

# Novell NetWare® 6.5

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OVERVIEW AND INSTALLATION GUIDE

June 1, 2005



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NetWare 6.5 Overview and Installation Guide

[June 1, 2005](#)

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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, “Welcome to NetWare 6.5,” on page 11
- ♦ Chapter 2, “Installing a New NetWare 6.5 Server,” on page 21
- ♦ Chapter 3, “Upgrading to NetWare 6.5,” on page 71
- ♦ Chapter 4, “Installing Products and Updates,” on page 83

## Documentation Updates

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

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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, use the User Comments feature at the bottom of any page in the online documentation.



# 1

## Welcome to NetWare 6.5

NetWare® 6.5 is the most reliable, cost-effective platform for delivering secure, nonstop access to network and information resources and is engineered to host business-critical, open source-enabled services. NetWare 6.5 gives you choice and flexibility, creating greater application interoperability, continuous availability, and tools that deliver new levels of productivity.

The following sections provide information about the features and benefits of NetWare 6.5:

- ◆ [“NetWare 6.5 Benefits” on page 11](#)
- ◆ [“NetWare 6.5 Graphical Overview” on page 13](#)
- ◆ [“What’s New” on page 14](#)
- ◆ [“Product Components” on page 18](#)
- ◆ [“Partner Products” on page 19](#)
- ◆ [“Additional Information” on page 19](#)
- ◆ [“What’s Next” on page 20](#)

## NetWare 6.5 Benefits

The new capabilities and services in NetWare 6.5 let you

- ◆ Keep critical systems running with cost-effective disaster recovery, resource consolidation, dependable branch office backups, and secure remote management.  
For more information, see [“Business Continuity Services” on page 11](#).
- ◆ Boost productivity by giving users secure and timely access to the right information and tools.  
For more information, see [“Productivity-Enhancing Services” on page 12](#).
- ◆ Capitalize on the many advantages of open source technologies and solutions.  
For more information, see [“Open Source Services” on page 12](#).
- ◆ Take full advantage of the greater application interoperability, reduced development costs, and increased efficiency of the Web services model.  
For more information, see [“Web Application Services” on page 13](#).

## Business Continuity Services

NetWare 6.5 offers tightly integrated capabilities for server consolidation, branch office support, backup, and availability. These are made possible by an advanced management system that lets you install, upgrade, and maintain systems from any place at any time using a Web browser.

NetWare 6.5 supports your business continuity needs by enabling you to

- ◆ Create a centralized, highly available storage area network that leverages lower-cost iSCSI standards over standard Ethernet or on standard fibre channel arrays.
- ◆ Establish a disaster recovery system that ensures a complete geo-site failover, minimizing business risks.
- ◆ Slash connection and management costs associated with running satellite offices while giving remote users the same performance and services that users at headquarters enjoy.
- ◆ Protect critical information with centralized backup and restore.

For a description of the business continuity services included with NetWare 6.5, see [“Business Continuity Features” on page 14](#).

## Productivity-Enhancing Services

Novell® Virtual Office for NetWare 6.5 provides a simple yet powerful work environment that enables secure and timely access to the information and tools users need—whenever and wherever they need them. Self-help features eliminate help desk calls and new collaboration capabilities enhance teamwork.

Productivity-enhancing services in Virtual Office include

- ◆ Novell iPrint—Gives users secure, global access to printers. Using a standard Web browser, users simply click the printer they want to install, and iPrint does the rest. Users can install printers from a customized list, or administrators can create custom maps to help users find the closest printers.
- ◆ Novell eGuide—Lets users locate names, addresses, fax numbers, and e-mail addresses stored in Novell eDirectory™ or in other data sources across the Web. Users can connect with different user groups and other employees to exchange ideas and information via secure directories and databases.
- ◆ Novell iFolder®—Gives users access to critical information from any location, with any Web-enabled device. Novell iFolder automatically backs up, synchronizes, and securely stores personal files to ensure information integrity and protection.
- ◆ Virtual Teams—Lets users from any location create teams, organize projects, and share information through enhanced collaboration and real-time interaction. Employees can conduct meetings, connect with key team members, and keep business moving—regardless of their location.
- ◆ File versioning—Lets users find and restore previous versions of their files without involving IT resources.

For a description of the productivity-enhancing services included with NetWare 6.5, see [“End User Features” on page 15](#).

## Open Source Services

With NetWare 6.5, you can take advantage of open source services without reducing system availability or increasing management costs. NetWare 6.5 can host the best solutions available from the open source community. As a result, you’ll realize the significant cost benefits associated with these solutions running on the industry’s most scalable, reliable, secure platform. NetWare 6.5 supports open source solutions in a variety of ways:

- ◆ Open source services such as Apache, MySQL\*, Perl, PHP, and Tomcat are integrated with NetWare 6.5.

- ◆ You can seamlessly manage open source projects through the NetWare 6.5 browser-based interface, making it easy to orchestrate processes across the entire organization and have them appear as a single, integrated business solution.

For a description of the open source services included with NetWare 6.5, see [“Web Development/Open Source Features” on page 16.](#)

## Web Application Services

NetWare 6.5 provides a comprehensive environment for building, deploying, and managing applications based on Java\* and Web services standards. NetWare 6.5 includes the Novell exteNd™ Application Server, giving you a strong foundation for deploying cross-platform, high-performance, standards-based applications.

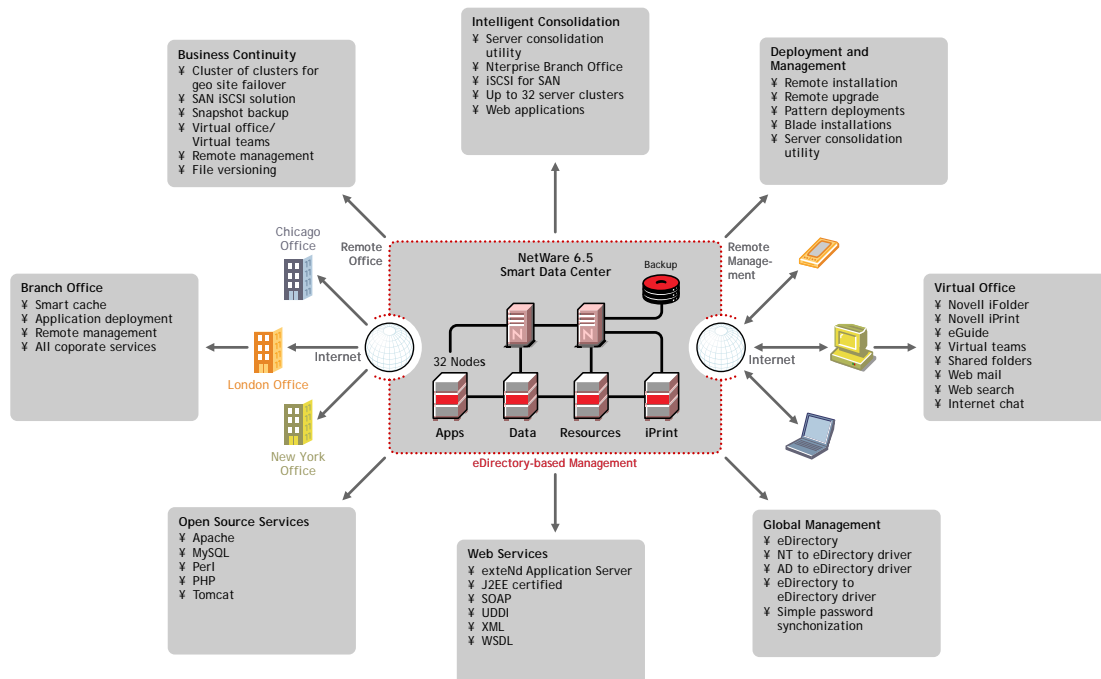
With the Web services capabilities of NetWare 6.5, you can

- ◆ Run J2EE\* applications on the NetWare 6.5 platform and leverage your existing systems.
- ◆ Take full advantage of the Web services model, including greater interoperability among applications, reduced development costs, and increased efficiency.
- ◆ Add other components of the award-winning Novell exteNd application development suite—such as Novell exteNd Composer™ and Novell exteNd Director™—to eliminate information boundaries and transform the information locked inside your closed, single-purpose applications into open, flexible Web services.

For a description of the Web application services included with NetWare 6.5, see [“Web Development/Open Source Features” on page 16.](#)

## NetWare 6.5 Graphical Overview

The following illustration shows how you can use the features and capabilities of NetWare 6.5 to build an integrated, end-to-end solution.



# What's New

NetWare 6.5 delivers a host of new and enhanced features over previous releases of NetWare. See the following sections for detailed information:

- ◆ [“Business Continuity Features” on page 14](#)
- ◆ [“End User Features” on page 15](#)
- ◆ [“Web Development/Open Source Features” on page 16](#)
- ◆ [“Other Features” on page 17](#)

## Business Continuity Features

Feature	Description	For More Information
Browser-based Administration	Single browser-based management tool (Novell iManager) enhances productivity of IT staff.	See the <i>Novell iManager 2.0.x Administration Guide</i> .
Cluster Services/High Availability	Automatic redundancy and failover help ensure critical systems are always available (support for up to 32 nodes).	See the <i>Novell Cluster Services 1.7 Administration Guide</i> .
Directory Synchronization (DirXML® Starter Pack)	Quick and accurate role-based access to resources eliminates redundant administrator tasks. Includes support for Active Directory*, NT Domains, and Novell eDirectory.	See the <i>DirXML Starter Pack Installation Guide for NetWare 6.5</i> .
Fibre Channel SAN Support	Significant cost savings through an easy-to-manage, highly available storage area network.	See the <i>Novell Cluster Services 1.7 Administration Guide</i> .
Global Server Management	Lets you manage servers remotely and boost IT staff productivity.	See the <i>NetWare 6.5 Novell Remote Manager Administration Guide for NetWare</i> .
iSCSI SAN Support	Lets you deploy more cost-effective SANS.	See the <i>iSCSI 1.1.3 Administration Guide for NetWare 6.5</i> .
NSS File System	Optimizes storage hardware through storage pooling.	See the <i>Novell Storage Services File System Administration Guide for NetWare 6.5</i> .
Patterned Deployments	Quickly and automatically deploy special-purpose servers to host specific services.	See <a href="#">Chapter 2, “Installing a New NetWare 6.5 Server,” on page 21</a> .
Remote Upgrades	Upgrade servers remotely from any location, eliminating the time and expense of travel to remote sites.	See <a href="#">Chapter 3, “Upgrading to NetWare 6.5,” on page 71</a> .

<b>Feature</b>	<b>Description</b>	<b>For More Information</b>
Server/Storage Consolidation Utility	Easy consolidation of server and printer infrastructure simplifies administration and lowers costs, without degrading performance.	See the <i>Novell Server Consolidation Utility 4.0 Administration Guide</i> .
Snapshot Backup	Backups are no longer restricted to rigid backup windows, so backup schedules are flexible, encouraging a higher level of backup.	See the <i>Novell Storage Services File System Administration Guide for NetWare 6.5</i> .
Storage Management Services (SMS)	Provides an infrastructure for backup and restore services that you can optimize for better performance; scales well with optimized hardware configurations.	See the <i>NetWare 6.5 Storage Management Services Administration Guide</i> .
Storage Resource Management	Provides cost-effective management of storage usage across the network.	See the <i>Novell Storage Services File System Administration Guide for NetWare 6.5</i> .
Storage Scalability	Gives you the scalability to consolidate your storage resources.	See the <i>Novell Storage Services File System Administration Guide for NetWare 6.5</i> .

## End User Features

<b>Feature</b>	<b>Description</b>	<b>For More Information</b>
File Versioning	Protects data by allowing users to find and restore previous versions of files.	See the <i>Novell Archive and Version Services 2.0 Administration Guide for NetWare 6.5</i> .
Internet Chat	Secure instant messaging speeds and improves communication and enhances collaboration.	See the <i>Novell Virtual Office Configuration Guide</i> .
NetStorage	Browser-based access to any networked file keeps users productive regardless of location.	See the <i>NetWare 6.5 NetStorage Administration Guide</i> .
Novell eGuide	Browser-based directory improves communication and access to individuals.	See the <i>Novell eGuide 2.1.2 Administration Guide</i> .
Novell iFolder	Automatic, secure synchronization and disaster recovery ensures the integrity and protection of personal files.	See the <i>Novell iFolder 2.1 Installation and Administration Guide</i> .

Feature	Description	For More Information
Novell iPrint	Self-service, browser-based printing eliminates many print-related help desk calls, decreasing support requirements.	See the <i>Novell iPrint Administration Guide for NetWare 6.5</i> .
Virtual Office	Lets users log in to a single Web site and gain access to all their network resources, from any computer.	See the <i>Novell Virtual Office Configuration Guide</i> .
Virtual Teams	Provides integrated, real-time collaborative tools that improve team efficiency.	See the <i>Novell Virtual Office Configuration Guide</i> .

## Web Development/Open Source Features

Feature	Description	For More Information
Apache Web Server	Integrates the most popular Web server with Novell's directory security and management.	See the <i>Apache Web Server Administration Guide for NetWare 6.5</i> .
Beans for Novell Services	Provides an easy-to-use suite of Java components for rapid and effective development of Web applications with Net services.	See the <a href="http://developer.novell.com/ndk/bns-index.htm">Beans for Novell Services Developer Web site (http://developer.novell.com/ndk/bns-index.htm)</a> .
DNS/DHCP Servers	Lowers management requirements by dynamically assigning domain names and IP addresses.	See the <i>Novell DNS/DHCP Services for NetWare Administration Guide for NetWare 6.5</i> .
FTP Server	Securely upload and download files using this standard Web protocol.	See the <i>NetWare FTP Server Administration Guide for NetWare 6.5</i> .
MySQL Database	The most popular open source database, integrated with Apache Web Server, Tomcat, PHP, and Novell Portal Services.	See the <i>MySQL for NetWare Administration Guide for NetWare 6.5</i> .
NetWare Web Search Server	Offers a powerful full-text search engine you can use to add search capabilities to your Internet or intranet Web sites	See the <i>NetWare 6.5 Web Search Server Administration Guide</i> .
Novell exteNd Application Server	Comprehensive, high-performance J2EE server for enterprise-class Web applications.	See the <a href="http://www.novell.com/documentation/lg/extends50/index.html">exteNd Application Server 5.0 online documentation (http://www.novell.com/documentation/lg/extends50/index.html)</a> .



Feature	Description	For More Information
OpenSSH	Lets you perform secure transactions to and from your NetWare network via scripts, file copy, and FTP with most OpenSSH-compliant clients.	See the <i>OpenSSH Administration Guide for NetWare 6.5</i> .
Perl for NetWare	Adds a flexible choice for authoring dynamic Web content.	See the <a href="http://developer.novell.com/ndk/perl5.htm">Perl 5 for NetWare Web site (http://developer.novell.com/ndk/perl5.htm)</a> .
PHP for NetWare	Enables you to host platform-independent Web applications in minutes.	See the <a href="http://developer.novell.com/ndk/php.htm">PHP for NetWare Web site (http://developer.novell.com/ndk/php.htm)</a> .
Tomcat Servlet Container	Run Java applications using this popular open source servlet JSP engine.	See the <i>Tomcat Administration Guide for NetWare 6.5</i> .

## Other Features

Feature	Description	For More Information
Auditing	Robust auditing services to effectively monitor and track system activity so you can make informed decisions that ensure the safety of your most valuable corporate asset—your information.	See the <i>Novell Nsure Audit 1.0.3 Administration Guide</i> .
Authentication	<p>Advanced levels of authentication strengthen security. Methods include Smart Cards, Biometrics, Radius, Tokens, and x.509 certificates.</p> <p>Graded authentication lets you restrict access based on user identity or access method.</p> <p>Multifactor authentication secures access through multilevel authentication methods.</p>	See the <i>Novell Modular Authentication Services (NMAS) 2.3 Administration Guide</i> .
Internet Protocol v6 (IPv6)	Solves the Internet scaling problem (addresses), provides a flexible transition mechanism, meets the needs of mobile users, and supports automatic configuration (plug-and-play).	See the <i>Novell IPv6 Administration Guide for NetWare 6.5</i> .

Feature	Description	For More Information
IP Address Management and Port Configuration	Provides a centralized framework that stores and displays the IP addresses of the applications running on the server. It also helps in resolving IP address and port conflicts.	See the <a href="#">NetWare 6.5 IP Address Management Administration Guide</a> .
Licensing	Simplified licensing based on users, not servers, reduces licensing costs (unlimited connections per user).	See the <a href="#">Novell Licensing Services Administration Guide for NetWare 6.5</a> .
Native Mac (OS X) client support for 4 GB files	Macintosh* users have native access to shared storage resources, simplifying use and reducing training requirements.	See "Working with Macintosh Computers" in the <a href="#">NetWare 6.5 Native File Access Protocols Guide</a> .
Native UNIX, Linux* (NFSv3) client support for 4 GB files	UNIX/Linux users have native access to shared storage resources, simplifying use and reducing training requirements.	See "Working with UNIX Machines" in the <a href="#">NetWare 6.5 Native File Access Protocols Guide</a> .
Native Windows (NT, 2000, XP) client support for 4 GB files	Windows* NT*, 2000, and XP users have native access to shared storage resources, simplifying use and reducing training requirements.	See "Working with Windows Computers" in the <a href="#">NetWare 6.5 Native File Access Protocols Guide</a> .
Novell Remote Manager	Improved inventory management and group management features let you manage one or more NetWare servers globally and synchronize specific settings on them.	See the <a href="#">NetWare 6.5 Novell Remote Manager Administration Guide for NetWare</a> .
Novell eDirectory	The industry's most popular directory ensures proven, secure access to resources.	See the <a href="#">Novell eDirectory 8.7.3 Administration Guide</a> .

## Product Components

The NetWare 6.5 product package includes the following (subject to change in subsequent Support Pack releases):

- ◆ *NetWare 6.5 CD 1 (Operating System)*
- ◆ *NetWare 6.5 CD 2 (Products)*
- ◆ *NetWare 6.5 Demonstration Kit (Digital Airlines)*
- ◆ *NetWare 6.5 Documentation CD*
- ◆ *NetWare 6.5 License/Cryptography diskette*
- ◆ *NetWare 6.5 Partner CD*
- ◆ *Novell DirXML Starter Pack CD*

- ◆ *Novell Nterprise Branch Office CD*
- ◆ *Novell Clients Software CD*

This CD includes the following:

- ◆ Novell Client™ 4.9 for Windows NT/2000/XP
- ◆ Novell Client 3.4 for Windows 95/98
- ◆ Novell ConsoleOne® 1.3.6 with NetWare 6.5 snap-ins
- ◆ Novell NetDrive Client 4.1
- ◆ Novell Modular Authentication Services (NMAST™) Client 2.2
- ◆ Client NICI 2.6 for Windows
- ◆ exteNd Workbench™ 4.1.1
- ◆ exteNd App Server Client 5.0
- ◆ NetIdentity Agent 1.2

## Partner Products

### Partner CD and Web Site

NetWare 6.5 has a broad range of support from most key systems and software vendors. The *NetWare 6.5 Partner* CD included with your product package contains a list of NetWare partners, partner product information, sample products, and contact information. This information will continue to be updated on the [NetWare Partners Web site \(http://www.novell.com/netware/partners\)](http://www.novell.com/netware/partners).

To receive support for software products included on the NetWare 6.5 Partner CD, please contact the partner software company directly.

The NetWare Partners Web site also provides the latest information on YES Tested and Approved™ certified products, the latest news on Novell and partner solutions, and additional collateral to assist you in purchasing third-party solutions.

### Third-Party Drivers

NetWare 6.5 ships with a number of third-party drivers. These are located at the root of *NetWare 6.5 CD 1 (Operating System)* in the driver directory. From there you will find subdirectories for the CIOS, LAN, PSM, SBD, and Storage drivers. If you need support for any of these drivers, go to the [YES Tested and Approved Web site \(http://developer.novell.com/yessearch/Search.jsp\)](http://developer.novell.com/yessearch/Search.jsp) or contact the driver vendor directly.

## Additional Information

For additional information about NetWare 6.5 and other Novell products and services, see the following areas of the Novell Web sites:

- ◆ [NetWare 6.5 Product Page \(http://www.novell.com/products/netware\)](http://www.novell.com/products/netware)
- ◆ [NetWare 6.5 Product Documentation \(http://www.novell.com/documentation/lg/nw65\)](http://www.novell.com/documentation/lg/nw65)
- ◆ [NetWare Cool Solutions \(http://www.novell.com/coolsolutions/netware\)](http://www.novell.com/coolsolutions/netware)
- ◆ [NetWare Partners \(http://www.novell.com/netware/partners\)](http://www.novell.com/netware/partners)

- ◆ [Novell Developer Support \(http://developer.novell.com\)](http://developer.novell.com)
- ◆ [Novell Education \(http://www.novell.com/training\)](http://www.novell.com/training)
- ◆ [Novell KnowledgeBase \(http://support.novell.com/search\)](http://support.novell.com/search)
- ◆ [Novell Support \(http://support.novell.com\)](http://support.novell.com)
- ◆ [Novell User Forums \(http://support.novell.com/forums\)](http://support.novell.com/forums)
- ◆ [Updates and Patches \(http://support.novell.com/filefinder\)](http://support.novell.com/filefinder)

## What's Next

To take advantage of the benefits offered by NetWare 6.5, start by installing or upgrading your network. See [Chapter 2, “Installing a New NetWare 6.5 Server,”](#) on page 21 and [Chapter 3, “Upgrading to NetWare 6.5,”](#) on page 71.

The following documents provide additional information about key NetWare 6.5 services:

- ◆ *[NetWare 6.5 Administration Overview](#)*
- ◆ *[NetWare 6.5 Security Overview](#)*
- ◆ *[NetWare 6.5 Storage Overview](#)*
- ◆ *[MySQL for NetWare Administration Guide for NetWare 6.5](#)* *[NetWare 6.5 Web and Application Services Overview](#)*

# 2

## Installing a New NetWare 6.5 Server

This chapter describes how to install a new NetWare® 6.5 server. If you are upgrading from a previous version of NetWare, see [Chapter 3, “Upgrading to NetWare 6.5,” on page 71](#).

Installing a new server includes the following tasks:

- ◆ [Meeting System and Software Requirements \(page 22\)](#)
- ◆ [Preparing the Network with Deployment Manager \(page 25\)](#)
- ◆ [Preparing the Computer \(page 28\)](#)
- ◆ [Starting the Installation Program \(page 30\)](#)
- ◆ [Selecting the Initial Installation Settings \(page 30\)](#)
- ◆ [Choosing a Server Pattern \(page 35\)](#)
- ◆ [Naming the Server \(page 55\)](#)
- ◆ [Installing Networking Protocols \(page 56\)](#)
- ◆ [Setting Up Domain Name Service \(page 59\)](#)
- ◆ [Setting the Server Time Zone and Time Synchronization Method \(page 60\)](#)
- ◆ [Setting Up Novell eDirectory \(page 61\)](#)
- ◆ [Licensing the NetWare 6.5 Server \(page 63\)](#)
- ◆ [Selecting the Login Method \(page 64\)](#)
- ◆ [Completing the Server Installation \(page 69\)](#)

### Conditions for Installing NetWare 6.5

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

- ◆ 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 server into a tree that has Novell® eDirectory™ 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.
- ◆ The server cannot be installed in a tree that contains NetWare 4.10 servers. All servers in the tree must be NetWare 4.11 or later.
- ◆ To ensure that Licensing works properly, all NetWare 4 and 5 servers in your tree need to be at the following minimum Support Pack level:  
NetWare 4.11 and 4.2 servers must be at Support Pack 6a or later  
NetWare 5.0 servers must be at Support Pack 4 or later

NetWare 5.1 servers must be at Support Pack 3 or later

NOTE: Novell recommends installing the latest available Support Packs on all NetWare servers in your tree.

- ◆ To ensure that your tree's keys and certificates are not broken, apply Support Pack 6 to all NetWare 5.1 servers in the tree.

Additionally, run PKIdiag on any servers being upgraded and make sure that the certificates are good. Also, run SDIdiag and fix any tree key issues.

IMPORTANT: Make sure that you run PKIdiag and SDIdiag *after* you have applied Support Pack 6 to your NetWare 5.1 servers.

- ◆ Before you introduce a NetWare 6.5 server into an existing network, you must run the NetWare Deployment Manager to update the network. See [“Preparing the Network with Deployment Manager” on page 25](#) for more information.

## Installation Issues

- ◆ If a problem occurs (critical errors, the installation fails, etc.) during the installation procedure *before* the file copy and the Operating System installation 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 [“NetWare Installation and Upgrade”](#) section of the *NetWare 6.5 Support Pack 3 Readme*.

## Meeting System and Software Requirements

NetWare 6.5 will run on server hardware that has been approved by the manufacturer for running the NetWare operating system. For more information on system specifications, contact the hardware manufacturer.

## 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, Pentium III Xeon, Pentium 4, or Intel Xeon 700 MHz or higher processors

- 1 GB of RAM

Some NetWare 6.5 installation options (patterned deployments) have specific processor and RAM requirements. Please see “[Choosing a Server Pattern](#)” on page 35 for individual pattern requirements.

- A VESA compliant 1.2 or higher display adapter

- A boot 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 boot partition for volume sys:
- One or more network boards
- A bootable CD drive that supports the El Torito specification
- A USB or PS/2\* mouse

## Software Requirements

The installation procedures described in this manual assume you are installing NetWare 6.5 with Support Pack 3. If you have the shipped version of NetWare 6.5, download the SP3 Operating System and Products CD overlay images from the [Novell Download page \(http://www.novell.com/download\)](http://www.novell.com/download) and burn them to CDs for use when installing NetWare 6.5.

Depending on the network configuration and the type of server you are installing, you might need one or all of the following:

- NetWare 6.5 SP3 CD 1 (Operating System)*
- NetWare 6.5 SP3 CD 2 (Products)*
- NetWare 6.5 License/Cryptography* diskette or license files
- Novell Client™ software
- Client connection utilities (optional, for installing from a network):
  - ◆ IP Server Connection Utility (for installing from a NetWare server running IP only)  
For download and usage instructions, see [TID 10074248 \(http://support.novell.com/cgi-bin/search/searchtid.cgi?/10074248.htm\)](http://support.novell.com/cgi-bin/search/searchtid.cgi?/10074248.htm).
  - ◆ Novell Client for DOS and Windows 3.1x (for installing from a NetWare server running IPX™)

The Novell Client for DOS is no longer available. However, you can use the client software you might have from a previous version of NetWare.

- 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
- 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.

## Rights Required for Installing NetWare 6.5 Servers

To install the first NetWare 6.5 server in an eDirectory tree, the user who installs the server must have the Supervisor right at the [Root] of the eDirectory tree. If you are installing the server into a new tree, the Admin user that is created during the NetWare 6.5 Install program will have full rights to the root of the tree. Using the Admin account allows the installer to extend the eDirectory schema for NetWare 6.5 as necessary.

If you are installing the first NetWare 6.5 server into an existing NDS<sup>®</sup>/eDirectory tree, be sure to run the Novell Deployment Manager first to prepare the tree so it is compatible with the new version of eDirectory that comes with NetWare 6.5. Deployment Manager requires access to a server with a Read/Write replica of the Root partition. See [“Preparing the Network with Deployment Manager” on page 25](#) for more information.

## Rights Required for Subcontainer Administrators

For security reasons, you might want to create one or more subcontainer administrators with sufficient rights to install additional NetWare 6.5 servers, without granting them full rights to the entire tree. A subcontainer administrator needs the following rights to install a NetWare 6.5 server into the tree:

- Supervisor right to the container where the server will be installed
- Read right to the Security container object for the eDirectory tree
- Read right to the NDSPKI:Private Key Attribute on the Organizational CA object, which is located in the Security container
- Supervisor right to the W0 object located inside the KAP object in the Security container

These rights are typically granted by placing all administrative users in a Group or Role, and then assigning the above rights to the Group or Role.

Some of the products that can be selected to install along with NetWare 6.5 require schema extensions of their own. Currently, only an administrator with rights at [Root] can extend the schema of an eDirectory tree; a subcontainer administrator would not have sufficient rights. One way to work around this is to have a root administrator install a NetWare 6.5 server with all products selected. This would take care of extending the schema for every possible server configuration. Subcontainer administrators could then install subsequent NetWare 6.5 servers without having to worry about schema extensions.

Another option is to run the new Schema Update utility in Deployment Manager. This utility prompts you to select an NDS/eDirectory tree and then gives you the opportunity to select the products you plan to install on servers in that tree. After you have configured your product selections, the utility updates eDirectory with required and product schema extensions.



By default, the first three servers installed in an eDirectory partition will automatically receive a replica of the partition. To install a server into a partition that does not already contain three replica servers, the user must have either Supervisor rights at the [Root] of the tree or administrative rights to the container in which the server holding the partition resides.

## Preparing the Network with Deployment Manager

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

- 1 On a Windows NT/2000 or Windows XP Professional Edition 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 specify the IP address of the server by clicking Details.

- 2 Insert *NetWare 6.5 SP3 CD 1 (Operating System)*.

If you want to run the browser-based version of Deployment Manager and you have an Internet Explorer 5 or 6 browser installed, run `nwdeploy.exe` located at the root of the CD.

If you prefer to run a standalone version of Deployment Manager that does not require a browser or you do not want to use the ActiveX Control included with the browser-based version, run `nwdeploynobrowser.exe` located at the root of the CD.

- 3 In the left frame of the browser window, under the heading Network Preparation, click the Overview link to review the following tasks you need to perform:

- ◆ Back Up Data
- ◆ Search Tree for eDirectory and NDS versions
- ◆ Prepare for New eDirectory
- ◆ Generate GUIDs on NetWare 4 Servers (Conditional)
- ◆ Prepare a Novell Cluster for Upgrade (Conditional)
- ◆ Update the Certificate Authority (CA) Object
- ◆ Prepare for Universal Password
- ◆ Prepare for CIFS/AFP
- ◆ Verify NCI Keys
- ◆ Schema Update

- 4 Under the Network Preparation heading on the left side of the browser, click the Back Up Data link and follow the instructions that display to back up any server data and Novell eDirectory data.

Backing up your data is an optional step, but one that we recommend you complete.

- 5 Under the Network Preparation heading on the left side of the browser, click the Search Tree for eDirectory/NDS Versions link to update the NDS in your tree to a level that is compatible with the version of eDirectory installed by NetWare 6.5.

(Conditional) If the tree is using NDS, a compatible version of NDS *must* be running on all servers in the tree.

The View and Update NDS utility checks the NetWare and NDS versions of all servers and updates NetWare 4/NDS 6 and NetWare 5/NDS 7 servers to be compatible with eDirectory. It does not update NetWare servers already running eDirectory.

- 6 Under the Network Preparation heading on the left side of the browser, click the Prepare for New eDirectory link and follow the displayed instructions to extend the network schema.

This ensures that the new NetWare 6.5 server can communicate with an existing NDS/eDirectory tree.

This step requires that you have already updated NetWare 4/NDS 6 and NetWare 5/NDS 7 servers to be compatible with eDirectory as described in [Step 5](#). It also requires access to a server with a Read/Write replica of the Root partition.

- 7 (Conditional) If you have NetWare 4.11 or 4.2/NDS 6 servers in your tree, under the Network Preparation heading on the left side of the browser, click the Generate GUIDs on NetWare 4 Servers link and follow the instructions to generate the necessary GUIDs.

IMPORTANT: The GUID generator in Deployment Manager does not work with NetWare 4.10 servers, only with 4.11 or 4.2 servers. If there is a NetWare 4.10 server in your tree, it must be removed or you cannot install a new NetWare 6.5 server.

This step requires you to update NetWare 4.11 or 4.2/NDS 6 servers to be compatible with eDirectory and to extend the core schema of your tree, as described in [Step 5](#) and [Step 6](#). [Step 5](#) copied a new ds.nlm and a new sguid.nlm that support GUID generation to each selected NetWare 4 server. With these updated files in place, and with the core schema extended and synchronized, when ds.nlm is restarted on a NetWare 4.11 or 4.2/NDS 6 server it automatically generates GUIDs for objects in master replicas on that server.

Even though the new GUID generator for NetWare 4 helps to avoid GUID compatibility issues, problems can still occur. Always back up all file system trustees before any upgrade or migration to NetWare 6.5. If a problem does occur, see [TID# 10078892 - Trustee Assignments Appear to No Longer Work After NetWare 4x to NetWare 6x Upgrade \(<http://support.novell.com/cgi-bin/search/searchtid.cgi?/10078892.htm>\)](#) for more information.

- 8 (Conditional) Under the Network Preparation heading on the left side of the browser, click the Prepare a Server for Upgrade link and follow the displayed instructions to run a health check on the server that you are upgrading to NetWare 6.5.

The utility found in this section will perform a general health check on your server to ensure that there is enough memory, a sys: volume is in place, and that the server meets the minimum requirements for the upgrade. This utility will report if problems are detected that could cause the upgrade to fail.

- 9 (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.

- 10 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.

Novell Certificate Server™ is an integrated Public Key Infrastructure (PKI) built in to eDirectory. The NetWare installation process uses Novell Certificate Server to create an Organizational Certificate Authority and to issue certificates for applications that consume Secure Socket Layer (SSL) services.

Novell delivered a base-level PKI with NetWare 5.0. Because your network might be configured with the NetWare 5.0 PKI, you should follow the steps outlined here to properly upgrade from the NetWare 5.0 PKI and to correctly configure your network for Novell Certificate Server.

- 11 Click the Prepare for Universal Password link under the Network Preparation heading, read the explanation of the Universal Password feature of NetWare 6.5, click the Universal

Password Deployment Guide link, then follow the step-by-step instructions in the deployment guide for setting up the Universal Password feature.

- 12 Click the Prepare for CIFS/AFP link under the Network Preparation heading and follow the instructions displayed to prepare your new NetWare 6.5 server so CIFS (Microsoft Windows native networking workstations) and AFP (Apple Macintosh native networking workstations) users can log in to it.
- 13 Click the Verify NCI Keys link under the Network Preparation heading and follow the instructions displayed to check your eDirectory tree for SDI key consistency.
- 14 (Optional) Click the Schema Update link under the Network Preparation heading to extend the eDirectory schema for the products you plan to install on your NetWare 6.5 servers.
- 15 After you have completed the Network Preparation section of NetWare Deployment Manager, click the Overview link located under the Install/Upgrade Options heading to help you choose the install/upgrade option that best meets your needs.
- 16 (Optional) Click the Install NetWare 6.5 link under the Install/Upgrade Options heading for instructions if you have a new computer that you want to install NetWare 6.5 on, or if you are adding a NetWare 6.5 server to your existing network.
- 17 (Optional) Click the Automate an Installation link under the Install/Upgrade Options heading for instructions on automating the NetWare 6.5 installation using a response file and to access the Response File Generator utility which assists you in creating response files.
- 18 (Optional) Click the Upgrade to NetWare 6.5 link under the Install/Upgrade Options heading to view the options for upgrading a server to NetWare 6.5.

If you currently have a NetWare server that meets the minimum requirements, you can either use *NetWare 6.5 SP3 CD 1 (Operating System)* to perform an in-place upgrade from NetWare 6.0 or 5.x to NetWare 6.5, or you can remotely upgrade a server to NetWare 6.5 by clicking the Upgrade a Server Remotely link.

After you have completed the tasks in the Network Preparation section and decided on an installation or upgrade option, exit Deployment Manager and prepare the computer to be a NetWare 6.5 server.

### **Preparing to Install a NetWare 6.5 Server into a Pure NetWare 4.x NDS Tree**

To install a NetWare 6.5 server into a pure NetWare 4 tree, run the NetWare Deployment Manager utility and follow the directions to copy updated NetWare 4 NDS files to the network, generate GUIDs, and update the schema.

After running the Deployment Manager, but before attempting to install the NetWare 6.5 server, do the following.

NOTE: These steps are necessary only in a pure NetWare 4 tree. If any NetWare 5.1 or NetWare 6.0 servers already exist in the tree, this procedure is not necessary.

- 1 Run DSRepair on a server that holds a writable copy of the Root partition.
- 2 Select Advanced Options Menu > Global Schema Operations.
- 3 Log in as the Admin, if necessary, then run the Post NetWare 5 Schema Update.
- 4 After the Post NetWare 5 Schema Update completes, return to the main menu and select Advanced Options Menu > Repair Local DS Database.
- 5 Set the Rebuild Operational Schema option to Yes.
- 6 Run the local database repair.

# Preparing the Computer

To prepare your computer for NetWare 6.5:

- ◆ In the config.sys file, set FILES=50.
- ◆ 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 28](#).
- ◆ Create and format a boot partition. For more information, see [“Creating and Formatting a Boot Partition” on page 28](#).
- ◆ Access the installation files. For more information, see [“Accessing the Installation Files” on page 29](#).

## 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 the storage adapters.

## Creating and Formatting a Boot Partition

NetWare requires a DOS partition in standard FAT format to hold the NetWare operating system startup and server files. If an adequate boot partition already exists on your machine, proceed to [“Accessing the Installation Files” on page 29](#).

TIP: You should increase the size of your boot partition to accommodate your specific configuration requirements. See [“System Requirements” on page 22](#).

To create and format a DOS boot partition:

- 1 Back up any desired data to another computer or offline storage media.
- 2 Boot your computer with DOS 3.3 or later.
- 3 If the computer already has an operating system installed, such as Windows or a previous installation of NetWare, you should completely remove the existing partitions and the operating system.  
  
You can use FDISK to remove partitions, or the partitions can be deleted from the Prepare Boot Partition screen during the NetWare 6.5 installation.
- 4 If you want to use FDISK to create an active DOS partition, enter **FDISK** at the DOS prompt.  
  
Create a primary DOS partition and make it the active partition. See [“System Requirements” on page 22](#) for minimum requirements. The computer will restart.
- 5 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.

## Accessing the Installation Files

NetWare 6.5 can be installed from the server's local CD drive or from installation files located on the network. If you want to run the NetWare 6.5 Install program from DOS or a network drive, complete the steps in "Preparing to Run the NetWare Installation from DOS or a Network Drive" below.

Starting in NetWare 6.5 SP1, Novell added an option during a new server install to use NetWare as the Boot OS instead of Caldera DOS (overlay install only). This option allows you to proceed with the NetWare 6.5 Install program directly without having to boot DOS first. To use this option, make sure your computer is set up to boot from the CD drive before the hard drive. Skip to ["Starting the Installation Program" on page 30](#).

### Preparing to Run the NetWare Installation from a Network Drive

- 1 Make sure that the DOS config.sys file contains the FILES=50 and BUFFERS=30 commands.
- 2 Make sure the config.sys and autoexec.bat files are configured to load the CD-ROM drivers for your computer. The logical filename of your CD drive (specified in these files) must *not* be CDDVD.
- 3 Boot your computer with DOS 3.3 or later.
- 4 (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*.

Copy the contents of both *NetWare 6.5 SP3 CD 1 (Operating System)* and *NetWare 6.5 SP3 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.

You can now proceed to ["Starting the Installation Program" on page 30](#).

### Using Updated Files during the Installation

The c:\nwupdate directory structure for NetWare 6.5 mirrors the directory structure of the install image. Updated files should be placed in the c:\nwupdate subdirectory that corresponds to where they are located in the install image.

There are two notable exceptions to this rule:

1. Install scripts (sys\_inst.ils, dos\_inst.ils, defpre.ils, defcopy.ils, etc.) should be placed in the c:\nwupdate directory.  
  
NOTE: Defpre.ils and defcopy.ils are dummy scripts called from dos\_inst.ils (the first C-Worthy copy) and sys\_inst.ils (the second C-Worthy copy), respectively, and are intended to be modified for OEM use. These scripts are also used in NetWare 6.0.
2. The subdirectories of the c:\nwupdate\drivers directory (\storage, \lan, \psm, \sbd, \cios) have been eliminated. Their files and subdirectories should be placed in the c:\nwupdate\drivers directory.

There is a blackout period during the install when access to the DOS drives (C:, D:, etc.) is prohibited. This occurs during the time that platform support and storage drivers (PSMs, HAMS, SBDs, and CDMs) are detected and loaded. However, they can be loaded from a floppy disk.

# Starting the Installation Program

To start the NetWare 6.5 installation program, complete one of the following:

- ◆ To use the bootable NetWare option, insert *NetWare 6.5 SP3 CD 1 (Operating System)* and boot the computer. Unless you press a key to interrupt the installation preparation, the NetWare 6.5 Install program will launch automatically.

If you want to specify additional installation parameters, press any key before the installation program begins, type **P**, and then enter the parameters using this syntax:

```
[INST: parameter1 parameter2 parameter3 ...]
```

For more information, type **H** to view the online help.

- ◆ To start the NetWare 6.5 Install program on the CD from DOS, change to the CD drive letter and enter **INSTALL**.
- ◆ To run the NetWare 6.5 Install program from a network drive, log in to the network, access the directory where you copied the installation files, and enter **INSTALL**.

TIP: If you attempt to install a new server into your tree at the same time you upgrade another server in the tree to NetWare 6.5, you might have difficulty logging in to the server being upgraded until the other server's installation is complete.

## 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.

NOTE: 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 Initial Installation Settings

The initial server installation settings include choosing the language and regional settings, accepting the license agreements, and deciding whether to do a default or manual installation.

- 1 Select the language for the install, then press Enter.

This setting specifies the language for the install program only. You can select other language options, such as the language for the user or the operating system, later during the installation.

- 2 Accept or modify the regional settings.

The following are the default settings:

- ◆ Country Code: 001 (USA)
- ◆ Codepage: 437 (United States English)
- ◆ Keyboard: United States

To accept the defaults, select Continue and press Enter.

To change the settings, select Modify and press Enter.

- 3 Press F10 to accept the Novell Software License Agreement.
- 4 Press F10 to accept the JReport Runtime License Agreement.

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

## Selecting Default or Manual Installation

The next screen allows you to select either a Default Installation or a Manual Installation.

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

- ◆ 100 MB DOS partition (unless you have already created a larger one)
- ◆ 4 GB (4000 MB) volume sys:—any remaining disk space will be left as free space
- ◆ LAN and disk drivers auto-discovered and loaded
- ◆ Video mode: Super VGA Plug N Play
- ◆ Mouse: Auto-discovered and loaded

The Manual Installation allows you to modify detected drivers and choose specific configuration options for your networking environment. It also allows for the manual configuration of the default settings used in the Default Installation. You must choose Manual Installation to create volumes other than the sys: volume during the install.

NOTE: If you select a Default installation, you will still have the chance later in the installation to select the individual products that you want to install. You can also create additional volumes after the server is installed.

### Default Installation

To choose the Default installation option:

- 1 If necessary, press Enter to toggle the install option to Default.
- 2 (Optional) If you have previously prepared a response file to automate the server installation, press F3 to specify the full path name of the response file.
- 3 Select Continue and press Enter.

A screen is displayed showing the default settings for the size of the sys: volume, LAN and disk driver discovery, and video mode.

- 4 Complete one of the following:

If you need to change the default settings, select Back and press Enter. This takes you back a screen so you can select the Manual installation option.

or

Select Continue and press Enter.

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 see an error message to that effect. Press Enter to see the Prepare Boot Partition screen showing the current settings for the DOS partition, NetWare partition (if any), and free space.

To modify the partition settings:

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

You must delete the existing DOS partition in order to create a new one. Follow the onscreen prompts to complete the operation.

- 3 Select Continue and press Enter.

A screen is displayed showing the settings for the size of the sys: volume, LAN and disk driver discovery, and video mode.

- 4 Select Continue and press Enter.

To continue the Default installation, skip to [“Switch to Graphical Display Mode” on page 34](#).

## Manual Installation

To choose the Manual installation option:

- 1 Press Enter to toggle the Default or Manual installation option to Manual.
- 2 (Optional) If you have previously prepared a response file to automate the server installation, press F3 to specify the full path name of the response file.
- 3 Select Continue and press Enter.

### Prepare Boot Partition

The Prepare Boot Partition screen displays the default settings for the DOS partition, NetWare partition (if any), 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

If you don't want to automatically restart the NetWare server after a reboot, change the setting to No.

- ◆ The option to modify the boot sector is set to DOS

If NetWare is selected and DOS is the OS that normally boots when the system comes up, then the installation will modify the boot sector to load NetWare instead of DOS.

If DOS is selected and NetWare is the normal boot OS, then the installation will restore the DOS boot sector.



- ◆ The option to allow unsupported drivers is set to No  
If Yes is selected, then drivers that have not been tested and approved for NetWare are automatically selected and loaded if no other drivers are available.
- ◆ The video option is set to SVGA Plug N Play

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 specify new SET parameters or other commands (Load, etc.). SET parameters specified here are saved and run from the server's registry. All other commands specified 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 to copy the necessary NetWare server files to the boot partition. After 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 and press Enter.

If you want to modify the settings:

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

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

The Novell Storage Services Management Utility (NSSMU) now displays. NSSMU is a console-based utility for managing storage devices on a server. NSSMU is the interface you use to set up at least your basic storage solution during the installation of NetWare 6.5.

If an existing NetWare partition or volume is discovered on the server, NSSMU indicates this. You are given two options: (1) Remove only the NetWare sys: volume and pool/partitions, or (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 Specify the desired size of the sys: volume in MB.
- 3 Press Enter to select the Create option.
- 4 Press Enter again.

You now see the NSSMU 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 and press Enter.
- 2 Follow the on-screen prompts, and when finished, return to the Main Menu.  
For more information, see **“NSSMU”** in the *NetWare 6.5 Utilities Reference*.
- 3 Select the Continue Installation option and press Enter.

## Switch to Graphical Display Mode

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

If you are installing from the network, you are prompted to reconnect to the network. To continue the installation, type 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 87 for a table listing the graphical mode keyboard actions.

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

## Selecting the NetWare 6.5 Installation Type

In the Select Installation Type screen, you are prompted to select either Open Enterprise Server or NetWare 6.5 SP3 as the type of installation you require.

The following information will help you choose the appropriate installation type.

### Open Enterprise Server

Open Enterprise Server includes NetWare 6.5 with Support Pack 3 fixes, and the following updated and new products:

- ◆ iManager 2.5
- ◆ Virtual Office 1.5
- ◆ QuickFinder Server 4.0 (replaces NetWare Web Search Server)
- ◆ OpenWBEM

Select this option if you want to install any of these products. They will not be available for selection if you choose the NetWare 6.5 Support Pack 3 option.

**IMPORTANT:** There are new features in these products that might affect your current NetWare 6.5 experience. See **“Differences Between NetWare 6.5 SP3 and OES NetWare”** on page 35 for details.

The open Web-Based Enterprise Management (OpenWBEM) component is installed on the server only when the Open Enterprise Server option is chosen.

### NetWare 6.5 SP3

NetWare 6.5 Support Pack 3 includes all the traditional NetWare 6.5 products. Three of these are different than the products available in OES NetWare:

- ◆ iManager 2.0.2
- ◆ Virtual Office 1.0

- ◆ NetWare Web Search Server

Select this option if you want a traditional Support Pack installation of NetWare 6.5 and do not want to install new versions of iManager, Virtual Office, and Web Search Server at this time.

You can run the product installation later and install iManager 2.5, Virtual Office 1.5, and QuickFinder Server 4.0. See the documentation for these products for more information.

### **Differences Between NetWare 6.5 SP3 and OES NetWare**

iManager 2.5, which is included in OES NetWare, offers enhanced performance and a new administration interface that does not manage Virtual Office 1.0. For information about other changes from version 2.0.2, see the *Novell iManager 2.5 Administration Guide*.

In Virtual Office 1.5, which is included in OES NetWare, the administration interface has been removed from iManager 2.5 and incorporated into Virtual Office 1.5. iManager 2.5 does not manage Virtual Office 1.0. For information about the new administration interface, see the *Novell Open Enterprise Server Virtual Office Configuration Guide*.

QuickFinder Server 4.0 is a Web and file system search engine that includes several new and enhanced features. Installing QuickFinder Server into an existing Web Search Server installation will require that you reindex the data. For more information, see the *QuickFinder Server 4.0 Administration Guide*.

OpenWBEM is not installed and activated by default on NetWare 6.5 SP3 servers. However, the necessary files are contained in the cimom.zip file in the products/openwbem directory on the *NetWare 6.5 SP3 Products CD*. If you want to load OpenWBEM on an SP3 server, you can unzip this file and load the necessary modules manually. For more information, see the *OpenWBEM Services Administration Guide for OES*.

## **Choosing a Server Pattern**

The Choose a Pattern page gives you the opportunity to select the type of server you want to install. Clicking on the name of a 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 \(page 36\)](#)
- ◆ [Basic Netware File Server \(page 36\)](#)
- ◆ [Pre-Migration Server \(page 37\)](#)
- ◆ [DNS/DHCP Server \(page 38\)](#)
- ◆ [exteNd J2EE Web Application Server \(page 39\)](#)
- ◆ [LDAP Server \(page 41\)](#)
- ◆ [NetWare AMP \(Apache, MySQL, PHP, and PERL\) Server \(page 42\)](#)
- ◆ [NetWare Backup Server \(page 43\)](#)
- ◆ [NetWare Web Search Server \(page 44\)](#)
- ◆ [Network Attached Storage \(NAS\) Server \(page 45\)](#)
- ◆ [Novell iPrint Server \(page 46\)](#)
- ◆ [Apache/Tomcat Server \(page 47\)](#)

- ◆ [Novell Nsure Audit Starter Pack Server \(page 49\)](#)
- ◆ [iSCSI SAN Storage Server \(page 50\)](#)
- ◆ [Management Server \(page 51\)](#)
- ◆ [Novell iFolder Storage Services \(page 52\)](#)
- ◆ [Virtual Office Server \(page 53\)](#)

The following sections provide additional information about the individual installation patterns and the products 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.

Proceed to [“Installed Products Summary” on page 54](#).

## 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 and Tomcat 4 Admin Instance
- ◆ Beans for Novell Services
- ◆ ConsoleOne 1.3.6
- ◆ eDirectory 8.7.3
- ◆ eDirectory Management Utilities Toolbox 8.7.3
- ◆ LDAP Services
- ◆ NDS iMonitor Services
- ◆ Novell Remote Manager
- ◆ Novell Certificate Server 2.7.6
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services

- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell Script for NetWare 2.0 (for PHP and Perl support)
- ◆ Novell TLS Library
- ◆ Perl for NetWare
- ◆ PHP for NetWare
- ◆ Pervasive\* SQL 2000i
- ◆ Secure Authentication Services
- ◆ Storage Management Services™ (SMS)

If you selected the Basic NetWare File Server option, click Next and then proceed to **“Pattern Installation Details”** on page 55.

## 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. The Migration Wizard Utility connects the servers involved in a migration using one of two methods, SLP or the sys:\etc\hosts file. In order to successfully complete a migration, either the sys:\etc\hosts file on the Pre-Migration Server must contain the IP address and server name of the source server involved in the migration, or SLP must be configured on the Pre-Migration Server.

For instructions on how to configure SLP on this server, see **“Installing IP and IPX”** on page 57.

After completing the Pre-Migration Server installation, to modify the sys:\etc\hosts file on the Pre-Migration Server:

- 1 On the Pre-Migration Server’s server console, enter **edit**.
- 2 Press the Insert key.
- 3 Select sys: and press Enter.
- 4 Select etc and press Enter.
- 5 Select hosts, press Enter > Enter.
- 6 Add the IP address and server name of the source server involved in the migration project.  
Type the IP address and server name as *xxx.xxx.xxx.xxx Server\_Name*.
- 7 Save the file.
- 8 Run the migration project.

The Pre-Migration Server option has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The Pre-Migration Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

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

- ◆ ConsoleOne 1.3.6
- ◆ eDirectory 8.7.3
- ◆ Java Virtual Machine (JVM)
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ Secure Authentication Services
- ◆ W0 (Security Domain Key)

If you selected the Pre-Migration Server option, click Next and then proceed to **“Pattern Installation Details”** on page 55.

## 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 has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The DNS/DHCP Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

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
- ◆ ConsoleOne 1.3.6
- ◆ DNS/DHCP
- ◆ eDirectory 8.7.3
- ◆ Java Virtual Machine (JVM)
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)

- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell iManager 2.0
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ Secure Authentication Services
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

For information about configuring DNS/DHCP after the installation, see the *Novell DNS/DHCP Services for NetWare Administration Guide for NetWare 6.5*.

If you selected the DSN/DHCP Server option, click Next and then proceed to “**Pattern Installation Details**” on page 55.

## 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 (Simple Object Access Protocol)-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. For information on installing Novell exteNd Workbench, see the [Novell exteNd Workbench Release Notes \(http://www.novell.com/documentation/lg/workbench41/docs/relnotes.html\)](http://www.novell.com/documentation/lg/workbench41/docs/relnotes.html)

The exteNd J2EE Web Application Server option has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The exteNd J2EE Web Application Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

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 1.3.6
- ◆ DNS/DHCP
- ◆ eDirectory 8.7.3
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ J2EE
- ◆ LDAP Service
- ◆ MySQL
- ◆ NDS iMonitor Services
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ NetWare Web Search
- ◆ Novell Certificate Server 2.4.0
- ◆ iPrint
- ◆ Novell eGuide
- ◆ Novell iFolder<sup>®</sup> 2.1
- ◆ Novell iManager 2.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell Native File Access
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ NWFTP
- ◆ OpenSSH
- ◆ Pervasive SQL 2000i
- ◆ Secure Authentication Services
- ◆ 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 55](#).

## 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 has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The LDAP Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

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 1.3.6
- ◆ eDirectory 8.7.3
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NDS iMonitor Services
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell Native File Access
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ Pervasive SQL 2000i

- ◆ Secure Authentication Services
- ◆ 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 8.7.3 Administration Guide*.

If you selected the LDAP Server option, click Next and then proceed to “**Pattern Installation Details**” on page 55.

## 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 Server option has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The NetWare AMP Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

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 1.3.6
- ◆ DNS/DHCP
- ◆ eDirectory 8.7.3
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ MySQL
- ◆ NDS iMonitor Services
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)

- ◆ NetWare Web Search
- ◆ Novell Certificate Server 2.4.0
- ◆ iPrint
- ◆ Novell eGuide
- ◆ Novell iManager 2.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell Native File Access
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ NWFTP
- ◆ OpenSSH
- ◆ Pervasive SQL 2000i
- ◆ Secure Authentication Services
- ◆ 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 55.**

## 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 has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The NetWare Backup Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

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:

- ◆ ConsoleOne 1.3.6
- ◆ eDirectory 8.7.3

- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAAS)
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ Pervasive SQL 2000i
- ◆ Secure Authentication Services
- ◆ W0 (Security Domain Key)

For information about configuring SMS after the installation, see the *NetWare 6.5 Storage Management Services Administration Guide*.

If you selected the NetWare Backup Server option, click Next and then proceed to “**Pattern Installation Details**” on page 55.

## 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 has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The NetWare Web Search Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

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
- ◆ ConsoleOne 1.3.6
- ◆ eDirectory 8.7.3
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service

- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ NetWare Web Search
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ Secure Authentication Services
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

For information about configuring Web Search after the installation, see the *NetWare 6.5 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 55.

## 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 has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The Network Attached Storage (NAS) Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

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 1.3.6

- ◆ eDirectory 8.7.3
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell Native File Access
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ Pervasive SQL 2000i
- ◆ Secure Authentication Services
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

For information about configuring NetStorage after the installation, see the *NetWare 6.5 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 55**.

## 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 has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The Novell iPrint Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

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

- ◆ ConsoleOne 1.3.6
- ◆ eDirectory 8.7.3
- ◆ iPrint
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NDS iMonitor Services
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Modular Authentication Service (NMAS)
- ◆ Novell Portal Services (NPS)
- ◆ Novell Publish/Subscribe Infrastructure (NPSI)
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ Secure Authentication Services
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

For information about configuring iPrint after the installation, see the *Novell iPrint Administration Guide for NetWare 6.5*.

If you selected the Novell iPrint Server option, click Next and then proceed to **“Pattern Installation Details” on page 55**.

## 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 (July 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 has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The Apache/Tomcat Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

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 1.3.6
- ◆ eDirectory 8.7.3
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ 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)
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ OpenSSH
- ◆ Pervasive SQL 2000i
- ◆ Secure Authentication Services
- ◆ 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 NetWare 6.5*.

For information about configuring Tomcat after the installation, see the *Tomcat Administration Guide for NetWare 6.5*.

If you selected the Apache/Tomcat Server option, click Next and then proceed to “**Pattern Installation Details**” on page 55.



## Novell Nsure Audit Starter Pack Server

The Novell Nsure Audit Starter Pack Server option installs the centralized auditing service that is built into NetWare 6.5. The auditing service collects security and system event data, filters the collected information to trigger real-time e-mail notifications, and enables centralized logging to a single data store.

The Novell Nsure Audit Starter Pack Server option has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The Novell Nsure Audit Starter Pack Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

The Novell Nsure Audit Starter Pack Server option creates a dedicated auditing server by copying only the files needed, including those for the following products:

- ◆ ConsoleOne 1.3.6
- ◆ eDirectory 8.7.3
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NDS iMonitor Services
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Pervasive SQL 2000i
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ Secure Authentication Services
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

If this server is to act as the Secure Logging Server, MySQL should also be installed.

For information about configuring the Novell Nsure Audit Starter Pack Server after the installation, see the *Novell Nsure Audit 1.0.3 Administration Guide*.

If you selected the Novell Nsure Audit Starter Pack Server option, click Next and then proceed to **“Pattern Installation Details” on page 55**.

## iSCSI SAN Storage Server

The iSCSI SAN Storage Server option creates an iSCSI Storage Server (also known as an iSCSI Target) out of a NetWare server. The NetWare iSCSI Storage Server includes LDAP access control so you can limit the servers on the iSCSI SAN that can access the storage on the iSCSI Storage Server.

iSCSI is an industry standard that lets you build low-cost, fully functional Storage Area Networks (SANs) using commodity LAN (Ethernet) hardware.

NOTE: Improved storage system performance is possible with Gigabit Ethernet hardware.

With iSCSI, existing direct-attached or SAN-attached servers can be redeployed as iSCSI Storage Servers. This lets you improve the manageability and deployment of your storage while also adding high availability with Novell Cluster Services™, which Novell's iSCSI Storage Server fully supports.

The iSCSI SAN Storage Server option has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The iSCSI SAN Storage Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

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

- ◆ ConsoleOne 1.3.6
- ◆ eDirectory 8.7.3
- ◆ eMBox
- ◆ iSCSI Module
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NDS iMonitor Services
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ Pervasive SQL 2000i
- ◆ Secure Authentication Services
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

For information about configuring the iSCSI SAN Storage Server after the installation, see *iSCSI 1.1.3 Administration Guide for NetWare 6.5*.

If you selected the iSCSI SAN Storage Server option, click Next and then proceed to “**Pattern Installation Details**” on page 55.

## Management Server

The Management Server option installs Novell iManager 2.0.2 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 2.0.2 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 has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 800 MHz processor
- 512 MB RAM
- IDE/SCSI
- 4 GB hard drive

The Management Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 1000 MHz processor
- 1 GB RAM
- SCSI

The Management Server option has the following large configuration recommendations:

- Xeon Quad processor
- 4 GB RAM
- Fibre Channel/iSCSI

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 1.3.6
- ◆ eDirectory 8.7.3
- ◆ eMBox

- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ NDS iMonitor Services
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell eGuide
- ◆ Novell iManager 2.0
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Licensing Services
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ Pervasive SQL 2000i
- ◆ Secure Authentication Services
- ◆ Tomcat 4 Servlet Container
- ◆ W0 (Security Domain Key)

For information about configuring iManager after the installation, see the *Novell iManager 2.0.x Administration Guide*.

If you selected the Management Server option, click Next and then proceed to “**Pattern Installation Details**” on page 55.

## Novell iFolder Storage Services

Novell iFolder Storage Services is a Net services software solution that allows your user’s 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 user’s local files to the iFolder server, making them available for regularly scheduled data backup.

The Novell iFolder Storage Services option has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The Novell iFolder Storage Services option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

The Novell iFolder Storage Services 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
- ◆ ConsoleOne 1.3.6
- ◆ eDirectory 8.7.3
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Service
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ Novell Certificate Server 2.4.0
- ◆ Novell iFolder 2.1
- ◆ Novell International Cryptographic Infrastructure (NICI)
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ Secure Authentication Services
- ◆ W0 (Security Domain Key)

For information about configuring Novell iFolder 2.1 after the installation, see the *Novell iFolder 2.1 Installation and Administration Guide*.

If you selected the Novell iFolder Storage Services option, click Next and then proceed to “**Pattern Installation Details**” on page 55.

## 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. It also provides team folders, Web mail, and Internet chat functionality.

The Virtual Office Server option has the following minimum system requirements:

- Single processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 512 MB RAM

The Virtual Office Server option has the following recommended system requirements:

- Dual processor
- Server-class PC with a Pentium III 550 MHz or AMD K7 processor
- 1 GB RAM

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 1.3.6
- ◆ eDirectory 8.7.3
- ◆ eMBox
- ◆ Java Virtual Machine (JVM)
- ◆ LDAP Services
- ◆ NDS iMonitor Services
- ◆ Novell Remote Manager
- ◆ NetWare Storage Management Services (SMS)
- ◆ NetWare Web Search
- ◆ Novell Certificate Server 2.4.0
- ◆ iPrint
- ◆ 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
- ◆ Novell Script for NetWare (for PHP and PERL support)
- ◆ Pervasive SQL 2000i
- ◆ Secure Authentication Services
- ◆ Secure Authentication Services (SAS)
- ◆ 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 Configuration Guide*.

If you selected the Virtual Office Server option, click Next and then proceed to **“Pattern Installation Details”** on page 55.

## Installed Products Summary

After selecting the components that you want to install from the Components page, a Summary page 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.

If you are installing from CD, remove *NetWare 6.5 CD 1 (Operating System)* when prompted, insert *NetWare 6.5 CD 2 (Products)*, click OK, and then proceed to **“Naming the Server” on page 55**.

## Pattern Installation Details

After selecting the special purpose server that you want to install, a Details page 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, then proceed to **“Naming the Server” on page 55**.

## 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 or periods (.).

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, type 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 On 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 On 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 for IP/IPX and IP with Compatibility Mode configurations. 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 On 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 On 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.

## 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 \(IP\) \(page 56\)](#)
- ◆ [About IPX \(page 57\)](#)
- ◆ [Using Both IP and IPX \(page 57\)](#)
- ◆ [Installing IP and IPX \(page 57\)](#)

### 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 specify 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 to support IPX-based applications without binding IPX. 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.

TIP: 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 On the Protocols page, select a network board.
- 2 Check the IP check box.
- 3 Type the required IP information for the selected network board.
- 4 Check the IPX check box if you are installing IPX on the selected network board.

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.

- 5 Repeat **Step 1** through **Step 4** for each network board in the server.

### **(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 specified in a separate configuration file.

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

- 1 On the Protocols page, click Advanced.
- 2 Select the SLP tab.
- 3 Either specify the IP addresses of the Directory Agents on your network or, 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 On the Protocols page, click Advanced.
- 2 Select the SNMP tab.
- 3 (Optional) Type a hardware description, server location, and administrator in the fields provided.
- 4 Type 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 On the Protocols page, click Advanced.
- 2 Select the IPX Compatibility tab.
- 3 (Conditional) Select 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 57**.

- 3a Type 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 57](#).  
  
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 Type 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.

## Specifying a Hostname for Each IP Address

If you bound two different IP addresses to two or more network boards, the hostnames page will display. If you have only one network board, or you bound two or more network boards with the same IP address, see [“Setting Up Domain Name Service” on page 59](#).

You must specify a hostname for each of the IP addresses that were bound in [“Installing Networking Protocols” on page 56](#). The hostname is the name of the DNS server that will resolve to your IP address. If you do not know the hostname, contact your network administrator.

You must also determine which IP address will be the Primary IP address. The Primary IP address will be the default IP address for all TCP/IP services.

- 1 Type a hostname in the field provided for each IP address.
- 2 Click the Primary radio button next to the IP address you want to specify as the primary IP address.
- 3 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.

TIP: 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, provide 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.

NOTE: If you bound two different IP addresses to two or more network boards in ["Installing Networking Protocols" on page 56](#), the Host Name field will not display on this screen. This is because you specified the hostname on the [Specifying a Hostname for Each IP Address](#) screen described in the previous step. The remainder of this screen remains the same.

- ◆ **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 Click Next.

## Setting the Server Time Zone and Time Synchronization Method

Keeping accurate time is a critical function for servers in an eDirectory tree. The reported time must be synchronized across the network in order to provide expiration dates and time stamps to establish the order of events taking place in eDirectory.

Follow these steps to set the server's time zone:

- 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 Saving Time.

By default, the NetWare installation synchronizes time automatically with the first server in the tree. However, you might want to set up a different time synchronization scheme or synchronize with an external time source using Network Time Protocol.

To change the default time synchronization settings, continue with the time synchronization configuration instructions below. Otherwise, skip to ["Setting Up Novell eDirectory" on page 61](#).

### (Optional) Configure Time Synchronization

- 1 On the Time Zone page, click Advanced.
- 2 On the Time Synchronization page, click the radio button next to the time protocol that you want.

NetWare servers can use one of two available protocols for time synchronization: NTPv3 or Timesync. Select the protocol that best fits your network's needs:

- ◆ Select NTPv3 to use Network Time Protocol for synchronizing time on your network. (The `xntpd.nlm` that provides NTP time packets is also capable of providing Timesync packets for servers that require them, such as NetWare 5.0 and 4.2 servers.)

If you select this option, further configuration might be required to fully implement your time server hierarchy. For more information, see the [NetWare 6.5 Network Time Management Administration Guide](#).

- ◆ Select Timesync to use the legacy time synchronization mechanism built in to NetWare. (The `timesync.nlm` that provides Timesync packets is also capable of providing NTP packets for interoperability with other time servers.)
- 3 (Conditional) If you selected Timesync in [Step 2](#), click the radio button next to the time server type that you want.

NetWare distinguishes four types of time servers. Three of these 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.

The first NetWare server installed in a network is automatically set up as a Single Reference time server. All subsequent NetWare servers are automatically set up as Secondary time servers. This default configuration works well for most small networks. If your network requires a different time synchronization configuration, you can change the time server type. For more information, see the *NetWare 6.5 Network Time Management Administration Guide*.

4 (Optional) If you do not want to accept the defaults, configure Timesync time sources by checking the Use Timesync Configured Sources check box.

4a Type the time sources in the fields provided (up to three).

Timesync time sources can be specified in one of three different formats:

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

4b (Conditional) If your time source uses Network Time Protocol (NTP), check the NTP check box to the right of the time source.

5 Click OK.

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

6 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.

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.

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

- ◆ [Installing the Server into an Existing eDirectory Tree \(page 62\)](#)
- ◆ [Creating a New eDirectory Tree \(page 62\)](#)

- 1 Click the radio button next to the eDirectory option you want.
- 2 Click Next.

Continue with the section below that corresponds to your choice.

## Installing 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 Type the tree name in the field provided.
- 2 Type the context for the server object in the field provided.
- 3 Click Next.
- 4 Type the full eDirectory context for the Admin object.
- 5 Type 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 are asked if you have run the Deployment Manager as described in [“Preparing the Network with Deployment Manager” on page 25](#).

If you have not run the Deployment Manager, you can run it on a workstation, return to the server console, and click Yes, or you can click No, cancel the installation, run Deployment Manager, then restart the installation. Deployment Manager is located at the root of the *NetWare 6.5 SP3 CD 1 (Operating System)* CD 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 Type a tree name.

Each eDirectory tree must have a name unique from other eDirectory trees on the network.

- 2 Type the context for the Server object in the field provided or browse to the context by clicking the Browse button.

If you click the Browse button, you will be able to add or delete containers in your tree.

- 3 Type the context for the default Admin user.
- 4 Type a password for the Admin user.
- 5 Retype the password for the Admin user.
- 6 Click Next.

## eDirectory 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 screen is accurate.
- 2 Record the Admin password and any other relevant information before proceeding.
- 3 Click Next.

## Licensing the NetWare 6.5 Server

Every NetWare 6.5 server must have a valid license for the number of users who access the server. You have several licensing options when installing a server:

- ◆ Use the 90-day evaluation license: This is the license included on the NetWare installation CDs in the /License folder.  
  
You can use the same license files for all NetWare servers installed during the evaluation period.
- ◆ Use a standard purchased license: This is the license you receive when you purchase NetWare 6.5 from a Novell Authorized Reseller™. It includes two files: a foundation key (.nfk) file and a license (.nlf) file.

If you have already installed the server with the evaluation license, you must use Novell iManager to delete the evaluation license and install the standard license.

- ◆ Install without licenses: You can install the server without licenses; however, an unlicensed server allows only two user connections.

After you install the server, you can use Novell iManager to install additional user licenses.

Follow these steps to implement the licensing option of your choice:

- 1 (Optional) If you want to install the server without licenses, select Install Without Licenses and click Next. Skip to [“LDAP Configuration” on page 64](#).
- 2 To install the server with a license, click the Browse button and browse to the location of the license files:
  - ◆ The evaluation license file is located on either of the NetWare installation CDs in the License folder.
  - ◆ Standard license files can be located on a diskette, on the server’s DOS partition, or on another server in the tree.
- 3 Select the desired .nlf file, then click OK.
- 4 Click Next.
- 5 (Conditional) If prompted, select where in the tree you want to install the license, then click Next.

For instructions on how to delete or install licenses by using iManager after the server installation, see [“Installing NetWare Licenses” on page 83](#).

# LDAP Configuration

If you selected a Manual Installation at the beginning of the NetWare 6.5 installation, (see [“Selecting Default or Manual Installation” on page 31](#)), you will now see the LDAP Configuration page. On this page, you can configure LDAP on the server. If you are not performing a manual install, continue with [“Selecting the Login Method” on page 64](#).

- 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 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 [“Managing Login and Post-Login Methods and Sequences”](#) in the *Novell Modular Authentication Services 2.3 Administration Guide*.

The NDS and Challenge Response login methods are installed by default.

- 1 On the Novell Modular Authentication Service page, select the login method you want to use from the options provided.

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 (except the NDS and Challenge Response defaults).

- 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 on the *Novell Clients Software CD (July 2003)*.

## DNS/DHCP Installation

If you selected to install DNS/DHCP on the Components page or if you selected a pattern installation that installs DNS/DHCP, you 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 65](#).

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 and select 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 and select 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 and select the NDS context that you want.
  - 3b Click OK.
- 4 Click Next.

## iFolder Server Options

If you selected to install Novell iFolder Storage Services on the Components page or if you selected a pattern installation that installs iFolder, you now see the iFolder Server Options page. If you did not select Novell iFolder Storage Services on the Components page, continue with [“MySQL Options” on page 65](#).

There are six fields on this page 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 Names** - 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 specifying 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 page or accept the default settings that are provided.
  - 2 Click Next.

## MySQL Options

If you selected to install MySQL on the Components page or if you selected a pattern installation that installs MySQL, you now see the MySQL Options page. If you did not select MySQL on the Components page, continue with [“exteNd Application Server - Details” on page 66](#).

- 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 Type 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

## exteNd Application Server - Details

If you selected to install the exteNd Application Server on the Components page or if you selected a pattern installation that installs exteNd, you now see the exteNd Application Server - Details page. This page specifies some basic settings about the application server's configuration. If you did not select exteNd Application Server on the Components page, continue with [“Novell Nsure Audit Starter Pack - Component Selection” on page 67](#).

- 1 Type 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 username other than the default (admin).

- 2 Type 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 Type the HTTP port number that the application server will listen on in the field provided.

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, click the Help button.

- 6 Click Next.

## exteNd Application Server - Database Options

You now see the exteNd Application Server - Database Options page. This page 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 [“Novell Nsure Audit Starter Pack - Component Selection” on page 67](#).

- 1 Type the name of the machine hosting the MySQL database in the field provided. Localhost is the default.
- 2 Type the port number for the MySQL database on the host machine in the field provided. 3306 is the default.
- 3 Type 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 Type 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 Type 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.

## Novell Nsure Audit Starter Pack - Component Selection

If Novell Nsure Audit Starter Pack was one of the products you selected to install on the Components page, or if you selected the Novell Nsure Audit Starter Pack pattern installation, you now see the Component Selection page. The Component Selection page allows you to select which Nsure Audit components you want to install to the current server. If you did not select Novell Nsure Audit Starter Pack on the Components page, continue with [“NetStorage Install” on page 68](#).

- 1 (Optional) Check the Install Secure Logging Server check box.  
This installs the Secure Logging Server (lengine.nlm), mdb.nlm, and the channel drivers (lgd\*.nlm) to the current server.  
This also creates a Logging Server object in the Logging Services container.
- 2 (Optional) Check the Autoconfigure MySQL check box.  
This creates the MySQL Channel object in the Logging Services' Channel container.
- 3 (Optional) Check the Install Platform Agent check box.  
This installs the Platform Agent (logevent.nlm), the Caching Module (lcache.nlm), and the NetWare and eDirectory instrumentations (auditNW.nlm and auditDS.nlm respectively).
- 4 Specify the IP address or hostname of the Secure Logging Server that the Platform Agent will connect to.
- 5 Click Next.

# Novell Nsure Audit Starter Pack - Database Options

If you checked the Autoconfigure MySQL check box in “[Novell Nsure Audit Starter Pack - Component Selection](#)” on page 67, the Database Options page displays. The options on this page are used to define the MySQL Channel object. If you did not check the Autoconfigure MySQL check box on the previous page, continue with “[NetStorage Install](#)” on page 68.

- 1 Type the IP Address or hostname of the MySQL database server in the field provided.

If a hostname is specified, only the first address associated with that name is used.

- 2 Type the MySQL port number where the Secure Logging Server will connect to the database server in the field provided.

If this field is left blank, the Secure Logging Server uses the default MySQL port assignment, 3306.

- 3 In the field provided, type the user account name that the Secure Logging Server uses to log in to the database.

This account has all privileges to the default database and can log in from any IP address.

The default username for the NetWare 6.5 data store is “auditusr.”

**IMPORTANT:** On NetWare 6.5, MySQL installs in Secure Mode. In Secure Mode, the default MySQL administrative account, Root, only has rights to log in at the database server. Therefore, if you want the logging server to use the Root account to log in to the database, MySQL and the Secure Logging Server must be located on the same server and you must specify a loopback address (“127.0.0.1” or “localhost”) in the MySQL Database Host field.

- 4 Type the password the logging server uses to authenticate with the database in the field provided.

The default password for the NetWare 6.5 data store is “auditpwd.”

- 5 Type the password again in the password confirmation field.

- 6 In the field provided, type the name of the database to which the logging server writes events.

The default database name is “naudit.”

The MySQL driver, lgdmsql.nlm, automatically creates this database when the logging server first loads the MySQL Channel object configuration in memory.

- 7 Type the database table name to which the logging server writes events in the field provided.

The default table is “log.”

The MySQL driver, lgdmsql.nlm, automatically creates this table when the logging server first loads the MySQL Channel object configuration in memory.

- 8 Click Next.

## NetStorage Install

If Novell NetStorage was one of the products you selected to install on the Components page, or if you selected a pattern installation that installs NetStorage, you 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 69.

- 1 Type 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) Type 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) Type 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.

## Completing the Server Installation

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

If you selected to load the server on reboot, 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**.

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: sys: and \_admin. These volumes are required for the server to function and must not be deleted.

### NetWare 6.5 Installation with Existing Volumes

If you installed NetWare 6.5 on a server with existing NSS or traditional NetWare volumes, the install did not create eDirectory objects in the tree for the existing volumes. You must mount the pre-existing volumes, then create an eDirectory object for each volume.

To create an eDirectory object for an NSS volume using iManager:

- 1 Launch iManager on your workstation.
- 2 In the left-hand navigation frame, click the Plus sign (+) next to the Storage heading.
- 3 Click the Volumes link under the Storage heading.

The existing volumes for the server are displayed in the Volume Management frame of the iManager screen.

- 4 Select the volume you want to create an eDirectory object for.
- 5 Click the Mount link in the Volume Management frame of iManager.
- 6 Click the Update eDirectory link in the Volume Management frame of iManager.

To create an eDirectory object for an NSS volume using NSSMU:

- 1 Enter **load nssmu** at the server console.

- 2 Select Volumes, then press Enter.
- 3 Select the Volume that needs to have an eDirectory object created for it.
- 4 To update eDirectory with the new Volume object, press F8 > Alt+F8.

To create an eDirectory object for a traditional volume using Novell Remote Manager:

- 1 Launch Novell Remote Manager on your workstation.
- 2 In the left-hand navigation frame, click the Partition Disks link under the Manage Server heading.
- 3 In the right-hand frame of the browser window, locate the volume you want to create.
- 4 Click the Create eDir Object link next to the desired volume.

The Create eDir Object link disappears after the object is created.

## What's Next

After rebooting the server, continue by completing the tasks described in [Chapter 4, “Installing Products and Updates,”](#) on page 83.

The NetWare 6.5 Welcome screen provides helpful information for getting the most out of your new NetWare server. To access the Welcome screen, open a browser on a workstation with access to the new server and go to <http://xxx.xxx.xxx.xxx>, where [xxx.xxx.xxx.xxx](#) is the new server's IP address.

**IMPORTANT:** Apache and Tomcat must be installed on the server in order for the Welcome screen to be displayed. If you chose a Basic server installation, or a Customized installation without these two components, you will not see the Welcome screen.

For further information on the management of your server's operating system, see the [NetWare 6.5 Server Operating System Administration Guide](#). For information on managing your network using Novell iManager 2.0, see the [Novell iManager 2.0.x Administration Guide](#).

# 3

## Upgrading to NetWare 6.5

NetWare® 6.5 supports upgrades from previous versions of NetWare 5 and 6.

Upgrading a server to NetWare 6.5 includes the following tasks:

- ◆ [Meeting System and Software Requirements \(page 71\)](#)
- ◆ [Preparing the Network with Deployment Manager \(page 74\)](#)
- ◆ [Preparing the Computer \(page 76\)](#)
- ◆ [Starting an Upgrade \(page 77\)](#)
- ◆ [Completing the Server Upgrade \(page 82\)](#)
- ◆ [What's Next \(page 70\)](#)

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 to version 8.7.3.
- ◆ NetWare 6.5 information is added to autoexec.ncf and startup.ncf.
- ◆ The NetWare 6.5 system files are copied to the server.

Upgrades to NetWare 6.5 are performed on a running NetWare server.

**IMPORTANT:** If prompted to overwrite newer files due to patches or more recent Support Packs, Novell recommends overwriting newer files when performing major OS upgrades.

## 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 cannot be in a tree that contains NetWare 4.10 servers. All servers in the tree must be NetWare 4.11 or later.
- ❑ The server to be upgraded must be running one of the following:
  - ◆ NetWare 5.1 server with Support Pack 6 or later

Upgrading to NetWare 6.5 from NetWare 5.1 Support Pack 6 and eDirectory version 8.5 is not supported. The minimum eDirectory level required to upgrade to NetWare 6.5 is eDirectory version 8.6 or later.

Upgrading to NetWare 6.5 from NetWare 5.1 running NDS® version 7 or later *is* supported, providing that Deployment Manager is first run to prepare the network for the new NetWare 6.5 server.

- ◆ NetWare 6.0 server with Support Pack 4 or later
- ◆ NetWare 6.5 server, FCS version or with Support Pack 1 or Support Pack 2

To upgrade from the original shipped version of NetWare 6.5 or from NetWare 6.5 Support Pack 1 or Support Pack 2, obtain Support Pack 3 and install it according to the instructions that come with the download. Do not use the instructions in this chapter.

The server to be upgraded must meet the hardware requirements for NetWare 6.5:

- A server-class PC with a Pentium II or AMD K7 processor
- 512 MB of RAM (minimum), 1 GB of RAM (recommended)
- 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:
- A Super VGA display adapter
- One or more network boards
- A CD drive
- A USB or PS/2 mouse (recommended but not required)

## Software Requirements

The upgrade procedures described in this manual assume you are installing NetWare 6.5 with Support Pack 3. If you have the shipped version of NetWare 6.5, download the SP3 Operating System and Products CD overlay images from the [Novell Downloads page \(http://www.novell.com/download\)](http://www.novell.com/download) and burn them to CDs for use when upgrading to NetWare 6.5.

Depending on the network configuration and the type of server you are upgrading, you might need one or all of the following:

- NetWare 6.5 SP3 CD 1 (Operating System)*
- NetWare 6.5 SP3 CD 2 (Products)*
- NetWare 6.5 License/Cryptography* diskette or license files
- NetWare 6.5 Documentation* CD
- NetWare 6.5 Partner* CD
- Novell Clients Software CD (July 2003)*
- Novell Nterprise Branch Office* CD
- Novell DirXML Starter Pack* CD

The DirXML Starter Pack for NetWare 6.5 provides licenses to use DirXML, the DirXML Driver for NT, the DirXML Driver for Active Directory, and the DirXML Driver for eDirectory. All of the DirXML drivers are provided for you to use and evaluate for 90 days, but these additional drivers require purchase and activation after the initial evaluation period.

- CD drivers (required to access the CD)
- Client connection utilities (optional, for upgrading from another server):
  - ◆ IP Server Connection Utility (optional, for installing from a NetWare server running IP only).

For download and usage instructions, see [TID 10074248 \(http://support.novell.com/cgi-bin/search/searchtid.cgi?/10074248.htm\)](http://support.novell.com/cgi-bin/search/searchtid.cgi?/10074248.htm).



- ◆ Novell® Client™ for DOS and Windows 3.1x (optional, for upgrading from a NetWare server running IPX™)

The Novell Client for DOS is no longer available. However, you can use the client software you might have from a previous version of NetWare.

- 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.

## **Rights Required for Upgrading NetWare 6.5 Servers**

To upgrade the first NetWare 6.0 or earlier server in an eDirectory tree to NetWare 6.5, the user must have the Supervisor right at the [Root] of the eDirectory tree. The Admin user that is created during the NetWare 6.5 INSTALL program will have full rights to the root of the tree. Using the Admin account allows the installer to extend the eDirectory schema for NetWare 6.5 as necessary.

If you are upgrading the first NetWare server in an existing NDS/eDirectory tree to NetWare 6.5, be sure to run the Deployment Manager first to prepare the tree so it is compatible with the new version of eDirectory that comes with NetWare 6.5. This requires access to a server with a Read/Write replica of the Root partition.

## **Rights Required for Subcontainer Administrators**

For security reasons, you might want to create one or more subcontainer administrators with sufficient rights to install or upgrade additional NetWare 6.5 servers, without granting them full rights to the entire tree. A subcontainer administrator needs the following rights to install or upgrade a NetWare 6.5 server in the tree:

- Supervisor right to the container where the server will be installed
- Read right to the Security container object for the eDirectory tree
- Read right to the NDSPKI:Private Key Attribute on the Organizational CA object, which is located in the Security container
- Supervisor right to the W0 object located inside the KAP object in the Security container

These rights are typically granted by placing all administrative users in a Group or Role, and then assigning the above rights to the Group or Role.

Some of the products that can be selected to install along with NetWare 6.5 require schema extensions of their own. Currently, only an administrator with rights at [Root] can extend the schema of an eDirectory tree; a subcontainer administrator would not have sufficient rights. One way to work around this is to have a root administrator install a NetWare 6.5 server with all products selected. This would take care of extending the schema for every possible server configuration. Subcontainer administrators could then install or upgrade subsequent NetWare 6.5 servers without having to worry about schema extensions.

Another option is to run the new Schema Update utility in Deployment Manager. This utility prompts you to select an NDS/eDirectory tree and then gives you the opportunity to select the products you plan to install on servers in that tree. After you have configured your product selections, the utility updates eDirectory with required and product schema extensions.

By default, the first three servers installed in an eDirectory partition will automatically receive a replica of the partition. To install a server into a partition that does not already contain three replica servers, the user must have either Supervisor rights at the [Root] of the tree or administrative rights to the container in which the server holding the partition resides.

## Preparing the Network with Deployment Manager

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 76](#).

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 NT/2000 or Windows XP Professional Edition 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 Deployment Manager, you can specify the IP address of the server by clicking Details.

- 2 Insert *NetWare 6.5 SP3 CD 1 (Operating System)*.

If you want to run the browser-based version of Deployment Manager and you have an Internet Explorer 5 or 6 browser installed, run `nwdeploy.exe` located at the root of the CD.

If you prefer to run a standalone version of Deployment Manager that does not require a browser or you do not want to use the ActiveX Control included with the browser-based version, run `nwdeploynobrowser.exe` located at the root of the CD.

- 3 In the left frame of the browser window, under the heading Network Preparation, click the Overview link to review the following tasks you need to perform:

- ◆ Back Up Data
- ◆ Search Tree for eDirectory and NDS versions
- ◆ Prepare for New eDirectory
- ◆ Generate GUIDs on NetWare 4 Servers (Conditional)
- ◆ Prepare a Novell Cluster for Upgrade (Conditional)
- ◆ Update the Certificate Authority (CA) Object
- ◆ Prepare for Universal Password
- ◆ Prepare for CIFS/AFP
- ◆ Verify NCI Keys
- ◆ Schema Update

- 4 Under the Network Preparation heading on the left side of the browser, click the Back Up Data link and follow the instructions that display to back up any server data and Novell eDirectory data.

Backing up your data is an optional step, but one that we recommend you complete.

- 5 Under the Network Preparation heading on the left side of the browser, click the Search Tree for eDirectory/NDS Versions link to update the NDS in your tree to a level that is compatible with the version of eDirectory installed by NetWare 6.5.

(Conditional) If the tree is using NDS, a compatible version of NDS *must* be running on all servers in the tree.

The View and Update NDS utility checks the NetWare and NDS versions of all servers and updates NetWare 4/NDS 6 and NetWare 5/NDS 7 servers to be compatible with eDirectory. It does not update NetWare servers already running eDirectory.

- 6 Under the Network Preparation heading on the left side of the browser, click the Prepare for New eDirectory link and follow the displayed instructions to extend the network schema.

This ensures that the new NetWare 6.5 server can communicate with an existing NDS/eDirectory tree.

This step requires that you have already updated NetWare 4/NDS 6 and NetWare 5/NDS 7 servers to be compatible with eDirectory as described in [Step 5](#). It also requires access to a server with a Read/Write replica of the Root partition.

- 7 (Conditional) If you have NetWare 4.11 or 4.2/NDS 6 servers in your tree, under the Network Preparation heading on the left side of the browser, click the Generate GUIDs on NetWare 4 Servers link and follow the instructions to generate the necessary GUIDs.

**IMPORTANT:** The GUID generator in Deployment Manager does not work with NetWare 4.10 servers, only with 4.11 or 4.2 servers. If there is a NetWare 4.10 server in your tree, it must be removed or you cannot install a new NetWare 6.5 server.

This step requires you to update NetWare 4.11 or 4.2/NDS 6 servers to be compatible with eDirectory and to extend the core schema of your tree, as described in [Step 5](#) and [Step 6](#). Step 5 copied a new ds.nlm and a new sguid.nlm that support GUID generation to each selected NetWare 4 server. With these updated files in place, and with the core schema extended and synchronized, when ds.nlm is restarted on a NetWare 4.11 or 4.2/NDS 6 server it automatically generates GUIDs for objects in master replicas on that server.

Even though the new GUID generator for NetWare 4 helps to avoid GUID compatibility issues, problems can still occur. Always back up all file system trustees before any upgrade or migration to NetWare 6.5. If a problem does occur, see [TID# 10078892 - Trustee Assignments Appear to No Longer Work After NetWare 4x to NetWare 6x Upgrade](http://support.novell.com/cgi-bin/search/searchtid.cgi?/10078892.htm) (<http://support.novell.com/cgi-bin/search/searchtid.cgi?/10078892.htm>) for more information.

- 8 (Conditional) Under the Network Preparation heading on the left side of the browser, click the Prepare a Server for Upgrade link and follow the displayed instructions to run a health check on the server that you are upgrading to NetWare 6.5.

The utility found in this section will perform a general health check on your server to ensure that there is enough memory, a sys: volume is in place, and that the server meets the minimum requirements for the upgrade. This utility will report if problems are detected that could cause the upgrade to fail.

- 9 (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.

- 10 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.

Novell Certificate Server™ is an integrated Public Key Infrastructure (PKI) built in to eDirectory. The NetWare installation process uses Novell Certificate Server to create an

Organizational Certificate Authority and to issue certificates for applications that consume Secure Socket Layer (SSL) services.

Novell delivered a base-level PKI with NetWare 5.0. Because your network might be configured with the NetWare 5.0 PKI, you should follow the steps outlined here to properly upgrade from the NetWare 5.0 PKI and to correctly configure your network for Novell Certificate Server.

- 11 Click the Prepare for Universal Password link under the Network Preparation heading, read the explanation of the Universal Password feature of NetWare 6.5, click the Universal Password Deployment Guide link, then follow the step-by-step instructions in the deployment guide for setting up the Universal Password feature.
- 12 Click the Prepare for CIFS/AFP link under the Network Preparation heading and follow the instructions displayed to prepare your new NetWare 6.5 server so CIFS (Microsoft Windows native networking workstations) and AFP (Apple Macintosh native networking workstations) users can log in to it.
- 13 Click the Verify NCI Keys link under the Network Preparation heading and follow the instructions displayed to check your eDirectory tree for SDI key consistency.
- 14 (Optional) Click the Schema Update link under the Network Preparation heading to extend the eDirectory schema for the products you plan to install on your NetWare 6.5 servers.
- 15 After you have completed the Network Preparation section of NetWare Deployment Manager, click the Overview link located under the Install/Upgrade Options heading to help you choose the install/upgrade option that best meets your needs.
- 16 (Optional) Click the Automate an Installation link under the Install/Upgrade Options heading for instructions on automating the NetWare 6.5 installation using a response file and to access the Response File Generator utility which assists you in creating response files.
- 17 Click the Upgrade to NetWare 6.5 link under the Install/Upgrade Options heading to view the options for upgrading a server to NetWare 6.5.

If you currently have a NetWare server that meets the minimum requirements, you can either use *NetWare 6.5 SP3 CD 1 (Operating System)* to perform an in-place upgrade from NetWare 6.0 or 5.x to NetWare 6.5, or you can remotely upgrade a server to NetWare 6.5 by clicking the Upgrade a Server Remotely link.

After you have completed the tasks in the Network Preparation section and decided on an upgrade option, exit 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:

- ◆ [Back Up the NetWare Server Files \(page 76\)](#)
- ◆ [Preparing Application Files Prior to Upgrading \(page 77\)](#)
- ◆ [Verify a Valid DOS Partition \(page 77\)](#)

### Back 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.

## Log Out Users before Upgrading

It is recommended that you log all users off the server before upgrading it.

## 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® for Servers 2, you must install ZENworks for Servers 3 prior to upgrading the server to NetWare 6.5.

### Turn Off Applications and Services

Any applications, products, or services (virus scan software, backup software, etc.) running on the server to be upgraded should be shut down before beginning the upgrade procedure.

## 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 Boot Partition](#)” on page 28.

TIP: 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 documentation \(http://www.novell.com/documentation/migwiz80/index.html\)](http://www.novell.com/documentation/migwiz80/index.html).

## Starting an Upgrade

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.

IMPORTANT: When upgrading a NetWare 5.1 or 6.0 server with the Novonyx Web Server to NetWare 6.5, the document root for the Novonyx Web Server is preserved and not updated to the Apache 2 Web Server document root. Some NetWare 6.5 Web services might not work correctly. To resolve this, review and edit the Apache configuration file, `sys:\apache2\conf\httpd.conf`.

If you are performing an upgrade, several components are already selected. These are the components currently installed on the server. Leaving the installed components checked reinstalls the products. Unchecking an installed component does not uninstall the product.

TIP: If you attempt to install a new server into your tree at the same time you upgrade another server in the tree to NetWare 6.5, you might have difficulty logging in to the server being upgraded until the other server’s installation is complete.

## In-Place Upgrade

To begin an upgrade to NetWare 6.5:

- 1 Insert the *NetWare 6.5 SP3 CD 1 (Operating System)* and if it does not auto-mount as a NetWare volume, do one of the following:
  - ◆ On a NetWare 6.5 server, enter **LOAD CDDVD.NSS** at the system console.
  - ◆ On a NetWare 6.0 server, enter **LOAD CD9660.NSS** at the system console.
  - ◆ On a NetWare 5 server, enter **LOAD CDROM.NLM** at the system console.If the CD still does not mount, reboot the server.
- 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 79](#).

## Remote Upgrades

One of the features 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 2.0.2
- ◆ Remote Upgrade from the Novell Deployment Manager

TIP: When you run a remote upgrade, if the source files are located on a remote server, that server must contain a DS replica in order for the server-to-server file copy to run efficiently. If a replica does not exist on the source server, the file copy might revert to a workstation copy, which can be significantly slower over a WAN link.

### Remote Upgrade from iManager 2.0.2

iManager 2.0.2 must be installed and configured in order for remote upgrades to successfully complete using this utility. For information on installation and configuration of iManager 2.0.2, see the [Novell iManager 2.0.x Administration Guide](#). After iManager 2.0.2 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 SP3 CD 1 (Operating System)*.

NOTE: Performing the remote upgrade from a staging server that contains the NetWare 6.5 Operating System files is significantly faster than launching from the NetWare 6.5 CD located on the workstation.

The path selected will include nw65os. In NetWare 6.5, 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 79](#).

After the initial reboot during a remote upgrade, a login screen might display requiring you to log in to the server being upgraded. If this occurs, provide the login information, click Details, type the IP address of the server being upgraded, then click OK.

If Installation/Upgrade tasks fail to run from iManager, you might need to change your security settings.

- 1 In Internet Explorer, click Tools > Internet Options.
- 2 Click Security > Custom Level.
- 3 Under Initialize and Script ActiveX Controls Not Marked as Safe, select Enable.
- 4 Click OK.

### Remote Upgrade from Deployment Manager

- 1 On a Windows NT/2000 or Windows XP Professional Edition 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 specify the IP address of the server by clicking Details.
- 2 Insert *NetWare 6.5 SP3 Cd 1 (Operating System)*, or map a drive to a server containing the NetWare 6.5 Operating System files, and run Deployment Manager located at the root of the Operating System files.  
NOTE: Performing the remote upgrade from a staging server that contains the NetWare 6.5 Operating System files is significantly faster than launching from the NetWare 6.5 CD located on the workstation.
- 3 Click the Upgrade to NetWare 6.5 link on the left 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 79](#).

## 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 Failure state for each check that was run.

If the health check completes without any Warning or Failure states, the health check summary page does not display. If that is the case, proceed to [“Back Up Server Files” on page 80](#).

A Success or Warning state allows the upgrade to continue. A Failure state stops the upgrade until the problem is resolved.

- 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 lets you select whether to automatically reboot the server after the file copy is complete and gives you the option of a Default or Manual upgrade.

- 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.  
**IMPORTANT:** Make sure that the drive you specify as the location for the backup is a valid drive on the server.
- 3 If you want the server to automatically reboot after the file copy, click Yes. Otherwise, click No.
- 4 Select either a Default or Manual upgrade by clicking the radio button next to the desired choice.

The Default upgrade automatically detects drivers and upgrades the server to NetWare 6.5 with default settings.

The Manual upgrade lets you manually configure your drivers and the default settings used in the Default upgrade.

- 5 Click Next.

## Installing Additional Components

After the file copy is complete, the Components page displays 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 are already selected. These are the components currently installed on the server. Leaving the installed components checked reinstalls the products. Unchecking an installed component 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)*, then click OK.

**IMPORTANT:** The iManager installation might 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.

The system will now proceed to copy files for a few minutes. The system will then reboot.

If you selected Manual during **Step 4 on page 80**, then your 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 and press Enter.
- 2 Make any desired changes.
- 3 Select Continue and press Enter.

If you selected Default during **Step 4 on page 80**, the system will continue to copy files following the reboot.

**IMPORTANT:** If you are performing a remote upgrade and you are unable to reconnect to the server after it reboots, you can complete the upgrade locally by entering **FINISHUP.NCF** at the server console.

When this post-reboot file copy completes, a GUI screen will appear and you will need to log in to eDirectory.

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

## eDirectory Summary

The eDirectory Summary page is now displayed.

- 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 page. When you select a login method, a description of the component appears in the Description box. For more information on login methods, see **“Managing Login and Post-Login Methods and Sequences”** in the *Novell Modular Authentication Services 2.3 Administration Guide*.

The NDS and Challenge Response login methods are installed by default.

- 1 On the Novell Modular Authentication Service page, select the login method you want to use from the options provided.

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 (except the NDS and Challenge Response defaults).

## 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 on the *Novell Clients Software CD (July 2003)*.

# Completing the Server Upgrade

After the upgrade is finished, remove *NetWare 6.5 SP3 CD 2 (Products)* and click Yes to restart the server.

If you selected to load the server on reboot, 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**.

Continue with “**What’s Next**” on page 70.

# Down-Server Upgrades

Upgrades to NetWare 6.5 are performed on a running server from the server GUI console or remotely from iManager or Deployment Manager. The down-server upgrade of NetWare 4.2 servers is no longer supported.

In certain situations, customers can work with Novell Technical Services staff to complete a down-server upgrade. For example, this might be necessary if:

- ◆ An in-place or remote upgrade on a running server fails at some point after the **Health Check Summary (page 79)** step completes.
- ◆ After the failure, the upgrade cannot be restarted.

If you need to complete an upgrade on a downed server, contact Novell Technical Services<sup>SM</sup> for assistance.

# What’s Next

After rebooting the server, continue by completing the tasks described in **Chapter 4, “Installing Products and Updates,”** on page 83.

The NetWare 6.5 Welcome screen provides helpful information for getting the most out of your new NetWare 6.5 server. To access the Welcome screen, open a browser on a workstation with access to the new NetWare 6.5 server and go to *http://xxx.xxx.xxx.xxx*, where *xxx.xxx.xxx.xxx* is the new server’s IP address.

**IMPORTANT:** Apache and Tomcat must be installed on the server in order for the Welcome screen to be displayed. If you chose a Basic server installation, or a Customized installation without these two components, you will not see the Welcome screen.

# 4

## Installing Products and Updates

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

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

- ◆ [Installing NetWare Licenses \(page 83\)](#)
- ◆ [Updating NSS Volumes \(page 84\)](#)
- ◆ [Installing or Updating Novell Client Software \(page 84\)](#)
- ◆ [Installing Product Updates \(page 84\)](#)
- ◆ [Installing Additional Products \(page 84\)](#)
- ◆ [Other Post-Installation Tasks \(page 85\)](#)

### Installing NetWare Licenses

If you installed your server with no license, you must install either the 90-day evaluation license or a standard purchased license before using the server.

If you installed the evaluation license and the 90-day evaluation period has elapsed, Novell expects you to purchase a standard user license if you intend to continue using the server. Contact your Novell Authorized Reseller<sup>SM</sup> for more information.

- 1 (Conditional) If necessary, delete an existing evaluation license.
  - 1a In iManager, click Licenses > Delete a License.
  - 1b Browse to and select the evaluation license, then click OK.
  - 1c When prompted, confirm that you want to delete the license container and its certificates by clicking OK.
  - 1d When you see the message verifying that the license has been deleted, click OK
- 2 To install a new NetWare license, in iManager, click Licenses > Install a License.
- 3 Browse to and select the location of the .nlf file, then click Next.
- 4 Select the license certificates you want to install, then click Next.
- 5 Browse to and select the location in the tree where you want to install the license, then click Install.
- 6 When you see the message verifying that the license has been installed, click Done.

## 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 File System Administration Guide for NetWare 6.5*.

- 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 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 online 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).

## Installing Additional Products

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

Although many products can be installed during the Customized 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 Deployment Manager (remotely) or from the GUI server console page (locally).

IMPORTANT: When installing additional products through the post-install procedure, make sure you use the same version overlay CDs as the version of NetWare on the server. If the server is running NetWare 6.5 SP3, you must use the SP3 overlay CDs.

### Installing Additional Products Using NetWare Deployment Manager

- 1 Log in to the network from a Windows workstation running Novell Client™ software.
- 2 Run nwdeploy.exe (or nwdeploynobrowser.exe for the non-browser version), located at the root of *NetWare 6.5 SP3 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 SP3 CD 2 (Products)* into the CD drive of the server.
- 2 (Conditional) If necessary, start the GUI server console page by entering **startx** at the console prompt.
- 3 Click Novell > Install.
- 4 Click Add.
- 5 Specify the root directory of the CD and click OK.
- 6 Select the postinst.ni file.
- 7 Follow the on-screen instructions for installing the product.

## Other Post-Installation Tasks

After completing the NetWare 6.5 installation, you can run the Deployment Manager again and click the links under the Post-Install Tasks heading for information on:

- ◆ Creating additional volumes
- ◆ Migrating to new hardware using the NetWare Migration Wizard Utility
- ◆ Consolidating servers with the Novell Server Consolidation Utility
- ◆ Using DSREPAIR
- ◆ Upgrading a cluster after the NetWare 6.5 installation



# 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 the next element
Shift+Tab	Move to the previous element
Enter	Select
Ctrl+Tab	Move to the 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





# B

## Documentation Updates

This section contains information on documentation content changes that have been made in the *Overview and Installation Guide* for NetWare 6.5 since the initial release of the product. This information will help you to keep current on updates to the documentation.

All changes that are noted in this section were also made in the documentation. The documentation is provided on the Web in two formats: HTML and PDF. The HTML and PDF documentation are both kept up-to-date with the documentation changes listed in this section.

The documentation update information is grouped according to the date the changes were published. Within a dated section, the changes are alphabetically listed by the names of the main table of contents sections for NetWare 6.5.

If you need to know whether a copy of the PDF documentation you are using is the most recent, the PDF document contains the date it was published on the front title page or in the Legal Notices section immediately following the title page.

The documentation was updated on the following dates:

- ♦ “June 1, 2005” on page 89
- ♦ “March 31, 2005” on page 90
- ♦ “June 15, 2004” on page 91

### June 1, 2005

Updates were made to the following sections. The changes are explained below.

- ♦ “Installing a New NetWare 6.5 Server” on page 89
- ♦ “Installing Products and Updates” on page 90

### Installing a New NetWare 6.5 Server

The following updates were made in this section:

Location	Change
“Selecting the NetWare 6.5 Installation Type” on page 34	Added information about the OpenWBEM components that are included with OES NetWare.
“Licensing the NetWare 6.5 Server” on page 63	Added information about the new 90-day evaluation license and how to install purchased licenses.

## Installing Products and Updates

The following updates were made in this section:

Location	Change
<a href="#">“Installing NetWare Licenses” on page 83</a>	Added this new section to explain how to install purchased licenses in Novell iManager.

## March 31, 2005

Updates were made to the following sections. The changes are explained below.

- ◆ [Installing a New NetWare 6.5 Server](#)
- ◆ [Upgrading to NetWare 6.5](#)
- ◆ [Installing Products and Updates](#)

## Installing a New NetWare 6.5 Server

The following updates were made in this section:

Location	Change
<a href="#">“Choosing a Server Pattern” on page 35</a>	Deleted information about the Nterprise Branch Office - Central Office Server pattern, which has been removed from NetWare 6.5 SP3.  Also deleted references to Rsync and UDDI, which have also been removed from the product.
<a href="#">“Preparing the Network with Deployment Manager” on page 25</a>	Added information about the Schema Update option in Deployment Manager.
<a href="#">“Rights Required for Subcontainer Administrators” on page 24</a>	Added information about the Schema Update option in Deployment Manager.
<a href="#">“Selecting the Login Method” on page 64</a>	Added information about the Challenge Response login method, which is now also installed by default.
<a href="#">“Selecting the NetWare 6.5 Installation Type” on page 34</a>	Added this new section to explain how to choose between the Open Enterprise Server and NetWare 6.5 SP3 installation types.
<a href="#">“Setting the Server Time Zone and Time Synchronization Method” on page 60</a>	Added information about choosing between Timesync and NTPv3 as the time synchronization method.
<a href="#">“What’s Next” on page 70</a>	Added a note that Apache Web Server and Tomcat Servlet Container must be installed in order to see the NetWare 6.5 Welcome screen.

## Upgrading to NetWare 6.5

The following updates were made in this section:

Location	Change
<a href="#">“Down-Server Upgrades” on page 82</a>	Deleted information about how to perform down-server upgrades, as these upgrades are no longer supported in NetWare 6.5 SP3.
<a href="#">“In-Place Upgrade” on page 78</a>	Added information about other commands to load CDs for previous NetWare versions.
<a href="#">“Preparing the Network with Deployment Manager” on page 74</a>	Added information about the Schema Update option in Deployment Manager.
<a href="#">“What’s Next” on page 82</a>	Added a note that Apache Web Server and Tomcat Servlet Container must be installed in order to see the NetWare 6.5 Welcome screen.

## Installing Products and Updates

The following updates were made in this section:

Location	Change
<a href="#">“Installing Additional Products” on page 84</a>	Added a note about using the same Support Pack level for the overlay CDs as the version of NetWare running on the server.

## June 15, 2004

Updates were made to the following sections. The changes are explained below.

- ◆ [Installing a New NetWare 6.5 Server](#)
- ◆ [Upgrading to NetWare 6.5](#)
- ◆ [Installing Products and Updates](#)

## Installing a New NetWare 6.5 Server

The following updates were made in this section:

Location	Change
<a href="#">“Accessing the Installation Files” on page 29</a>	Updated the instructions to reflect the new “bootable NetWare” feature of the Support Pack 2 overlay CDs.
<a href="#">“Preparing the Network with Deployment Manager” on page 25</a>	Added information about the non-browser version of Deployment Manager.
<a href="#">“Rights Required for Installing NetWare 6.5 Servers” on page 24</a>	Added this new section to clarify what rights are required to install a NetWare 6.5 server and what rights to assign a subcontainer administrator for installation purposes.

Location	Change
<a href="#">“Selecting Default or Manual Installation” on page 31</a>	Added information to clarify the differences between the Default and Manual installation options.
<a href="#">“Setting the Server Time Zone and Time Synchronization Method” on page 60</a>	Added information about the default time synchronization configuration.

## Upgrading to NetWare 6.5

The following updates were made in this section:

Location	Change
<a href="#">“Rights Required for Upgrading NetWare 6.5 Servers” on page 73</a>	Added this new section to clarify what rights are required to upgrade a NetWare 6.5 server and what rights to assign a subcontainer administrator for upgrade purposes.

## Installing Products and Updates

The following updates were made in this section:

Location	Change
<a href="#">“Installing Additional Products” on page 84</a>	Added this new section with information on installing additional products.
<a href="#">“Other Post-Installation Tasks” on page 85</a>	Added this new section with information on the Post-Install tasks option in NetWare Deployment Manager.