/2008 12:46 PM             Saved Games
d-r--              2/13/2008 12:46 PM             Searches
d-r--              2/13/2008 12:46 PM             Videos

PS C:\Users\Administrator> _
```

Figure 1-3 Using Windows PowerShell for a directory listing

Virtualization

- Hyper-V provides the ability to run two or more operating systems on a single computer
- The Hyper-V capabilities include the following:
 - Compatible with clustering
 - Able to handle up to a four-processor SMP computer
 - Can be used with Windows and Linux operating systems
 - Compatible with different types of disk storage methods
 - Enables fast migration from one computer to another
 - Can house 64-bit and 32-bit operating systems

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Planning a Windows Server 2008 Networking Model

- **Peer-to-peer networking**
 - Focuses on spreading network resource administration among server and nonserver members of a network
- **Server-based networking**
 - Centralizes the network administration on one or more servers

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Peer-to-Peer Networking (continued)

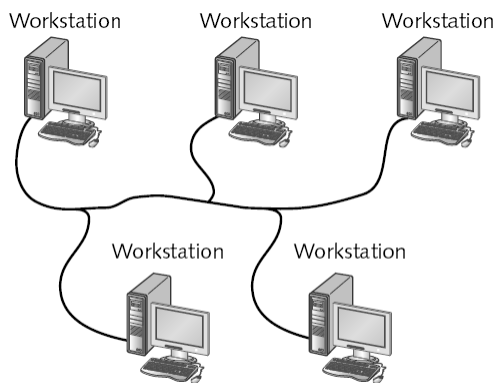


Figure 1-6 A simple peer-to-peer network without a server

Peer-to-Peer Networking (continued)

- Each of the users is responsible for the security of their own resources
- Generally designed for about 10 workstations or less
- Can often experience slow response times
 - Because this model is not optimized for multiple users accessing one computer
- **Workgroup**
 - A number of users who share drive and printer resources

Server-Based Networking

- **Server**
 - A single computer that provides extensive multiuser access to network resources
 - Can handle hundreds of users at once
 - Fast response when delivering the shared resource
 - Less network congestion when multiple workstations access that resource
- **Advantages**
 - Users only need to log on once to gain access to network resources
 - Security is stronger

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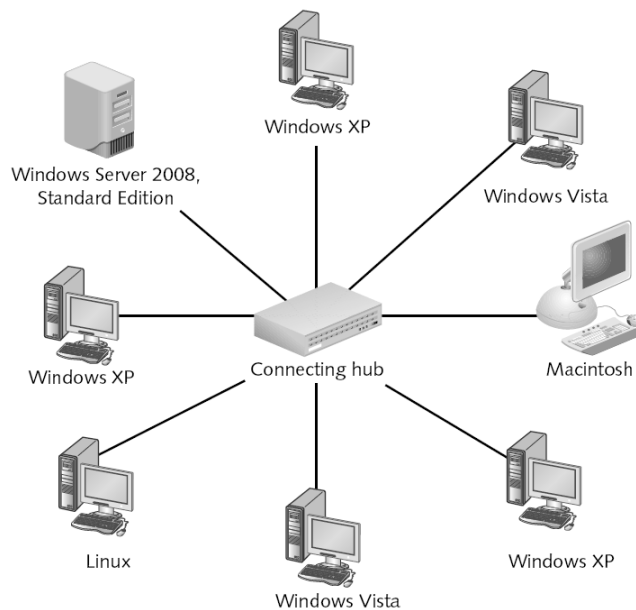


Figure 1-7 A server-based network

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Implementing TCP/IP in Windows Server 2008

- Implementing TCP/IP involves two tasks:
 - **First Task:** Verifying that TCP/IP is enabled
 - 1) Start ->Control Panel -> Network and Internet -> Network and Sharing Center -> Manage network connections.
 - 2) Right-click the appropriate connection, such as:
 - Local Area Connection
 - or Wireless Network Connection
 - 3) Click Properties.
 - 4) Check to see if TCP/IP is enabled. If it is enabled, you'll see one or both of Internet of the following checked
 - Internet Protocol Version 6 (TCP/IPv6)
 - Internet Protocol Version 4 (TCP/IPv4)

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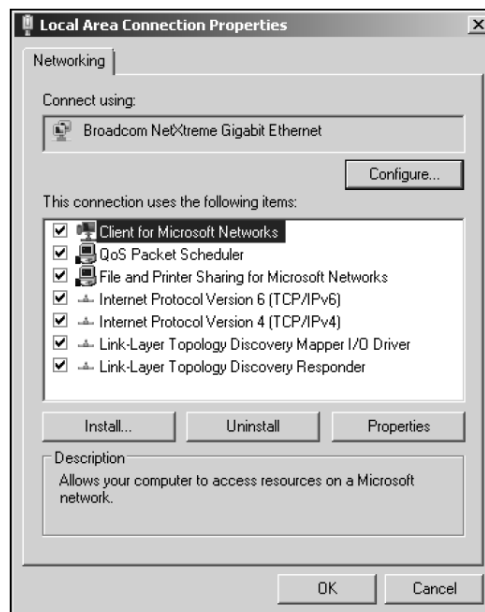


Figure 1-13 Viewing the network connection properties

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Implementing TCP/IP in Windows Server 2008

- **Second Task:** Configuring TCP/IP

- Do the steps in slide 37 to view the dialog box in slide 38.
- Double-click Internet Protocol Version 4 (TCP/IPv4).
- The following dialog appear:

- Fill in this dialog with the
- appropriate information of addressing.

