

# Novell ZENworks™ for Desktops 3.2 Preboot Services

3.2

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INSTALLATION



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# About This Guide

This guide provides information about installing and configuring ZENworks™ for Desktops (ZfD) 3.2 Preboot Services on your network.

## Documentation Conventions

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# 1

## Setting Up ZENworks for Desktops Preboot Services

This section contains information that will help you to understand, install, and configure ZENworks™ for Desktops (ZfD) 3.2 Preboot Services, including:

- ♦ [“About ZfD 3.2 Preboot Services” on page 9](#)
- ♦ [“Hardware and Software Requirements” on page 10](#)
- ♦ [“Preboot Services Installation” on page 11](#)
- ♦ [“Preboot Services Setup” on page 12](#)

### About ZfD 3.2 Preboot Services

ZfD 3.2 Preboot Services utilizes the Preboot Execution Environment (PXE), an industry-standard protocol that allows a workstation to boot up and execute a program from the network before the workstation operating system starts. The PXE environment is loaded from either the Network Interface Card (NIC) in flash or ROM, or in the same memory as the system BIOS.

By using Preboot Services, you can put an image on a workstation even if the workstation's hard disk is blank. You do not need to install a Linux\* imaging partition on the workstation. Before you can use Preboot Services, make sure that you have installed the new Imaging and PXE Support components of ZfD 3.2 on your server.

When a PXE-enabled workstation is booted, it looks for the server where Preboot Services is installed. After using DHCP to obtain IP information, it checks the Preboot Services Transaction Server to see if there is any imaging work to do. If there is imaging work to do, it downloads the Linux imaging environment from the server so that the workstation can be booted to Linux. Then the image is downloaded to the workstation. If there is no imaging work to do, these three files are not downloaded and the workstation proceeds to boot to its operating system.

# Hardware and Software Requirements

## Minimum Hardware Requirements

The following table lists the minimum hardware requirements for ZfD 3.2 Preboot Services.

Resource	Minimum Disk Space	Minimum Hardware Requirements
User workstation	0 MB	A Pentium* (or higher) personal computer, 75 MHz, 16 MB of RAM; PXE-enabled network adapter or PXE-On-Disk boot diskette
PXE server	10 MB	128 MB of RAM with 8 MB free

## Minimum Software Requirements

The following table lists the minimum software requirements for the server where you will install ZfD 3.2 Preboot Services.

Platform	Minimum Software Requirements
NetWare® 4.x	Not supported
NetWare 5.0	NW5SP5.EXE (or later) patch applied
NetWare 5.1	NW51SP1.EXE (or later) patch applied
Windows* NT* 4.0 server	Service Pack 6a (or later) applied
Windows 2000 server	No special requirements

ZfD 3.2 Preboot Services uses DHCP and TFTP protocols. A standard DHCP server must already be installed—either on the same server where you are installing ZfD 3.2 Preboot Services or on another server in the network—before you install the ZfD 3.2 Preboot Services Proxy DHCP server. If the standard DHCP server is on the same server where you are installing the Proxy DHCP server, you must set option tag 60 in DHCP services.

The DHCP protocol on NetWare does not deliver option tag 60, so it cannot be used with PXE in a single-server environment.

For more information, see *Administration* at the ZENworks for Desktops 3.2 Preboot Services documentation Web site at <http://www.novell.com/documentation> (<http://www.novell.com/documentation>).

**IMPORTANT:** Installing and running the Proxy DHCP Server on a NetWare 5.x server that is already running a standard DHCP server is not supported.

## Preboot Services Installation

ZfD 3.2 Preboot Services can be used only in conjunction with ZENworks for Desktops 3.2. To properly install and correctly configure Preboot Services, you must first initiate the ZfD 3.2 installation program, which includes a discrete subinstall of the software on the ZfD 3.2 *Preboot Services* CD. You have three options for installing the Preboot Services software:

1. Copy the *ZfD Program* CD to a network location and use the *ZfD Preboot Services* CD in the local CD drive of the workstation you are using for the installation. You would use this method if you want to install PXE at different times or to different servers.
2. Use the *ZfD Program* CD in the CD drive of the workstation you are using for installation, then swap to the *Preboot Services* CD when the Preboot Services subinstall is called. You would use this method if you want to visit several sites to perform multiple installations.
3. Copy the *ZfD Program* CD to the hard drive of the workstation you are using for installation, then copy the *Preboot Services* CD (or the Preboot Services .ZIP file you purchased and downloaded from Novell) to the \PXE subdirectory now located in the directory you created when you copied the *ZfD Program* CD. You would use this method to perform any number of installations on servers accessible from your site. It does not require swapping CDs. Be aware that by default, this installation method will install Preboot Services every time the installation runs. There will be no prompts or pauses.

For more information about ZfD installation, see **Installation and Setup** in *Getting Started* at the ZENworks for Desktops documentation (<http://www.novell.com/documentation/lg/zdfs/index.html>) Web site at <http://www.novell.com/documentation> (<http://www.novell.com/documentation>).

# Preboot Services Setup

This section provides information on how to check the configuration of ZfD 3.2 Preboot Services after it has been installed.

Before you can configure Preboot Services, you need to use the *Preboot Services* CD (or the downloaded CD image) to install the PXE components on either a Windows NT/2000 or a NetWare server. For detailed ZfD 3.2 Preboot Services installation and setup instructions, see *Administration* in the ZENworks for Desktops 3.2 Preboot Services documentation Web site at <http://www.novell.com/documentation> (<http://www.novell.com/documentation>).

## Checking the Setup on a Windows NT Server

If the NT/2000 server where the Preboot Services components were installed is also a DHCP server, refer to the instructions for configuring the DHCP service to work correctly with the PXE Proxy DHCP service in *Administration* at the ZENworks for Desktops 3.2 Preboot Services documentation Web site at <http://www.novell.com/documentation> (<http://www.novell.com/documentation>).

When the ZfD 3.2 Preboot Services components are installed, the following services should be installed and running on the server:

- ◆ Proxy DHCP Server
- ◆ MTFTP Server
- ◆ TFTP Server
- ◆ Transaction Server

You should not need to change the default configuration of these services unless the default multicast IP is already in use in your environment or you moved any of the PXE-installed files from their default directories.

## Checking the Setup on a NetWare Server

If the NetWare server where the Preboot Services components were installed is also a DHCP server, refer to the instructions on configuring the DHCP service to work correctly with the Preboot Services Proxy DHCP service in *Administration* at the ZENworks for Desktops 3.2 Preboot Services documentation Web site at <http://www.novell.com/documentation> (<http://www.novell.com/documentation>).

When the ZfD 3.2 Preboot Services components are installed, the following services should be installed and running on the server:

- ◆ PMAP.NLM
- ◆ TFTP.NLM
- ◆ PDHCP.NLM
- ◆ DTS.NLM

You can use the PXESTART.NCF file to start Preboot Services with a single command.

You can use the PXESTOP.NCF file to stop PXE services with a single command.

You should not need to change the default configuration of these services unless the default multicast IP is already in use in your environment or you moved any of the PXE-installed files from their default directories.

## Configuring a PXE-Enabled Workstation for Preboot Services

To image a workstation by using ZfD 3.2 Preboot Services, you need to find out if the workstation is PXE capable, and then make sure that PXE is enabled. (When PXE is enabled, it can lengthen the time of the boot process slightly, so most NICs have PXE turned off by default.)

To enable PXE, open the workstation BIOS and analyze the boot up options. The PXE activation method for a workstation varies from one manufacturer to another, but generally one of the following methods is used:

- ❑ Some BIOSs have a separate entry in the BIOS configuration to enable or disable the PXE functionality. In this case, set either the PXE Boot setting or the Network Boot setting to Enabled.
- ❑ Some BIOSs extend the entry that allows you to configure boot order. For example, you can specify that the system should try to boot from a diskette before trying to boot from the hard drive. In this case, set the system to try Network Boot before trying to boot from a diskette or from the hard disk.

- ❑ Workstations that do not have the network adapter and PXE integrated into the motherboard will use the installed NIC management software to prompt you to start PXE configuration during the boot process. For example, many network adapters that are PXE aware will prompt you to press Control+S during the boot process to allow you to configure the PXE functionality. Other network adapters may prompt you to press Control+Alt+B or another key combination to configure PXE.
- ❑ If PXE is not listed and if the NIC is embedded in the motherboard, refer to the integrated devices section of the BIOS, which may have an option to activate PXE. PXE may be called by another name, such as MBA (Managed Boot Agent) or Pre-Boot Service.

After you have activated PXE, it will become available in the Boot section of the BIOS. PXE is correctly enabled on a workstation when the workstation attempts to establish a PXE session during the boot process. You can see this happening when the workstation pauses during the boot process and displays the following on the screen:

```
CLIENT MAC ADDR: 00 E0 29 47 59 64  
DHCP . . .
```

The actual message displayed will vary from one manufacturer to another, but you will be able to identify it by the obvious pause in the boot process as the workstation searches for DHCP.

## Configuring a Non-PXE-Enabled Workstation for Preboot Services

Some older workstations might not support PXE and will require you to install PXE on them. There are several ways to do this:

- ❑ Update your NIC or NIC driver. Most network adapter manufacturers will supply a PXE Boot ROM chip that you can fit into your network adapter to enable PXE on the workstation. Contact the NIC manufacturer or a supplier to see if they sell a PXE Boot ROM. It is also possible that your current NIC may need an upgraded driver to become PXE-enabled.
- ❑ Update your BIOS version. Most manufacturers that supply motherboards with the network adapter embedded in the motherboard will offer a BIOS upgrade that will PXE-enable the workstation. Check the manufacturer's Web site or contact a supplier to check for a BIOS upgrade.

- ❑ Use the ZfD 3.2 Preboot Services PXE-On-Disk utility if no PXE is available for your workstation. With this utility, you can create a boot diskette that enables the workstation to participate in the PXE environment.

You can access the PXE-On-Disk utility with the Create PXE Disk button in Imaging Boot Disk Creator. (To start this utility from ConsoleOne™, click Tools > ZENworks Utilities > Imaging > Create or Modify Boot Diskette.)

For more information about using PXE-on-Disk and for a list of supported network adapters see the *PXE-on-Disk User Guide*. To access this guide on a Windows machine that has PXE components installed on it, at the desktop click Start > Programs > ZEN Preboot Services > PXE on Disk > PXE on Disk Manual.

You can also access the *PXE-on-Disk User Guide* at the ZENworks for Desktops 3.2 Preboot Services documentation Web site at <http://www.novell.com/documentation> (<http://www.novell.com/documentation>).

## Setting up Standard DHCP and Proxy DHCP Services on a Windows 2000 Advanced Server

Use the following steps to set up Standard DHCP and Proxy DHCP Services on the same Windows 2000 Advanced Server:

- 1** At the command prompt, enter **netsh**.
- 2** At the netsch prompt, enter **dhcp server**.
- 3** At the dhcp server prompt, enter the following:  

```
add optiondef 60 ClassID STRING 0 PXEClient
```
- 4** Add the definition type in the DHCP setup menus.

