

Module 9: Using Group Policy to Manage Software

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Instructor Notes

Presentation:
75 Minutes

This module provides students with the knowledge and skills required to use Group Policy to deploy software.

Labs:
60 Minutes

At the end of this module, students will be able to:

- Describe how to manage software deployment by using Group Policy.
- Describe how Windows® Installer is used for software installation and maintenance.
- Use Group Policy to deploy software.
- Use Group Policy to configure software deployment.
- Use Group Policy to maintain software.
- Troubleshoot common problems with software deployment.
- Apply best practices for deploying software.

In the two hands-on labs in this module, students will have the opportunity to use Group Policy to manage software. In the first lab, students will assign and publish software by using Group Policy. In the second lab, students will deploy mandatory and optional upgrades of software by using Group Policy and remove software previously deployed with Group Policy.

Materials and Preparation

This section provides you with the required materials and preparation tasks that are needed to teach this module.

Required Materials

To teach this module, you need the following materials:

- Microsoft® PowerPoint® file 2154A_09.ppt

Preparation Tasks

To prepare for this module, you should:

- Read all of the materials for this module.
- Study the review questions and prepare alternative answers to discuss.
- Anticipate questions that students may ask. Write out the questions and provide the answers.
- Read the white paper, *The Windows Installer Service*, on the Student Materials compact disc.
- Read the white paper, *Software Installation and Maintenance*, on the Student Materials compact disc.

Module Strategy

Use the following strategy to present this module:

- Introduction to Managing Software Deployment

In this topic, you will introduce managing software deployment by using Group Policy. Briefly discuss each phase in software installation but avoid going into detail about each phase.

- Windows Installer

In this topic, you will introduce Windows Installer and describe the role that it plays in software installation and maintenance. Discuss some of the problems typically encountered by administrators when deploying and managing software in an organization.

- Deploying Software

In this topic, you will introduce deploying software. Provide an overview of the software deployment process. Describe the process of creating a software distribution point and discuss the guidelines for creating a software distribution point. Explain how to assign and publish software. Discuss the advantages of advertising software as opposed to installing it. Explain the difference between assigning software to a user and assigning software to a computer. Discuss situations in which assigning software to a user would be more appropriate, and occasions when it might be better to assign software to computers. Demonstrate how users can use Add/Remove Programs in Control Panel to install software. Demonstrate the process that occurs when a user double-clicks an unknown file type. Illustrate the procedure for using Group Policy to assign and publish software packages. Demonstrate how to change the deployment options for an application.

- Configuring Software Deployment

In this topic, you will introduce configuring software deployment. Illustrate the concept of adding modifications to a software package. Show students the **Modifications** tab in the **Properties** dialog box for a published application, and describe how to add a transform file. Explain how software categories are used to classify applications within Add/Remove Programs. Explain the concept of managing file name extensions with the Software Installation component of Group Policy. Emphasize that a list of file name extensions, and the applications associated with them, is stored in Active Directory® directory service.

- Lab A: Assigning and Publishing Software

Prepare students for the lab in which they will use Group Policy to assign and publish software. Make sure that students run the command file for the lab, and tell them that they will work in pairs for this lab. After students have completed the lab, ask them if they have any questions.

- Maintaining Deployed Software

In this topic, you will introduce maintaining deployed software. Illustrate the procedure for deploying a mandatory or an optional upgrade. Demonstrate how to redeploy software. Emphasize the fact that redeployment involves not only obtaining the updated application files, but also obtaining a new Windows Installer package file.

- Removing Deployed Software

In this topic, you will introduce removing deployed software. Illustrate the procedure for removing deployed software. Emphasize that when you configure a Group Policy object (GPO), the software is automatically removed.

- Lab B: Upgrading and Removing Software

Prepare students for the lab in which they will deploy mandatory and optional upgrades of software by using Group Policy. They will also remove software previously deployed by using Group Policy. After students have completed the lab, ask them if they have any questions.

- Troubleshooting Software Deployment

In this topic, you will introduce troubleshooting options for resolving the problems that may occur when using Group Policy to deploy software. Tell students that they may encounter problems when deploying software with Group Policy. Present some of the more common problems that they may encounter, along with suggested strategies for resolving them.

- Best Practices

Present best practices for using Group Policy to manage software. Emphasize the reason for each best practice.

Customization Information

This section identifies the lab setup requirements for the module and the configuration changes that occur on student computers during the labs. This information is provided to assist you in replicating or customizing Microsoft Official Curriculum (MOC) courseware.

Important The labs in this module are also dependent on the classroom configuration that is specified in the Customization Information section at the end of the Classroom Setup Guide for Course 2154, *Implementing and Administering Microsoft Windows 2000 Directory Services*.

Lab Setup

The labs in this module require that the student computers be configured as domain controllers. To prepare student computers to meet this requirement, perform one of the following actions:

- Complete Module 3, “Creating a Windows 2000 Domain,” in Course 2154, *Implementing and Administering Microsoft Windows 2000 Directory Services*.
- Run Autodc.vbs from the C:\Moc\Win2154A\Labfiles\Custom\Autodc folder.
- Run Dcpromo.exe on the student computers by using the following parameters:
 - A domain controller for a new domain.
 - A new domain tree.
 - A new forest of domain trees.
 - Full DNS domain name, which is *computerdom.nwtraders.msft* (where *computer* is the assigned computer name).
 - NetBIOS domain name, which is *COMPUTERDOM*.
 - Default location for the database, log files, and SYSVOL.
 - Permission compatible only with Windows 2000–based servers.
 - Directory Services Restore Mode Administrator password, which is **password**.

Note Before you use Module 3, “Creating a Windows 2000 Domain,” in Course 2154, *Implementing and Administering Microsoft Windows 2000 Directory Services*, you must successfully complete Module 2, “Implementing DNS to Support Active Directory,” in Course 2154, *Implementing and Administering Microsoft Windows 2000 Directory Services*.

Lab Results

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

Overview

Topic Objective

To provide an overview of the module topics and objectives.

Lead-in

In this module, you will learn about how to use Group Policy to deploy and manage software.

- Introduction to Managing Software Deployment
- Windows Installer
- Deploying Software
- Configuring Software Deployment
- Maintaining Deployed Software
- Removing Deployed Software
- Troubleshooting Software Deployment
- Best Practices

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Microsoft® Windows® 2000 includes a new feature called Software Installation and Maintenance that uses Active Directory® directory service, Group Policy, and Windows Installer to install, maintain, and remove software on computers in your organization. By using a policy-based method for managing software deployment, you can ensure that the applications that users need to perform their jobs are available whenever and wherever they are needed.

At the end of this module, you will be able to:

- Describe how to manage software deployment by using Group Policy.
- Describe how Windows Installer is used for software installation and maintenance.
- Use Group Policy to deploy software.
- Use Group Policy to configure software deployment.
- Use Group Policy to maintain software.
- Use Group Policy to remove software.
- Troubleshoot common problems with software deployment.
- Apply best practices for deploying software.

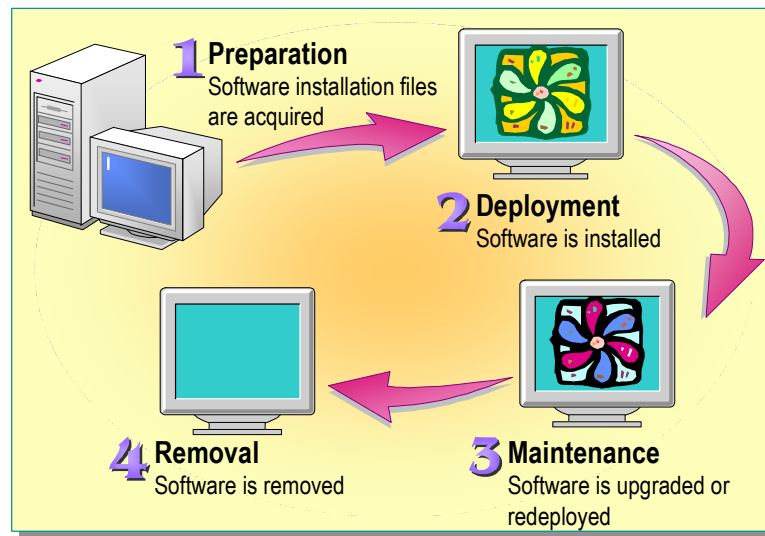
Introduction to Managing Software Deployment

Topic Objective

To provide an overview of how you can use Group Policy to manage software deployment.

Lead-in

Managing software is a process that consists of four phases: preparation, deployment, maintenance, and removal.



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Briefly discuss each phase in the software installation process, but avoid going into detail about each phase.

In Windows 2000, you can use Group Policy to manage the software deployment process centrally, or from one location. You can apply Group Policy settings to users or computers in a site, domain, or organizational unit (OU) to automatically install, upgrade, or remove software for the users and computers in the site, domain, or OU. By applying Group Policy settings to software, you can manage the various phases of software deployment without needing to visit each computer individually.

The following list describes each phase in the software installation and maintenance process:

1. *Preparation.* You prepare the files that enable an application to be deployed with Group Policy. To do this, copy the Windows Installer package files for an application to a software distribution point, which can be a shared folder on the server. You can acquire a Windows Installer package file from the application's vendor, or you can create a package file by using a third-party utility.
2. *Deployment.* An administrator creates a Group Policy object (GPO) that installs the software on the computer and links the GPO to an appropriate Active Directory container. The software actually installs either when the computer starts or when a user activates the application.
3. *Maintenance.* The deployed software is upgraded with the new version or redeployed with a service pack and patch. The software is automatically upgraded or redeployed either when the computer starts or when a user activates the application.
4. *Removal.* To eliminate software that is no longer required, remove the software package setting from the GPO that originally deployed the software. The software is automatically removed either when the computer starts or when a user logs on.

Windows Installer

Topic Objective

To introduce Windows Installer and describe how it deploys and manages software.

Lead-in

Windows 2000 includes Windows Installer that can help administrators overcome the challenges of deploying and managing software throughout an organization.

Windows Installer Service	Windows Installer Package
■ Is a client-side service that fully automates the software installation and configuration process ■ Is used to modify or repair an existing application installation	■ Contains all of the information required by the Windows Installer service to install or uninstall an application ■ Consists of an .msi file and any external source files that are required to install the application ■ Contains summary information about both the application and the package ■ Contains a reference to an installation point where product files reside
Benefits of Employing Windows Installer	
■ Resilient applications ■ Clean removal of files	

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Discuss some of the problems typically encountered by administrators when deploying and managing software in an organization.

Key Point

Windows Installer contains two components: the Windows Installer service and the Windows Installer package.

To enable Group Policy to deploy and manage software, Windows 2000 uses Windows Installer, which contains the following two components:

- *Windows Installer service.* The Windows Installer service is a client-side service that fully automates the software installation and configuration process. The Windows Installer service can also modify or repair an existing installed application. The Windows Installer service installs an application either directly from the CD-ROM or through Group Policy.
- *Windows Installer package.* The Windows Installer package contains all of the information that the Windows Installer service requires to install or uninstall software. A package consists of a Windows Installer, or .msi file, and any external source files required to install or uninstall the software. An .msi package file also contains standard summary information about both the software and the package itself. It also contains the product files or a reference to an installation point where the product files reside.

The benefits of employing the Windows Installer technology include:

- *Resilient applications.* If a critical file is deleted or becomes corrupt, the application will automatically return to the installation source and acquire a new copy of the file, without requiring user intervention.
- *Clean removal.* Applications are uninstalled without leaving orphaned files or inadvertently breaking another application; for example, by deleting a shared file required by another application. Also, all application-related registry settings are removed.

Note For more information about Windows Installer, see *The Windows Installer Service* under **Additional Reading** on the Web page on the Student Materials compact disc.

◆ Deploying Software

Topic Objective

To introduce the topics related to deploying software.

Lead-in

Windows 2000 provides a new way for administrators to deploy software in an organization.

- **Software Deployment**
- **Creating a Software Distribution Point**
- **Assigning Software**
- **Publishing Software**
- **Using Group Policy to Deploy Software Packages**
- **Setting Software Installation Defaults**

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You can use Software Installation, a component of Group Policy, to deploy software to users and computers. Deploying software ensures that required applications are available from any computer to which a user logs on. From the user's point of view, software is always available and functional. Administrators can either install software for users in advance, or give users the option to install the software that they require, as it is needed.

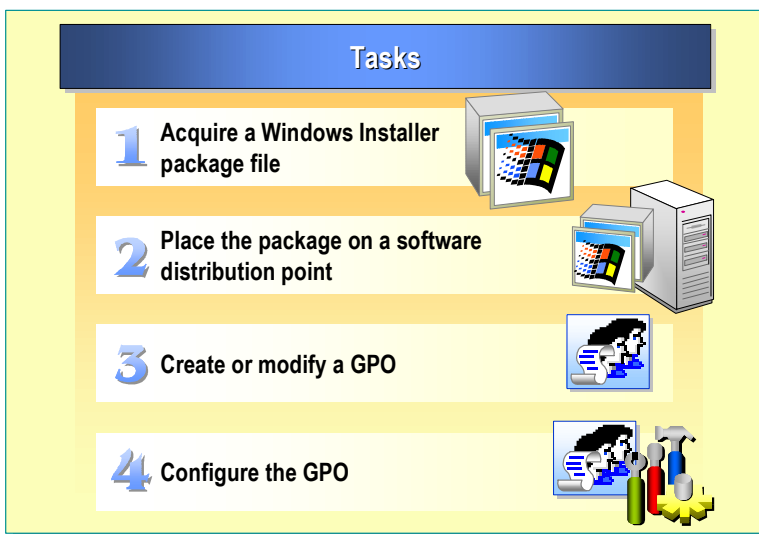
Software Deployment

Topic Objective

To provide an overview of the software deployment process.

Lead-in

When deploying software, you use Group Policy to specify how applications are installed and maintained within your organization.



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Delivery Tip

Tell students that they must obtain a license to run the software they are deploying. Windows Installer does not manage software licenses.

Emphasize that it is recommended that you use groups for software deployment, instead of using individual user accounts.

Key Points

You must have a Windows Installer package file for an application before Group Policy can deploy that application.

Depending on your requirements, you can configure the GPO to deploy software for a user account or for a computer account.

When you deploy software, you are specifying how applications are installed and maintained within your organization. To use Group Policy to deploy new software, perform the following tasks:

1. Acquire a Windows Installer package file. You must have a package file for an application before that application can be deployed. A package contains an .msi file and necessary related installation files. The related installation files are the application files that are installed on the local hard disk.
2. Place the package file and any related installation files on a software distribution point. A software distribution point is a shared folder on your server.
3. Create or modify a GPO. You need to create or make necessary changes to a GPO for the container in which you want to deploy the application.
4. Configure the GPO to deploy the application. You can configure the GPO to deploy software for a user account or a computer account. This task also includes selecting the type of deployment that you need. Deployment types, and the differences between deploying an application to users and computers, will be discussed later in this module.

Creating a Software Distribution Point

Topic Objective

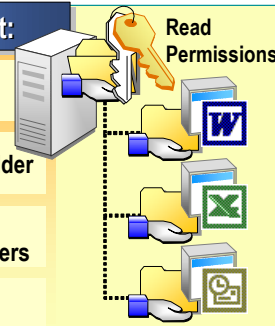
To describe the process of creating a software distribution point.

Lead-in

All package files are kept at a common location so that they can be located easily. This common location is the software distribution point.

To Create a Software Distribution Point:

- 1 Create a shared folder
- 2 Create appropriate folders in the shared folder
- 3 Copy the Windows Installer packages and application executables to appropriate folders
- 4 Assign users the Read permission so that they can gain access to the shared folder



When Creating a Software Distribution Point:

- ☒ Create a folder for .msi applications named for the application
- ☒ Use a hidden shared folder
- ☒ Use Dfs to provide a single share point for all applications

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Explain the tasks involved in creating a software distribution point.

Discuss the guidelines for creating a software distribution point.

Briefly explain Dfs and tell students that it is covered in detail in Module 7, "Providing Network Access to File Resources," in Course 2152, *Implementing Microsoft Windows 2000 Professional and Server*.

Key Point

A software distribution point is a shared folder that contains the package files for deploying software.

A software distribution point is a shared folder that contains the package files for deploying software. Installer packages and software files must be available on a software distribution point, so that when software is installed on a local computer, files are copied from this point to the computer. Keeping the files for each application together simplifies administration.

To create a software distribution point, perform the following tasks:

1. Create a shared folder.
2. Create the appropriate application folders in the shared folder.
3. Copy the Windows Installer packages and application executables to the appropriate folders.
4. Set the appropriate permission for the shared folder. Assign users the Read permission so that they can gain access to the software installation files on the software distribution point.

When creating a software distribution point, use the following guidelines:

- Create a folder named for the application for .msi packages, and place the .msi package file, and all required installation files, in that folder. To simplify administration, store .msi package files in the same location.
- Use a hidden shared folder (for example, *packages\$*), to prevent users from browsing the contents of the shared folder on the software distribution point.
- Use Distributed file system (Dfs) to provide a single share point for all published applications, so you can take advantage of Dfs redundancy and load-balancing features.

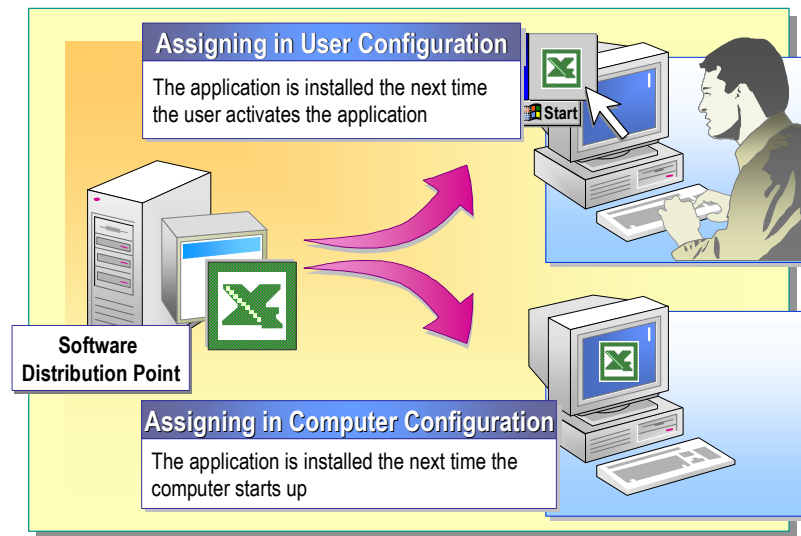
Assigning Software

Topic Objective

To illustrate how to assign software.

Lead-in

You deploy software by either assigning or publishing software. Typically, you assign software when the application is required by users for their jobs.



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Discuss the advantages of advertising software over installing it automatically when the user logs on.

Discuss situations in which assigning software to a user would be more appropriate, and on some occasions better, to assign software to computers.

Key Points

You can assign software to users and computers. Assigning software packages ensures that the software is available to the user and resilient.

You assign software to make sure that users have all of the applications they need installed on their computers. The next time that the user logs on, the newly installed software is *advertised* on their desktops. When software is advertised, **Start** menu shortcuts and desktop icons for the application appear.

By assigning software packages, you ensure that:

- The software is always available to the user. Users will be able to access the software they need from any computer to which they log on. If the user starts a file that uses Microsoft Excel on a computer that does not have Excel, Excel will be installed on that computer when the user activates the file.
- The software is resilient. If for any reason the user deletes the software, it will be reinstalled the next time the user logs on and activates the application.

You can assign software to either users or computers:

- During user configuration. When you assign software to a user, the software is advertised on the user's desktop. Although the application is advertised when the user logs on, installation does not begin until the user double-clicks either the application's icon or a file type associated with the application, which is a method called document activation. If the user does not activate the application by using one of these methods, the software will not be installed, thus saving hard disk space and time.
- During computer configuration. When you assign software to a computer, no advertising takes place. Instead, when the computer starts up, the software is installed automatically. By assigning software to a computer, you can ensure that certain applications are always available on that computer, regardless of who is using it. However, assigning software to a computer does not work if the computer is a domain controller.

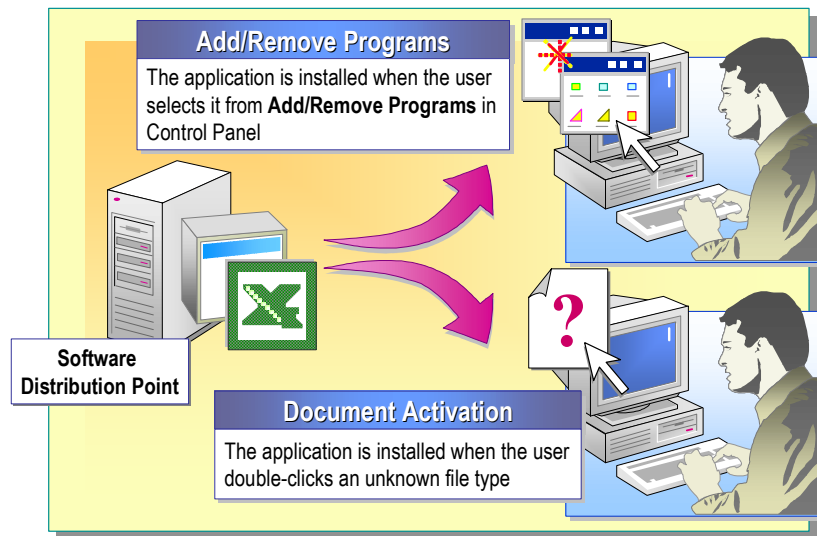
Publishing Software

Topic Objective

To illustrate how to publish software.

Lead-in

You assign software that users require to do their jobs. You can also publish software that might be useful but is not required.



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Delivery Tip

Demonstrate how users can use **Add/Remove Programs** in Control Panel to install software.

Demonstrate the process that occurs when a user double-clicks an unknown file type.

Key Point

All published software is installed by using a single tool, which is **Add/Remove Programs**.

Published software may be installed automatically by document activation.

You can publish software only to users, not to computers, because users must manually install the published software.

When you publish software, it becomes available for users to install on their computers, even though no shortcuts are added to the user's desktop or **Start** menu, and no local registry entries are made. Because users must install the published software, you can publish software only to users, not to computers. Users can install published software in one of two ways:

- Using **Add/Remove Programs**. A user can open Control Panel and double-click **Add/Remove Programs** to display the set of applications available. The user can then select the desired application and click **Install**.
- Using document activation. When an application is published in Active Directory, the file name extensions for the documents that it supports are registered in Active Directory. If a user double-clicks an unknown file type, the computer sends a query to Active Directory to determine whether there are any applications associated with the file name extension. If Active Directory contains such an application, the computer installs it.

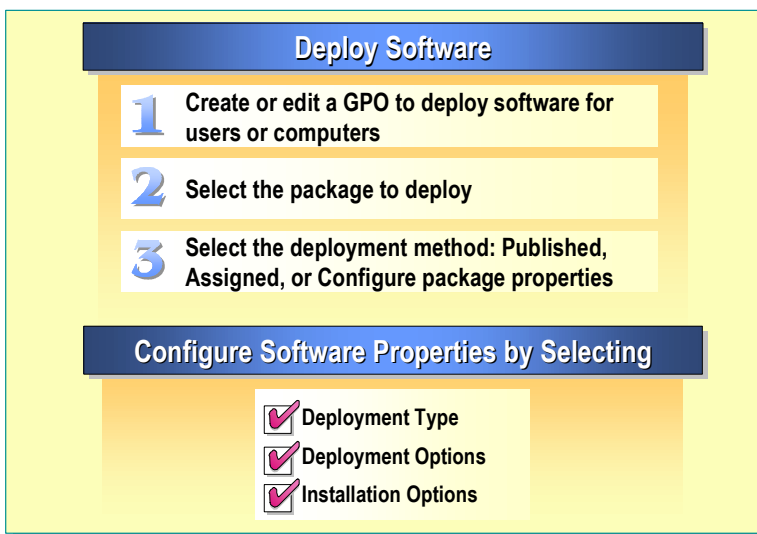
Using Group Policy to Deploy Software Packages

Topic Objective

To illustrate the procedure for using Group Policy to assign and publish software packages.

Lead-in

You assign and publish software by creating a GPO and then linking it to an appropriate container. After deploying software, you can also modify the options for deployment.



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Show students the **Software installation Properties** dialog box that appears when you right-click **Software Installation** instead of **Package**. Explain that this dialog box is used to set the configuration options during deployment. Compare this dialog box with the **Properties** dialog box that appears by right-clicking a package that has already been deployed.

Delivery Tip

Demonstrate how to use a GPO to deploy software. Discuss the three deployment methods in the **Deploy Software** dialog box. Show students the **Properties** dialog box that appears when you select the **Configure package properties** option.

Demonstrate how to change the deployment options for an application.

To install applications for users, or to make applications available for users to install when needed, you need to create a GPO that deploys those applications. Then link this GPO to the Active Directory container that contains the users or computers to which you want to deploy software.

Using a GPO to Deploy Software Packages

To use a GPO to deploy software, perform the following steps:

1. Create or edit a GPO in either **User Configuration** or **Computer Configuration**, depending on whether the software is to be assigned to users or computers, or published to users.
2. Expand **Software Settings**, right-click **Software Installation**, point to **New**, and then click **Package**. When the **File Open** dialog box appears, select the package file, and then click **Open**.
3. In the **Deploy Software** dialog box, select a deployment method, and then click **OK**.

Changing Options for Deployed Software Packages

After you have deployed a software package by using Group Policy, you can change the deployment options that were set during the initial deployment of software. For example, you can prevent a software package from being installed by using document activation.

To change the software deployment options for a software package, perform the following steps:

1. In Software Installation, right-click the deployed package, and then click **Properties**.
2. In the **Properties** dialog box of the application, click the **Deployment** tab, and set any combination of the options described in the following table.

Option	Description
Deployment type	Use to change the deployment type for software from assigned to published, or published to assigned. This change affects only new installations of the software, not software that has already been installed.
Deployment options	Use the Auto-Install this application by file extension activation option to install published software by using document activation. You may turn off this option for published software if you do not want the software to be automatically installed. Use the Uninstall this application when this GPO no longer applies to users or computers option to remove software when the software GPO no longer applies to a particular user, group of users, or computer. If a user or computer is moved to an organizational unit (OU) or domain where this GPO no longer applies, the deployed software will be uninstalled. Use the Do not display this package in Add/Remove Programs option to prevent the application from being displayed in Add/Remove Programs in Control Panel. This option restricts the ability of users to install software. Users can still install software by document activation or by gaining access to an advertised shortcut.
Installation user interface options	Windows Installer packages often come with two different setup interfaces. The basic interface installs the software by using default values. The maximum interface prompts the user to enter values. You can choose which interface to display to users during setup.

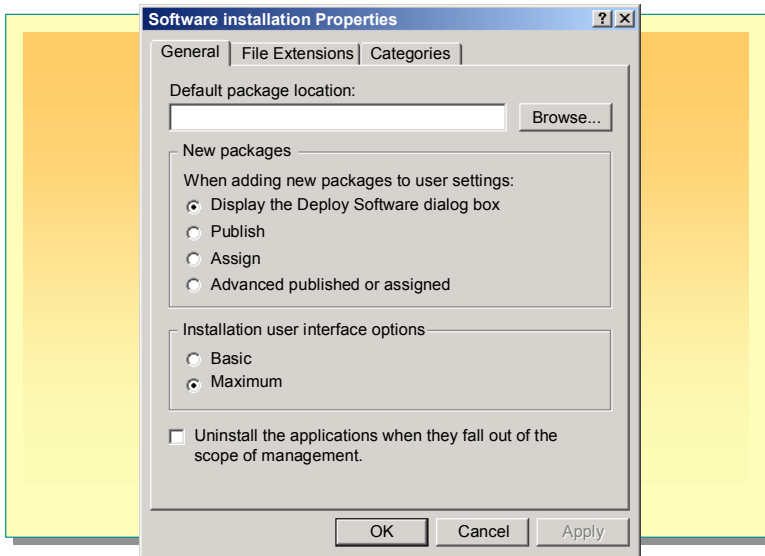
Setting Software Installation Defaults

Topic Objective

To illustrate the procedure for setting software installation defaults for software deployment by using Group Policy.

Lead-in

You can set software installation defaults by setting properties on the software installation object for either computer or user configurations.



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Show students the **General** tab in the **Software installation Properties** dialog box that appears when you right-click **Software Installation**. Explain that the **General** tab is used to set the default settings used for new software packages installed during software deployment for a particular GPO.

Delivery Tip

Discuss how to set the **General** tab on the **Software installation Properties** dialog box to configure the software installation default settings.

Key Points

Use these default settings if you will add a number of applications to a GPO at one time.

You set software installation default options for the current GPO by using the **General** tab on the **Software installation Properties** dialog box. These defaults are most useful when you will add several applications to a GPO at one time.

To set software installation default options, perform the following steps:

1. Create or edit a GPO in either **User Configuration** or **Computer Configuration**, depending on whether the software is to be assigned to users or computers, or published.
2. Expand **Software Settings**, right-click **Software Installation**, and then click **Properties**.

3. In the **Software installation Properties** dialog box, click the **General** tab, and set any combination of the options described in the following table.

Option	Description
Default package location.	The location of the software distribution point that contains the .msi package files. You can specify any location that contains the software package, but make sure that the distribution point is not on a local drive.
New Packages.	The Display the Deploy Dialog box option displays a dialog box for each package file added to the GPO. This dialog box prompts you to either publish or assign the new package file.
When adding new packages to user settings.	The Publish option automatically publishes by default a new installation package file under User Configuration (this option does not appear under Computer Configuration). If you are going to add several applications to this GPO that need to be published, use this option. Use the Assign option to automatically assign by default a new package file. If you are going to add several applications to this GPO that need to be assigned, use this option. Use the Advanced published or assigned option for finer control on a per-package basis. For example: using transforms.
Installation user interface options.	Windows Installer packages often come with two different setup interfaces. The basic interface installs the software by using default values. The maximum interface prompts the user to enter values. You can choose which interface to display to users during setup.
Uninstall the application when they fall out of the scope of management.	If a GPO no longer applies to a user, because the settings are on a new GPO, or the GPO has been deleted, the application and all related files will automatically be removed from the user's computer.

Note For more information about software installation, see *Software Installation and Maintenance* under **Additional Reading** on the Web page on the Student Materials compact disc.

◆ Configuring Software Deployment

Topic Objective

To introduce the topics for configuring software deployment.

Lead-in

You can deploy several different configurations of one application and control how an application is assigned or published.

- Using Software Modifications
- Creating Software Categories
- Associating File Name Extensions with Applications

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Software Installation is an extension in Group Policy that includes options for configuring deployed software. By using Software Installation, you can deploy several different configurations of one application and control how that application is assigned or published whenever a user's duties change. You can also simplify the task of deploying software by categorizing programs listed in Add/Remove Programs and associating file name extensions with applications.

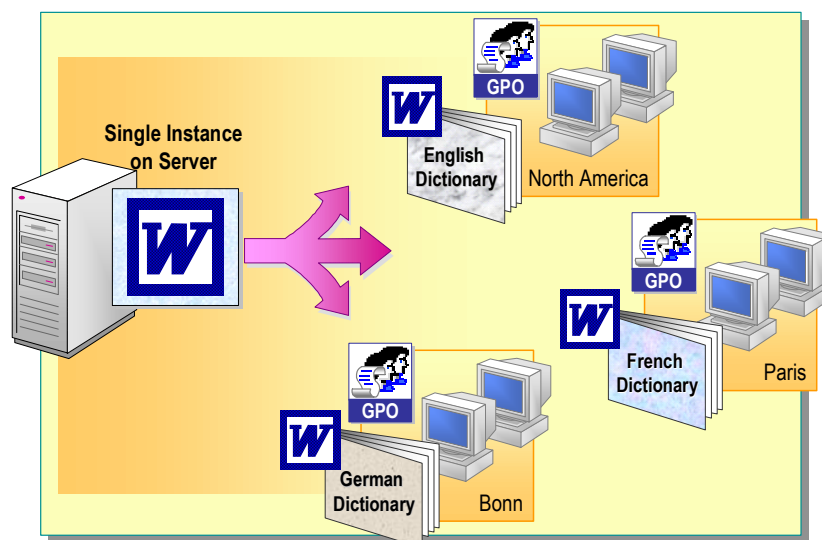
Using Software Modifications

Topic Objective

To illustrate the concept of adding modifications to a software package.

Lead-in

You can use software modifications to deploy a single application with several different configurations.



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Delivery Tip

Show students the **Modifications** tab in the **Properties** dialog box for a published application and describe how to add a transform file.

Key Points

An **.mst** file is a custom software package that provides the ability to install specific features of an application.

You can add or remove modifications only during software deployment, not after the package is deployed.

Deploying several different configurations of one application enables different groups in your organization to use a software package in different ways. You can use software modifications, or **.mst** files, to deploy several different configurations of one application. An **.mst** file is a custom software package that modifies how Windows Installer installs a packaged application.

For example, an international organization would like to deploy Microsoft Word 2000, but there are large segments of the organization that require localized dictionaries. Rather than manually configuring users' computers with the local dictionaries, you could use different GPOs and **.mst** files for each language to deploy several configurations of one application.

Important You can add and remove modifications only during deployment of a software package, not after the deployment has occurred.

To add modifications for a software package, perform the following steps:

1. While you are adding a new package to a GPO or before the package has been deployed, open the **Properties** dialog box for the application package, and then click the **Modifications** tab.
2. On the **Modifications** tab, click **Add**.
3. In the **Open** dialog box, select the path and file name of the modification (**.mst**) file, click **Open**, and then click **OK**.

Note You can also add multiple modifications. The modifications are applied according to the order that you specify in the **Modifications** list. To arrange the list, click a modification in the list, and click **Move Up** or **Move Down**.

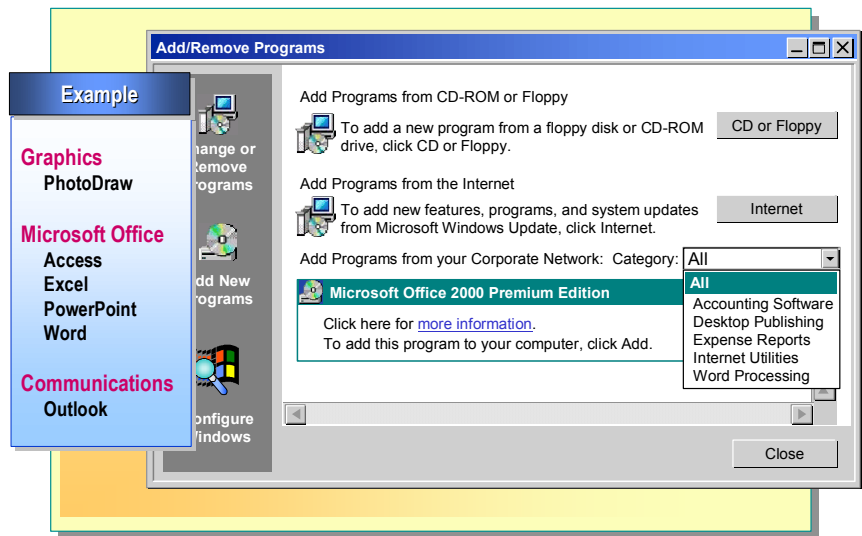
Creating Software Categories

Topic Objective

To illustrate how software categories are used to classify applications within Add/Remove Programs.

Lead-in

One way to make software installation easier for users is to categorize the applications available to them in Add/Remove Programs.



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Delivery Tip

Demonstrate how to create categories, and show students where categories are displayed in Add/Remove Programs.

Key Point

Software categories function on a domain-wide basis. Any changes that you make will be reflected throughout domain.

You can create software categories to logically group different applications under a specific heading. You can categorize the software deployed in an organization to allow users to choose from categories in Add/Remove Programs such as “Graphics,” “Microsoft Office,” or “Accounting,” rather than from a long and arbitrary list of applications. Categorizing applications requires you to first create a category, and then assign the application to a category.

Creating Categories

Software categories function across domains. Any changes that you make are reflected throughout the domain. You can gain access to the **Categories** tab from within any OU. However, any changes that you make are reflected throughout the domain. The categories that you create are available for all software policies in that domain.

To create a category, perform the following steps:

1. Create or edit a GPO in either User Configuration or Computer Configuration, depending on whether the software is to be assigned to users or computers, or published.
2. Expand **Software Settings**. Right-click **Software Installation**, click **Properties**, and then click the **Categories** tab.
3. Click **Add**, **Modify**, or **Remove** to create and edit category names.

Assigning a Software Package to a Category

You can assign a software package to a category either when you deploy the application, or any time thereafter. You can also list Packages under more than one category, and assign a package to a category by using the **Categories** tab in the **Properties** dialog box for the package.

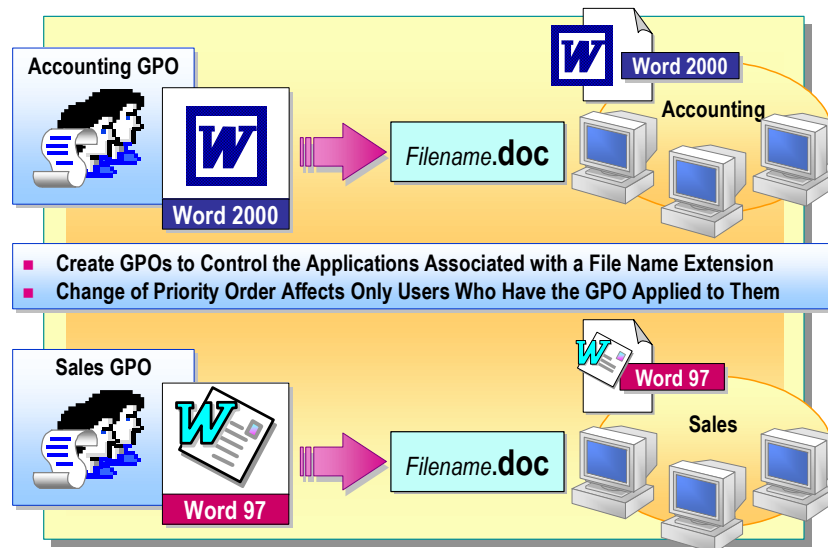
Associating File Name Extensions with Applications

Topic Objective

To illustrate the concept of managing file extensions by using Software Installation.

Lead-in

Different applications often use the same file name extension by default. By using Software Installation, administrators can control which application is primarily associated with a file name extension and is opened or installed during document activation.



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Explain that a list of file name extensions, and the applications associated with them, is stored in Active Directory. Tell students that the set of extensions stored in Active Directory cannot be modified. The associations change automatically in response to application deployment. You can change only the priority of applications that open them.

Inform students that it is a good idea to keep track of the GPOs that are used to set file name extension priorities, because it is possible that the created GPOs conflict.

Delivery Tip

Demonstrate how to set the priority for a file name extension.

Active Directory maintains a list of file name extensions and published applications associated with these extensions. This is the list used by Windows Installer to install an application when a user double-clicks an unknown file type. Administrators cannot dictate the contents of this list, but they can determine the priority for installing or starting applications upon document activation.

For example, your organization might require the use of both Microsoft Word 97 and Word 2000. Each word processor may be preferred in a different department, but both of these applications use the .doc file name extension. You need to adjust the file name extension priorities for each department so that the preferred word processor is installed when the user activates a document.

To modify file name extension priorities, perform the following steps:

1. Open the GPO used to deploy the application.
2. Expand **User Configuration**, and then open the **Properties** dialog box for Software Installation.
3. In the **Software installation Properties** dialog box for Software Installation, click the **File Extensions** tab and then click **Up** or **Down** to set the priority order.

The first application listed in Windows Installer will be the first application installed.

Application associations are managed on a per-GPO basis. Changing the priority order in a GPO affects only those users who have that GPO applied to them. If you set Word 2000 as the default application, it will be the default application for only the users affected by that GPO.

Note You may associate document types only with applications that have been deployed by using Group Policy. For example, you cannot associate the .doc file name extension with Word 97 unless you create a package file for deploying Word 97.

Lab A: Assigning and Publishing Software

Topic Objective

To introduce the lab.

Lead-in

In this lab, you will use Group Policy to assign and publish software.



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Explain the lab objectives.

Objectives

After completing this lab, you will be able to:

- Assign software to users in an OU by using Group Policy.
- Publish software to users in an OU by using Group Policy.

Prerequisites

Before working on this lab, you must have the knowledge and skills to create Group Policy objects.

Lab Setup

To complete this lab, you need the following:

- A computer running Windows 2000 Advanced Server that is configured as a domain controller.
- An OU structure. To create the required OUs and users, run the Software.vbs script file from C:\Moc\Win2154A\Labfiles.

Key Points

The lab does not reflect the real-world environment. It is recommended that you always use complex passwords for any administrator accounts, and never create accounts without a password.

Outside of the classroom environment, it is strongly advised that you use the most recent software updates that are necessary. Because this is a classroom environment, we may use software that does not include the latest updates.

Important The lab does not reflect the real-world environment. It is recommended that you always use complex passwords for any administrator accounts, and never create accounts without a password.

Important Outside of the classroom environment, it is strongly advised that you use the most recent software updates that are necessary. Because this is a classroom environment, we may use software that does not include the latest updates.

Estimated time to complete this lab: 30 minutes

Exercise 1

Assigning Software

Scenario

Northwind Traders has decided to centrally manage the deployment of applications to users. You want to ensure that Windows 2000 Support Tools are available to all users in the Information Services department.

Goal

In this exercise, you will use Group Policy to assign the Windows 2000 Support Tools to users in the Information Services OU.

Tasks	Detailed Steps
1. Create a GPO named Application Assignment Policy in the Information Services OU.	- Log on as Administrator with a password of password. - Open Active Directory Users and Computers from the Administrative Tools menu. - Expand <i>domain.nwtraders.msft</i> (where <i>domain</i> is your assigned domain name), if necessary. - Right-click Information Services, and then click Properties. - On the Group Policy tab, click New. - Type Application Assignment Policy and then press ENTER. - Leave the Information Services Properties dialog box open.
2. Modify the Application Assignment GPO to assign the Veritas WinInstall LE package: Assigned File Name: \\computer\Labfiles\Packages\Swiadmle.msi (where <i>computer</i> is your assigned computer name).	- In the Information Services Properties dialog box, select the Application Assignment Policy GPO, if necessary, and then click Edit. - Under User Configuration, expand Software Settings, and then click Software Installation. - Right-click Software Installation, point to New, and then click Package. - In the File name box, type \\computer\labfiles\packages (where <i>computer</i> is your assigned computer name) and then click Open. - Click Swiadmle, and then click Open. - In the Deploy Software dialog box, click Assigned, and then click OK.  <i>WinINSTALL LE appears in the list of deployed applications.</i> - Close Group Policy, and then click Close to close the Information Services Properties dialog box. - Close all open windows, and then log off.

Exercise 2

Testing Software Assignment

Scenario

After making changes to the Group Policy settings, you want to test that the software is assigned correctly.

Goal

In this exercise, you will test the software assignment from the previous exercise.

Task	Detailed Steps
1. Log on as Hduser to confirm that the Veritas WinInstall LE package is being assigned.	a. Log on as Hduser with a password of password .
? Does VERITAS Software appear on the Programs menu? Why or why not? Yes. The Veritas WinINSTALL LE package was assigned to users in the Information Services OU, and that Group Policy was enforced during the user logon process.	
1. (continued)	b. Open the VERITAS Software Console from the VERITAS menu.
? What happens? Windows Installer installs Vertias WinINSTALL LE and then opens the VERITAS Software Console.	
1. (continued)	c. Close the VERITAS Software Console, and then log off.

Exercise 3

Publishing Applications

Scenario

The Information Services department uses the Cosmo application. You want to make it available to all users, but Cosmo is not an essential application. Users should be able to install Cosmo from Add/Remove Programs, but Cosmo should not automatically install.

Goal

In this exercise, you will use Group Policy to publish Cosmo to the Information Services OU.

Tasks	Detailed Steps
1. Create a GPO named Application Publishing Policy and linked to the Information Services OU.	a. Log on as Administrator with a password of password . b. Open Active Directory Users and Computers from the Administrative Tools menu. c. Expand <i>domain.nwtraders.msft</i> , if necessary. d. Open the Properties dialog box for the Information Services OU. e. On the Group Policy tab, click New . f. Type Application Publishing Policy and then press ENTER. g. Leave the Information Services Properties dialog box open.
2. Modify the Application Publishing GPO to publish Cosmo: Assigned File Name: \\London\Labfiles\Packages\Cosmo1\Cosmo1.msi.	a. In the Information Services Properties dialog box, select the Application Publishing Policy GPO if necessary, and then click Edit . b. Under User Configuration , expand Software Settings , and then click Software installation . c. Right-click Software installation , point to New , and then click Package . d. Double-click cosmo1 , click cosmo1.msi , and then click Open . e. In the Deploy Software dialog box, verify that Published is selected, and then click OK . f. Close all open windows and dialog boxes, and the log off.

Exercise 4

Installing a Published Application

Scenario

After making changes to the Group Policy settings to enable them to publish applications, you want to test those settings to verify that the published applications are installed correctly.

Goal

In this exercise, you will install a published application by using Add/Remove Programs and by opening a document.

Tasks	Detailed Steps
1. Log on as Hduser and then install the published application by using Add/Remove Programs.	a. Log on as Hduser with a password of password. b. In Control Panel, click Add/Remove Programs, and then click Add New Programs.  <i>Cosmo 1 appears in the list of programs available from the network.</i> c. Click Add.  <i>Windows Installer installs Cosmo 1.</i> d. In the Cosmo 1 dialog box, click OK. e. Close Add/Remove Programs, and then close Control Panel. f. Verify that Cosmo 1 is installed, and then log off.
2. Log on as Csuser and determine whether Cosmo 1 is installed.	▪ Log on as Csuser with a password of password.
 Is Cosmo 1 installed? Why or why not? Cosmo 1 is not installed because it was published. It will only be installed when a user chooses to install it.	

Tasks	Detailed Steps
3. Install a published application through document invocation. Open the following file: <code>\\computer\Labfiles\Packages\Cosmo.cs00</code> (where <i>computer</i> is your assigned computer name)	a. In the Run box, type <code>\\computer\labfiles\packages</code> in the Open box, and then click OK.
 Is the file <code>Cosmo.cs00</code> associated with any application? No.	
3. (continued)	b. Double-click <code>Cosmo.cs00</code>.
 What happens? Why? Windows Installer installs Cosmo 1, and then Cosmo 1 opens the <code>Cosmo.cs00</code> file. Double-clicking the file causes a query to be sent to Active Directory to check for applications that have registered the <code>.cs00</code> extension. Because Cosmo 1 has been published and has registered the <code>.cs00</code> extension, the application is automatically installed.	
3. (continued)	c. Close all open windows, and then log off.

◆ Maintaining Deployed Software

Topic Objective

To introduce the topics related to maintaining software.

Lead-in

Windows 2000 allows you to upgrade existing versions of software.

- Upgrading Deployed Software
- Redeploying Software

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After software has been deployed, you may be required to modify it. You must be able to maintain or upgrade users' software to ensure that they have the most current version. The options available in Windows 2000 for maintaining software are upgrading software versions and redeploying software.

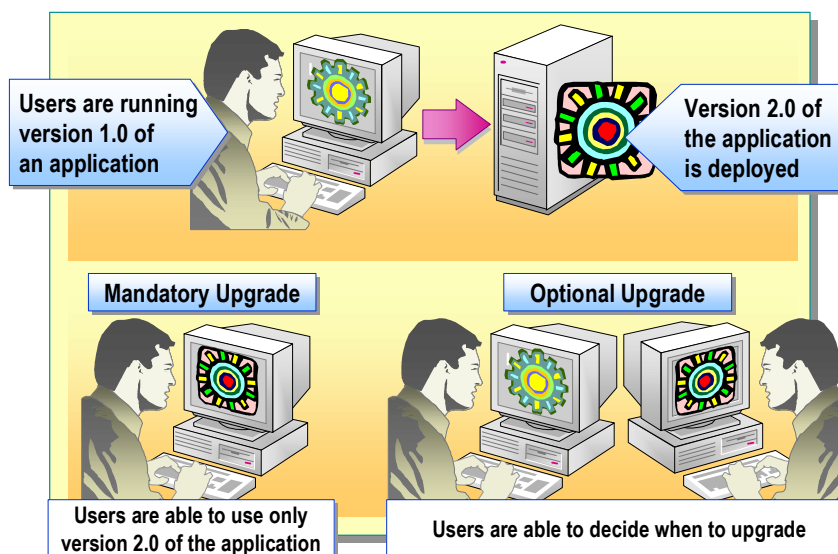
Upgrading Deployed Software

Topic Objective

To illustrate the procedure for deploying mandatory and optional upgrades.

Lead-in

Depending on your organization's needs, you can perform either a mandatory upgrade or an optional upgrade. Mandatory upgrades force users to upgrade to the most current version. Optional upgrades permit users to use two versions of an application simultaneously.



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Delivery Tip

Demonstrate how to implement both a mandatory and an optional upgrade.

Key Points

Mandatory upgrade automatically replaces an old version of software with an upgraded version.

Optional upgrade allows users to continue to use the old version of the software or to install the new version.

Because the tasks in an organization are dynamic and varied, you can use Group Policy to deploy and manage software by using upgrades that match the needs of the departments in your organization. The two types of upgrades are:

- *Mandatory upgrades.* Mandatory upgrades automatically replace an old version of software with an upgraded version. For example, if users are currently using software version 1.0, this version is removed, and software version 2.0 is installed the next time that the computer starts or the user logs on.
- *Optional upgrades.* Optional upgrades allow users to decide when to upgrade to the new version. For example, an optional upgrade allows users to determine if they want to upgrade to version 2.0 of the software or continue using version 1.0.

To deploy an upgrade, perform the following steps:

1. Deploy software version 2.0.
2. Open Software Installation, right-click the version 2.0, and then click **Properties**. In the **Properties** dialog box for package file, click the **Upgrades** tab.
3. In the **Packages that this package will upgrade** section, click **Add**, and then select version 1.0 of the application. If both versions 1.0 and 2.0 are native Windows Installer packages, this step will be done automatically.
4. Select the type of upgrade:
 - To perform a mandatory upgrade, select the **Required upgrade for existing packages** check box, and then click **OK**.
 - To perform an optional upgrade, clear the **Required upgrade for existing packages** check box, and then click **OK**.

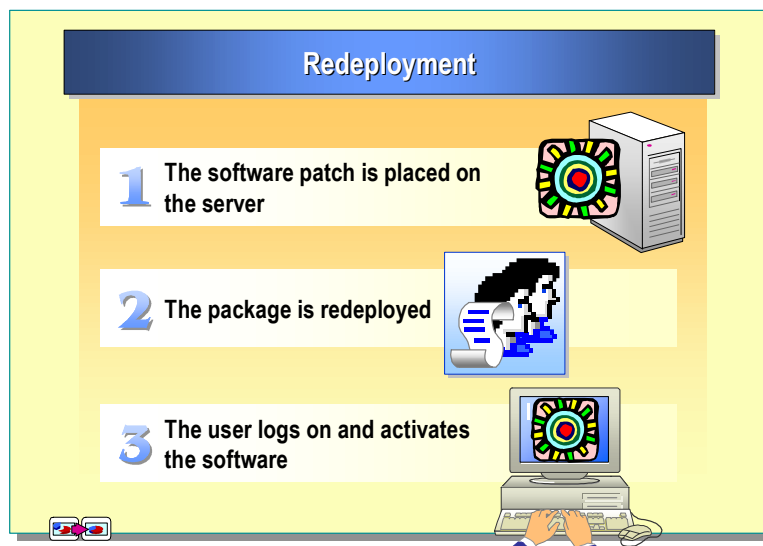
Redeploying Software

Topic Objective

To illustrate how to redeploy software.

Lead-in

Redeployment offers a way for administrators to automatically apply service packs or software patches throughout their entire organizations.



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Discuss the three bulleted scenarios and how redeployment is used in each.

Emphasize the fact that redeployment involves not only obtaining the updated application files, but also obtaining a new Windows Installer package file.

Delivery Tip

Demonstrate how to redeploy an application.

Redeployment is applying service packs and software patches to deployed software. When you mark a package file for redeployment, the software is advertised to everyone who has been granted access to the application, either through assigning or publishing. Then, depending on how the original package was deployed, one of three scenarios occurs:

- If the software was assigned to a user, the **Start** menu, desktop shortcuts, and registry settings relevant to that software will be updated the next time that the user logs on. The next time that the user starts the software, the service pack or software patch is automatically applied.
- If the software was assigned to a computer, the service pack or software patch will automatically be applied the next time that the computer starts up.
- If the software was published and installed, the **Start** menu, desktop shortcuts, and registry settings relevant to that software will be updated the next time that the user logs on. The next time that the user starts the software, the service pack or software patch is automatically applied.

To redeploy a software package, perform the following tasks:

1. Obtain the service pack or software patch from the application vendor and place the files in the appropriate installation folders.

The service pack must include a new Windows Installer package file (.msi file). If it does not, you cannot redeploy the software, because only the original package file contains instructions for deploying the new files added by the service pack or software patch.

2. Open the GPO that originally deployed the software.
3. Open Software Installation, right-click the package file name, point to **All Tasks**, and then click **Redeploy Application**. In the **Redeployment** dialog box, click **Yes**.

When the user logs on to the computer, the application will apply the service pack or software patch.

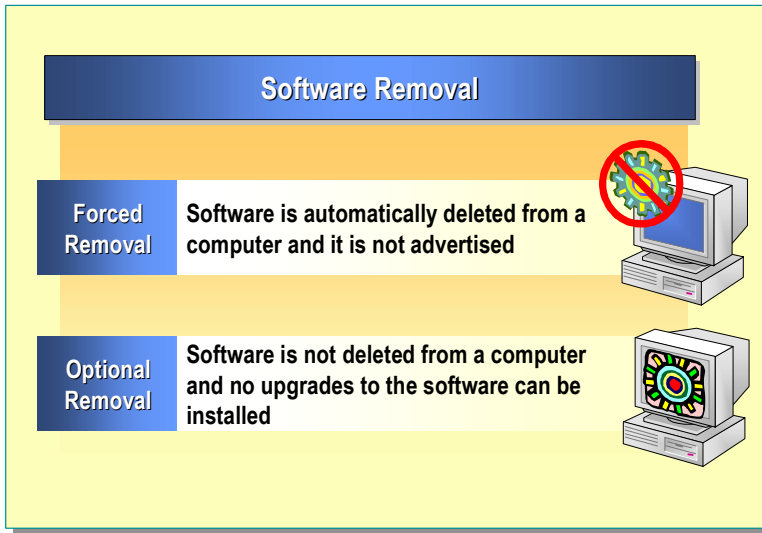
Removing Deployed Software

Topic Objective

To describe the method for removing deployed software.

Lead-in

Software Installation provides administrators with two different ways to remove deployed software: forced removal or optional removal.



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Delivery Tip

Demonstrate how to remove deployed software. Show both forced removal and optional removal.

When you use Group Policy to deploy software, you can configure a GPO for removing software that is outdated or is no longer required by your organization. You can also remove old software by configuring the GPO to allow users to optionally upgrade to a new software package.

To remove the deployed software, perform the following steps:

1. Open the GPO that was originally used to deploy the software.
2. In Software Installation, right-click the name of the package, point to **All Tasks**, and then click **Remove**.
3. In the **Remove Software** dialog box, select one of the options described in the following table, and then click **OK**.

Option	Comments
Immediately uninstall software from users and computers (Forced removal)	Software is automatically deleted from a computer, either the next time that the computer is turned on or the next time that a user logs on (which is what occurs in the case of a user Group Policy setting). Removal takes place before the desktop appears.
Allow users to continue to use the software but prevent new installations (Optional removal)	Software is not actually removed from computers. The software will no longer be listed in Add/Remove Programs, but the users who had this software will still be able use it. If users manually delete the software, they will not be able to reinstall it.

Lab B: Upgrading and Removing Software

Topic Objective

To introduce the lab.

Lead-in

In this lab, you will deploy mandatory and optional upgrades of software by using Group Policy. You will also remove software previously deployed by using Group Policy.



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Explain the lab objectives.

Objectives

After completing this lab, you will be able to:

- Use Group Policy to deploy mandatory upgrades of software.
- Use Group Policy to deploy optional upgrades of software.
- Use Group Policy to remove software previously deployed by using Group Policy.

Prerequisites

Before working on this lab, you must have the knowledge and skills necessary to create Group Policy objects.

Lab Setup

To complete this lab, you need the following:

- A computer running Windows 2000 Advanced Server that is configured as a domain controller.

Estimated time to complete this lab: 30 minutes

Exercise 1

Deploying Application Upgrades

Scenario

At Northwind Traders, all of your users are currently using the Cosmo1 application. Now you want to perform an optional upgrade to Cosmo2 for most of the organization. However, you want to force the users in the Customer Support OU to perform a mandatory upgrade. You do not want to visit every computer to manually install the software, so you will use Group Policy to perform the upgrades.

Goal

In this exercise, you will deploy both an optional and a mandatory upgrade to previously deployed applications.

Tasks	Detailed Steps
1. Deploy an optional upgrade from Cosmo1 to Cosmo2 for the Information Services OU. • GPO: Application Publishing Policy. • Application: Cosmo2 upgrades Cosmo1.	a. Log on as Administrator with a password of password. b. Open Active Directory Users and Computers from the Administrative Tools menu. c. Open the Properties dialog box for Information Services. d. On the Group Policy tab, click Application Publishing Policy, and then click Edit. e. Under User Configuration, expand Software Settings, and then click Software installation. f. Right-click Software installation, point to New, and then click Package. g. In the Look in box, click packages, double-click Cosmo2, click Cosmo2, and then click Open. h. In the Deploy Software dialog box, click Advanced published or assigned, and then click OK. i. On the Upgrades tab, click Add. j. Under Package to upgrade, select Cosmo1, click OK, and then click OK to close the Cosmo 2 Properties dialog box.  <i>Cosmo 2 appears in the list of deployed software. Notice that the upgrade type is set to Optional.</i> k. Close Group Policy, and then click OK to close the Information Services Properties dialog box. l. Leave Active Directory Users and Computers open.
2. Create a new GPO linked to the Customer Support OU. Name the GPO Mandatory Upgrade Policy.	a. Open the Properties dialog box for the Customer Support OU. b. On the Group Policy tab, click New. c. Type Mandatory Upgrade Policy and then press ENTER. d. Leave the Customer Support OU Properties dialog box open.

Tasks	Detailed Steps
3. Deploy a mandatory upgrade from Cosmo1 to Cosmo2 for the Customer Support OU. • GPO: Mandatory Upgrade Policy. • Application: Cosmo2 upgrades Cosmo1.	- In the Customer Support Properties dialog box, on the Group Policy tab, click Mandatory Upgrade Policy, and then click Edit. - Under User Configuration, expand Software Settings, and then click Software Installation. - Right-click Software Installation, point to New, and then click Package. - Click Cosmo2, and then click Open. - Click Advanced published or assigned, and then click OK. - On the Upgrades tab, click Add. - In the Add Upgrade Package dialog box, click A specific GPO, and then click Browse. - In the Domains, OUs and linked Group Policy Objects list, double-click Information Services.domain.nwtraders.msft, click Application Publishing Policy, and then click OK. - In the Add Upgrade Package dialog box, ensure that Cosmo 1 (Application Publishing Policy) is selected, and then click OK. - In the Cosmo 2 Properties dialog box, click Required upgrade for existing packages, and then click OK.  <i>Cosmo 2 appears in the list of deployed software. Notice that the upgrade type is set to Required.</i> - Close all open windows and dialog boxes, and then log off.

Exercise 2

Testing Application Upgrades

Scenario

After making changes to the Group Policy settings for the mandatory upgrade and the optional upgrade, you want to test those settings, to verify that the software is upgraded and that all of the components work correctly.

Goal

In this exercise, you will test the results of mandatory and optional upgrades.

Tasks	Detailed Steps
1. Log on as Hduser to test the optional upgrade.	a. Log on as Hduser with a password of password .
	Which version of Cosmo appears on the Start menu? Why? Cosmo 1 still appears on the Start menu because Cosmo 2 was deployed to the Information Services OU as an optional upgrade.
	 How would this user upgrade to Cosmo 2? The upgrade to Cosmo 2 would be performed through Add/Remove Programs in Control Panel.
1. (continued)	b. Upgrade to Cosmo 2, and then log off.

Tasks	Detailed Steps
2. Log on as Csuser to test the mandatory upgrade.	a. Log on as Csuser with a password of password .
? Which version of Cosmo appears on the Start menu? Why? Cosmo 2 appears on the Start menu because Cosmo 2 was deployed to the Customer Support OU as a mandatory upgrade.	
2. (continued)	b. Open Cosmo 2 from the Start menu.
? What happens when you open Cosmo 2? Windows Installer installs Cosmo 2 and then the application is opened.	
2. (continued)	c. Close all open windows, and then log off.

Exercise 3

Removing Deployed Software

Scenario

Your trial period for Cosmo 2 has expired, and you have decided to upgrade to the new package. You have been told that to get the best results from the Cosmo program, you should remove Cosmo 2, which is a limited trial version, before deploying the full version. You also will be phasing out the Veritas WinINSTALL LE application, which means that you want users to be able to continue using Veritas WinINSTALL LE, but you do not want users to be able to install it. You want to remove the software without visiting each computer. You can use Group Policy settings to perform this function for you.

Goal

In this exercise, you will remove an application that was deployed in a previous exercise, by using both forced removal and optional removal.

Tasks	Detailed Steps
1. Implement a forced removal of Cosmo 2, which was previously deployed in the Application Publishing Policy GPO.	- Log on as Administrator with a password of password. - Open Active Directory Users and Computers from the Administrative Tools menu. - Open the Properties dialog box for Information Services. - On the Group Policy tab, click Application Publishing Policy, and then click Edit. - Under User Configuration, expand Software Settings, and then click Software installation. - Right-click Cosmo 2, point to All Tasks, and then click Remove. - In the Remove Software dialog box, ensure that Immediately uninstall software from users and computers is selected, and then click OK. - Close Group Policy. - Leave the Information Services Properties dialog box open.
2. Implement an optional removal of Veritas WinINSTALL LE, which was previously deployed in the Application Assignment Policy GPO.	- On the Group Policy tab, click Application Assignment Policy, and then click Edit. - Under User Configuration, expand Software Settings, and then click Software installation. - Right-click WinINSTALL LE, point to All Tasks, and then click Remove. - In the Remove Software dialog box, click Allow users to continue to use the software, but prevent new installations, and then click OK. - Close all open windows and dialog boxes, and then log off.

Exercise 4

Testing the Removal of Deployed Applications

Scenario

Now that you have made the changes necessary to remove the deployed software, you need to test the results.

Goal

In this exercise, you will test the results of forced and optional removal of deployed applications.

Tasks	Detailed Steps
1. Log on as Hduser to test the removal of the applications.	a. Log on as Hduser with a password of password .
 Is Cosmo 2 still installed? Why or why not? No, Cosmo 2 was removed during the logon process because it was marked as a forced removal. _____ _____ _____ _____	
 Is Veritas WinINSTALL LE still installed? Why or why not? Yes, Veritas WinINSTALL LE is still installed because it was marked as an optional removal. _____ _____ _____ _____	
1. <i>(continued)</i>	b. Log off.
2. Log on as Administrator and then run the Rmous.vbs script file in the C:\Moc\Win2154A\Labfiles folder. This script removes all OUs created in the labs in this module.	a. Log on as Administrator with a password of password. b. Open the C:\Moc\Win2154A\Labfiles folder. c. Double-click Rmous.vbs, which removes all of the OUs created during the labs in this module. d. Restart your computer.

Troubleshooting Software Deployment

Topic Objective

To introduce troubleshooting options for resolving problems that may occur when using Group Policy to deploy software.

Lead-in

You may encounter problems when deploying software by using Group Policy. Here are some of the more common problems that you may encounter, along with suggested strategies for resolving them.



Applications Do Not Appear As Expected



Applications Cannot Be Installed



Applications Are Not Deployed As Expected

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The following are some of the more common problems that you may encounter when using Group Policy to deploy software, and suggested strategies for resolving them:

- *Applications do not appear as expected.* This is most likely caused by a problem in the way that the applications were deployed. To determine whether an application has been assigned or published to a user, log on as that user and open Add/Remove Programs in Control Panel.
 - If the application appears in Add/Remove Programs, but there is no **Start** menu shortcut, this means that the application has been published rather than assigned.
 - If the application does not appear in Add/Remove Programs, the application was never deployed, it was deployed in the wrong OU, or the user is a member of a security group that is being filtered out from the effects of this GPO.
- *Application cannot be installed.* This is probably because a user cannot gain access to the software distribution point; for example, the server hosting that network may be unavailable. Verify that users have at least the Read and NTFS file system permission for the software distribution point.
- *Applications are not deployed as expected.* This is probably caused by Group Policy conflicts. It is possible to assign a user an application at one level of Active Directory (for example, at the domain level), and then deny them access to that application at a lower level (for example, at the OU level). Another probable cause is that applications can also be assigned to computers, and computer policy in most cases overrides user policy. If a user has been assigned Word, but Word has been marked for mandatory removal from a computer, that user will not receive Word when logging on to that computer.

Best Practices

Topic Objective

To list best practices for deploying software.

Lead-in

Review this checklist before you deploy software.



Deploy Package Files to a Test Group of Users First



Use Domain-based Dfs



Specify a Software Distribution Point for Package Files Location



Organize Applications by Function



Do Not Use Two Different Methods to Deploy the Same Software

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Delivery Tip

Emphasize the reason for each best practice.

Emphasize that it is recommended that you use groups for software deployment, instead of using individual user accounts.

Consider the following best practices for using Group Policy to deploy and manage applications:

- Deploy package files gradually or to a test group of users first, before you make them available to all users. Gradual deployment and testing can help you to identify and resolve package problems before you deploy the application to the entire organization.
- Use domain-based Dfs for the software distribution points. Clients then attempt to install deployed software from a Dfs replica in their own site, thus reducing network traffic across slow wide area network (WAN) links.
- Specify a default software distribution point where package files are located if you will be publishing or assigning multiple applications in a GPO.
- Organize applications by function to make it easier to locate them when creating software policies. For example, create a folder named Graphic Tools in the software distribution shared folder, and then under the Graphic Tools folder, create a folder for each graphics application that you are deploying. Try to use folder names that are consistent with the software categories for the applications.
- Do not use two different methods to deploy the same software. Deploy software by assigning it either to users or to computers, but never to both users and computers.

Review

Topic Objective

To reinforce module objectives by reviewing key points.

Lead-in

The review questions cover some of the key concepts taught in the module.

- Introduction to Managing Software Deployment
- Windows Installer Technology
- Deploying Software
- Configuring Software Deployment
- Maintaining Deployed Software
- Removing Deployed Software
- Troubleshooting Software Deployment
- Best Practices

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Give students time to read and answer the review questions on their own, and then discuss the answers as a group.

1. Because Word 2000 is used on a daily basis by all of the users in your organization, you want to make sure that it is available, even if users delete the application by mistake. Which deployment method should you use to install this application if the application needs to be always installable?

Assign Word 2000 to users or computers.

2. You need to deploy an accounting application used only by users in the Payroll OU and the users must have access to that application. What deployment method should you use to install this application?

You should create a GPO linked to the Payroll OU that assigns the accounting application to users, which ensures that the application is available to users regardless of which computer they use.

3. For organizations that have many published applications, how can you make it easy for users to locate applications that they need in Add/Remove Programs?

Create categories to classify how applications appear within Add/Remove Programs. For example, you can build your categories around application types (word processing or graphics), or around departments (Accounting applications and Human Resources applications).

4. Your company assigns a virus protection application, which is frequently updated, to all of the computers in your organization. You need to ensure that the latest version of the application is installed on all computers in the organization. What should you do when you receive the latest version of the application from the vendor?

Deploy the new version as a mandatory upgrade to the existing application. A mandatory upgrade automatically replaces an old version of an application with the upgraded version.