Clustering and Clustering Tools

▶ Testing

▶ Migrate configuration settings

▶ Quick configuration and troubleshooting

▶ Storage configuration

▶ Performance and reliability

▶ Security

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Enhanced Web Services

- Microsoft **Internet Information Services (IIS)**
  - Enhanced security
  - Easier application of patches
  - Easier for programmers to write and configure Web applications
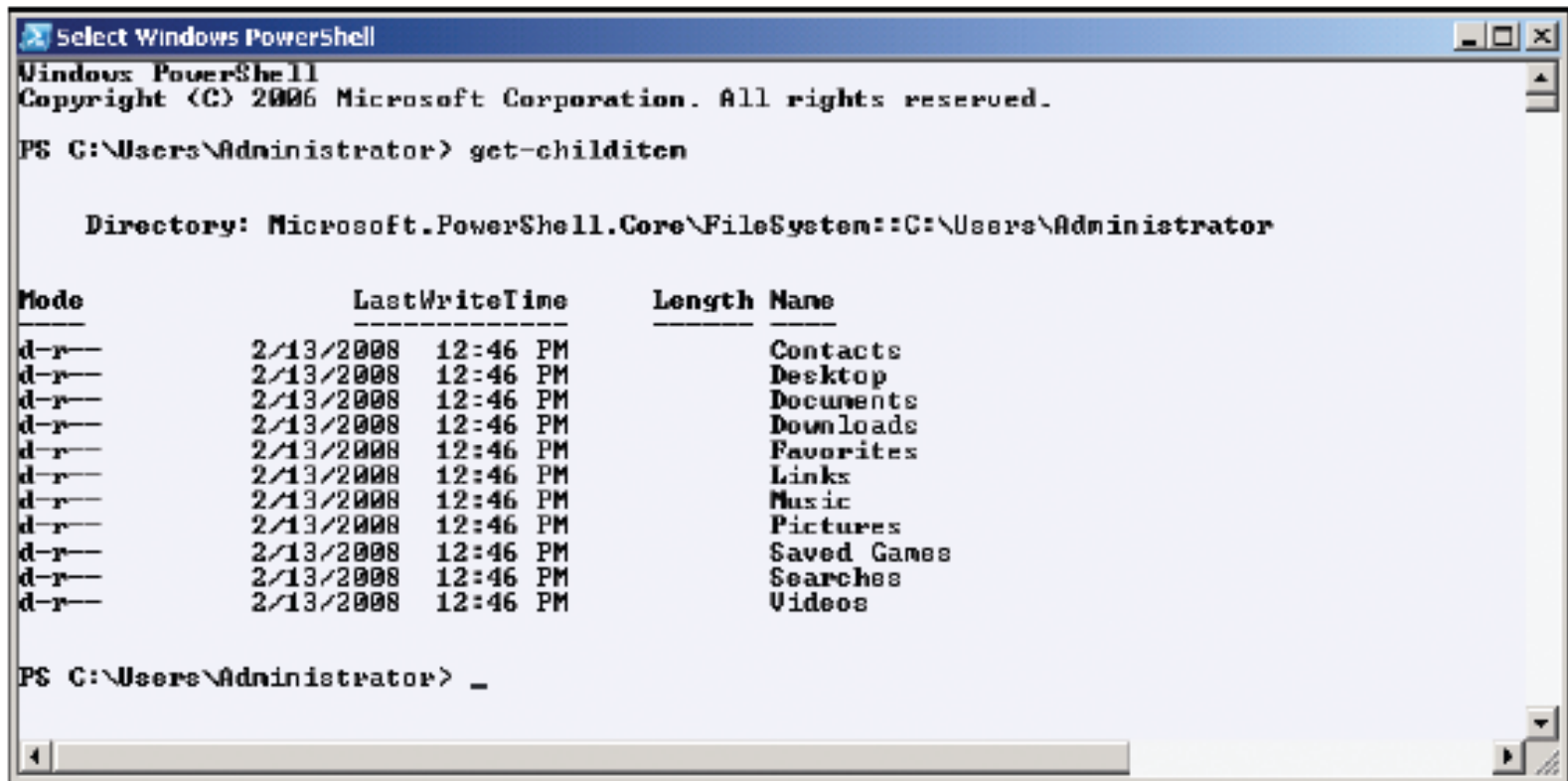 - Better management tools: IIS Manager

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Windows Server Core

► Minimum server configuration

► Advantages:

  ► No GUI overhead

  ► Less disk space and memory needed

  ► Smaller attack surface

► Interact with server via command line

Windows PowerShell

► Command-line interface that offers a shell

► Perform common administration tasks

► Use **cmdlets**

    ► 130 command line-tools

► Scripting language

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Windows PowerShell (cont'd.)

Figure 1-3 Using Windows PowerShell for a directory listing
Courtesy Course Technology/Cengage Learning

Virtualization

▶ Using Hyper-V

▶ Capabilities:

▶ 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

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Reliability

- **Kernel** runs in **privileged mode**
  - Core programs; computer code of operating system
  - Extra level of security
- Protected **processes**
  - Computer program or portion of program
  - Protects premature interruption
- Management features:
  - Server Manager
  - Wizards
  - Windows Reliability and Performance Monitor

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Reliability (cont'd.)

▶ Activity 1-2: Viewing Running Processes

  ▶ Objective: View the processes running in Windows Server 2008

Multitasking and Multithreading

▶ **Multitasking**

  ▶ Ability to run two or more programs at the same time

▶ **Multithreading**

  ▶ Capability of programs written to run several program code blocks at the same time

  ▶ **Preemptive multitasking**
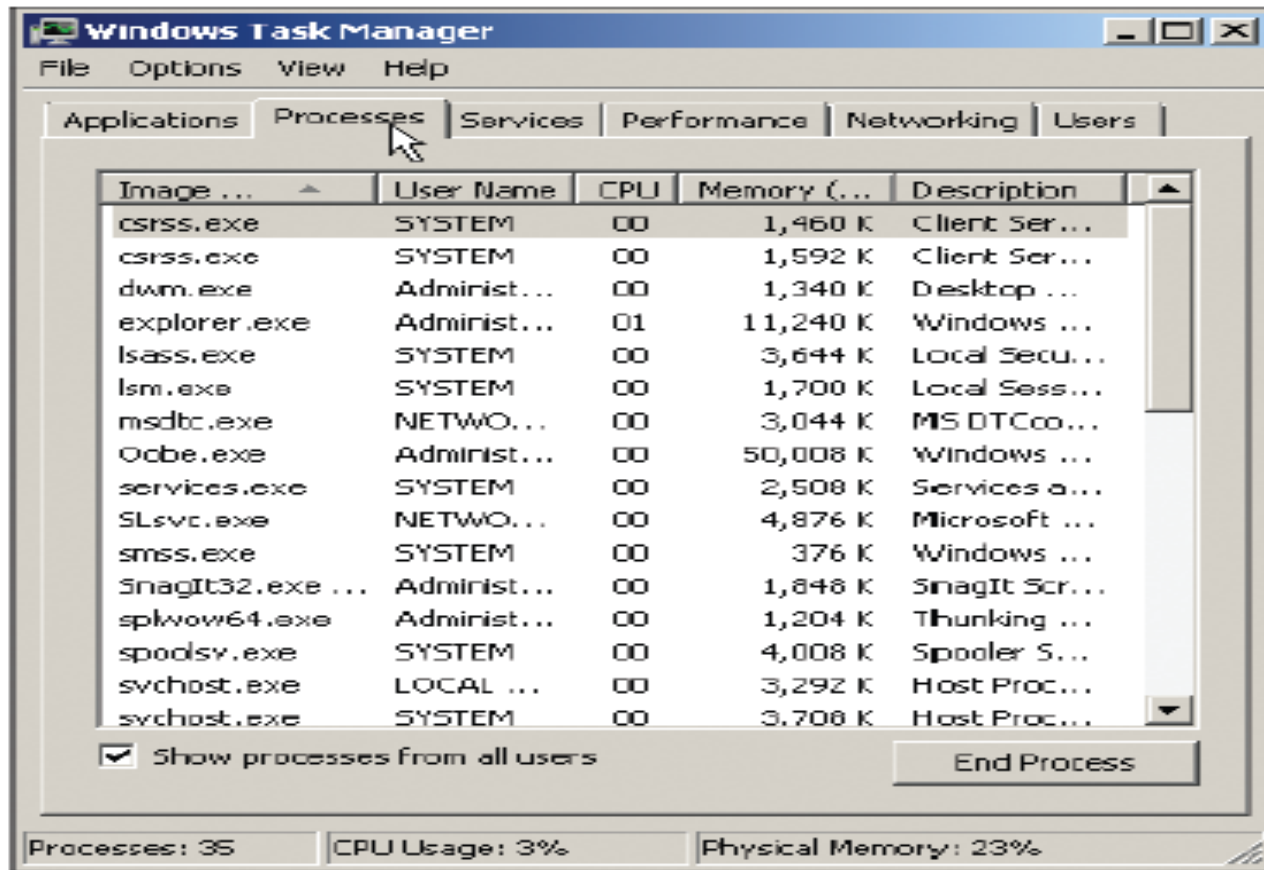
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Multitasking and Multithreading (cont'd.)

Figure 1-4 Using Task Manager to view running processes
Courtesy Course Technology/Cengage Learning

Planning a Windows Server 2008 Networking Model

- **Network**
  - Communication system
  - Enables computer users to share equipment, software, data, and transmissions

- **Peer-to-peer networking**
  - Spreads resource administration among server and non-server members of network
  - Used by small businesses

- **Server-based networking**
  - Centralizes network administration on servers
  - Used by medium and large networks

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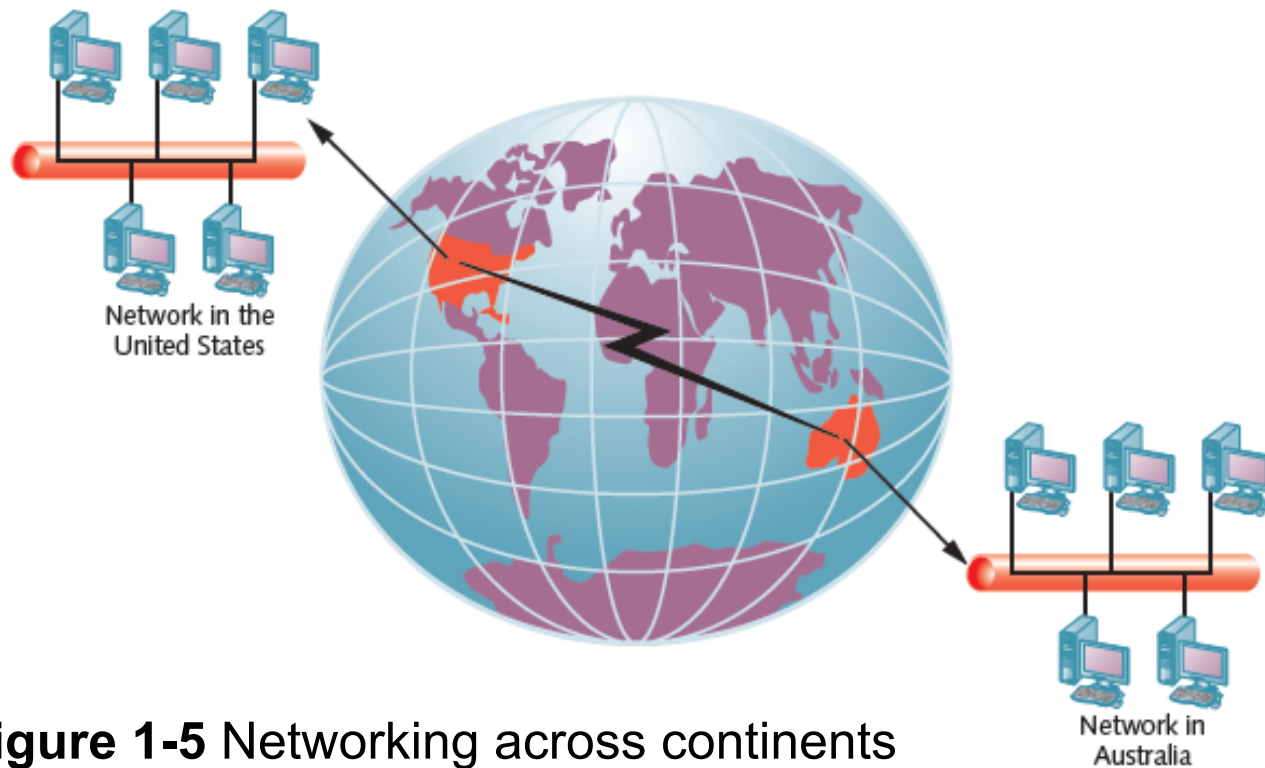# Planning a Windows Server 2008 Networking Model (cont'd.)

Figure 1-5 Networking across continents
Courtesy Course Technology/Cengage Learning

Peer-to-Peer Networking

▶ One of the simplest ways to configure a network

▶ No special computer needed

▶ Disadvantages:

  ▶ Network management decentralized

  ▶ Security is responsibility of each user

  ▶ Less effective as number of workstations exceeds 10

▶ Activity 1-3: Determining if a Computer Is in a Domain or a Workgroup

  ▶ Objective: Discover if a particular computer is in a domain or a workgroup

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Server-Based Networking

- **Server**

  - Single server can act as file and print server, Web server, network administration server, database server, e-mail server

  - Can handle many users at once

- Advantages

  - Single log on

  - Stronger security

  - Sharing of files and resources

  - E-mail server

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Server-Based Networking (cont'd.)

- ▶ Advantages (cont'd.)
    - ▶ Software applications are shared
    - ▶ Databases are managed and secured
    - ▶ Easier backups
    - ▶ Resource sharing can be customized
    - ▶ Software updates quicker and easier to install
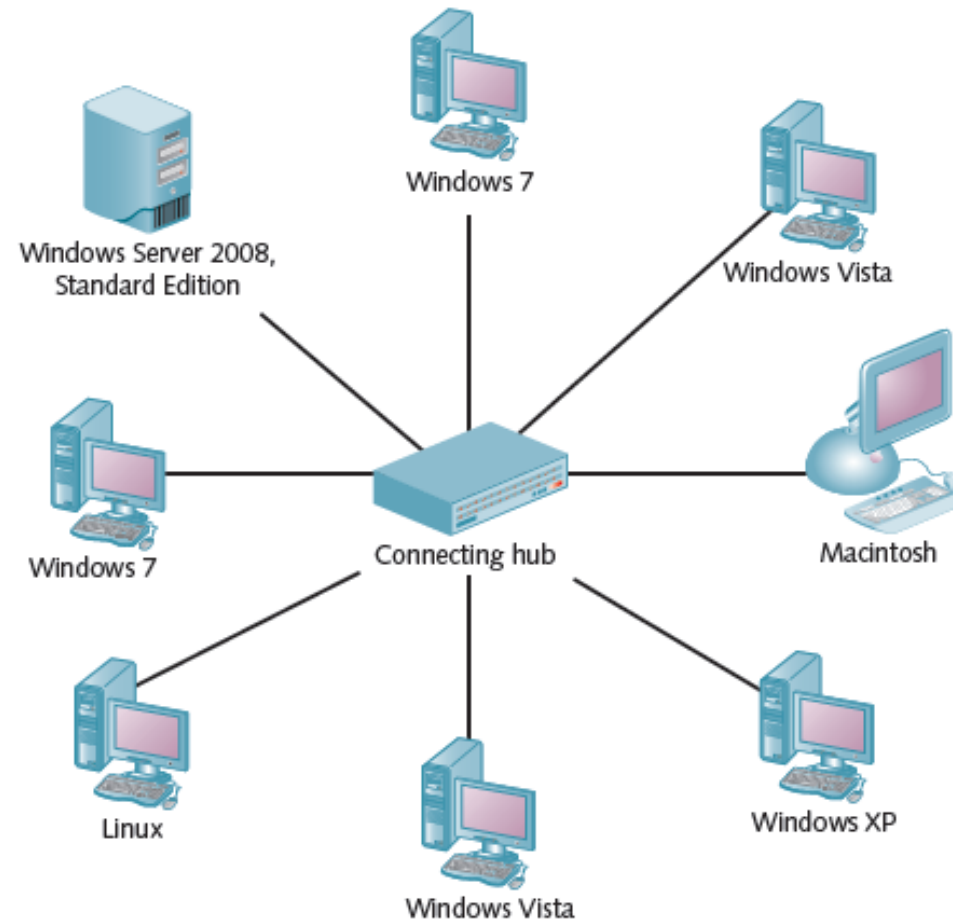
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Server-Based Networking (cont'd

Figure 1-7 A server-based network
Courtesy Course Technology/Cengage Learning

Protocols for the Windows Server 2008 Networking Model

▶ **Protocol** sets guidelines for:

  ▶ Data formatting into packets and frames

  ▶ Data transmission

  ▶ Interpretation of packets and frames

▶ **Packets** and **frames**

  ▶ Units of data transmitted from a sending computer to a receiving computer

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Protocols for the Windows Server 2008 Networking Model (cont'd.)

▶ **Transmission Control Protocol/Internet Protocol (TCP/IP)**

  ▶ Suite of protocols and utilities that support communication across LANs and the Internet

▶ **Local area network (LAN)**

  ▶ Network of computers in relatively close proximity

▶ TCP/IP used for several reasons

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Transmission Control Protocol

▶ Provides for reliable end-to-end delivery of data by controlling data flow

▶ **Connection-oriented communication**

  ▶ Ensures that packets are delivered in correct sequence with accurate contents