MICROSOFT
TRAINING
AND CERTIFICATION

Microsoft Official Curriculum

Module 2: Automating an Installation of Microsoft Windows XP Professional

Contents

Microsoft

Instructor Notes

Presentation:
75 Minutes

Labs:
75 Minutes

This module provides students with the knowledge and skills necessary to automate an installation of Microsoft® Windows® XP Professional by using answer files and Uniqueness Database Files (UDFs), or by using the Microsoft Windows 2000 System Preparation Tool (Sysprep.exe) and a third-party imaging tool to deploy an image of a computer running Windows XP Professional.

After completing this module, students will be able to:

- Describe the automation process, including how Setup uses answer files and Uniqueness Database Files.
- Create an answer file.
- Create a Uniqueness Database File.
- Perform an automated installation of Windows XP Professional.
- Describe an image.
- Create, test, and deploy an image of a computer running Windows XP Professional.
- Describe the use of Remote Installation Services (RIS).

Materials and Preparation

This section provides the materials and preparation tasks that you need to teach this module.

Required Materials

To teach this module, you need the following materials:

- Microsoft PowerPoint® file 2272A_02.ppt
- A blank 3.5” disk for each student in the class

Preparation Tasks

To prepare for this module, you should:

- Read all of the materials for this module.
- Complete the labs.
- Run the animated presentation, “How Setup Uses Answer Files and UDFs” and create several questions for students to answer after the animation is presented.
- Practice running the Setup Manager Wizard to create an answer file, a UDF, and a Sysprep.ini file.

Instructor Setup for Labs

This section provides setup instructions that are required to prepare the instructor computer or classroom configuration for a lab.

Lab Setup

To complete this module's labs you need:

- Two blank, 1.44-megabyte (MB) floppy disks for each student.
- The Microsoft Windows 98 System Disk created in Module 1, Lab 1A.

Setup Requirement

- The labs in this module require that the computers are running Microsoft Windows XP Professional.
- Complete Module 1, "Installing Microsoft Windows XP Professional," in Course 2272A, *Implementing and Supporting Microsoft Windows XP Professional (Course Beta)*.

Lab Results

There are no configuration changes on student computers that affect replication or customization.

Demonstration

This section provides demonstration procedures that will not fit in the margin notes or are not appropriate for the student notes.

Installing and Running the Setup Manager Wizard

► **To prepare for the demonstration**

1. Practice installing and running the Setup Manager Wizard in each of its three automation methods, which are answer file, Sysprep.exe, and RIS.
2. Delete the Setup manager files that you used during your practice so that you can demonstrate the extraction process for the class.

Multimedia Presentation

This section provides multimedia presentation procedures that do not fit in the margin notes or are not appropriate for the student notes.

How Setup Uses Answer Files and Uniqueness Database Files

This interactive animation is an overview of how Setup uses answer files and UDF files. It is positioned after students learn how to create answer files and UDFs, and before they learn about performing an automated installation so that the animation can reinforce their understanding of the process. Answer the questions at the end of the animation as a class. The majority of the module is dedicated to answer files, UDFs, and the automation process.

► **To prepare for the multimedia presentation**

1. Watch the interactive animation several times.
2. Complete the questions at the end of the animation.
3. Anticipate student questions about the animation, and prepare answers.

Module Strategy

Use the following strategy to present this module:

- Introduction to Automating an Installation of Windows XP Professional

  In this section, introduce the two types of files used to automate an installation of Windows XP Professional: answer files and UDFs. Inform students that the majority of this module is dedicated to the automation of an installation by using these files.

- Creating Answer Files

  This is an important topic in the module, and contains six sections. While introducing the sections, explain that the easiest way to create an answer file is by using the Setup Manager Wizard. In the first section, Understanding Answer File Syntax, explain to the students that while they do not need to know the exact syntax to create the answer file by using the wizard, they do need to understand the syntax to customize files.

  In the Installing and Running the Setup Manager Wizard section, demonstrate how to extract the files, and how to run the wizard. In the subsequent sections, demonstrate the Setup Manager Wizard, and emphasize the places where the wizard enables nonlinear progress through the screens. Emphasize that the Customize the Software, Time Zone, and Computer Names screens must be completed. Emphasize the different names under which the answer file can be saved, and that the possible names depend on the type of installation.

- Lab 2A: Creating an Answer File by Using the Setup Manager Wizard

  In this lab, students will install the Setup Manager Wizard and use it to create an answer file for a fully automated installation from a compact disc. Take time to discuss the scenario with the students, because it contains an overview of the information that they will enter into the wizard. Students will save the answer file as Unattend.txt in the C:\Deploy folder that they create at the beginning of the exercise.

- Creating a Uniqueness Database File

  In this section, explain that adding more than one computer name when running the Setup Manager Wizard automatically creates a UDF, and that the computer names can be created or modified in a text editor, such as Microsoft Notepad. Emphasize the functions of the two sections of the UDF, and ensure that students understand the syntax and purpose of the files.

- Multimedia: How Setup Uses Answer Files and UDFs

  Inform students that this animation illustrates how Setup uses answer files and UDFs to perform an unattended installation. Inform them that they can pause and restart the animation, and should answer the questions at the end of the animation. If you choose to view the animation as a class, then answer the questions as a class.

- Performing an Automated Installation of Windows XP Professional

  In this section, explain how Setup uses answer files and UDFs. You may want to give further examples of the **winnt** and **winnt32** command line switches that your particular students would find useful. Emphasize the ways in which answer files and UDFs can be substituted during setup.

  Some of the information in this section is also presented in the interactive animation entitled How Setup Uses Answer Files and UDFs. Therefore, you may be able to skip some of the topics or sub-topics. These topics are marked with instructor notes instructing you to determine if the students need to go over the information.

- Introduction to Creating and Deploying an Image

  In this section, introduce the concept of an image, and explain that creating an image is like taking a snapshot, or picture, of an already configured computer, while deploying an image is like superimposing that picture on other computers. Emphasize the difference between automating a setup and creating and deploying an image.

- Preparing a Reference Computer

  In this section, explain the importance of properly configuring the reference computer, and the importance of copying the configured profile to the Default User profile to preserve the settings. Explain how to use the Setup Manager Wizard to create an answer file to automate the Mini-Setup Wizard. Emphasize that the answer file created must be named Sysprep.inf and be stored in the Sysprep folder with the Sysprep.exe and the Setupcl.exe files.

- Creating, Testing, and Deploying an Image

  In this section, emphasize the recursive nature of testing an image. That is, the image is created, stored on a network share, deployed to a test computer, and tested. After testing, if any changes need to be made, the reference computer is reconfigured, a new image is created, and the process starts over again.

- Remote Installation Services

  In this section, present the components and function of RIS, and explain that you must have the RIS Setup Wizard installed on the RIS server to use this service. Emphasize that RIS can only be used in an Active Directory™ directory services domain in which both the domain name service (DNS) and Dynamic Host Configuration Protocol (DHCP) service are running. Also emphasize that unless an RIS answer file is created through the Setup Manager Wizard, a mini-setup wizard that requires user intervention will run on the client computers.

- Lab 2B: Editing the Unattend.txt File and Performing an Unattended Installation

- In this lab, students will edit the Unattend.txt file, and perform an unattended installation.

Important If you cannot present this topic before lunch, or at the end of the day, have students turn off their monitors while you proceed to the next module. The installation will continue without students becoming distracted.

Overview

Topic Objective
To provide an overview of the module topics and objectives.

Lead-in
In this module, you will learn about automating an installation of Microsoft Windows XP Professional by using answer files, and creating and deploying an image.

- **Introduction to Automating an Installation of Windows XP Professional**
- **Creating Answer Files**
- **Creating a Uniqueness Database File**
- **Performing an Automated Installation of Windows XP Professional**
- **Introduction to Creating and Deploying an Image**
- **Preparing a Reference Computer**
- **Creating, Testing, and Deploying an Image**
- **Remote Installation Services**

In many organizations, staffing levels, distance, and time constraints make it impossible to manually deploy new operating systems on one computer at a time. An alternative to this labor- and time-intensive manual deployment is to automate the setup of the operating system by using answer files and Uniqueness Database Files (UDFs), or to create an image of a computer running Microsoft® Windows® XP Professional and then deploy that image to other computers.

Automating an installation by using an answer file enables you to install Windows XP Professional on computers without user intervention, or with limited user intervention.

Creating and deploying an image of a computer running Windows XP Professional enables you to copy the configuration of a computer to other identical computers.

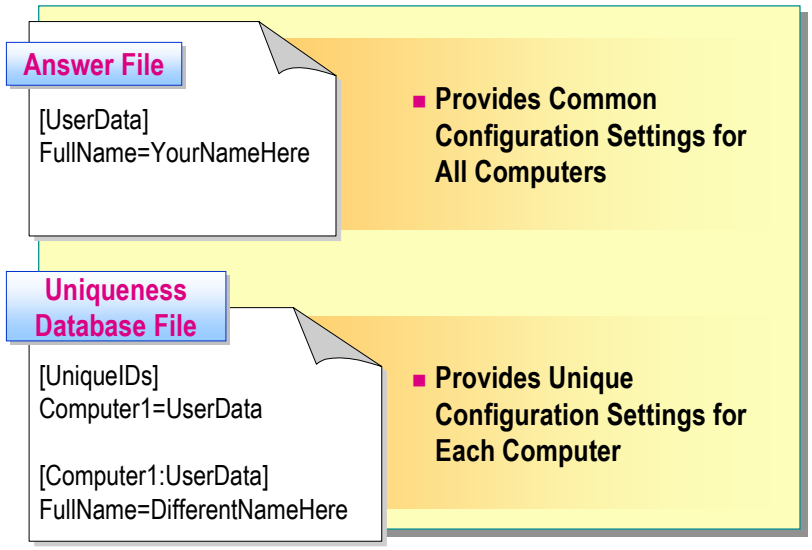
After completing this module, you will be able to:

- Describe the automation process, including how Setup uses answer files and Uniqueness Database Files.
- Create an answer file.
- Create a Uniqueness Database File.
- Perform an automated installation of Windows XP Professional.
- Describe an image.
- Create test, and deploy an image of a computer running Windows XP Professional.
- Describe the use of Remote Installation Services (RIS)

Introduction to Automating an Installation of Windows XP Professional

Topic Objective
To provide an introduction to automating an installation of Windows XP Professional.

Lead-in
You automate a Windows XP Professional installation by using two types of files: an answer file and a UDF.



Introduce how to automate an installation of Windows XP Professional by using an answer file and a UDF.

Refer to the student notes for supporting details.

Automating an installation of Windows XP Professional means creating and using an answer file that supplies the settings that a user would otherwise need to provide during setup. In addition, the answer file determines how Windows XP Professional Setup interacts during pre-installation with the files at the software distribution point.

An answer file can supply some or all of the settings required by Setup during the installation. By providing all of the answers, you can prepare an unattended, fully automated installation of Windows XP Professional.

Two types of files are used to automate a Windows XP Professional installation:

- *Answer file*. A text file containing configuration settings that provide responses to setup questions that a user would otherwise need to provide. By changing or adding settings in an answer file, you can automate an installation for multiple computers that require the same configuration.
- *Uniqueness Database File*. A file that provides replacement settings for the settings configured in an answer file. You use a UDF to configure the unique settings, such as computer name, for each computer. By using an answer file and a UDF, you can automate the installation for multiple computers that require different configurations.

After the answer file and the UDF are configured, they are run on each client computer from either a floppy disk or a shared folder on a network. When you first run Setup on the client computer, Setup uses the settings from the answer file and the UDF to configure the computer. During Setup, users must supply all settings that are not configured in an answer file or a UDF.

◆ Creating Answer Files

Topic Objective
To introduce the purpose of answer files and the method used to create them.

Lead-in
An answer file provides common configuration settings for all of the computers for which it will be used. The most common way to create an answer file is by using the Setup Manager Wizard.

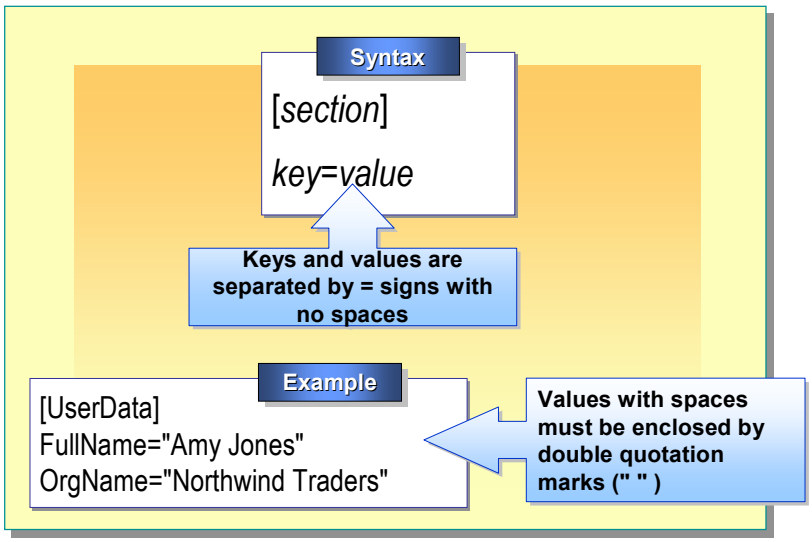
- **Understanding Answer File Syntax**
- **Installing and Running the Setup Manager Wizard**
- **Configuring User Interaction Level and Distribution Method**
- **Configuring General Settings**
- **Configuring a Network Settings**
- **Configuring Advanced Settings and Saving the Answer File**

The easiest way to create an answer file is by using the Setup Manager Wizard. The wizard enables you to configure the user interaction level, distribution method, and general, network, and advanced settings that you want to apply to every computer that uses the answer file during Setup.

Understanding Answer File Syntax

Topic Objective
To introduce the basic structure of answer files, and provide resources for further investigation.

Lead-in
You can create or modify answer files by using text files. Even though you usually create answer files by using the wizard, it is important to understand answer file syntax.



Define the basic answer file structure and syntax. Describe the function of section headers, keys, and values.

Refer to the student notes for supporting details.

You can use the Setup Manager Wizard or a text editor, such as Microsoft Notepad, to create or modify an answer file. Although you do not need to understand the answer file syntax to create an answer file by using the wizard, you will need to understand the basic structure and syntax of an answer file to create or modify one by using a text editor.

Answer File Syntax

The settings in an answer file take the following format:

```
[section]
key=value
```

where

- [*section*] describes the category of parameters that follow.
- *key* defines the name of the parameter.
- *value* contains the actual configuration settings.

For example, you could configure user information during Setup by supplying the following information in an answer file:

```
[UserData]
   FullName="Amy Jones"
   OrgName="Northwind Traders"
```

There are answer file settings that correspond to each piece of information that Setup uses. However, you only need to include keys and values for required information. If Setup requires a key that is not specified in the answer file, it will pause and prompt the user to enter a value.

Syntax for Automatic Activation

Activation is required for every installation of Windows XP Professional, except when a volume license key is used. To include automatic activation as a part of an automated setup, include the following in the answer file:

[Unattend]

AutoActivate=yes

Note To learn more about answer file structure and syntax, see the Deployment Planning Guide in the Support Tools folder on the Windows XP Professional compact disc.

Installing and Running the Setup Manager Wizard

Topic Objective
To describe the process for installing and running the Setup Manager Wizard.

Lead-in
The easiest way to create an answer file is by using the Setup Manager Wizard. To do so, you must first install and run it.

1. **Extract all the Deployment Tools from the Windows XP Professional CD:**

   ***drive*:\Support\Tools\Deploy.cb (where *drive* is the location of the compact disc)**

2. **Run the Setup Manager Wizard by Double-Clicking Setupmgr.exe in the Deploy Folder**

Describe how to install the Setup Manager Wizard. Describe how to configure the **New or Existing Answer File** and **Product to Install** pages.

Refer to the student notes for supporting details.

Delivery Tip
On the following pages, demonstrate how to create an answer file by using the Setup Manager Wizard. Make sure that you select **Windows XP Professional** on the **Platform** page. Otherwise, the pages that follow will not correspond to the descriptions in the student workbook.

You can use the Setup Manager Wizard to create an answer file. The wizard provides an easy way to create an answer file without having to know the proper syntax for each Setup option. The Setup Manager Wizard prompts you for typical installation options and then creates an answer file based on your responses.

Extracting the Deployment Tools from the Windows XP Professional CD

To install the Setup Manager Wizard from the Windows XP Professional compact disc, you must first extract the files from the CD. To do so, perform the following steps:

1. Create a folder named Deploy at the root of the system drive. For example, C:\Deploy.
2. Click **Start**, click **Run**, then in the **Open** box, type *drive*:**\Support\Tools\Deploy.cab** (where *drive* is the location of the Windows XP Professional compact disc), and then click **OK**.
3. Select all of the files, right-click one of the selected files, and then click **Extract**.
4. Select the Deploy folder that you created, and then click **Extract**.

Running the Setup Manager Wizard

The Setup Manager Wizard is one of the Windows XP Professional Support Tools.

To use the Setup Manager Wizard to create an answer file, perform the following steps:

1. In the deploy folder that contains the Setup Manager Wizard files, double-click **Setupmgr.exe**.
2. On the **Welcome to the Windows XP Professional Setup Manager Wizard** page, click **Next**.
3. On the **New or Existing Answer File** page, click the type of answer file that you want to create, and then click **Next**.

   The following table describes the available options.

Option	Action
Create a new answer file	Creates a new answer file based on the choices that you supply. Use this option when you want to create an entirely new answer file.
Modify an existing answer file	Modifies an existing answer file. Use this option to open an existing answer file that you want to modify.

4. On the **Product to Install** page, click **Windows XP Unattended Installation**, and then click **Next**.
5. On the **Platform** page, click **Windows XP Professional**, and then click **Next**.

The wizard will take you through a series of pages on which you will configure the user interaction level, distribution method, general settings, network settings, and advanced settings.

Configuring User Interaction Level and Distribution Method

Topic Objective
To describe the first settings configured in the Setup Manager Wizard.

Lead-in
The first settings configured in the Setup Manager Wizard are the user interaction level and the distribution method.

- **Configuring the User Interaction Level**
- **Choosing a Distribution Method**
- **Configuring the Location of the Answer and Setup Files**

In the Setup Manager Wizard, the first several pages enable you to configure the following settings of a basic answer file.

Demonstrate the wizard, and discuss the options for each type of setting. Refer students to the appendix specified in the following note that has detailed information on these settings.

- User Interaction Level

  When configuring the user interaction level, you specify the amount of information to provide during Setup. You can choose to create a fully automated Setup that runs without user intervention, allow users to review and change the Setup information that you enter, allow users to enter only user and computer specific information, or automate only the text-mode portion of Setup and have users compute the graphical user interface (GUI) portion. If you choose to create a fully automated installation, you will be prompted to accept the License Agreement later in the wizard.

- Choosing a Distribution Method

  You can choose to create a distribution folder, to which you can add files to further customize the setup, or you can choose to install from the CD. If you choose to create a distribution folder, the Setup files will be copied to the folder, and you will be prompted for the location of the Setup files and the destination folder name.

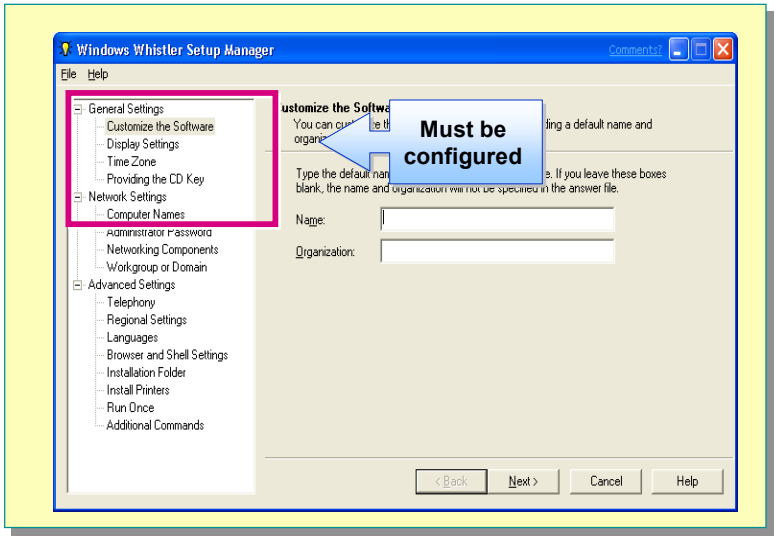
- Configuring the Location of the Setup and Answer Files

  If you choose to distribute the automated Setup from a folder, be sure that the folder is large enough to hold the contents of the I386 folder on the Windows XP Professional compact disc.

Configuring General Settings

Topic Objective
To describe the options for configuring general settings.

Lead-in
After configuring the user interaction level and the distribution method, you configure General Settings.



Key Points
At this point in the wizard, you can proceed to any setting by clicking that setting. This is convenient if you are modifying a Setup file, and only need to change particular settings.

Explain to the students that they will not be able to proceed without configuring the default name and organization.
Emphasize the importance of properly configuring the time zone.

After configuring the user interaction level and the distribution method, the Setup Manager Wizard changes to a nonlinear wizard. A tree on the left side of the wizard lists General Settings, Network Settings, and Advanced Settings that can be configured. You may configure these settings in any order by clicking the specific setting, or you can continue through the wizard by clicking **Next** on each page. By continuing through the wizard by clicking **Next**, you will have the opportunity to configure each setting.

Under General Settings, you will find the following options.

- Customize the Software (must be configured)

  Enables you to customize the software by entering the default name and organization to be used by Setup.

- Display Settings

  Enables you to specify the default display colors, screen area, and refresh frequency. You can choose to configure custom settings, or accept Windows default settings. If you do not configure this setting, the Windows default settings will apply.

- Time Zone (must be configured)

  It is important to correctly configure the time zone. Computers with incorrectly configured time zones may have trouble communicating with servers.

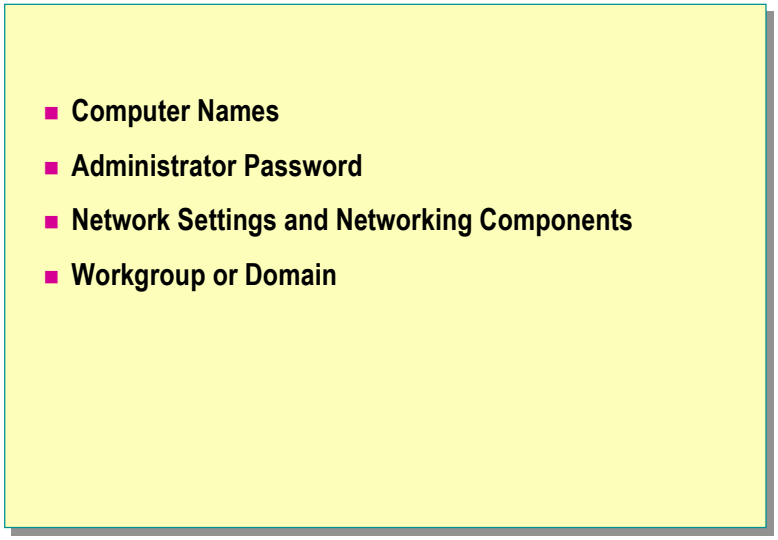
- Providing the CD Key

  You must provide a product key. Standard licensing agreements specify that each product key can be used for only one installation of Windows XP Professional on a single computer. This is enforced by Windows Product Activation. However, if you are using an automated Setup, you will probably use a volume license key. Volume license keys do not require activation.

Configuring Network Settings

Topic Objective
To introduce the settings configured under Network Settings.

Lead-in
When proceeding through the wizard by clicking **Next**, you configure Network Settings after you configure General Settings.



If you continue through the Setup Manager Wizard in the default order, you will configure Network Settings after you configure General Settings.

Under Network Settings you will find the following configurable settings:

- Computer Names (must be configured)

  When you configure the computer names, you can have Setup automatically generate names, or you can specify the name of each computer on which the answer file will be run during Setup. If your computers are on a domain, and therefore have domain computer accounts, you will want to specify those names. You can import a list of computer names from a text document as long as only one computer name appears on each line of the document.

- Administrator Password (should always be configured)

  By entering an administrative password, you increase security. The Setup Manager Wizard enables you to both enter a password and also specify that when the destination computer starts, the administrator be automatically logged on. You can set the number of times that the administrator is automatically logged on. You can also choose to encrypt the administrative password in the answer file, to further increase security.

Key Points
You should always configure an administrative password to increase security. You can do so and still enable users to log on as the administrator a specified number of times.

Note If you choose to encrypt the administrative password, you will not be able to retrieve the password from the answer file. Be sure to record the administrative password in a secure place if you choose to encrypt it.

- Network Settings and Networking Components

  You can configure network settings in either a typical or a custom configuration. The typical installation installs TCP/IP, Client for Microsoft Networks, and File and Print Sharing for Microsoft Networks, and enables Dynamic Host Configuration Protocol (DHCP). If you select **Typical**, click **Next** when you get to the **Networking Components** page. The custom installation installs the same components as the typical installation, but enables you to configure them by adding, removing, and configuring clients, services, and protocols on the **Networking Components** page. If you do not configure these settings, the typical installation will apply.

- Workgroup or Domain

  When you configure this setting, you specify the name of the workgroup or domain that the computers will join. If you do not configure this setting, the computers will join the default workgroup named Workgroup.

Configuring Advanced Settings and Saving the Answer File

Topic Objective
To introduce the Advanced Settings that can be configured in the Setup Manager Wizard.

Lead-in
The last settings configured in the wizard are Advanced Settings. After configuring the desired Advanced Settings, you must save the answer file.

- **Telephony**
- **Regional Settings**
- **Languages**
- **Browser and Shell Settings**
- **Installation Folder**
- **Install Printers**
- **Run Once**
- **Additional Commands**
- **Location of Setup Files**

When preparing the answer file, you may want to configure Advanced Settings, although you are not required to do so.

Configuring Advanced Settings

Under Advanced Settings, you will find:

- Telephony

  Enables you to provide information about your location and telephone system so that calls can be dialed correctly.

- Regional Settings

  Enables you to customize Windows XP Professional for different regions and languages. You can choose to use the default settings for the language version of Windows XP Professional that you are installing, enable the end user to specify the region, or configure a specific region to be used by the answer file.

- Languages

  Enables you to specify additional languages for which you want to install support.

- Browser and Shell Settings

  Enables you to customize the browser and the Windows shell settings. You can choose to use the Windows XP Professional default settings, provide settings by using a script created in the Microsoft Internet Explorer Administration Kit, or specify a particular home page and list of Favorites.

- Installation Folder

  Enables you to configure the name of the folder into which Windows XP Professional will be installed on the destination computers. You can install into a folder named Windows, a folder automatically generated and named by Setup, or a specific folder.

- Install Printers

  When you install printers, you name the printers that you want Setup to install on the destination computers. You name the printers by using the universal naming format *server_name**printer_name*. Users must have appropriate network permissions to gain access to installed printers.

- Run Once

  Enables you to specify commands that will run only once after the user logs on for the first time. For example, you might want to run the **load state** utility to migrate the users settings and files back to the computer the first time that a user logs on.

- Additional Commands

  Enables you to configure additional commands to run at the end of Setup. You can run any command that does not require you to be logged on to the computer.

Saving the Answer File

When you finish creating the answer file, save it in one of two ways, according to the following table.

If you will install from:	The default file location and name are:	Save the answer file as:
A compact disc	\\deploy\unattend.txt	A 1.44 megabyte (MB) floppy, and name it Winnt.sif
A deployment folder	\\distributionfolder\unattend.txt	The deployment folder, and name it either Unattend.txt or a name of your choice. The file name must be specified on the **winnt** or **winnt32** command line when starting the installation.

Lab 2A: Creating an Answer File by Using the Setup Manager Wizard

Topic Objective
To introduce the lab.

Lead-in
In this lab, you will create an answer file that will completely automate an installation of Windows XP Professional.

Objectives

After completing this lab, you will be able to:

- Install the Setup Manager Wizard.
- Create an answer file by using the Setup Manager Wizard.

Prerequisites

Before working on this lab, you must have:

- Completed Lab 1C Upgrading Windows 98 to Windows XP Professional.
- Knowledge of Windows XP Professional Setup.
- Knowledge of Windows XP Professional unattended setup parameters.

Lab Setup

A computer running Microsoft Windows XP Professional.

Scenario

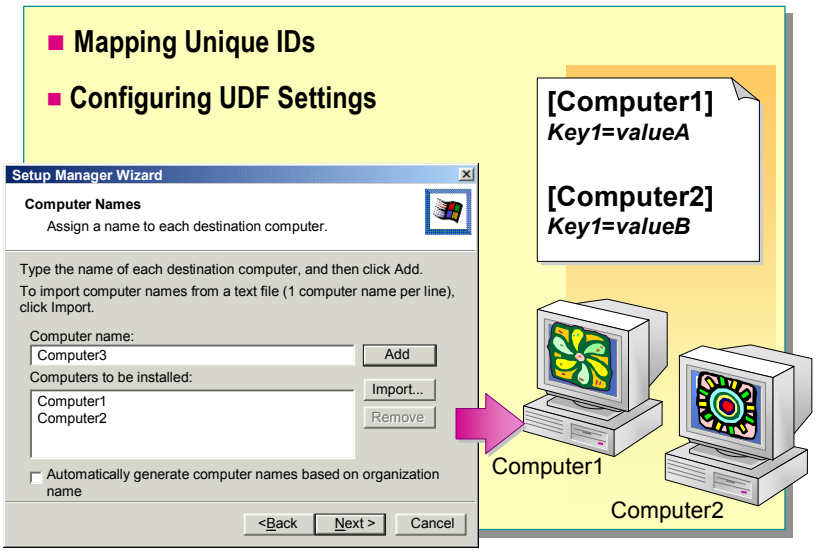
You are supporting the marketing division in your organization. The marketing division has just purchased portable computers for each of the marketing representatives, and you have to install Windows XP Professional on each of the computers. To speed up the installation process, you need to automate the installation process.

Estimated time to complete this lab: 30 minutes

Creating a Uniqueness Database File

Topic Objective
To describe the use and structure of a UDF.

Lead-in
You create a UDF to provide replacements for sections in an answer file, or to supply additional section parameters.



Explain how you use a UDF to add or replace section parameters in an answer file. Describe the two parts of a UDF.

Refer to the student notes for supporting details.

You create a Uniqueness Database File (UDF) to replace values or provide additional values or sections in an answer file. This allows you to use one answer file for multiple client computers that require different setup configurations. Otherwise, you would need to create a separate answer file for each client computer.

UDFs contain two sections. The first section specifies which sections of data will be replaced in or merged with the answer file. The second section provides the actual information to be replaced or merged.

The sections in a UDF are specified in a text file similar to the way that they appear in an answer file. This UDF text file is indexed through strings called *unique IDs*. You must assign a unique ID to each computer that is part of the automated setup. However, more than one computer (for example, all the computers in a specific location) can use the same unique ID. The replacement sections are mapped to the unique IDs, and are then replaced in the answer file during the start of GUI-mode Setup.

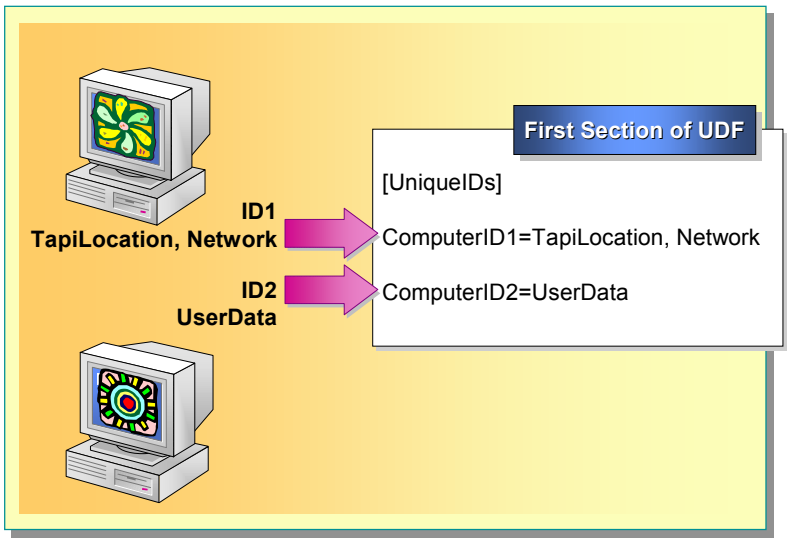
The Setup Manager Wizard creates UDF if multiple computer names are entered on the **Computer Names** page. The UDF that is automatically created contains only the unique IDs and the computer names that were entered into the Setup Manager Wizard when the answer file was created.

If a more detailed or customized UDF is required, double-click the **Unattend.udf** file and use a text editor, such as Notepad, to edit the UDF.

Mapping Unique IDs

Topic Objective
To explain how to assign unique IDs to answer file sections in a UDF.

Lead-in
The first section of a UDF assigns the answer file section headers to the unique IDs.



Explain how to configure the first part of a UDF.

Refer to the student notes for supporting details.

The first section of a UDF assigns the unique IDs to the appropriate answer file section headers. The unique IDs are listed under the [UniqueIDs] section heading:

```
[UniqueIDs]
ComputerID1=TapiLocation, Network
ComputerID2=UserData
```

The information on the left side of the equal sign is the unique ID, which can contain any character except an asterisk (*), space, comma, or equal sign (=).

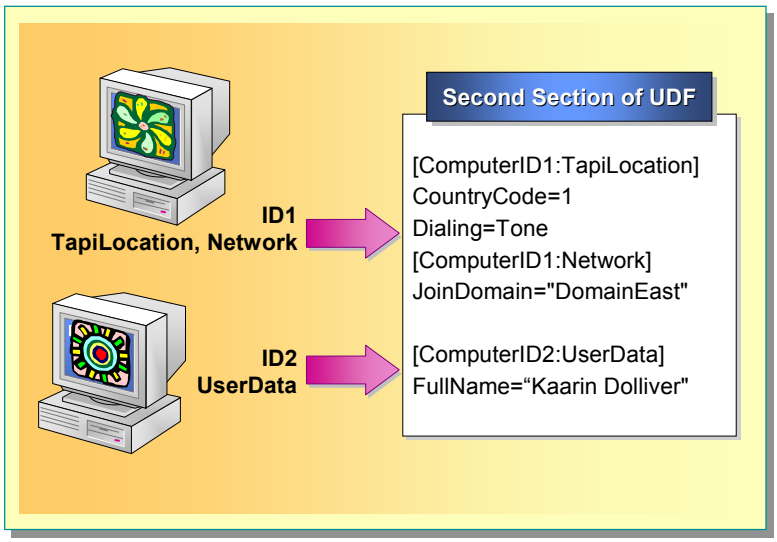
For Your Information
This information is briefly addressed in the multimedia presentation about answer files and UDFs.

The information on the right side of the equal sign is a list of sections that will be merged with the answer file sections for the associated computer. These section headers must exactly match the names of the corresponding sections in the answer file, or the settings in the answer file will not be replaced.

Configuring UDF Settings

Topic Objective
To explain how to configure the answer file sections that are assigned to each unique ID in a UDF.

Lead-in
The second part of a UDF configures the answer file sections that are assigned to each unique ID.



Explain how to configure the second part of a UDF.

Refer to the student notes for supporting details.

The second part of a UDF configures the answer file sections that are assigned to each unique ID. These sections contain the values that are mapped to the answer file.

Unique IDs for a Single Computer

In the following example, the [GuiUnattended] section will merge into the answer file for the computer named ComputerID1.

First Section of UDF

```
[UniqueIDs]
ComputerID1=GuiUnattended
```

Second Section of UDF

```
[GuiUnattended]
TimeZone=3
```

Unique IDs for Multiple Computers

You can create a single UDF file for multiple computers, provided that the unique ID for each type of computer is located in the UDF file. In the example below, the first section of the UDF file specifies that computers identified as ComputerID1 will merge the TapiLocation and Network sections from the second section of the UDF file into the answer file. Because the UDF specifies that computers identified as ComputerID2 will merge only the UserData section into the answer file, these computers will use TapiLocation and Network information found in the answer file.

First Section of UDF

```
[UniqueIDs]
ComputerID1=TapiLocation, Network
ComputerID2=UserData
```

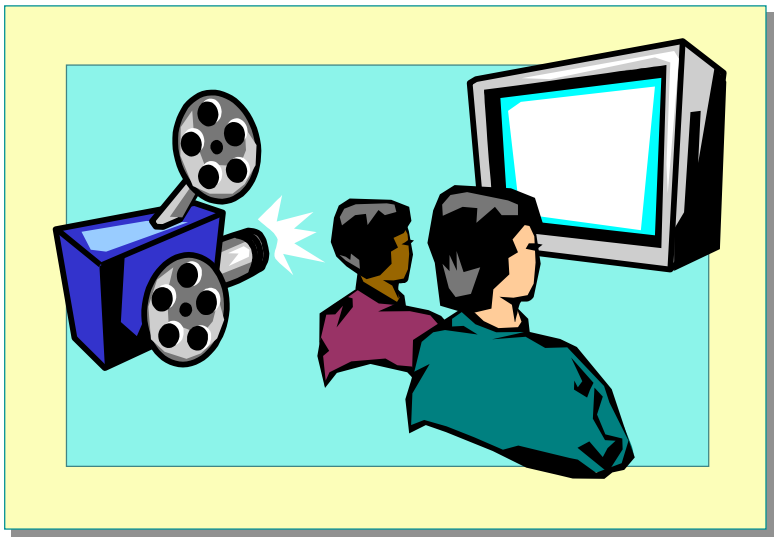
Second Section of UDF

```
[ComputerID1:TapiLocation]
CountryCode=1
Dialing=Tone
AreaCode=425
LongDistanceAccess=9

[ComputerID1:Network]
JoinDomain="DomainEast"

[ComputerID2:UserData]
FullName="Kaarin Dolliver"
OrgName="Engineering Department"
ComputerName="Vancouver-3"
ProductID="12345-12345-12345-12345-12345-12345"
```

Multimedia: How Setup Uses Answer Files and Uniqueness Database Files

Topic Objective
To introduce the animation on how Setup uses answer files and UDFs.

Lead-in
When you automate a setup, Setup uses answer files, and possibly UDFs, in place of user input.



When Setup uses an answer file and a UDF, the value used for a particular setting depends on whether one or both of the files specify a key or value. The different scenarios and their outcomes appear in the following table.

Answer File	UDF	Outcome
Key and value specified	Key not specified	Value in answer file is used
Key not specified	Key and value specified	Value in UDF is used
Key and value specified	Key and value specified	Value in UDF is used
Key not specified	Key specified without value	No value set; user may be prompted for input
Section and/or key not specified	Key and value specified	Section and key are created and used by Setup

Performing an Automated Installation of Windows XP Professional

Topic Objective
To describe what a user must know to perform an automated installation of Windows XP Professional.

Lead-in
When you perform an automated installation of Windows XP Professional on a new computer, you must understand how answer files and UDFs work together.

- **Using an Answer File During Setup**
- **Using a UDF During Setup**
- **Using Answer File and UDF Values During Setup**

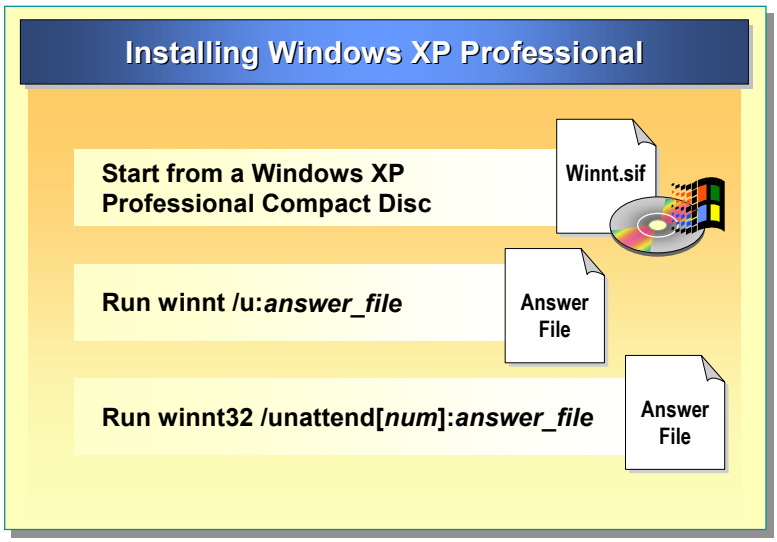
When you perform an automated installation of Windows XP Professional, you must understand and configure:

- Proper command syntax for using an answer file during Setup to provide common configuration settings for all target computers.
- Proper command syntax for using a UDF during Setup to provide unique configuration settings for each target computer.
- Different ways that Setup substitutes answer file and UDF values.

Using an Answer File During Setup

Topic Objective
To explain how to initiate an automated setup of Windows XP Professional.

Lead-in
You can initiate an automated setup by running an answer file in one of three ways.



Describe the three ways to initiate an automated installation of Windows XP Professional.

Explain the parameters of the **winnt** and **winnt32** commands.

Refer to the student notes for supporting details.

You can perform an installation of Windows XP Professional by using an answer file to initiate an automated setup from one of the following three sources:

- The Windows XP Professional compact disc.
- A command prompt on a computer with no operating system installed. You must use Winnt.exe and the appropriate syntax.
- Computer that is running Microsoft Windows 95, Microsoft Windows 98, or Microsoft Windows NT. You must use Winnt32.exe and the appropriate syntax.

Using the Windows XP Professional Compact Disc

On a computer configured to start from the CD-ROM drive, use the Windows XP Professional compact disc to start the computer. When Setup begins, insert a 1.44 MB disk containing the answer file saved as Winnt.sif. If you use any name other than Winnt.sif for the answer file, Setup will not find the answer file and will prompt the user for settings.

Note You must change the folder options to enable you to view file extensions of known file types, or you will inadvertently save the file as Winnt.sif.txt. To view file extensions, in the folder that contains the answer file, click **Tools**, click **Folder Options**, click the **View** tab, and then clear the **Hide file extensions of known type** option. After saving the file, be sure to remove the .txt extension if it appears.

To enable the computer to use the Winnt.sif file, the following parameters must be set in the [Data] section of the answer file:

```
[Data]
unattendedinstall="yes"
   msdosinitiated="0"
autopartition="1"
```

Using the Winnt Command

The syntax of the **winnt** command is as follows:

winnt [**/s**:*sourcepath*] [**/t**:*drive*] [**/u**:*answer_file*]

The following table describes the switches that the **winnt** command uses.

Switch	Action
/s:*sourcepath*	Specifies the location of the Windows XP Professional files. To copy files from multiple servers simultaneously, specify multiple **/s** sources.
/t:*drive*	Directs Setup to place temporary files on the specified drive, and install Windows XP Professional on that drive.
/u:*answer_file*	Performs an installation in unattended mode.

Using the Winnt32 Command

The syntax of the **winnt32** command is as follows:

winnt32 [**/s**:*sourcepath*] [**/tempdrive**:*drive*]
[**/unattend**[*num*]:*answer_file*]

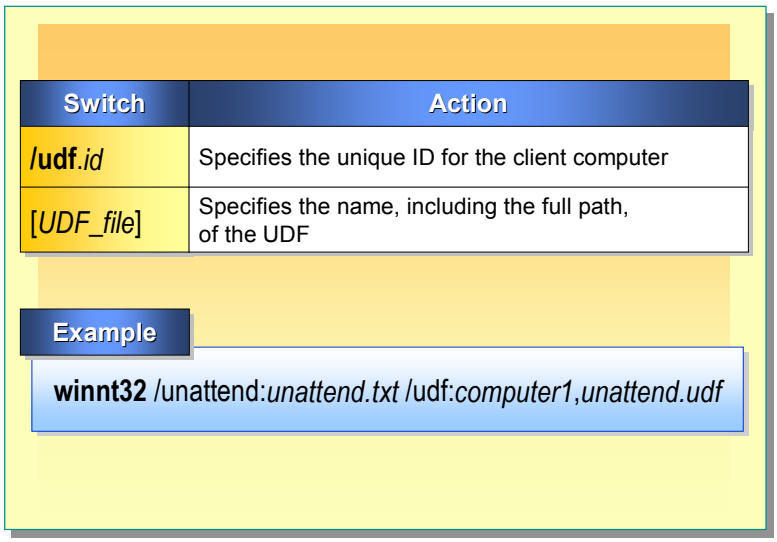
The following table describes the switches that the **winnt32** command uses.

Switch	Action
/s:*sourcepath*	Specifies the location of the Windows XP Professional files. To copy files from multiple servers simultaneously, specify multiple **/s** sources.
/tempdrive:*drive*	Directs Setup to place temporary files on the specified drive, and install Windows XP Professional on that drive.
/unattend[*num*]:*answer_file*	Performs an installation in unattended mode. The answer file provides Setup custom specifications. For *num*, type the number of seconds between the time that Setup finishes copying the files and the time that Setup restarts the computer.

Using a UDF During Setup

Topic Objective
To explain how to run Setup by using a UDF to initiate an automated setup of a client computer.

Lead-in
To run a UDF in Setup, you must type the proper syntax.



Explain the proper syntax to run an automated installation by using a UDF.

Refer to the student notes for supporting details.

To use a UDF to initiate an automated installation of Windows XP Professional, type the following command syntax at the end of the **winnt** or **winnt32** command lines:

/udf.*id[UDF_file]*

The following table defines the parameters for this command syntax.

Switch	Action
/udf.*id*	Specifies the unique ID to use while installing Windows XP Professional.
[*UDF_file*]	Specifies the name, including the full path, of the UDF. Setup uses the values in a specified section to amend portions of an answer file.

For example, to run a UDF for **winnt32**, type:

winnt32 /unattend:*unattend.txt* **/udf:***computer1***,***unattend.udf*

If both the unique ID and the UDF name are specified, the UDF is copied during text-mode Setup to the local drive of the target computer. The UDF is then used during GUI-mode Setup without user intervention.

If only the unique ID is specified on the **winnt** or **winnt32** command line, Setup requires a 3.5-inch disk containing a UDF named $Unique$.udf. This disk must be prepared and given to the user before the automated setup is initiated. The user will be prompted for this disk during GUI-mode Setup.

If the supplied UDF is damaged, or if Setup cannot locate the specified unique ID in it, the user is prompted to either insert a 3.5-inch disk with the repaired UDF or to exit Setup. If the user clicks **Cancel**, the answer file values are used and the UDF values are ignored.

Using Answer File and UDF Values During Setup

Topic Objective
To explain how Setup substitutes answer file and UDF settings.

Lead-in
Setup uses answer file and UDF keys by following specific rules.

Answer file	UDF	Outcome
Key specified	**Key not specified**	Value in answer file used
Key not specified	**Key specified**	Value in UDF used
Key specified	**Key specified**	Value in UDF used
Key not specified	**Key specified without value**	No value set; user may be prompted to enter the information
Section and/or key not specified	**Section and/or key specified**	Section and key are created and used by Setup

For Your Information
This information was presented in the interactive animation. Determine if the students understood the information presented in the multimedia, and if so, skip this topic.

During Setup, keys and values are substituted between the answer file and the UDF, depending on the following scenarios:

- If a key is specified in the answer file but not in the UDF, the value specified in the answer file is used.
- If a key is not specified in the answer file but is specified in the UDF, the value specified in the UDF is used.
- If a key is specified in the answer file and also referenced by the unique ID in the UDF, the value specified in the UDF is used.
- If a key is not specified in the answer file and is specified in the UDF, but the value is left blank, no value will be used for that parameter. This might result in the user being prompted for the information.
- If a section or key is used in the UDF, but there is no section or key with that name in the answer file, Setup will create and use the UDF section.

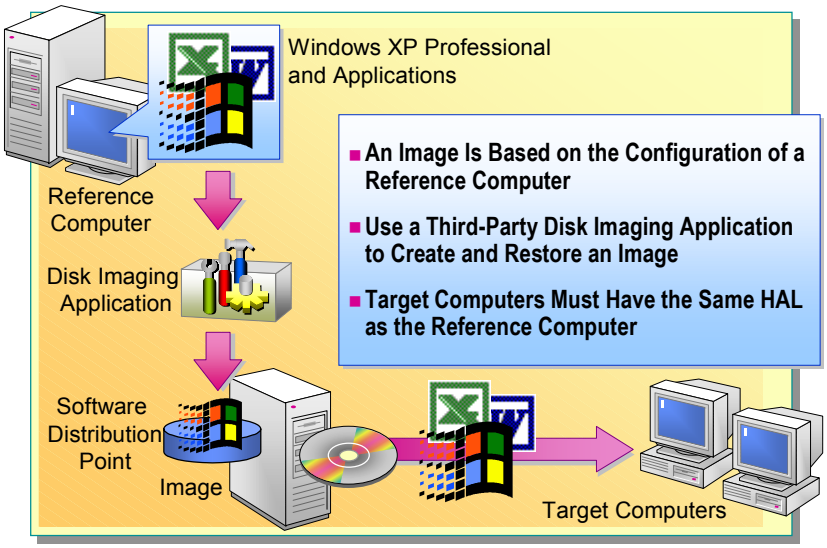
Note For more information about substituting sections, keys, and values between the answer file and the UDF, see the *Microsoft Windows XP Professional* Resource Kit, and the Help files in the \\tools\deploy.cab folder on the Windows XP Professional compact disc.

Introduction to Creating and Deploying an Image

Topic Objective
To introduce how an image is created and deployed.

Lead-in
An image is a duplicate of a hard disk that contains a pre-installation or installation of Windows XP Professional.

You create an image when you want to install the same configuration on computers that have the same hardware abstraction layer.



Use the illustration in the Topic to introduce the concepts for creating and deploying an image.

Mention the Note at the bottom of the page.

Refer to the student notes for supporting details.

Creating an image means configuring an installation of Windows XP Professional, including applications, desktop settings, and user preferences, and then duplicating that configuration. Deploying an image means restoring the image on new or existing computers.

Creating and deploying an image requires the following:

- *Reference computer*. Provides a baseline configuration for other computers. The configuration of the reference computer is replicated to other computers in an organization, or to other new computers in a line of computer products. The replicated contents are known as an image.
- *Third-party disk imaging application*. You will need to use a third-party disk imaging application, such as PowerQuest Drive Image Pro, to create an image of the reference computer, and then restore that image on new or existing target computers.
- *Target computers*. New or existing computers on which you deploy an image require the same hardware configurations as the reference computer. Images can be installed only on target computers that have the same hardware abstraction layer (HAL) and disk controller type as the reference computer.

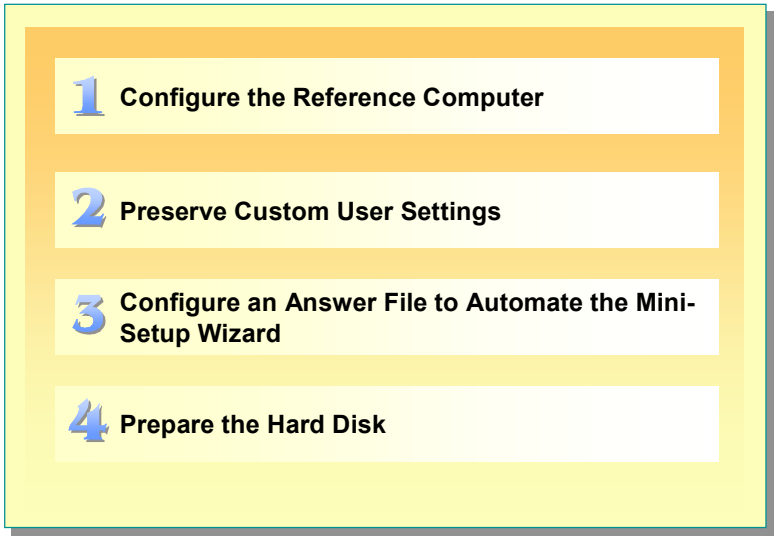
Key Points
Images can only be deployed on target computers that have the same HAL and disk controller type as the reference computer.

Note You can also use a disk duplicator to copy the contents of the reference computer hard disk to other hard disks. For instructions about using this hard disk duplication method, see the documentation for the disk duplicator.

Preparing a Reference Computer

Topic Objective
To introduce the steps necessary for creating and deploying an image.

Lead-in
Perform these steps to create and deploy an image of Windows XP Professional.



Introduce these overview steps for creating and deploying an image. The actual tasks are covered in detail on the following pages.

Refer to the student notes for supporting details.

To create and install an image, perform the following tasks:

1. Configure the reference computer.

   A reference computer includes Windows XP Professional, retail and custom in-house applications, and network and computer settings.

2. Preserve custom user settings.

   You will need to copy the customized user settings to the Default User profile on the reference computer. Otherwise, after the image is deployed on a target computer, only users who log on as Administrator will receive the customized settings.

3. Configure an answer file to automate the Mini-Setup Wizard.

   You can use an answer file to automate the Mini-Setup Wizard so that users are not prompted for configuration information. This method provides a more fully automated installation.

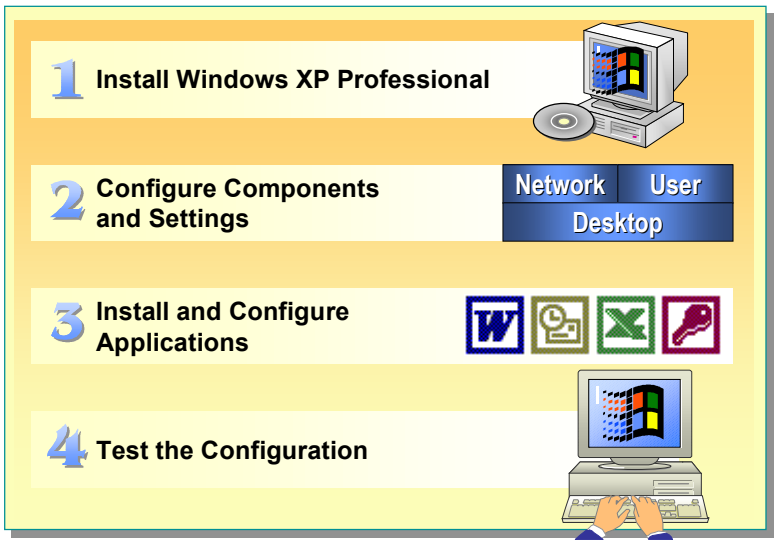
4. Prepare the hard disk.

   You prepare the hard disk on the reference computer by running Sysprep.exe. Sysprep.exe removes all configuration settings that are unique to a computer, such as the computer name and the unique security identifiers (SIDs). It also installs the Mini-Setup Wizard. After the image is installed on a target computer and the computer is restarted, the Mini-Setup Wizard will prompt the user for some of the information that Sysprep.exe removed, such as user name and computer name.

Configuring a Reference Computer

Topic Objective
To explain the steps required to configure the reference computer before creating an image.

Lead-in
A reference computer is a computer that provides a baseline configuration of Windows XP Professional, applications, and settings.



Explain the steps required to configure a reference computer before creating an image.

Explain the Important note following the student notes.

Refer to the student notes for supporting details.

Key Point
Use the built-in Administrator account when configuring the reference computer.

A reference computer contains the hard disk configuration that will be replicated to the target computers. This configuration can include not only the operating system, but also retail and in-house applications, and network and computer settings. When you configure the reference computer, be sure that you have logged on by using the built-in Administrator account.

Configure a reference computer by performing the following steps:

1. Install Windows XP Professional.

   Install Windows XP Professional on a *clean* computer. A clean installation means that Windows XP Professional is installed on a newly formatted hard disk.

2. Configure components and settings.

   These are the settings that will represent the new computer configuration. The configuration can include everything from the appearance of the desktop to the installation of printers.

Example: Do not configure mapped network drives if any users installing the image will not have access to those drives.

Note Always verify that all configuration settings are appropriate for all users who will install the image. If only a portion of users need a particular setting or application, use two images created by using Sysprep, or use an answer file and a UDF.

3. Install and configure applications.

   An application should be included with an image only if all users need that application at the time of deployment.

4. Test the configuration.

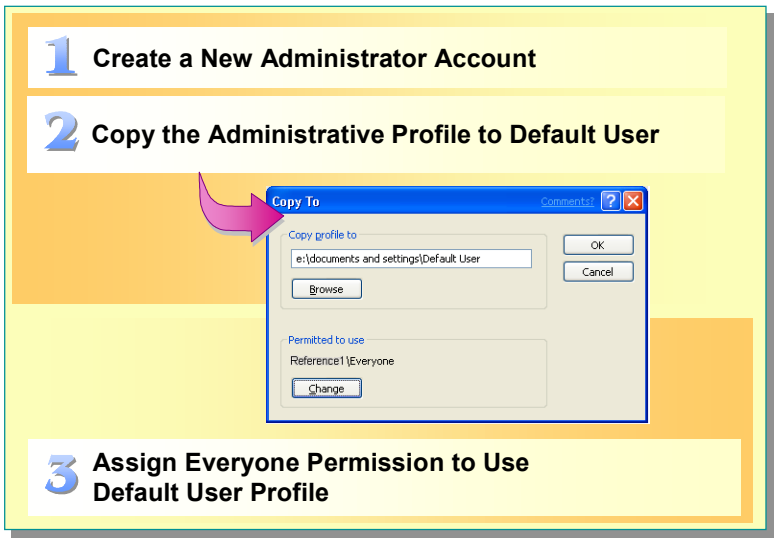
   Test Windows XP Professional and all applications before you create an image. After the image is copied to a shared folder or compact disc, you will not be able to reconfigure Windows XP Professional or any application included in the image. If you need to make any changes, you must create a new image.

Important When you have achieved the correct configuration on the reference computer, shut down the computer to prevent any unwanted alterations to the configuration.

Preserving Custom User Settings

Topic Objective
To explain how to preserve custom user settings on a reference computer before creating an image.

Lead-in
You will want to preserve any custom user settings on the reference computer before creating an image.



Explain how to preserve custom user settings by copying the Administrator profile to the default user profile.

Refer to the student notes for supporting details.

Delivery Tip
Demonstrate the steps to save the user profile.

When you log on and create an image, changes to the image are contained within the profile for the user account that is logged on. Some of the changes that you make to the image may require administrative user rights. Therefore, to create an image, you must log on to the reference computer as an account with administrator privileges. It is easiest to use the built-in Administrator account, which is referred to throughout the remainder of this section; however, you can use any account that has administrative privileges.

Any configuration changes that you make to the reference computer will be stored in the Administrator profile. As a result, after the image is deployed on a target computer, the custom settings will apply only to users who log on to the target computer as the administrator. To make the custom settings available to anyone who uses the image, you will need to copy the Administrator profile to the Default User profile before creating the image.

After you have configured the reference computer, perform the following steps to copy the Administrator profile to the Default User profile:

1. On the reference computer, create a new account with administrative privileges, and then log on by using that account.

   Step 1 is necessary, because you can copy the Administrator profile only if that profile is not in use.

2. Copy the Administrator profile to the Default User profile.

   a. Click **Start**, right-click **My Computer**, click **Properties**, and then click the **Advanced** tab**.**

   b. In the **User Profiles** section, click **Settings**.

   c. On the **User Profiles** page, click *computer_name***Administrator** (where *computer_name* is the name of the reference computer), and then click the **Copy To** button.

   d. In the **Copy To** dialog box, type **%***system_drive***%\Documents and Settings\Default User** (where *system_drive* is the root of the drive on which Windows XP is installed)

   Note Do not click **OK** after completing step 2d.

3. Grant to the Everyone group permission to use the default user profile.

   a. Click the **Change** button.

   b. In the **Select User or Group** dialog box, type **Everyone** in the Name box, and then click **OK**.

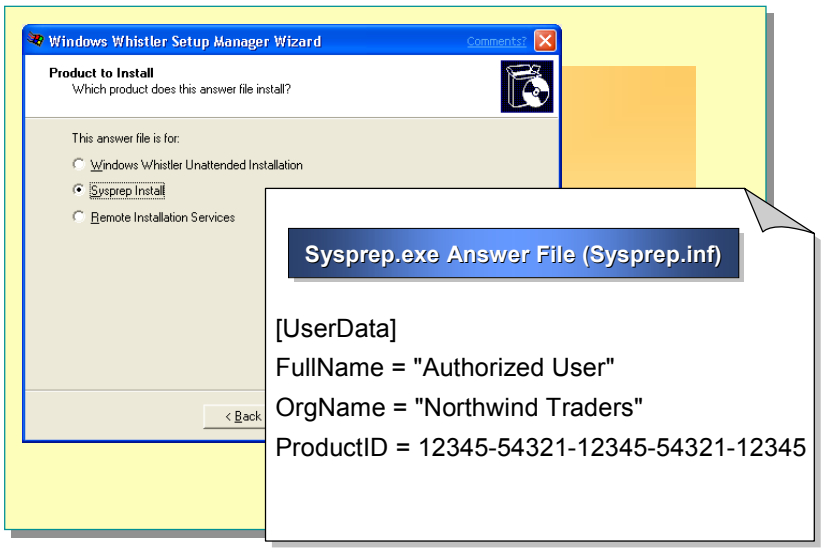
      A **Confirm Copy** message box appears that states "*drive*:\Documents and Settings\Default User already exists. The current contents of this directory will be deleted during this operation. Are you sure you want to continue? Click **Yes**.

   c. Click **OK** until all dialog boxes are closed.

Configuring an Answer File to Automate the Mini-Setup Wizard

Topic Objective
To explain how use an answer file to automate the Mini-Setup Wizard.

Lead-in
You can automate the Mini-Setup Wizard by creating a Sysprep.inf answer file.



Explain how to create and configure an answer file to automate the Mini-Setup Wizard to finish an installation.

Discuss how to create a Sysprep.inf answer file by using a text editor or the Setup Manager Wizard.

Tell students where they can get more information about Sysprep.exe.

Key Point
The password for the built-in Administrator account on the reference computer must be blank to enable a user to create a password for the built-in Administrator account when the Mini-Setup Wizard runs on the target computer.

You can reduce the amount of configuration information that the user needs to supply when the Mini-Setup Wizard runs. You do this by configuring an answer file to provide unique configuration information, such as the organization and computer names, that enables each computer to finish the image installation.

To support the installation of an image, the answer file must be named Sysprep.inf and stored in the Sysprep folder on the system partition with the Sysprep.exe and Setupcl.exe files. If a Sysprep.inf file is found in this folder, the answer file will automatically be applied when you run Sysprep.exe.

Creating a Sysprep.inf File by Using Setup Manager

You can also configure a Sysprep.inf file by running the Setup Manager Wizard. Setup Manager is located on the Windows XP Professional compact disc.

To create a Sysprep.inf answer file by using Setup Manager, perform the following steps:

1. Create a folder named %*systemdrive*%\Sysprep.
2. In the Deploy folder that contains the Setup Manager Wizard files, double-click **Setupmgr.exe**.
3. On the **Welcome to the Windows XP Professional Setup Manager Wizard** page, and then click.
4. Click **Create a new answer file**, and then click **Next**.
5. On the **Product to Install** page, click **Sysprep Install**, and then click **Next**.
6. Follow the on-screen instructions to complete the answer file.
7. When you are prompted for a location in which to save the answer file, either save it to the %*systemdrive*%\Sysprep folder, or make sure that the answer file is copied to the Sysprep folder before you run Sysprep.exe.

Important If you want the Mini-Setup Wizard to prompt the user for a password for the built-in Administrator account on the target computer, the password for the Administrator account on the reference computer must be blank before you run Sysprep.exe.

Creating a Sysprep.inf File by Using a Text Editor

When using a text editor to create the Sysprep.inf file, you can use many of the keys and values that are supported in the Windows XP Professional Setup answer files. To create the Sysprep.inf file, use any text editor to enter the appropriate section headers, keys, and values.

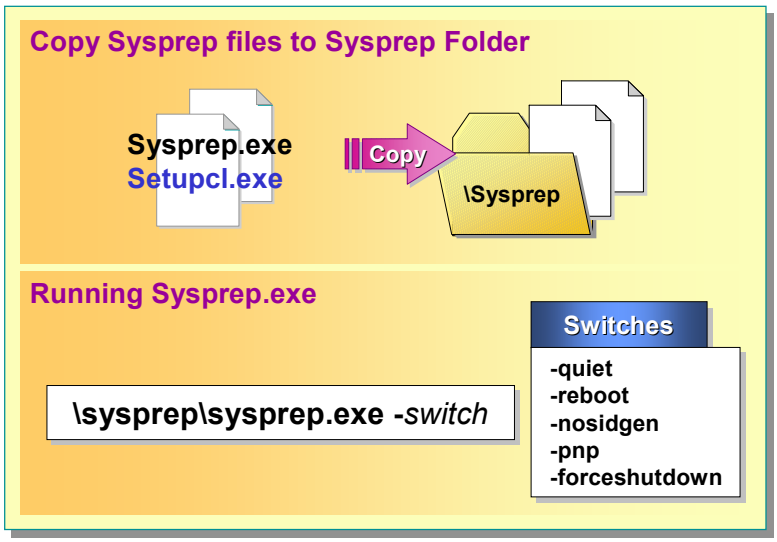
For example:

```
[UserData]
FullName = “Authorized User”
OrgName = “Northwind Traders”
ProductID = 12345-54321-12345-54321-12345
```

Preparing the Hard Disk

Topic Objective
To explain how to use the System Preparation tool to prepare the hard disk for imaging.

Lead-in
Before you create an image of the reference computer, you must use the System Preparation tool to remove configuration information that is unique to that computer, such as the computer name and SID.



Explain how to install Sysprep.exe. Also describe how to prepare the hard disk by running Sysprep.exe to remove configuration information that is unique to the reference computer.

Describe the switches that are used in running Sysprep.exe and their actions.

Refer to the student notes for supporting details.

Delivery Tip
Demonstrate the steps to install Sysprep.exe.

Create the Sysprep folder, and then copy Sysprep.exe and Setupcl.exe into it.

After you configure the reference computer, you must use the System Preparation tool, Sysprep.exe, to remove all information that is unique to the reference computer, such as the SID and computer name. By removing this information, you can prevent security problems that could arise if computers have the same SIDs.

To run Sysprep.exe, perform the following steps:

1. Restart the reference computer, and then log on as Administrator.
2. If you have not already done so, create a folder and name the folder %*system_drive*%\Sysprep.
3. Copy the Sysprep.exe and Setupcl.exe files from the Deploy folder on your hard disk or the compact disc to the %*system_drive*%\Sysprep folder.
4. Click **Start**, click **Run**, and, in the **Open** box, type **%***systemdrive***%\sysprep\sysprep.exe** –*switch* (where *switch* is the appropriate switch or switches), and then click **OK**.

   Example: *drive*:**\sysprep\sysprep.exe –quiet**

   The following table describes the actions of each Sysprep.exe switch.

Switch	Action
-quiet	Runs Sysprep.exe without displaying on-screen messages.
-reboot	Forces the computer to restart automatically after the image of the hard disk is installed and the Mini-Setup Wizard starts. Restarting the computer is useful when you want to audit the computer's functions and verify that the Mini-Setup Wizard is operating correctly. You must run Sysprep.exe again to reset the Mini-Setup Wizard.
-nosidgen	Runs Sysprep.exe without generating a SID. You must use this switch if you are not duplicating the hard disk on which you are running Sysprep.exe.

5. Sysprep.exe will display a message box warning before proceeding, unless you have used the **–quiet** switch. Click **OK** to proceed.

   After Sysprep.exe is finished, the reference computer shuts down and is ready to be imaged.

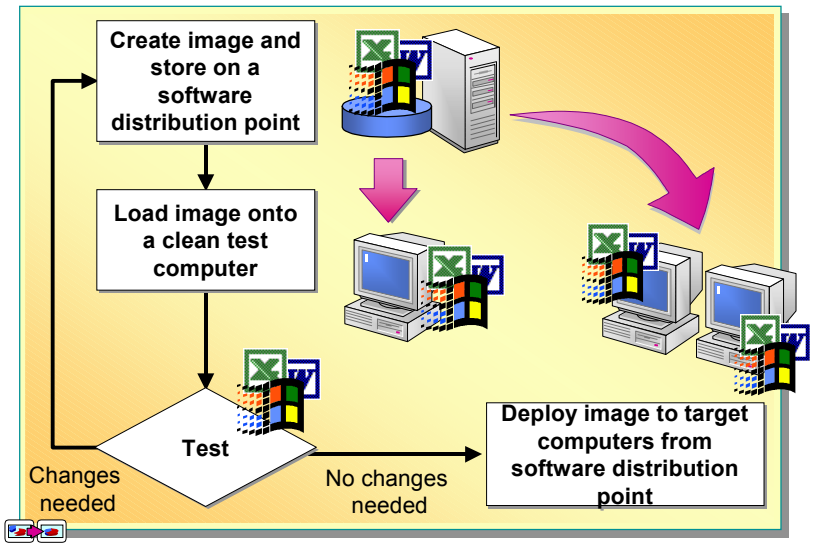
   If you were going to duplicate the hard disk physically, you would now remove the hard disk from the reference computer and use disk-duplicating equipment to reproduce it.

Note Sysprep.exe supports only Microsoft Windows 2000 Professional, Windows XP Professional, Microsoft Windows 2000 Server, and Windows XP Server. The servers are supported only when they are configured as stand-alone servers.

Creating, Testing, and Deploying an Image

Topic Objective
To introduce the process for creating, testing, and deploying and image.

Lead-in
It is essential to create and test an image before you deploy it.



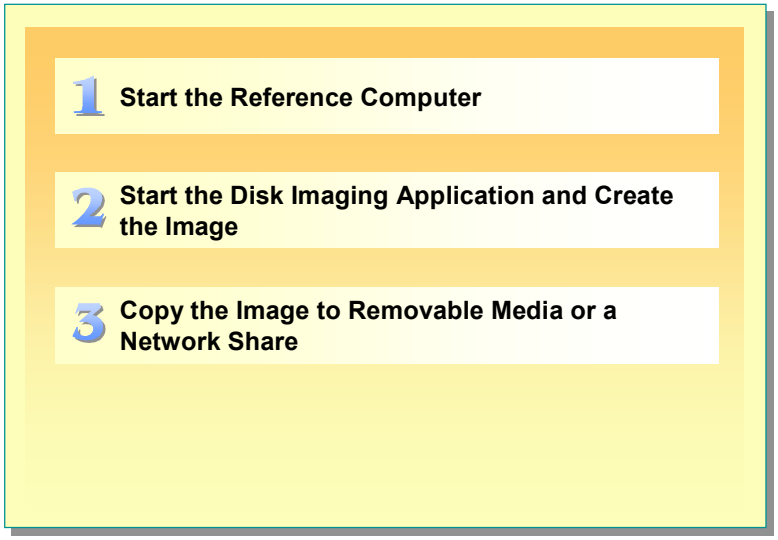
After the hard disk of the reference computer is prepared, an image of the computer is created, tested, and deployed.

- First, a third-party imaging tool is used to create an image, which is stored on a software distribution point, such as a compact disc or a network share.
- Next, the image is loaded from the software distribution point onto a clean test computer. Windows XP Professional and any applications included in the image are tested. If there are any problems with the image, such as a failure to start correctly, the source computer is reconfigured to eliminate the problems. Then a new image is saved to the distribution point, and loaded on the test computer. This is a recursive process that continues until the image on the test computer is perfected.
- After the image on the test computer passes all testing, that version of the image is deployed from the software distribution point to the target computers.

Creating an Image

Topic Objective
To explain how to create an image of a reference computer.

Lead-in
You use a third-party application to create an image of a reference computer.



Describe the steps for creating an image of a reference computer.

Refer to the student notes for supporting details.

After you prepare the hard disk of the reference computer, create an image of it by using a third-party disk imaging application. The process of creating an image varies, depending on the third-party disk imaging application that you use. It is recommended that you test the third-party disk imaging application by using Sysprep.exe before you begin creating an image for installation.

Note For more information about the third-party disk imaging application, see the application manufacturer's documentation.

To create an image, perform the following steps:

1. Start the reference computer by following the directions of the third-party disk imaging application vendor.
2. Follow the manufacturer's instructions to start the disk imaging application and create the image.
3. Store the image in a shared folder or on removable media.

Testing an Image

Topic Objective
To explain how to test an image before restoring the image on new or existing computers.

Lead-in
Before deploying an image, test it thoroughly to ensure that there are no problems that can replicate to new or existing computers.

Explain the steps required to test an image before restoring it to all target computers.

Refer to the student notes for supporting details.

Before you restore an image on computers, it is important to test the image to ensure that the operating system and applications are installed and configured correctly. You can use any system maintenance tool or utility, such as Chkdsk, Scandisk, or other hard disk utilities to ensure the integrity of the disk.

To test an image, perform the following steps:

1. Using the third-party disk imaging application, restore the image on a test computer from removable media or a network share.

   This computer must have the same mass storage device driver and same HAL as the reference computer.

2. Restart the test computer.

   The Mini-Setup Wizard runs automatically to complete the installation of the image.

3. Test the configuration.

   At a minimum, it is recommended that you do the following:

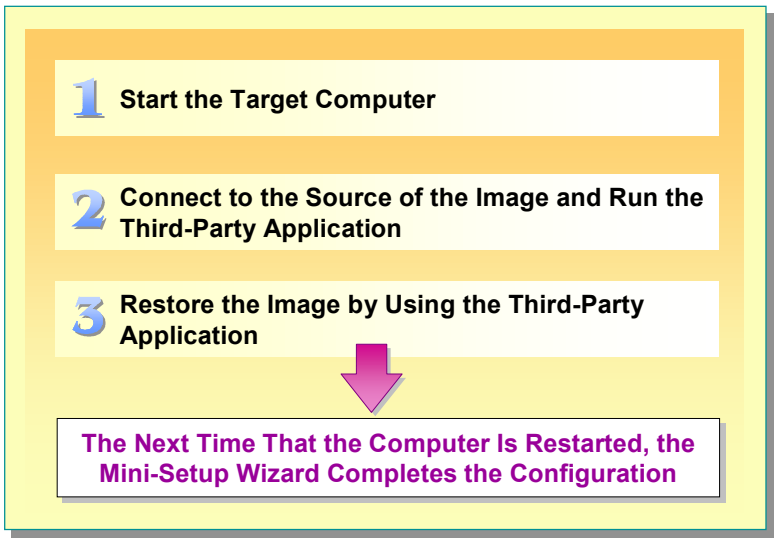
   - Verify that the operating system and applications start properly.
   - Run Chkdsk to check for corrupted files, and then run Disk Defragmenter.
   - Verify that the end-user license agreement appears when you complete the computer setup to ensure that you will not violate the licensing agreement when users install the image.
   - Use Device Manager to verify that all installed devices are working properly.

   If the computer passes each test, the image is ready to be deployed to new or existing target computers.

Deploying an Image

Topic Objective
To explain the steps required to deploy an image to new or existing computers.

Lead-in
After you have created and downloaded an image to the network distribution share, you are ready to deploy the image on new or existing computers.



Explain the steps required to deploy an image. Explain that different third-party disk imaging applications may use different steps when restoring an image.

Mention the Important note following the student notes.

Refer to the student notes for supporting details.

After creating the image and copying it to removable media or a network share, you are ready to restore the image to the new or existing target computers. Use the same third-party disk imaging application to restore the image that you used to create it.

To restore the image from removable media or a network share, perform the following steps:

1. Start the target computer by using one of the following methods as specified by the manufacturer of the imaging software:
   - Use a startup compact disc that contains the image. This method works only if the computer supports starting from the CD-ROM drive.
   - Use a startup disk that includes drivers for the removable media device, such as a CD-ROM drive.
   - Use a network startup disk that can connect the target computer to the software distribution point that contains the image.
   - Use the remote boot capabilities of the target computer to connect to a multicast server.
2. From the target computer, connect to the source of the image and run the third-party disk imaging application that was used to create the image.
3. Restore the image on the computer. Follow the steps specified by the third-party disk imaging application.

Important When the image is restored, all previously existing data on the hard disk of the target computer will be erased.

The next time that the computer is started, the Mini-Setup Wizard will run automatically. The user will be prompted for any configuration information that you did not configure in an answer file.

Note Some third-party disk imaging applications provide Internet Protocol (IP) multicasting, which distributes the image to designated computers simultaneously. This simultaneous distribution helps to reduce network traffic associated with multiple over-the-network installations of Windows XP Professional.

Remote Installation Services

Topic Objective
To explain how RIS can be used to automate installation.

Lead-in
Another way of automating an installation of Windows XP Professional is to use Remote Installation Services.

One of the most efficient methods of deploying Windows XP Professional is to use the Remote Installation Services (RIS). RIS enables you to deploy Windows XP Professional to computers within an Active Directory™ directory service domain without user intervention, or with a set level of user intervention. RIS enables client computers to connect to a server during the initial startup phase and remotely install Windows XP Professional. Similar to fully automated installations that use answer files, a remote installation does not require users to know where the installation source files are stored or what information to supply during the Setup program.

During the startup of a new computer that does not contain an operating system, the person at the computer presses the F12 key, which starts the remote installation process.

Components and Function of RIS

The remote installation process includes three primary components:

- RIS servers host the RIS service and distribute Windows XP Professional to client computers enabled for remote startup. RIS servers can be either domain controllers or member servers within a Windows 2000 domain.
- RIS client computers can connect to a RIS server upon startup to remotely install Windows XP Professional or run diagnostic and maintenance utilities.
- Images are the operating system configurations that can be downloaded and installed on client computers. RIS supports two types of images: CD-based images, which are images of the operating system only, and Remote Installation Preparation (RIPrep) images, which are images of the operating system and applications.

Using RIS to Automate Installation

To use RIS, you will need a PCI network adapter card that supports Pre-Boot eXecution (PXE), or Remote Installation Services boot disks for client computers with network cards that do not support PXE. The boot disk simulates the PXE boot process.

Additional Requirements

RIS also requires that additional services, listed in the following table, be installed on the network.

Service	RIS function
DHCP Service	Client computers performing a network boot will receive an IP address from the DHCP Server
DNS Service	Client computers use DNS for locating a server, or domain controller, running Active Directory.
Server running Active Directory	Client computers use Active Directory for locating the RIS server.

Remote Installation Services Setup Wizard

The Remote Installation Services Setup Wizard is installed and run on the RIS server. Running the Remote Installation Services Wizard:

- Installs the RIS software.
- Creates the Remote Installation folder and copies Windows XP Professional installation files to the server.
- Adds .sif files, which are a form of Unattend.txt file.
- Configures the Client Installation Wizard that will appear during a remote installation.

> **Note** You can use the Setup Manager Wizard to create an answer file that will automate the Client Installation Wizard. To create the RIS answer file, choose **Remote Installation Services** when the Setup Manager Wizard prompts you for the product to install. If you do not create this answer file, someone must manually complete the Client Installation Wizard on the client computer.

- Updates the registry.
- Starts the required Remote Installation Services.

Creating Remote Installation Boot Floppies

If the client computer does not have a PXE-enabled network adapter, or the BIOS does not support starting from the Network adapter card, you can create a remote installation boot disk. The boot disk simulates the PXE boot process. You use the Windows XP Remote Boot Disk Generator to create the boot disk. Start Windows XP Remote Boot Disk Generator by running Rbfg.exe, located in the System32\Reminst folder. The Remote Boot Disk Generator is a wizard that will step you through creating the boot disk.

Lab 2B: Editing the Unattend.txt File and Performing an Unattended Installation

Topic Objective
To introduce the lab.

Lead-in
In this lab, you will edit the Unattend.txt file, and perform an unattended installation.

Objectives

After completing this lab, you will be able to:

- Edit the Unattend.txt file.
- Perform an unattended installation.

Prerequisites

Before working on this lab, you must have:

- Completed Lab 1C Upgrading Windows 98 to Windows XP Professional.
- Knowledge of Windows XP Professional Setup.
- Knowledge of Windows XP Professional unattended setup parameters.

Lab Setup

To complete this lab, you need:

- 1 blank, 3.5-inch disk.
- The Unattend.txt file created in Lab 2A.
- The Windows 98 system disk created in Module 1.
- A computer running Microsoft Windows XP Professional.
- Completed Lab 1C Upgrading Windows 98 to Windows XP Professional.

Scenario

You are supporting the marketing division in your organization. The marketing division has just purchased portable computers for each of the marketing representatives, and you need to install Windows XP Professional on each of the computers. To speed up the installation process, you need to automate the installation process.

Estimated time to complete this lab: 45 minutes

Review

Topic Objective
To reinforce knowledge gained in the module.

Lead-in
Take a few minutes to answer these review questions before a class discussion.

- Introduction to Automating an Installation of Windows XP Professional
- Creating Answer Files
- Creating a Uniqueness Database File
- Performing an Automated Installation of Windows XP Professional
- Introduction to Creating and Deploying an Image
- Preparing a Reference Computer
- Creating, Testing, and Deploying an Image
- Remote Installation Services

1. Your organization uses Windows 98 as its desktop operating system. With the exception of the marketing department, all desktop computers are configured with the same software and user settings. The marketing department uses the same basic configuration and settings, but also uses two additional applications. You have decided to purchase new computers and install Windows XP Professional on all computers. You want all of the Windows XP Professional computers to have the same basic configuration, while ensuring that the marketing department has their additional applications installed. What are two methods that you can use to install and deploy these new computers?

   Sysprep, by using two different images.

   Answer files and the Uniqueness Database File (UDF) with Run Once used to install the Marketing applications.

2. You have decided to deploy new computers that will require that Windows XP Professional be installed. Your organization consists of many satellite offices. These offices are located in multiple time zones. You want to perform a fully automated installation. How would you configure the fully automated installation of Windows XP Professional to configure the computers with the proper time zones?

   Use an answer file with the addition of a UDF configured with the correct computer names and time zones for the computers in each office.

3. You have decided to use RIS to deploy Windows XP Professional. During the deployment, a desktop support person calls and says that the RIS installation option is not appearing on three of the 50 computers that they are deploying. What could be the issue? How do you resolve this issue?

   The network cards in the 3 computers are not PXE-compliant.

   Use the Windows XP Network Boot Floppy Generator to boot to the network and connect to the RIS server.

   It is also possible that DHCP is not sending the three computers IP addresses, but because only three computers were affected, this possibility is not as likely.