

MICROSOFT OFFICIAL COURSE

## Module 3

# Installing, Upgrading, and Migrating to Windows 7

## Module Overview

- Preparing to Install Windows 7
- Performing a Clean Installation of Windows 7
- Upgrading and Migrating to Windows 7
- Performing Image-Based Installation of Windows 7
- Configuring Application Compatibility

# Lesson 1: Preparing to Install Windows 7

- Key Features of Windows 7
- Editions of Windows 7
- Hardware Requirements for Installing Windows 7
- Advantages of Using 64-Bit Editions of Windows 7
- Options for Installing Windows 7

# Key Features of Windows 7

**The key features of Windows 7  
are categorized as follows:**

Usability

Security

Multi-tiered data protection

Reliability and performance

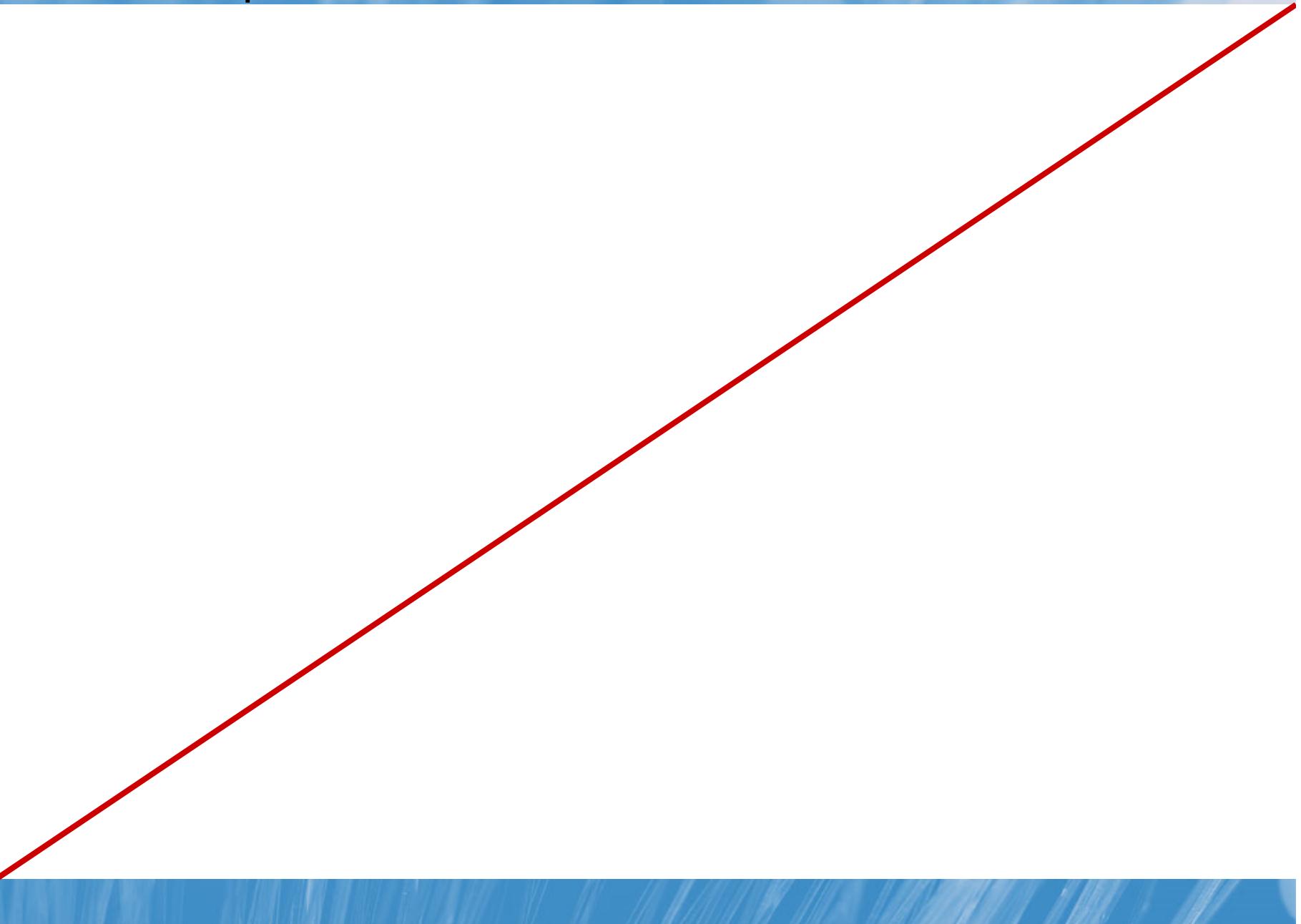
Deployment

Manageability

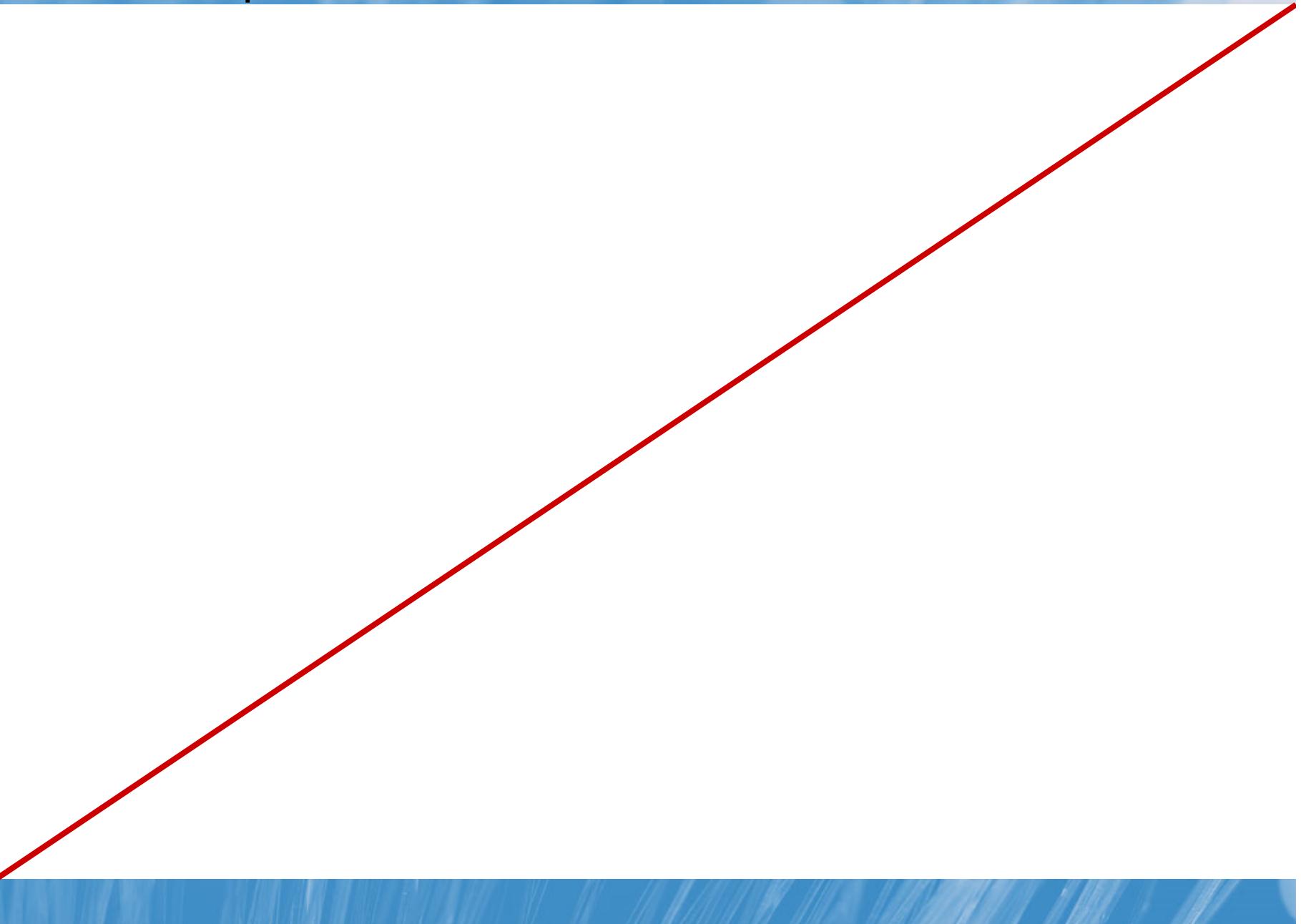
Productivity



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# Editions of Windows 7

## Consumers

### Windows 7 Home Premium

- Standard consumer edition
- Does not include business features

## Businesses

### Windows 7 Professional

- Business-focused edition for small and lower mid-market
- Include business features

## Specialized

### Enthusiasts

### Windows 7 Ultimate

All features of Windows features

### Enterprises

### Windows 7 Enterprise

Business-focused edition for large enterprises

### Emerging Markets

### Windows 7 Home Basic

Value edition in emerging markets

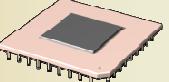
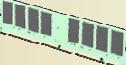
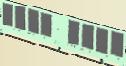
### Entry Level PCs

### Windows 7 Starter

Entry-level edition in all markets



# Hardware Requirements for Installing Windows 7

Hardware	Minimum Requirements
CPU	 1 GHz or faster
RAM	 1 GB for 32-bit or 2 GB for 64-bit
GPU	 Aero Capable
Video RAM	 128 MB
HDD Free	 16 GB for 32-bit or 20 GB for 64-bit
Optical Drive	 DVD

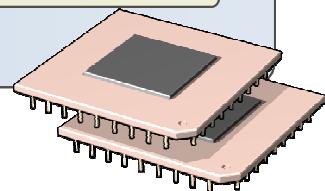
# Advantages of Using 64-Bit Editions of Windows 7

## **Take advantage of 64-bit processors:**

- Improved performance
- More memory
- Improved device support
- Improved security

## **Limitation:**

- Does not support the 16-bit Windows on Windows (WOW) environment



# Options for Installing Windows 7

## Clean installation

- Install Windows 7 on a new partition
- Replace an existing operating system on a partition



## Upgrade installation

- Replace an existing version of Windows with Windows 7
- All users applications, files, and settings are retained

## Migration

- Move files and settings from an old operating system to Windows 7
- Side-by-side or wipe and load

## Lesson 2: Performing a Clean Installation of Windows 7

- Discussion: Considerations for a Clean Installation
- Methods for Performing Clean Installation
- Discussion: Common Installation Errors
- Demonstration: Configuring the Computer Name and Domain/Work Group Settings

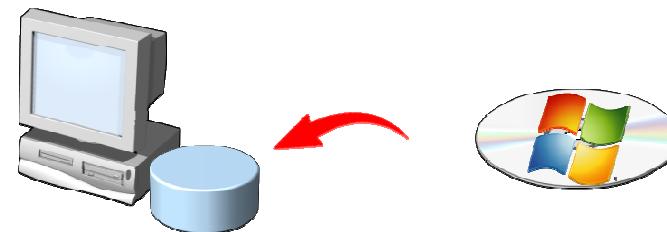
## Discussion: Considerations for a Clean Installation

**When do you typically perform a clean installation of Windows?**

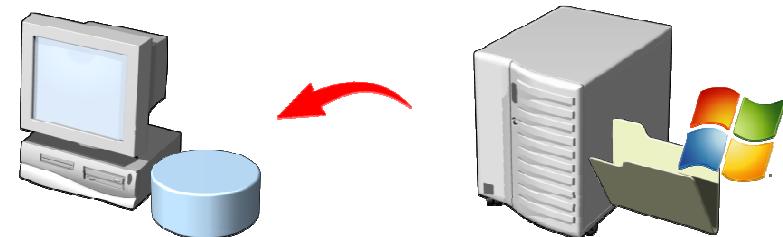


# Methods for Performing Clean Installation

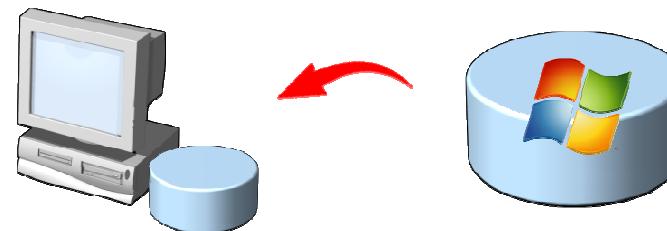
**Running setup.exe  
from DVD**



**Running setup.exe  
from a network share**

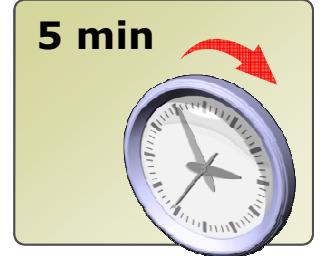


**Installing by using an  
image**



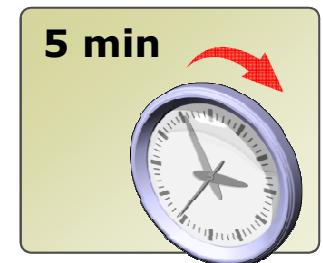
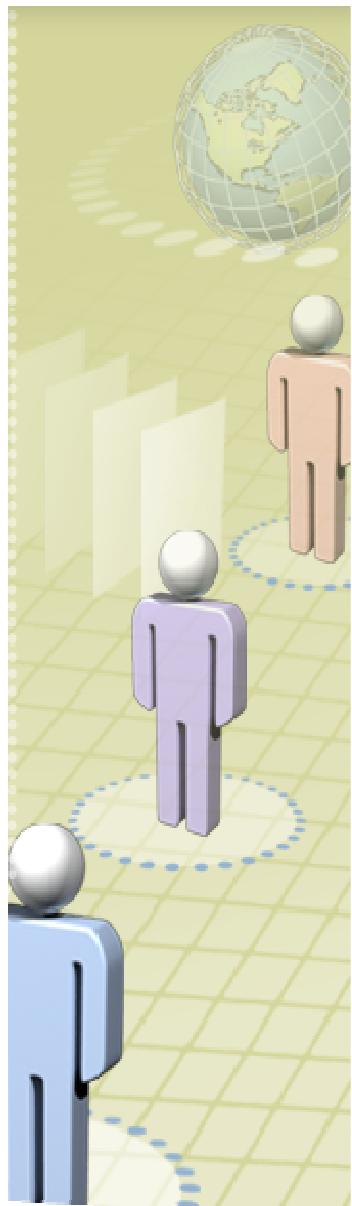
## Discussion: Common Installation Errors

**What potential issues might you encounter when installing Windows?**



# Demonstration: Installing Windows 7 – Clean Install

In this demonstration, you will see how to install Windows 7 using a DVD.



## Lesson 3: Upgrading and Migrating to Windows 7

- Considerations for Upgrading and Migrating to Windows 7
- Identifying the Valid Upgrade Paths
- Determining the Feasibility of an Upgrade Using Windows Upgrade Advisor
- Process for Upgrading to Windows 7
- Tools for Migrating User Data and Settings
- Process for Migrating to Windows 7
- Migrating User Settings and Data by Using WET

# Considerations for Upgrading and Migrating to Windows 7

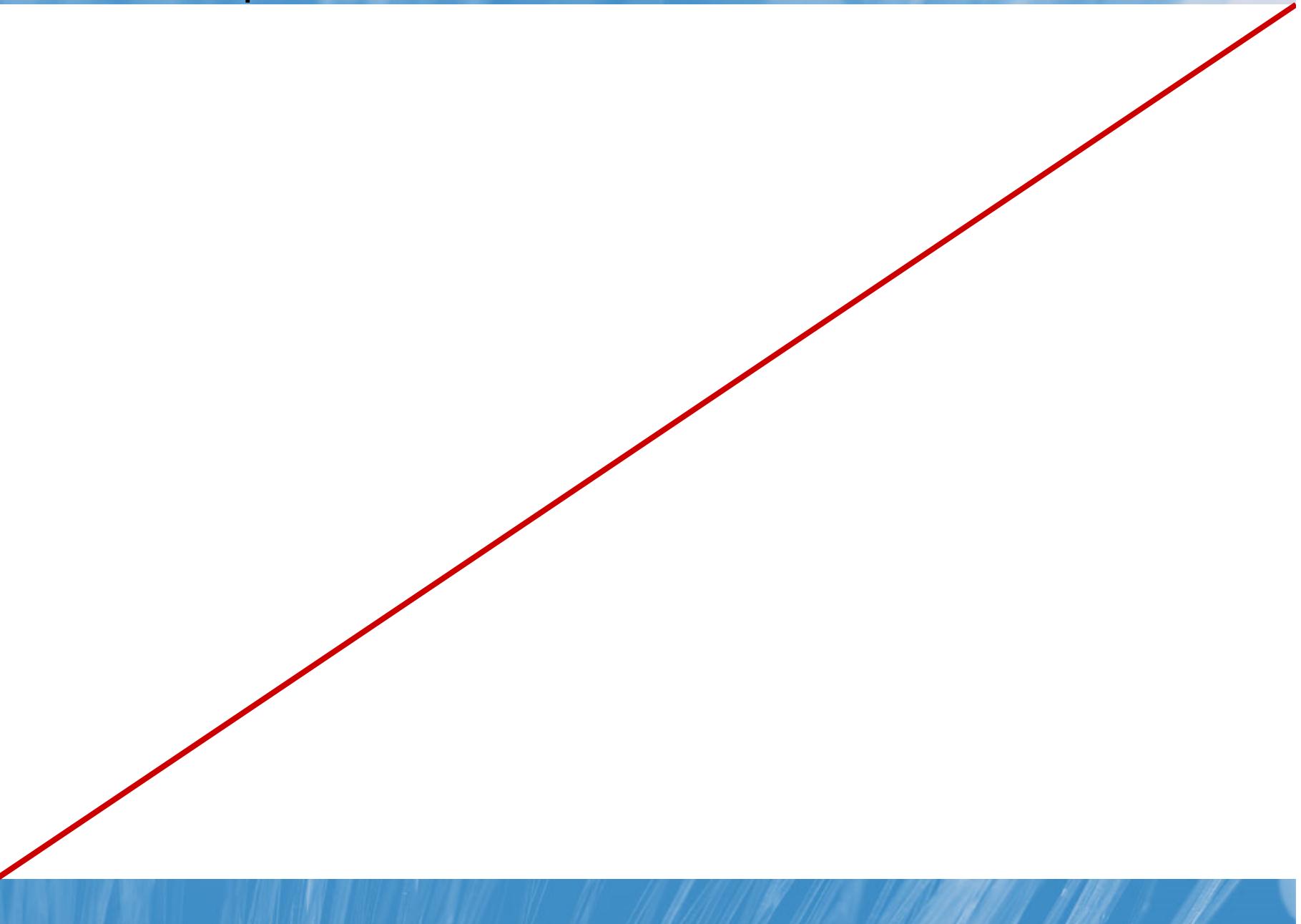
## Upgrade:

- Does not require the reinstallation of applications
- Does not require additional storage space
- Does not require replacing existing computer hardware
- Is the recommended solution in home or small offices scenarios

## Migrate:

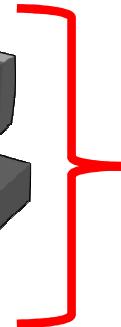
- Requires a reinstallation of applications
- Typically, requires more storage space
- Typically, requires replacing existing computer hardware
- Is the recommended solution to achieve a standardized environment in a large enterprise scenario

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# Identifying the Valid Upgrade Paths

**Windows 95  
Windows 98  
Windows ME  
Windows NT4  
Windows 2000**



Only clean install

**Windows XP  
Windows Vista RTM**



Clean install

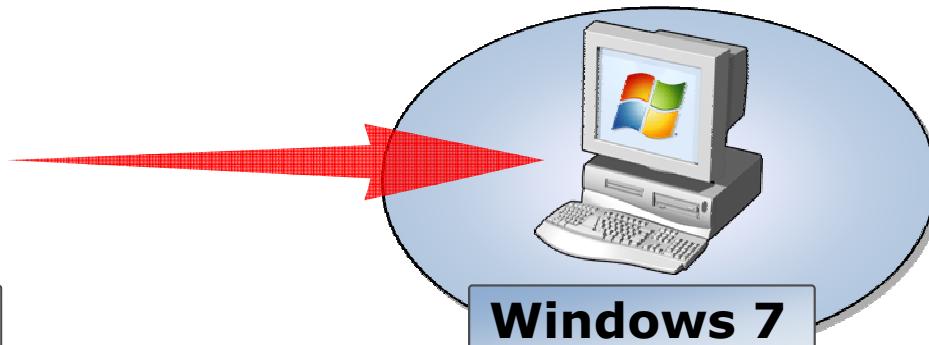


Migration



- In-place upgrade
- Clean install
- Migration

**Windows Vista SP1, SP2**



**Windows 7**

**Windows Anytime Upgrade enables you to upgrade to a higher edition of Windows 7**



# Determining the Feasibility of an Upgrade Using Windows Upgrade Advisor

**Windows Upgrade Advisor is a downloadable application that helps Windows users identify which edition of Windows 7 meets their needs**

## Use Windows Upgrade Advisor to:

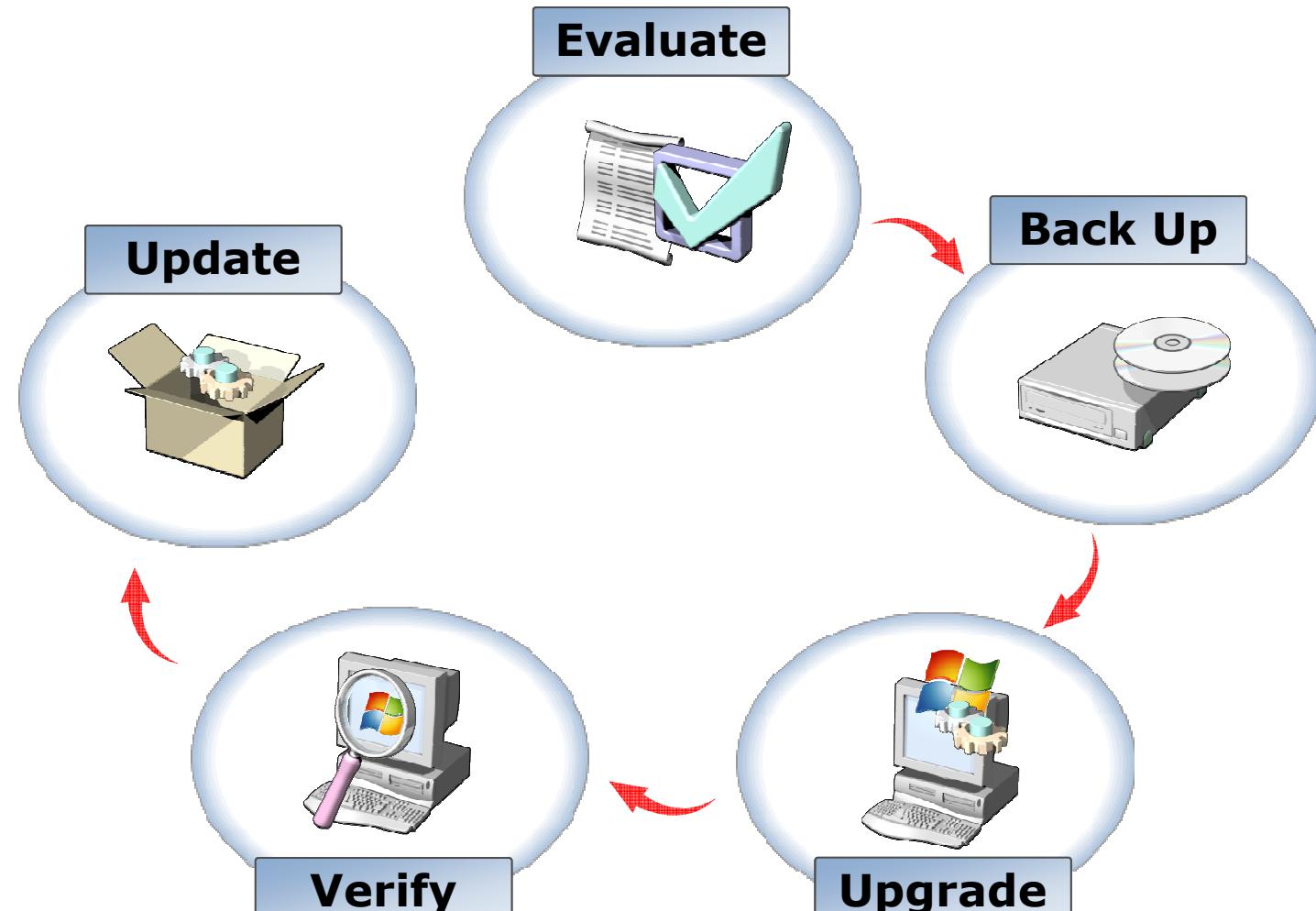
- Provide suggestions about necessary hardware updates to install and run the appropriate edition and features of Windows 7
- Provide upgrade guidance to Windows 7

## Requirements

- .NET 2.0
- MSXML 6
- 20 MB free HDD

- Administrator privileges
- Internet connection

# Process for Upgrading to Windows 7



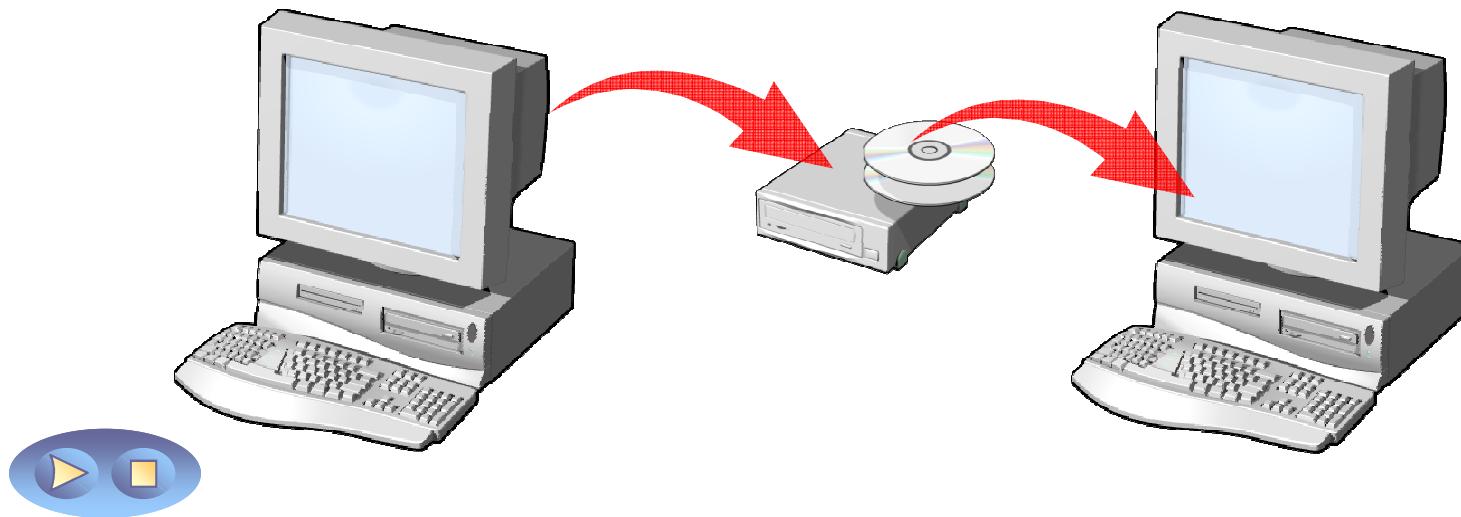
# Tools for Migrating User Data and Settings

**Identify which components are to be migrated to the new operating system**

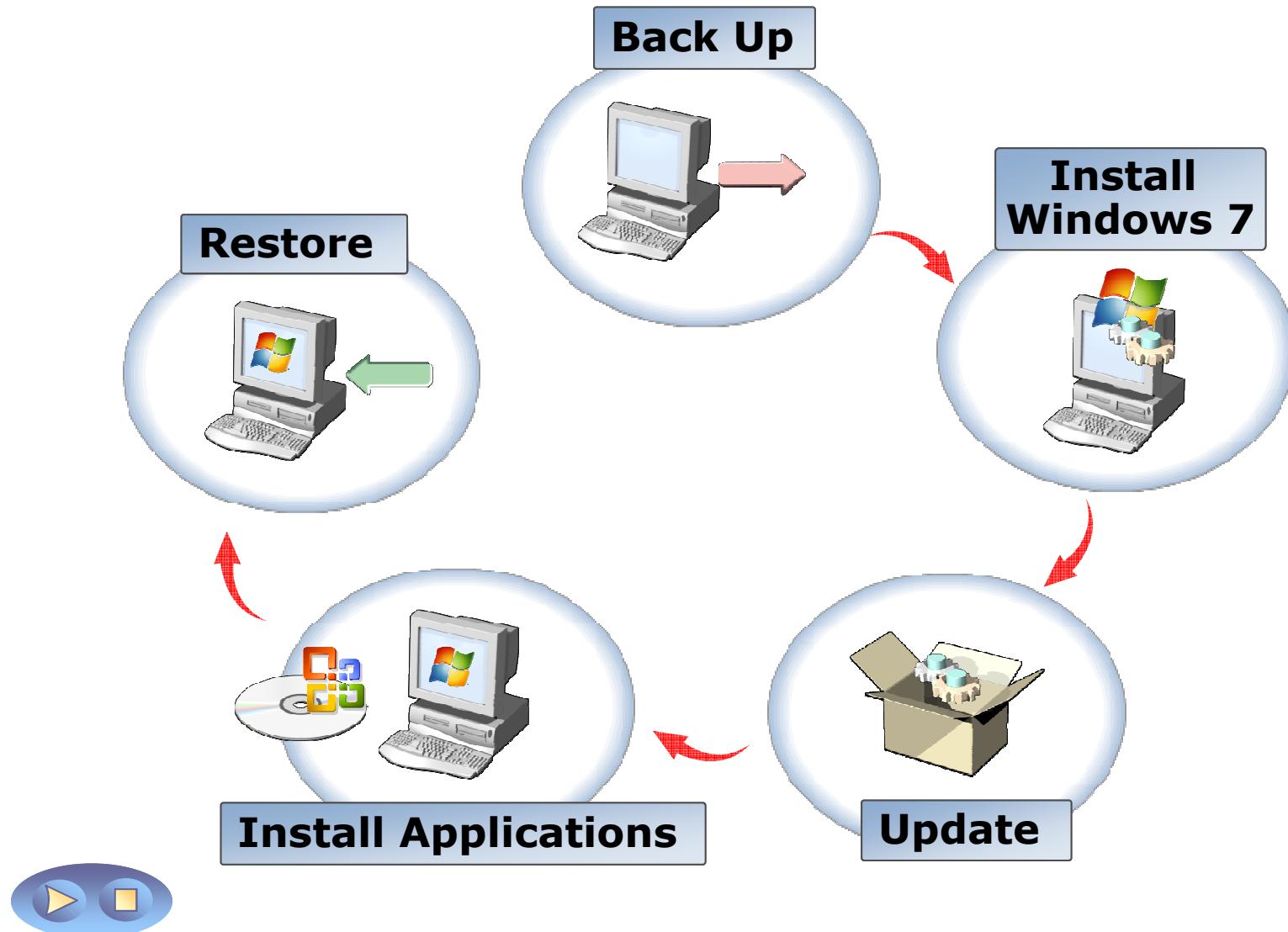
**Use one of the following migration tools:**

Windows Easy Transfer (WET)

User State Migration Tool (USMT) 4.0



# Process for Migrating to Windows 7



# Migrating User Settings and Data by Using WET

**WET is the recommended tool for scenarios in which you have a small number of computers to migrate**

**To migrate by using WET:**

**1 Store the Windows 7 WET files to be Used on the Source Computer**

**2 Migrate Files and Settings from the Source Computer to the Destination Computer by using:**

- Windows Easy Transfer cable
- Network
- Removable media or a network share



## Lesson 4: Performing an Image-Based Installation of Windows 7

- What Is Windows Imaging File Format?
- Tools for Performing an Image-Based Installation
- Image-Based Installation Process
- Demonstration: Building an Answer File by Using Windows SIM
- Building a Reference Installation by Using SysPrep
- Demonstration: Creating Bootable Windows PE Media
- Capturing and Applying the Installation Image by Using ImageX
- Demonstration: Modifying Images by Using DISM
- Migrating User Data and Settings by Using USMT 4.0
- Configuring VHDs

# What Is Windows Imaging File Format?

**A file-based image technology used to install the Windows operating system**

## **Provides the following benefits:**

- One image for many hardware configurations
- Multiple images in one file
- Compression and single instancing
- Offline servicing of the image file
- Installation on partitions of any size
- Modification of image files using APIs
- Nondestructive deployments
- Bootable image support for Windows PE

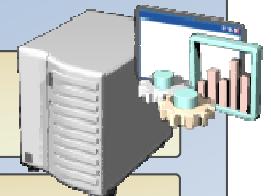
# Tools for Performing Image-Based Installation

- Windows Setup (setup.exe)
- Answer File
- Catalog
- Windows Automated Installation Kit (Windows AIK)
  - Windows System Image Manager (Windows SIM)
  - Windows Preinstallation Environment (Windows PE)
  - ImageX
  - User State Migration Tool (USMT)
- Deployment Image Servicing and Management (DISM)
- Sysprep
- Diskpart
- Windows Deployment Services (WDS)
- Virtual Hard Disk (VHD)



# Image-Based Installation Process

**1 Build an Answer File**



**2 Build a reference installation**

**3 Create a bootable Windows PE Media**



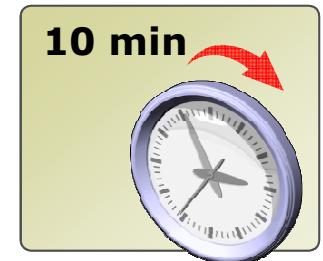
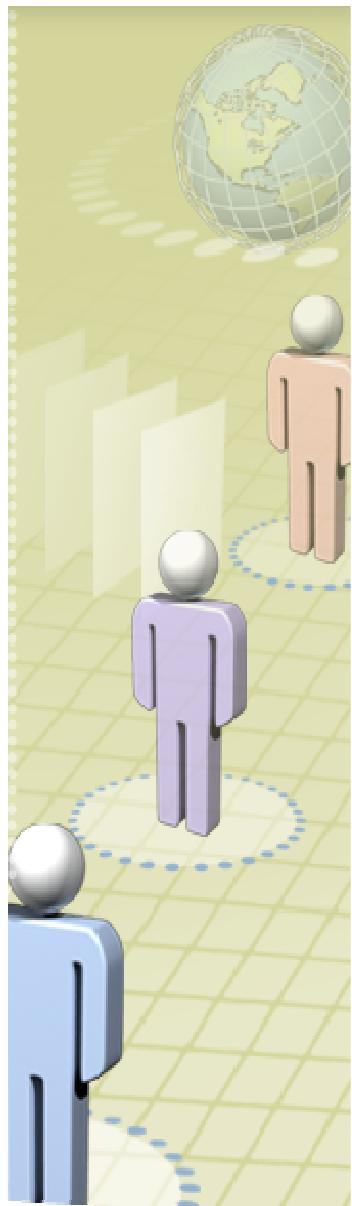
**4 Capture the installation image**

**5 Deploy the installation image**

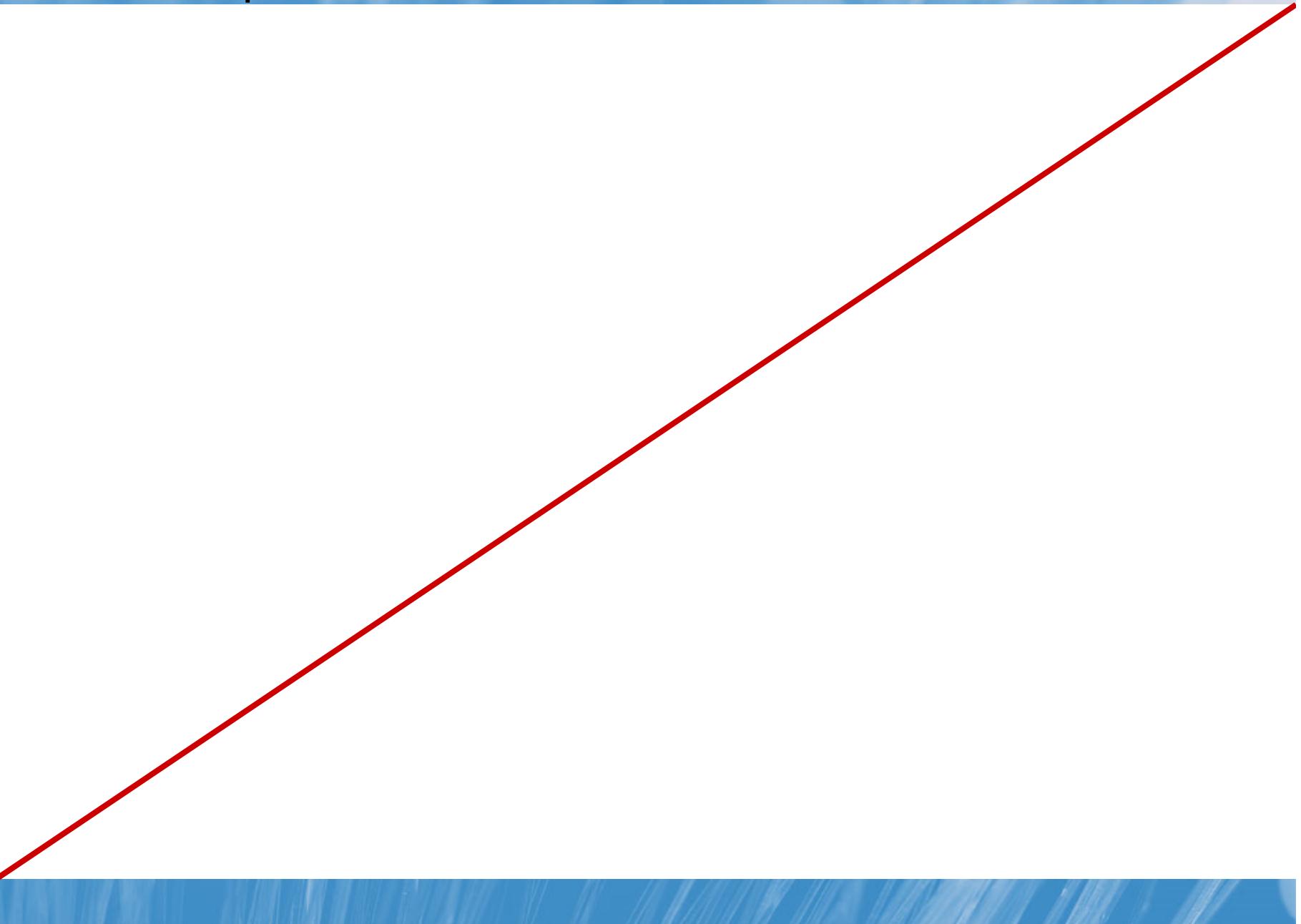


# Demonstration: Building an Answer File by Using Windows SIM

In this demonstration, you will learn how to create an answer file by using Windows SIM.



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# Building a Reference Installation by Using SysPrep

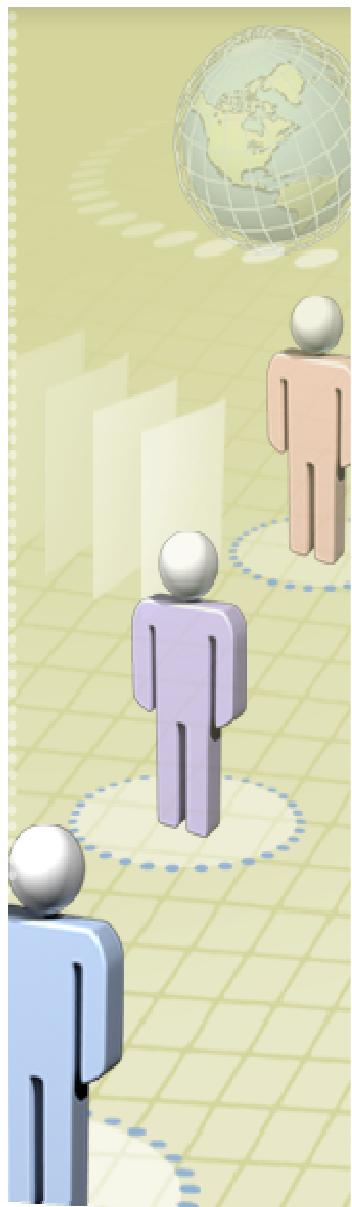
**Prepares an installation of Windows for duplication, auditing, and delivery**

## Use Sysprep to:

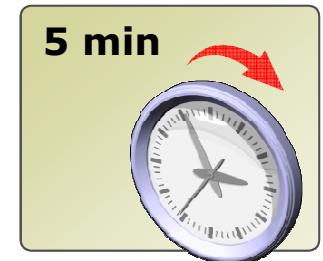
- Remove system-specific data from the Windows operating system
- Configure Windows to start in audit mode
- Configure the Windows operating system to start the Windows Welcome phase
- Reset Windows Product Activation

**Sysprep.exe [/quiet] [/generalize] [/audit | oobe]  
[/reboot | /shutdown | /quit] [/unattend:*answerfile*]**

# Demonstration: Creating Bootable Windows PE Media



In this demonstration, you will see how to create bootable Windows PE media that can be used for imaging computers.



# Capturing and Applying the Installation Image by Using ImageX

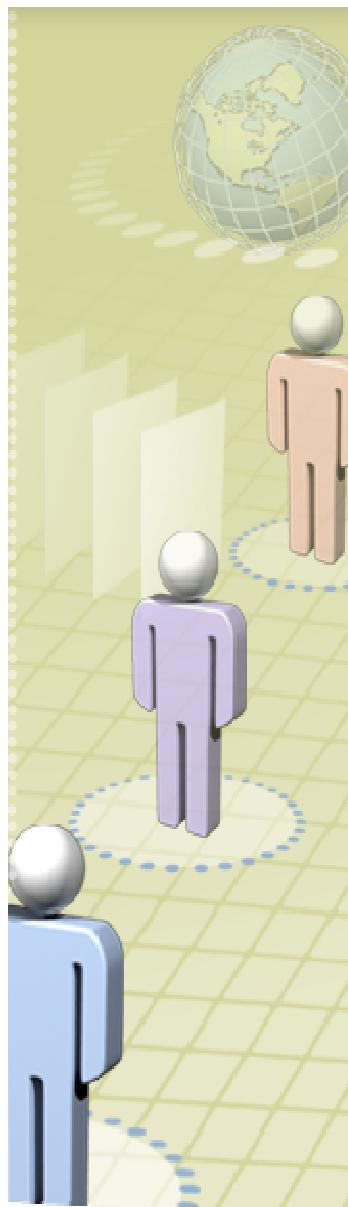
**A command-line tool that is used to capture, modify, and apply file-based WIM images**

## Use ImageX to:

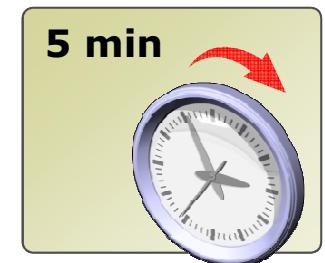
- View the contents of a WIM file
- Capture and apply images
- Mount images for offline image editing
- Store multiple images in a single file
- Compress the image files
- Implement scripts for image creation

**ImageX [/flags "EditionID"] [{/dir | /info | /capture |  
/apply | /append | /delete | /export | /mount |  
/mountrw | /unmount | /split} [Parameters]]**

## Demonstration: Modifying Images by Using DISM



In this demonstration, you will see how to modify an image by using DISM.



# Migrating User Settings and Data by Using USMT 4.0

**A scriptable command-line tool that provides a highly-customizable user-profile migration experience for IT professionals**

## USMT components:

- ScanState and LoadState
- Config.xml and Migration .xml files
- Component manifests for Windows Vista, Windows 7, and down-level manifests for Windows XP
- USMT internal files

**Scanstate [StorePath] [/i:[path\]FileName] [Options]**  
**Loadstate [StorePath] [/i:[path\]FileName] [Options]**

# Configuring VHDs

**A native-boot VHD is a VHD that can be used as the running operating system on a computer without a parent operating system**

## Create VHD

DiskPart Tool

Disk Management MMC

Attach VHD to the host computer

## Prepare VHD

Install Windows 7 to the VHD

## Deploy VHD

Copy VHD to computer to run in VM

Copy VHD to computer to run in Native Boot

Add a Native Boot VHD to the Boot Menu

Use WDS to deploy VHD images for native boot



## Lesson 5: Configuring Application Compatibility

- Common Application Compatibility Problems
- Common Mitigation Methods
- Updating Shims

# Common Application Compatibility Problems

**Common Application Compatibility problems  
may relate to the following areas:**

- Setup and installation of applications
- User Account Control
- Windows Resource Protection (WRP)
- Internet Explorer Protected Mode
- 64-bit architecture
- Windows Filtering Platform (WFP)
- Operating system version changes
- Kernel-mode drivers
- Deprecated components



# Common Mitigation Methods

## **Common mitigation methods include:**

- Modifying the application configuration
- Applying updates or service packs
- Upgrading the application
- Modifying the security configuration
- Running the application in a virtualized environment
- Using application compatibility features built into the operating system
- Selecting another application



# Updating Shims

- A **shim** is software, added to an existing application or other program, to provide some form of enhancement or stability
- In the application compatibility context, a shim refers to a compatibility fix

## Use the Compatibility Administrator Tool to:

- Search for a compatibility fix for an existing application
- Create a new compatibility fix

## To deploy a compatibility fix:

- Store the compatibility fix database locally or in a network location
- Use the Sdbinst.exe command-line tool to install the compatibility fix

## Lab Review

- Why do you use Sysprep before capturing an image?
- Why is Windows PE required as part of the imaging process?