

# Novell NetWare 6.5

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OVERVIEW AND INSTALLATION GUIDE

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NetWare 6.5 Overview and Installation Guide

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# About This Guide

This guide provides an overview of NetWare® 6.5 and describes how to install and upgrade to it. The guide is intended for network administrators and is divided into the following sections:

- ♦ **Chapter 1, “Setting Up NetWare 6.5,” on page 5** explains the prerequisites and instructions for installing a NetWare 6.5 server.
- ♦ **Chapter 2, “Upgrading to NetWare 6.5,” on page 43** explains the prerequisites and instructions for upgrading to NetWare 6.5 from a NetWare 5.1, and 6.0 server.
- ♦ **Chapter 3, “Installing Products and Updates,” on page 51** explains the tasks that should be completed after installing or upgrading to NetWare 6.5.

## Additional Documentation

The entire NetWare 6.5 documentation set is available online at the [Novell® NetWare 6.5 Product Documentation Web site \(http://www.novell.com/documentation/lg/nw65\)](http://www.novell.com/documentation/lg/nw65).

Novell Education offers a variety of courses that help you maximize your investment in NetWare. For course descriptions, details, and locations of training events, visit the [Novell Education Web site \(http://www.novell.com/education/netware6\)](http://www.novell.com/education/netware6).

## Documentation Updates

For the most recent version of the *Novell NetWare 6.5 Overview and Installation Guide*, see the [Novell NetWare 6.5 Product Documentation Web site \(http://www.novell.com/documentation/lg/nw65\)](http://www.novell.com/documentation/lg/nw65)

## Documentation Conventions

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

A trademark symbol (®, ™, etc.) denotes a Novell trademark. An asterisk (\*) denotes a third-party trademark.

When a single pathname can be written with a backslash for some platforms or a forward slash for other platforms, the pathname is presented with a backslash. Users of platforms that require a forward slash, such as UNIX\*, should use forward slashes as required by your software.

## User Comments

We want to hear your comments and suggestions about this manual and the other documentation included with NetWare 6.5. To contact us, send e-mail to [proddoc@novell.com](mailto:proddoc@novell.com).





# 1

## Setting Up NetWare 6.5

This chapter describes how to set up a NetWare® 6.5 server. The process includes fulfilling the following tasks:

- ◆ Meeting System and Software Requirements
- ◆ Preparing the Network
- ◆ Preparing the Computer
- ◆ Installing the Software
- ◆ Selecting the Settings and Configuration
- ◆ Choosing the Server Type
- ◆ Naming the Server
- ◆ Enabling Cryptography
- ◆ Installing Networking Protocols
- ◆ Setting Up Domain Name Service
- ◆ Setting the Server Time Zone
- ◆ Setting Up Novell eDirectory
- ◆ Licensing the NetWare 6.5 Server
- ◆ Selecting the Login Method
- ◆ Completing the Server Installation

### Conditions for Installing NetWare 6.5 Public Beta

The NetWare 6.5 Public Beta installation is supported only under the following conditions:

- ◆ Install only in an isolated, nonproduction test environment.
- ◆ Install onto a clean, error-free disk drive.  
Remove files from any previous installation, and run the scandisk or chkdsk DOS utilities to verify the integrity of the DOS partition.
- ◆ Install a NetWare 6.5 Public Beta server into a tree that has versions of eDirectory™ (NDS®) 8 or later.  
Installing into a tree with a version earlier than eDirectory 8 can make User objects unmanageable when using management utilities other than those that ship with NetWare 6.5
- ◆ Upgrade only from the following:
  - ◆ NetWare 5.1 server with Service Pack 6 and Novell eDirectory 8 version 8.85 or later

- ◆ NetWare 6 server with Service Pack 3

## Installation Issues

- ◆ If a problem occurs (critical errors, the install fails, etc.) during the installation procedure *before* the file copy and the OS install is complete, you must start the installation again from the beginning.

If a problem occurs (critical errors, the install fails, etc.) during the product installation procedure *after* the file copy and the OS install is complete, the installation will finish. An error will be generated telling you which individual product installation failed, but the remaining products will install normally.

- ◆ For a complete list of known issues in this release of NetWare 6.5, see the [Installation/Upgrade](#) chapter of the NetWare 6.5 Readme.

## Meeting System and Software Requirements

### System Requirements

NetWare 6.5 will run on the minimum system requirements listed below. For optimal performance, the computer should meet the recommended requirements.

#### Minimum System Requirements

NetWare 6.5 has the following minimum system requirements:

- A server-class PC with a Pentium\* II or AMD\* K7 processor
- 512 MB of RAM
- A Super VGA display adapter
- A DOS partition of at least 200 MB and 200 MB available space
- 2 GB of available, unpartitioned disk space outside the DOS partition for volume sys:
- One network board
- A CD drive

#### Recommended System Requirements

For optimal performance, NetWare 6.5 has the following recommended system requirements:

- A server-class PC with two-way Pentium III 700 MHz or higher processors

NetWare 6.5 can run on as many as 32 processors.

- 512 MB of RAM
- A Super VGA or higher resolution display adapter
- A DOS partition with 1 GB of available space

To determine the optimal size of a boot partition, add the amount of server memory to the minimum amount of the available disk space. The minimum amount of available space is 200 MB, so a server with 1024 MB RAM has an optimal boot partition of 1224 MB (1024 MB + 200 MB = 1224 MB). This size will allow you to do a core dump to the disk drive if required.

- 4 GB of available, unpartitioned disk space outside the DOS partition for volume sys:
- At least one network board
- A bootable CD drive that supports the El Torito specification
- A USB, PS/2\*, or serial mouse

## Software and Other Requirements

Depending on the network configuration, you might need one or all of the following:

- NetWare 6.5 CD 1 (Operating System)*
- NetWare 6.5 CD 2 (Products)*
- Novell Clients Software CD (March 2003)*

The software included on the *Novell Clients Software CD (March 2003)* is available on the [Novell Public Beta Web site \(http://beta.novell.com/public.jsp\)](http://beta.novell.com/public.jsp).

This includes the following:

- ◆ Novell Client 4.9 for Windows NT/2000/XP
- ◆ Novell Client 3.4 for Windows 95/98
- ◆ Novell Modular Authentication Service (NMAST<sup>™</sup>) Client 2.2
- ◆ Client NICE 2.6 for Windows
- ◆ NetIdentity Client
- ◆ Novell NetDrive Client 4.1
- ◆ Novell ConsoleOne<sup>®</sup> 1.3.6 w/ NetWare 6.5 snap-ins
- ◆ exteNd<sup>™</sup> Workbench 4.1
- ◆ exteNd Client 5.0
- Novell Nterprise Branch Office CD*
- Novell DirXML Starter Pack CD*
- NetWare 6.5 Demonstration Kit CD
- Supervisor right at the [Root] of the eDirectory tree
- Supervisor right to the container where the server will be installed
- Read right to the Security container object for the eDirectory tree
- Client connection utilities (optional, for installing from a network):
  - ◆ Novell Client<sup>™</sup> for DOS and Windows\* 3.1x (for installing from a NetWare server running IPX<sup>™</sup>).
  - ◆ IP Server Connection Utility (for installing from a NetWare server running IP only).  
For instructions, see PRODUCTS\SERVERINST\IPCONN.TXT on the Novell Clients Software CD (March 2003).
- IP address and domain names (optional, for connecting to the Internet):
  - ◆ An IP address
  - ◆ The IP address of a domain name server

- ◆ The name of your domain

For IP addresses and domain names, contact your network administrator and Internet Service Provider.

- Network board and storage device properties, such as the interrupt and port address (required if not included in NetWare)

For more information, contact your computer hardware manufacturer.

## Preparing the Network

Before you introduce a NetWare 6.5 server into an existing network, you must run the NetWare Deployment Manager to update the network.

- 1** On a Windows 95/98 or Windows NT\*/2000 workstation that has the latest Novell client installed on it, log in to your existing network as a user with the Supervisor right.

If you are prompted to log in again while running the NetWare Deployment Manager, you can enter the IP address of the server by clicking Details.

- 2** Insert *NetWare 6.5 CD 1 (Operating System)* and run the NetWare Deployment Manager (nwdeploy.exe) located at the root of the CD.
- 3** Click the Deployment Overview link.
- 4** In the right frame of the browser window, under the heading Network Preparation, click the Overview link to review the tasks you need to perform.
- 5** In the Overview section that displays, click the Step 1: Back Up Data link and follow the instructions that display to back up any server data and Novell eDirectory data.
- 6** Under the Network Preparation heading on the left side of the browser, click the Search Tree for eDirectory and NDS Versions link to learn how to update eDirectory as required.
- 7** Under the Network Preparation heading on the left side of the browser, click the Prepare for eDirectory 8.7 link and follow the displayed instructions to extend the network schema.
- 8** (Conditional) If you are upgrading a cluster of NetWare servers, under the Network Preparation heading on the left side of the browser, click the Prepare Cluster for Upgrade link to follow the instructions to run the Prepare a Novell Cluster for Upgrade program.
- 9** Click the Update Certificate Authority Objects link under the Network Preparation heading and follow the instructions displayed to create or update a Security container object and a Certificate Authority (CA) object.

After you have completed the Network Preparation section of NetWare Deployment Manager, read through the Installation/Upgrade Options section to help you choose the install/upgrade option that best meets your needs.

The three choices described in this section are:

- ◆ Install NetWare 6.5
- ◆ Upgrade to NetWare 6.5
- ◆ Migrate to NetWare 6.5 using the Novell Migration Wizard

After deciding on an installation or upgrade option, exit the NetWare Deployment Manager and prepare the computer to be a NetWare 6.5 server.

# Preparing the Computer

To prepare your computer for NetWare 6.5:

- ◆ In the CONFIG.SYS file, set FILES=50.
- ◆ Ensure that the C:\ drive is formatted so that files can be copied to it. If the C:\ drive is not available for temporary files, the installation will fail.
- ◆ We recommend that you run SCANDISK or CHKDSK /F (depending on the machine's version of DOS) on the C: drive before beginning the installation procedure.
- ◆ Install computer and networking hardware. For more information, see [“Installing Computer and Networking Hardware” on page 9](#).
- ◆ Create and format a DOS partition. For more information, see [“Creating and Formatting a DOS Partition” on page 9](#).
- ◆ Access the installation files. For more information, see [“Access the Installation Files” on page 10](#).

## Installing Computer and Networking Hardware

Follow the manufacturer's instructions to install and connect the network board and network cabling to your computer. Make sure that all storage devices are properly attached to storage adapters.

## Creating and Formatting a DOS Partition

NetWare requires a DOS partition to start the computer and load NetWare. The DOS partition contains the NetWare startup and server files.

**HINT:** You should increase the size of your DOS partition to accommodate your specific configuration requirements. See [“System Requirements” on page 6](#).

To create and format a DOS partition:

- 1** Back up any desired data to another computer or offline storage media.
- 2** Insert *NetWare 6.5 CD 1 (Operating System)* and boot the computer.
- 3** Complete one of the following:
  - ◆ If the computer boots from the CD, follow the on-screen prompts to create and format a partition. Skip to [“Accept the License Agreement” on page 11](#).  
You can make a bootable floppy diskette by entering **C** when asked to select either **"I"** - Install a New Server, or **"C"** - Create a Boot Floppy. DOS 7 and all required DOS utilities are included on the CD.
  - ◆ If you will be installing from files located on another server, continue with step 4.
  - ◆ If the computer does not boot from the CD, continue with step 4.
- 4** Boot your computer with DOS 3.3 or later.
- 5** If the computer already has an operating system installed, such as Windows or NetWare, you should completely remove the partitions and the operating system.  
Use FDISK to remove partitions.
- 6** Use FDISK to create an active DOS partition by entering **FDISK** at the DOS prompt.

Create a primary DOS partition and make it the active partition. See “[System Requirements](#)” on page 6 for minimum requirements.

The computer will restart.

- 7 Format and transfer DOS system files to the partition by changing to drive a: and entering **FORMAT C: /S** at the DOS prompt.

Your computer should now have an active DOS partition that meets or exceeds the minimum requirements. Continue the installation by accessing the installation files.

## Access the Installation Files

NetWare 6.5 can be installed from the server’s local CD drive or from installation files located on the network.

- 1 Insert *NetWare 6.5 CD 1 (Operating System)* and boot the computer.
- 2 Complete one of the following:
  - ♦ If the computer boots from the CD, follow the on-screen prompts and skip to “[Accept the License Agreement](#)” on page 11.
  - ♦ If the computer does not boot from the CD, continue with the following steps.
- 3 Boot your computer with DOS 3.3 or later.
- 4 Access *NetWare 6.5 CD 1 (Operating System)*.

If you install CD drivers to the disk drive, make sure that the logical filename of your CD drive (specified in config.sys and autoexec.bat) is *not* CDROM or CDINST.

- 5 Make sure that the config.sys file contains the **FILES=50** and **BUFFERS=30** commands.
- 6 (Conditional) To install from NetWare 6.5 files located on a network, install the Novell Client for DOS and Windows 3.1x or IP Server Connection Utility software located on the *Novell Clients Software CD (March 2003)*.
- 7 (Conditional) To install from NetWare 6.5 files located on a network, copy the contents of both *NetWare 6.5 CD 1 (Operating System)* and *NetWare 6.5 CD 2 (Products)* to the same directory on your network. In copying these two CDs to the network, you may see messages regarding duplicate files. This is because some of the files for NetWare 6.5 are placed on both CDs. Proceed past the duplicate file messages and continue the copy to the network.

## Installing the Software

To begin the installation, complete the following steps:

- 1 Insert *NetWare 6.5 CD 1 (Operating System)*.

or

Log in to the network to access the installation files on the network.

- 2 At the CD drive or network drive prompt, enter **INSTALL**.

## Navigating in the Character-Based Screens

The initial screens of the installation program display in text-based mode. Auto-detected and default settings appear on each screen.

You can accept the detected and default settings, or you can modify the settings to meet the needs of your networking environment.

**HINT:** To continue the installation with the standard settings, use the arrow keys to select Continue in the Options box and then press Enter.

To modify the settings, use the arrow keys to select Modify in the Options box and then press Enter. Select the field to be modified and press Enter. Select or enter the appropriate value.

Some screens require additional keystrokes in order to navigate through the interface. Information about screen navigation appears at the bottom of each screen.

## Selecting the Settings and Configuration

To select the settings and configuration, you must

- ◆ Select the Language and Regional Settings
- ◆ Accept the License Agreement
- ◆ Select the Type of Installation

### Select the Language and Regional Settings

The installation program is available in several languages. You can install other language options, such as the language for the users or the operating system, later during the installation.

- 1 Select the language, then press Enter.

The next screen allows you to modify the regional settings. The default settings are shown.

- 1 To accept the defaults, select Continue and press Enter.

or

To change the settings, select Modify and press Enter.

### Accept the License Agreement

Accepting each License Agreement means that you have read and agreed to the terms and conditions contained in the License Agreement.

- 1 Press F10 to accept the Novell Software License Agreement.
- 2 Press F10 to accept the JReport Runtime License Agreement.

### Select the Type of Installation

You can select either an Express Installation or a Custom Installation.

#### Express Installation

The Express Installation automatically detects drivers and installs the NetWare 6.5 server with default settings. The settings include the following:

- ◆ 4 GB volume sys: Any remaining disk space will be left as free space.
- ◆ LAN and disk drivers auto-discovered and loaded.
- ◆ Country Code: 1

- ◆ Codepage: 437
- ◆ Video mode: SVGA Plug N Play
- ◆ Keyboard: United States
- ◆ Mouse: Auto-discovered and loaded

If you have an existing boot partition on the server, but NetWare 6.5 determines that it is not big enough for the install to continue, you will now see the Prepare Boot Partition screen.

The Prepare Boot Partition screen displays the default settings for the DOS partition, NetWare partition, and free space.

To accept the default settings:

- 1 Select Continue and press Enter.

To modify the default settings:

- 1 From the Prepare Boot Partition screen, select Modify and press Enter.
- 2 Make the desired changes.
- 3 Select Continue and press Enter.

If you selected an Express installation, continue with [“Summary” on page 14](#).

## Custom Installation

The Custom Installation allows you to choose specific configuration options for your networking environment. It also allows for the manual configuration of the default settings used in the Express Installation.

To perform a custom installation:

- 1 Select Custom.
- 2 Select Continue and press Enter.

### Prepare Boot Partition

The Prepare Boot Partition screen displays the default settings for the DOS partition, NetWare partition, and free space.

To accept the default settings:

- 1 Select Continue and press Enter.

To modify the default settings:

- 1 From the Prepare Boot Partition screen, select Modify and press Enter.
- 2 Make the desired changes.
- 3 Select Continue and press Enter.

### Server Settings

The following defaults are set:

- ◆ A server ID number is provided
- ◆ The option to load the server at reboot is set to Yes



- ◆ SVGA Plug N Play is listed as the default for video

To modify any of these default settings, or to edit the server SET parameters:

- 1** Select Modify and press Enter.

If you choose to edit the server SET parameters, a screen will display where you can enter new SET parameters or other commands (Load, etc.). SET parameters entered here are saved and run from the server's registry. All other commands entered here are saved and run from the startup.ncf file.

- 2** Make any desired changes.
- 3** Select Continue and press Enter.

### **Device Driver Settings**

A file copy procedure begins. During the file copy, the device drivers will be detected and you will be presented with a screen or screens where you can modify these settings.

If you do not want to modify the settings:

- 1** Select Continue.
- 2** Press Enter.

If you want to modify the settings:

- 1** Select Modify.
- 2** Press Enter.
- 3** Make any desired changes.
- 4** Select Continue.
- 5** Press Enter.

### **Existing NetWare Partition or Volume**

If an existing NetWare partition or volume is discovered on the server, a screen will appear that indicates this. You will be given two options: 1) Remove only the NetWare sys: volume and pool/partitions, 2) Remove all NetWare volumes and partitions.

- 1** Select the desired option.
- 2** Press Enter.

You will next see a Create SYS Volume screen.

- 1** Select the sys: volume size option.
- 2** Enter the desired size of the sys: volume in MB.
- 3** Press Enter to select the Create option.
- 4** Press Enter again.

You will now see the Main Menu screen. From this screen, you can create or modify devices, partitions, pools, raid devices, and volumes. To create or modify any of the options presented:

- 1** Select the desired option.
- 2** Press Enter.
- 3** Follow the on-screen prompts, and when finished, return to the Main Menu.

- 4 Select the Continue Installation option.
- 5 Press Enter.

## Summary

The NetWare system files are copied to volume sys:. The file copy process will take several minutes.

If you are installing from the network, you are prompted to reconnect to the network. To continue the installation, enter the password for the user that originally logged in. The file copy process will now continue for a few minutes. The NetWare installation program will then continue in graphical display mode.

Although a mouse is recommended, you can use keyboard commands to navigate through the installation program. For more information on keyboard commands, see [Appendix A, “Keyboard Commands,” on page 53](#) for a table listing the graphical mode keyboard actions.

The following sections explain how to complete the NetWare 6.5 installation.

## Choosing the Server Type

After the file copy is complete, the Choose a Pattern page displays and you are given the opportunity to select the type of server you want to install. Placing your cursor over the name of the special-purpose server (pattern) displays a description of that server in the Description window.

The following types of pattern installations are available in NetWare 6.5:

- ◆ [“Customized Netware Server” on page 15](#)
- ◆ [“Basic Netware File Server” on page 15](#)
- ◆ [“Pre-Migration Server” on page 16](#)
- ◆ [“DNS/DHCP Server” on page 17](#)
- ◆ [“exteNd J2EE Web Application Server” on page 17](#)
- ◆ [“LDAP Server” on page 19](#)
- ◆ [“NetWare AMP \(Apache, MySQL, PHP, and PERL\) Server” on page 19](#)
- ◆ [“NetWare Backup Server” on page 21](#)
- ◆ [“NetWare Web Search Server” on page 21](#)
- ◆ [“Novell iPrint Server” on page 22](#)
- ◆ [“Nterprise Branch Office - Central Office Server” on page 23](#)
- ◆ [“Apache/Tomcat Server” on page 23](#)
- ◆ [“Network Attached Storage \(NAS\) Server” on page 24](#)
- ◆ [“Management Server” on page 25](#)
- ◆ [“Novell iFolder 2.1 Server” on page 26](#)
- ◆ [“Virtual Office Server” on page 27](#)

The following sections provide additional information about the individual installation types and the products that they will install on your server.

## Customized NetWare Server

The Customized NetWare Server option gives you the freedom to install any combination of products you want. After you select Customized NetWare Server and click Next, the Components page displays and you can choose which additional NetWare 6.5 components to install. To view a description of a component, place the cursor over the component name.

To select additional components to install:

- 1 Check the check box next to each component you want to install, then click Next.

Default selections can be deselected if desired.

**IMPORTANT:** The iManager installation might take up to 15 minutes to complete. During this installation, the page will not change.

- 2 If you're performing an upgrade, you might see a message stating that there is a file conflict. If this occurs, select the file overwrite option that you prefer and click OK.

We recommend Never Overwrite Newer Files.

- 3 When prompted, remove *NetWare 6.5 CD 1 (Operating System)*, insert *NetWare 6.5 CD 2 (Products)*, then click OK.

Proceed to [“Installed Products Summary” on page 28](#).

## Basic Netware File Server

The Basic NetWare File Server option installs only the basic NetWare operating system. This option is appropriate if you want to get the server up and running quickly and install products later. The Basic NetWare File Server option copies only the files needed for a basic NetWare server, including those for the following products:

- ◆ Apache 2 Admin Server
- ◆ CIFS/AFP
- ◆ eDirectory 8.7
- ◆ Java\* Virtual Machine (JVM\*)
- ◆ LDAP Service
- ◆ NetWare Remote Manager
- ◆ Novell Certificate Server™ 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Pervasive\* SQL 2000i
- ◆ Scripting Engine (for PHP and PERL support)
- ◆ Secure Authentication Services
- ◆ Storage Management Services™ (SMS)
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

If you selected the Basic NetWare File Server option, click Next and then proceed to [“Pattern Installation Details” on page 28](#).

## Pre-Migration Server

The Pre-Migration Server option installs a NetWare server that an existing server will be migrated to at a later time using the NetWare Migration Wizard Utility. SLP must be configured on a Pre-Migration Server for the Migration Wizard to function properly. For instructions on how to configure SLP on this server, see [“Installing IP and IPX” on page 31](#).

The Pre-Migration Server option copies only the files needed for a Pre-Migration server, including those for the following products:

- ◆ eDirectory 8.7
- ◆ Java Virtual Machine (JVM)
- ◆ NetWare Remote Manager
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Storage Management Services (SMS)
- ◆ W0 (Security Domain Key)

If you selected the Pre-Migration Server option, click Next and then proceed to [“Pattern Installation Details” on page 28](#).

## DNS/DHCP Server

Novell DNS/DHCP Services in NetWare integrates the Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP) into the eDirectory database. Integrating these services into eDirectory provides centralized administration and enterprise-wide management of network (IP) addresses, configuration, and hostnames.

The DNS/DHCP Server option extends the schema for DNS/DHCP and creates a dedicated DNS/DHCP server by copying only the files needed, including those for the following products:

- ◆ Apache 2 Web Server
- ◆ DNS/DHCP
- ◆ eDirectory 8.7
- ◆ Java Virtual Machine (JVM)
- ◆ NetWare Remote Manager
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell iManager 2.0
- ◆ Storage Management Services (SMS)
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

For information about configuring DNS/DHCP after the installation, see the *Novell DNS/DHCP Management Utility Administration Guide*.

If you selected the DSN/DHCP Server option, click Next and then proceed to “**Pattern Installation Details**” on page 28.

## exteNd J2EE Web Application Server

The exteNd J2EE Web Application Server option installs a highly optimized configuration of the Novell exteNd Application Server (Enterprise Edition). It is a comprehensive J2EE server for deploying enterprise-class Web applications. It supports the full Java 2 Enterprise Edition standard: JavaServer\* Pages (JSP pages), Enterprise JavaBeans\* (EJBs), and all other J2EE 1.3 components and technologies. The Novell exteNd Application Server provides high performance, scalability, and reliability; support for rapid application development; application deployment facilities; and server management facilities.

Also included:

- ◆ A complete set of Web Services for building SOAP-based applications that can use either the light or enterprise edition of the Novell UDDI server.
- ◆ Several working samples that can be modified for your own use. These include the J2EE Pet Store and SilverBooks, both examples of a simple ecommerce application.

**IMPORTANT:** You must also install Novell exteNd Workbench from the client CD. It is the integrated development environment (IDE) designed specifically to help you build Web Services and J2EE applications and then deploy them to your J2EE server.

The exteNd J2EE Web Application Server option creates a J2EE and Web Services server by copying only the files needed, including those for the following products:

- ◆ Apache 2 Admin Server
- ◆ Apache 2 Web Server
- ◆ CIFS/AFP
- ◆ ConsoleOne 1.3.4
- ◆ DNS/DHCP
- ◆ eDirectory 8.7
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ J2EE
- ◆ LDAP Service
- ◆ MySQL\*
- ◆ NDS iMonitor Services
- ◆ NetWare Remote Manager
- ◆ NetWare Web Search
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell Distributed Print Services (NDPS)
- ◆ Novell eGuide™

- ◆ Novell iFolder 2.1
- ◆ Novell iManager 2.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell Native File Access
- ◆ NWFTP
- ◆ OpenSSH
- ◆ Pervasive SQL 2000i
- ◆ Scripting Engine (for PHP and PERL support)
- ◆ Storage Management Services (SMS)
- ◆ Tomcat 4 Servlet Container
- ◆ UDDI
- ◆ WANCON
- ◆ WANMAN
- ◆ W0 (Security Domain Key)

For information about configuring an exteNd J2EE Web Application Server after the installation, see the Novell exteNd Application Server help.

If you selected the exteNd J2EE Web Application Server option, click Next and then proceed to [“Pattern Installation Details” on page 28](#).

## LDAP Server

The LDAP Server option installs Lightweight Directory Access Protocol (LDAP) Services for Novell eDirectory. This is a server application that lets LDAP clients (for example, Netscape Communicator, Internet Explorer, or the Novell Import Conversion Export utility) access information stored in eDirectory. LDAP Services includes access to the following eDirectory features through LDAP: provisioning, account management, authentication, authorization, identity management, notification, reporting, qualification, and segmentation.

The LDAP Server option creates an LDAP server by copying only the files needed, including those for the following products:

- ◆ Apache 2 Admin Server
- ◆ ConsoleOne 1.3.4
- ◆ eDirectory 8.7
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NDS iMonitor Services
- ◆ NetWare Remote Manager

- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell Native File Access
- ◆ Pervasive SQL 2000i
- ◆ Scripting Engine (for PHP and PERL support)
- ◆ Storage Management Services (SMS)
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

For information about configuring LDAP after the installation, see the [Configuring LDAP Services for Novell eDirectory](#) chapter of the *Novell eDirectory 8.7 Administration Guide*.

If you selected the LDAP Server option, click Next and then proceed to [“Pattern Installation Details” on page 28](#).

## NetWare AMP (Apache, MySQL, PHP, and PERL) Server

The NetWare AMP (Apache, MySQL, PHP, and PERL) Server option lets you host Web database applications on your NetWare 6.5 server. Available from the open-source community, Web database applications can be downloaded from the World Wide Web and easily deployed to your NetWare AMP server. Additionally, if you are familiar with the structured query language (SQL) and PHP or PERL scripting languages, you can develop and host your own Web database applications.

The NetWare AMP (Apache, MySQL, PHP, and Perl) Server option creates a NetWare AMP server by copying only the files needed, including those for the following products:

- ◆ Apache 2 Admin Server
- ◆ Apache 2 Web Server
- ◆ CIFS/AFP
- ◆ ConsoleOne 1.3.4
- ◆ DNS/DHCP
- ◆ eDirectory 8.7
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ MySQL
- ◆ NDS iMonitor Services
- ◆ NetWare Remote Manager
- ◆ NetWare Web Search
- ◆ Novell Certificate Server 2.4.0

- ◆ Novell Distributed Print Services (NDPS)
- ◆ Novell eGuide
- ◆ Novell iManager 2.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell Native File Access
- ◆ NWFTP
- ◆ OpenSSH
- ◆ Pervasive SQL 2000i
- ◆ Scripting Engine (for PHP and PERL support)
- ◆ Storage Management Services (SMS)
- ◆ Tomcat 4 Servlet Container
- ◆ WANCON
- ◆ WANMAN
- ◆ W0 (Security Domain Key)

If you selected the NetWare AMP (Apache, MySQL, PHP, and Perl) Server option, click Next and then proceed to **“Pattern Installation Details” on page 28.**

## NetWare Backup Server

The NetWare Backup Server option provides the infrastructure for backup and restore services on the NetWare platform. It lets you back up targets such as the file system, Novell eDirectory, and GroupWise® to removable tape media for off-site storage. The NetWare Backup Server has been designed to scale with optimized hardware configurations.

The NetWare Backup Server option extends the schema for SMS and creates a dedicated NetWare Backup Server by copying only the files needed, including those for the following products:

- ◆ eDirectory 8.7
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ NetWare Remote Manager
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Pervasive SQL 2000i
- ◆ Scripting Engine (for PHP and PERL support)
- ◆ Storage Management Services (SMS)



- ◆ W0 (Security Domain Key)

For information about configuring SMS after the installation, see the *Storage Management Services Administration Guide*.

If you selected the NetWare Backup Server option, click Next and then proceed to “**Pattern Installation Details**” on page 28.

## NetWare Web Search Server

The NetWare Web Search Server option installs the NetWare Web Search server, a search engine capable of indexing Web site and file server content. Web Search lets you easily add search functionality to your Web sites.

The NetWare Web Search Server option creates a NetWare Web Search server by copying only the files needed, including those for the following products:

- ◆ Apache 2 Admin Server
- ◆ Apache 2 Web Server
- ◆ eDirectory 8.7
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NetWare Remote Manager
- ◆ NetWare Web Search
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Storage Management Services (SMS)
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

For information about configuring Web Search after the installation, see the *NetWare Web Search Server Administration Guide*

If you selected the NetWare Web Search Server option, click Next and then proceed to “**Pattern Installation Details**” on page 28.

## Novell iPrint Server

Novell iPrint is our recommended print solution. iPrint lets users install printers and manage print jobs using an existing Internet connection and a Web browser. iPrint generates a Web page containing a list of available printers and lets administrators create maps with printer locations that aid users in finding the printer closest to them.

The Novell iPrint Server option installs and creates a dedicated iPrint server by copying only the files needed, including those for the following products:

- ◆ Apache 2 Web Server
- ◆ Apache 2 Admin Server

- ◆ eDirectory 8.7
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NDS iMonitor Services
- ◆ NetWare Remote Manager
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell Distributed Print Services (NDPS)
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell Portal Services (NPS)
- ◆ Novell Publish/Subscribe Infrastructure (NPSI)
- ◆ Storage Management Services (SMS)
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

For information about configuring iPrint after the installation, see the *iPrint Administration Guide*.

If you selected the Novell iPrint Server option, click Next and then proceed to “**Pattern Installation Details**” on page 28.

## **Nterprise Branch Office - Central Office Server**

The Nterprise Branch Office - Central Office Server option installs the basic NetWare server plus files necessary to run Rsync at the central office. Rsync is an open-source utility that provides fast incremental file transfer. Rsync is used in conjunction with Nterprise Branch Office soft appliance (included with NetWare 6.5) to create a solution for businesses that have multiple branch offices that need to back up data.

Nterprise Branch Office replicates data to a server running Rsync software at your central office, where backups can be run by network administration personnel using high-performance equipment. This brings branch office data into your corporate backup strategy and enhances your ability to recover from disasters.

Nterprise Branch Office appliance software combines with your hardware to create a Branch Office server appliance that simplifies directory management, automates branch office file replication, and leverages low-cost Internet connections. It is also the only appliance solution that automatically provides user access for all users in the branch using User Access Provisioning (LDAP) to provide local access at the branch office. Users can access and share files using all popular file access protocols (Windows\*, Apple\* and HTTP). They can also locate and use printers with a Web browser and print to local printers using Branch Office as a local print spool.

The Nterprise Branch Office - Central Office Server option creates an Nterprise Branch Office Central Office server by copying only the files needed, including those for the following products:

- ◆ eDirectory 8.7
- ◆ Java Virtual Machine (JVM)
- ◆ NetWare Remote Manager

- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Storage Management Services
- ◆ W0 (Security Domain Key)

For information about configuring Nterprise Branch Office and RSYNC after the installation, see the [Nterprise Branch Office online documentation \(http://www.novell.com/documentation/lg/nbo\)](http://www.novell.com/documentation/lg/nbo).

If you selected the Nterprise Branch Office Corporate Server option, click Next and then proceed to **“Pattern Installation Details” on page 28**.

## Apache/Tomcat Server

The Apache/Tomcat Server option lets you deploy and host servlets and Java Server Pages (JSPs). It installs Apache Web Server 2.0 and the Jakarta-Tomcat Servlet Container 4.1 for use in hosting dynamic, application-driven Web sites. Novell eDirectory Java LDAP beans are also included to provide a broad range of eDirectory authentication and identity mechanisms that are customized for use in setting up browser-based access to protected information.

For additional development and deployment power, install the Novell exteNd Workbench IDE from the *Novell Clients Software CD (March 2003)*.

If you need more functionality than you can get from servlets and JSPs, consider installing the exteNd J2EE Web Application Server pattern instead.

The Apache/Tomcat Server option creates an Apache/Tomcat server by copying only the files needed, including those for the following products:

- ◆ Apache 2 Admin Server
- ◆ Apache 2 Web Server
- ◆ ConsoleOne 1.3.4
- ◆ eDirectory 8.7
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NetWare Remote Manager
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell eGuide
- ◆ Novell iManager 2.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ OpenSSH
- ◆ Pervasive SQL 2000i
- ◆ Scripting Engine (for PHP and PERL support)

- ◆ Storage Management Services (SMS)
- ◆ Tomcat 4 Servlet Container
- ◆ UDDI
- ◆ W0 (Security Domain Key)

For information about configuring the Apache Web Server after the installation, see the *Apache Web Server Administration Guide*.

For information about configuring Tomcat after the installation, see the *Tomcat for NetWare Administration Guide*.

If you selected the Apache/Tomcat Server option, click Next and then proceed to “**Pattern Installation Details**” on page 28.

## Network Attached Storage (NAS) Server

The Network Attached Storage (NAS) Server option gives you multiple file protocol storage for your network. NetWare 6.5 supports Native File Access protocols (NFAPs), including Windows Networking (CIFS), Novell Networking (NCP), UNIX/Linux Networking (NFS), Macintosh Networking (AFP), and Web Storage (HTTP, HTTPS, FTP, and WebDAV). Multiplatform clients and application servers can access storage using their native protocols. This deployment includes NetStorage™, which allows for Web-based sharing of and access to files. From any Web client, or through WebDAV for sharing, all your data is securely accessible. NetWare 6.5 is able to drop into and integrate with any of these environments seamlessly, as well as bridge these environments together.

The Network Attached Storage (NAS) Server option creates a NAS server by copying only the files needed, including those for the following products:

- ◆ Apache 2 Admin Server
- ◆ CIFS/AFP
- ◆ ConsoleOne 1.3.4
- ◆ eDirectory 8.7
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NetWare Remote Manager
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell Native File Access
- ◆ Pervasive SQL 2000i
- ◆ Scripting Engine (for PHP and PERL support)
- ◆ Storage Management Services (SMS)
- ◆ Tomcat 4 Servlet Container

- ◆ W0 (Security Domain Key)

For information about configuring NetStorage after the installation, see the *NetStorage Administration Guide*.

If you selected the Network Attached Storage (NAS) and File Protocol Server option, click Next and then proceed to “**Pattern Installation Details**” on page 28.

## Management Server

The Management Server option installs Novell iManager 2.0 and Novell ConsoleOne 1.3.6 network administration software. Both products together provide a complete management solution for your NetWare 6.5 server environment.

Novell iManager 2.0 provides a single Web-based management console for the administration of Novell products on NetWare 6.5. iManager standardizes all Novell Web-based administration utilities on a single management framework. iManager also provides a best-of-breed architecture for easy development of Web-based administration and management modules through open standard application interfaces.

Novell ConsoleOne 1.3.6 is the latest version of Novell's Java-based, GUI network management application.

The Management Server option creates a dedicated iManager server by copying only the files needed, including those for the following products:

- ◆ Apache 2 Admin Server
- ◆ Apache 2 Web Server
- ◆ CIFS/AFP
- ◆ ConsoleOne 1.3.4
- ◆ eDirectory 8.7
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NDS iMonitor Services
- ◆ NetWare Remote Manager
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell eGuide
- ◆ Novell iManager 2.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Pervasive SQL 2000i
- ◆ Scripting Engine (for PHP and PERL support)
- ◆ Storage Management Services (SMS)
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

For information about configuring iManager after the installation, see the [Novell iManager 2.0 Administration Guide](http://www.novell.com/documentation/beta/imanager20/index.html) (<http://www.novell.com/documentation/beta/imanager20/index.html>).

If you selected the Management Server option, click Next and then proceed to “**Pattern Installation Details**” on page 28.

## Novell iFolder 2.1 Server

Novell iFolder 2.1 is a Net services software solution that allows your users’ files to follow them across multiple workstations and the Internet. With iFolder, each user has a single virtual work folder that provides convenient and secure access to the most recent version of his or her documents. All the user needs is an active Internet connection and the iFolder client or a Web browser. The iFolder server helps guard against local data loss by automatically backing up users’ local files to the iFolder server, making them available for regularly scheduled data backup.

The Novell iFolder 2.1 Server option extends the eDirectory schema for iFolder and creates a dedicated iFolder server by copying only the files needed, including those for the following products:

- ◆ Apache 1.3.26 Web Server
- ◆ eDirectory 8.7
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NetWare Remote Manager
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell iFolder 2.1
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Storage Management Services (SMS)
- ◆ W0 (Security Domain Key)

For information about configuring Novell iFolder 2.1 after the installation, see the [iFolder 2.1 Installation and Administration Guide](#).

If you selected the Novell iFolder 2.1 Server option, click Next and then proceed to “**Pattern Installation Details**” on page 28.

## Virtual Office Server

The Virtual Office Server option addresses the need for users to be self sufficient with their IT needs. Virtual Office lets users set up and manage many of their own networking, information sharing, and data backup processes. It also lets users create project teams, organize projects, and collaborate with team members in real time from any location. Virtual Office optimizes the concept of self service for users, which significantly reduces support calls.

The Virtual Office Server option creates a Virtual Office server by copying only the files needed, including those for the following products:

- ◆ Apache 2 Admin Server
- ◆ Apache 2 Web Server
- ◆ ConsoleOne 1.3.4

- ◆ eDirectory 8.7
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NDS iMonitor Services
- ◆ NetWare Remote Manager
- ◆ NetWare Web Search
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell Distributed Print Services (NDPS)
- ◆ Novell eGuide
- ◆ Novell iFolder 2.1
- ◆ Novell iManager 2.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell NetStorage
- ◆ Pervasive SQL 2000i
- ◆ Scripting Engine (for PHP and PERL support)
- ◆ Secure Authentication Services (SAS)
- ◆ Storage Management Services (SMS)
- ◆ Tomcat 4 Servlet Container
- ◆ Virtual Office
- ◆ WANCON
- ◆ W0 (Security Domain Key)

For information about configuring Virtual Office after the installation, see the *Novell Virtual Office Installation and Configuration Guide*.

If you selected the Virtual Office Server option, click Next and then proceed to “**Pattern Installation Details**” on page 28.

## Installed Products Summary

After selecting the components that you want to install from the Components page, a Summary screen appears displaying the names of the selected products and the disk space (in MB) required to install them.

If you want to change your product selection, click Back and make the necessary changes. After verifying the product names and space requirements, click Copy Files.

(Conditional, if installing from CD) When prompted, remove *NetWare 6.5 CD 1 (Operating System)*, insert *NetWare 6.5 CD 2 (Products)*, click OK, and proceed to “**Naming the Server**” on page 28.

## Pattern Installation Details

After selecting the special purpose server that you want to install, a Details screen appears displaying a description of the selected pattern and the system requirements needed to successfully deploy it.

If you want to change your pattern selection, click Back and make the necessary changes. After verifying the description and system requirements for your selected pattern, click Copy Files.

(Conditional, if installing from CD) When prompted, remove *NetWare 6.5 CD 1 (Operating System)*, insert *NetWare 6.5 CD 2 (Products)*, click OK, and proceed to “Naming the Server” on page 28.

## Naming the Server

The NetWare 6.5 server name must be unique from all other servers on the eDirectory tree. The name can be between 2 and 47 alphanumeric characters and can contain underscores ( \_ ) and hyphens ( - ), but no spaces. The first character cannot be a period ( . ).

**IMPORTANT:** The server name must be different from the name that you plan to use for the eDirectory tree.

- 1 On the Server Properties page, enter the server name in the field provided.

### (Optional) Edit the Config.sys File

At this stage of the installation, you can make changes or additions to the server’s config.sys file.

- 1 From the Server Properties page, click Advanced.
- 2 Select the Edit Config.sys tab.
- 3 Type the desired information into the config.sys field on the right side of the screen.
- 4 Click OK.

### (Optional) Edit the Autoexec.bat File

At this stage of the installation, you can make changes or additions to the server’s autoexec.bat file.

- 1 From the Server Properties page, click Advanced.
- 2 Select the Edit Autoexec.bat tab.
- 3 Type the desired information into the autoexec.bat field on the right side of the screen.
- 4 Click OK.

### (Optional) Specify the Server’s ID Number

The server requires a unique identification number. Changing the server ID number during this portion of the installation places the new server ID number in the autoexec.ncf file. The new server ID number takes effect after you reboot the server.

- 1 From the Server Properties page, click Advanced.
- 2 Select the Server Properties tab.
- 3 Type the desired server ID number into the field provided.
- 4 Click OK.



## (Optional) Select Language Options

NetWare 6.5 can be customized to function in several languages.

**1** From the Server Properties page, click Advanced.

**2** Select the Language tab.

**3** Select the desired server language from the drop-down list.

The server language determines which language the server console and error messages appear in.

**4** Select the desired admin language from the drop-down list.

The admin language determines which language the network administrator User object uses to log in to the network. When additional eDirectory objects are created by the administrator, they use the same language as the admin language.

**5** In the Additional Server Languages field, check the box next to the languages you want to install.

You can use NetWare server and client utilities in other languages, if the additional language is installed on the server.

**6** Click OK.

After completing the previous, optional steps, you will now be back at the Server Properties page.

**7** Click Next.

## Enabling Cryptography

The use of cryptography must be licensed on NetWare 6.5. To license cryptography, you must provide a cryptographic file (.nfk). This file is located in the License directory on *NetWare 6.5 CD 1 (Operating System)* and on *NetWare 6.5 CD 2 (Products)*.

**1** On the Encryption page, click the Browse button and browse to the License directory on *NetWare 6.5 CD 1 (Operating System)* or *NetWare 6.5 CD 2 (Products)*.

**2** Select the .nfk file.

**3** Click OK, then click Next.

## Installing Networking Protocols

NetWare 6.5 can process IP (Internet Protocol) network packets and traditional IPX™ (Internetwork Packet Exchange™) packets. Both protocols can be assigned to a single network board, which allows the server to communicate using IP and IPX.

- ♦ [About the Internet Protocol \(IP\)](#)
- ♦ [About IPX](#)
- ♦ [Using Both IP and IPX](#)
- ♦ [Installing IP and IPX](#)

## About the Internet Protocol (IP)

The Internet protocol (IP) lets your network share data with other IP networks, including the Internet. Using IP requires a unique IP address, a subnet, and a router or gateway address.

- ◆ **IP Address**—Identifies each device on the network. The address consists of 32 bits, which are represented as decimal values separated by periods, such as 123.45.67.89.

If your server will connect to the Internet, you must obtain a unique IP address. For information on receiving an IP address, contact your Internet service provider (ISP).

- ◆ **Subnet Mask**—Lets you break up your network into smaller networks. Your network might have too many nodes or might be too geographically dispersed to manage as a single network.

Dividing your network into smaller networks allows the network routers to filter and reduce the network activity seen by any of the nodes. However, dividing your network and using several network addresses might not be appropriate on a large network that needs to appear to network administrators as a single network.

- ◆ **Router (Gateway)**—The address of the router that connects two different environments, such as a LAN and the Internet.

You can enter a specific router (gateway) address or you can rely on the network to automatically find the nearest router. If you specify the address, remember that the router must exist on your network segment.

Installing IP will automatically bind to the Ethernet\_II frame type.

When IP is selected, passive support for IPX is also provided. If an IPX request arrives at the server, NetWare will process the IPX request. This passive support for IPX is called Compatibility Mode and is automatically enabled to provide service for applications that require IPX.

**HINT:** You can disable Compatibility Mode by removing the `LOAD SCMD` command from the server's `AUTOEXEC.NCF` file. When IPX Compatibility Mode is disabled, the server will process only IP packets. Applications that require IPX will not function properly.

## About IPX

Novell's traditional protocol, Internetwork Packet Exchange (IPX), lets you continue using IPX-based applications. If IPX, but not IP, is installed on your server, it will actively process IPX packets and ignore packets using other protocols, such as IP.

During the installation program, existing IPX frame types will be detected. The installation program will detect one of the following conditions.

- ◆ **A single IPX frame type**—If a single frame type is detected, it will be installed.
- ◆ **Multiple IPX frame types**—If detected, you will be prompted to choose the frame types that you want to install.
- ◆ **No IPX frame types**—If no frame types are detected, Ethernet\_802.2 will be installed by default.

## Using Both IP and IPX

If you have network clients or applications that require IPX and IP, you can install both protocols. Both protocols can be bound to a single network board. When selected, both IP and IPX protocols are actively supported. The server will process IP requests using IP, and it will broadcast and reply to IPX requests using IPX.

## Installing IP and IPX

- 1 From the Protocols page, select a network board.
- 2 Check the IP check box.
- 3 Enter the required IP information.
- 4 Check the IPX check box if you are installing IPX.

If you choose to install IP and not IPX, the SERVERID reference is not used and is removed from autoexec.ncf. You can add IPX after the server installation by adding the **SERVERID 8\_digit\_number** command after the **SERVERNAME** command in autoexec.ncf.

### (Optional) Configuring SLP

Service Location Protocol (SLP) is an IETF standard for enabling network-based applications to automatically discover the location, including the address or domain name and other configuration information, of a required service. Using SLP, clients can connect with and make use of services on an IP network. Without SLP, network resources must be manually configured or entered into a separate configuration file.

SLP must be configured properly if the server is going to be a part of a migration using the NetWare Migration Wizard utility.

- 1 From the Protocols page, click Advanced.
- 2 Select the SLP tab.
- 3 Enter the IP addresses of the Directory Agents on your network. If no Directory Agents exist on your network, check the Configure This Server as a DA check box.
- 4 If you want to enable multicasting, check the Enable Multicast Routing on This Server check box.
- 5 Click OK.

### (Optional) Configuring SNMP

Network management utilities use Simple Network Management Protocol (SNMP) to record and communicate information about network devices. Using an SNMP-compatible utility, you can set and monitor threshold levels and specific events such as packets per second or error rates. The information is then sent to the destination address of the workstation running the SNMP-compatible management utility.

- 1 From the Protocols page, click Advanced.
- 2 Select the SNMP tab.
- 3 (Optional) Enter a hardware description, server location, and administrator in the fields provided.
- 4 Enter the IPX and IP destination addresses of the devices that will receive the SNMP information in the fields provided.
- 5 Click OK.

### (Optional) Configuring IPX Compatibility

When enabled, IPX compatibility provides passive support for IPX-based applications without binding IPX. Although the server does not broadcast services using RIP and SAP, NetWare processes any IPX request that arrives at the server.

- 1** From the Protocols page, click Advanced.
- 2** Select the IPX Compatibility tab.
- 3** (Conditional) Check the Load IPX Compatibility check box. This option is only available if you did not check the IPX box in [“Installing IP and IPX” on page 31](#).
  - 3a** Enter the eight-digit hexadecimal compatibility mode network number in the field provided or accept the default shown.
  - 3b** Select the preferred IP address from the drop-down list.
- 4** (Conditional) Check the Load the Migration Agent on This Server check box. This option is only available if you checked the IPX box in [“Installing IP and IPX” on page 31](#).

NetWare regulates IP and IPX protocols using a Migration Agent. A Migration Agent regulates the protocol function on different network segments. If a Migration Agent is not enabled, packets are not forwarded onto network segments communicating with a different protocol. For more information, see the online help file associated with this screen.

  - 4a** Enter the eight-digit hexadecimal compatibility mode network number in the field provided or accept the default shown.
  - 4b** Select the preferred IP address from the drop-down list.
- 5** Click OK.

After completing the previous, optional steps, you will now be back at the Protocols page.
- 6** Click Next.

## Setting Up Domain Name Service

The IP protocol identifies computers and systems by their assigned IP addresses, such as 123.45.56.89. Domain Name Service (DNS) allows a specific server on the network to maintain a list of simple, readable names that match IP addresses. Applications (or protocols) that require IP addresses rather than names can use a DNS server to translate from one form to another.

**HINT:** If this server will not be available to the Internet, you can skip this screen and ignore any associated error messages.

- 1** If you want this server to be available to the Internet, enter the following information on the Domain Name Service page:
  - ◆ **Host Name**—The simple, readable name on the DNS server that matches this NetWare 6.5 server’s name (or the name that you have bound to the network board).

You can set up the host computer name on the DNS server to use the NetWare server name.
  - ◆ **Domain Name**—The hierarchical name that represents the organization of your network, such as acme.com.
  - ◆ **Domain Name Server**—The IP address of the DNS server that maintains the list containing this NetWare 6.5 server’s simple, readable name and IP address. For more information, contact your network administrator or Internet service provider.
- 2** (Optional) If you want the install to verify the domain name service information for you, check the Verify the DNS Information check box.
- 3** After entering the appropriate information, click Next.

# Setting the Server Time Zone

The server time and time zone are important in order to synchronize network events. Advanced time synchronization settings are available during the Customize section of the installation.

- 1 On the Time Zone page, select the correct time zone setting from the available list.
- 2 Check the check box if you want the system to adjust automatically for Daylight Savings Time.

## (Optional) Configure Time Synchronization

Specifying the type of time server allows the synchronization of the reported time across the network. It also provides expiration dates and time stamps to establish the order of events taking place in eDirectory. NetWare distinguishes three types of time servers that provide network time: Single Reference, Reference, and Primary. All other servers are called Secondary time servers because they receive their time from the time providers.

- 1 From the Time Zone page, click Advanced.
- 2 On the Time Synchronization page, click the radio button next to the time server type that you want.
- 3 (Optional) If you do not want to accept the defaults, configure Timesync time sources by checking the Use Timesync Configured Sources check box.
  - 3a Enter the time sources in the fields provided (up to three).

Timesync time sources can be entered in one of three different formats.

- ◆ IP Address
- ◆ DNS Name
- ◆ Server Name (IPX required)

- 3b (Conditional) If your time source uses Network Time Protocol (NTP), check the NTP check box to the right of the time source.

- 4 Click OK.

After completing the previous, optional steps, you will now be back at the Time Zone page.

- 5 Click Next.

# Setting Up Novell eDirectory

Novell eDirectory provides global access to all networking resources. eDirectory allows users with the proper access rights to log in to the network and view and access network resources.

Network resources such as servers and printers are presented hierarchically in an eDirectory tree. Users log in to the eDirectory tree with a single login name and password instead of logging in to specific servers.

## Selecting the Type of eDirectory Installation

To set up eDirectory, you must choose one of the following options:

- ◆ **Install the Server into an Existing eDirectory Tree**
- ◆ **Creating a New eDirectory Tree**

Before completing this task, you should understand the concepts relating to eDirectory trees, containers, and context.

- ◆ **Tree Name**—The top level of the available network resources. It must be unique from other eDirectory tree names on the network.
  - ◆ **Containers**—Much like subdirectories, containers contain network objects. The server can be installed into two types of container objects: Organization (O) and Organizational Unit (OU).
  - ◆ **Context**—The context, much like DOS directory paths, denotes the full path of a network object in the eDirectory tree. For example, a NetWare server might be installed into an Organizational Unit (OU) named Sales under the Organization (O) named Acme. The context would be denoted as OU=Sales.O=Acme or Sales.Acme.
- 1 Click the radio button next to the eDirectory option you want.
  - 2 Click Next.

## Install the Server into an Existing eDirectory Tree

Installing your server into an existing eDirectory tree incorporates the server into your network.

The server can be installed in any Organization (O) or Organizational Unit (OU) container in the eDirectory tree where you have the Supervisor right. You can create containers during the installation program.

- 1 Enter the tree name in the field provided.
- 2 Enter the context for the server object in the field provided.
- 3 Click Next.
- 4 Enter the full eDirectory context for the Admin object.
- 5 Enter the password for the Admin object.
- 6 Click OK.

**IMPORTANT:** If this is the first NetWare 6.5 server to be installed into an existing eDirectory tree, you should have already completed the section titled [“Preparing the Network” on page 8](#).

NetWare Deployment Manager (nwdeploy.exe) is located on the *NetWare 6.5 CD 1 (Operating System)* and is run from a Windows workstation.

If you have updated the eDirectory tree on all servers but have not yet prepared the network for NDS 8, you will be prompted to modify the schema. When prompted, you must provide the administrator name and password for the entire eDirectory tree.

## Creating a New eDirectory Tree

Create a new tree if you are creating a new network or if this server requires a separate eDirectory tree. The resources available on the new tree will only be available to users logged in to the new tree.

- 1 Enter a tree name.  
Each eDirectory tree must have a name unique from other eDirectory trees on the network.
- 2 Enter the context for the server object in the field provided or browse to the context by clicking the Browse button.  
**NOTE:** If you click the Browse button, you will be able to add or delete containers in your tree.
- 3 Enter the context for the default Admin user.

- 4 Enter a password for the Admin user.
- 5 Retype the password for the Admin user.
- 6 Click Next.

## Summary

The eDirectory Summary screen is now displayed. Now that you have created a new eDirectory tree or installed the server into an existing eDirectory tree, the NetWare Server object and Volume objects will be installed in the container you specified.

If you have created a new eDirectory tree, a user (default name Admin) with Supervisor rights to the eDirectory tree is created in the same eDirectory container as the NetWare Server object.

- 1 Verify that the information on the eDirectory Summary screen is accurate.
- 2 Record the Admin password and any other relevant information before proceeding.
- 3 Click Next.

## Licensing the NetWare 6.5 Server

NetWare 6.5 must have a valid license in order to function as a server. You can install the license from *NetWare 6.5 CD 2 (Products)* or browse to a directory that contains NetWare 6.5 licenses.

If you installed a license at the beginning of the installation, you can choose to use that license, or you can install a different one.

**Install without Licenses**—Although the server can be installed without a license, the unlicensed server will allow only two user connections. After installation, you can use the Novell iManager utility to install additional licenses.

- 1 On the Licenses page, click the Browse button and browse to the License/Demo directory on *NetWare 6.5 CD 2 (Products)*.
- 2 Select the .nlf file.
- 3 Click OK.
- 4 (Optional) If you want to install NetWare 6.5 without licenses, check the Install Without Licenses check box.
- 5 Click Next.
- 6 If prompted, select where in the tree you want to install the license, then click Next.

## LDAP Configuration

If you selected a Custom Installation at the beginning of the NetWare 6.5 installation, (see [“Select the Type of Installation” on page 11](#)), you will now see the LDAP Configuration page. On this page, you can configure LDAP on the server. If you are not performing a custom install, continue with [“Selecting the Login Method” on page 36](#).

- 1 Specify the ports for Clear Text and SSL/TLS, or accept the defaults provided.
- 2 Check the box to Require TLS for Simple Bind with Password if you want that feature activated.
- 3 Click Next.

## Selecting the Login Method

NMAS server components are installed automatically when you run the NetWare 6.5 installation program. You will need to select the login methods you want to install.

Select the login methods that you want to install into eDirectory by checking the appropriate check boxes on the Novell Modular Authentication Service screen. When you select a login method, a description of the component appears in the Description box. For more information on login methods, see [Setting Up Login and Post-Login Methods and Sequences](#) in the Novell Modular Authentication Service Administration Guide.

Click Select All if you want to install all the login methods into eDirectory. Click Select Clear All if you want to clear all selections.

The NDS login method is installed by default.

- 1** On the Novell Modular Authentication Service screen, select the login method you want to use from the options provided. NDS is selected by default.
- 2** Click Next.

**IMPORTANT:** The NMAS client software must be installed on each client workstation where you want to use the NMAS login methods. The NMAS client software is included with the NetWare Client Software build. For this release of NetWare 6.5, this build can be obtained from the [NetWare 6.5 Beta Web site](http://beta.novell.com/public.jsp). (<http://beta.novell.com/public.jsp>)

## DNS/DHCP Installation

If you selected to install DNS/DHCP, you will now see the DNS/DHCP Installation page. If you did not select DNS/DHCP on the Components page, continue with [“iFolder Server Options” on page 37](#).

You must specify the NDS context of three different items on this page. They are:

- ◆ DNS/DHCP Locator Object
- ◆ DNS/DHCP Group Object
- ◆ RootSrvr Zone

All three fields are populated with a default NDS context. To change the context from the default:

- 1** (Optional) Click the Tree button to the right of the DNS/DHCP Locator Object NDS Context field.
  - 1a** Browse to the NDS context that you want.
  - 1b** Click OK.
- 2** (Optional) Click the Tree button to the right of the DNS/DHCP Group Object NDS Context field.
  - 2a** Browse to the NDS context that you want.
  - 2b** Click OK.
- 3** (Optional) Click the Tree button to the right of the RootSrvr Zone NDS Context field.
  - 3a** Browse to the NDS context that you want.
  - 3b** Click OK.
- 4** Click Next.



## iFolder Server Options

If you selected to install Novell iFolder Storage Services you will now see the iFolder Server Options page. If you did not select Novell iFolder Storage Services on the Components page, continue with [“exteNd Application Server - Database Options” on page 39](#).

There are six fields on this screen that have values that can be modified. They are:

- ◆ LDAP Host Name or IP  
The DNS name or IP address of the server that acts as your eDirectory LDAP server.
  - ◆ LDAP Port, 389 (Clear Text) 636 (SSL)  
The LDAP port type that you want to use, based on your security needs, for data exchanges between your LDAP server and your iFolder server.
  - ◆ LDAP Context for Admins  
The LDAP context of the container where your iFolder Admin User objects are located.
  - ◆ iFolder Server Host Name or IP  
The DNS name or IP address of your iFolder server. The DNS name or IP address you provide must enable the iFolder server to be accessed from the users' computers.
  - ◆ iFolder Admin Name(s)  
The default user ID for the iFolder administrator for this iFolder server. You can assign more than one user ID to be an iFolder administrator. If you are entering more than one name, separate them with semicolons and with no spaces. All entries cannot exceed 256 characters, including the semicolons. For example: admin;jsmith;jdoe.
  - ◆ User Database Path  
The path to the directory on the iFolder server where user data for all the iFolder accounts will be stored.
- 1** Modify any of the server options for iFolder that are displayed on the screen or accept the default settings that are provided.
  - 2** Click Next.

## MySQL Options

If you selected to install MySQL you will now see the MySQL Options page. If you did not select MySQL on the Components page, continue with [“exteNd Application Server - Details” on page 38](#).

- 1** Click the browse icon to browse to the directory where you want the MySQL databases to be stored.  
The database must reside on an NSS volume. The default location is `sys:/mysql/data`.
- 2** Enter the Root password in the field provided.  
The MySQL root user is created as a supervisor who can do anything. Specifying a password for the MySQL root user is recommended. If the root password field is left empty, anyone can connect as root without a password and be granted all privileges.
- 3** Confirm the Root password in the field provided.  
This password must match the password specified in the previous field.

- 4 (Optional) Check the Secure Installation check box if you want secure installation enabled.

By default, the root user can connect either from the local host or remotely. An anonymous user is also created that can connect from the local host or remotely and do anything with databases that have a name of "test" or starting with "test\_". This means any local user can connect without a password and be treated as the anonymous user. A test database is also created.

If this box is checked, the root user is only allowed to connect from the local host, a root password is required, and the anonymous user and the test database are not created.

- 5 Click Next

- 6 Continue with [“exteNd Application Server - Details” on page 38.](#)

## exteNd Application Server - Details

If you selected to install the exteNd Application Server, you will now see the exteNd Application Server - Details page. This screen specifies some basic settings about the application server's configuration. If you did not select exteNd Application Server on the Components page, continue with [“NetStorage Install” on page 40.](#)

- 1 Enter the user name for the application server's administration account in the field provided.

The install will create a user with this name and assign Locksmith privileges to it. To better secure the application server, specify a user name other than the default (admin).

- 2 Enter the password for the Admin name in the field provided.

To better secure the application server, specify a password other than the default (admin).

- 3 Confirm the password in the field provided.

- 4 Enter the HTTP port number that the application server will listen on in the field provided.

Note that, by default, port 80 is used by the Apache HTTP Server installed with NetWare. However, when the application server's Web Server Integration (WSI) module for Apache is in use, it redirects requests from the Apache server (listening on port 80) to the application server (port 83).

- 5 Check the Restrict Access check box if the application server is to be initially configured to restrict user access.

For more information on restricting access, see the online help file associated with this screen.

- 6 Click Next.

- 7 Continue with [“exteNd Application Server - Database Options” on page 39.](#)

## exteNd Application Server - Database Options

You will now see the exteNd Application Server - Database Options screen. This screen specifies settings for configuring the MySQL database to be used as the application server's SilverMaster. If you did not select exteNd Application Server on the Components page, continue with [“NetStorage Install” on page 40.](#)

- 1 Enter the name of the machine hosting the MySQL database in the field provided. Localhost is the default.

- 2** Enter the port number for the MySQL database on the host machine in the field provided. 3306 is the default.
- 3** Enter the MySQL user name to be used by the application server when logging in to the database.  

The install will create a user with this name in the MySQL database and grant that user rights to the SilverMaster system tables needed by the application server. To better secure the MySQL database, specify a user name other than the default (appserver).
- 4** Enter the password for the database user name in the field provided.  

To better secure the MySQL database, specify a password other than the default (appserver).
- 5** Confirm the password in the field provided.
- 6** Enter the name of the MySQL database in the SilverMaster Name field provided. SilverMaster50 is the default.
- 7** Check the Execute SilverMasterInit check box if you want to populate the MySQL database with the SilverMaster system tables needed by the application server.  

The default state of this option is checked. Keep the SilverMasterInit setting checked unless this install is for a secondary application server in a cluster.
- 8** Click Next.
- 9** Continue with [“NetStorage Install” on page 40](#).

## NetStorage Install

If Novell NetStorage was one of the products you selected to install, you will now see the NetStorage Install page. NetStorage provides simple access to file storage on a Novell network from any Internet-enabled machine. If you did not select Novell NetStorage on the Components page, continue with [“Completing the Server Installation” on page 40](#).

- 1** Enter the IP address or DNS name of a server in your eDirectory tree that has the master replica or a read/write replica of eDirectory in the field provided.
- 2** (Optional) Enter the IP addresses or DNS names of servers in other eDirectory trees that have at least read/write eDirectory replicas, or specify the same IP address or DNS name you used for the primary eDirectory server but with a different context.  

You can add two alternate eDirectory server URL and context settings. These alternate settings are used to allow NetStorage to find User objects that exist in contexts other than what you specified for the primary eDirectory server. The alternate settings also allow NetStorage to find user objects with the same name in different eDirectory trees. The alternate URL and context settings are optional, but can help provide users with an additional level of access to NetStorage.
- 3** (Optional) Enter the IP address or DNS name and the port number that you assigned to Novell iFolder in the fields provided.  

The iFolder DNS name or IP address and the port number are optional, but if specified, will allow NetStorage users to access and manipulate files and directories on the iFolder server.
- 4** Click Next.

## Accepting the Rsync License Agreement

If Nterprise Branch Office was one of the products that you chose to install, you will now see the Rsync license agreement. Click the I Accept button after reading and understanding the license agreement. If you did not select Novell NetStorage on the Components page, continue with [“Completing the Server Installation” on page 40](#).

## Completing the Server Installation

After the installation is finished, remove *NetWare 6.5 CD 2 (Products)* and click Yes to reboot the server.

If you selected to load the server on reboot, see [“Custom Installation” on page 12](#), the NetWare 6.5 server software will automatically load when the computer reboots.

If you selected to not load the server on reboot, you can load it manually. To load the server manually, reboot the computer by clicking Yes. When the computer reboots, change to the startup directory containing the NetWare server files (c:\nwserver) and enter **SERVER**.

## Summary

Your NetWare 6.5 server installation is now complete. In addition to installing the products necessary for your server to run as designed, two volumes were created on the server. They are the sys: volume and the \_admin volume. Please note that these volumes are required for the server to function and must not be deleted.

For further information on the management of your server’s operating system, see [Server Operating System Administration Guide](#). For information on managing your network using Novell iManager 2.0, see the [Novell iManager 2.0 Administration Guide \(http://www.novell.com/documentation/beta/imanager20/index.html\)](http://www.novell.com/documentation/beta/imanager20/index.html).

## What’s Next

After rebooting the server, continue by completing the tasks described in [Chapter 3, “Installing Products and Updates,” on page 51](#).

# 2

## Upgrading to NetWare 6.5

The NetWare® 6.5 installation program can be used to upgrade an existing NetWare 6 server with Support Pack 3, and an existing NetWare 5.1 server with Support Pack 6 and NDS eDirectory 8, version 8.85 or later to NetWare 6.5.

The upgrade process includes the following tasks:

- ◆ Meeting System and Software Requirements
- ◆ Preparing the Network
- ◆ Preparing the Computer
- ◆ Starting an Upgrade
- ◆ Selecting the Login Method
- ◆ Completing the Server Upgrade

When you run the upgrade program, the server is upgraded to NetWare 6.5 and the following tasks are automatically performed:

- ◆ Device drivers and LAN drivers for the NetWare 6.5 operating system are loaded. Outdated drivers are matched with and replaced by new drivers included with NetWare 6.5.
- ◆ eDirectory is upgraded.
- ◆ NetWare 6.5 information is added to autoexec.ncf and startup.ncf.
- ◆ The NetWare 6.5 files are copied to the server.

## Meeting System and Software Requirements

To upgrade to NetWare 6.5, your system must meet the minimum requirements listed below.

### System Requirements

- The server to be upgraded must be running one of the following:
  - ◆ NetWare 6 with Support Pack 3
  - ◆ NetWare 5.1 with Support Pack 6 and NDS eDirectory 8, version 8.85 or later
- A server-class PC with a Pentium II or AMD K7 processor
- 512 MB of RAM
- A Super VGA display adapter
- A DOS partition of at least 200 MB and 200 MB available space
- 2 GB of available disk space outside the DOS partition for volume SYS:

- One network board
- A CD drive
- A USB, PS/2, or serial mouse (recommended but not required)

## Software and Other Requirements

Depending on the network configuration, you might need one or all of the following:

- NetWare 6.5 CD 1 (Operating System)*
- NetWare 6.5 CD 2 (Products)*
- Novell Clients Software CD (March 2003)*

If you do not have a copy of the *Novell Clients Software CD (March 2003)*, you can download it from the [NetWare 6.5 Beta Web site](http://beta.novell.com/public.jsp). (<http://beta.novell.com/public.jsp>)

- Novell Nterprise Branch Office CD*
- Novell DirXML Starter Pack CD*
- NetWare 6.5 Demonstration Kit CD*
- Supervisor right at the [Root] of the eDirectory tree
- Supervisor right to the container where the Server object resides
- Read right to the Security container object for the eDirectory tree
- CD drivers (required to access the CD)
- Client connection utilities (optional, for upgrading from another server):
  - ◆ Novell Client™ for DOS and Windows 3.1x (optional, for upgrading from a NetWare server running IPX™).
  - ◆ IP Server Connection Utility (optional, for installing from a NetWare server running IP only).

For instructions, see products\serverinst\ipconn.txt on the *Novell Clients Software CD (March 2003)*.

- IP address and domain names (required for connecting to the Internet):
  - ◆ An IP address
  - ◆ An IP address of a domain name server
  - ◆ The name of your domain

For IP addresses and domain names, contact your network administrator and Internet Service Provider.

- Network board and storage device properties, such as the interrupt and port address (required if not included in NetWare).

For more information, contact your computer hardware manufacturer.

Next, you should prepare the network for the NetWare 6.5 server. If this server is not part of an existing network, you can skip to [“Preparing the Computer” on page 45](#).

# Preparing the Network

Before you introduce a NetWare 6.5 server into an existing network, you must run the NetWare Deployment Manager to update the network.

- 1** On a Windows 95/98 or Windows NT\*/2000 workstation that has the latest Novell client installed on it, log in to your existing network as a user with the Supervisor right.  
  
If you are prompted to log in again while running the NetWare Deployment Manager, you can enter the IP address of the server by clicking Details.
- 2** Insert *NetWare 6.5 CD 1 (Operating System)* and run the NetWare Deployment Manager (nwdeploy.exe) located at the root of the CD.
- 3** Click the Deployment Overview link.
- 4** In the right frame of the browser window, under the heading Network Preparation, click the Overview link to review the tasks you need to perform.
- 5** In the Overview section that displays, click the Step 1: Back Up Data link and follow the instructions that display to back up any server data and Novell eDirectory data.
- 6** Under the Network Preparation heading on the left side of the browser, click the Search Tree for eDirectory and NDS Versions link to learn how to update eDirectory as required.
- 7** Under the Network Preparation heading on the left side of the browser, click the Prepare for eDirectory 8.7 link and follow the displayed instructions to extend the network schema.
- 8** (Conditional) If you are upgrading a cluster of NetWare servers, under the Network Preparation heading on the left side of the browser, click the Prepare Cluster for Upgrade link to follow the instructions to run the Prepare a Novell Cluster for Upgrade program.
- 9** Click the Update Certificate Authority Objects link under the Network Preparation heading and follow the instructions displayed to create or update a Security container object and a Certificate Authority (CA) object.

After you have completed the Network Preparation section of NetWare Deployment Manager, read through the Installation/Upgrade Options section to help you choose the install/upgrade option that best meets your needs.

The three choices described in this section are:

- ◆ Install NetWare 6.5
- ◆ Upgrade to NetWare 6.5
- ◆ Migrate to NetWare 6.5 using the Novell Migration Wizard

After deciding on an installation or upgrade option, exit the NetWare Deployment Manager and prepare the computer to be a NetWare 6.5 server.

# Preparing the Computer

To prepare your existing server for the NetWare 6.5 operating system, complete the following tasks:

- ◆ [Backing Up the NetWare Server Files](#)
- ◆ [Preparing Application Files Prior to Upgrading](#)
- ◆ [Verify a Valid DOS Partition](#)

- ◆ [Accessing the Installation Files](#)

## Backing Up the NetWare Server Files

Make at least one backup of your NetWare server files, including files on the DOS partition. Do not attempt an upgrade without a backup.

## Preparing Application Files Prior to Upgrading

Some applications require that you perform certain actions prior to upgrading.

### Preparing Servers Running ZENworks for Server 2 (Conditional)

If the server is running ZENworks<sup>®</sup> for Servers 2, you must install ZENworks for Servers 3 prior to upgrading the server to NetWare 6.5.

## Verify a Valid DOS Partition

Your NetWare server uses the DOS partition to start the computer and load NetWare. Many of the existing NetWare startup files will be replaced with new NetWare 6.5 files. In addition, the DOS partition must exceed the minimum amount of available space to accommodate new NetWare 6.5 files.

If the DOS partition does not have enough available space, you cannot upgrade the server. You must create a new DOS partition and install a new server. See [“Creating and Formatting a DOS Partition” on page 9](#).

**HINT:** If your computer does not meet the minimum requirements, you might try using the Novell Migration Wizard utility to migrate data to another computer. For more information, see the [NetWare Migration Wizard 6.5 documentation \(http://www.novell.com/documentation/beta/migwiz65/index.html\)](#).

## Accessing the Installation Files

NetWare 6.5 can be upgraded from the server’s local CD drive or from installation files located on the network.

- 1** Insert *NetWare 6.5 CD 1 (Operating System)* and boot the computer.
- 2** Complete one of the following:
  - ◆ If the computer boots from the CD, follow the on-screen prompts and skip to [“Accept the License Agreement” on page 11](#).
  - ◆ If the computer does not boot from the CD, continue with the following steps.
- 3** Boot your computer with DOS 3.3 or later.
- 4** Access *NetWare 6.5 CD 1 (Operating System)*.

If you install CD drivers to the disk drive, make sure that the logical filename of your CD drive (specified in config.sys and autoexec.bat) is *not* CDROM or CDINST.
- 5** Make sure that config.sys contains the **FILES=50** and **BUFFERS=30** commands.
- 6** (Conditional) To upgrade from NetWare 6.5 files located on a network, install the Novell Client for DOS and Windows 3.1x or IP Server Connection Utility software located on the *Novell Clients Software CD (March 2003)*.



# Starting an Upgrade

**IMPORTANT:** An upgrade to NetWare 6.5 is only supported from an existing NetWare 6 server with Support Pack 3, and an existing NetWare 5.1 server with Support Pack 6 and NDS eDirectory 8, version 8.85 or later.

When you upgrade to NetWare 6.5, both the operating system and eDirectory are upgraded. In addition, only the NetWare products or components that are currently installed are upgraded. Other Novell products that you might have purchased or installed separately (for example GroupWise® or ZENworks) are not upgraded.

Additionally, the Enterprise server is migrated to the Apache 2 Web server when you upgrade to NetWare 6.5. During the upgrade, the existence of the Enterprise server is verified, and if it exists, information in the Enterprise server's config files is migrated to the Apache 2 server's config files. After the Apache 2 Web server is installed, the Enterprise server is automatically removed.

**NOTE:** If you are performing an upgrade, several components will already be selected. These are the suggested default components. If any of these checked products are already installed on the server that will be upgraded, leaving the defaults checked will reinstall the products. Unchecking the defaults does not uninstall the product.

To begin an upgrade to NetWare 6.5:

- 1** Mount *NetWare 6.5 CD 1 (Operating System)* as a NetWare volume by entering **LOAD CD9660.nss** at the system console.
- 2** From the server GUI console, click Novell and select Install.
- 3** In the Installed Products page, select Add.
- 4** When the Source Path page appears, browse to the location of your NetWare 6.5 software.
- 5** Select the Product.ni file and click OK.
- 6** Verify that the Source Path window has the correct path filled in and click OK.

Proceed to **“Accepting the License Agreements” on page 48** .

## Remote Upgrades

One of the features brought to you in NetWare 6.5 is the ability to remotely upgrade any servers in your network. The process is a simple one that can be accomplished in two different ways:

- ◆ Remote Upgrade from iManager 2.0
- ◆ Remote Upgrade from the NetWare Deployment Manager

### Remote Upgrade from iManager 2.0

iManager 2.0 must be installed and configured in order for remote upgrades to successfully complete using this utility. For information on installation and configuration of iManager 2.0, see [Novell iManager 2.0 Administration Guide \(http://www.novell.com/documentation/beta/imanager20/index.html\)](http://www.novell.com/documentation/beta/imanager20/index.html). After iManager 2.0 is installed and configured, complete the following tasks:

- 1** Click the Install and Upgrade link that displays on the left side of the iManager main page.
- 2** Click the Upgrade to NetWare 6.5 link.
- 3** From the page on the right, click the Upgrade a Server Remotely link.
- 4** Click Browse and browse to the root of the NetWare 6.5 build or *NetWare 6.5 CD 1 (Operating System)*.

The path selected will include nw65os. In the NetWare 6.5 Public Beta release, the path expects a mapped drive and does not support UNC paths.

If you are not prompted for your source media, it is because you have run an upgrade from Deployment Manager in the past and it will launch the upgrade from that same source. If you do not want to use this previous location, delete the file `\program files\common files\novell\ni\data\browserlaunch.rsp`.

- 5 Click OK.
- 6 Follow the on screen instructions to complete the remote upgrade. See [“Accepting the License Agreements” on page 48](#)

### Remote Upgrade from the NetWare Deployment Manager

- 1 On a Windows 95/98 or Windows NT\*/2000 workstation that has the latest Novell client installed on it, log in to your existing network as a user with the Supervisor right.

If you are prompted to log in again while running the NetWare Deployment Manager, you can enter the IP address of the server by clicking Details.

- 2 Insert the *NetWare 6.5 OS* CD and run the NetWare Deployment Manager (nwdeploy.exe) located at the root of the CD.
- 3 Click the Upgrade to NetWare 6.5 link on the left side navigation bar of the Deployment Manager.
- 4 In the right frame of the browser window, click the Upgrade a Server Remotely link.
- 5 Follow the on screen instructions to complete the remote upgrade. See [“Accepting the License Agreements” on page 48](#).

## Accepting the License Agreements

Accepting both license agreements means that you have read and agreed to the terms and conditions contained in the license agreements.

- 1 For an upgrade, click I Accept for both license agreements.

## Health Check Summary

NetWare 6.5 performs a health check on your server to determine if an upgrade can proceed without problems. A summary of the checks that were run is displayed including a Success, Warning, or Fail state for each check that was run.

- 1 To view the detailed health check log, click View Log.
- 2 Click Next.

## Back Up Server Files

This page allows you to specify whether to back up your server files. It also allows you to select whether to automatically reboot the server after the file copy is complete.

- 1 Select Yes or No depending on whether you want to back up the server files.
- 2 If you selected Yes, specify the location for the backup files.
- 3 If you want the server to automatically reboot after the file copy, click Yes. Otherwise, click No.

- 4 Click Next.

## Installing Additional Components

After the file copy is complete, the Components screen is displayed and you can choose which additional NetWare 6.5 components to install. To see a description of a component, place the cursor over the component name.

**NOTE:** Because you are performing an upgrade, several components will already be selected. These are the suggested default components. If any of these checked products are already installed on the server that will be upgraded, leaving the defaults checked will reinstall the products. Unchecking the defaults does not uninstall the product.

To select additional components to install:

- 1 Check the box next to the components you want to install, then click Next. (Default selections can be deselected if desired.)

After selecting the components that you want to install from the Components page, a Summary screen appears displaying the names of the selected products and the disk space (in MB) required to install them.

If you want to change your product selection, click Back and make the necessary changes. After verifying the product names and space requirements, click Copy Files.

(Conditional, if installing from CD) When prompted, remove *NetWare 6.5 CD 1 (Operating System)*, insert *NetWare 6.5 CD 2 (Products)*, click OK.

**IMPORTANT:** The iManager installation may take up to 15 minutes to complete. During this installation, the page will not change.

- 2 If you see a message stating that there is a file conflict, select the file overwrite option that you prefer and click OK. (We recommend Never Overwrite Newer Files.)

The system will now proceed to copy files for a few minutes. The system will then reboot and continue to copy files. When this post-reboot file copy completes, a GUI screen will appear and you will need to log in to eDirectory.

- 1 Enter your name and password in the fields provided.
- 2 Click OK.

## Summary

The eDirectory Summary screen is now displayed. Now that you have created a new eDirectory tree or installed the server into an existing eDirectory tree, the NetWare Server object and Volume objects will be installed in the container you specified.

If you have created a new eDirectory tree, a user (default name Admin) with the Supervisor right to the eDirectory tree is created in the same eDirectory container as the NetWare Server object.

- 1 Verify that the information on the eDirectory Summary page is accurate.
- 2 Record the Admin password and any other relevant information before proceeding.
- 3 Click Next.

## Selecting the Login Method

NMAS server components are installed automatically when you run the NetWare 6.5 installation program. You will need to select the login methods you want to install.

Select the login methods that you want to install into eDirectory by checking the appropriate check boxes on the Novell Modular Authentication Service screen. When you select a login method, a description of the component appears in the Description box. For more information on login methods, see [Setting Up Login and Post-Login Methods and Sequences](#) in the Novell Modular Authentication Service Administration Guide.

Click Select All if you want to install all the login methods into eDirectory. Click Select Clear All if you want to clear all selections.

The NDS login method is installed by default.

- 1** On the Novell Modular Authentication Service screen, select the login method you want to use from the options provided. NDS is selected by default.
- 2** Click Next.

**IMPORTANT:** The NMAS client software must be installed on each client workstation where you want to use the NMAS login methods. The NMAS client software is included with the NetWare Client Software build. For this release of NetWare 6.5, this build can be obtained from the [NetWare 6.5 Beta Web site](http://beta.novell.com/public.jsp). (<http://beta.novell.com/public.jsp>)

## Completing the Server Upgrade

After the upgrade is finished, remove *NetWare 6.5 CD 2 (Products)* and click Yes to reboot the server.

If you selected to load the server on reboot in **“Custom Installation”** on page 12, the NetWare 6.5 server software will automatically load when the computer reboots.

If you selected to not load the server on reboot, you can load it manually. To load the server manually, reboot the computer by clicking Yes. When the computer reboots, change to the startup directory containing the NetWare server files (c:\nwserver) and enter **SERVER**.

# 3

## Installing Products and Updates

After installing or upgrading to NetWare® 6.5, you should install the latest software updates and configure products to work in the new environment.

The process of installing products and updates includes the following tasks:

- ◆ [Updating NSS Volumes](#)
- ◆ [Installing Additional Products](#)
- ◆ [Installing or Updating Novell Client Software](#)
- ◆ [Installing Product Updates](#)

### Updating NSS Volumes

If you upgraded from a NetWare 5.1 server with NSS volumes, you must complete the following procedure to update NSS volumes.

**NOTE:** For more detailed information, see [Upgrading NetWare 5 NSS Volumes](#) in the *Novell Storage Services Administration Guide*.

- 1 When prompted at the end of the upgrade, reboot the computer.
- 2 Make sure that all processes relating to the NetWare 6.5 upgrade have completed.
- 3 At the server console, enter the following command

```
NSS /ZLSSVOLUMEUPGRADE=ALL
```

The NSS volumes can now be mounted on the NetWare 6.5 server.

### Installing Additional Products

You should now install other networking products. For specific product information, see the product documentation in the [NetWare 6.5 online documentation \(http://www.novell.com/documentation/lg/nw65\)](http://www.novell.com/documentation/lg/nw65).

Although many products can be installed during the Custom NetWare server installation, some additional products such as Novell® Cluster Services™ can be installed only after completing the server installation. You can install additional products using NetWare Deployment Manager or from the GUI server console page.

#### Installing Additional Products Remotely Using NetWare Deployment Manager

- 1 Log in to the network from a Windows workstation running Novell Client™ software.
- 2 Run nwdeploy.exe, located at the root of *NetWare 6.5 CD 1 (Operating System)*.
- 3 Under Post-Install Tasks, click the Install NetWare 6.5 Products link.

- 4 Follow the on-screen instructions for adding the desired products.

### Installing Additional Products Using the GUI Server Console Page

- 1 Insert *NetWare 6.5 CD 2 (Products)* into the CD drive of the server.
- 2 Start the GUI server console page by entering **STARTX** at the server console.
- 3 Click Novell > Install > Add.
- 4 Specify the root directory of the CD and click OK.
- 5 Select the postinst.ni file.
- 6 Follow the on-screen instructions for installing the product.

### Post-Install of Products After a Migration to NetWare 6.5

After completing the four steps of the migration in the Novell NetWare Migration Wizard Utility, and before doing a post-install of products on a NetWare 6.5 server, do the following to ensure a post-install of Novell's Web Products completes correctly.

- 1 Delete the following:
  - ♦ sys:system\rootcert.der
  - ♦ sys:\adminsrv\keystore
  - ♦ sys:adminsrv\adminserv.conf
  - ♦ sys:adminsrv\webapps\welcome\web-inf\classes\startup.properties
  - ♦ sys:adminsrv\webapps\apacheadmin\web-inf\classes\startup.properties
- 2 Proceed with a post-install of products, making sure to install Certificate Server, Apache Admin Server and Tomcat.
- 3 (Conditional) If using the Deployment Manager to do a remote post-install, copy the sys:sys.mig\public\rootcert.der or sys:sys.mig\system\rootcert.der to sys:system before post-installing any products.

The remote post-install currently does not recreate the rootcert.der file on the server. Rootcert.der is needed for some of the products to install and configure properly.

## Installing or Updating Novell Client Software

If you are running Novell Client software, you should now upgrade your existing workstations. You can also choose to run workstations without additional software using Novell Native File Access Protocols.

For more information, see the [Novell Client documentation \(http://www.novell.com/documentation/lg/noclienu/index.html\)](http://www.novell.com/documentation/lg/noclienu/index.html).

## Installing Product Updates

For best performance, you should download and install the latest updates available at [Novell Support and Downloads \(http://support.novell.com\)](http://support.novell.com).

# A

## Keyboard Commands

Although a mouse is recommended, you can use the keyboard commands in the table below to navigate through the installation program. Use the arrow keys on the numeric keypad for cursor movements.

NumLock (number lock) must be on in order for cursor movements to be enabled on the keypad.

Keystroke	Action
Tab	Move to next element
Shift+Tab	Move to previous element
Enter	Select
Ctrl+Tab	Move to next text area
Up-arrow (keypad 8)	Move cursor up
Down-arrow (keypad 2)	Move cursor down
Right-arrow (keypad 6)	Move cursor right
Left-arrow (keypad 4)	Move cursor left
Hold Shift while pressing the key	Accelerate cursor movement
Keypad 5	Select or click an object
Keypad 0	Lock a selected object (for dragging)
Keypad . (period)	Unlock a selected object (to drop)
Keypad + (plus)	Double-click an object
Alt+F7	Move to the next window
Alt+F8	Move to the previous window

