Lesson 1: Deploying and Managing Server Images

MOAC 70-411: Administering Windows Server 2012

Microsoft Official Academic Course

WILEY

Overview

- Exam Objective 1.1: Deploy and Manage Server Images
- Using Windows Deployment Services

Using Windows Deployment Services

Lesson 1: Deploying and Managing Server Images

Windows Deployment Services (WDS)

- WDS is a software platform and technology that allows you to perform automated network-based installations based on network-based boot and installation media.
- The WDS server stores the installation files and helps you manage the boot and operating system image files used in network installations.

Preboot Execution Environment (PXE)

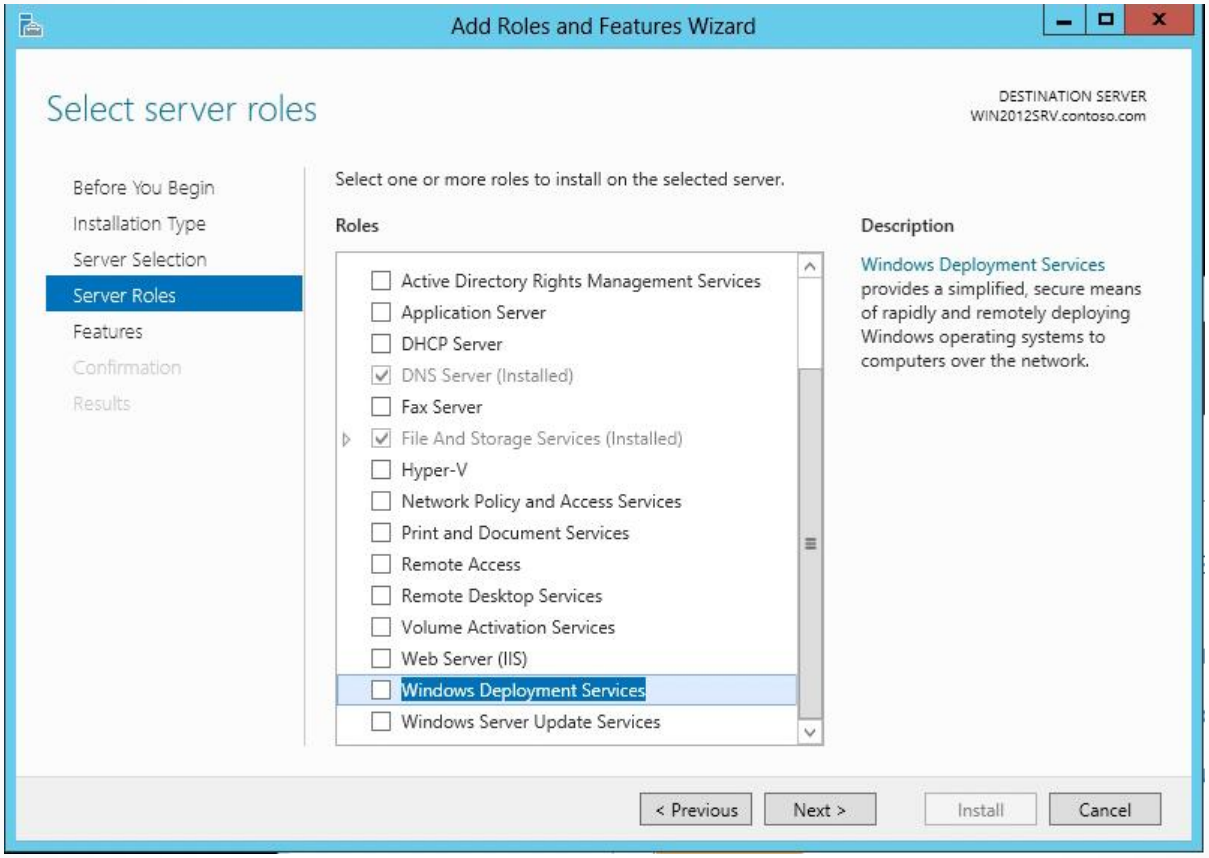
- For client computers to communicate with a WDS server without an operating system, the client computer must support preboot execution environment (PXE).
- When PXE is used with WDS, the client computer downloads a boot image that loads Windows Preinstallation Environment (Windows PE).
- Windows PE is a minimal Windows operating system with limited services. Windows PE is then used to install the operating system using an operating system image file.

Installing the WDS Role

WDS is a server role included with Windows Server 2012. The WDS role includes the following two role services:

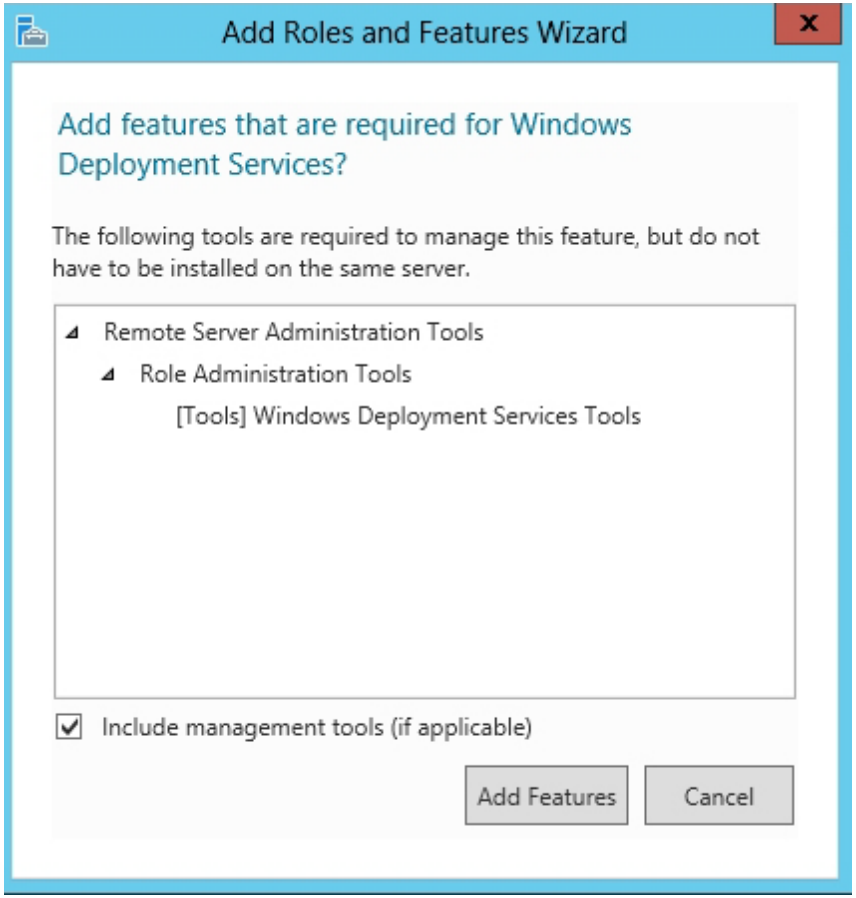
- Deployment Server
- Transport Server

Deploy WDS



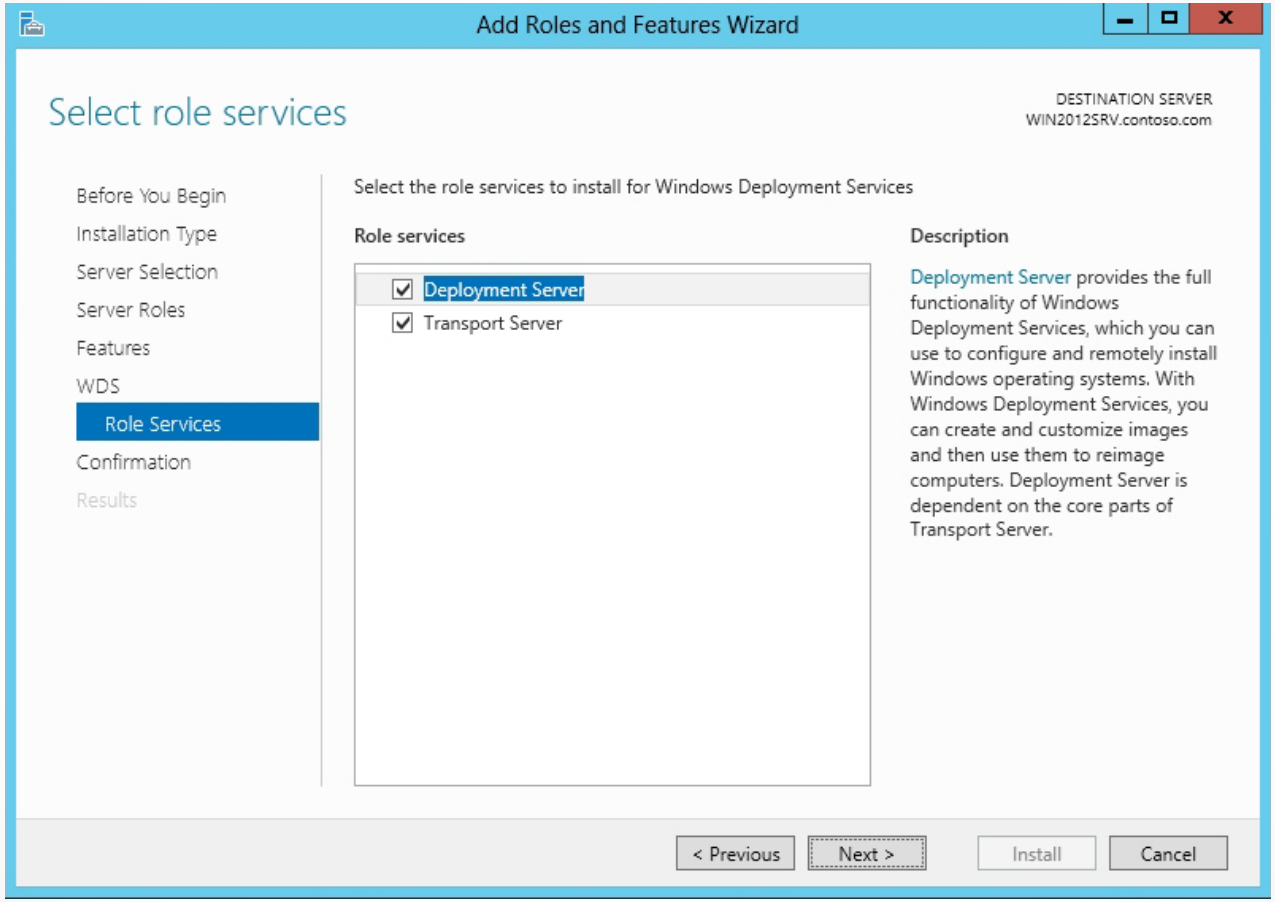
Selecting Windows Deployment Services

Deploy WDS



Adding required features for WDS

Deploy WDS



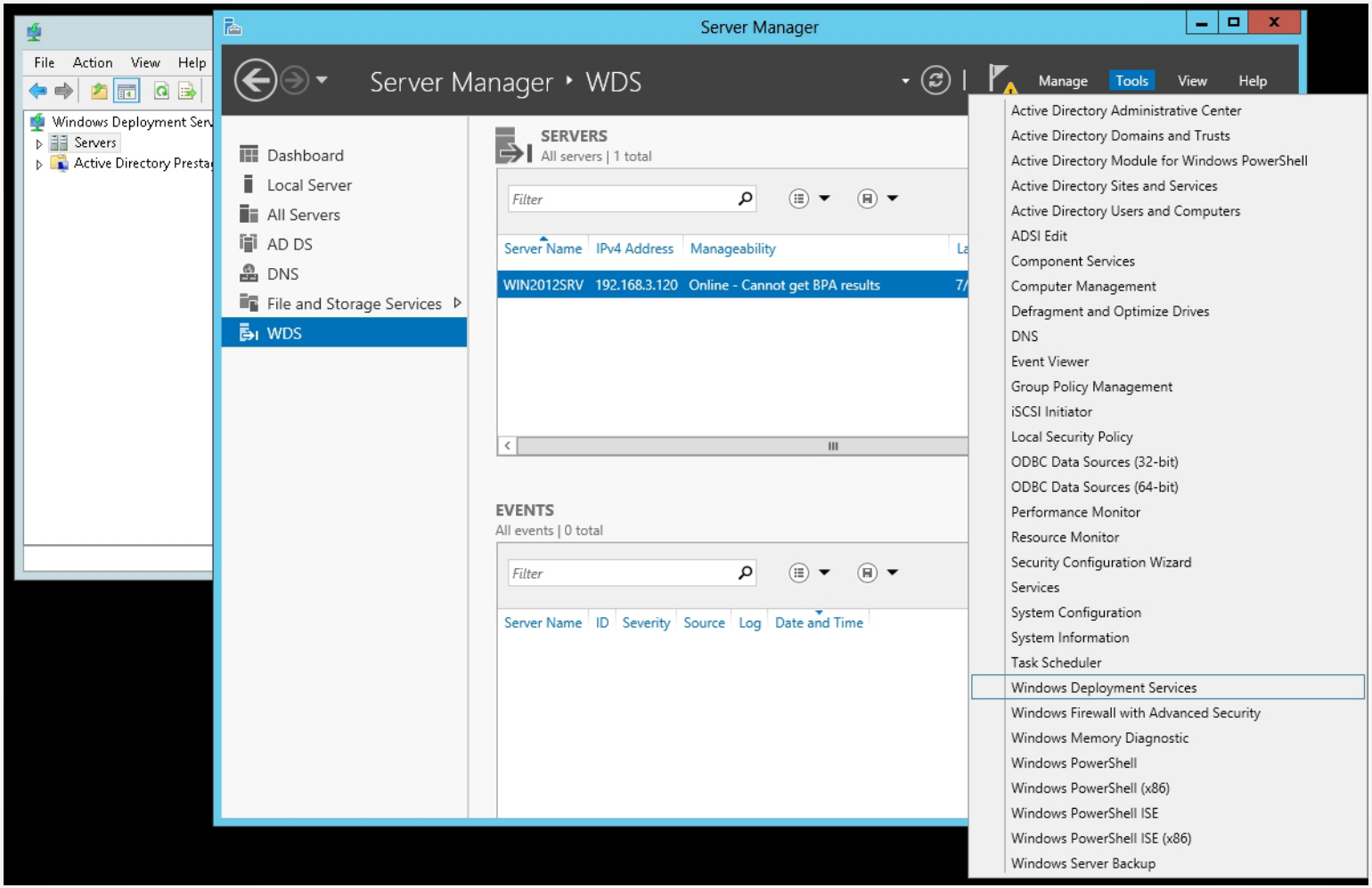
Selecting the WDS role services

Configuring the WDS Server

To use WDS, your system must meet the following requirements:

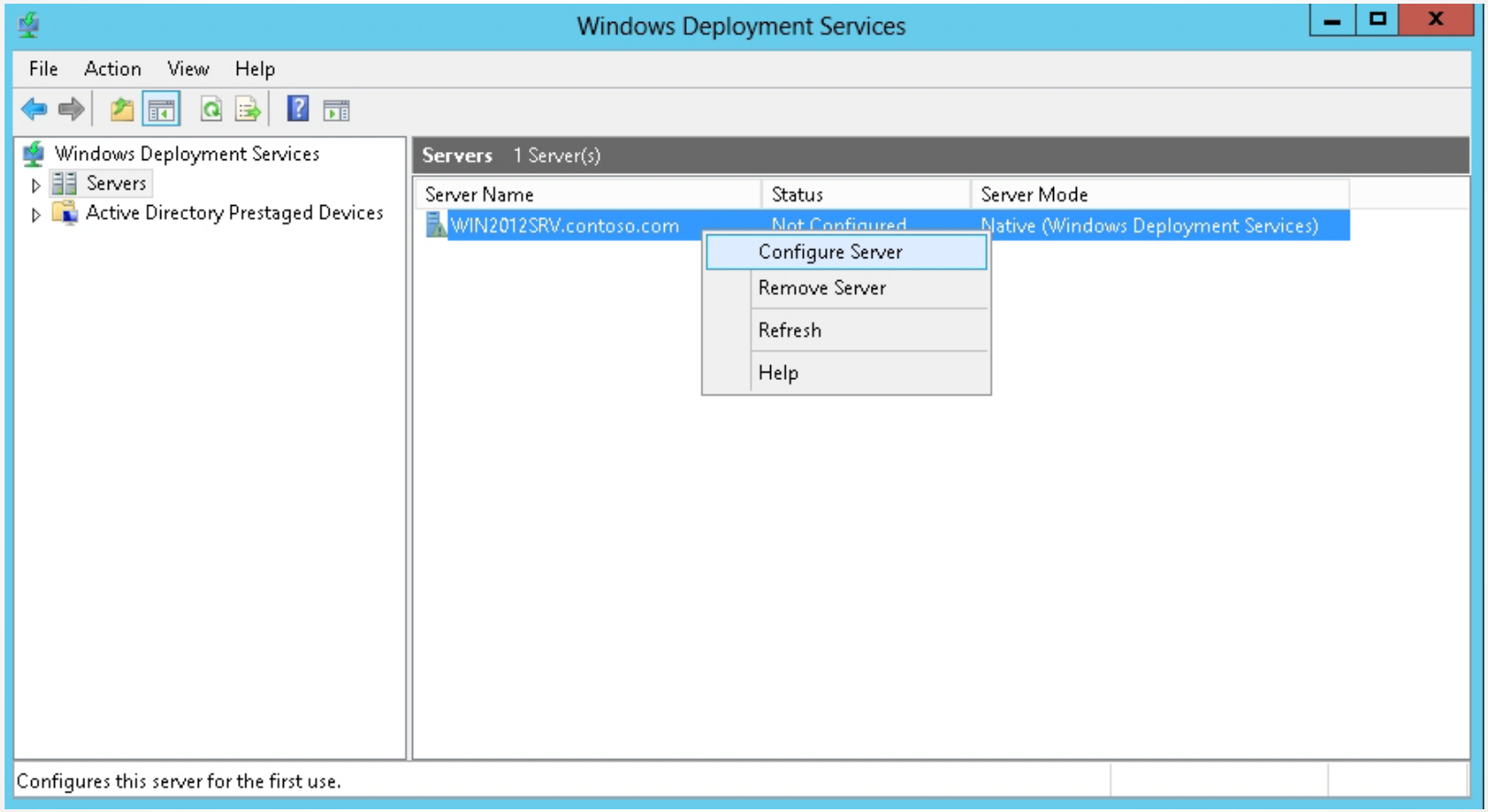
- The server is a member of an Active Directory Domain Services (AD DS) domain, or a domain controller for an AD DS domain.
- There is an active DHCP server on the network.
- There is an active DNS server on your network.
- The WDS server has an NTFS file system partition to store images.

Perform the Initial Configuration of WDS



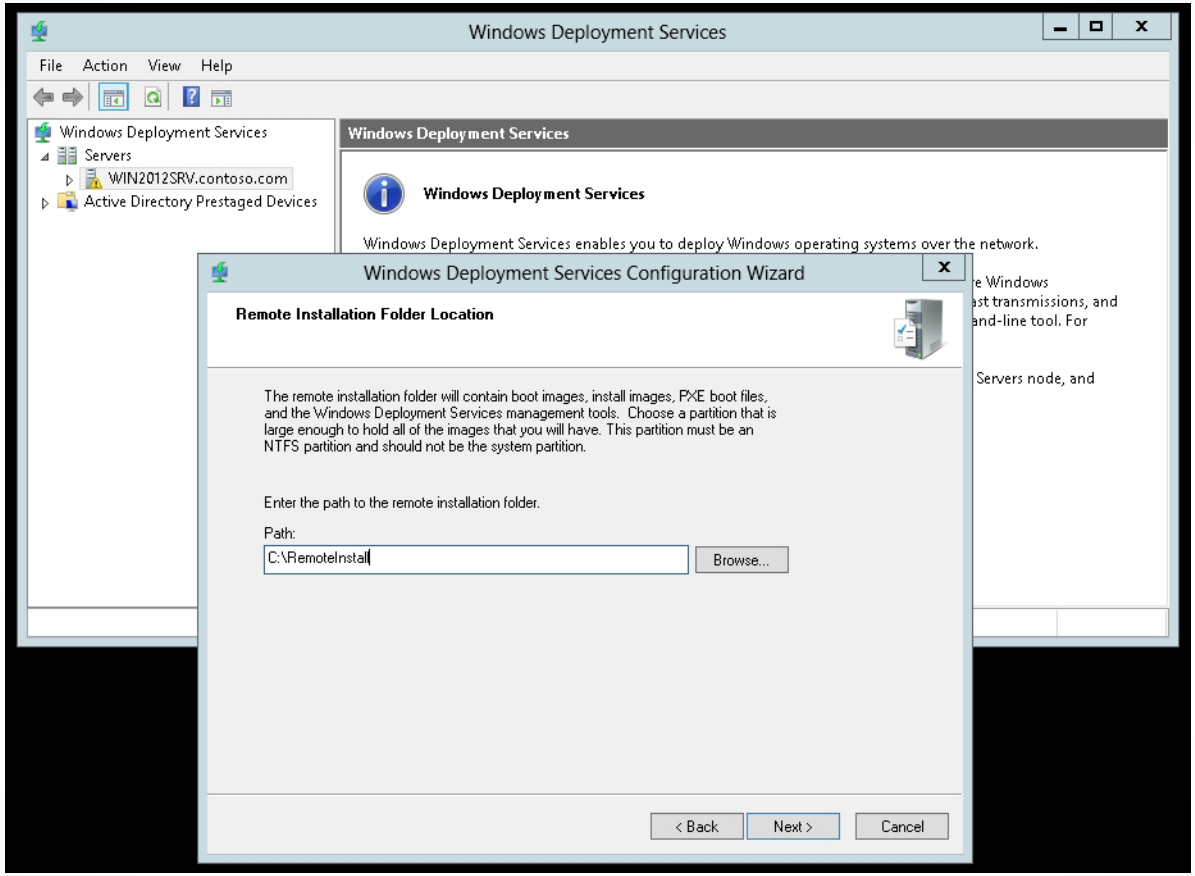
Opening the Windows Deployment Services console

Perform the Initial Configuration of WDS



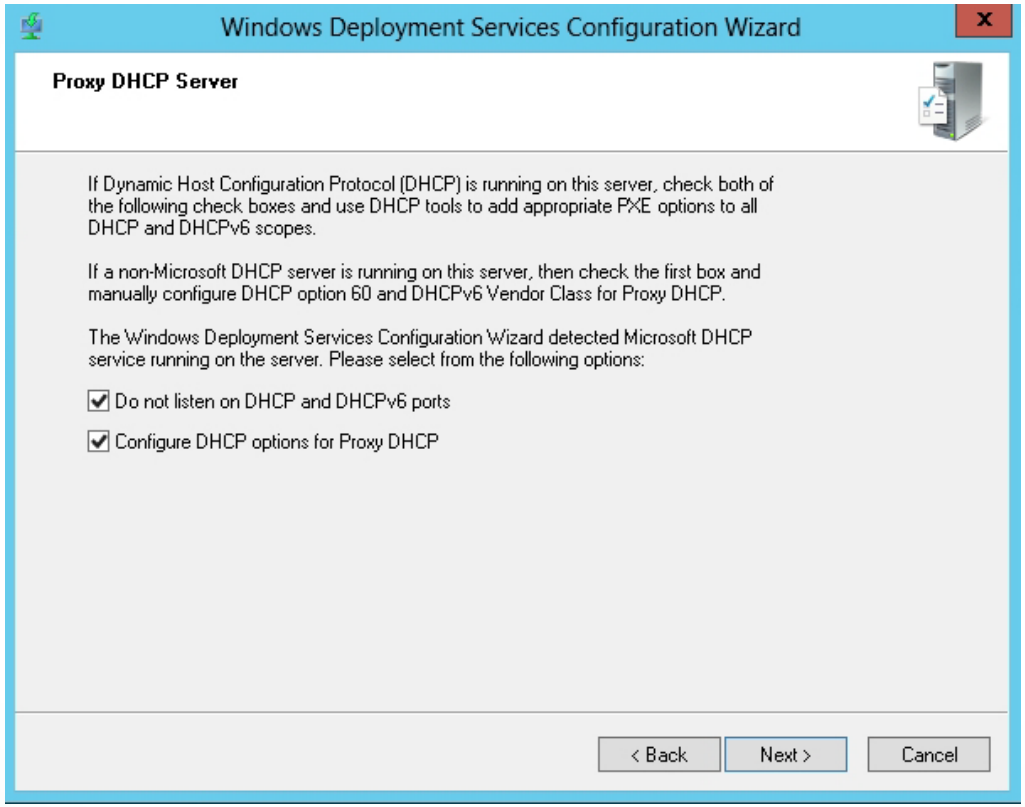
Starting the Initial Configuration Wizard for WDS

Perform the Initial Configuration of WDS



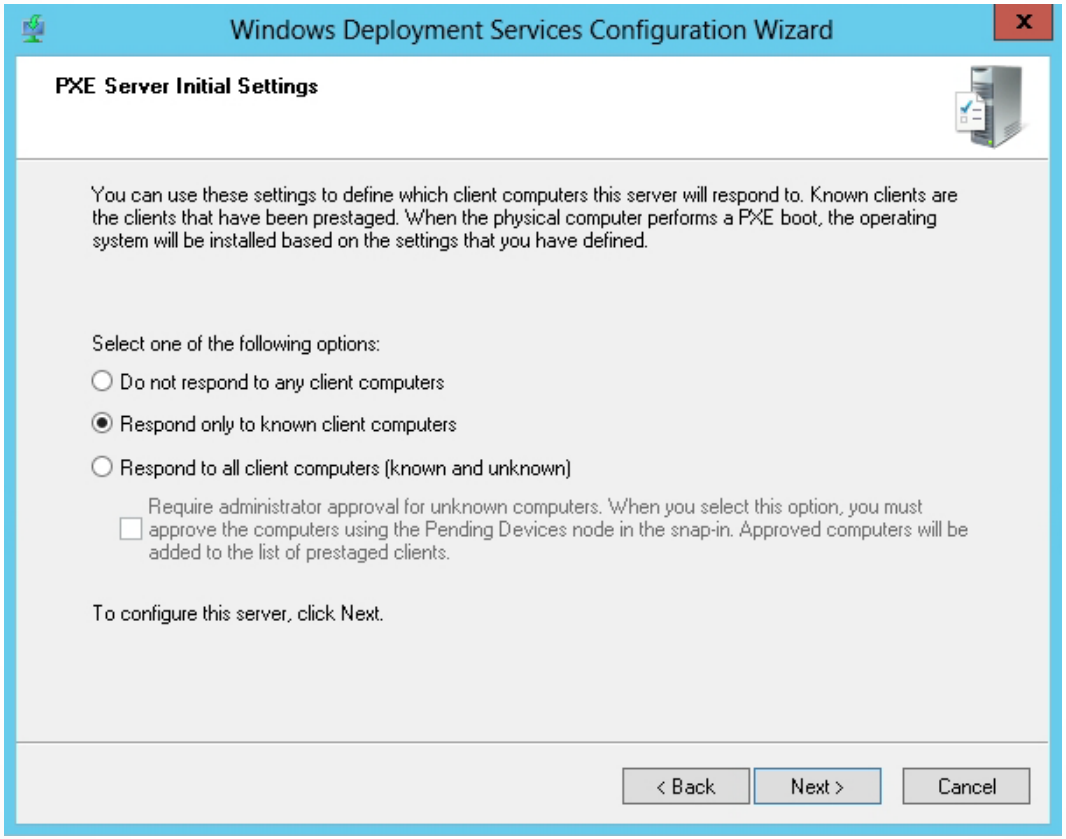
Specifying the location of the remote installation folder

Perform the Initial Configuration of WDS



Specifying the DHCP Server options to work with WDS

Perform the Initial Configuration of WDS



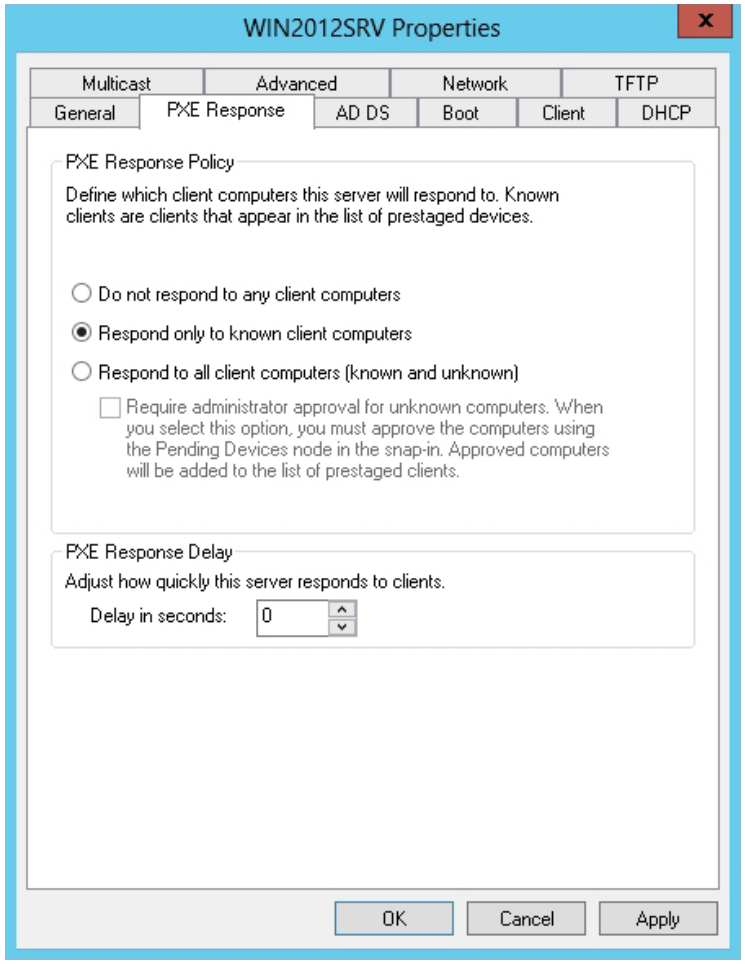
Specifying how WDS/PXE server responds to clients

Configuring the WDS Properties

After the initial configuration, you must reconfigure the WDS server by accessing the WDS Properties.

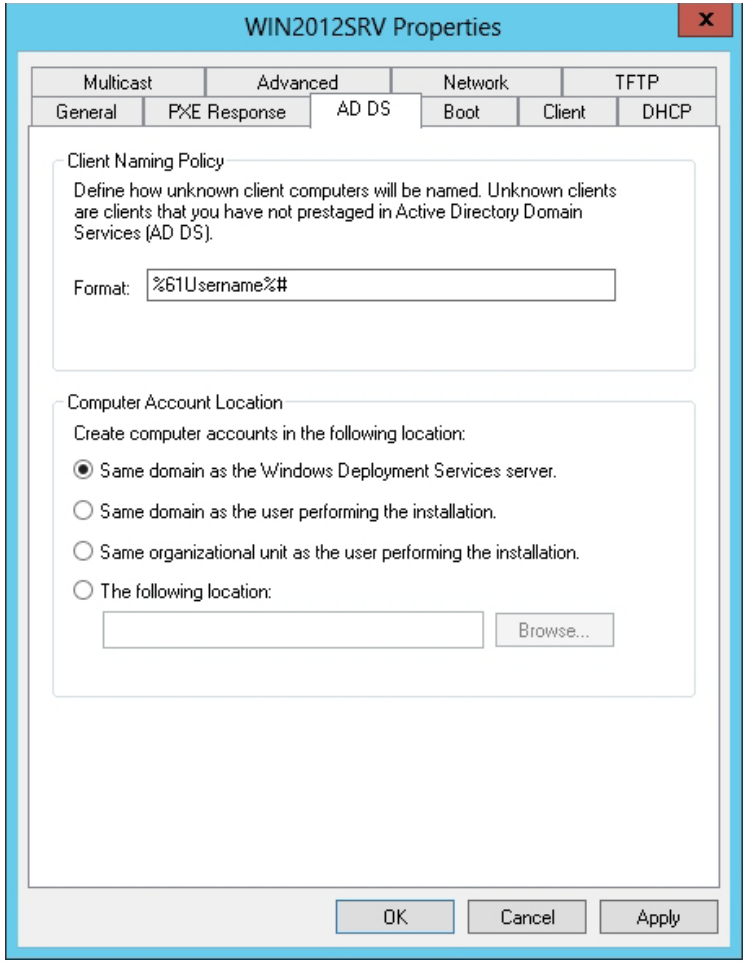
- Right-click the server in the Windows Deployment Services console and then select Properties.

WDS Server Properties



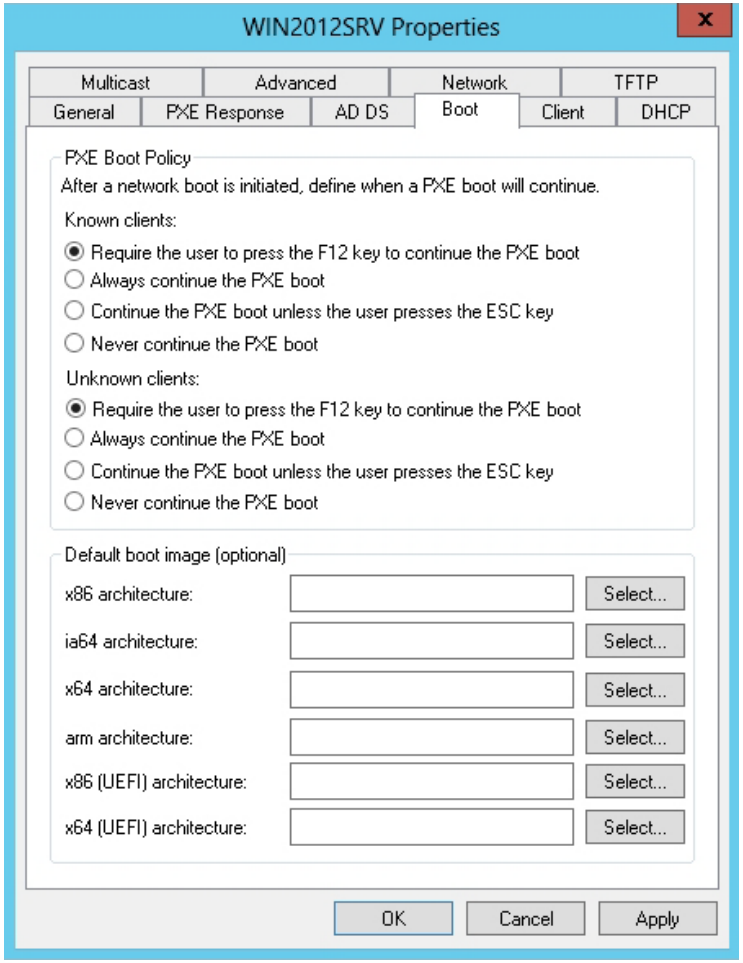
The PXE Response tab

WDS Server Properties



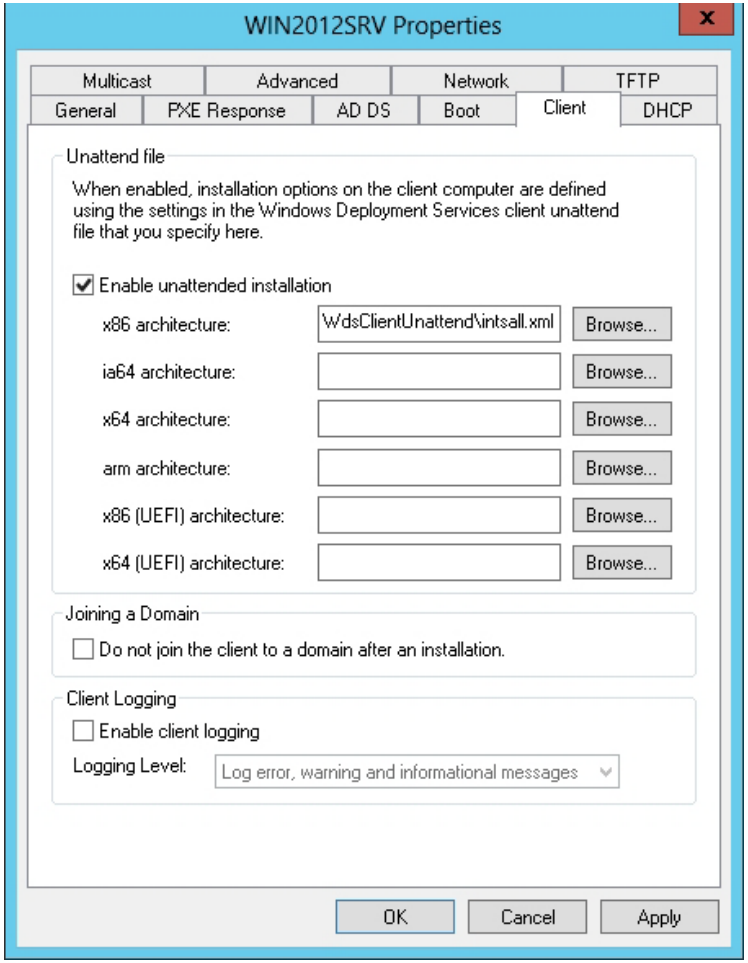
The AD DS tab

WDS Server Properties



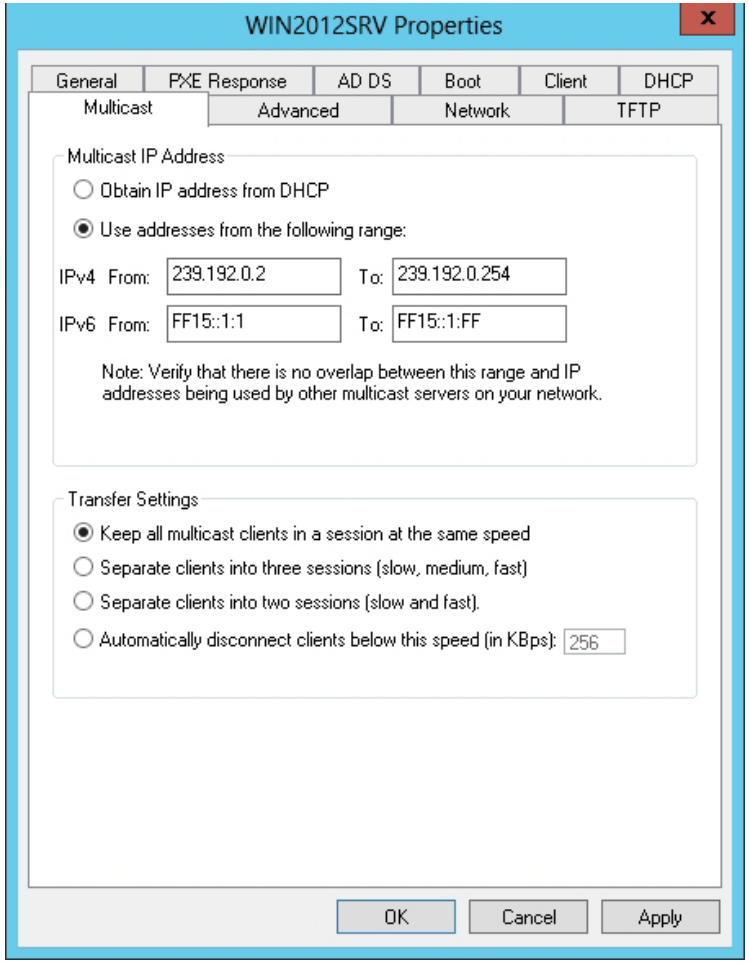
The Boot tab

WDS Server Properties



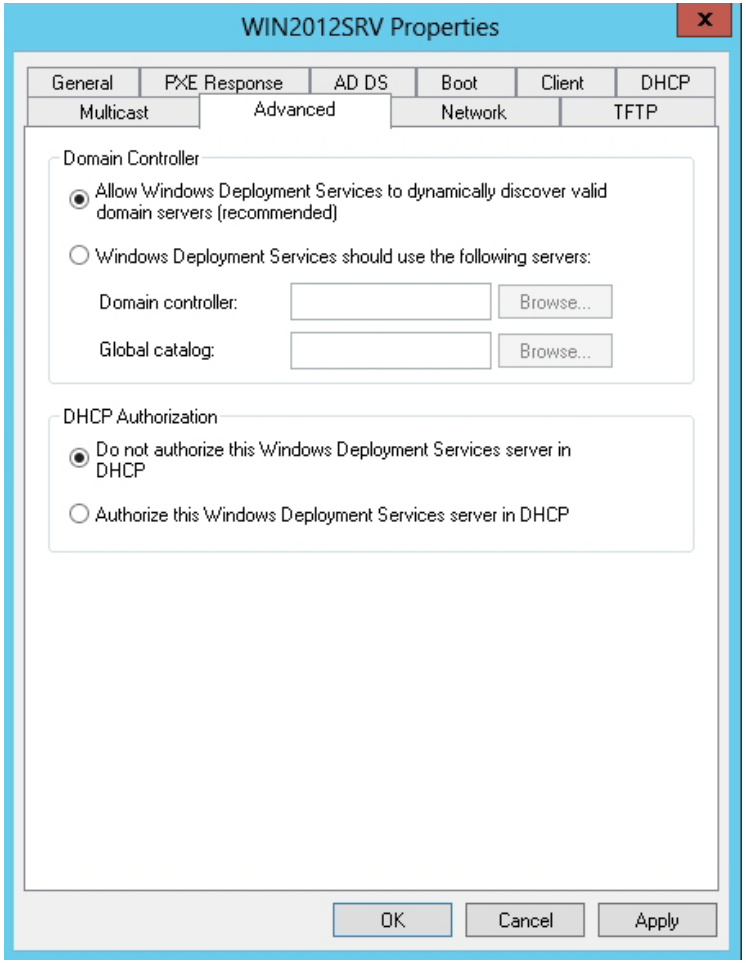
The Client tab

WDS Server Properties



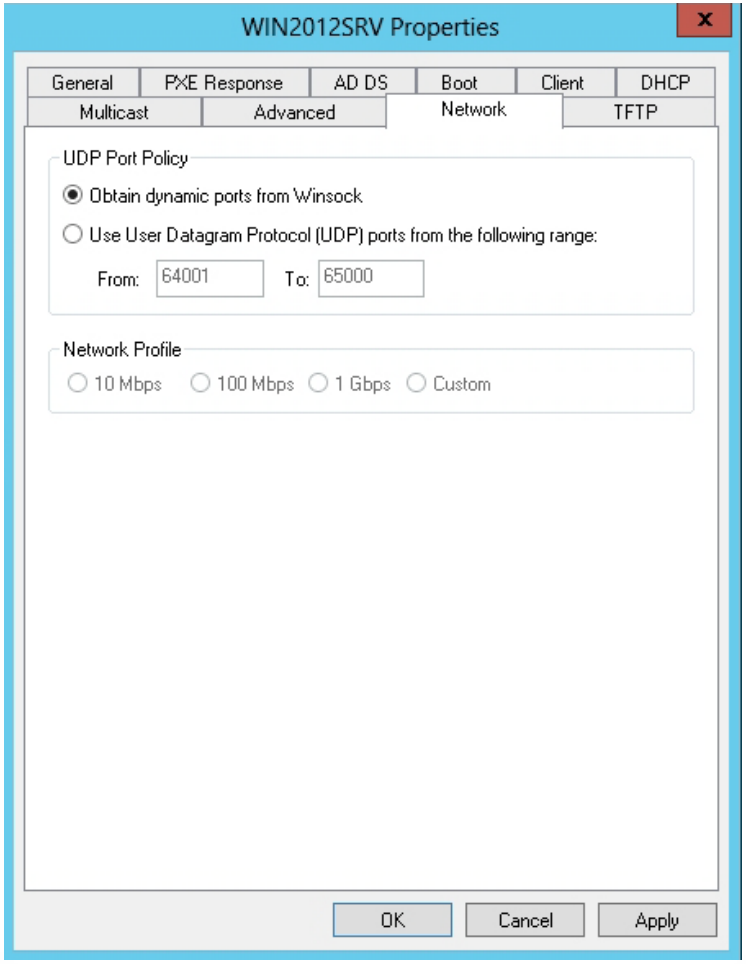
The Multicast tab

WDS Server Properties



The Advanced tab

WDS Server Properties

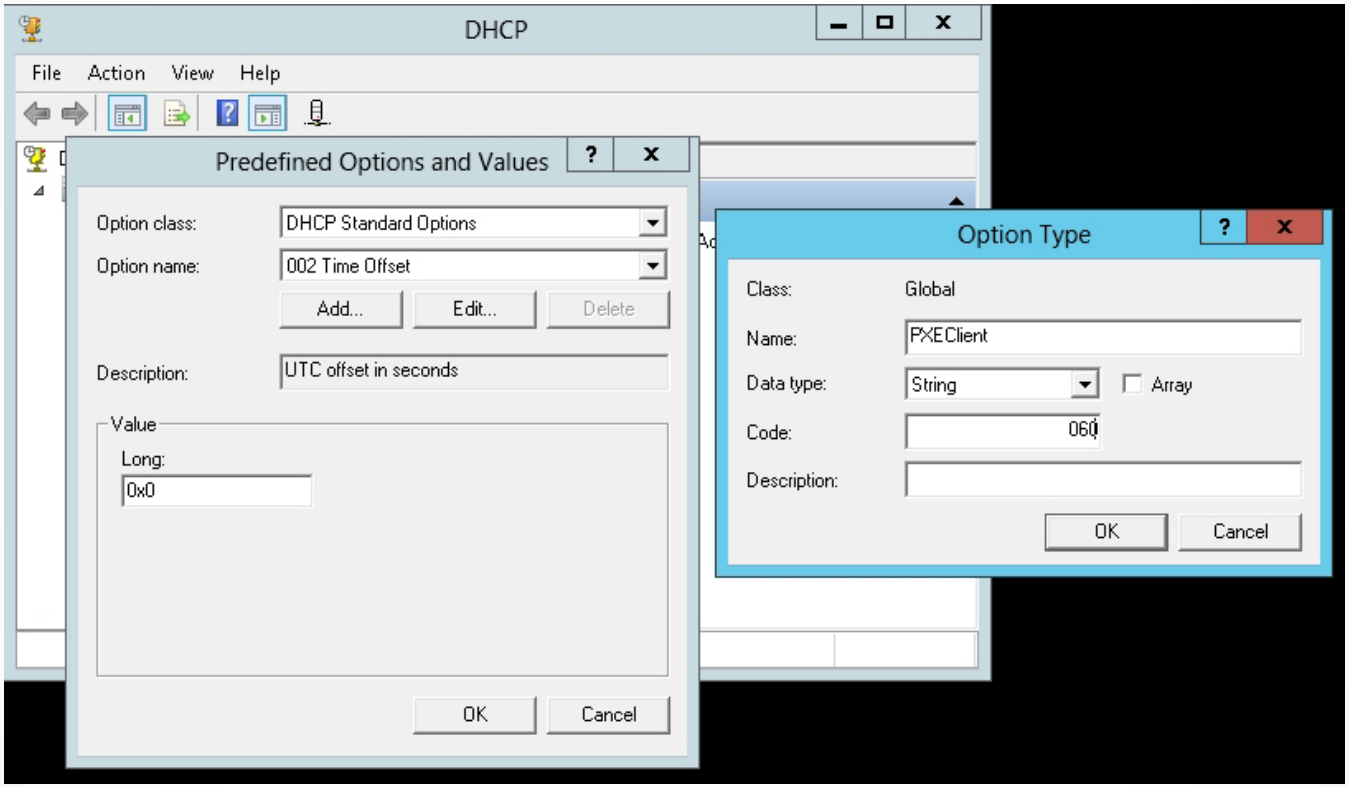


The Network tab

Configuring the Custom DHCP Option

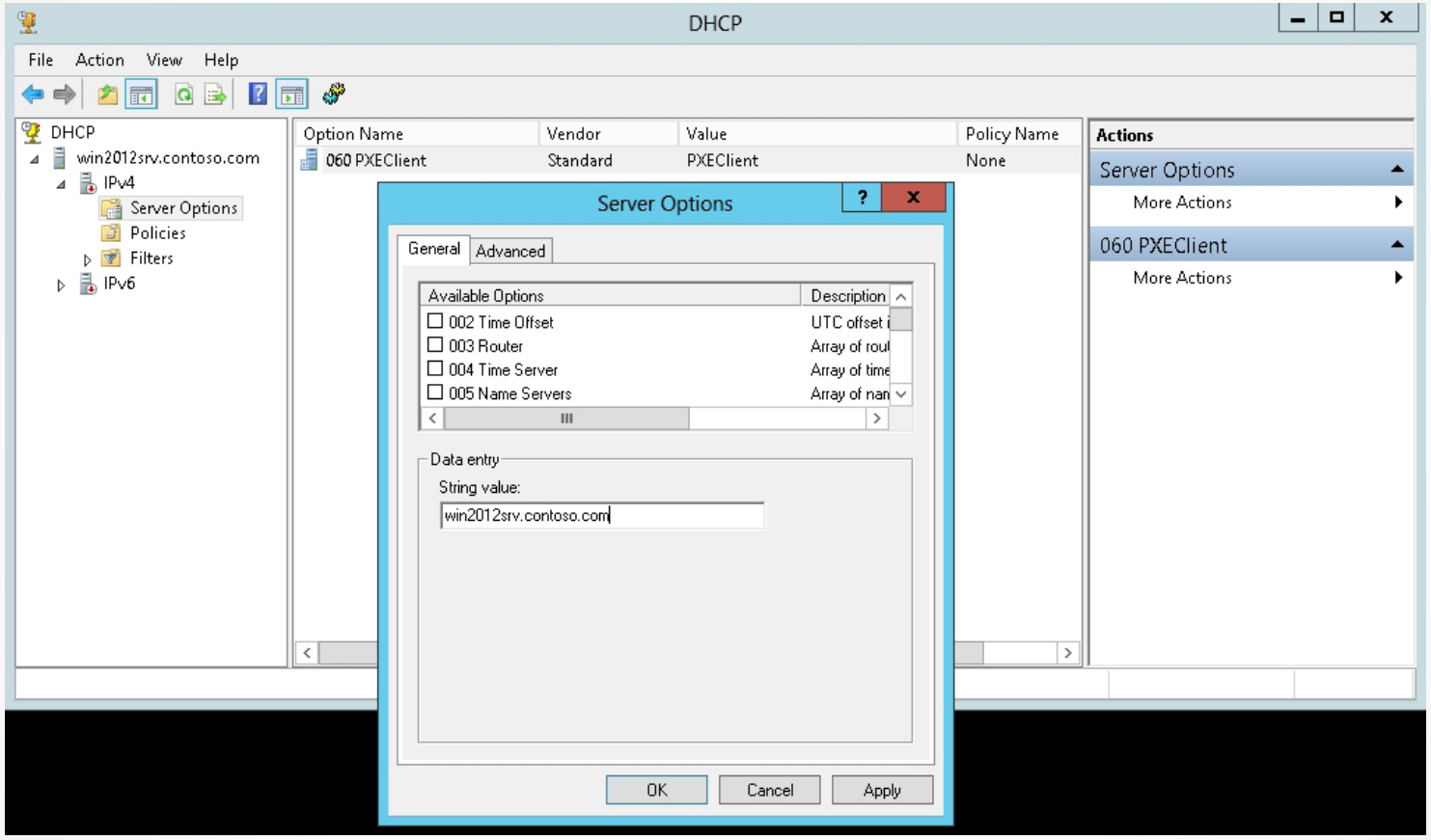
- If you have a separate server running DHCP server, you must manually configure it to include the custom option that provides the WDS clients with the name of the WDS server via DHCP.
- If this option is not performed, the WDS clients will not be able to find the WDS server to boot from.

Configure the Custom DHCP Option



Setting option types and specifying the PXE Client Option 60

Configure the Custom DHCP Option

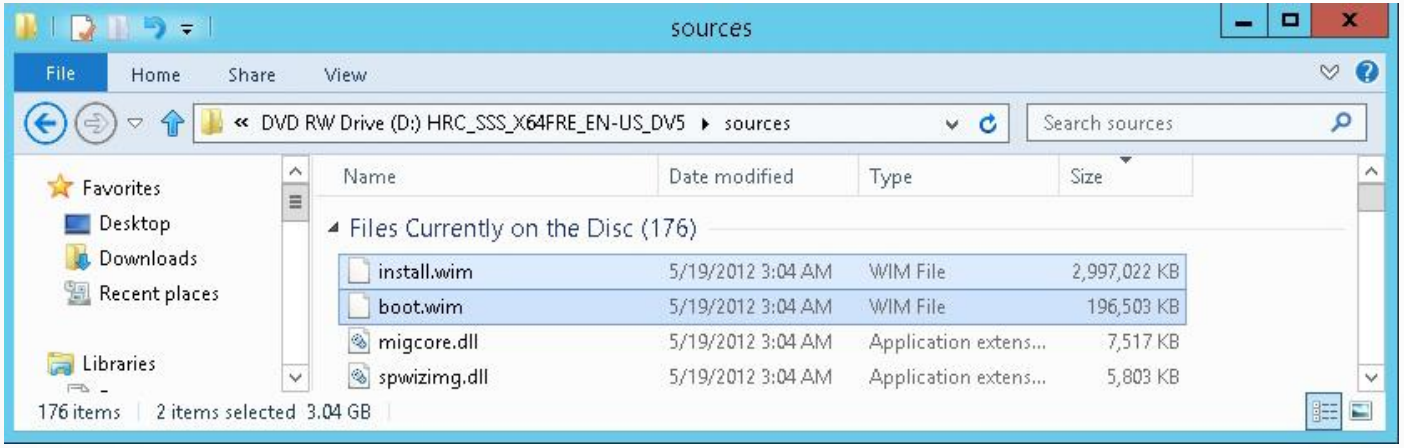


Typing the name of your WDS server

Managing Boot, Install, and Discover Images

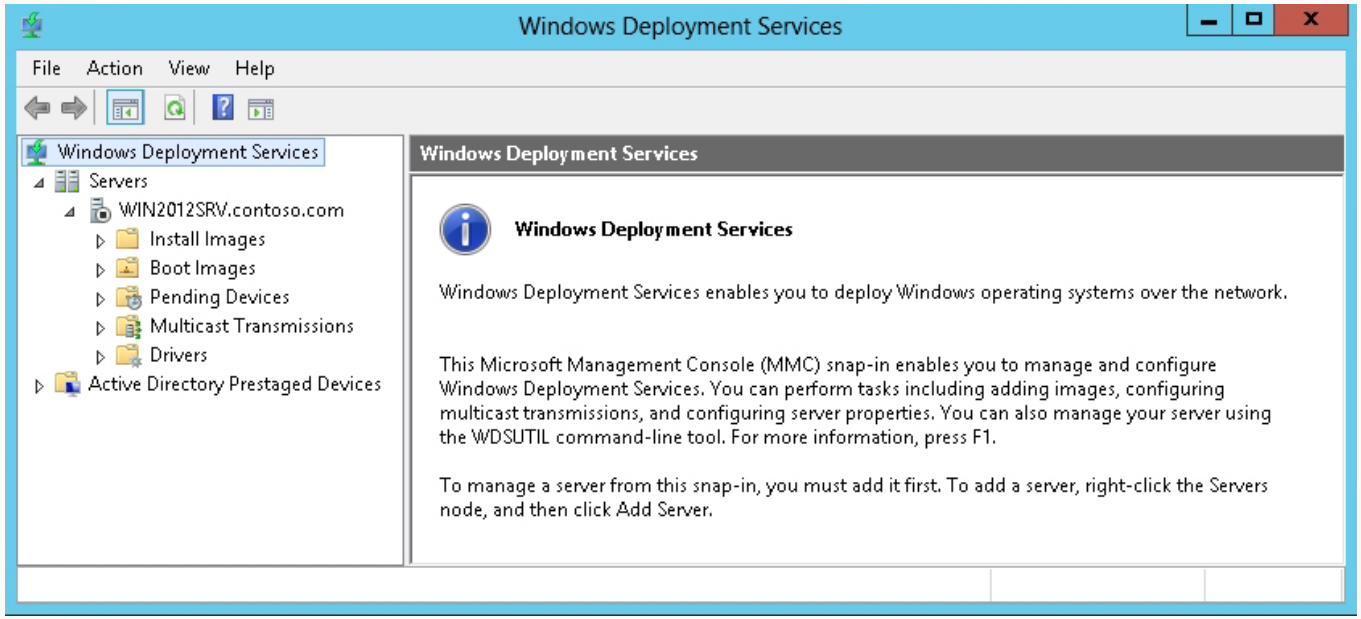
- Two types of image formats:
  - Sector-based image formats
  - File-based image formats
- The boot images and install images use the Windows Imaging Format (WIM).
- WIM is a file format that allows a file structure (folders and files) to be stored inside a single WIM database.

Adding Boot Images



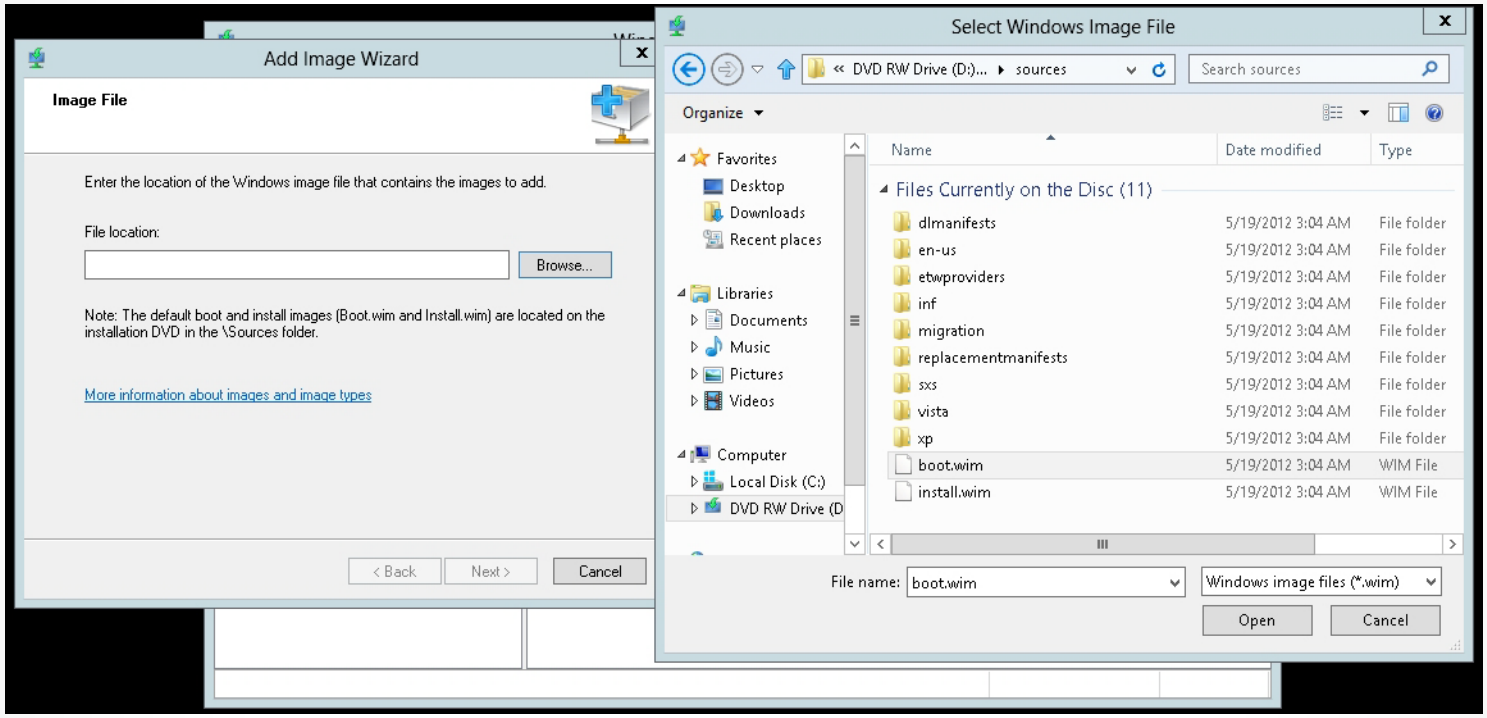
Viewing the sources folder

Add a Boot Image



Viewing the Install Images folder and the Boot Images folder

Add a Boot Image

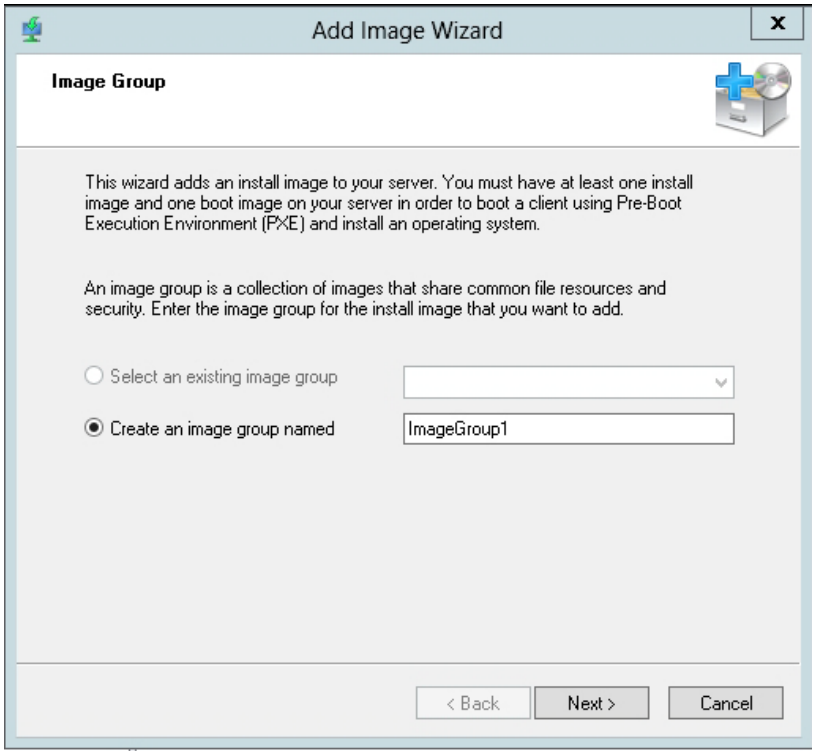


Opening the boot.wim file

Adding Image Files

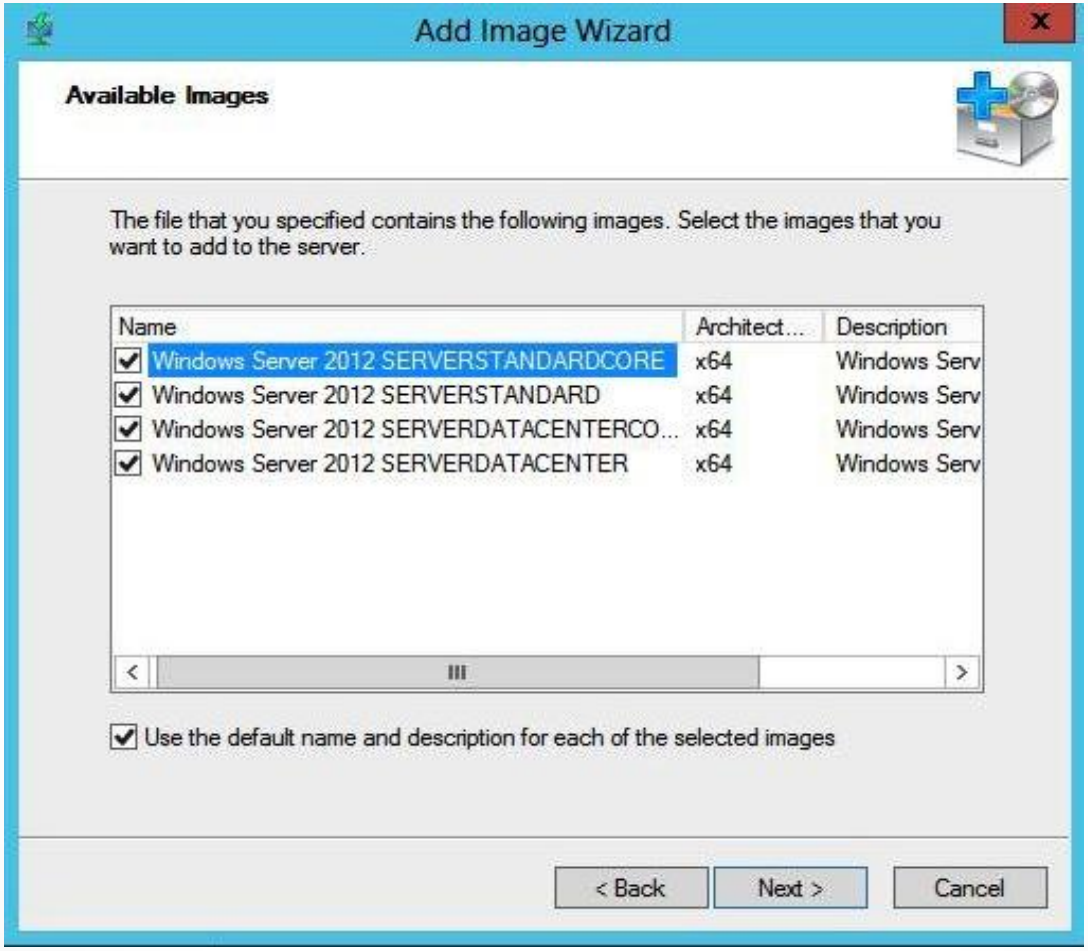
- When you create image files, you place the image file in an image group.
- An ***image group*** is a folder within the image repository of WDS that shares security options and file resources. The image group consists of:
  - The resource *.wim* file (*Res.rwm*)
  - The *<imagename>.wim* files
- Any permission assigned to an image group is inherited by all the images in the group.

Add an Install Image File



Creating an image group

Add an Install Image File



Specifying the images you want to include

Creating an Image File with WDS

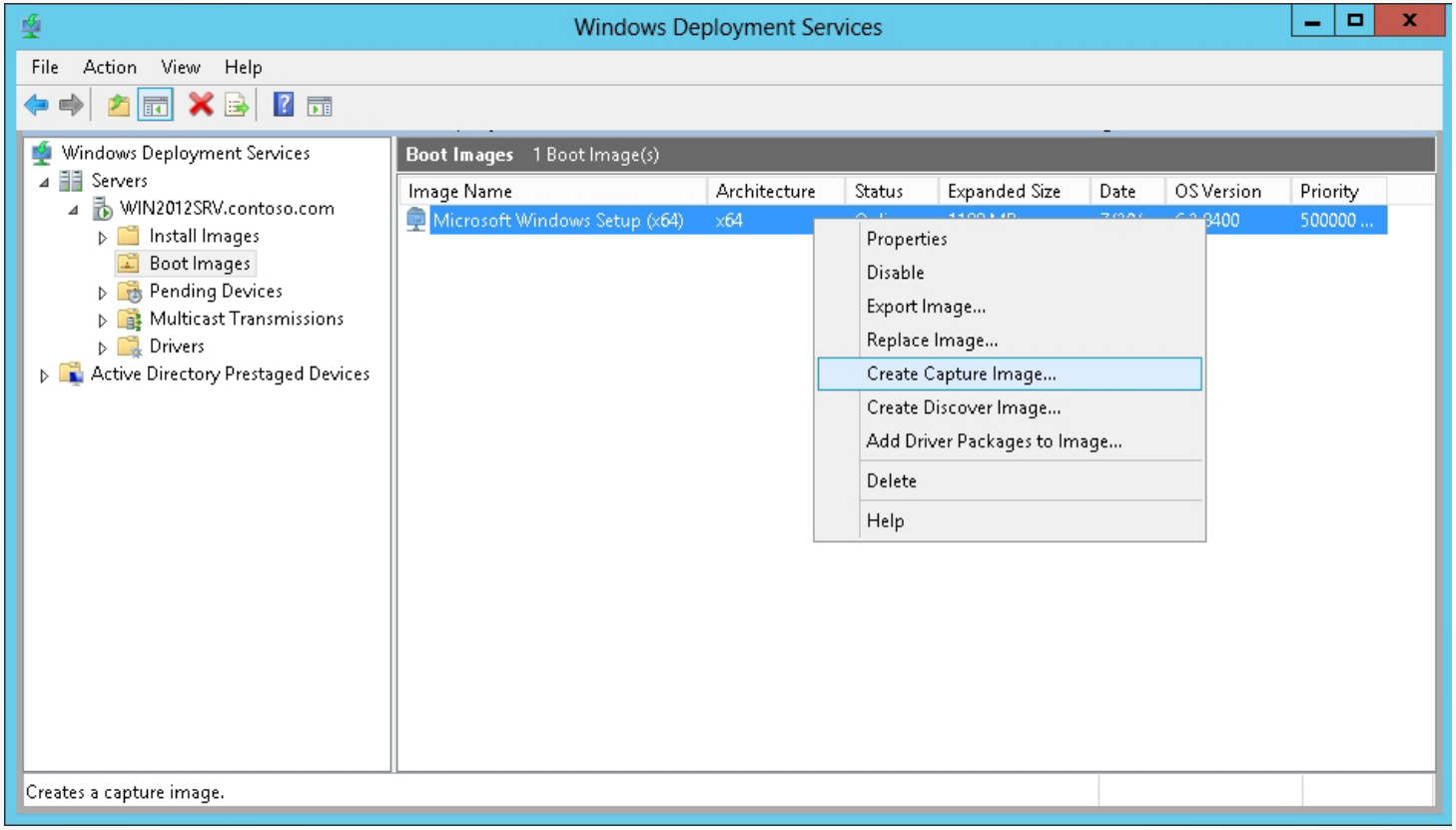
An image file contains:

- All operating system files on the computer
- Any updates and drivers that have been applied
- Any installed applications
- Any configuration changes that have been made

Creating an Image File with WDS

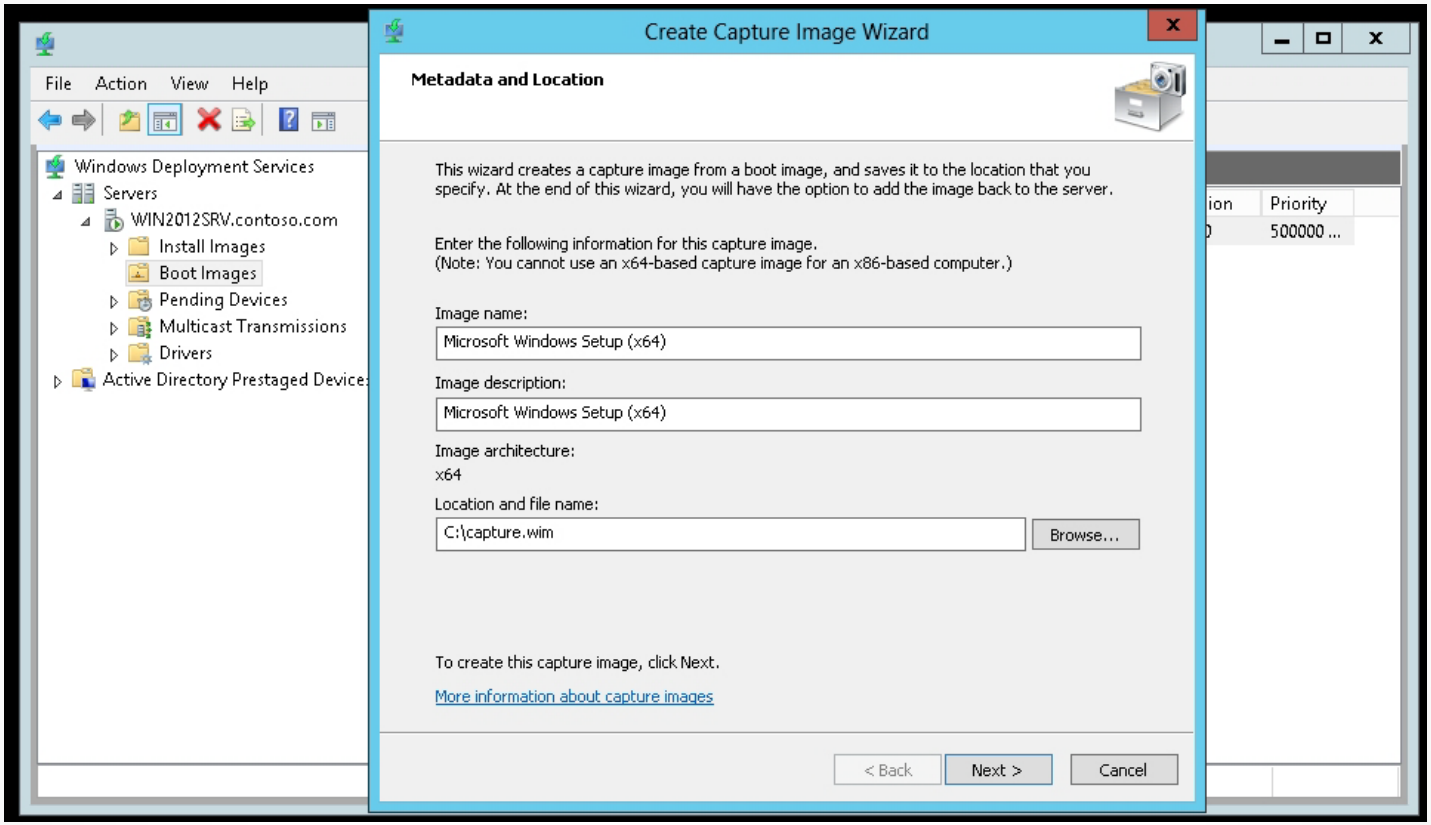
- The install images included on a Windows installation disk are images of a basic Windows installation, with no patches, updates or additional drivers.
- To create your own image files:
  - Set up a master computer with all patches, drivers, applications, and configurations applied.
  - Use WDS to create your own image file by modifying an existing boot image, booting the master computer with the modified boot image, and running the **Windows Deployment Services Capture Utility.**

Create an Image File



Starting the Create Capture Image Wizard

Create an Image File



Specifying the location and file name

Microsoft System Preparation Utility

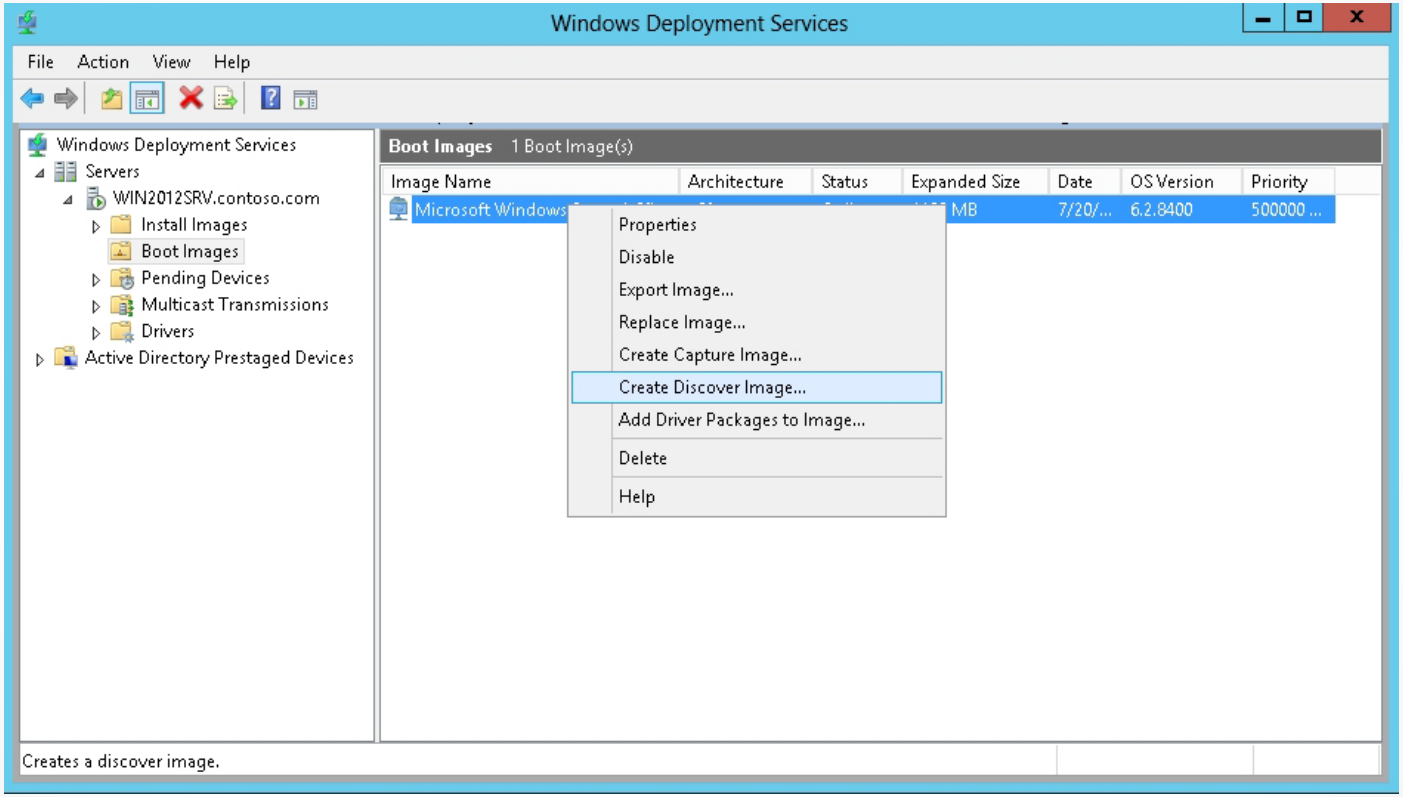
- Sysprep.exe prepares a Windows computer for cloning by removing specific computer information such as the computer name and Security Identifier (SID).
- On Windows Server 2012, Sysprep.exe is located in C:\Windows\System32\Sysprep
- When running `sysprep` on the master computer, use the following syntax:

```
sysprep /generalize /oobe
```

Creating a Discover Image

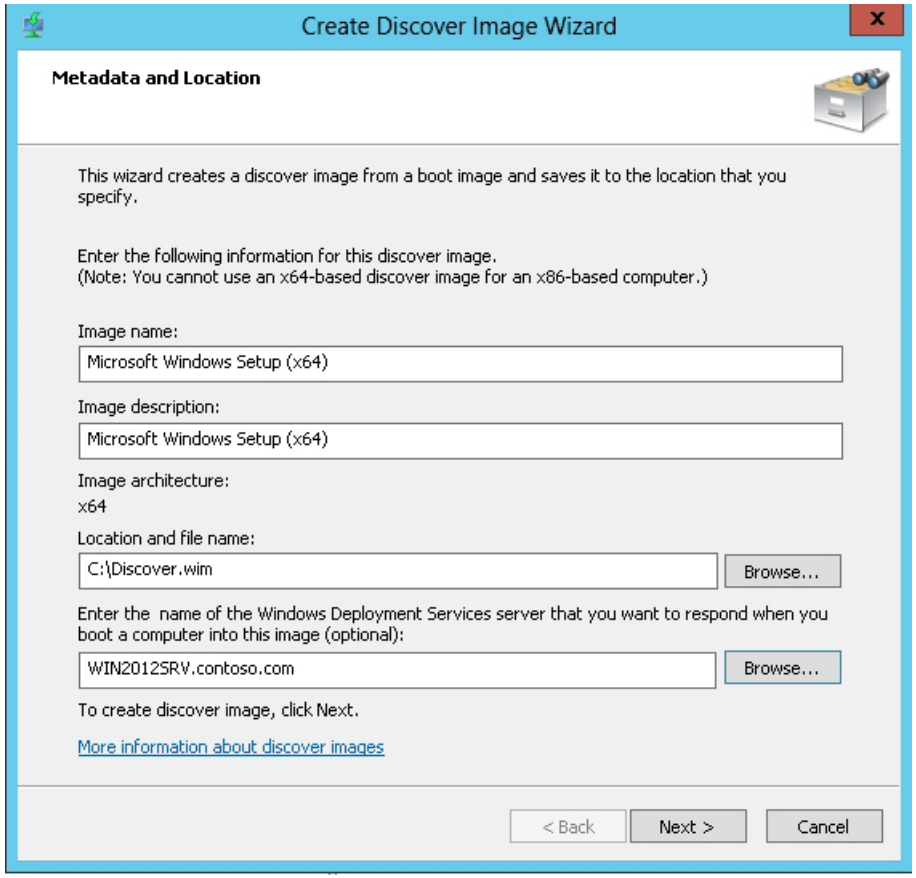
- On computers that do not support a PXE boot, you can boot the computer from disk using a discover image.
- A **discover image** is an image file that you can burn to a CD-ROM or other boot medium.

Create a Discover Image



Creating a discover image

Create a Discover Image



Specifying the image name, the image description, and where to store the discover image file

Windows Assessment and Deployment Kit (ADK)

- To convert a discover image to a bootable .ISO image, first download and install the ADK for Windows 8.
- ADK is a set of tools provided by Microsoft to customize, assess, and deploy a Windows operating system to new computers.

Create a Bootable ISO Image

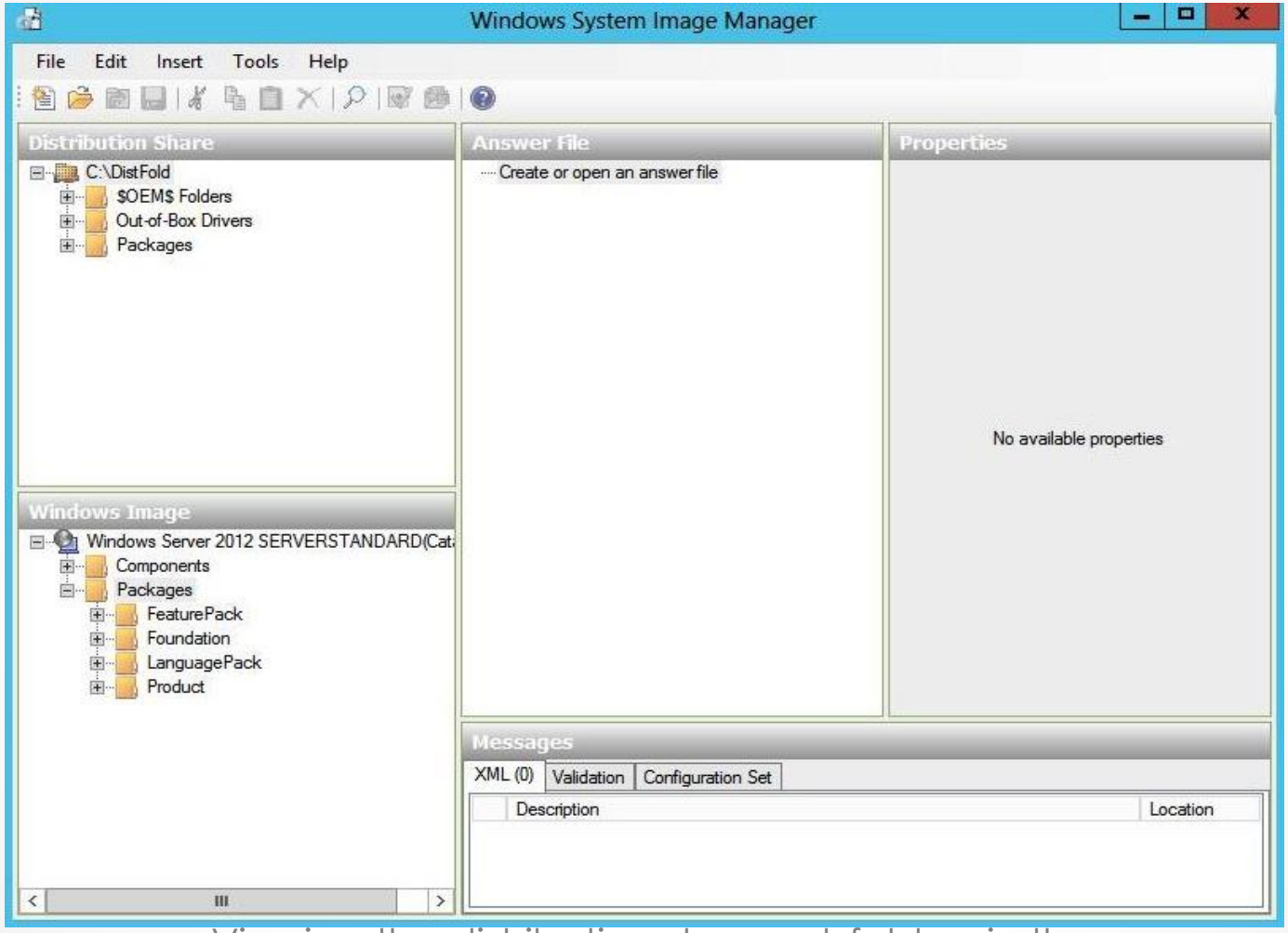
- Create a bootable ISO by running the following command:

```
oscdimg -b"c:\WinPE_X64\etfsboot.com" -n
C:\WinPE_X64\ISO C:\
WinPE_X64\WinPE_X64.iso
```

Performing an Unattended Installation

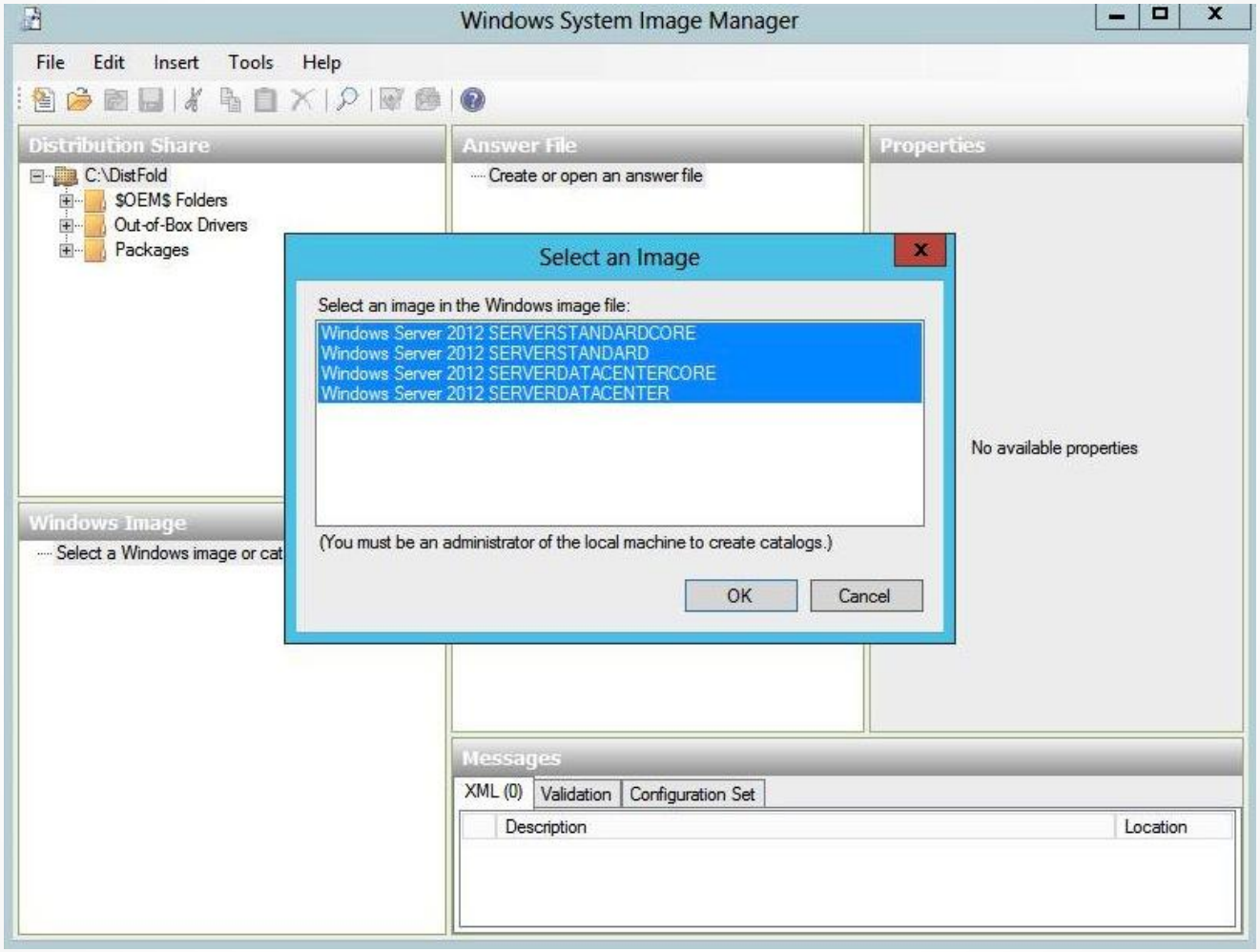
- Use answer files to provide responses to the prompts that normally appear during the Windows installation.
- Create answer files with:
  - A text editor
  - An XML editor
  - System Image Manager (SIM), a tool used to create and manage unattended Windows setup answer files using a graphical interface

Create an Answer File



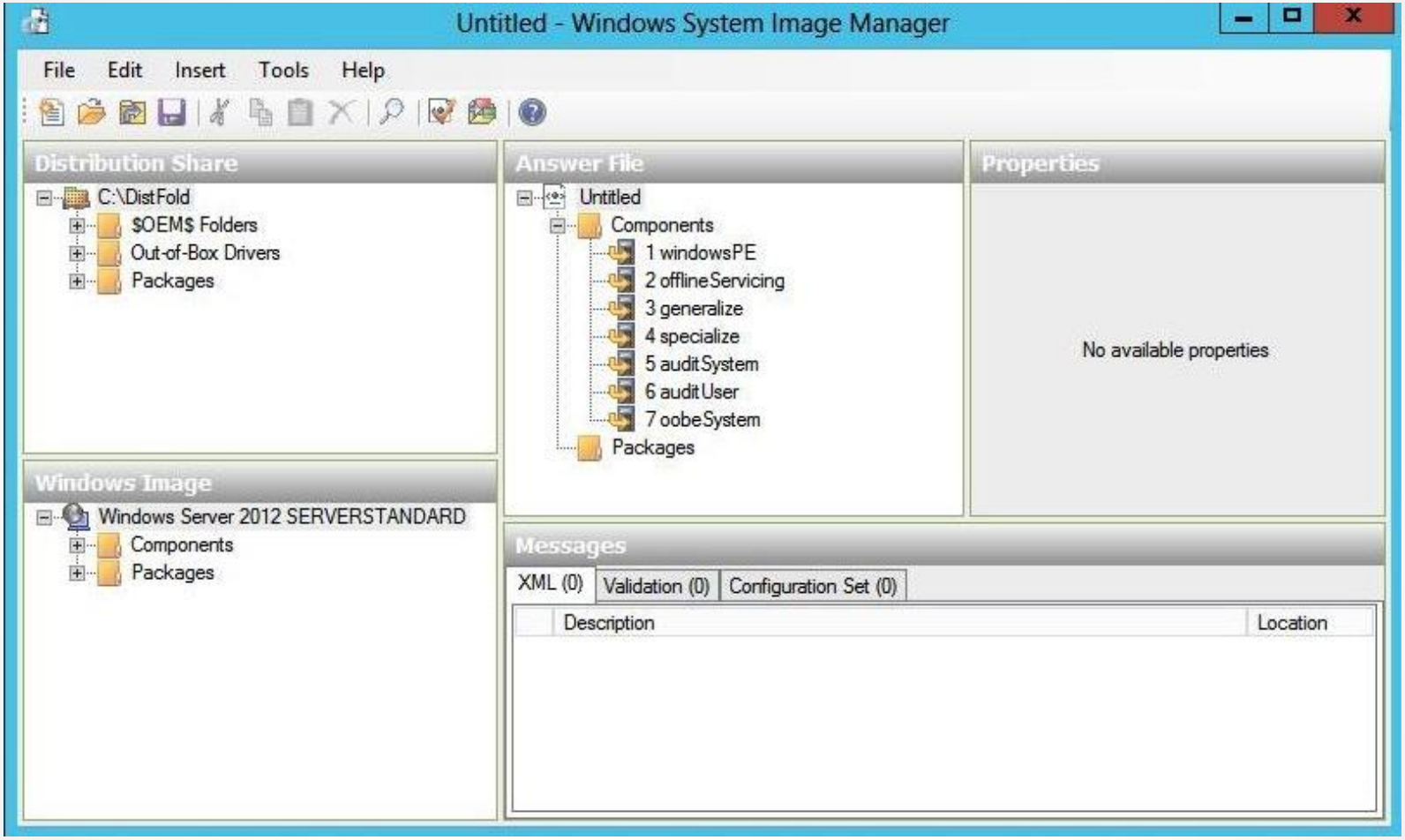
Viewing the distribution share subfolders in the Distribution Share pane

Create an Answer File



Selecting an Image

Create an Answer File

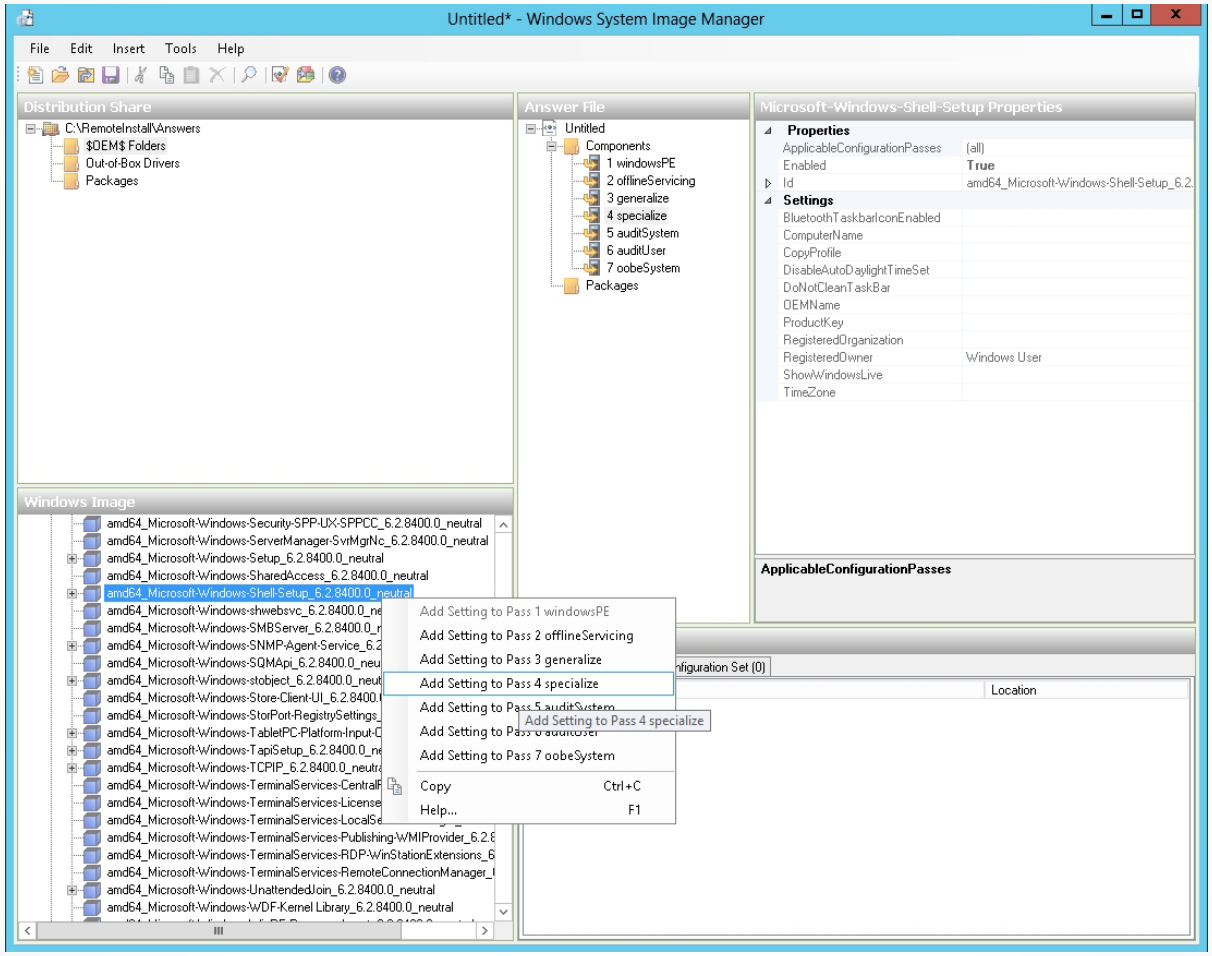


Viewing elements in the Answer File pane

Seven Configuration Passes in an Answer File

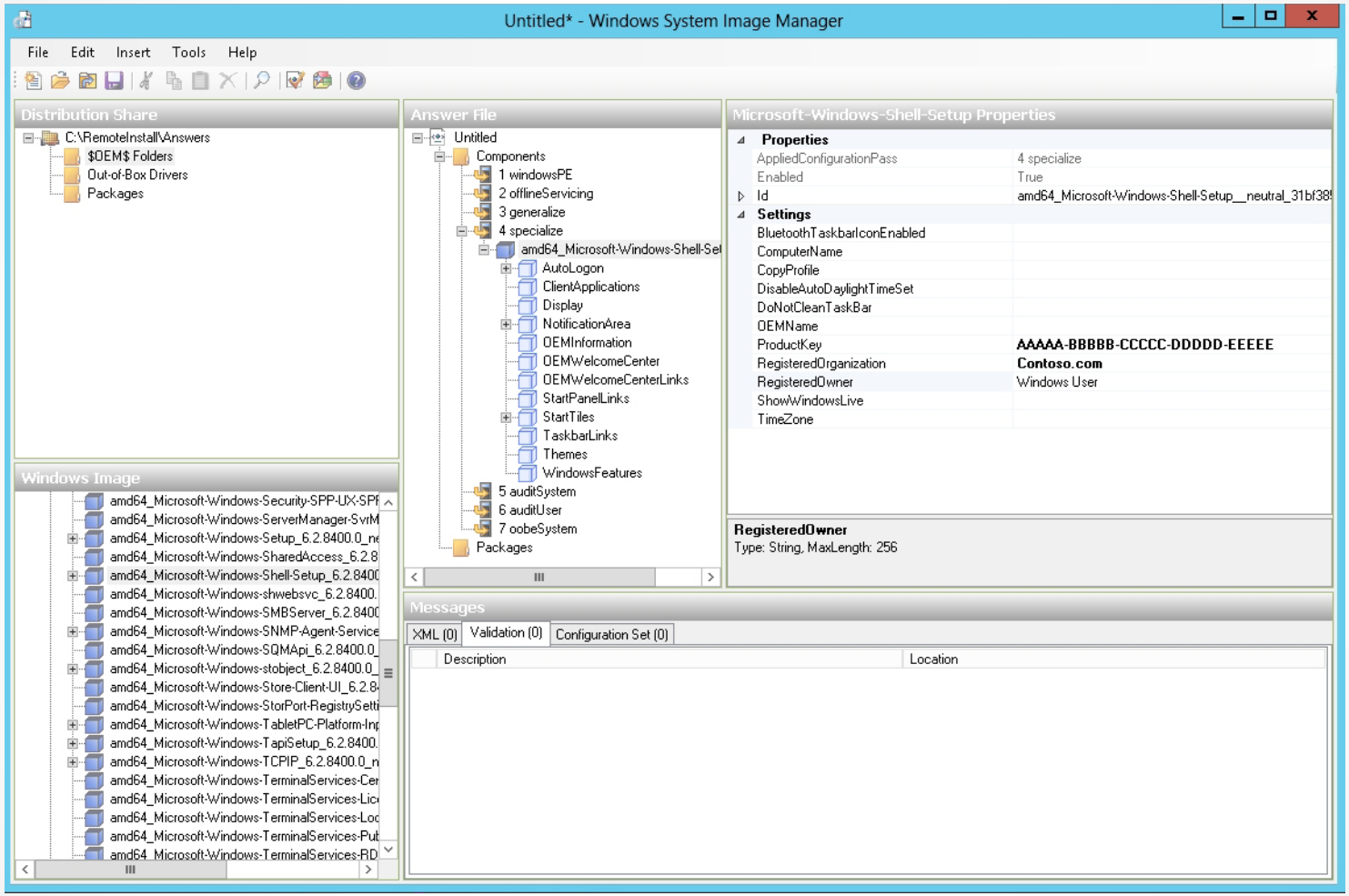
- windowsPE
- offlineServicing
- generalize
- specialize
- auditSystem
- auditUser
- oobeSystem

Create an Answer File



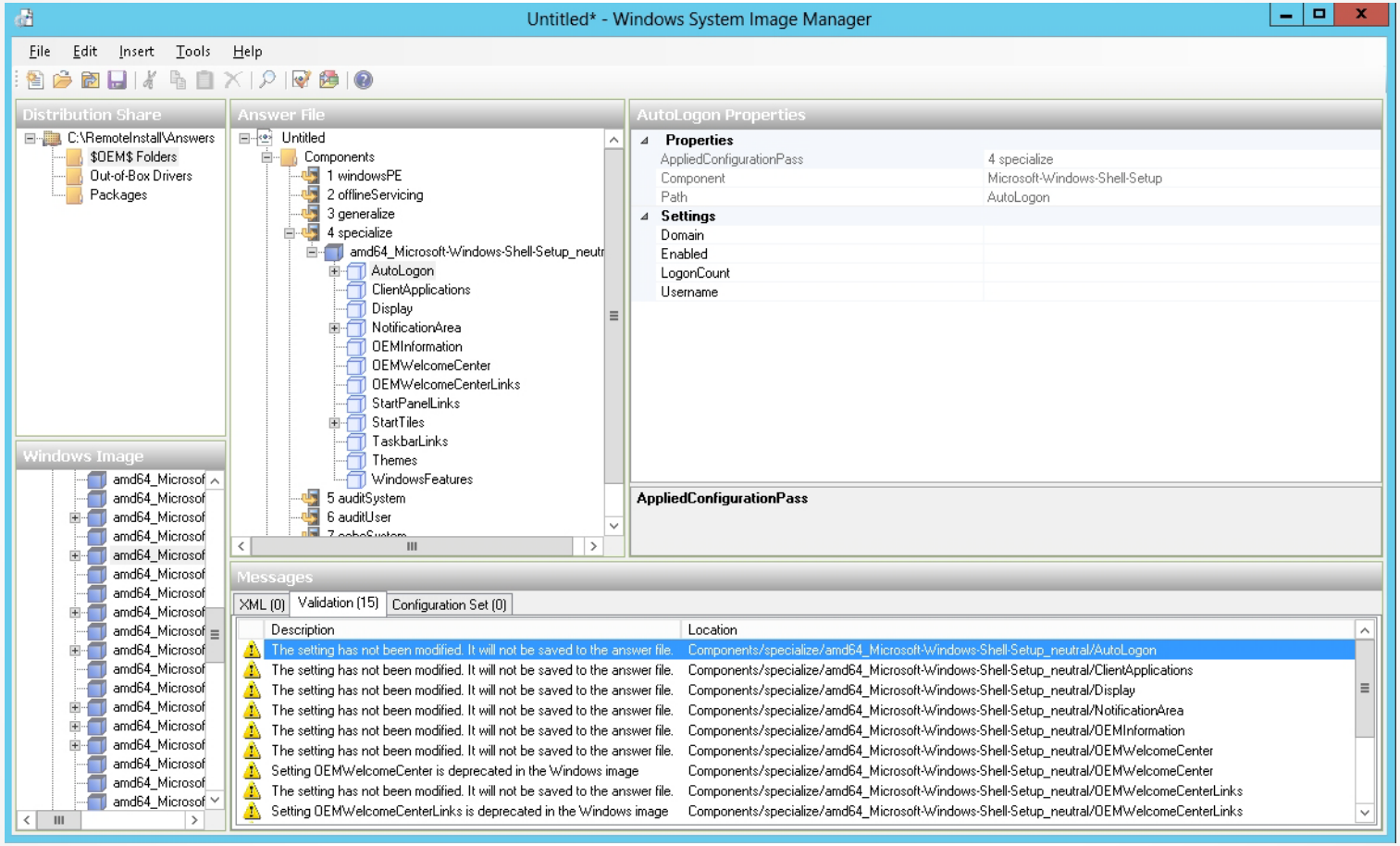
Selecting a configuration pass

Create an Answer File



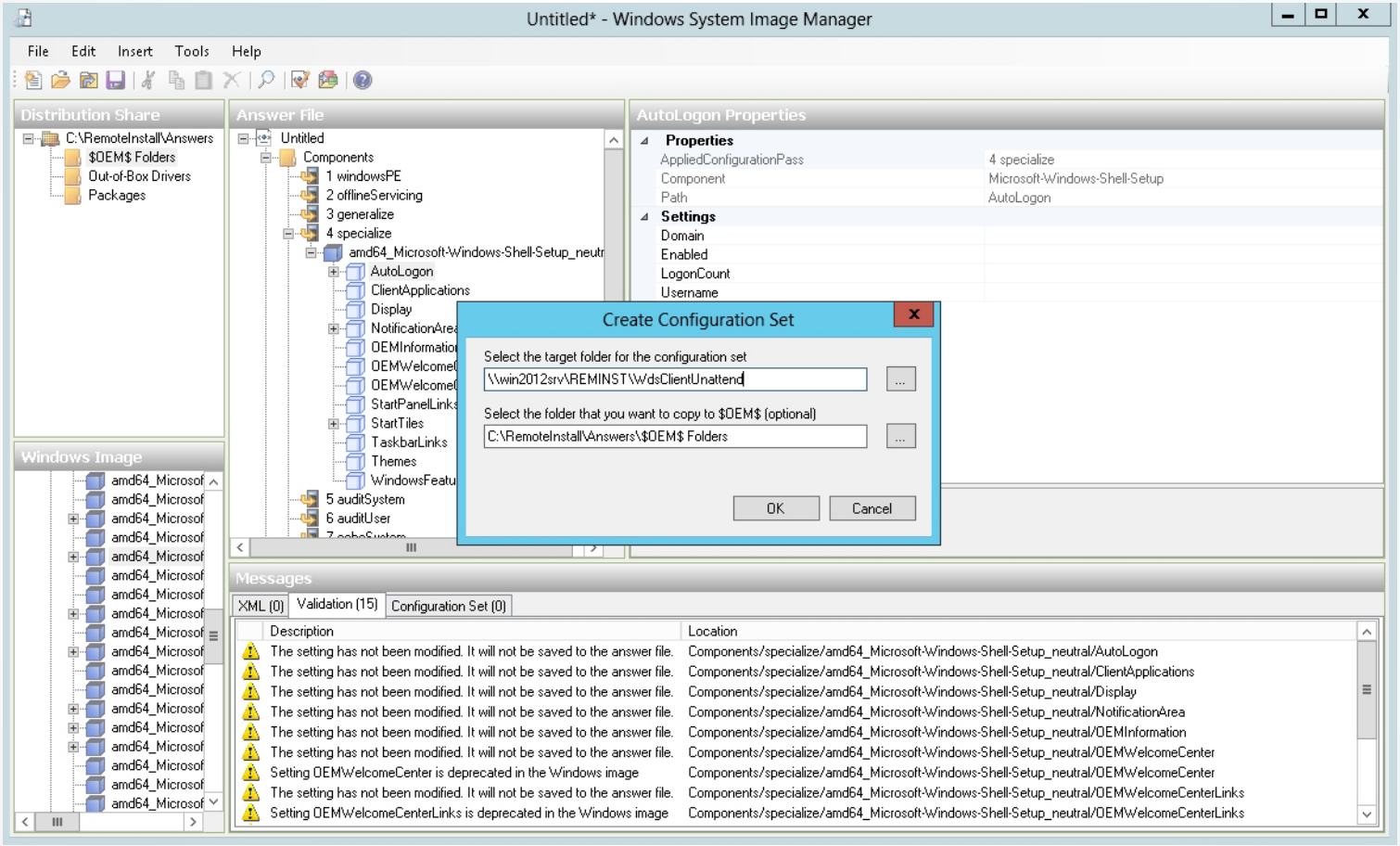
Configuring setting properties

Create an Answer File



Validating an answer file

Create an Answer File



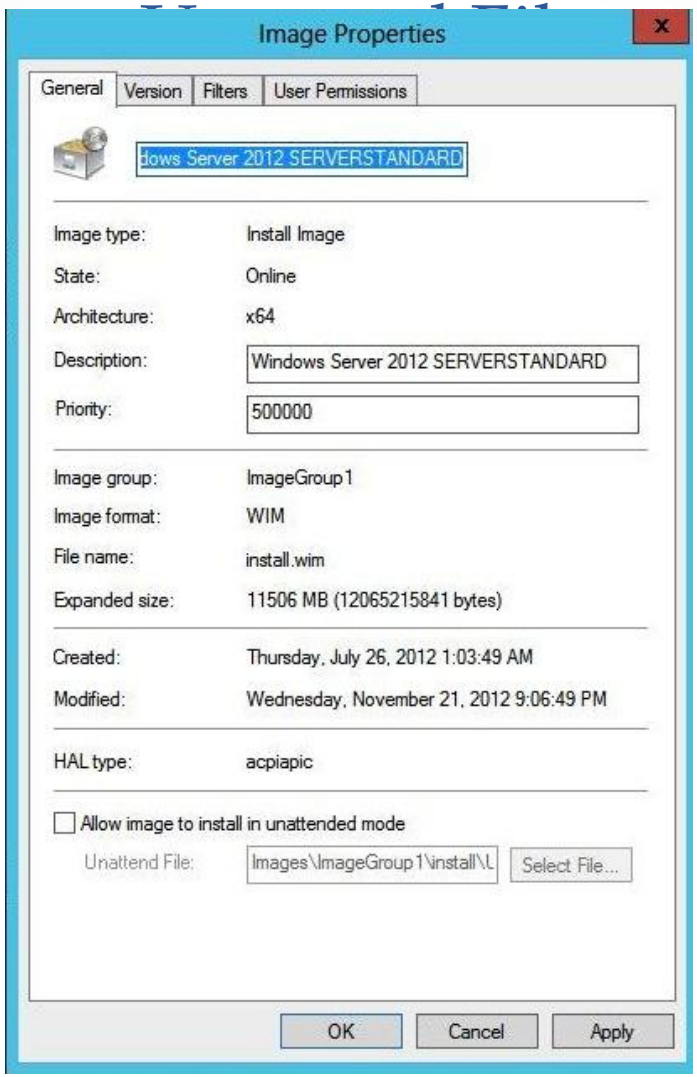
Creating a configuration set

Unattend Files

To install an operating system on a client using WDS with no interactivity, you must have these two unattend files:

- **WDS client unattend file:** Automates the WDS client procedure that begins when the client computer loads the boot image file
- **Operating system unattend file:** For a standard operating system installation; contains responses to all prompts that display after the client computer loads the install image file

Deploy a Server Using an



Viewing the Image Properties dialog box

Patches, Hotfixes, and Drivers

- Using the `dism` command:
  - To make changes to an image, mount the Windows image in the Windows file structure using the `Mount-Wim` option.
  - After you make changes to the image, commit the changes by using the `/Commit-Wim` option.
  - To unmount the image, use the `/Unmount-Wim` option.
  - To get information about an image or WIM file, use the `/Get-WimInfo` option.

Patches, Hotfixes, and Drivers

- If a Windows package is provided as a cabinet (*.cab*) file or as a Windows Update Stand-alone Installer (*.msu*) file, you can add the package using the `/Add-Package` command. For example:

```
Dism /image:C:\offline /Add-Package
/Packagepath:C:\Update\Update.cab
```

- To remove a package, use the `/Remove-Package` option.

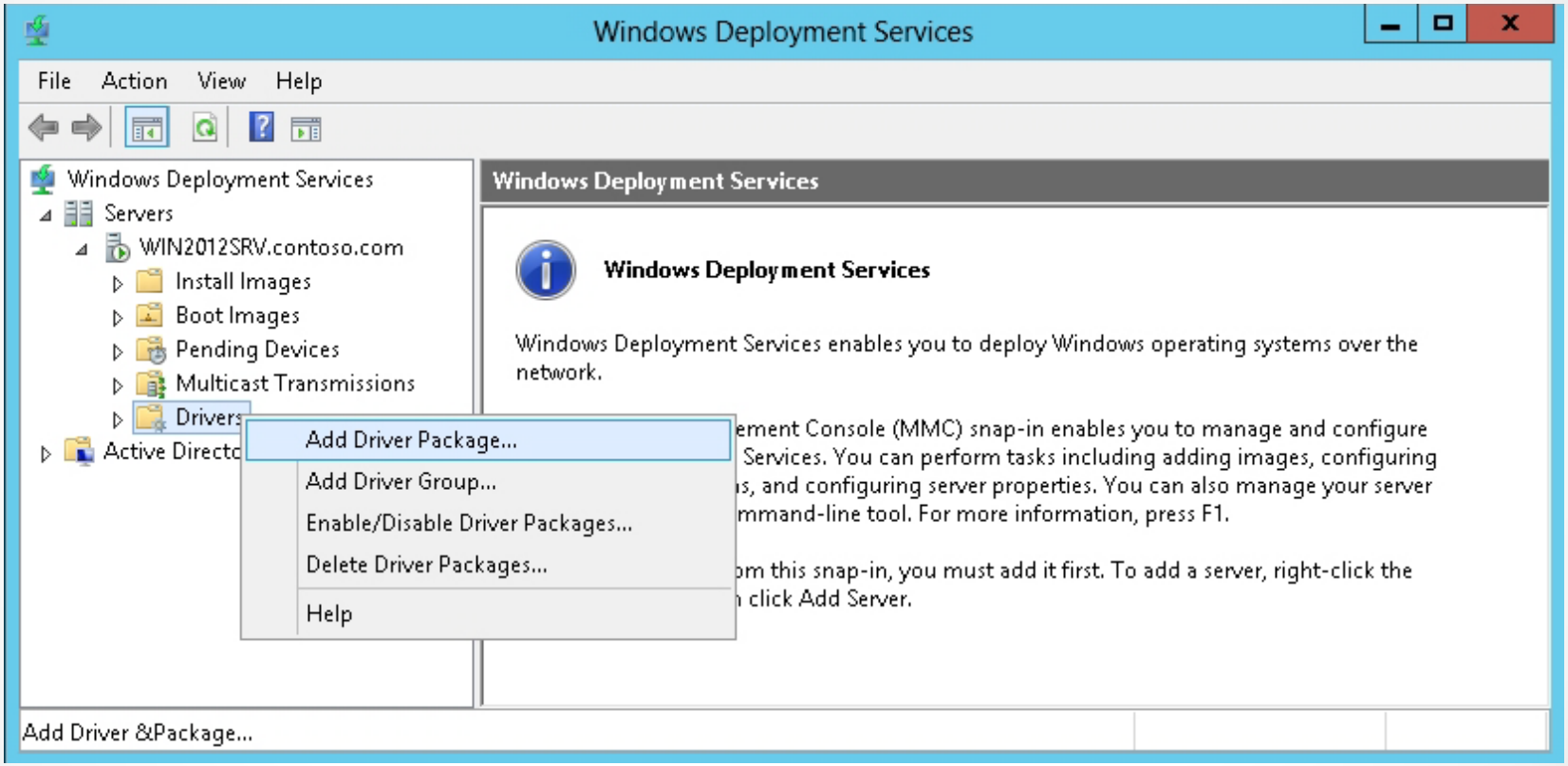
Installing Features for Offline Images

- **Deployment Image Servicing and Management (Dism.exe)** is a command-line tool that can be used to service a Windows image or to prepare a Windows PE image.
- With Dism, you can mount an image offline and then add, remove, update, or list the features, packages, drivers, or international settings stored on that image.
- Dism.exe is not included with Windows.

Deploying Driver Packages with an Image

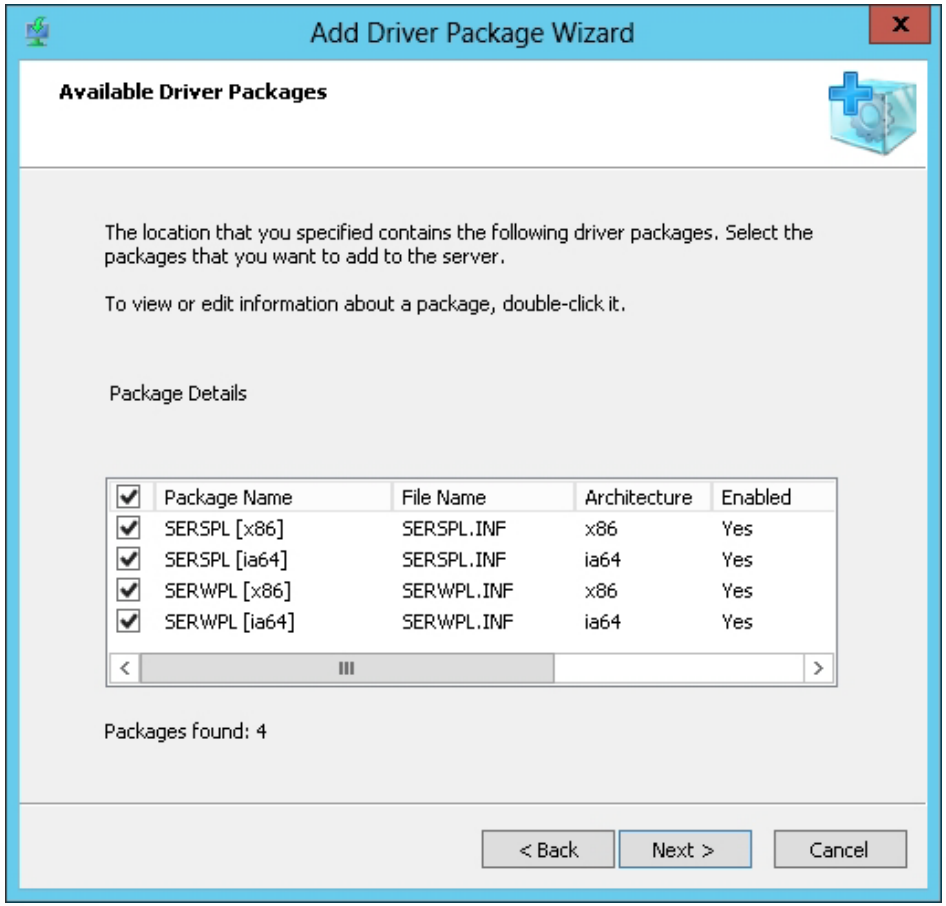
- Using dynamic driver provisioning requires:
  - The boot image from either Windows 7, Windows 8, Windows Server 2008 R2, or Windows Server 2012 (from \Sources\Boot.wim on the DVD)
  - The install images for Windows Vista SP1, Windows 7, Windows 8, Windows Server 2008, Windows 7, Windows Server 2008 R2, or Windows Server 2012
- To deploy drivers based on the plug-and-play hardware of the client, you must extract the drives; they cannot be an *.msi* file or an .exe file.

Add Drivers to an Image



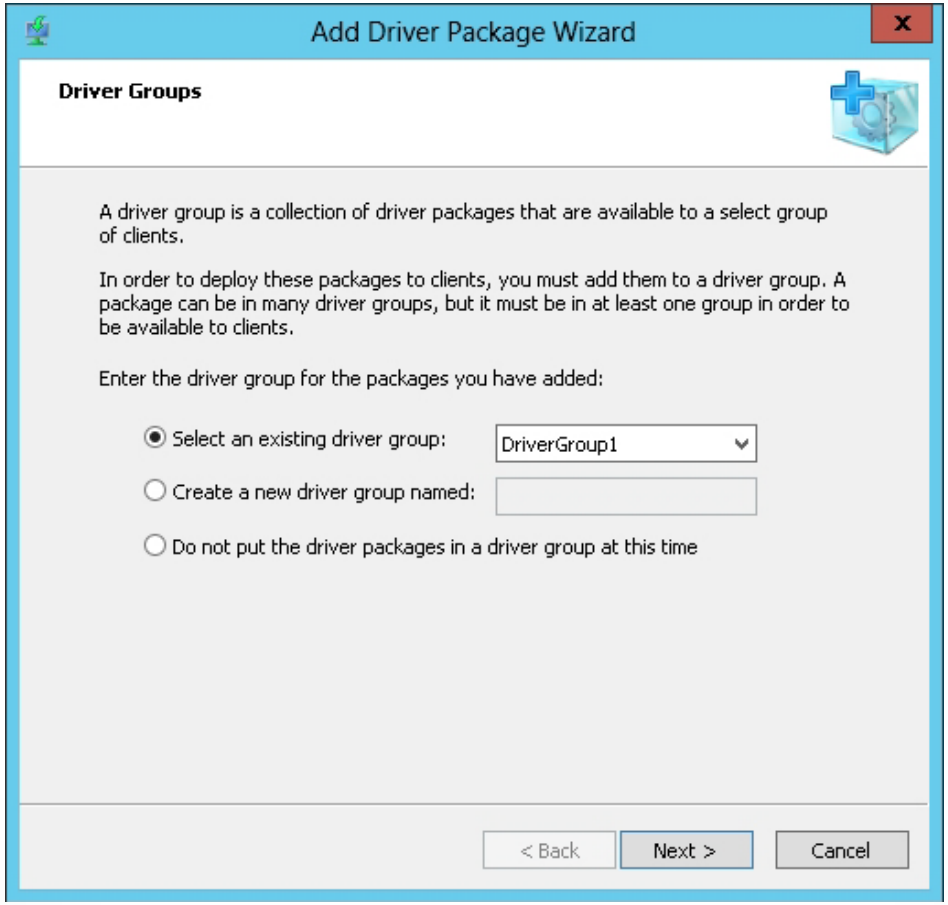
Selecting the Add Driver Package option

Add Drivers to an Image



Selecting driver packages

Add Drivers to an Image



Selecting a driver group

Lesson Summary

- Windows Deployment Services (WDS) is a software platform and technology that allows administrators to perform automated network-based installations based on network-based boot and installation media.
- For client computers to communicate with a WDS server without an operating system, the client computer must support the preboot execution environment (PXE).
- Windows Preinstallation Environment (Windows PE) is a minimal Windows operating system with limited services.
- Before you can use WDS, you must configure WDS server.
- To deploy Windows, you must create a boot image and an install image.

Lesson Summary

- The Microsoft System Preparation Utility (Sysprep.exe) prepares a Windows computer for cloning by removing specific computer information such as the computer name and Security Identifier (SID).
- A computer that does not support a PXE boot can boot from a disk using a discover image.
- To streamline the installation process, you must automate the Windows installation by using answer files, which provide responses to the prompts that would normally display during the Windows installation.
- Deployment Image Servicing and Management (Dism.exe) is a command-line tool that can be used to service a Windows image or to prepare a Windows PE image.