Windows Deployment Services Overview

Another way that many IT departments deploy operating systems has been through the use of Remote Installation Services (RIS). RIS was a utility that allowed an administrator to deploy an operating system remotely. On the client machine that was receiving the operating system, you would use a set of disks (RIS client disks) that would automatically initiate a network card, connect to the RIS server, and download the operating system.

Starting with Windows 7 / Windows Server 2008 and continuing with Windows 8 and Windows Server 2012, a new version of RIS was developed and it's called Windows Deployment Services (WDS). WDS allows an IT administrator to install a Windows operating system without using a CD or DVD installation disk. Using WDS allows you to deploy the operating system through a network installation. WDS can deploy Windows XP, Windows Server 2003, Windows Vista, Windows 7, Windows Server 2008 / 2008 R2 and Microsoft Windows Server 2012.

The following are some of the advantages of using WDS for automated installation:

You can remotely install Windows 7 / Windows 8.

The procedure simplifies management of the server image by allowing you to access Windows 7 / 8 distribution files from a distribution server.

You can quickly recover the operating system in the event of a computer failure.

Here are the basic steps of the WDS process from a PXE-enabled WDS client:

1. The WDS client initiates a special boot process through the PXE network adapter (and the computer's BIOS configured for a network boot). On a PXE client, the user presses F12 to start the PXE boot process and to indicate that they want to perform a WDS installation.

2. A list of available Windows PE boot images is displayed. The user should select the appropriate Windows PE boot image from the boot menu.

3. The Windows Welcome screen is displayed. The user should click the Next button.

4. The WDS user is prompted to enter credentials for accessing and installing images from the WDS server.

5. A list of available operating system images is displayed. The user should select the appropriate image file to install.

6. The WDS user is prompted to enter the product key for the selected image.

7. The Partition And Configure The Disk screen is displayed. This screen provides the ability to install a mass storage device driver, if needed, by pressing F6.

8. The image copy process is initiated, and the selected image is copied to the WDS client computer.

The following sections describe how to set up the WDS server and the WDS clients and how to install Windows 7 / 8 through WDS.

Preparing the WDS Server

With the WDS server, you can manage and distribute Windows 7 / 8 operating system images to WDS client computers. The WDS server contains any files necessary for PXE booting, Windows PE boot images, and the Windows 7 / 8 images to be deployed.

The following steps for preparing the WDS server are discussed in the upcoming sections:

1. Make sure the server meets the requirements for running WDS.

2. Install WDS.

3. Configure and start WDS.

4. Configure the WDS server to respond to client computers (if this was not configured when WDS was installed).

For WDS to work, the server on which you will install WDS must meet the requirements for WDS and be able to access the required network services.

WDS Server Requirements

The WDS server must meet these requirements:

The computer must be a domain controller or a member of an Active Directory domain.

At least one partition on the server must be formatted as NTFS.

WDS must be installed on the server.

The operating system must be Windows Server 2003, Windows Server 2008 / 2008 R2, or Windows Server 2012.

A network adapter must be installed.

Network Services

The following network services must be running on the WDS server or be accessible to the WDS server from another network server:

TCP/IP installed and configured

A DHCP server, which is used to assign DHCP addresses to WDS clients (Ensure that your DHCP scope has enough addresses to accommodate all the WDS clients that will need IP addresses.)

A DNS server, which is used to locate the Active Directory controller

Active Directory, which is used to locate WDS servers and WDS clients as well as authorize WDS clients and manage WDS configuration settings and client installation options

Installing the WDS Server Components

You can configure WDS on a Windows Server 2003 / 2008 / 2008 R2 or Windows Server 2012 computer by using the Windows Deployment Services Configuration Wizard or by using the WDSUTIL command-line utility. Table 1.2 describes the WDSUTIL command-line options.

TABLE 1.2 WDSUTIL command-line options

WDSUTIL Option Description

/initialize-server Initializes the configuration of the WDS server

/uninitialized -server Undoes any changes made during the initialization of the WDS server

/add Adds images and devices to the WDS server

/convert-ripimage Converts Remote Installation Preparation (RIPrep) images to WIM images

/remove Removes images from the server

/set Sets information in images, image groups, WDS servers, and WDS devices

/get Gets information from images, image groups, WDS servers, and WDS devices

/new Creates new capture images or discover images

/copy- image Copies images from the image store

/export-image Exports to WIM files images contained within the image store

/start Starts WDS services

/stop Stops WDS services

/disable Disables WDS services

/enable Enables WDS services

/approve-autoadddevices Approves Auto-Add devices

/reject-autoadddevices Rejects Auto-Add devices

/delete-autoadddevices Deletes records from the Auto-Add database

/update Uses a known good resource to update a server resource

The first step in setting up WDS to deploy operating systems to the clients is to install the WDS role. You do this by using Server Manager.

One of the advantages of using the Windows deployment server is that WDS can work with Windows image (.wim) files. As stated earlier in this chapter, Windows image files can be created through the use of the Windows Sysprep utility.

One component that you need to pay attention to when using the Windows deployment server is Preboot Execution Environment (PXE) network devices. PXE boot devices are network interface cards (NICs) that can talk to a network without the need for an operating system. PXE boot NIC adapters are network adapters that have a set of preboot commands within the boot firmware.

This is important when using WDS because PXE boot adapters connect to a WDS server and request the data needed to load the operating system remotely. Remember, most of these machines that you are using WDS for do not have an operating system on the computer. You need NIC adapters that can connect to a network without the need for an operating system for WDS to work properly.

For the same reason, you must set up DHCP to accept PXE machines. Those machines need a valid TCP/IP address so that they can connect to the WDS server.

Preparing the WDS Client

The WDS client is the computer on which Windows 7 / 8 will be installed. WDS clients rely on a technology called PXE, which allows the client computer to remotely boot and connect to a WDS server.

To act as a WDS client, the computer must meet all the hardware requirements for Windows 7 / Windows 8 and have a PXE-capable network adapter installed, and a WDS server must be present on the network. Additionally, the user account used to install the image must be a member of the Domain Users group in Active Directory.

After the WDS server has been installed and configured, you can install Windows 7 / Windows 8 on a WDS client that uses a PXE-compliant network card.

To install Windows 7 / Windows 8 on the WDS client, follow these steps:

1. Start the computer. When prompted, press F12 for a network service boot. The Windows PE appears.

2. The Windows Welcome screen appears. Click the Next button to start the installation process.

3. Enter the username and password of an account that has permissions to access and install images from the WDS server.

4. A list of available operating system images stored on the WDS server appears. Select the image to install, and click Next.

5. Enter the product key for the selected Windows 7 / 8 image, and click Next.

6. The Partition And Configure The Disk screen appears. Select the desired disk-partitioning options, or click OK to use the default options.

7. Click Next to initiate the image-copying process. The Windows Setup process will begin after the image is copied to the WDS client computer.