

Novell ZENworks™ for Desktops 3.2 Preboot Services

3.2

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PXE-ON-DISK USER GUIDE



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About This Guide

This guide contains information that will help you understand the PXE-on-Disk utility, prepare a workstation for it, and use it.

Documentation Conventions

In Novell[®] documentation, a greater than symbol (>) is used to separate actions within a step and items in a cross-reference path.

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PXE-on-Disk Setup

This section contains information about the ZENworks™ for Desktops (ZfD) 3.2 Preboot Services utility known as PXE-on-Disk Setup. The information includes:

- ◆ [“About PXE” on page 9](#)
- ◆ [“Creating a PXE-on-Disk Diskette” on page 11](#)
- ◆ [“Booting with a PXE-on-Disk Diskette” on page 15](#)
- ◆ [“Troubleshooting” on page 16](#)

About PXE

This section contains the following information:

- ◆ [“What is PXE?” on page 9](#)
- ◆ [“What Does PXE Do?” on page 10](#)
- ◆ [“How Does PXE Work?” on page 10](#)
- ◆ [“What is PXE-on-Disk Setup?” on page 11](#)

What is PXE?

The Preboot Execution Environment (PXE), pronounced “pixie,” is a client/server interface that allows networked computers to be configured and booted remotely by a network administrator. This interface enables the administrator to manage client workstations on a LAN from a remote location.

This technology makes it possible to configure or reconfigure a system remotely, even with an empty hard drive. The computer system has a universal service agent loaded locally in the BIOS and/or LAN adapter. (PXE-on-Disk

allows this service to be loaded on a boot diskette.) The agent allows the system to interact with a remote server to dynamically retrieve the requested boot image across the network, making it possible to install the operating system and user configuration of a new system without a technician present. As a result, an organization's IT department can save on human labor, which is the most expensive element of support costs, and get new or transferred employees set up and productive more quickly.

What Does PXE Do?

PXE allows you to control and fix a workstation before the operating system starts. The PXE code is typically delivered with a new workstation (PC-99 compliant or later) on a network interface card (NIC). PXE allows the computer to communicate with the network server so that it can be remotely configured and its operating system can be remotely booted.

PXE provides three features:

- ◆ The Dynamic Host Configuration Protocol (DHCP), which allows the client to receive an IP address to gain access to the network servers
- ◆ A set of Application Program Interfaces (APIs) that are used by the client's Basic Input/Output Operating System (BIOS) or a downloaded Network Bootstrap Program (NBP) that automates the booting of the operating system and other configuration steps
- ◆ A standard method of initializing the PXE code in the PXE ROM chip or boot disk

PXE Supports WfM

PXE supports the Wired for Management (WfM) Initiative, an industry-supported effort to make Intel* architecture-based systems universally manageable and universally managed, without sacrificing agility or performance. Through the WfM Initiative, Intel has worked with others in the industry to develop guidelines for a new generation of platforms that can be centrally managed over networks, thereby reducing the cost of ownership.

How Does PXE Work?

The PXE process consists of the client workstation notifying the server that it uses PXE. If the server supports PXE, it sends the client workstation a list of boot servers that contain the available operating systems. The client workstation finds the boot server it needs and receives the name of the file to

download. Using Trivial File Transfer Protocol (TFTP), the client workstation then downloads the file and executes it. This loads the operating system. If a client workstation is equipped with PXE and the server is not, the server ignores the PXE code, preventing disruption in the DHCP and Bootstrap Protocol operations.

There are several advantages to using PXE:

- ◆ The client machine does not necessarily need an operating system or even a hard disk.
- ◆ The client machine can be rebooted in the event of hardware or software failure. This allows the administrator to diagnose and fix the problem.
- ◆ PXE is vendor-independent, allowing new types of computers to be added to the network.

What is PXE-on-Disk Setup?

PXE-on-Disk Setup helps you create a 1.44 MB floppy diskette that contains all of the files needed to allow a PXE-compatible network adapter on a Windows* workstation communicate with a Zfd 3.2 Preboot Services server. When you boot a workstation with a PXE-on-Disk diskette in the floppy drive, it is as if that workstation had a PXE-enabled network adapter.

Operating Systems

The PXE-on-Disk Setup program runs on the following operating systems:

- ◆ Windows 95/98/ME
- ◆ Windows NT* Server/Workstation 4
- ◆ Windows NT/2000

Creating a PXE-on-Disk Diskette

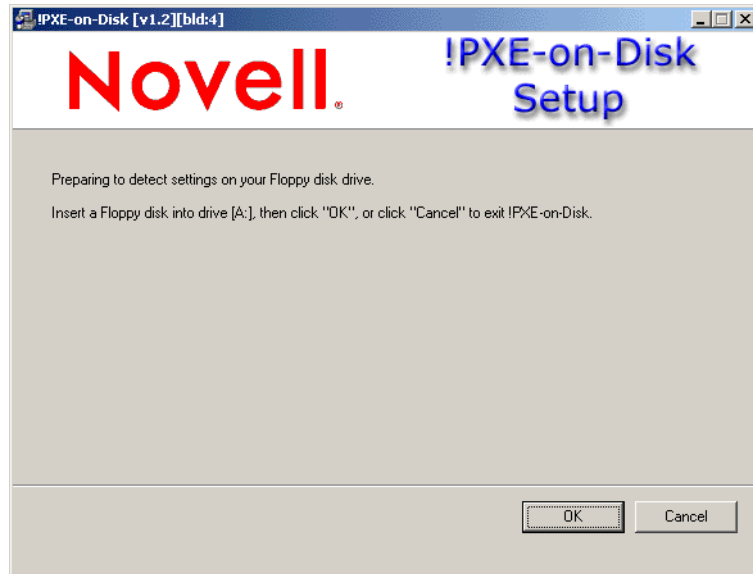
This section contains the following information:

- ◆ [“Creating the Diskette in a Windows NT/2000 Server Environment” on page 12](#)
- ◆ [“Creating the Diskette in a NetWare Server Environment” on page 14](#)

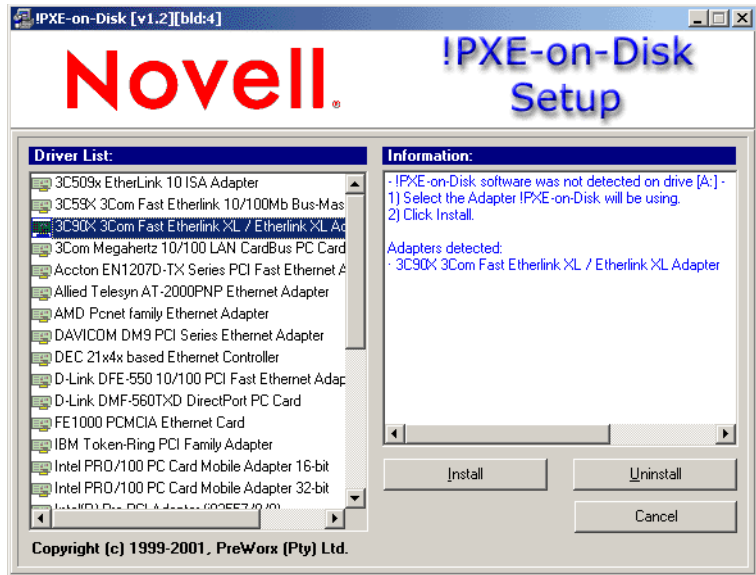
Creating the Diskette in a Windows NT/2000 Server Environment

When you installed ZfD 3.2 Preboot Services component on a Windows server, the PXE-on-Disk creation program was also installed and registered. Use the following procedure to create a PXE-on-Disk diskette from your Windows NT or Windows 2000 server.

- 1 From the Windows desktop, click Start > Programs > ZEN Preboot Services > PXE-on-Disk to display the PXE-on-Disk Setup window.



- 2 Click OK to display the Driver and Information lists for PXE-compatible network adapters.



Note that the network adapter (or adapters) installed on your server is detected and the specifications are listed in the Information list box of the Setup window. Some driver types may be duplicated. For example, Accton En1207d is the same as SMC 1211TX.

- 3** From the Driver List, select the name of the network adapter driver (or its nearest equivalent) that is installed on the client workstation you want to connect to the PXE server.
- 4** Click Install to start creating a PXE-on-Disk diskette.

When the installation is complete, the diskette contains appropriate PXE-on-Disk information for the intended client workstation.
- 5** Click Close to complete the creation of the PXE-on-Disk diskette.

For more information about setting up PXE-on-Disk in a Windows 2000 environment, see *Automatic Workstation Imaging* in the ZENworks for Desktops 3.2 *Lab Guide* at the [Zfd 3.2 documentation Web site \(http://www.novell.com/documentation/lg/zdfs/index.html\)](http://www.novell.com/documentation/lg/zdfs/index.html).

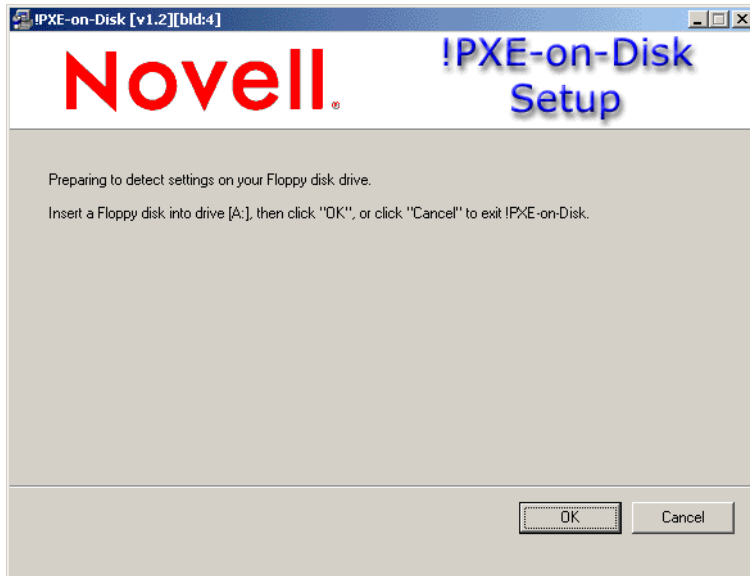
Creating the Diskette in a NetWare Server Environment

The Zfd 3.2 installation program does not copy PXE-on-Disk files to a NetWare server. Use the following the following procedure to create a PXE-on-Disk diskette.

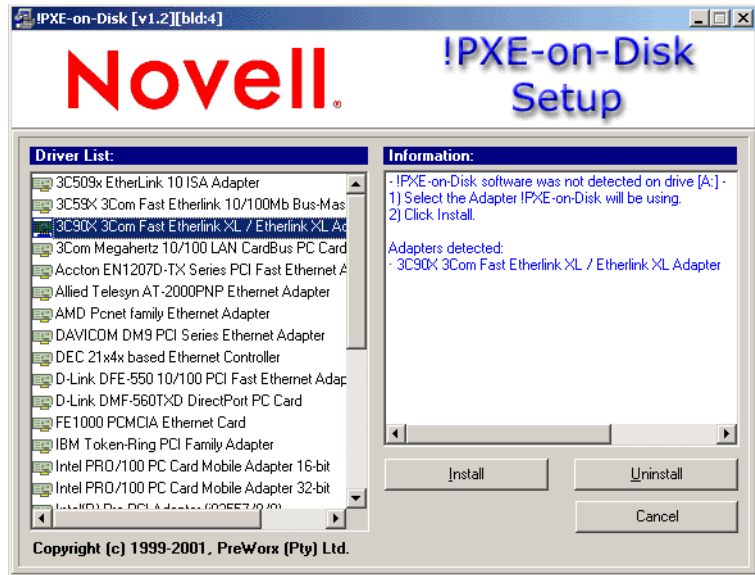
- 1 Copy the PXE-on-Disk folder from the Program CD to the hard disk of a Windows workstation.

Because the PXE-on-Disk program depends on the definition of a specific NIC driver, it will be to your advantage to create the diskette on a workstation with the same network adapter driver as the workstation(s) where you plan to use PXE-on-Disk.

- 2 From the new PXE-on-Disk folder of the Windows workstation, run PXEBUILDER.EXE to display the PXE-on-Disk Setup window.



- 3 Click OK to display the Driver and Information lists for PXE-compatible network adapters.



Note that the network adapter of machine you are using is detected and its specifications listed in the Information list box of the Setup window.

- 4 From the Driver List, select the name of the network adapter driver (or its nearest equivalent) that is installed on the client workstation you want to connect to the PXE server.

Note that some driver types may be duplicated. For example, Accton En1207d is the same as SMC 1211TX.

- 5 Click Install to start creating a PXE-on-Disk diskette.

When the installation is complete, the diskette contains appropriate PXE-on-Disk information for the intended client workstation.

- 6 Click Close to complete the creation of the PXE-on-Disk diskette.

Booting with a PXE-on-Disk Diskette

Before you boot a client workstation with a PXE-on-Disk diskette, you should make sure that Zfd 3.2 Preboot Services has been installed on a network server. This is the server that will communicate with the client workstation and give it tasks (such as workstation imaging) to perform. For more information about installing Zfd 3.2 Preboot Services on a server, see [Setting Up ZENworks for Desktops Preboot Services in Installation](#) at the [Zfd 3.2 Preboot Services documentation Web site \(http://www.novell.com/documentation\)](http://www.novell.com/documentation).

When you know that ZfD 3.2 Preboot Services is installed on the server, you can reboot the client workstation with a PXE-on-Disk diskette. During the reboot cycle, the client workstation will:

1. Establish a connection with the ZfD 3.2 Preboot Services server.
2. Execute any imaging work to be performed.
3. Continue its boot cycle.

Troubleshooting

There are some known problems that have occurred during the testing of PXE-on-Disk software. This section lists those problems and the methods you can use to deal with them.

[“PXE-on-Disk Fails to Operate Correctly” on page 16](#)

PXE-on-Disk Fails to Operate Correctly

Problem: PXE-on-Disk is not working.

Possible Cause: An incorrect network adapter is installed, or PXE-on-Disk is not installed on the diskette that you are using to boot the workstation.

Action: Install a PXE-enabled network adapter.

Action: Reinstall PXE files on a diskette using the PXE-on-Disk setup utility. For more information, see [“Creating a PXE-on-Disk Diskette” on page 11](#).

A

Acronyms

The following table lists the acronyms that are commonly used in this and other ZENworks™ for Desktops 3.2 Preboot Services documentation.

Acronym	Description
API	Application Program Interface
BIOS	Basic Input/Output Operating System
DHCP	Dynamic Host Configuration Protocol
IP	Internet Protocol
LAN	Local Area Network
MTFTP	Multicast Trivial File Transfer Protocol
NBP	Network Bootstrap Program
NDS™	Novell® Directory Service
NFS	Network File System
NTFS	New Technology File System
PXE	Preboot Execution Environment
TFTP	Trivial File Transfer Protocol
WAN	Wide Area Network
WfM	Wired for Management
ZfD	Novell ZENworks for Desktops

