Chaffey College
Chino Information Technology Center

CISNTWK-11

Microsoft Network Server

Chapter 2

Installing Windows Server 2008

Chaffey College
Chino Information Technology Center

Objectives

- Plan and make the appropriate preparations for installing Windows Server 2008
- Understand the different installation methods used and install Windows Server 2008
- Set up Windows Server 2008 from the Initial Configuration Tasks window
- Activate Windows Server 2008

Objectives (continued)

- Install and configure Windows Deployment Services
- Install service packs
- Troubleshoot installation problems
- Uninstall Windows Server 2008

Preparing for Installation

- Preinstallation tasks:
  - Identify the hardware requirements and check hardware compatibility
  - Determine disk partitioning options
  - Understand the file system
  - Determine upgrade options
  - Plan user licensing
  - Determine domain or workgroup membership

Preparing for Installation (continued)

- Preinstallation tasks: (continued)
  - Choose a computer name
  - Determine whether to install Server Core or the full version
  - Identify the server roles to implement
  - Determine the immediate preparations

Identifying Hardware Requirements and Determining Compatibility

- Most operating systems come with a list of minimum hardware requirements
- Always better to exceed the minimum recommendations
  - By how much will be determined by what role the Windows Server 2008 server will play on the network
- **Redundant array of inexpensive disks (RAID)**
  - An array of multiple hard drives designed to extend the life of disk drives and to prevent data loss from a hard disk failure

Identifying Hardware Requirements and Determining Compatibility (continued)

- Hardware compatibility testing
  - The most up-to-date listing of compatible hardware (and software) is the Catalog of Tested Products on Microsoft's Web site
    - www.windowsservercatalog.com
  - Recommended that you select hardware listed on the Catalog of Tested Products or labeled with the Certified for Windows Server 2008 logo
  - Might still be necessary to upgrade the **basic input/output system (BIOS)**

Identifying Hardware Requirements and Determining Compatibility (continued)

- Activity 2-1: Determining the BIOS Version of a Computer
  - Time Required: Approximately 10 minutes
  - Objective: Learn how to determine the BIOS version on a computer

Determining Disk Partitioning Options

- Creating a partition
  - A process in which a hard disk section or a complete hard disk is prepared for use by an operating system
- A disk can be formatted after it is partitioned
  - Process divides the disk into small sections called tracks and sectors for the storage of files by a particular file system
- The Windows Server 2008 installation program will detect how your hard disk is currently partitioned
  - Allows you to install the operating system on an existing partition or create a new one

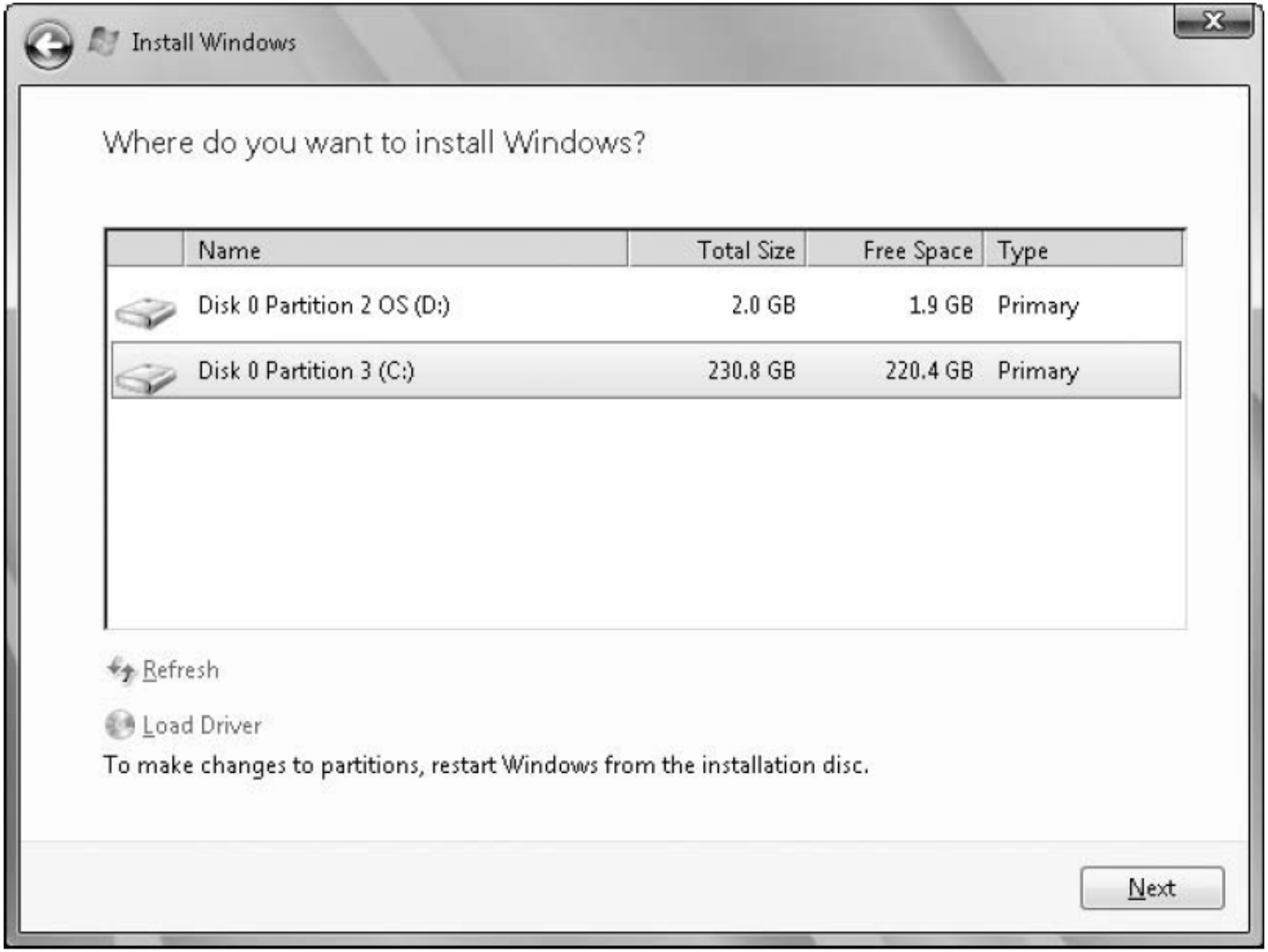

Figure 2-1 Installation program detecting existing partitions

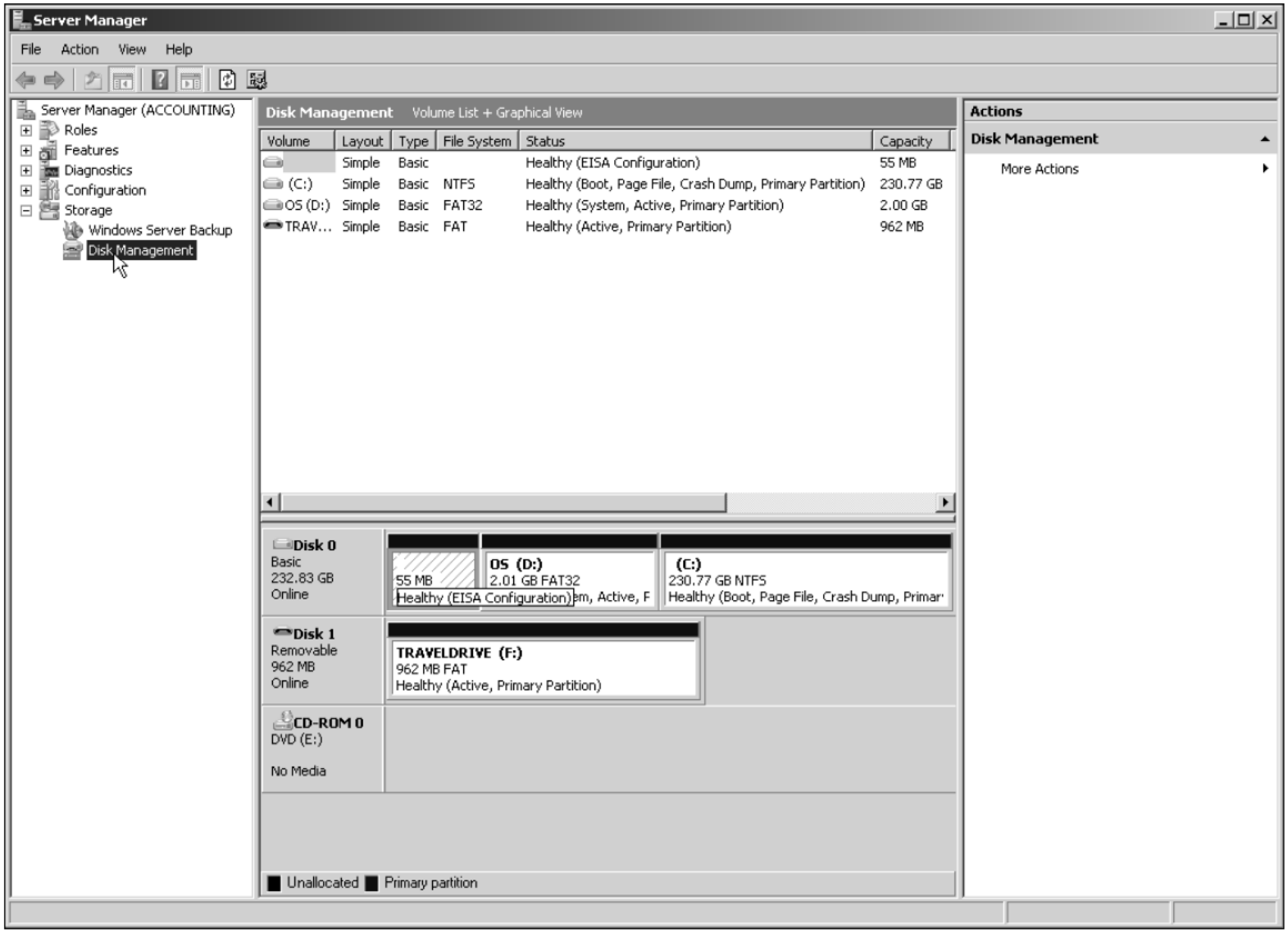

Figure 2-2 Using Server Manager to manage disks after an installation

Determining Disk Partitioning Options (continued)

- Activity 2-2: Determining How an Existing Windows Server 2003 Server Is Partitioned
  - Time Required: Approximately 15 minutes
  - Objective: Determining the space on disks in a Windows Server 2003 server and how the disks are partitioned

Understanding NTFS

- **New Technology File System (NTFS)**
  - The native Windows Server file system
- NTFS features include:
  - Local security through file and folder permissions
  - Compression
  - Disk quotas
  - Encryption
  - Indexing
  - POSIX.1 support

Understanding NTFS (continued)

- NTFS features include (continued):
  - Journaling
  - Large volume capacity
  - Hard links
  - Self-healing
- **Portable operating system interface (POSIX)**
  - A set of standards designed to enable portability of applications from one computer system to another
- **Journaling** by a file system means that it tracks changes to files and keeps a record of these changes in a separate log file

Understanding NTFS (continued)

- You cannot install Windows Server 2008 on a FAT volume
  - Check to ensure that any File Allocation Table (FAT) volumes are first converted to NTFS

Understanding NTFS (continued)

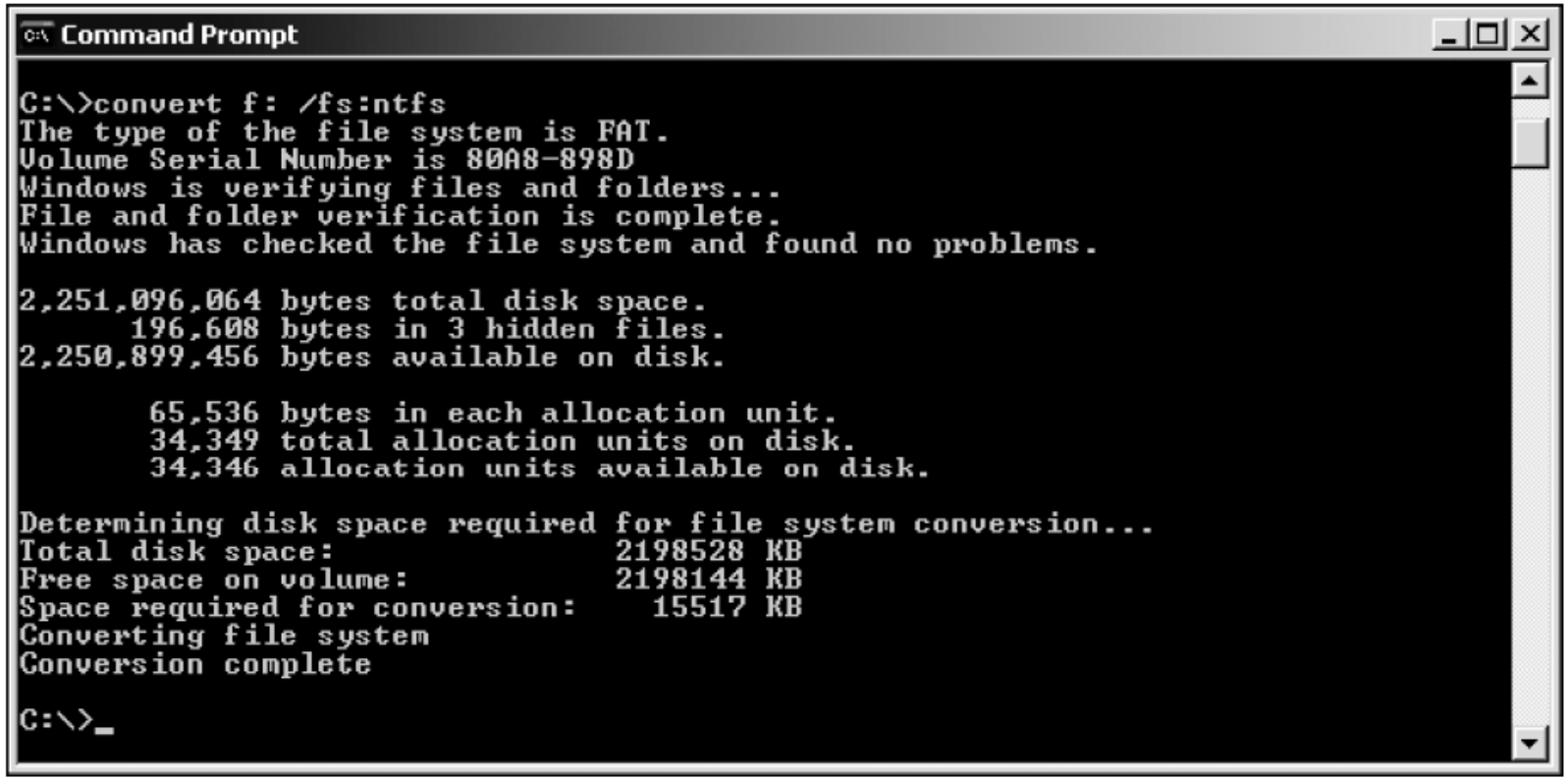

Figure 2-4 Converting a FAT volume to NTFS in Windows Server 2003

Upgrading to Windows Server 2008

Table 2-1 Windows Server upgrade paths

Windows Server 2003 Edition	Windows Server 2008 Edition upgrade path
Windows Server 2003, Enterprise Edition with SP1 or SP2 installed	Windows Server 2008 Standard Edition or Windows Server 2008 Enterprise Edition
Windows Server 2003 R2, Standard Edition	Windows Server 2008 Standard Edition or Windows Server 2008 Enterprise Edition
Windows Server 2003, Enterprise Edition with SP1 or SP2 installed	Windows Server 2008 Enterprise Edition
Windows Server 2003 R2, Enterprise Edition	Windows Server 2008 Enterprise Edition
Windows Server 2003, Datacenter Edition with SP1 or SP2 installed	Windows Server 2008 Datacenter Edition
Windows Server 2003 R2, Datacenter Edition	Windows Server 2008 Datacenter Edition

Planning User Licensing

- For the Standard and Enterprise editions
  - You currently can purchase your initial edition with five or 25 **client access licenses (CALs)**
- For the Datacenter and Itanium-Based editions
  - You pay one flat cost per processor
- When there is a virtual server set up for Windows Server 2008 Standard Edition
  - Users may have one virtual access per CAL
- For Windows Server 2008 Datacenter Edition
  - A workstation can have unlimited virtual accesses per processor license

Determining Domain or Workgroup Membership

- Determine the type of network access for which your computer will be configured
- You can specify a domain or workgroup on the Initial Configuration Tasks window
- Requirements for adding the computer to a domain:
  - Provide the DNS name of the domain you want to join
  - You must have a computer account in the domain you want to join
  - One domain controller and a DNS server must be online before you can join the domain

Choosing a Computer Name

- The installation process assigns a randomly generated name for the server computer
- Some organizations have a predetermined naming scheme for computers on their network
- Microsoft's recommendations for creating a computer name include the following:
  - The maximum length is 63 characters
  - Use shorter names up to 15 characters for easier typing

Choosing a Computer Name (continued)

- Microsoft's recommendations for creating a computer name include the following: (continued)
  - The computer should have a name that is different from any other computer name on the local network or in the domain
  - If no DNS server exists on the network, use only standard Internet characters
  - If a DNS server is present on the network, use standard Internet characters plus additional characters such as $, %, &, , and others

Determining Whether to Install Server Core or the Full Version

- Some scenarios for a Server Core installation:
  - Your organization is medium or large in size and wants to dedicate one server to operate as a DHCP or combined DHCP and DNS server
  - Your organization offers many shared folders to users for their work and the organization wants to centralize all of the shared folders on one computer
  - The server contains only centralized databases accessed by users
  - The server holds critical files for the organization and needs to have the smallest attack surface
  - The server is dedicated to one narrow task

Determining Whether to Install Server Core or the Full Version (continued)

- Sample scenarios for installing the full version are:
  - Your organization is a small or medium-size business and does not plan to dedicate a server for a specific function, such as for DHCP
  - You prefer to work in a GUI environment
  - Your organization needs to have GUI-based software on the server
  - The server administrator is relatively new to Windows Server 2008 and wants to use wizards for guidance
  - The server must have .NET Framework for the applications on it

Identifying Server Roles

- Active Directory Certificate Services Role
  - Four services are incorporated into this role, as shown in Table 2-2
- Active Directory Domain Services Role
  - Central to implementing Active Directory and creating one or more domains
- Active Directory Federation Services
  - Used to manage security tokens and security services on a Windows Server 2008 Web-based network

Identifying Server Roles (continued)

Table 2-2 Active Directory Certificate Services

Service	Purpose
Certification Authority Web Enrollment	Enables requesting digital certificates for Web communications, sets up smart card digital certificates, and can obtain lists of revoked certifications
Certification Authority	Used to set up the use of digital certificates for user accounts and computers
Microsoft Simple Certificate Enrollment Protocol	Enables routers and network devices to access digital certificates
Online Certificate Status Protocol (OCSP)	Enables detention of a revoked certificate without the need to access a revocation list

Identifying Server Roles (continued)

- Active Directory Lightweight Directory Services
  - Intended for servers that primarily manage applications for users
- Active Directory Rights Management Services Role
  - Uses security capabilities such as encryption, user authentication, and security certificates to help safeguard information
- Application Server Role
  - Places the Windows Server 2008 server in the role of a computer that makes applications available to users on a network or over the Web

Identifying Server Roles (continued)

- DHCP Server Role
  - Role in which the server leases IP addresses to network clients
- DNS Server Role
  - DNS maintains tables from which this service translates domain and computer names into IP addresses and vice versa
- Fax Server Role
  - Through the Fax Server role, you can manage all fax resources on a network

Identifying Server Roles (continued)

- File Services Role
  - Enables users to access and share files through one or more servers
- Hyper-V Role
  - Enables Windows Server 2008 to function as a virtual server
- Network Policy and Access Services Role
  - A network is kept secure and healthy by having policies governing who can access it

Identifying Server Roles (continued)

- Print Services Role
  - Includes a service to make a Windows Server 2008 server a formal Print Server that manages print jobs and network printers from one place
- Terminal Services Role
  - Enable client computers to run services and software applications on the server instead of on the client
- UDDI Services Role
  - Enables the discovery of existing Web services and program resources that can be used over and over in different Web applications

Identifying Server Roles (continued)

- Web Server (IIS) Role
  - Enables Windows Server 2008 to provide an ever-expanding range of Web services
- Windows Deployment Services Role
  - Enables an organization to purchase multiple computers without operating systems and then install Windows Server 2008 on all of the computers

Identifying Server Roles (continued)

- Activity 2-3: Viewing Server Roles
  - Time Required: Approximately 15 minutes
  - Objective: Determine server roles already implemented and view all available server roles

Making Immediate Preparations

- Immediate preparations include:
  - If you are upgrading, back up the files before starting
  - Ensure that all important hardware are preinstalled
  - Disconnect or remove removable storage devices
  - Disconnect any connection for communications with an (UPS)
  - Have on hand CD/DVDs or other media with drivers for new peripherals
  - Use the test software disc that comes with the server to verify that the CPU, memory, and disk drives are working properly

Overview of Windows Server 2008 Installation Methods

- The primary installation methods are as follows:
  - DVD installation
  - Upgrade from Windows Server 2003
  - Installation for a virtual server using Hyper-V
  - Windows Deployment Services

DVD Installation

- To start the installation from DVD:
  - Make sure the computer's BIOS is set to boot first from the CD/DVD drive
  - Insert the Windows Server 2008 installation DVD
  - Power off the computer
  - Turn on the computer, and if necessary, press the key combination to boot from the CD/DVD drive
  - Follow the instructions for installing Windows Server 2008

Upgrading from Windows Server 2003

- The general steps to begin an upgrade are as follows:
  - Boot the computer to use its current operating system
  - Insert the Windows Server 2008 installation DVD
  - If you see the Autoplay window, click the option to Run setup.exe.
  - When you see the Install Windows window, click Install now
  - Follow the instructions for installing Windows Server 2008

Figure 2-6 Starting the installation

Installation for a Virtual Server Using Hyper-V

- The actual installation steps of Windows Server 2008 as a virtual server are nearly the same as those for a DVD installation
  - But first you need to go through the steps to set up a virtual server

Windows Deployment Services

- The WDS role is designed to enable the installation of Windows operating systems, Windows Vista and Windows Server 2008, on multiple computers
- When you use WDS, it's not necessary to stay at the computer during the operating system installation
- An installation DVD is not necessary
  - The installation files are sent over a network from the Windows Server 2008 Windows Deployment Services server
  - However, you do need to have licenses for all of the operating systems you install through WDS

Performing a DVD-Based Installation

- Activity 2-4: Installing Windows Server 2008 from DVD
  - Time Required: Approximately 30–60 minutes (depending on the speed of your computer)
  - Objective: Install Windows Server 2008 from DVD

Using the Initial Configuration Tasks Window for Setup

- In this window, you can do the following:
  - Provide Computer Information
  - Update This Server
  - Customize This Server
- You don’t need to complete all of the tasks at this time
  - But you should complete some preliminary tasks right away
- After configuring the computer information, plan to configure how to update the computer

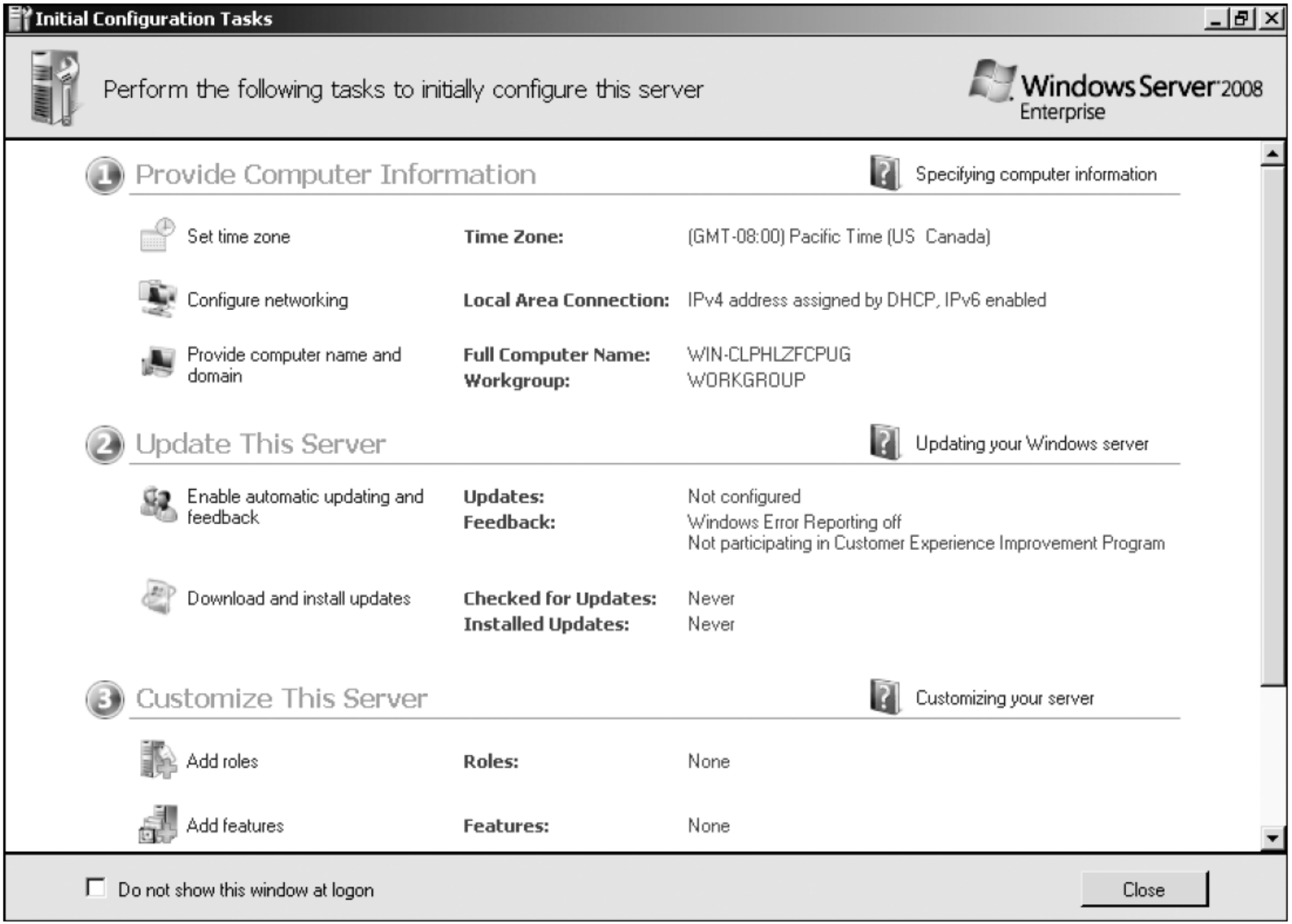

Figure 2-10 The Initial Configuration Tasks window

Using the Initial Configuration Tasks Window for Setup (continued)

- Activity 2-5: Performing Initial Configuration Tasks
  - Time Required: Approximately 15–20 minutes
  - Objective: Use the Initial Configuration Tasks window to start configuring Windows Server 2008

Server Activation

- After Windows Server 2008 is installed
  - Necessary to activate the copy of the operating system
- You need to activate your copy of Windows Server 2008 before the short activation period expires
  - Or else many functions of the operating system are disabled
- Windows Server 2008 can be activated through the Internet or by telephone

Using Windows Deployment Services

- Benefits
  - Installs Windows Server 2008 and Windows Vista
  - Retains the ability to install Windows Server 2003 and Windows XP
  - Enhances performance
  - Provides updated boot format
  - Uses image-based installation techniques
  - Can utilize multicasting for network efficiency
  - Offers a redesigned presentation for choosing which operating system to install

Using Windows Deployment Services (continued)

- Windows Deployment Services operate in a **Preboot Execution Environment (PXE)**
  - The target computer on which to install the operating system already has software to be PXE-enabled
- A PXE-enabled client can connect to the network and communicate with a server (or boot from the server)
  - Without first having to boot from an operating system on the client's hard disk

Installing and Configuring Windows Deployment Services

- Requirements
  - A DNS server already configured on the network
  - A DHCP server already configured on the network
  - Active Directory Domain Services already installed on a network server and the WDS server is part of the domain managed by Active Directory
  - NTFS as the file system on the Windows Deployment Services server
- You can install the Windows Deployment Services role from either the Initial Configuration Tasks window or from Server Manager

Installing and Configuring Windows Deployment Services (continued)

- Activity 2-6: Installing and Configuring the Windows Deployment Services Role
  - Time Required: Approximately 15 minutes
  - Objective: Use the Initial Configuration Tasks Window to install the Windows Deployment Services role

Elements for an Unattended Installation

- To set up for an unattended installation, it is necessary to do the following:
  - Create the client-side unattend file, unattend.xml, in the \WDSClientUnattend folder
  - Configure Windows Deployment Services to use the unattend.xml file

Elements for an Unattended Installation (continued)

Table 2-3 Variables for the unattend.xml file

Variable	Description
%ORGNAME%	Name of the organization using Windows Deployment Services
%MACHINEDOMAIN%	Domain name for the computer when creating a computer account
%USERDOMAIN%	Domain name when creating a user account
%MACHINENAME%	Name for the computer
%USERNAME%	User account name for creating a user account
%USERPASSWORD%	Password for the user account that is created during installation (for the sake of security, the password should be changed during the initial login)

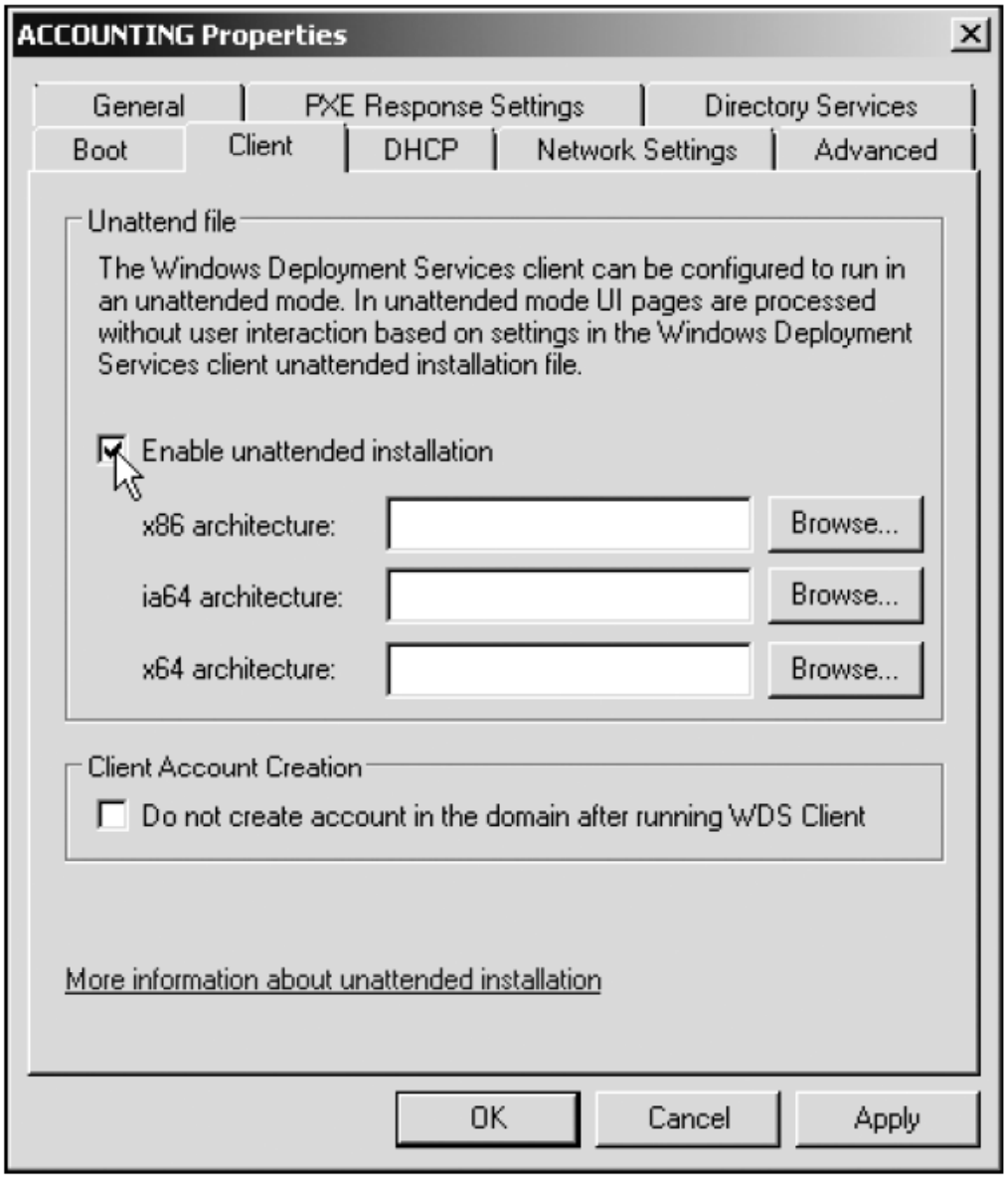

Figure 2-16 Configuring Windows Deployment Services for unattended installation

Installing Windows Server Core

- The steps for installing Windows Server Core are nearly identical to the steps for a full installation
  - Until you reach the end of the process when you need to log on to the newly installed system
- You can implement all or portions of the following server roles:
  - Active Directory Domain Services
  - Active Directory Lightweight Directory Services
  - DHCP and DNS Servers
  - File, Print and Web Services

Installing Windows Server Core (continued)

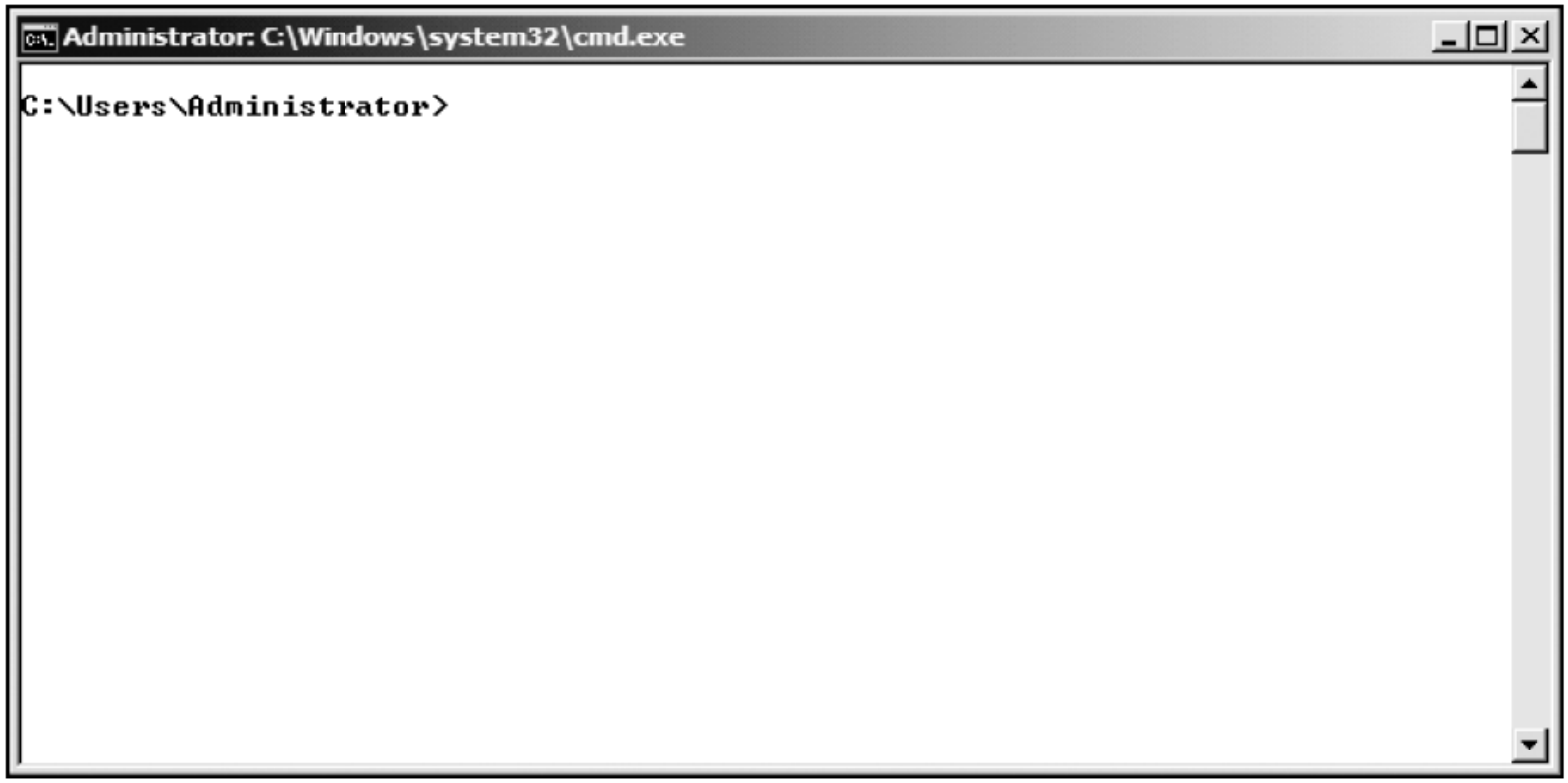

Figure 2-17 Windows Server Core command-line window

Installing Windows Server Core (continued)

- For many of these roles, not all role services can be installed as in the full installation of Windows Server 2008
  - This is in keeping with the design concept of having a smaller attack surface to discourage attackers and malicious software
- Use the *start* command to install a particular role
  - Use the /uninstall option to uninstall a role
- At the command line, enter *help* to view a listing of commands

Installing and Managing Service Packs

- Service packs are designed to correct things such as security issues
  - As well as problems affecting stability, performance, or the operation of features included with the operating system
- Guidelines when installing the latest service packs
  - Download the latest service pack from Microsoft's download site
  - Review the documentation that comes with the service pack

Installing and Managing Service Packs (continued)

- Guidelines when installing the latest service packs (continued)
  - Perform a full backup before you do the service pack installation
  - If the server is already available to clients, schedule when the service pack will be installed
  - Once the service pack is installed, document any problems that occurred and how you fixed them for future reference
- You can install the latest service pack by using Windows Update

Troubleshooting Installation Problems

- Keep the following points in mind to avoid problems:
  - Ensure that the hardware has the Certified for Windows Server 2008 sticker or is in the Windows Server Catalog of Tested Products
  - Test all hardware before installing the operating system
  - Run the computer manufacturer's diagnostics before installing the operating system
  - Run a comprehensive test of the hard disk to ensure it is functioning properly

Table 2-4 Troubleshooting a Windows Server 2008 Installation

Problem description	Solution steps
Installation fails when connecting to the domain controller	Make sure you have previously created an account in the domain or have a user account with administrative privileges and provided the right domain name. Also, make sure the computer is connected to the network and that the domain controller (the server with Active Directory) and the DNS server are working.
Setup did not find any mass storage devices on the computer	The most common cause is that Setup does not have a driver for a SCSI device or is detecting storage devices in the wrong order, such as the CD/DVD drive first. Press F6 or click the *Load Driver* link in the Where do you want to install Windows window, and provide a driver for the mass storage device that will hold the operating system files. Check to make sure all adapters and controllers are working properly. Check power to all devices. Reseat adapters and controllers. For SCSI devices: (1) Ensure the SCSI cabling is properly installed, (2) check that SCSI devices are terminated, (3) ensure SCSI devices are correctly addressed, and (4) verify the BIOS correctly recognizes all SCSI adapters. Also, be sure the SCSI boot drive is addressed as 0. Check the manufacturer's recommendations for configuring SCSI adapters and hard disk drives. Try replacing the adapter before replacing the drive(s). For EIDE/SATA/ATA drives: (1) Check the controller, (2) ensure file I/O and disk access are set to standard, and (3) ensure the system drive is the first device recognized by the controller. For IDE and ESDI drives: (1) Check the cabling and controller, (2) check the drive setup in the BIOS for master/slave relationships, and (3) ensure the drive is properly recognized in the BIOS.
Media errors are reported	If you receive media errors when installing from DVD, try installing from another CD/DVD drive. If the problem still persists, use another Windows Server 2008 installation DVD.
The system will not connect to the network	Use the Initial Configuration Tasks window to ensure that networking is correctly configured. Check the network interface card to be certain it is working. Reseat or replace the card, if necessary. Use the diagnostic software provided with the card to test for problems. If this does not work, try a card from a different manufacturer, in case there is a hardware incompatibility.
The operating system will not install or will not start after installation	Verify that the hardware you are using is supported by Windows Server 2008.
A STOP message appears during the installation	Start the installation again. If the STOP message appears a second time, record the message and consult a Microsoft technician.
The computer locks up	Check the IRQ and I/O settings for conflicts among hardware components and cards (check the NIC and any specialized cards in particular).

Uninstalling Windows Server 2008

- Uninstalling Windows Server 2008 is a relatively straightforward process
  - And requires you to format the partition on which it has been installed
- If you are installing another operating system
  - You are usually given an opportunity to format the hard drive for that operating system
- You can also use the FDISK and FORMAT utilities
- Another option is to use the DISKPART utility

Summary

- Before you install Windows Server 2008, complete the preinstallation tasks to help ensure the best result
- Windows Server 2008 has many server-based roles, from housing Active Directory functions to offering DNS or DHCP services to providing file and print services
- Windows Server 2008 can be installed using any of several methods, which include DVD installation, upgrading from Windows Server 2003, using Hyper-V for a virtual server, and WDS

Summary (continued)

- After Windows Server 2008 is installed, you can perform basic configuration activities from the Initial Configuration Tasks window
- So that you can retain full use of Windows Server 2008, plan to activate the operating system immediately
- If your organization is planning to install multiple servers or many Windows Vista computers, you can use Windows Deployment Services to save time and effort

Summary (continued)

- Service packs should be installed to fix any known problems with the operating system
- If you run into installation problems, try the troubleshooting suggestions in Table 2-4
- To uninstall Windows Server 2008, use the installation of another operating system to overwrite the Windows Server 2008 installation or use tools such as FDISK, FORMAT, and DISKPART