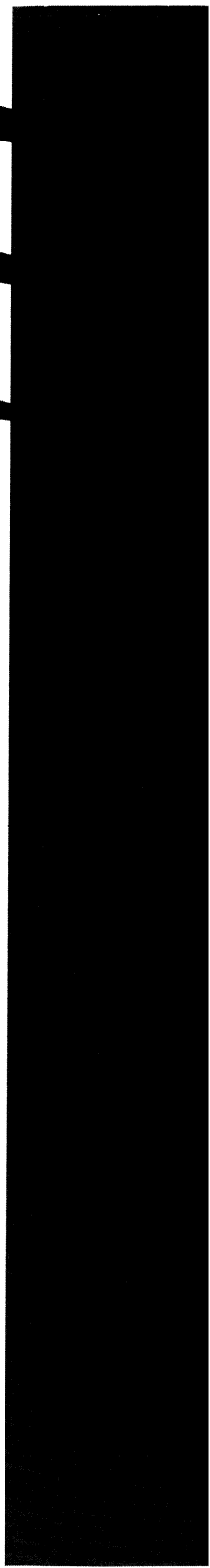**Upgrade**

NOVELL®

NetWare®

NETWORK COMPUTING PRODUCTS

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How to Use This Manual

Introduction

Upgrade describes in detail the different ways you can upgrade your present network operating system to NetWare® 4.1.

Contents Overview

Chapter 1: Upgrade Options

This chapter describes the four ways to upgrade to NetWare 4.1. It also gives recommendations on which upgrade method to use depending on your individual situation.

Chapter 2: Upgrade Using the NetWare 4.1 Installation Program

This chapter explains how to upgrade from NetWare 3.1*x* or NetWare 4.0*x* to NetWare 4.1 using the NetWare 4.1 installation program.

Chapter 3: Upgrade Using Across-the-Wire Migration

This chapter explains how to upgrade existing NetWare 2, NetWare 3, and other network operating systems servers to NetWare 4.1 using the Across-the-Wire Migration method.

Chapter 4: Upgrade Using Same-Server Migration

This chapter gives instructions on how to upgrade servers to NetWare 4.1 using the Same-Server Migration method.

Chapter 5: Upgrade Using In-Place Upgrade

This chapter gives instructions on how to upgrade a NetWare 2 server to NetWare 3 using the In-Place Upgrade method.

Appendix A: Calculating RAM Requirements

This appendix provides a detailed formula for calculating your NetWare 4.1 RAM requirements.

Appendix B: NetWare 4 File and Directory Attributes

This chapter describes the new file and directory attributes unique to NetWare 4™.

Appendix C: Special Instructions for LAN Server

This chapter gives information for upgrading from LAN Server to NetWare 4.1.

Documentation Conventions

This manual uses the following Novell® conventions.

Asterisk (*)

An asterisk denotes a trademarked name belonging to a third-party company. Novell trademarks are denoted with specific trademark symbols (®, ™, etc.).

An ownership listing of all (Novell and third-party) trademarks cited in a manual can be found either on the disclaimer page in the front or in a "Trademarks" section at the back of printed manuals. A trademarks list is also available in the DynaText* online documentation.

Commands

Boldface characters indicate items that you type, such as commands and options. You can use any combination of uppercase and lowercase letters.

For example:

`C:\A INSTALL`

Delimiter Bar (|)

In syntax examples, a delimiter bar separating two command options indicates that you can choose one of the options.

For example:

`-S | -R`

Do *not* type the bar.

DOS Commands

DOS commands and command option letters are shown in uppercase letters. For example: FTPD.

Because DOS is not case-sensitive, you can type DOS commands in uppercase or lowercase letters.

DOS Filenames, Directory Names, and Pathnames

DOS filenames, directory names, and pathnames are shown in uppercase letters. For example, AUTOEXEC.BAT.

Because DOS is not case-sensitive, you can type these names in uppercase or lowercase letters.

Ellipses

Ellipses in syntax examples indicate that parameters, options, or settings can be repeated.

For example, in the command

`LOGIN SERVER1/SUPERVISOR /` *`option`*`...`

you could replace *option* with any number of available options.

Emphasis

Italic type also indicates emphasized text. For example:

Remember to load the driver *before* you install the application.

Icons

Checklist — Checklists, which often contain prerequisites, are marked with the "Checklist" icon to the left of this text.
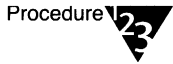
Procedure — Procedures to follow in order to accomplish a specified task are marked with the "Procedure" icon to the left of this text.

Note — Additional or "nonessential" but noteworthy information is marked with the "Note" icon to the left of this text.

Important — Vital information about system or software requirements, etc., that deserves particular attention is marked with the "Important" icon to the left of this text.

Suggestion — Guidelines or tips about fine-tuning, optimizing, etc., which might be applicable to your site or situation but maybe not to all, are emphasized with the "Suggestion" icon to the left of this text.
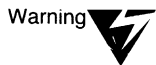
Warning — Warnings about potential danger to data, hardware, or person are emphasized with the "Warning" icon to the left of this text.

Key Names

Angle brackets surround the name of a key. For example, <Enter> corresponds to the Enter key on your keyboard. <Ctrl>+<c> means hold down the Ctrl key and simultaneously type the letter c (in lowercase, in this case).

Options

In syntax examples, braces indicate that you are required to choose one of the enclosed options. For example, the following notation means that you must include a 0 or a 1 in the command:

```
{0, 1}
```

Square Brackets

In syntax examples, boldface type enclosed in square brackets indicates command options that you can type as needed. For example:

```
FTP [ -D ] [ -F ]
```

System Response

Monospace type shows system-generated responses that appear on your workstation screen. For example:

```
TNVT220>
```

Variables

Italic type indicates variables—descriptive item names, such as command parameters—that you replace with appropriate values.

For example, in the command:

```
FTP -F remote_host
```

you type the name of a computer on your network in place of *remote_host.*

UNIX Commands

UNIX® commands are shown in boldface letters. For example, **vi**. Because UNIX is case-sensitive, these commands are usually lowercase. Type UNIX commands exactly as shown.

UNIX Filenames, Directory Names, and Pathnames

UNIX filenames, directory names, and pathnames are shown in italics. For example, */etc/hosts*.

Because UNIX is case-sensitive, these names usually are in lowercase letters. Type UNIX filenames exactly as shown.

Supplemental Documentation

The following publications provide supplemental information specifically related to upgrading to NetWare 4:

◆ "NetWare Migration Utilities Part 1: The In-Place Upgrade NLM." *NetWare Application Notes*, June 1993.

◆ "NetWare Migration Utilities Part 2: The Across-the-Wire Migration Utility." *NetWare Application Notes*, September 1993.

Online Help

◆ **Context-sensitive help.** If you are using a NetWare menu utility and want more information about how to complete a task, press <F1>.

If you are unsure how to use a command, type the command name and add the /? option for help. For example, for help with the RIGHTS command, type "RIGHTS /?".

◆ **Online MS Windows help.** The Microsoft* (MS) Windows help viewer allows you to read NetWare help developed for the MS Windows environment. To access the NetWare help screens within MS Windows, press <F1> or the "?" button.

◆ **DynaText online documentation.** The DynaText viewer allows you to read NetWare documentation from your DOS, MS Windows, Macintosh*, UNIX, or OS/2* workstation.

All NetWare 4™ and 3.12 documentation except the *Quick Access Guide* are available on the *NetWare Online Documentation* CD-ROM.

Additional Help Resources

◆ **Novell Authorized Service Center**^{SM} **(NASC) locations.** NASC^{SM} facilities are local support providers authorized and supported by Novell. They provide both telephone and on-site assistance, and should be your first source for technical support.

For the Novell Authorized Service Center nearest you, in the U.S. and Canada call 1-800-338-NASC.

◆ **Hardware documentation.** Many network problems occur because of malfunctioning hardware.

If you can isolate a problem to a certain computer component or cable segment, check the manuals that came with the hardware involved.

◆ **NetWare Management System™ (NMS) services.** NMS™ services helps you manage the cabling system, computers, software, and other components of the network.

For more information about using NMS on your network, contact your Novell Authorized Reseller^{CLM} representative.

◆ **Other Novell publications.** NetWare *Applications Notes* and *Research Reports* cover technical aspects of NetWare based system design, implementation, and management.

Applications Notes is a collection of technical articles published monthly. *Research Reports* is published as the research becomes available.

To purchase subscriptions and back issues of these publications from within the United States or Canada, call the Novell Research Order Desk at 1-800-UPDATE1. From other locations, call 801-429-5380.

◆ **Third-party books and periodicals.** A number of books on NetWare, including books published by Novell Press™ publishing, are available at most bookstores.

In addition, numerous networking periodicals give advice on configuring, managing, and troubleshooting your network.

◆ **NetWire™ forum on the CompuServe bulletin board.** A fairly inexpensive way to get up-to-date advice and patches is through NetWire on the CompuServe bulletin board.

To open a CompuServe account, call one of the following numbers and ask for "Representative 200"

   ◆ In the United States or Canada: 1-800-524-3388

   ◆ In the United Kingdom: 0800-289-378

   ◆ In Germany: 0130-37-32

   ◆ In other European countries: 44-272-255-111

   ◆ In locations other than the United States, Canada, or Europe, use the appropriate country code for the U.S. and call 614-457-0802. Ask for "Representative 200." This phrase identifies you as a Novell customer.

◆ **Technical Support Database and NetWire forum on the Internet.** The Novell FTP sites support access through FTP, Gopher, and World Wide Web (WWW) systems. Over 9,000 documents exist on the WWW system for providing technical hints and information.

To access the Novell Internet sites, log in as ANONYMOUS and use your E-mail address as your password.

Contact one of the following site addresses:

   ◆ In the United States: ftp.novell.com

   ◆ In Germany: ftp.novell.de

   ◆ In the United Kingdom: ftp.salford.ac.uk

   ◆ In Canada: novell.nrc.ca

See public areas in these sites for possible listings of other sites addresses.

◆ **FaxBack Service.** Novell provides a FaxBack Service for obtaining additional product information to help with support needs.

To access the Novell FaxBack Service, complete the following steps.

◆ Within the continental United States

1. Dial 1-800-NETWARE (1-800-638-9273).
2. Press #1 (the "Presale Product Information and Upgrade Information" option).
3. Again press #1 (the "Receive Product Information via Fax" option).

◆ Outside the continental United States

Dial 1-801-429-2772. You are connected directly to the FaxBack Service.

Follow the directions provided on the phone. You are prompted to enter a document number and then a fax number to send the document to.

◆ **Network Support Encyclopedia Professional Volume**[SM] **(NSE Pro) package.** This encyclopedia gives customers access to regularly updated information on products and services—plus patches, fixes, and more—from Novell and other vendors.

The NSE Pro[SM] package is distributed on CD-ROM on a subscription basis. Updates are sent out several times each year. More information is available on NetWire or from your Novell Authorized Reseller.

◆ **Troubleshooting hardware and software.** Specialized hardware and software packages, such as the Novell LANalyzer® software, are available to help you isolate network problems.

◆ **Customer service.** You can contact your Novell Authorized Reseller for technical assistance.

Most Novell Authorized Resellers have Certified NetWare Engineer[SM] representatives on their staffs ready to assist users with their networking problems.

User Comments

We are continually looking for ways to make our products and our documentation as easy to use as possible.

You can help us by sharing your comments and suggestions about how our documentation could be made more useful to you and about inaccuracies or information gaps it might contain.

Submit your comments either by filling out the "User Comments" form at the end of this document or by writing to us directly at the following address:

Novell, Inc.
Technical Publications MS C-23-1
122 East 1700 South
Provo, UT 84606 USA

We appreciate your comments.

chapter **1** *Upgrade Options*

Introduction

This chapter describes the available options for upgrading to NetWare®
4.1.

Topic	Page
Four Upgrade Methods	2
Choosing Which Upgrade Method to Use	3

Overview

There are many options available for upgrading your network servers
to NetWare 4.1. The options described in this chapter will help you
decide which method is best for you.

There are four ways to upgrade to NetWare 4.1:

◆ NetWare 4.1 installation program

◆ Across-the-Wire Migration

◆ Same-Server Migration

◆ In-Place Upgrade

The upgrade option you choose depends on the version of NetWare (or
another network operating system) you are running and the hardware
you have available.

Four Upgrade Methods

There are four ways to upgrade to NetWare 4.1.

NetWare 4.1 Installation Program

The upgrade option in the NetWare 4.1 installation program
(INSTALL.NLM) is a convenient way to upgrade a NetWare 3.1x or
NetWare 4.0x server to NetWare 4.1.

The NetWare 4.1 installation program is run on the NetWare 3.1x or
NetWare 4.0x server that you want to upgrade to NetWare 4.1.

Across-the-Wire Migration

Across-the-Wire Migration uses the Migration utility to convert an
existing NetWare 2.1x, NetWare 2.2, or NetWare 3.1x bindery server to
a new NetWare 4.1 server.

The Migration utility converts the bindery information on the
NetWare 2 or NetWare 3™ server to NetWare Directory Services™ on a
NetWare 4.1 server via a DOS client workstation.

Same-Server Migration

Same-Server Migration uses the Migration utility to convert an existing
NetWare 2, NetWare 3, or another network operating system server to
NetWare 4.1.

After you back up the NetWare 2, NetWare 3, or another network
operating system server, the Migration utility converts the server's
bindery information to NetWare Directory Services and installs
NetWare 4.1.

In-Place Upgrade

The In-Place Upgrade NetWare Loadable Module™ (2XUPGRDE.NLM) reformats a server's NetWare 2.1x or NetWare 2.2 partition, without losing any data, and transforms it into a NetWare 3.1x partition.

From there, you use the NetWare 4.1 installation program to upgrade the server from NetWare 3.1x to NetWare 4.1.

Choosing Which Upgrade Method to Use

The upgrade method you use depends on the version of NetWare you're running and the hardware you have available.

Upgrading from NetWare 2 to NetWare 4.1

When upgrading from NetWare 2.1x or 2.2 to NetWare 4.1, you can use the following upgrade methods:

- ◆ Across-the-Wire Migration

- ◆ Same-Server Migration

- ◆ In-Place Upgrade

Upgrading from NetWare 3 to NetWare 4.1

When upgrading from NetWare 3.1x to NetWare 4.1, you can use the following upgrade methods:

- ◆ NetWare 4.1 installation program

- ◆ Across-the-Wire Migration

- ◆ Same-Server Migration

Upgrading from NetWare 4.0x to NetWare 4.1

When upgrading from NetWare 4.01 or 4.02 to NetWare 4.1, you can use the NetWare 4.1 installation program.

Warning ▼ Special care should be taken when running NetWare 4.01, 4.02, and 4.1 in the same Directory tree. For more information, see Chapter 2, "Upgrade Using the NetWare 4.1 Installation Program."

Upgrading from Another Network Operating System to NetWare 4.1

The following network operating systems can be upgraded to NetWare 4.1:

◆ IBM* PCLP 1.3 Extended Services

◆ IBM LAN Server* 1.0

◆ IBM LAN Server 1.1

◆ IBM LAN Server 1.2

◆ IBM LAN Server 1.3

◆ Microsoft* LAN Manager* 2.0

When upgrading from any of these network operating systems, you can use the following upgrade methods:

◆ Across-the-Wire Migration

◆ Same-Server Migration

Where to Go from Here

Each upgrade method described has its own chapter in this book. Once you've decided which upgrade method to use, go the specific chapter and proceed with the upgrade.

2 Upgrade Using the NetWare 4.1 Installation Program

Introduction

This chapter covers the procedures for upgrading an existing NetWare 3™ or NetWare 4™ server to NetWare® 4.1 using the NetWare 4.1 installation program.

Topic	Page
Upgrading NetWare Directory Services	7
Running the NetWare 4.1 Installation Program	8
What to Do After the Upgrade	15

Overview

You can use the NetWare 4.1 installation program upgrade option to ugrade from

◆ NetWare 3 (specifically, NetWare 3.11 and NetWare 3.12) to NetWare 4.1.

◆ NetWare 4 (specifically, NetWare 4.01 and NetWare 4.02) to NetWare 4.1.

How It Works

◆ Copies new NetWare 4.1 files onto the NetWare 3.1x or 4.0x boot directory.

This includes SYSTEM and PUBLIC files, SERVER.EXE, disk and LAN drivers, name space support modules, and other loadable modules.

◆ On NetWare 3.1x servers, the NetWare 4.1 installation program installs NetWare Directory Services™ and upgrades the bindery to a NetWare 4.1 Directory Services database. All bindery objects are placed in the same context as the server that is being upgraded. The following information is upgraded:

  ◆ ID numbers (user and group IDs)

  ◆ Print servers and print queues

  ◆ Trustee rights

  ◆ Security equivalences

  ◆ MAIL directories

  ◆ Restrictions (account, expiration, password, disk usage, connection, time, station)

◆ On NetWare 4.0x servers with NetWare Directory Service already installed, a screen will appear during the upgrade process stating that Directory Services has already been installed.

◆ Resolves any name conflicts that may occur (if upgrading your server into an existing Directory).

◆ Scans the server configuration files (STARTUP.NCF and AUTOEXEC.NCF) to make sure information gets updated (especially Ethernet driver frame types).

◆ (Optional) Upgrades Print Services.

Bindery Services

The following restrictions apply to Bindery objects in NetWare 4.1 Directory Services.

◆ You must use bindery-based utilities to modify any information about Bindery objects in NetWare 4.1.

◆ You must use a bindery-based utility (under bindery services) to manage Bindery objects. If you are using bindery services on your NetWare 4.1 network, you must copy the pre-4.1 utilities to the PUBLIC and LOGIN directories so pre-4.1 clients can function on the network.

For more information about objects and their properties, see Chapter 1, "Managing NetWare Directory Services Objects," of *Supervising the Network* and "Rights" in *Concepts*.

Upgrading NetWare Directory Services
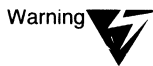
Warning NetWare Directory Services in NetWare 4.1 is backwards compatible with NetWare 4.01 and 4.02. However, the NetWare Directory Services schema has changed in NetWare 4.1. Care should be taken when running combinations of NetWare 4.01, 4.02, and 4.1 in the same Directory tree.

Follow the instructions in this section if you plan on having any combination of NetWare 4.01, 4.02, and 4.1 servers running in the same Directory tree.

The NetWare 4.1 NetWare Directory Services schema must be distributed to all NetWare 4.01 and 4.02 servers in your Directory tree for Directory Services to run reliably. This can be done in one of two ways.

◆ In your Directory tree, install NetWare 4.1 on a new server or upgrade an existing NetWare 4.01 or 4.02 server to NetWare 4.1.

If all servers are running properly, the new schema will be automatically distributed to all current NetWare 4.01 and 4.02 servers in your Directory tree.

◆ Run the DSREPAIR utility.

If you are not installing or upgrading a new NetWare 4.1 server, or if any NetWare 4.01 and 4.02 servers were not running properly when you installed the new NetWare 4.1 server, the DSREPAIR utility will put the new schema on the designated NetWare 4.01 and 4.02 servers.

For instructions on running DSREPAIR, see "Repairing the NetWare Directory Services Database" in Chapter 5 of *Supervising the Network.*

Running the NetWare 4.1 Installation Program

Necessary Resources

Checklist ▼

❏ Minimum 8 MB of RAM on the server.

❏ Minimum of 75 MB free space on volume SYS:.

❏ NetWare 4.1 server.

❏ CD-ROM device installed on the server being upgraded.

❏ NetWare 4.1 CD-ROM or working copies of the NetWare 4.1 diskettes. For an installation from a network directory, a drive mapped to the working areas where copies of the diskette files are located.

Prerequisites

Checklist ▼

❏ (Optional) Use the NetWare 3.1*x* SALVAGE utility to restore deleted files.

To salvage already-deleted files, restore them before upgrading.

As you mount existing volumes under NetWare 4.1, purged files are eliminated and appear on the FILER utility screen as eliminated files.

❏ Make sure you have a fully functional backup of your NetWare 3.*x* or NetWare 4.0*x* system. Do not attempt an upgrade without a backup.

❑ Notify users to log out of the NetWare 3.x or NetWare 4.0x server.

Broadcast a message from the console (using the BROADCAST command) that users must log out before the server upgrade. Users (this includes print servers) must stay logged out until the upgrade is complete.

❑ Set up and configure a CD-ROM device on the server being upgraded.

❑ If you are using third-party NLMs, disk drivers (*.DSK), or LAN drivers (*.LAN), check with your Novell Authorized Reseller™ representative for compatibility issues before upgrading your network.

Or, call 1-800-414-LABS to receive a FAXBACK catalog listing drivers and modules that are compatible with NetWare 4.1. Call 1-801-429-5544 for operator assistance.

Most third-party disk and LAN drivers written for NetWare 3.11 and 3.12 work with NetWare 4.1.

❑ If you are upgrading a NetWare 3.1x server into an existing Directory tree, find out the following information from the network supervisor:

♦ Tree name

♦ Which context to place this server into

♦ Administrator's name (user ADMIN or another user with Supervisor object rights to this context)

♦ Administrator's password (for authentication to the Directory)

❑ Load NetWare 3.1x INSTALL and edit the AUTOEXEC.NCF file to specify the frame type for Ethernet LAN drivers. NetWare accepts either Ethernet 802.2 or 802.3 frame types. The default is 802.2.

This is so other servers and routers broadcasting the 802.2 frame type can see this server.

It is possible to load both frame types. Servers, routers, and clients using the 802.2 frame type will be able to communicate with each other, but will not be able to communicate with servers, routers and clients using the 802.3 frame type.

❏ If you are upgrading several servers into the same NetWare Directory Services context, do this before upgrading:

- ◆ Consolidate names of users who exist under different names on different servers. For example, user Mark Peters might be MARK on server ONE and MPETERS on server TWO. If you upgraded both servers into the same context, two User objects would be created for the same user, Mark Peters.

- ◆ Change names of users with the same names on different servers that will be upgraded into the same context. For example, there might be a user MARK on server ONE and a different user MARK on server TWO. Even though they are two different users, you may accidentally merge them into one Directory object called MARK. (You can rename conflicting bindery object names during the upgrade process.) For example, a merge of user MARK on server ONE and MARK on server TWO will give server ONE's MARK access to both servers' files.

❏ We recommend you review all your login scripts to check whether they must be updated to take advantage of NetWare 4.1 functionality. See "What to Do After the Upgrade" on page 15 for further instructions for modifying login scripts.

❏ Prepare for Macintosh* file support:

- ◆ This product provides native-mode support for Macintosh workstations that connect to the NetWare 4.1 server.

- ◆ You will also need to add name space support to any volume that contains files with long names. For instructions, see "Manage NetWare Volumes" in Chapter 3 of *Installation*.

Procedure
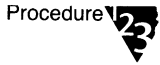
Procedure 1. **On the server you are upgrading, load the installation program for the version of NetWare you are running.**

   At the system console (:), type

   LOAD INSTALL <Enter>

2. **Edit the AUTOEXEC.NCF file with respect to frame types.**

   Important
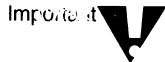
   If an Ethernet driver is loaded with no frame type specified, the driver uses the 802.2 default. Previous versions of NetWare defaulted to 802.3.

   Make sure all LAN drivers have a frame type specified.

3. **Bring down the server.**

   At the system console (:), type

   DOWN <Enter>

4. **Exit to DOS by typing**

   EXIT <Enter>

5. **Copy all old boot files to another diskette or directory.**

   Take this precautionary measure to ensure that you have a backup of your old boot files.

   Files include:

   *.BAT (batch files)
   *.DSK (disk drivers)
   *.LAN (LAN drivers)
   *.NAM (name spaces)
   AUTOEXEC.NCF
   INSTALL.NLM
   SERVER.EXE
   STARTUP.NCF
   VREPAIR

6. **(Conditional) If installing from diskette, insert the NetWare 4.1** *Install* **diskette into drive A:, change to drive A:, and type**

   `INSTALL` <Enter>

   The "Select an Installation Option" menu appears.

7. **(Conditional) If installing from CD-ROM, change to the drive letter corresponding to your CD-ROM device and type**

   `INSTALL` <Enter>

   7a. **Select the language you want installed. Press** <Enter> **to select the default NetWare 4.1 English version.**

   The "Select the Type of Installation Desired" menu appears.

   7b. **Choose "NetWare Server Installation." Press** <Enter>**.**

   The "Choose the Product You Want to Install" menu appears.

   7c. **Choose "NetWare 4.1" to upgrade a server that currently has either NetWare 3.1***x* **or NetWare 4.0***x* **to NetWare 4.1.**

8. **Choose "Upgrade NetWare 3.1***x* **or 4.0***x* **to 4.1."**

   The "Copy Files to the DOS Partition" screen appears. You must specify the destination directory (where you want SERVER.EXE, etc. to be copied).

9. **Copy the new NetWare 4.1 server boot files to the boot directory.**

   9a. **Enter the destination path for the files to be copied**

   Important ▼

   It is recommended that you create a new directory rather than specify the directory where you current NetWare 3.1x or 4.0x SERVER.EXE file resides. You will be prompted to create this as a new server boot directory. Press <Enter> after the directory has been created.

   For example:

   `C:\SERVER.41`

   The files are copied from the *Install* diskette or the NetWare 4.1 CD-ROM to the destination directory on drive C:.

The following files are copied to the boot directory, on drive C: (or another directory on drive C: that you specify.)

- Standard disk drivers (*.DSK)
- INSTALL.NLM (the installation utility)
- Replacement LAN drivers (*.LAN) (for as many pre-4.1 drivers as possible)
- Message and help files
- NWSNUT.NLM (an interface utility needed for certain NetWare Loadable Modules™)
- LAN drivers (*.LAN)
- SERVER.EXE (the NetWare operating system)

9b. If the directory that you specified does not exist, the following message appears:

```
Do you want to create the directory "directory
name." Y/N
```

Note ▼▼▼ If you are using a third-party driver not shipped in the red box, you may need to exit the INSTALL and copy the disk driver (*.DSK) to the new boot directory.

9c. If you choose "Yes," press <Enter> to create the new directory. The following message appears:

```
Enter the path to your existing SERVER.EXE
file.
```

9d. Type the path to your existing SERVER.EXE file.

10. After you set the destination path, follow the instructions on the screen.

Once the appropriate files have been copied, a screen displays drivers that were found in the existing startup directory, but were not updated by the installation procedure.

Press <Enter> to continue. The "Select a Local Configuration for the Server" screen appears.

11. Once the files have been copied, the following screen appears:

Figure 2-1
Language configuration screen

```
┌─────────────────────────────────────────────────────────────┐
║ Press <ENTER> to view choices                                ║
║                                                              ║
║ Country Code:          001  (United States)                  ║
║                                                              ║
║ Code Page:             437  (United States English)          ║
║                                                              ║
║ Keyboard Mapping:      None                                  ║
└─────────────────────────────────────────────────────────────┘
```

12. (Conditional) Specify the country code, code page, and keyboard mapping.

Note ▼

For information on any of the settings in this screen, press <F1> or refer to your DOS manual.

Use the Up- and Down-arrow keys to maneuver through the screen.

12a. Press <Enter> to view options and select an applicable country code.

The "Code Page" filed is highlighted.

12b. Press <Enter> and select an applicable code page.

The "Keyboard Mapping" field is highlighted.

12c. Press <Enter> and select an applicable keyboard type.

13. Press <Enter> to save and continue.

14. Continue with "Load the Disk and CD-ROM Drivers" in Chapter 2 of *Installation* to complete the upgrade to NetWare 4.1.

15. You can copy system and public files from a remote workstation using RCONSOLE.

For instructions, see Appendix E, "Install Using RCONSOLE," of *Installation*.

What to Do After the Upgrade

Complete the following before allowing users to log in.

◆ Set the ADMIN password.

◆ Change user passwords.

 If you chose to assign random passwords, print the NEW.PWD file and distribute the password information to each user. Users should change their passwords immediately, using NetWare Administrator.

◆ Check applications to see if they run properly.

 Some DOS applications don't work when installed on volumes that have more than 32 MB of disk space. Some of these applications can be made to work by doing the following:

 ◆ Restrict the application's directory on the destination server with DSPACE.

 ◆ Make the directory path a fake root using the MAP command.

◆ Check directory security.

◆ Set new directory and file attributes using FLAG or FILER.

◆ Check directories for unnecessary NetWare files.

◆ Modify the system and user login scripts.

 If you changed the server name, update references to the server in the system and user login scripts.

 Although user login scripts are upgraded, they are not modified and server names are not changed to match your new environment. Use the NetWare Administrator utility to modify the login scripts.

 If you have set up your login scripts so that users have drive mappings to directories in which they have no rights, these users receive the following message when they log in:

 ```
 Attempt to map drive to invalid path in MAP
 command.
 ```

Complete one of the following:

- Delete the drive mapping from the login script.

- Delete the drive mapping from the system login script and insert the drive mapping in the user's login script only when the user has been granted rights to the directory.

- Create a group, grant the group the trustee assignment, assign the appropriate users to the group, and then use an IF…THEN command in the system login script before the drive mapping (IF member of "*groupname*," THEN map *drive:=volume:directory*).

◆ If you have workstations that boot from diskettes, create new boot diskettes for each workstation.

- If the server was renamed, change the server's name in the users' AUTOEXEC.BAT files to the new NetWare 4.1 server name.

- If you have other NetWare 2.*x* servers on your network, upgrade the workstation files for those users even if you aren't upgrading the server.

  The new workstation files shipped with NetWare 4.1 are compatible with NetWare 2.*x*. All users on the internetwork should use the latest version of the workstation files to ensure that there are not conflicts.

◆ (Conditional) Copy the NetWare 4.1 utilities to other servers on the network.

The NetWare 3.*x* public utilities will run on servers running NetWare 2.*x*. Complete one of the following:

- If you have servers running NetWare 2.0a, 2.10, or 2.11, do not copy the NetWare 3.*x* public utilities to them. However, copy the NetWare 3.*x* LOGIN.EXE file to the SYS:LOGIN and SYS:PUBLIC directories.

- If you have NetWare 2.12 or 2.15 servers on your network, replace the NetWare public utilities with the NetWare 3.*x* public utilities to allow the NetWare 2.12 and 2.15 servers to work with encrypted passwords.

To copy utilities, complete the following steps:

- Log in to the NetWare 2.*x* server as SUPERVISOR.

- Flag the NetWare 2.*x* utilities Normal. In the SYS:LOGIN and SYS:PUBLIC directories, type

  `FLAG *.* N` `<Enter>`

- Protect the system login script. In the SYS:PUBLIC directory, type

  `FLAG NET$LOG.DAT SRO` `<Enter>`

- Map a drive to the SYS:PUBLIC directory on the NetWare 4.1 server by typing

  `MAP` *`drive:=fileserver/`***`SYS:PUBLIC`** `<Enter>`

  Replace *`drive`* with a drive letter not being used and replace *`fileserver`* with the name of the NetWare 4.1 server.

- Enter your username and password for the NetWare 4.1 server.

- Copy the NetWare 4.1 PUBLIC files to the NetWare 2.*x* server.

  For example, if drive Q: is mapped to SYS:PUBLIC on the NetWare 4.1 server and drive F: is mapped to SYS:PUBLIC on the NetWare 2.*x* server, change to drive F: and type

  `NCOPY Q:*.*` `<Enter>`

- Flag the NetWare 4.1 utilities on the NetWare 2.*x* server Shareable and Read Only. Type

  `FLAG *.* SRO` `<Enter>`

  Repeat the above steps for the SYS:LOGIN directory.

Important Login scripts on the NetWare 4.1 server do not execute properly unless you copy the NetWare 4.1 login programs to all NetWare LOGIN directories on your internetwork.

- Update as necessary upgraded print queues using PCONSOLE.

- Use SBACKUP to make a backup copy of all data on the NetWare 4.1 server.

For SBACKUP instructions, see Chapter 9, "Backing Up and Restoring Data," of *Supervising the Network*.

◆ Check user restrictions and accounting charge rates to make sure your system is configured the way you want it.

◆ (Optional) If your network includes workstations that use an operating system that supports long filenames, make sure you have loaded the name space module, then use the ADD NAME SPACE command to add name space to the volume. Type

ADD NAME SPACE *name-support* **TO VOLUME** *volume_name* <Enter>

For example, if you have a volume named MAC for Macintosh files, type the following at the console prompt:

ADD NAME SPACE MACINTOSH TO VOLUME MAC <Enter>

Use the command once for every volume that needs to store files with long names.

To ensure name space support each time the server is brought up, load the appropriate name space module in the STARTUP.NCF file.

◆ (Optional) To store Macintosh files and folders on a NetWare 4.1 server, install NetWare for Macintosh on the NetWare 4.1 server.

This product provides support for Macintosh workstations that connect to the NetWare 4.1 server.

◆ Assign Directory object and property rights to Directory objects that were upgraded from bindery objects.

See Chapter 1, "Managing NetWare Directory Services Objects," of *Supervising the Network* for details.

◆ Certain login script commands have to be modified or deleted after the upgrade:

   ◆ MEMBER_OF_*group*

   Groups have been replaced by Group objects and Profile objects. This variable becomes a Group object in NetWare 4.1. For more information, see Chapter 3, "Creating Login Scripts," of *Supervising the Network.*

   ◆ MAP command

   When you map a drive to a directory that's located on a NetWare 4.1 Directory Services volume, you may want to modify the volume name to correspond to the new Directory name.

   However, when you map a drive to a server that is running a previous version of NetWare, the MAP command functions as it did originally and must include the servername.

   ◆ ATTACH command

   Users can still attach to pre-4.1 servers, but the ATTACH command is not valid for NetWare 4.1 servers.

Note

The majority of login commands work the same under NetWare 4.1 as they did under previous NetWare versions. In MAP commands, if the server is not specified (MAP F:=SYS:*directory*), the Message Server attribute of the User will be used.

◆ To set up the maximum amount of disk space a user can use, use the NETADMIN or NetWare Administrator utility in NetWare 4.1 after you have finished the upgrade to NetWare 4.1.

For more information on NETADMIN or NetWare Administrator, see Chapter 1, "Managing NetWare Directory Services Objects," of *Supervising the Network.*

◆ Allow users to log in to the NetWare 4.1 server.

Users can log in if

◆ Volume SYS: is mounted

◆ The user exists in the bindery

◆ The LAN driver is loaded and bound to a protocol

◆ Logins are enabled

To ensure that logins are enabled, type

ENABLE LOGIN <Enter>

Upgrade Using Across-the-Wire Migration

Introduction

This chapter explains how to upgrade existing NetWare® 2, NetWare 3™, and other network operating system servers to servers running NetWare 4.1 using the Across-the-Wire Migration method.

Topic	Page
Preparing for Migration	28
Running the Migration Utility	29
Running MIGPRINT	41
What to Do After Migration	42

Overview

Across-the-Wire Migration uses the Migration utility to convert an existing NetWare 2.1x, NetWare 2.2, or NetWare 3.1x bindery server to a new NetWare 4.1 server. The Migration utility converts the bindery information on the NetWare 2 or NetWare 3 server to NetWare Directory Services on a NetWare 4.1 server via a DOS client workstation.

You can use Across-the-Wire Migration when upgrading from

◆ NetWare 2 (specifically, NetWare 2.1x and NetWare 2.2) to NetWare 4.1.

◆ NetWare 3 (specifically, NetWare 3.11 and NetWare 3.12) to NetWare 4.1.

◆ Another network operating system (specifically, IBM* PCLP 1.3 Extended Services; IBM LAN Server* 1.0, 1.1, 1.2, 1.3; and Microsoft* LAN Manager* 2.0) to NetWare 4.1.

How It Works

In an Across-the-Wire Migration, data files are migrated across the network from the source server to the NetWare 4.1 server.

Selected bindery information is migrated to the working directory on the client workstation and translated to the NetWare 4.1 format, and then migrated to the NetWare 41 server through bindery services. Bindery services occurs when NetWare Directory Services™ (NDS) emulates a flat structure for the objects within an NDS™ Directory tree.

The NetWare Migration utility lets you select specific information from the bindery and data files so that you can upgrade a server and create a customized NetWare 4.1 server. The Migration utility leaves the source server intact and only copies information to the NetWare 4.1 server.

Across-the-Wire Migration allows you to preserve your user environment (users and their trustee assignments) as well as the default account restrictions, accounting methods, and print queues and print servers.

Figure 3-1
Across-the-Wire
Migration

NetWare 2 or NetWare 3 server (source)

Other NOS: LAN Server, LAN Manager, or PCLP

NetWare 4.1 server (destination)

Data files

Bindery information

DOS client workstation

Working directory on hard disk
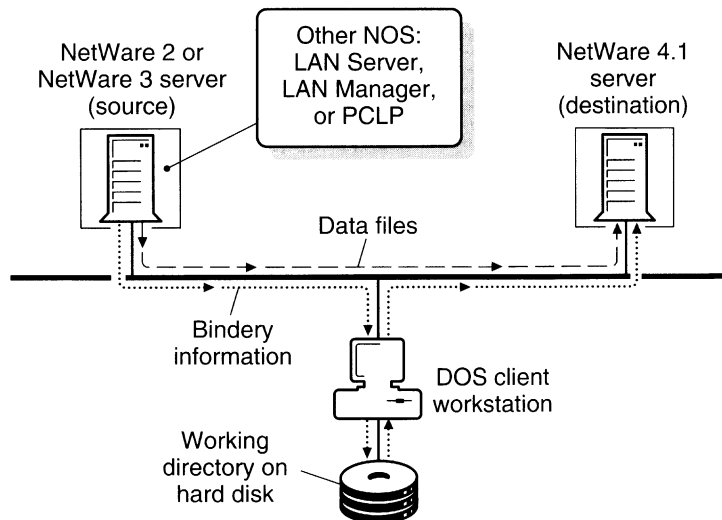
Three Computers Needed

Three computers are needed to upgrade using Across-the-Wire Migration:

◆ A NetWare server running NetWare 2, NetWare 3, or another network operating system. This is called the *source server.*

◆ A NetWare server running NetWare 4.1. This is called the *NetWare 4.1 server.*

◆ A DOS workstation with NetWare Client™ for DOS and MS Windows software loaded. This is called the *client workstation.* The Migration utility will run on this client workstation.

Bindery Services Connection Necessary

A *bindery* is the database in NetWare 2.*x* and 3.*x* that contains definitions for entities such as users, groups, NetWare servers, and print servers. For more information, see "Bindery" and "Bindery services" in *Concepts.*

When you use the Migration utility, it is important to have only bindery connections, because the utility depends on bindery services to work properly. To ensure only bindery connections, log in to the NetWare 4.1 server using the bindery services (/b) option. For example, you would type

LOGIN SRV1/SUPERVISOR /B

Or use the Migration utility to log in to the NetWare 4.1 server.

NetWare Directory Services

In NetWare 4.1, NetWare Directory Services replaces the bindery, which served as the system database for previous releases of NetWare.

While the bindery supports the operation of a single NetWare server, NetWare Directory Services supports an entire network of servers. NetWare Directory Services is a single, logical database: all users, applications, and servers go to one database for information.

For more information on NetWare Directory Services, see *Introduction to NetWare Directory Services*.

Migrating Directories

◆ If a directory is being migrated that has the same name and path as a directory that already exists on the NetWare 4.1 server, the files from both directories are merged under the destination directory name.

◆ The directory structure and files are migrated and become a part of the NetWare 4.1 file system. If necessary, modify the organization on the NetWare 4.1 server after all the source servers are migrated.

Migrating Files

◆ NetWare 2.*x* or 3.*x* system files are not migrated.

◆ Any file (newer or older) on a source server that has the same name as one that exists on the NetWare 4.1 server is not copied to the NetWare 4.1 server.

An error message appears on the screen during the migration, and is also written to the migration report, to let you know that a file by that name already exists on the NetWare 4.1 server.

We recommend you overwrite the incoming file if it is older. You can also keep the file either by renaming it and copying it to the NetWare 4.1 server, or by manually copying it over the old file after migration is completed.

◆ The system login script is not migrated, but user login scripts are.

You should examine each user login script after the migration and make corrections if the server name or directory path names have changed.

You can use the UIMPORT utility to migrate login scripts from bindery-based NetWare to NetWare Directory Services. UIMPORT allows you to import data from an existing database to the NDS database.

The Migration utility creates the following two files in SYS:SYSTEM on the NetWare 4.1 server:

UIMPORT.CTL
UIMPORT.DAT

For instructions on using UIMPORT, see Chapter 5, "Managing the NetWare Directory Tree," in *Supervising the Network*.

Migrating Users

◆ Users on the source server are created as new user objects on the NetWare 4.1 server.

◆ User login names, print job configurations, and login scripts are copied.

◆ User account restrictions (such as account balance restrictions, expiration restrictions, password restrictions, and time restrictions) are copied.

◆ Users with the same username are merged; that is, their user information (login names, print job configurations, and login scripts) are added together (except for user account restrictions, which are left untouched).

Table 3-1 shows the types and descriptions of information you can migrate using the Migration utility.

Table 3-1
Information that Can Be Migrated Using the Migration Utility

Data Type	Description	Limitations
All Information	Migrates all the information listed in this table.	
Data Files	Migrates all data files and the DOS and NetWare attributes for files and directories.	Will not overwrite a file or directory with the same name.
Trustee Assignments	Migrates rights that are assigned to users and groups for directories and files. (Automatic conversion to NetWare 4.1 rights.)	With this selection, you must also choose Users, Groups, and Data Files if the users and data files in question do not already exist on the NetWare 4.1 server.

Table 3-1 *continued*
Information that Can Be Migrated Using the Migration Utility

Data Type	Description	Limitations
Users	Migrates user account names, user print job configurations (PRINTCON.DAT), and user login scripts.	Will not overwrite existing items on the NetWare 4.1 server.
User Restrictions	Migrates user account restrictions.	Does not include user volume restrictions. If this type is chosen, users must also be migrated. Will not overwrite existing restrictions on the NetWare 4.1 server.
Groups	Migrates the group members and group trustee rights for directories and files.	If a group from the source server already exists on the NetWare 4.1 server, the source and destination groups will be merged.
Default Account Restrictions	Migrates default account restrictions.	Overwrites any existing information on the NetWare 4.1 server.
Accounting Information	Migrates the accounting charge method chosen to charge for network services charged to individual user accounts.	Overwrites any existing information on the NetWare 4.1 server.
Print Queues and Print Servers	The Migration utility only migrates LAN Server and LAN Manager print queues. Migrates NetWare print queues and print servers and their corresponding setup information.	The source and destination information will be merged.

Table 3-2 describes how NetWare 2.*x* or 3.*x* user designations migrate to NetWare 4.1. The account restrictions are *not* merged.

Table 3-2
NetWare User Designations

In NetWare 2.*x* or 3.*x*	In NetWare 4.1
User account manager (NetWare 2.1*x* and 2.2 only)	Has Supervisor rights to objects managed (Object Supervisor property). Cannot create new objects.
Workgroup manager (NetWare 2.1*x* and 2.2 only)	Has Supervisor right to the User objects that were created in NetWare 2.*x*.
Console operator	Becomes an Operator property of the NetWare Server object.
Security equivalence	Becomes a value of the Security Equivalence property of the User object.

NetWare 2 Rights and Attributes

In NetWare 2.*x*, rights are assigned only at the directory level. In NetWare 4, rights are assigned at the file and directory levels.

When you use Across-the-Wire Migration, all NetWare 2.*x* rights and attributes are translated into the NetWare 4 format. The Maximum Rights Mask is replaced with an Inherited Rights Filter (IRF), which allows rights to flow down the file system directory structure.

Migrating Passwords

Passwords are not migrated. The Migration utility allows you to either

◆ Assign passwords that are generated randomly for all migrated users.

◆ Allow users to log in to the new system without a password.

Randomly generated passwords are stored in a file called NEW.PWD in SYS:SYSTEM on the NetWare 4.1 server, and can be accessed only by the User object ADMIN.

Preparing for Migration

During the migration process, you will set up your migration on a configuration form. This configuration form focuses on the following three areas:

◆ Preparing the NetWare 4.1 server

◆ Preparing the source server

◆ Preparing the client workstation

Preparing the NetWare 4.1 Server

Prerequisites

Checklist ▼

❑ Minumum server setup includes a 15MB DOS partition, a 50MB NetWare partition, and 8 MB of RAM.

❑ Create the volumes that you want to migrate data to. The Migration utility does not create volumes.

You may want to create a directory to migrate the NetWare 2.*x* or 3.*x* volume SYS: to so that you can remove unnecessary NetWare 2.*x* or 3.*x* files more easily. Create a directory on volume SYS: that corresponds to the volume on the NetWare 2.*x* or 3.*x* server.

❑ Since two servers on the same network cannot share the same name, the NetWare 4.1 server must have a unique name.

❑ Make sure that all users, except ADMIN, are logged out of the NetWare 4.1 server and that all files are closed.

❑ (Optional) Prepare Macintosh* file support.

To store Macintosh files and folders on the new NetWare 4.1 server, add name space support to any volume that needs to store files with long names. For more information, see "ADD NAME SPACE" in *Utilities Reference*.

Install NetWare for Macintosh (a separate Novell® product) to provide native-mode support for Macintosh workstations that connect to the NetWare 4.1 server.

❏ Plan for disk space on the NetWare 4.1 server.

If you merge two or more NetWare 2.x or 3.x servers onto the same NetWare 4.1 server, plan for sufficient free disk space for the NetWare 4.1 volume SYS:. Volume SYS: requires at least 50 MB of disk space.

Preparing the Source Server

Prerequisites

Checklist ❏ Back up your source server.

Use your regular backup utility to back up your current NetWare 2.x, NetWare 3.x, or other network operating system server at least twice to ensure a good copy.

❏ Make sure that all users, except ADMIN (or SUPERVISOR), are logged out of the source servers and that all files (except bindery files) are closed during migration.

❏ Delete unnecessary files.

Decide if you want to migrate .BAK or .LST files, or any other temporary files. You may want to consolidate some files and directories.

Value-Added Processes (VAPs) are not compatible with NetWare 4.1, so you may want to delete them before you start the migration.

❏ Rename DOS directories and files that have long names.

NetWare 2.x supports 14-character directory and file names. NetWare 4.1 supports DOS naming conventions—eight-character name, three-character extention—for DOS directories and files.

Only DOS directories and files that conform to DOS naming conventions (8.3) are migrated.

Macintosh and OS/2* files can still follow their respective naming conventions.

❑ Modify the subdirectory depth to 25 levels.

NetWare 4.1 sets the default subdirectory depth to 25 levels; therefore, the Migration utility does not copy subdirectories deeper than 25 levles.

If the source server has subdirectories deeper than 25, modify the subdirectory structure so that the subdirectories aren't so deep.

❑ Run BINDFIX on the source server.

BINDFIX can delete mail subdirectories and trustee rights of all users who no longer exist on the source server.

For more information, see "BINDFIX," in *NetWare 2.2 Using the Network* or *NetWare 3.11 Utilities Reference*.

Preparing the Client Workstation

Prerequisites

Checklist ▼

❑ A DOS workstation with at least 640 KB of memory (with 480 KB of free memory) and 5 MB of free disk space on either a hard disk or another network drive that can attach to both the source server and NetWare 4.1 server.

❑ Make sure that your network connection is a bindery connection.

If you are authenticated to the NetWare 4.1 server, you must log in with a bindery connection or log out and use the Migration utility to log in.

❑ Make sure the CONFIG.SYS file includes the following line:

```
files=20
```

If you add the line to the CONFIG.SYS file, save the file and then reboot the workstation.

❏ Make sure the NET.CFG file includes the following lines:

```
Protocol IPXODI
   IPX retry count=60
```

❏ Load your LAN drivers on the DOS workstation and run the NetWare Client for DOS and MS Windows software.

Running the Migration Utility

Procedure

Procedure

1. **(Conditional) If your client workstation has a CD-ROM device, use the NetWare 4.1 CD-ROM and change to the MIGRATE directory.**

2. **(Conditional) If your client workstation does not have a CD-ROM device, create a MIGRATE directory on your client workstation and copy the migration files from the MIGRATE subdirectory on your NetWare 4.1 server to your client workstation or make migration diskettes using the NetWare 4.1 installation utility.**

3. **From the client workstation, start the Migration utility by changing to the directory that contains the Migration utility files and typing**

   MIGRATE <Enter>

   The "Select the Type of Migration" menu appears.

4. **From the "Select the Type of Migration" menu, choose "Across-the-Wire Migration."**

   The "Select Source LAN Type" menu appears.

5. **Choose a source LAN type (NetWare 2.*x* , NetWare 3.*x*,, LAN Server/PCLP, or LAN Manager).**

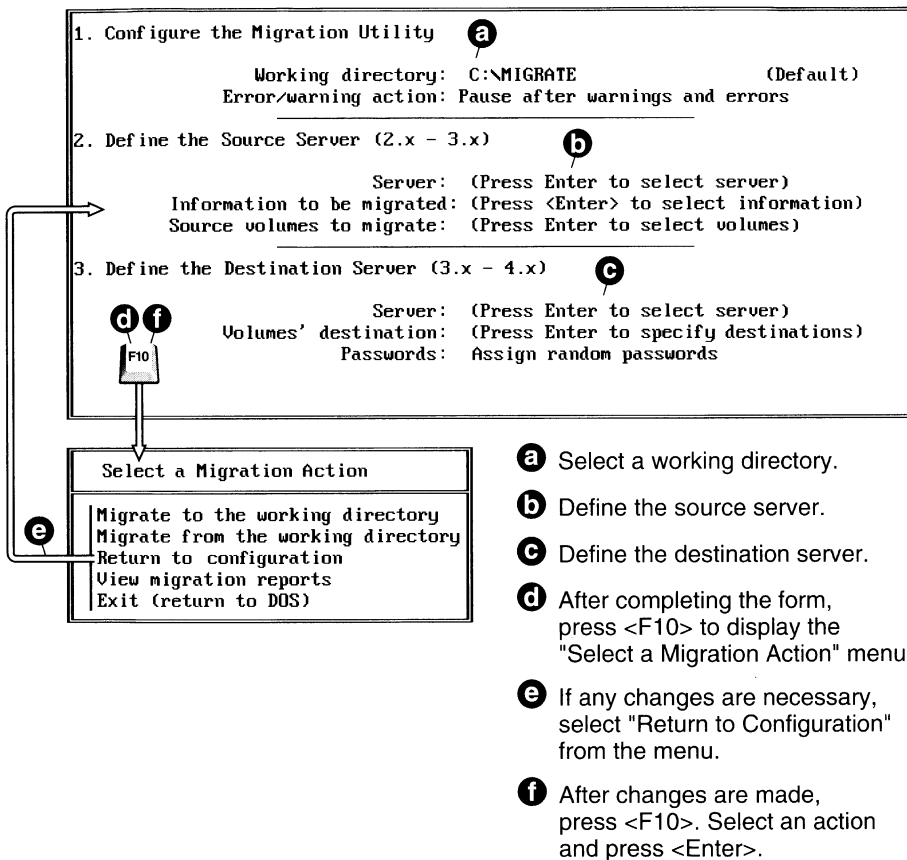   The "Select the Destination LAN Type" menu appears.

6. **Choose a destination LAN type (4.1).**

When selecting a source and destination, the Migration utility does version checking according to the source type and destination type you selected.

The "Migration Utility Configuration" form appears.

Figure 3-2 illustrates the process of filling out the configuration form used with the Migration utility. The corresponding migration steps are noted where applicable.

Figure 3-2
The Migration Utility Configuration Form

ⓐ Select a working directory.

ⓑ Define the source server.

ⓒ Define the destination server.

ⓓ After completing the form, press <F10> to display the "Select a Migration Action" menu.

ⓔ If any changes are necessary, select "Return to Configuration" from the menu.

ⓕ After changes are made, press <F10>. Select an action and press <Enter>.

7. **Under Step 1, "Configure the Migration Utility," on the configuration form, press <Enter> to change the working directory (if desired); then press the Down-arrow key to move to the next field.**

The working directory is where the bindery information and the migration reports are stored. Data files are not stored here. You need 5 MB of free disk space in this directory.

The working directory is usually located on the workstation's hard disk, but you can also put it on a network drive.

If you are using a network drive instead of a workstation hard disk, you must have Create, Read, and Write and File Scan rights in the working directory.

If the working directory doesn't exist on the workstation hard disk or network drive, the Migration utility creates it for you.

8. **Under Step 1 on the configuration form, press <Enter> to toggle between error/warning actions.**

Error/Warning Action	Description
Pause after warnings and errors	Choose this option if you want the utility to stop after each warning and error and prompt you to continue with the migration.
	Each time an error is reported and you are prompted, you can choose to discontinue the prompting.
Do not pause after warnings and errors	Choose this option if you do not want to be prompted after each warning and error.

Important ▼ All errors are listed in the report file regardless of the option you select.

9. **Under Step 2, "Define the Source Server," on the configuration form, press <Enter> to display a list of source servers.**

Note ▼ **For LAN Server or LAN Manager:** If you are migrating from LAN Server or LAN Manager, the screen shows the domain obtained from the DOSLAN.INI file. Edit this field if the domain you are logged into is not the same as the one listed in the DOSLAN.INI file.

10. **Choose the source server you want to migrate from.**

This selection must match the source type you specified in Step 5 of this procedure.

If the source server you want to select is not shown, press <Insert> to see a list of available servers you can log in to.

Note ▼ When migrating multiple source servers, only one source server can be migrated at a time.

11. **Under Step 2 on the configuration form, press <Enter> again to display categories of information you want to migrate.**

Note ▼ **For LAN Server or LAN Manager:** If you are migrating from LAN Server or LAN Manager, you are limited to the following categories to migrate:
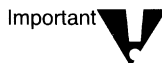
Access Control Profiles
All Information
Data Files
Groups
Print Queues
Users

Only files that conform to DOS naming conventions (8.3) are migrated.

12. **Using <F5>, mark the information you want to migrate.**

Follow the Quick Help for details on how to select information.

Mark as many categories as necessary.

Important ▼ If you select "All Information," all categories are migrated. However, printing environments are not migrated at this time. After the Migration utility has finished, use MIGPRINT.EXE (documented in this chapter) to migrate your printing environment.

13. **Under Step 2 on the configuration form, press <Enter> again to display a list of source volumes on the source server you want to migrate data from.**

Note ▼ **For LAN Server or LAN Manager:** If you are migrating from LAN Server or LAN Manager, source *drives* are listed.

14. **Mark the volumes using <F5>, and then press <Enter>.**

Mark source volumes to migrate only if you are migrating data files or trustee assignments on those volumes.

You must select a source volume (or a source drive in LAN Server or LAN Manager) to migrate if you select any of the following categories to migrate:

All Information
Data Files
Trustee Assignments (or Access Control permissions in LAN Server or LAN Manager)

If you are migrating one or more of the following categories, you do not need to select a source volume:

Accounting Information
Default Account Restrictions
Groups
Print Queues
User Restrictions
Users

15. **Under Step 3, "Define the Destination Server," on the configuration form, press** <Enter> **to display a list of servers on the network.**

16. **Choose the NetWare 4.1 server that you want to migrate the source server to.**

    This selection must match the destination type you specified in Step 6.

    If the NetWare 4.1 server you want to select is not shown, press <Insert> to see a list of available servers that you can log in to.

17. **Under Step 3 on the configuration form, press** <Enter> **to select a volume (or source drive in LAN Server or LAN Manager).**

18. **Press** <Enter> **to specify the destination volume and directory on the NetWare 4.1 server.**

    Destination volumes that match the source volumes are displayed as the default.

    Press <Insert> to see a list of available volumes and directories on the NetWare 4.1 server.

Note ▼ **For LAN Server or LAN Manager:** If you are migrating from LAN Server or LAN Manager, the list contains servers and drives.

If you specify a directory that does not exist on the NetWare 4.1 server, you are asked whether the system should create it. Volumes must already be created on the NetWare 4.1 server before you can migrate data to them.

Note ▼ The volume organization, as well as the directory structure, is migrated. You can modify the organization on the NetWare 4.1 server after all the source servers have been migrated.

19. **Press** <Enter> **when you complete the destination path of the source volume.**

20. **If you have multiple source volumes, continue to specify destination paths.**

21. **Press** <F10> **when you finish filling out the "Volumes' Destination" field.**

22. **(Optional) Under Step 3 on the configuration form, press** <Enter> **and choose a password option.**

Note ▼ **For LAN Manager:** If you are migrating from LAN Manager, password lengths are global. For example, if a user has a "password not required" flag set on the LAN Manager side, the user will have no password on the NetWare 4.1 server.

If a password is required and the length of the password is zero (0), the Migration utility assigns the destination default password length.

See the following table for a description of the options.

Password Option	Description
Assign Random Passwords (default)	A password for each username that has a password on the source is generated randomly and stored in a file (NEW.PWD) in SYS:SYSTEM on the NetWare 4.1 server.
	Note: New passwords are given only to users and print servers that had a password on the source server.
	Only users with rights to SYS:SYSTEM have access to this file. Users cannot log in until they are given their passwords from this list.
Assign no passwords	After you finish the migration, all users can log in using their previous username. They are not prompted for a password.
	Users have the option to create their passwords if no random passwords were issued upon migration.
	Note: If the user account restrictions require users to have a password, they are prompted to type a new password, which the system verifies.

23. **Review the fields on the configuration form and make any necessary changes.**

24. **To proceed with the migration, press <F10> to display the "Select a Migration Action" menu.**

25. Choose a "Migration Action" and then press <Enter>.

If you want to	Choose
Migrate all the information you selected from the source server to the NetWare 4.1 server. If you choose this option, the migration starts automatically. All information about the migration is scrolled to the screen and entered into a report file, which you can review later. (The bindery information you selected is copied to the working directory and translated into the NetWare 4.1 format; it is then copied to the NetWare 4.1 server. The data files are migrated directly to the destination 4.1 server.)	"Start the Migration"
Make changes to your migration configuration.	"Return to Configuration"
Display reports (after the migration is complete).	"View Migration Reports"
Exit the utility and return to the DOS prompt.	"Exit (Return to DOS)"

When the migration is complete, the Migration utility displays the following message:

```
Migration from the source server to the
destination server is complete. Press <Enter> to
continue.
```

26. (Conditional) If errors occur during the migration and you chose to be prompted after errors and warnings, you are prompted:

```
A migration error has occurred and is displayed in
the migration log above. Do you want to continue
with the migration?
(Y=Yes/N=No/I=Ignore Error):
```

Use the following table to help you answer the prompt.

If you choose	Then
Yes	The migration continues. The error is written to the report file, and you are prompted again the next time an error occurs.
No	The migration stops. The error is written to the report file. You receive this message:

Migration from the source server to the NetWare 4.1 server is finished. Press <Enter> to continue.

Press <Enter> to return to the "Select a Migration Action" menu. From there, press <Esc> to edit the fields or choose "Exit" to leave the utility and return to the DOS prompt. |
| Ignore | The migration continues. The error is written to report file. You are no longer prompted when an error occurs, but all errors are written to the report file. |

Suggestion

For explanations of all error messages, see *System Messages*.

27. **(Optional) To view the migration report, select "View Migration Reports" from the "Select a Migration Action" menu and continue with Step 27a.**

27a. **Select the report for the migration you completed and press <Enter>.**

The reports reside in the working directory that you specified earlier (in Step 7).

Use the report to help you complete and customize definitions, attributes, and access privileges on the NetWare 4.1 server. If you find errors on your NetWare 4.1 server after the migration, locate them in the migration report file and determine what actions to take on the NetWare 4.1 server to correct the errors.

The report file is an ASCII text file that consists of the following:

◆ Summary information of the bindery import phase (migrating bindery data from the source server to the working directory)

◆ Summary information of the bindery export phase (migrating bindery data from the working directory to the NetWare 4.1 server)

◆ A listing of each item in each category that was read from the source server

◆ A listing of each item in each category that was written to or created on the NetWare 4.1 server

◆ The number of errors that occurred during the migration

27b. To exit the report, press <Esc>.

27c. To return to the "Select a Migration Action" menu, press <Esc> again.

28. To exit the Migration utility, choose "Exit (Return to DOS)."

29. To complete the migration to NetWare 4, continue with the next section, "Running MIGPRINT."

Running MIGPRINT

The MIGPRINT utility allows you to migrate printers, print queues, print job configurations, and print servers from your NetWare 2 or NetWare 3 source server into your NetWare 4.1 Directory tree.

Prerequisites

Checklist ▼ ❑ Complete the Across-the-Wire Migration.

❑ Make sure you have the Supervisor right on the NetWare 4.1 server.

Procedures

Procedure ▼
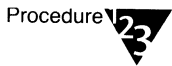
1. **From the client workstation, establish a NetWare Directory Services connection to the NetWare 4.1 server.**

2. **From the client workstation, establish a connection to the source server.**

3. **(Conditional) If your client workstation has a CD-ROM device, use the NetWare 4.1 CD-ROM and change to the MIGRATE directory.**

4. **(Conditional) If your client workstation does not have a CD-ROM device, create a MIGRATE directory (if you haven't already done so) on your client workstation and copy the MIGPRINT.EXE file from the MIGRATE subdirectory on your NetWare 4.1 server to your client workstation.**

5. **Initialize a search drive by mapping a search drive to SYS:SYSTEM/NLS.**

6. **From the client workstation, start the MIGPRINT utility by changing to the directory that contains the migration utility files and typing**

   ```
   MIGPRINT /S=source_server /D=destination_server
      [/VOL=queue_volume /O=output_file] <Enter>
   ```

   Replace *source server* with the name of the the bindery server that you're migrating the print information from.

Replace *destination server* with the name of the NetWare 4.1 server you're migrating to.

(Optional) If you don't want to migrate to the default volume SYS:, replace *queue volume* with the name of another queue volume.

(Optional) If you don't want to migrate to the default file, replace *output file* with the name of another file.

7. Follow the instructions on the MIGPRINT screen.

What to Do After Migration

After the migration is complete, check the NetWare 4.1 server and do the following if they apply:

◆ Update references to the server in the user login scripts.

Although user login scripts are migrated, they are not modified, and server names and directory paths are not changed to match your new environment.

You can use the UIMPORT utility to migrate login scripts from bindery-based NetWare to NetWare 4.1 Directory Services (NDS). UIMPORT allows you to import data from an existing database to the NDS database.

The Migration utility creates the following two files in SYS:SYSTEM on the NetWare 4.1 server:

UIMPORT.CTL
UIMPORT.DAT

For instructions on using UIMPORT, see Chapter 5, "Managing the NetWare Directory Tree," in *Supervising the Network*.

◆ Check third-party applications.

In order for third-party applications to run properly under NetWare 4.1, you may need to reinstall them and/or enter new paths in their setup files.

You may need to reinstall third-party applications if:

◆ The application has an .EXE file that did not migrate.

◆ The application is path-specific and you have changed the path structure during migration.

Some DOS applications don't work when installed on volumes that have more than 32 MB of disk space. Some of these applications can be made to work by doing the following:

◆ Restrict the application's directory on the NetWare 4.1 server with Object Manager (which replaces DSPACE).

◆ Make the directory a fake root using MAP.

◆ Examine the files in merged directories and reorganize them if necessary.

Any directories that were merged may contain unrelated files.

◆ Update migrated print queues and print servers.

NetWare 4.1 Print Services are different than printing in previous NetWare versions. For more information, see *Print Services*.

◆ Check user restrictions and accounting charge rates to make sure your system is configured the way you want it.

◆ Set any new directory and file attributes.

◆ If you chose to assign random passwords, you may want to print the NEW.PWD file and distribute the password information to your users. The users should change their passwords immediately.

The report, an ASCII text file, shows passwords sorted by date. If users were migrated from more than one server, the current password is the last one listed on the report.

◆ If you have menus set up, you may need to run a menu conversion program so your menus function properly under NetWare 4.1.

4 Upgrade Using Same-Server Migration

Introduction

This chapter describes the preparation and procedures necessary to complete a Same-Server Migration.

Topic	Page
Preparing for Migration	52
Running the Migration Utility	56
What to Do After Migration	67

Overview

Same-Server Migration uses the MIGRATE utility to convert an existing NetWare® 2, NetWare 3™, or another network operating system server to NetWare 4.1. After backing up the NetWare 2, NetWare 3, or another network operating system server, the MIGRATE utility converts the server's bindery information to NetWare Directory Services™ and installs NetWare 4.1.

You can use Same-Server Migration when upgrading from

◆ NetWare 2 (specifically, NetWare 2.1x and NetWare 2.2) to NetWare 4.1.

◆ NetWare 3 (specifically, NetWare 3.11 and NetWare 3.12) to NetWare 4.1.

◆ Another network operating system (specifically, IBM PCLP 1.3 Extended Services; IBM LAN Server 1.0, 1.1, 1.2, 1.3; and Microsoft LAN Manager 2.0) to NetWare 4.1.

How It Works

Same-Server Migration is used to update a server that will be installed on the same hardware as the old server, allowing you to change your NetWare 2, NetWare 3, or another network operating system into a NetWare 4.1 server.

Same-Server Migration allows you to use only one server. However, there is some risk to the data involved during the conversion process to NetWare 4.1. Also, you may not be able to migrate the file attributes (because Same-Server Migration does not migrate data files).

When you use Same-Server Migration, you must back up your data files, and then restore them to the NetWare 4.1 server after you install NetWare 4.1.

Figure 4-1 illustrates Same-Server Migration.

Figure 4-1
Same-Server
Migration
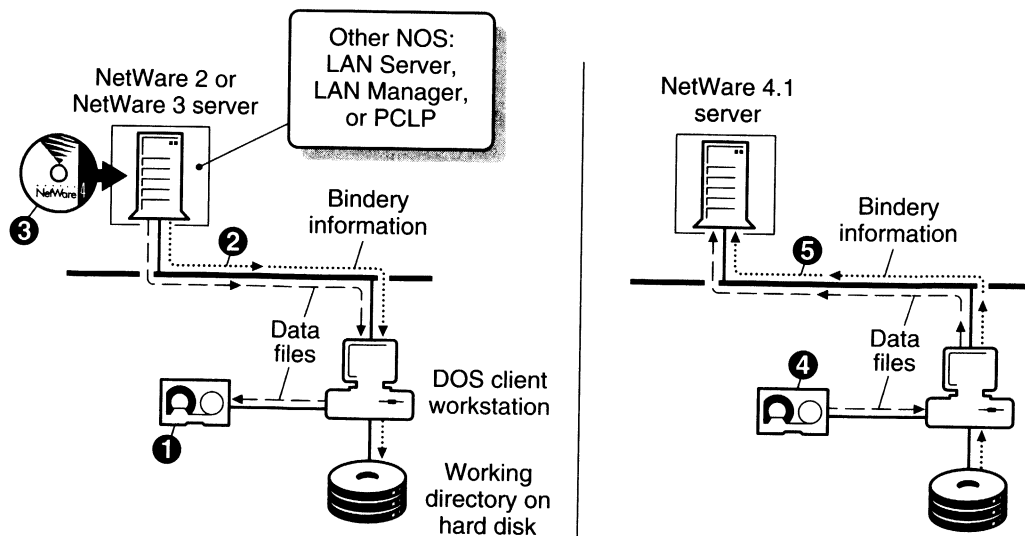
1 Back up your data files using a backup device.

2 Run the migration utility and migrate the bindery information you selected to the working directory.

3 Install NetWare 4.1 on your server.

4 Restore the data files from the backup device to the 4.1 server.

5 Run the migration utility and migrate the bindery information from the working directory to the 4.1 server.

Two Computers Needed

Two computers are needed to upgrade using Same-Server Migration:

◆ A NetWare server running NetWare 2, NetWare 3, or another network operating system. This is called the *server.*

◆ A DOS workstation with NetWare Client™ for DOS and MS Windows software loaded. This is called the *client workstation.* The MIGRATE utility will run on this client workstation.

Bindery Services Connection Necessary

A *bindery* is the database in NetWare 2.*x* and 3.*x* that contains definitions for entities such as users, groups, NetWare servers, and print servers. For more information, see "Bindery" and "Bindery services" in *Concepts*.

When you use the Migration utility, it is important to have only bindery connections, because the utility depends on bindery services to work properly. To ensure only bindery connections, log in to the NetWare 4.1 server using the bindery services (/b) option. For example, you would type

```
LOGIN SRV1/SUPERVISOR /B
```

Or use the Migration utility to log in to the NetWare 4.1 server.

NetWare Directory Services

In NetWare 4.1, NetWare Directory Services replaces the bindery, which served as the system database for previous releases of NetWare.

While the bindery supports the operation of a single NetWare server, NetWare Directory Services supports an entire network of servers. NetWare Directory Services is a single, logical database; all users, applications, and servers go to one database for information.

For more information on NetWare Directory Services, see *Introduction to NetWare Directory Services*.

Migrating Directories

◆ If a directory is being migrated that has the same name and path as a directory that already exists on the NetWare 4.1 server, the files from both directories are merged under the destination directory name.

◆ The directory structure and files are migrated and become a part of the NetWare 4.1 file system. If necessary, modify the organization on the NetWare 4.1 server after all the servers are migrated.

Migrating Files

◆ NetWare 2.*x* or 3.*x* system files are not migrated.

◆ Any file (newer or older) on a server that has the same name as one that exists on the NetWare 4.1 server is not copied to the NetWare 4.1 server.

An error message appears on the screen during the migration, and is also written to the migration report, to let you know that a file by that name already exists on the NetWare 4.1 server.

We recommend you overwrite the incoming file if it is older. You can also keep the file by either renaming it and copying it to the NetWare 4.1 server or by manually copying it over the old file after migration is completed.

◆ The system login script is not migrated, but user login scripts are.

You should examine each user login script after the migration and make corrections if the server name or directory path names have changed.

You can use the UIMPORT utility to migrate login scripts from bindery-based NetWare to NetWare Directory Services. UIMPORT allows you to import data from an existing database to the NDS database.

The Migration utility creates the following two files in SYS:SYSTEM on the NetWare 4.1 server:

UIMPORT.CTL
UIMPORT.DAT

For instructions on using UIMPORT, see *Supervising the Network*.

Migrating Users

◆ Users on the server are created as new user objects on the NetWare 4.1 server.

◆ User login names, print job configurations, and login scripts are copied.

◆ User account restrictions (such as account balance restrictions, expiration restrictions, password restrictions, and time restrictions) are copied.

◆ Users with the same username are merged; that is, their user information (login names, print job configurations, and login scripts) are added together (except for user account restrictions, which are left untouched).

Table 4-1 shows the types and descriptions of information you can migrate using the Migration utility.

Table 4-1
Information that Can Be Migrated Using the Migration Utility

Data Type	Description	Limitations
All Information	Migrates all the information listed in this table.	
Data Files	Migrates all data files and the DOS and NetWare attributes for files and directories.	Will not overwrite a file or directory with the same name.
Trustee Assignments	Migrates rights that are assigned to users and groups for directories and files. (Automatic conversion to NetWare 4.1 rights.)	With this selection, you must also choose Users, Groups, and Data files if the users and data files in question do not already exist on the NetWare 4.1 server.
Users	Migrates user account names, user print job configurations (PRINTCON.DAT), and user login scripts.	Will not overwrite existing items on the NetWare 4.1 server.
User Restrictions	Migrates user account restrictions.	Does not include user volume restrictions. If this type is chosen, users must also be migrated. Will not overwrite existing restrictions on the NetWare 4.1 server.
Groups	Migrates the group members and group trustee rights for directories and files.	If a group from the source server already exists on the NetWare 4.1 server, the source and destination groups will be merged.
Default Account Restrictions	Migrates default account restrictions.	Overwrites any existing information on the NetWare 4.1 server.

Table 4-1 *continued*
Information that Can Be Migrated Using the Migration Utility

Data Type	Description	Limitations
Accounting Information	Migrates the accounting charge method chosen to charge for network services charged to individual user accounts.	Overwrites any existing information on the NetWare 4.1 server.
Print Queues and Print Servers	The Migration utility only migrates LAN Server and LAN Manager print queues. Migrates NetWare print queues and print servers and their corresponding setup information.	The source and destination information will be merged.

Table 4-2 describes how NetWare 2.*x* or 3.*x* user designations migrate to NetWare 4.1. The account restrictions are *not* merged.

Table 4-2
NetWare User Designations

In NetWare 2.*x* or 3.*x*	In NetWare 4.1
User account manager (NetWare 2.1*x* and 2.2 only)	Has Supervisor rights to objects managed (Object Supervisor property). Cannot create new objects.
Workgroup manager (NetWare 2.1*x* and 2.2 only)	Has Supervisor right to the User objects that were created in NetWare 2.*x*.
Console operator	Becomes an Operator property of the NetWare Server object.
Security equivalence	Becomes a value of the Security Equivalence property of the User object.

NetWare 2 Rights and Attributes

In NetWare 2.*x*, rights are assigned only at the directory level. In NetWare 4, rights are assigned at the file and directory levels.

When you use Same-Server Migration, all NetWare 2.*x* rights and attributes are translated into the NetWare 4 format. The Maximum Rights Mask is replaced with an Inherited Rights Filter (IRF), which allows rights to flow down the file system directory structure.

Migrating Passwords

Passwords are not migrated. The Migration utility allows you to either

◆ Assign passwords that are generated randomly for all migrated users.

◆ Allow users to log in to the new system without a password.

Randomly generated passwords are stored in a file called NEW.PWD in SYS:SYSTEM on the NetWare 4.1 server, and can be accessed only by the User object ADMIN.

Preparing for Migration

During the migration process, you will set up your migration on a configuration form. This configuration form focuses on the following two areas:

◆ Preparing the server

◆ Preparing the client workstation

Preparing the Server

Prerequisites

Checklist ✔

❑ A server with a 386 or higher processor. Minimum recommendations for server setup include

15MB DOS Partition
50MB NetWare Partition
8MB RAM

❑ Back up your server.

Use your regular backup utility to back up your current NetWare 2.*x* or 3.*x* server or LAN Server at least twice to ensure a good copy.

Warning ▼ If you are doing a Same-Server Migration, note that the NetWare installation procedure destroys *all* data on your hard disk. Back up the server. You do not need to restore trustees or bindery information using your backup. The migration utility converts the trustees and bindery information to NetWare 4.1 format, accessible through bindery emulation.

❏ Make sure that all users, except ADMIN (or SUPERVISOR), are logged out of the server and that all files (except bindery files) are closed during migration.

Important ▼ Be sure that your network connection is a bindery connection. If you are authenticated to the NetWare 4.1 server, you must log in with a bindery connection or log out and use the Migration utility to login.

❏ Remove unnecessary files.

Decide if you want to migrate .BAK or .LST files, or any other temporary files. You may want to consolidate some files and directories.

Value-Added Processes (VAPs) that are in a directory that you migrate are copied to the NetWare 4.1 server; however, VAPs are not compatible with NetWare 4.1, so you may want to delete them before you start the migration.

The following NetWare 2.1*x* files are not compatible with NetWare 4.1. If these files are only in SYS:PUBLIC or SYS:SYSTEM, the migration utility blocks them from being transferred. If copies of these files are in other directories, they are transferred.

Important ▼ These files, located in SYS:SYSTEM, must be deleted:

LARCHIVE.EXE
LRESTORE.EXE
MACBACK.EXE
NARCHIVE.EXE
NRESTORE.EXE

❏ Prepare Macintosh file support.

To store Macintosh files and folders on the new NetWare 4.1 server, add name space support to any volume that needs to store files with long names. For more information, see "ADD NAME SPACE" in *Utilities Reference*.

Install NetWare for Macintosh to provide native-mode support for Macintosh workstations that connect to the NetWare 4.1 server.

❏ Rename DOS files and directories that have long names.

NetWare 2.2 and earlier lets you give directories and files 14-character names. NetWare 4.1 allows only DOS naming conventions for DOS directories. DOS limits directory names to 8 characters with a 3-character extension. (Macintosh and OS/2 files can still follow their respective naming conventions.)

Important
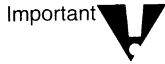
Only directories and files that conform to DOS naming conventions (8.3) are migrated.

❏ User login scripts are migrated from SYS:MAIL to the user's new mail directory on the NetWare 4.1 server.

Other files left in the mail directories are not copied to the destination mail directory.

❏ Obtain NLMs to replace any third-party VAPs that are currently running on the 2.x server.

VAPs do not run on a NetWare 4.1 system. To find out about NLMs that are available to replace your third-party VAPs, contact your vendor or call the Novell product information department at 1-800-NETWARE.

❏ Run BINDFIX on the NetWare server.

BINDFIX can delete mail subdirectories and trustee rights of all users who no longer exist on the server.

For more information, see "BINDFIX," in *NetWare 2.2 Using the Network* or *NetWare 3.11 Utilities Reference*.

❏ (Conditional) When running interoperably between NetWare and LAN Server or LAN Manager, use NETX.COM.

Preparing the Client Workstation

Prerequisites

Checklist ▼

❏ A DOS workstation with at least 640 KB of memory (with 480 KB of free memory) and 5 MB of free disk space on either a hard disk or another network drive that can attach to both the source server and NetWare 4.1 server.

❏ Make sure that your network connection is a bindery connection.

If you are authenticated to the NetWare 4.1 server, you must log in with a bindery connection or log out and use the Migration utility to log in.

❏ Make sure the CONFIG.SYS file includes the following line:

`files=20`

If you add the line to the CONFIG.SYS file, save the file and then reboot the workstation.

❏ Make sure the NET.CFG file includes the following lines:

```
Protocol IPXODI
  IPX retry count=60
```

❏ Load your LAN drivers on the DOS workstation and run the NetWare Client for DOS and MS Windows software.

Running the Migration Utility

Important ▼ The server must meet the minimum requirements specified under "Preparing the Server" on page 52.

Warning ▼ Same-Server Migration does involve some risk to your data files as a result of the conversion process to NetWare 4.1.

Procedure
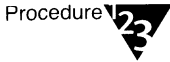
Procedure ▼

1. **(Conditional) If your client workstation has a a CD-ROM, use the NetWare 4.1 CD and go to the MIGRATE subdirection under the NW410 directory.**

2. **(Conditional) If your client workstation does not have a CD-ROM, create a MIGRATE directory on your client workstation and copy the migration files from the MIGRATE subdirectory on your 4.1 server to your client workstation or make migration diskettes using the NetWare 4.1 installation utility.**

3. **From the client workstation, start the migration utility by typing**

    MIGRATE <Enter>

    The "Select the Type of Migration" menu appears.

4. **From the "Select the Type of Migration" menu, choose "Same-Server Migration."**

    Same-Server Migration allows you to stop the utility after you migrate the bindery information to the working directory so that you can install NetWare 4.1.

5. **From the "Select the Source LAN Type" menu, choose a source LAN type (NetWare 2.x or 3.x or LAN Server, PCLP or LAN Manager).**

6. **From the "Select the Destination LAN Type" menu, choose a destination LAN type (4.1).**

    Once you have selected a source and destination, the migration utility verifies that you selected compatible versions for the migration.

Figure 4-2
**The Same-Server Migration Configuration
Form**

```
1. Configure the Migration Utility    ⓐ

            Working directory:  C:\MIGRATE                    (Default)
            Error/warning action: Pause after warnings and errors
    ─────────────────────────────────────────────────────────────
2. Define the Source Server (2.x - 3.x)      ⓑ

                        Server:  (Press Enter to select server)
        Information to be migrated:  (Press <Enter> to select information)
        Source volumes to migrate:  (Press Enter to select volumes)
    ─────────────────────────────────────────────────────────────
3. Define the Destination Server (3.x - 4.x)      ⓒ

    ⓓⓕ                 Server:  (Press Enter to select server)
        Volumes' destination:  (Press Enter to specify destinations)
    ┌F10┐        Passwords:  Assign random passwords
```

```
    ┌─────────────────────────────────────┐
    │     Select a Migration Action        │
    ├─────────────────────────────────────┤
    │ Migrate to the working directory     │
    │ Migrate from the working directory   │
 ⓔ │ Return to configuration              │
    │ View migration reports               │
    │ Exit (return to DOS)                 │
    └─────────────────────────────────────┘
```

ⓐ Select a working directory.

ⓑ Define the source server.

ⓒ Define the destination server.

ⓓ After completing the form,
press <F10> to display the
"Select a Migration Action" menu.

ⓔ If any changes are necessary,
select "Return to Configuration"
from the menu.

ⓕ After changes are made,
press <F10>. Select an action
and press <Enter>.

7. **Under Step 1, "Configure the migration utility," on the
   configuration form, press the Down arrow key to accept the
   default working directory or press** <Enter> **to specify another
   working directory.**

   The working directory is where the bindery information and the
   migration reports are stored.

Usually, the working directory is located on the hard disk drive of the workstation, but you can also put it on a network drive. You need 5 MB free disk space in this directory.

Note ▼ If you are using a network drive instead of a hard drive, you must have Create, Read, Write, and File Scan rights in this directory.

If this directory doesn't exist, the migration utility creates it for you on your hard disk.

Follow the Quick Help to specify a different working directory.

8. Under Step 1 on the configuration form, press <Enter> to select an error/warning action.

Error/Warning Action	Description
Pause after warnings and errors	Choose this option if you want the utility to stop after each warning and error and prompt you to continue with the migration.
	Each time an error is reported and you are prompted, you can choose to discontinue the prompting.
Do not pause after warnings and errors	Choose this option if you do not want to be prompted after each warning and error.

Important ▼ All errors are listed in the report file regardless of the option you select.

9. Under Step 2, "Define the source server," on the configuration form, press <Enter> to display a list of source servers.

10. Choose the server that you want to migrate.

This selection must match the type you specified in Step 5 of this procedure.

If the server you want to select is not shown, press <Ins> to see a list of available servers that you can log in to.

11. Under Step 2 on the configuration form, press <Enter> to display categories of information you want to migrate.

12. Using <F5>, mark the information you want to migrate.

Follow the Quick Help for details on how to select information.

Mark as many of the categories as necessary.
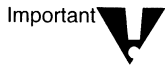
If you select "All Information," all categories are migrated.

13. Under Step 2 on the configuration form, press <Enter> again to display a list of source volumes on the server that you want to migrate data from.

14. Mark the volumes using <F5>, and then press <Enter>.

Mark source volumes to migrate only if you are migrating information contained on those volumes.

If you are migrating one or more of the following categories, you do not need to select a source volume:

Accounting Information
Default Account Restrictions
Groups
Print Queues and Print Servers
User Restrictions
Users

You must select a source volume (or a source drive in LAN Server or LAN Manager) to migrate if you select any of the following categories to migrate:

All Information
Trustee Assignments

15. Review the fields on the configuration form and make any necessary changes.

You cannot complete the information for the NetWare 4.1 server, since it does not yet exist.

After you migrate the source information to your working directory and install NetWare 4.1 on your server, you return to the migration utility and complete the NetWare 4.1 server information.

16. To proceed with the migration, press <F10> to display the "Select a Migration Action" menu.

17. **Select "Migrate to the Working Directory," and then press <Enter>.**

    All information about the migration is scrolled to the screen and entered into a report file, which you can review later.

18. **(Conditional) If errors occur during the migration and you chose to be prompted after errors and warnings, you receive the following error message and must answer the question.**

    ```
    A migration error has occurred and is displayed in
    the migration log above. Do you want to continue
    with the migration?
    (Y=Yes/N=No/I=Ignore Error):
    ```

    Use the following table to help you answer the question.

If you choose	Then
Yes	The migration continues. The error is written to the report file, and you are prompted again the next time an error occurs.
No	The migration stops. The error is written to the report file. You receive this message:
	Migration from the server to the working directory is complete. Press <Enter> to continue.
	Press <Enter> to return to the "Select a Migration Action" menu. From there, press <Esc> to edit the fields or choose "Exit" to leave the utility and return to the DOS prompt.
Ignore	The migration continues. The error is written to the report file. You are no longer prompted when an error occurs, but all errors are written to the report file.

Suggestion

See *System Messages* for explanations of all error messages.

When the migration to the working directory is complete, the following message appears:

```
Migration from the working directory is complete.
Press <Enter> to continue.
```

19. **(Optional) To view the migration report, select "View Migration Reports" from the "Select a Migration Action" menu and continue with Step 19a.**

19a. **Select the report for the migration you completed and press** <Enter>.

The reports reside in the working directory that you specified earlier.

Use the report to help you complete and customize definitions, attributes, and access privileges on the NetWare 4.1 server. If you find errors on your NetWare 4.1 server after the migration, locate them in the migration report file and determine what actions to take on the NetWare 4.1 server to correct the errors.

The report file is an ASCII text file that consists of the following:

◆ Summary information of the bindery import phase (migrating bindery data from the server to the working directory)

◆ Listing of each item in each category that was read from the server

◆ The number of errors that occurred during the migration

19b. **To exit the report, press** <Esc> **once.**

19c. **To return to the "Select a Migration Action" menu, press** <Esc> **again.**

20. **To exit the utility, choose "Exit (return to DOS)."**

21. **Install NetWare 4.1 on your NetWare 2.x or 3.x server or on your LAN Server, PCLP, or LAN Manager server.**

22. **Restore the data files from your backup device to the NetWare 4.1 server.**

Make a note of where you restore the data files so that you can direct the bindery information to the correct location.

Important ▼ Do not restore any trustees or bindery information; restore data files only.

23. **Restart the migration utility by moving to the directory where the migration utility files are on the workstation and typing**

   MIGRATE <Enter>

   The "Select the Type of Migration" menu appears.

24. **Make sure that the working directory is the same one you used when you migrated from the server to the working directory.**

25. **From the "Select the Type of Migration" menu, choose "Same-Server Migration."**

26. **From the "Select the Source LAN Type" menu, choose a source LAN type (NetWare 2.*x* or 3.*x* or LAN Server, PCLP or LAN Manager).**

   This should be the same source LAN type you selected in Step 5.

27. **From the "Select the Destination LAN Type" menu, choose a destination LAN type (NetWare 4.1).**

   This should be the same destination LAN type you selected in Step 6.

28. **(Optional) Change the "Error/Warning" prompt if you want.**

29. **Move the cursor to Step 3 on the configuration form and complete the destination information to move the bindery information in the working directory to the new NetWare 4.1 server.**
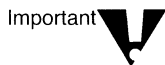
   Important Do not change the server information on the configuration form.

30. **Under Step 3 on the configuration form, press** <Enter> **to display a list of destination NetWare 4.1 servers.**

31. **Choose the NetWare 4.1 server that you want to migrate the server information to.**

   Choose the NetWare 4.1 server you just installed.

32. **Press** <Enter> **to display a list of selected source volumes and their default destination volumes.**

Destination volumes that match the source volumes are displayed as the default.

33. **Select a volume and press** <Enter> **to specify the destination volume and directory on the NetWare 4.1 server.**

    Press <Ins> to see a list of available volumes and directories on the NetWare 4.1 server.

    If you specify a directory that does not exist on the NetWare 4.1 server, you are prompted to create it. Volumes must already be created before you can migrate them.

34. **Press** <Enter> **when you have completed the destination path of the source volume.**

35. **Continue to specify destination paths if you have multiple source volumes.**

36. **Press** <F10> **when you are finished filling out the "Volumes' destination" field.**

37. **(Optional) Under Step 3 on the configuration form, press** <Enter> **and choose a password option.**

    If a password is required and the length of the password is zero (0), the migration utility assigns the destination default password length.

    See the following table for a description of the options.

Password Option	Description
Assign random passwords (Default)	A password for each username that has a password on the source is generated randomly and stored in a file (NEW.PWD) in SYS:SYSTEM on the NetWare 4.1 server.
	Note: New passwords are given only to users and print servers that had a password on the server.
	Only users with rights to SYS:SYSTEM have access to this file. Users cannot log in until they are given their passwords from this list.

Password Option	Description
Assign no passwords	After you finish the migration, all users can log in using their previous username. They are not prompted for a password.
	Users have the option to create their passwords if no password was chosen upon migration.
	Note: If the user account restrictions require users to have a password, they are prompted to type a new password, which the system verifies.

38. **Review the fields on the configuration form and make any necessary changes.**

Important
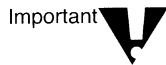
Do not change the information in the server area.

39. **To proceed with the migration, press <F10> to display the "Select a Migration Action" menu.**

40. **Select "Migrate from Working Directory."**

All information about the migration scrolls to the screen and goes into a report file, which you can review later.

When the migration from the working directory is complete, the migration utility notifies you.

41. **(Conditional) If errors occur during the migration, and you chose to be prompted after errors and warnings, you receive the following error message and must answer the question.**

```
A migration error has occurred and is displayed in
the migration log above. Do you want to continue
with the migration?
(Y=Yes/N=No/I=Ignore Error):
```

If you choose	Then
Yes	The migration continues. The error is written to the report file, and you are prompted again the next time an error occurs.
No	The migration stops. The error is written to the report file. You receive this message: Migration from the working directory to the NetWare 4.1 server is complete. Press <Enter> to continue. Press <Enter> to return to the "Select Migration Action" menu. From there, press <Esc> to edit the fields or choose "Exit" to leave the utility and return to the DOS prompt.
Ignore	The migration continues. The error is written to the report file. You are no longer prompted when an error occurs, but all errors are written to the report file.

Suggestion

See *System Messages* for explanations of all error messages.

When the migration is complete, the following message appears:

```
Migration from the working directory to the
destination server is complete. Press <Enter> to
continue.
```

42. **(Optional) To view the migration report, choose "View Migration Reports" and continue with Step 42a.**

    42a. **Select the report for the migration you completed and press <Enter>.**

    The reports reside in the working directory that you specified earlier.

Use the report to help you complete and customize definitions, attributes, and access privileges on the NetWare 4.1 server. If you find errors on your NetWare 4.1 server after the migration, review the migration report to see if you can find where they occurred.

The report file is an ASCII text file that consists of the following:

◆ Summary information of the bindery import phase (migrating bindery data from the server to the working directory).

◆ Summary information of the bindery export phase (migrating bindery data from the working directory to the NetWare 4.1 server).

◆ Listing of each item in each category that was read from the server.

◆ Listing of each item in each category that was written to or created on the NetWare 4.1 server.

◆ The number of errors that occurred during the migration.

42b. To exit the report, press <Esc> **once.**

42c. To return to the "Select a Migration Action" menu, press <Esc> **again.**

43. To exit the migration utility, select "Exit (return to DOS)."

What to Do After Migration

After the migration is complete, check the NetWare 4.1 server and do the following if they apply:

◆ Update references to the server in the user login scripts if you changed the server name.

Although user login scripts are migrated, they are not modified, and server names and directory paths are not changed to match your new environment.

You can use the UIMPORT utility to migrate login scripts from bindery-based NetWare to NetWare 4.1 Directory Services (NDS). UIMPORT allows you to import data from an existing database to the NDS database. The migration utility creates the following two files in SYS:SYSTEM on the NetWare 4.1 server:

   ◆ UIMPORT.CTL

   ◆ UIMPORT.DAT

See "Importing User Information into the Directory Services Database" in *Supervising the Network* for instructions on using UIMPORT.

◆ Run third-party applications. You may have to reinstall them for them to work properly under NetWare 4.1. You may also need to enter new paths in the setup files for any third-party applications.

Some applications may not work properly with the migration utility. The following conditions require you to reinstall the application:

   ◆ The application has a .EXE file that did not migrate.

   ◆ The application is path specific and you have changed the path structure during migration.

Some DOS applications don't work when installed on volumes that have more than 32 MB of disk space. Some of these applications can be made to work by doing the following:

   ◆ Restrict the application's directory on the NetWare 4.1 server with Object Manager (which replaces DSPACE).

   ◆ Make the directory a fake root with MAP.

◆ Update as necessary migrated print queues and print servers. NetWare 4.1 Print Services are different than printing in previous NetWare versions. See "PUPGRADE.NLM" in *Print Services* for further instruction.

◆ Check user restrictions and accounting charge rates to make sure your system is configured the way you want it.

◆ Set any new directory and file attributes.

◆ If you chose to assign random passwords, you may want to print the NEW.PWD file and distribute the password information to your users. The users should change their passwords immediately.

The report, an ASCII text file, shows passwords sorted by date. If users were migrated from more than one server, the current password is the last one listed on the report.

◆ Delete any old Value-Added Process (VAP) files. VAPs that are in a directory that you migrate are copied to the NetWare 4.1 server, but VAPs are not compatible with NetWare 4.1.

◆ If you have menus set up, you may have to run a menu conversion program so your menus function properly under NetWare 4.1.

5 *Upgrade Using In-Place Upgrade*

Introduction

This chapter covers the procedures for upgrading an existing NetWare® server using the In-Place Upgrade NLM™.

Topic	Page
Preparing for In-Place Upgrade	73
Running the In-Place Upgrade Utility	87
What to Do After In-Place Upgrade	106

Overview

An In-Place Upgrade allows you to upgrade an existing NetWare 2 server and file system to NetWare 3™ using SERVER.EXE with 2XUPGRDE.NLM.

Note Your NetWare 2.1x server must be running on hardware that meets NetWare 4™ requirements. For more information, see "Preparing the Server" on page 73.

Then, use the NetWare 4.1 installation program to upgrade the NetWare 3 server to NetWare 4.1.

How It Works

Upgrading a NetWare 2 *server* to NetWare 3 includes two parts:

1. The file system is upgraded.

2. The new operating system is installed.

Upgrading a NetWare 2 *file system* includes four phases:

1. The file system is analyzed/inventoried.

2. The disks are analyzed.

3. The disks are modified.

4. A NetWare 3 bindery is created from the NetWare 2 bindery.

This upgrade utility can use either the NetWare 3.11 or 3.12 operating system to convert the NetWare 2 file system into a NetWare 3.1*x* file system. NetWare 3.12 is the operating system used in the following examples.

Figure 5-1
Phases in the Upgrade
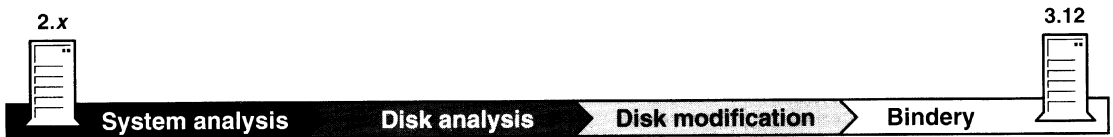
Following is a discussion of what happens during each phase of the upgrade. When you run the upgrade, status messages refer to each of the actions discussed here.

Phase 1: System Analysis

The NetWare 2 file system is analyzed.

◆ Each disk is inventoried.

◆ The system displays what volumes are on each disk.

◆ This phase approximates the memory and disk space requirements needed to successfully complete the upgrade.

◆ This phase ensures that MAC.NAM is loaded.

Phase 2: Disk Analysis

Each NetWare 2 disk is analyzed.

◆ The locations of the Hot Fix™ Redirection Area, the system and volume areas, the Directory Entry Tables (DETs) and the File Allocation Tables (FATs) are determined. A layout of the disk for NetWare 3.12 is created from this information.

◆ A list of disk blocks that have to be moved is created.

For example, if a block on volume VOL1: is on the disk in a location that is now assigned to volume VOL0:, then the block has to be moved to a location that was assigned to volume VOL1: when the disk layout for NetWare 3.12 was created.

◆ The DETs and FATs for each volume are translated.

◆ Directory and file attributes are upgraded automatically.

◆ Macintosh* folders and files are also upgraded if you are running NetWare for Macintosh. The Macintosh name space module should also be loaded (MAC.NAM).

◆ This phase ensures the system has enough memory and free disk space to complete the upgrade.

If the NetWare 2 disks don't have enough space for the upgrade to occur, a warning appears and the upgrade stops. (You must create more room on the disk and then restart the upgrade.)

Phase 3: Disk Modification

Each NetWare 2 disk is modified.

◆ Blocks are moved to their new locations on the disk. The NetWare 2 system is not functional after this phase begins.

◆ The NetWare 3.12 system tables are written to the system area, the partition table is written onto Track 0, and the DETs and FATs for each of the NetWare 3.12 volumes are duplicated.

Phase 4: Bindery

The NetWare 2 bindery is upgraded to NetWare 3.12.

◆ Most of the NetWare 2 bindery information is upgraded to NetWare 3.12. Other information that is upgraded includes account restrictions and print queues.

◆ NetWare 2 passwords are not retained in the NetWare 3.12 bindery. If you chose to assign new passwords to users, they are created and put into a file called NEW.PWD, located in the SYS: SYSTEM directory.

◆ VAPs do not get upgraded. They are unique to NetWare 2 and do not exist in NetWare 3.

Third-party VAP functionality is lost during this upgrade. Delete VAP files after the upgrade. Some VAPs can be upgraded to NLMs. Contact your VAP reseller for upgrade information.

◆ Core printing services are also not upgraded. After you have finished upgrading to NetWare 3.12, delete print services and re-create them.

◆ Volume and disk restrictions for users are not upgraded because of differences between NetWare 2 and NetWare 3 file systems.

In NetWare 2 the restrictions were server-wide, whereas in NetWare 3 the restrictions are limited to volumes.

Preparing for In-Place Upgrade

There are certain preparations that need to be made to your NetWare 2 server before upgrading to NetWare 3.

Preparing the Server

Prerequisites

Checklist ▼

❏ A NetWare server running NetWare versions 2.10, 2.11, 2.12, 2.15 (revisions a, b, and c), or 2.2.

❏ A computer with an 80386 or higher microprocessor. NetWare 3 does not run on an 80286 microprocessor.

❏ A backup device, such as a tape drive or a DOS device.

❏ Enough disk space to accommodate the NetWare 4.1 file system. Each volume should have at least 10% free disk space to accommodate the enlarged directory and file allocation tables.

To store the NetWare 4.1 operating system files, we recommend you reserve 50 MB on volume SYS:.

We recommend that you create at least a 15MB DOS partition on the disk containing volume SYS:.

Make sure no disk has more than eight volumes on it.

❏ The NetWare 4.1 CD-ROM, which contains the 2XUPGRDE.NLM file.

❏ Sufficient server memory to run the utility and upgrade to NetWare 4.1. NetWare 4.1 installation requires a minimum of 12 MB of RAM.

Servers with large disks and a large number of directories may need more memory to complete the upgrade than they would normally need to run the server after the upgrade.

For more information, see Appendix A, "Calculating RAM Requirements."

❏ Sufficient time to upgrade your server. This depends on the following conditions:

   ◆ The number of hard disks, not including mirrored disks

   ◆ The amount of disk space in use

   If you have several hard disks and a lot of disk space in use, the upgrade could take several hours.

❏ (Optional) NetWare for Macintosh (if you want to support Macintosh files on your network).

❏ If you are running NetWare 2 using an 80286 microprocessor, upgrade your computer to an 80386 or higher microprocessor.

❏ Back up your NetWare 2 system twice to ensure that you have a good backup.

   A backup is essential if you must restore your NetWare 2 system.

❏ Restore any deleted (but not purged) files you may need in the future.

❏ Make sure all users are logged out and all files (except bindery files) are closed during the upgrade.

❏ Make sure all print servers are logged out.

❏ You may need updated disk and LAN drivers to run NetWare 4.1. If you have third-party drivers, check with the manufacturer before you upgrade to see if you have compatible versions.

   For more information on drivers

   ◆ Contact your Novell Authorized Reseller™ representative or consultant, or call 1-800-NETWARE for the list of currently supported drivers.

   ◆ Download from NetWire™ a list of currently supported drivers. (For more information about NetWire, see "NetWire" in *Concepts* or contact your Novell Authorized Reseller representative.)

   ◆ Call Novell Labs™ at 1-800-429-5544 for a list of drivers that have been certified as "Yes, Tested and Approved" with NetWare 4.1.
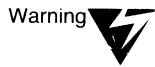
If you are using the IDE.DSK disk driver, you cannot add a DOS partition to an upgraded NetWare 3 disk.

Claiming a DOS partition with FDISK on an upgrade IDE disk causes the IDE.DSK driver to get its parameters for heads, sectors, and cylinders from the CMOS tables instead of from the disk drive.

The different parameters cause the DOS and NetWare partitions to overlap, resulting in data loss or data corruption.

The NetWare partition will also be read from and written to erroneously with the wrong drive parameters.

This problem occurs since the NetWare 2 IDE disk driver did not conform to the same specifications as DOS.

The IDE driver is designed to check for the existence of a DOS partition. If a DOS partition exists, then the driver uses the drive parameters from the CMOS tables so that they will match what DOS is using. Otherwise, the driver will use the parameters from the NetWare 2 partition on the IDE disk drive.

Choosing In-Place Upgrade Options

Before you start the upgrade, decide whether you will

◆ Run the upgrade interactively or as a batch process

◆ Create space for a DOS partition

◆ Assign randomly generated or fixed passwords to users

◆ Run the /BINDERY option

The following sections discuss each of your options to help you make your decisions, and then give you the instructions for completing each possible task.

Run the Upgrade Interactively

When you run the upgrade interactively, you are prompted to continue from one phase of the upgrade to the next, whether to create space for a DOS partition, and whether to have the NLM create and assign new passwords.

All status messages and error messages are displayed.

If you are a first-time installer, use the interactive method so you can follow each phase of the upgrade.

For example, to run the upgrade interactively, at the console prompt, you would type

LOAD A:2XUPGRDE <Enter>

Run the Upgrade as a Batch Process

When you run the upgrade utility as a batch process, only error and status messages are displayed. The upgrade automatically proceeds through the phases without requiring input from the user.

Use the optional parameters described in Table 5-1 to indicate if you want the utility to create space for a DOS partition and to create and assign new passwords to users. If no options are specified, the defaults are used. You are not prompted for these options later.

If you are an experienced installer and have run several upgrades, use the batch process method, especially if you are upgrading several servers.

For example, to run the upgrade as a batch process, at the console prompt, you would type

LOAD A:2XUPGRDE /*parameter* <Enter>

Replace *parameter* with any in the following table.

Table 5-1
In-Place Upgrade Optional Parameters

Parameter	Explanation
B or BATCH	Runs the upgrade in batch mode.
B2 or BATCH	Runs the upgrade in batch mode, not pausing for non-critical errors.
BINDERY	Skips to Phase 4 to upgrade the NetWare 2 bindery only.
F or FAST	Skips the lengthy memory and free disk space check.
H, ?, or HELP	Shows a list of parameters.
NORESTART	Restart data is not saved to disk.
PASSWORD=	Assigns a fixed password to all users.
P0	Does not create a DOS partition.
Px	Creates a DOS partition on the disk containing volume SYS: (x=partition size in megabytes) Size range: 0 to 32 MB Default: 15 MB
R+	Assigns randomly generated passwords.
R–	Does not assign random passwords (default).

You can enter the parameters in any order. Parameters can be separated by either a slash (/), a minus sign (–), or a space.

For example, to run the upgrade as a batch process, create a 5MB DOS partition, and assign randomly generated passwords, type:

```
LOAD A:2XUPGRDE /B /P5 /R+  <Enter>
```

Continue with "Running the In-Place Upgrade Utility" on page 87.

Run the /BINDERY option

The /BINDERY option allows you to restart the upgrade, skipping directly to the Bindery phase.

The NLM looks for the NetWare 2 bindery files (NET$BIND.SYS and NET$BVAL.SYS) in the SYS:SYSTEM directory and merges them into the NetWare 3 bindery (NET$OBJ.SYS, NET$PROP.SYS, and NET$VAL.SYS).

If your NetWare 2 bindery files are corrupt, simply rename the NET$BIND.OLD and NET$BVAL.OLD files (created when you ran the BINDFIX utility) with the .SYS extension, and then restart the upgrade with the /BINDERY option.

If volume SYS: didn't mount, the NetWare 2 bindery did not get upgraded. One situation which may cause the volume not to mount occurs when you have insufficient server memory in the Cache Buffers memory pool.

This is caused by the Permanent and Alloc memory pools not releasing memory back to the Cache Buffers. It is remedied by rebooting the server or adding more memory.

With the initial release of the In-Place Upgrade NLM, the solution was to re-create the bindery from scratch or to restore the system from backups, fix the problem, and then restart the upgrade. This new option allows you to restart the upgrade, skipping directly to the Bindery phase.

Note ▼ When using the /BINDERY option, trustee assignments for all users, except SUPERVISOR and GUEST, are lost. Use the NetWare 3 GRANT utility or the NetWare 4.1 RIGHTS utility to restore trustee rights.

Prepare to Bring Down the NetWare 2 Server
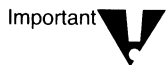
Important ▼ Keep a record of your hardware configuration information to be used at a later stage of the upgrade, as well as for future reference.

Procedure

Procedure ▼ **1. At the NetWare 2 server system console prompt (:), type**

`CONFIG` <Enter>

2. Copy the following information from the server screen:

◆ Server name

◆ LAN configuration information (including the network address)

◆ Disk channel configuration information

3. From a workstation, run BINDFIX.

Note ▼ You must have rights to the SYS:SYSTEM directory to run BINDFIX.

BINDFIX deletes mail subdirectories and trustee rights of users who no longer exist on the network and fixes the incorrect records in the bindery.

To delete mail subdirectories and trustee rights, answer "Y" to the questions presented during BINDFIX.
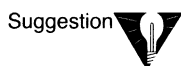
Suggestion ▼ You may want to copy the NET$BIND.OLD and NET$BVAL.OLD files to diskette to recover the bindery later if needed.

For more information, see "BINDFIX" in *NetWare 2.2 Using the Network* or *NetWare 3.12 Utilities Reference*.

4. Bring down the 2.1x server.

At the system console (:), type
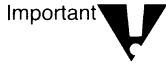
DOWN <Enter>

Important ▼ Do *not* bring down the server simply by turning off its power. This creates errors when upgrading to a NetWare 3 file system.

After the server responds that it is down, wait two to three minutes to be sure that all transactions to the system files are complete before turning the machine off.

Once you've received the "Server *servername* has been shut down" message, type "Exit" to return to DOS.

5. Run VREPAIR.

From the downed server, run the NetWare 2 VREPAIR utility on each volume.

See the NetWare 2 VREPAIR documentation for further instructions.

Creating the Upgrade Diskette from CD-ROM

Before performing an In-Place Upgrade, an upgrade diskette must be created from the NetWare 4.1 CD-ROM. To create this diskette, complete the following steps.
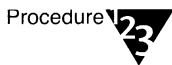
Procedure ▼ **1. Format a high density diskette and make it bootable. For example, from your DOS workstation you would type:**

FORMAT A: **/S** <Enter>

2. Copy the DOS partitioning and formatting utilities onto the diskette. For example, if your workstation's DOS is located in C:\DOS, you would type

COPY C:\DOS\FDISK.COM A: <Enter>
COPY C:\DOS\FORMAT.COM A: <Enter>

3. **Copy the upgrade files from the CD-ROM onto the bootable upgrade diskette. For example, from your DOS workstation, you would type**

   COPY *CD-ROM_drive*:**\UPGRADE*.* A:** <Enter>

Loading NetWare 3.12

1. **Insert the bootable upgrade diskette into drive A:.**

2. **Turn the server off and then on again.**

   The computer now boots with the version of DOS on the upgrade diskette.

   Note ▼▼ If you are creating a DOS partition on the hard disk, record the information you enter in the following steps. You use this information again later.

3. **With the upgrade diskette in drive A:, load the NetWare 3.12 operating system by typing**

   A:SERVER <Enter>

   You receive a message similar to the following:

   ```
   Loading...
   System Console
   Novell NetWare v3.12
     Processor speed: 193
     (Type SPEED at the command prompt for an
     explanation of the speed rating)
   File server name:
   ```

   Note ▼▼ Don't type "SPEED" at this prompt (unless you want to name the server "SPEED").

   For an explanation of the speed rating (which is computer-specific), wait until after you name the server and give it an internal network number before you type "SPEED" at the console prompt.

4. Name the server by typing

servername <Enter>

Use your NetWare 2.1*x* servername so that you do not have to change any login files, map statements, or batch files.

5. Assign an IPX™ internal network number to the server.

At the cursor prompt, type the IPX internal network number and press <Enter>.

The NetWare 3.12 console prompt (:) appears. The remaining steps are executed from the console prompt.

The IPX internal network number does not exist in a NetWare 2 network. In NetWare 3 and 4, it is a logical network number that identifies the individual server.

This number must be different from other IPX external network numbers (for cabling systems) or IPX internal network numbers (for NetWare 3 or 4 servers).

The IPX internal network number for each server must be

◆ Unique

◆ Hexadecimal (base 16, using numerals 0 through 9 and letters A through F)

◆ One to eight digits long

6. Load each disk driver by typing

LOAD A: *disk_driver* <Enter>

Replace the NetWare 2 *disk_driver* with one of the NetWare 3.12 drivers shown in the right column of Table 5-2.

Table 5-2
NetWare 3.12 Disk Drivers

Computer architecture	Disk controller type	NetWare 3.12 disk driver (*.DSK)
Industry Standard Architecture (ISA)	AT, MFM, RLL, ARLL	ISADISK
	ESDI	ISADISK /b
	IDE	ISADISK /b /l (lowercase "L")
		IDE.DSK (You cannot add a DOS partition to an upgraded NetWare 3 or 4 IDE disk.)
	Novell disk coprocessor board	DCB
Microchannel	ESDI	PS2ESDI
	MFM	PS2MFM
	IBM* SCSI	PS2OPT (replaces PS2SCSI)
Extended Industry Standard Architecture (EISA)	AT class	ISADISK
	EISA vendor proprietary	See vendor.
		Other devices may be supported. Contact the device manufacturer to find out if it has a NetWare 3.12-supported driver.

To decide which disk drivers to load, look at the disk channel configuration information you recorded in Step 2 on page 79. Load the equivalent 3.12 disk driver.

Third-party disk driver manufacturers include

Adaptec
ADIC
Always Technology
Bus Logic
Data Technology Corp.
DPT
Future Domain
Quantum
UltraStor

If you have third-party drivers, you may need to update them to run NetWare 3.12. Check with the manufacturer before you upgrade to check whether your drivers are compatible versions. If they are not compatible, you must update the drivers before you continue with the upgrade.

Important ▼ Load the disk drivers in the order of the controller boards. Load the driver for the internal controller first, the driver for the first disk controller board second, etc.

If you do not follow the correct order, system messages about your hard disks will be incorrect.

7. **Answer the disk driver configuration information prompts by typing in the information you recorded in Step 2 on page 79.**

Note ▼ In NetWare 2, the interrupt number was decimal. In NetWare 3, the interrupt number is hexadecimal.

8. **(Optional) To test third-party LAN drivers for compatibility, load them by typing**

   LOAD A: *LAN_driver* <Enter>

   Replace *LAN_driver* with a third-party NetWare 3.12 LAN driver.

Table 5-3 lists all LAN drivers supported by Novell®.

Table 5-3
NetWare 3.12 LAN Drivers

Cabling System	Network Board	NetWare 3.12 LAN Driver (*.LAN)
ARCnet*	RX-Net™ RX-Net II™ RX-Net/2™	TRXNET
Ethernet	NE/2™ NE/2T™	NE2
	NE/2-32™	NE2_32 (replaces NE2-32)
	NE1000™—ASSY 950-054401 NE1000—ASSY 810-160-001	NE1000
	NE2000™—ASSY 810-149 NE2000T—ASSY 810-000220 NE2000 Plus	NE2000
	NE2100™—ASSY 810-000209	NE2100
	NE1500T—ASSY 810000214	NE1500T
	NE3200™	NE3200
	NE32HUB™	NE32HUB
Token Ring	NTR2000™	NTR2000

Warning: Do not upgrade if the LAN drivers are not compatible. Call the manufacturer to get an updated version of the driver.

Important: If you experience problems with third-party drivers, contact the manufacturer listed in the driver description that appears when you load the driver.

For more information on LAN drivers

◆ Contact your Novell Authorized Resellerrepresentative or consultant, or call 1-800-NETWARE for the list of currently supported drivers.

◆ Download from NetWire a list of currently supported drivers. (For more information about NetWire, see "NetWire" in *Concepts* or contact your Novell Authorized Reseller representative.

♦ Call Novell Labs at 1-800-429-5544 for a list of drivers that have been certified as "Yes, Tested and Approved" with NetWare 4.1.

9. **(Optional) Answer the LAN driver configuration information prompts by entering the information you recorded in Step 2 on page 79.**

If the LAN driver loads, it can communicate with the network board and is compatible with NetWare 3.12.

If the LAN driver does *not* load, either it is incompatible with NetWare 3.12 or the configuration is wrong. The following message appears:

`Module xxx.LAN not loaded.`

Check the configuration and try again. If you're sure the configuration is correct, find out if you have the correct driver version.

10. **(Optional) Unload the third-party LAN drivers to free more memory for the upgrade by typing**

UNLOAD *LAN_driver* <Enter>

Important ▼ If the LAN driver is left loaded and bound to a protocol, extra memory may be needed as the upgraded volume SYS: is mounted. The bindery will grow to record all servers on the network.

11. **With the upgrade diskette in drive A:, load Macintosh name space support by typing**

LOAD A:MAC <Enter>

Loading the Macintosh name space module ensures that all volumes are mounted properly at the Phase 4 bindery step.

12. **Continue the upgrade by determining which upgrade option you want to use. See "Choosing In-Place Upgrade Options" on page 75.**

Running the In-Place Upgrade Utility

Note▼ The optional parameters shown in Table 5-1 on page 77 can be entered whether the upgrade is run interactively or as a batch process.

Procedure
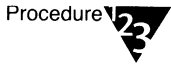
Procedure▼ 1. **(Conditional) To run the upgrade interactively, make sure the upgrade diskette is in drive A: and type**

   LOAD A:2XUPGRDE <Enter>

   A warning screen appears. You are asked:

   Do you have a recent backup of your server? y

   Skip to Step 3.

2. **(Conditional) To run the upgrade as a batch process, make sure the upgrade diskette is in drive A: and type**

   LOAD A:2XUPGRDE *optional parameter(s)* <Enter>

   Replace optional parameters with any of the parameters listed in Table 5-1.

3. **To proceed with the upgrade, type "Y."**

   Warning▼ If the procedure runs correctly (that is, if there are no disk head crashes), you will not need to restore your NetWare 2 file system from the backup.

   However, if a failure occurs, you may need to restore your disk to its previous condition.

4. **At the prompt, type the number of megabytes you want for the DOS partition and press <Enter>.**

   Important▼ You must create a DOS partition if you do not have one. NetWare 4.1 requires a minimum 15MB DOS partition.

   Note▼ The In-Place Upgrade can create the space (between 0 and 32 MB) for a DOS partition on the disk that contains volume SYS:.

   Booting the server from a DOS partition is significantly faster than booting from a diskette. Most servers cannot access a DOS partition from an external hard disk.

If there is not enough space on your disk to create a DOS partition, the upgrade stops and displays the following:

```
This NetWare server has insufficient free hard
disk space to complete the upgrade. The In-Place
Upgrade process is now being aborted.
```

Reboot the 2.1x server, and then restart the upgrade. Delete unnecessary files to free more space on the disk, and then restart the upgrade.

After you create the DOS partition, the "System Analysis" screens appear.

"System Analyisis" screen 1 details the System Analysis phase where each disk is scanned and inventoried.

"System Analysis" screen 2 details the second portion of the System Analysis phase: the inventory process. Free memory and disk space are inventoried to ensure that the server has sufficient resources to complete the upgrade.

This is done by imitating the Disk Analysis phase for each disk. Servers with only one disk proceed directly to Phase 2 (Disk Analysis) where they are inventoried.

The calculations made during Phase 1 (System Analysis) are discarded in order to conserve server memory.

"Disk Analysis" screen 1 details the first portion of the Disk Analysis phase.

This screen only appears if multiple disks are being upgraded.

These extra phases are run to determine how much server memory and free disk space is required per volume to successfully complete the upgrade.

Servers with only one hard disk proceed directly to the second part of the Disk Analysis phase.

The calculations made during the first part of the Disk Analysis phase are discarded to conserver server memory.

The Disk Analysis phase analyzes each disk. An image of the new NetWare 3.12 disk is built and stored in memory.

This phase is nondestructive and will not damage the existing NetWare 2 file system.

The "Disk Modification" screen details the Disk Modification phase. In this phase, the NetWare 2 file system is overwritten by the NetWare 3.12 file system.

The Disk Modification phase is the only destructive phase of the upgrade. This phase must be completed before NetWare 3.12 can use the disk.

5. **At the "Disk Modification" screen, type "Y" to continue with the upgrade or type "N" to quit.**

Note

If you have multiple disks, the Disk Analysis and Disk Modification phases repeat themselves.

After all the disks have been upgraded, volume SYS: is mounted and the bindery is upgraded . The NetWare 2 bindery is merged into the newly created NetWare 3.12 bindery.

The Bindery phase updates bindery objects, properties, and values such as user accounts and passwords.

Randomly generated passwords are assigned if requested (see Step 6).

Figure 5-2
Bindery Screen

```
┌─────────────────────────────────────────────────────────────────┐
│                                                                   │
│    In-Place Upgrade from NetWare 2.1x and 2.2 to NetWare 3.1x    │
│                                                                   │
└─────────────────────────────────────────────────────────────────┘


                    >>>>> PHASE #4: BINDERY <<<<<

Mounting volume SYS
Initializing Transaction Tracking System

The In-Place Upgrade utility cannot transfer user passwords to the 3.1x
bindery.  Choose one of the following password assigning options:

        1) Do not assign any user passwords
        2) Assign a unique randomly generated password to each user
        3) Assign the same password to each user

New passwords are recorded in the file NEW.PWD in the SYS:SYSTEM directory.
The SUPERVISOR will not be given a password.

Enter your choice (1-3): 2

Upgrading the bindery information . . . COMPLETE

Dismounting volume SYS

Renaming user mail directories in SYS:MAIL . . . COMPLETE
Updating user IDs on volume SYS:'s Directory Tables . . . COMPLETE
Updating user IDs on volume VOL1:'s Directory Tables . . . COMPLETE
```

6. (Conditional) In the process of assigning passwords, if you did
   not use the [R+] or [R–] or [B] or [PASSWORD =] parameters
   when you started the upgrade, you are prompted to choose a
   password option.

Choose one of the following password options:

Password Option	Description
Do not assign any passwords	Users are not prompted for a password when they first log in.
	However, after they have logged in once, and if their accounts are set to require passwords, they are prompted to type a new password.
Assign a unique randomly generated password to each user.	A random password for each user who originally had originally had a password is created by the utility and stored in a file called NEW.PWD.
	SUPERVISOR is not assigned a password.
	Only the network supervisor has access to this file.
	Users cannot log in until the supervisor gives them their password from this list
Assign the same password to all users.	The same password is assigned to each user who originally had a password. This password is created by the utility and stored in a file called NEW.PWD.

The "Status" screen appears, displaying how your disks and volumes were affected by the upgrade. See Figure 5-4 for an example.

Figure 5-3
Status Screen

```
┌─────────────────────────────────────────────────────────────────────┐
│  In-Place Upgrade from NetWare 2.1x and 2.2 to NetWare 3.1x          │
└─────────────────────────────────────────────────────────────────────┘
```

```
┌───────────────────────────────────────────────────────────────────────┐
│  ***** The In-Place Upgrade to the 3.1x File System is now complete *****│
├─────────────────────────┬─────────────────────────────────────────────┤
│  DISKS      VOLUMES      │  STATUS MESSAGES                            │
├─────────────────────────┼─────────────────────────────────────────────┤
│  Disk 0    SYS:          │  Disk successfully upgraded.               │
│            VOL1:         │                                             │
├─────────────────────────┴─────────────────────────────────────────────┤
│  Optional DOS Partition Size:   15 MB                                 │
├───────────────────────────────────────────────────────────────────────┤
│  A unique randomly generated password was assigned to each user.      │
│  They are recorded in SYS:SYSTEM\NEW.PWD.                             │
└───────────────────────────────────────────────────────────────────────┘
```

<Press ESC to terminate or any other key to continue>

The NetWare 2 file system has been upgraded to a NetWare 3 file system.

7. **Press any key to receive further instructions and then return to the console prompt (:). The upgrade confirmation screen appears (see Figure 5-4).**

Figure 5-4
Upgrade Confirmation Screen

```
╔═══════════════════════════════════════════════════════════════════════╗
║        In-Place Upgrade from NetWare 2.1x and 2.2 to NetWare 3.1x      ║
╚═══════════════════════════════════════════════════════════════════════╝
```

Your server's 2.1x file system and bindery have been upgraded to a 3.1x file
system and bindery. To finish the upgrade process, load the INSTALL NLM to
copy the new operating system files onto the SYS: volume and to create the
STARTUP.NCF and AUTOEXEC.NCF files. The DOS partition must also be formatted
using DOS's FDISK and FORMAT utilities.

Please refer to one of the following sections in your Installation manual
for further instruction:

* For NetWare 3.11: "File Server Installation", p. 123.
* For NetWare 3.12: "Upgrade the Operating System".
* For NetWare 4.01: "NetWare In-Place Upgrade from v3.1x to v4.0".
* For NetWare 4.10: "Upgrade Using In-Place Upgrade".

<Press ESC to terminate or any other key to continue>

Mount Volumes
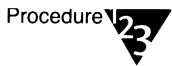
Procedure

Procedure

1. **Mount volume SYS: and other volumes by typing**

    MOUNT ALL <Enter>

2. **Temporarily prevent users from logging in by typing**

    DISABLE LOGIN <Enter>

    This prevents users from logging in as SUPERVISOR.

    To allow users to log in when the upgrade is completed, type

    ENABLE LOGIN <Enter>

Load LAN Drivers

Procedure
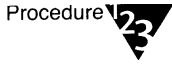
1. **Insert the *System_2* diskette into drive A:.**

2. **Load the appropriate LAN drivers by typing**

   LOAD A: *LAN_driver* <Enter>

   For more information on drivers"

   ◆ Contact your Novell Authorized Reseller representative or consultant, or call 1-800-NETWARE for the list of currently supported drives.

   ◆ Download from NetWire a list of currently supported drivers. (For more information about NetWire, see "NetWire" in *Concepts* or contact your Novell Authorized Reseller representative.)

   ◆ Call Novell Labs at 1-800-429-5544 for a list of drivers that have been certified as "Yes, Tested and Approved" with NetWare 4.1.

   The default frame type for NetWare 4.1 is 802.2. To use the Ethernet 802.3 frame type, add "frame=Ethernet 802.3" when loading the LAN driver.

   For example, you would type

   LOAD A:NE2000 frame=Ethernet_802.3 <Enter>

3. **Bind LAN drivers to the server's registered protocol.**

   For example, to bind IPX to the NE2000 LAN driver, you would type

   BIND IPX TO NE2000 <Enter>

   Enter the network number for your cabling system. To bind the Ethernet 802.3 frame type to the LAN driver, add "frame=Ethernet_802.3" when binding the protocol.

   For example, you would type

   BIND IPX TO NE2000 frame=Ethernet_802.3 <Enter>

Copy SYSTEM and PUBLC Files

Procedure

Procedure▼**2,3**

1. **Load INSTALL.NLM from the CD-ROM by typing**

   `LOAD INSTALL` <Enter>

Warning▼**1**
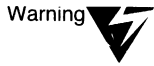
Be sure to use the new INSTALL.NLM, located in the SERVER.312 directory. To avoid confusion, delete the old INSTALL.NLM, located in the SYS:SYSTEM directory.

2. **Select "System Options."**

3. **Select "Copy System and Public Files" from the "Available System Options" menu.**

4. **Insert diskettes as prompted.**

Create a STARTUP.NCF File

A STARTUP.NCF file contains commands to load the disk drivers and name space support for your server.

This file is executed after SERVER.EXE and is stored on the disk you boot from (hard disk or floppy diskette).

Once this file loads the disk drivers and name space support, and mounts volume SYS:, it turns control over to the AUTOEXEC.NCF file to complete the boot process.

Procedure

Procedure▼**2,3**
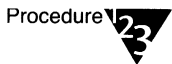
1. **Insert the writable *System_1* diskette into drive A:.**

2. **Select "Create STARTUP.NCF File" from the "Available System Options" menu.**

3. **Enter the proper drive letter on the "Path For STARTUP.NCF File" screen.**

   Backspace as necessary to make sure the drive is set to:

   ◆ C: to boot from hard disk.

   ◆ A: to boot from drive A:. (This file can be copied to drive C: later.)

4. **Press** <Enter>.

   A screen similar to the following appears:

Figure 5-5
Sample STARTUP.NCF File

```
                        File: STARTUP.NCF

Load IDE INT=E PORT=1F0
Load Mac
Load AHA1740 SLOT=3
Load ASPICD INT=0 INT1=0 DMA=0 DMA=0
Set Auto Register Memory above 16 Megabytes on
```

The operating system reads the information you previously entered for disk drivers and name space support.

5. **From the following table, determine your system configuration and decide which additional commands you would like added to the STARTUP.NCF file.**

To	Add these or other commands
Load name spaces for Macintosh, OS/2, UNIX, or FTAM	LOAD MAC.NAM LOAD OS2.NAM LOAD NFS.NAM LOAD FTAM.NAM (These commands must precede the command to mount the volume that stores the files using the name space.)

To	Add these or other commands
Set server parameters	(You can add the following eight commands to the STARTUP.NCF file only. You can add other SET commands to the STARTUP.NCF and to the AUTOEXEC.NCF file.) SET Maximum Physical Receive Packet Size SET Cache Buffer Size SET Reserved Buffer Below 16 Meg SET Maximum Subdirectory Tree Depth SET Concurrent Remirror Requests SET Auto TTS Backout Flag SET Minimum Packet Receive Buffers (For more on these and other SET parameters, see "SET" in Utilities Reference, or type "SET" at the server console.)
Pause after each command	PAUSE

6. **Type one command per line.**

7. **Press <Esc> to save the file.**

Create an AUTOEXEC.NCF File

An AUTOEXEC.NCF file contains commands to complete the boot process after SERVER.EXE and STARTUP.NCF execute.

Because AUTOEXEC.NCF is saved in and runs from SYS:SYSTEM, place most boot commands (except the disk driver and name space support commands) in AUTOEXEC.NCF.

You can use AUTOEXEC.NCF commands to do the following:

◆ Name the server.

◆ Assign the server's IPX internal network number.

◆ Load LAN drivers for the server and assign the network number.

◆ Bind LAN drivers to the server's registered protocol.

◆ Load other modules you want loaded when the server boots.

◆ Execute other console commands (such as TRACK ON or VOLUMES) during the boot process.

◆ Set other parameters for the server. (See "SET" in *Utilities Reference*.)

◆ Mount volumes.

Procedure
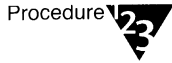
Procedure▼◢▼ **1. From the "Available System Options" menu, select "Create AUTOEXEC.NCF File."**

The operating system gathers for this file information you have previously entered at the console prompt.

A screen similar to the following appears, showing the commands that are automatically placed in the AUTOEXEC.NCF file.

Figure 5-6
Sample AUTOEXEC.NCF File

```
                        File: AUTOEXEC.NCF

Set Time Zone = MST7MDT
Set Daylight Savings Time Offset = 1:00:00
Set Start of Daylight Savings Time = (April Sunday First 2:00:00 am)
Set End of Daylight Savings Time = (October Sunday Last 2:00:00 am)
Set Default Time Server Type = Secondary
Set Bindery Context = O=Novell
File server name TSK_TSK
IPX internal net 1D0C36A
; The following command loads and binds drivers
SYS:\ETC\INITSYS.NCF
MOUNT ALL
LOAD MONITOR
```

Note▼◢▼ When using the 802.3 frame type, rather than the 802.2 default, the screen shown above displays the frame type number.

If you load multiple LAN drivers, your AUTOEXEC.NCF file is different. See "INSTALL" in *Utilities Reference*.

2. (Optional) From the following table, decide which loadable modules to load with AUTOEXEC.NCF.

To	Add these commands
Create disk partitions, create volumes, format a disk, etc.	LOAD INSTALL
Lock the server console, view network operation information, etc.	LOAD MONITOR
Load the print server and establish print services	LOAD PSERVER
Correct volume problems or remove name space entries from the File Allocation Table and Directory Entry Table	LOAD VREPAIR

To delete or modify commands, backspace to erase the command.

3. (Optional) From your system configuration, determine additional loadable module commands to include in the AUTOEXEC.NCF file.

Additional module types are listed in the table below.

Module Type	Module Name
UPS equipment	UPS.NLM
Remote console	REMOTE.NLM RSPX.NLM
Remote boot for token ring	TOKENRPL.NLM
Remote boot for IBM and Western Digital on Ethernet	ETHERRPL.NLM
Third-party loadable modules	(See third-party documentation)

Note ▼ If you use an uninterruptible power supply, see "UPS" in *Utilities Reference* for troubleshooting tips.

Some loadable modules need other loadable modules to function. If the prerequisite module is not loaded first, the operating system will look at your default drive and then at SYS:SYSTEM and automatically load the necessary module.

4. From the table below, decide if you want any of the following console commands to execute with the AUTOEXEC.NCF file.

To	Add these commands
Implement security measures	SECURE CONSOLE
Display the processor speed	SPEED

5. Decide from the table below additional commands you want to add to the AUTOEXEC.NCF file.

To	Add these or other commands
Mount volumes	MOUNT VOL1 (or other volume name) MOUNT ALL **Note:** Volume SYS: is mounted automatically when its corresponding disk driver is loaded during the STARTUP.NCF file's execution.
Bind protocols other than IPX to the LAN drivers	BIND IP to...
Set server parameters	SET commands (see "SET" in *Utilities Reference*)
Pause after each command	PAUSE

6. (Optional) Allow unencrypted passwords.

Use the table below to help you decide whether to use unencrypted passwords on a network using encrypted passwords.

For	Use
A new installation with one server on the network	Encrypted passwords.
Upgrading from NetWare 2 operating system.	Encrypted passwords temporarily.
A NetWare 3 server running on the same network as NetWare 2.11 or earlier.	Encrypted passwords temporarily.
A NetWare 3 server running on the same network as NetWare 2.11 or 2.15.	Encrypted passwords. Use SET in AUTOEXEC.NCF until utilities on other servers are upgraded.
	Copy NetWare 3 utilities to all NetWare 2.12 or 2.15 servers to allow all servers to use encrypted passwords.

Type the following command at the console prompt to allow unencrypted passwords:

SET ALLOW UNENCRYPTED PASSWORDS=ON <Enter>

For more information on AUTOEXEC.NCF files or on the commands listed above, see Chapter 7, "Maintaining the NetWare Server," in *Supervising the Network*. See also "Boot files" in *Concepts*.

7. Press <Esc> to save the file.

8. Press <Esc> twice to exit INSTALL.

Format the DOS Partition

Procedure
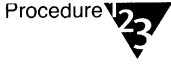
1. **At the console prompt (:), bring down the server by typing**

   `DOWN` <Enter>

2. **Insert the upgrade diskette into drive A:.**

3. **Return to the DOS prompt by typing**

   `EXIT` <Enter>

4. **From the downed server, create a DOS primary partition and make it the active partition by typing**

   `FDISK` <Enter>

   Note The two utilities (FDISK.COM and FORMAT.COM) used to partition and format the DOS partition are found on the bootable upgrade diskette.

   FDISK is a DOS utility that creates or deletes DOS partitions on your hard disk. It can also select which partition is active. The DOS partition is placed on the first few cylinders of the hard disk. The server reboots DOS as part of the FDISK process.

5. **Format the new DOS partition.**

   If you are using DR DOS, the format command is as follows:

   `FORMAT C:/s/x` <Enter>

   The /s parameter makes the partition bootable.

   The /x parameter tells DR DOS that it is formatting a hard disk.

   Note If you are using DR DOS to format your hard disk, use FORMAT.COM on the upgrade diskette or a later version.

   If you are not using DR DOS, type the format command as follows:

   `FORMAT C:/s` <Enter>

   The /s parameter makes the partition bootable.

6. **Reboot the server to make sure that DOS boots from the hard disk.**

Copy the New Boot Files to a Boot Directory

Procedure

Procedure ▼23▼
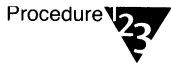
1. **Create a boot directory.**

   For example:

   `C:\SERVER.410`

   The boot files are copied to this directory on drive C:.

2. **Copy the newly created STARTUP.NCF file from the CD-ROM to the boot directory by typing**

   COPY*CD-ROM_drive***:\STARTUP.NCFC:***boot_directory* <Enter>

3. **From the CD-ROM drive, type**

   NWNSTLL /IN_PLACE <Enter>

   The "Select an Installation Option" menu appears.

4. **Choose "Upgrade NetWare 3.1*x* or 4.*x*."**

5. **Specify the destination directory (where you want the boot files to be copied).**

6. **Copy the NetWare 4.1 server boot files to the boot directory.**

   6a. **Press** <F4>.

   6b. **Enter the destination path created in Step 1 for the files to be copied.**

This should be the same directory that the STARTUP.NCF file was copied to in Step 2.

To	Then
Change the source drive	Press <F2> and enter a new drive letter or directory, and then press <Enter>.
Change the destination directory on drive C:	Press <F4>, enter a directory name, choose "Yes," and then press <Enter>.

The following files are copied to the newly-created boot directory on drive C: (or another directory on C: that you specify).

◆ SERVER.EXE (the NetWare operating system).

◆ NUT.NLM (an interface utility needed for certain NetWare Loadable Modules™).

◆ NWSNUT.NLM (an interface utility needed for certain NetWare Loadable Modules).

◆ Disk drivers (*.DSK).

◆ Name space modules (*.NAM).

◆ CLIB.NLM (C runtime library).

◆ Diagnostic NLMs (*.NLM).

◆ INSTALL.NLM (the installation utility).

◆ LAN drivers (*.LAN).

◆ Message and help files.

6c. **If the directory you specified in Step 6b does not exist, the following message appears:**

```
Do you want to create "directory name." Y/N
```

Note ▼ If you use a third-party driver not shipped in the Red Box™ (NetWare product package), you may need to exit NWNSTLL and copy the disk driver (*.DSK) to the new boot directory.

6d. **If you choose "Yes," press** <Enter> **to create the new directory.**

6e. **Copy your STARTUP.NCF file into the new directory if it is different than the directory created in Step 1.**

6f. **Press** <Enter> **to continue.**

6g. **Insert the diskettes as prompted.**

Once the files have been copied, the following screen appears:

```
Press <ENTER> to view choices

Country Code:        001   (United States)

Code Page:           437   (United States English)

Keyboard Mapping:    None
```
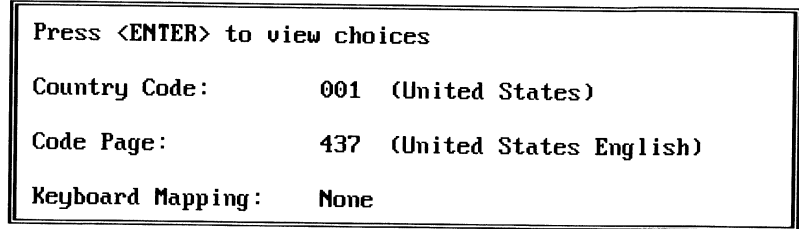
7. Enter your Country code, code page, and keyboard mapping settings and press <F10>.

Note

For a list of settings for each field, highlight a field and press <Enter>, or refer to your DOS manual.

The keyboard mapping command is automatically added to the STARTUP.NCF file.

The following screen appears:

```
DOS Filename Format (recommended)
NetWare Filename Format
```
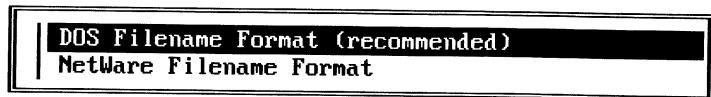
8. Select a format for your DOS files and press <Enter>.

Selecting "NetWare Filename Format" leaves previously saved DOS files with nonstandard DOS characters as they were.

The upgrade is complete.

9. **From the boot directory, load the server operating system by typing**

   `SERVER` <Enter>

10. **Complete the upgrade to NetWare 4.1 by using the NetWare 4.1 installation program. For instructions, see Chapter 2, "Upgrade Using the NetWare 4.1 Installation Program."**

What to Do After In-Place Upgrade

◆ Change the SUPERVISOR password.

Log in from a workstation as SUPERVISOR. Change the password using either SETPASS or SYSCON.

◆ Change user passwords.

If you chose to assign random passwords, print the NEW.PWD file and distribute the password information to each user. Users should change their passwords immediately, using either SETPASS or SYSCON.

◆ Check applications to see if they run properly.

Some DOS applications don't work when installed on volumes that have more than 32 MB of disk space. Some of these applications can be made to work by doing the following:

   ◆ Restricting the application's directory on the destination server with DSPACE.

   ◆ Making the directory path a fake root using the MAP command.

◆ Check directory security.

Check directory security if you used either of the following items for NetWare 2 security:

   ◆ Maximum Rights Mask

   ◆ Private attribute

◆ Set new directory and file attributes using FLAG or FILER.

◆ Check directories for unnecessary NetWare files.

The following NetWare 2 files are not compatible with NetWare 4.1 and should be deleted:

VAP files (*.VAP, *.HLD, *.VP?)
LARCHIVE.EXE
LRESTORE.EXE
MACBACK.EXE
NARCHIVE.EXE
NRESTORE.EXE
NET$BIND.SYS
NET$BVAL.SYS
NET$BIND.OLD
NET$BVAL.OLD
NET$ERR.SYS
NET$OS.EXE
NET$DOS.SYS
NET$MSG.SYS
NET$REC.DAT

(HIDEFILE.EXE and SHOWFILE.EXE still work, but have not been included in NetWare 4.1.)

These files were copied into SYS:SYSTEM. You can either delete them (FLAG allows users to add and remove System and Hidden attributes from files) or leave them.

The following NetWare 2.0a files are not compatible with NetWare 3, and should be deleted:

ENDSPOOL.EXE
Q.EXE
QUEUE.EXE
SPOOL.EXE

The utilities listed above are replaced by ENDCAP, PCONSOLE, and CAPTURE in NetWare 3.12. For more information, see *Utilities Reference*.

◆ Modify the system and user login scripts.

Update references to the server in the system and user login scripts if you changed the server name.

Although user login scripts are upgraded, they are not modified and server names are not changed to match your new environment. Use SYSCON to modify the login scripts.

With NetWare 2, you could give users drive mappings to directories in which they had not been granted rights. NetWare 4.1 will not allow users to have drive mappings to directories in which they have not been assigned rights.

If you have set up your login scripts so that users have drive mappings to directories in which they have no rights, these users receive the following message when they log in:

```
Attempt to map drive to invalid path in MAP
command.
```

Complete one of the following:

◆ Delete the drive mapping from the login script.

◆ Delete the drive mapping from the system login script and insert the drive mapping in the user login scripts only when the user has been granted rights to the directory.

◆ Create a group, grant the group the trustee assignment, assign the appropriate users to the group, and then use an IF...THEN command in the system login script before the drive mapping (IF member of "*groupname*," THEN map *drive:=volume:directory*).

◆ Create new boot diskettes for each workstation.

◆ If the server was renamed, change the server's name in the users' AUTOEXEC.BAT files to the new NetWare 4.1 server name.

◆ If you have other NetWare 2 servers on your network, upgrade the workstation files for those users even if you aren't upgrading the server.

The new workstation files shipped with NetWare 4.1 are compatible with NetWare 2. All users on the internetwork should use the latest version of the workstation files to ensure that there are not conflicts.

◆ (Conditional) Copy the NetWare 4.1 utilities to other servers on the network.

The NetWare 3 public utilities will run on servers running NetWare 2. Complete one of the following:

◆ If you have servers running NetWare 2.0a, 2.10, or 2.11, do not copy the NetWare 3 public utilities to them. However, copy the NetWare 3.*x* LOGIN.EXE file to the SYS:LOGIN and SYS:PUBLIC directories.

◆ If you have NetWare 2.12 or 2.15 servers on your network, replace the NetWare public utilities with the NetWare 3 public utilities to allow the NetWare 2.12 and 2.15 servers to work with encrypted passwords.

To copy utilities, complete the following steps:

◆ Log in to the NetWare 2 server as SUPERVISOR.

◆ Flag the NetWare 2 utilities Normal. In the SYS:LOGIN and SYS:PUBLIC directories, type

FLAG *.* N <Enter>

◆ Protect the system login script. In the SYS:PUBLIC directory, type

FLAG NET$LOG.DAT SRO <Enter>

◆ Map a drive to the SYS:PUBLIC directory on the NetWare 4.1 server by typing

MAP *drive:=fileserver/***SYS:PUBLIC** <Enter>

Replace *drive* with a drive letter not being used and replace *fileserver* with the name of the NetWare 4.1 server.

◆ Enter your username and password for the NetWare 4.1 server.

◆ Copy the NetWare 4.1 PUBLIC files to the NetWare 2 server.

For example, if drive Q: is mapped to SYS:PUBLIC on the NetWare 4.1 server and drive F: is mapped to SYS:PUBLIC on the NetWare 2 server, change to drive F: and type

NCOPY Q:*.* <Enter>

◆ Flag the NetWare 4.1 utilities on the NetWare 2 server Shareable and Read Only. Type
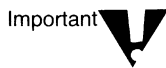
`FLAG *.* SRO` <Enter>

◆ Repeat the steps for the SYS:LOGIN directory.

Login scripts on the NetWare 4.1 server do not execute properly unless you copy the NetWare 4.1 login programs to all NetWare LOGIN directories on your internetwork.

◆ When you have copied the NetWare 4.1 utilities to all NetWare 2 servers and you do not have any NetWare 2.0a servers, you can change the setting for unencrypted passwords. At the console prompt of the NetWare 4.1 server, type

`SET ALLOW UNENCRYPTED PASSWORDS=OFF` <Enter>

If you still have NetWare 2.0a servers on your internetwork, the setting at the NetWare 4.1 server for unencrypted passwords must be ON.

◆ If your NetWare 2 server had mirrored disks, remirror them using INSTALL.NLM.

◆ Update print queues as necessary upgraded using PCONSOLE.

◆ Use SBACKUP to make a backup copy of all data on the NetWare 4.1 server.

For SBACKUP instructions, see *Utilities Reference.*

◆ Check user restrictions and accounting charge rates to make sure your system is configured the way you want it.

◆ (Optional) If your network includes workstations that use an operating system that supports long filenames, make sure you have loaded the name space module, then use the ADD NAME SPACE command to add name space to the volume. Type

`ADD NAME SPACE` *`name-support`* **`TO VOLUME`** *`volume_name`*
    <Enter>

For example, if you have a volume named MAC: for Macintosh files, type the following at the console prompt:

`ADD NAME SPACE MACINTOSH TO VOLUME MAC` <Enter>

Use the command once for every volume that needs to store files with long names.

To ensure name space support each time the server is brought up, load the appropriate name space module in the STARTUP.NCF file.

◆ (Optional) To store Macintosh files and folders on a NetWare 4.1 server, install NetWare for Macintosh (a separate Novell product) on the 4.1 server.

This product provides support for Macintosh workstations that connect to the NetWare 4.1 server.

◆ Assign Directory object and property rights to Directory objects that were upgraded from bindery objects.

For details, see Chapter 1, "Managing NetWare Directory Services Objects," of *Supervising the Network.*

◆ After verifying that the upgrade to NetWare 4.1 succeeded, delete NetWare 2-specific system files to save disk space.

For example, files you may want to delete include

  ◆ NetWare 2 system files

  ◆ NET$ERR.SYS file

  ◆ VAPs

◆ Certain login script commands have to be modified or deleted after the upgrade:

  ◆ MEMBER_OF_*group*

  Groups have been replaced by Group objects and Profile objects. This variable becomes a Group object in NetWare 4.1. For more information, see Chapter 3, "Creating Login Scripts," of *Supervising the Network.*

  ◆ MAP command

  When you map a drive to a directory located on a NetWare 4.1 Directory Services volume, you may want to modify the volume name to correspond to the new directory name.

  However, when you map a drive to a server that is running a previous version of NetWare, the MAP command functions as it did originally and must include the servername.

- ◆ ATTACH command

  Users can still attach to pre-NetWare 4.1 servers, but the ATTACH command is not valid for NetWare 4.1 servers.

Note ▼ The majority of login commands work the same in NetWare 4.1 as they did in previous NetWare versions. In MAP commands, if the server is not specified (MAP F:=*volume:directory*), the Message Server attribute of the User object will be used.

- ◆ To set up the maximum amount of disk space a user can use, use the NETADMIN or NetWare Administrator utility in 4.1 after you have finished the upgrade to 4.1.

  For more information on NETADMIN and NetWare Administrator, see Chapter 1, "Managing NetWare Directory Services Objects," of *Supervising the Network*.

11. Allow users to log in to the NetWare 4.1 server.

Users can log in if

- ◆ Volume SYS: is mounted

- ◆ The user exists in the bindery

- ◆ The LAN driver is loaded and bound to a protocol

- ◆ Login is enabled

To ensure that login is enabled, type

ENABLE LOGIN <Enter>

A Calculating RAM Requirements

This appendix provides a detailed formula for calculating your NetWare® 4.1 RAM requirements.

Calculating RAM requirements involves defining RAM usage for three major components:

◆ NetWare operating system

◆ Volumes

◆ NetWare Loadable Modules™ (NLMs)

The following charts list items that take up RAM and provide a formula for calculating that item's RAM usage. An example of a calculation follows in "Example RAM Calculation" on page 116.

For information on any item in the charts, see *Concepts*.

NetWare Operating System Requirements

Some of the following information can only be obtained by installing a server and loading MONITOR.NLM to see server statistics.

Table A-1
OS Requirements

Item	RAM usage	Notes
Core NetWare operating system	7 MB	
Cache memory	1 MB + (MB of disk space online x 5 KB)	This formula is an estimate based on reasonable performance per user. It assumes that the number of users increases with disk space.
Media Manager	150 KB + (0.2 KB x MB of disk space online)	
Connections in use	2 KB per user connection	For an installed server, see MONITOR.NLM.
Packet receive buffers	2.3 KB per buffer	For an installed server, see MONITOR.NLM.
Directory cache buffers	4.3 KB per buffer	For an installed server, see MONITOR.NLM.
Service processes	9 KB per service process	For an installed server, see MONITOR.NLM.
File compression enabled on any volume	250 KB	

Volume-Related Requirements

You need to calculate the following items for each volume individually and then add up the results from all volumes.

Table A-2
Volume requirements

Item	RAM usage	Notes
File Allocation Tables (FAT)	Volume Blocks x 8.2 bytes	Calculate Volume Blocks by dividing the size of the volume by its block size.
Block suballocation enabled	((Blocksize x 2) −1) x 4096 bytes) + (5 x Number of files) bytes	Calculate the approximate number of files by dividing the volume size by the average file size.
Directory Entry tables (DET)	Number of files x 10 bytes	Calculate the approximate number of files by dividing the volume size by the average file size.

NLM Requirements

The following chart lists some NLMs that take up more RAM than most other NLMs and, therefore, should be included in this calculation.

Table A-3
NLM requirements

Item	RAM usage	Notes
BTRIEVE.NLM	700 KB	Needed for products such as NetWare for Macintosh* and NetWare for NFS*.
CLIB.NLM	500 KB	Needed for products such as Print Server, and for many other NLMs.
INSTALL.NLM	600 KB	Needed for installation and maintenance.
PSERVER.NLM	200 KB	Needed for Print Server.

Procedure

1. **Calculate each of the items in Table A-1 on page 114.**

2. **Calculate volume requirements using Table A-2 on page 115.**

3. **Calculate NLM™ requirements using Table A-3 on page 115.**

4. **Add those results to the OS requirements.**

   See the example below.

Example RAM Calculation

Assume you want to install a system with

◆ 500 users

◆ 2 GB (2,000 MB) of disk space

◆ Four volumes with file compression and block suballocation enabled:

   ◆ Volume SYS: with 100 MB

   ◆ Volume MACVOL: with 500 MB

   ◆ Volume DATA: with 1 GB (file compression enabled)

   ◆ Volume ACCOUNTS: with 400 MB

◆ An average file size of 30 KB

Based on these assumptions, a RAM calculation would look like the following.

NetWare Operating System Requirements

Note ▼ For purposes of an easier calculation, we assumed 1 KB to mean 1,000 bytes (instead of 1,024 bytes), and 1 MB to mean 1,000,000 bytes (instead of 1,048,576 bytes.)

1. Assume a core operating system requirement of 7 MB.

2. Add 11 MB for cache memory.

   1 MB + (2000 x 5 KB) = 11 MB

3. Add 550 KB for the Media Manager.

   150 KB + (0.2 KB x 2000) = 550 KB

4. Add 1 MB for user connections.

   2 KB x 500 users = 1,000 KB= 1MB

5. Add 230 KB for packet receive buffers.

   Assume you need about 100 buffers for a system of this size.

   2.3 KB x 100 = 230 KB

6. Add 430 KB for directory cache buffers.

   Assume you need about 100 buffers for a system of this size.

   4.3 KB x 100 = 430 KB

7. Add 180 KB for service processes.

   Assume about 20 service processes for a system of this size. (Service processes are workstation requests that are tracked by MONITOR.NLM.)

8. Add 250 KB for file compression.

   Total approximate RAM requirements for the NetWare operating system: 20.7 MB

Volume Requirements

Calculate these requirements individually for each volume on your system.

1. Add 2 MB for FAT tables on all four volumes.

    Volume SYS: (100 MB) needs 0.1 MB.

    Volume MACVOL: (500 MB) needs 0.5 MB.

    Volume DATA: (1GB) needs 1 MB.

    Volume ACCOUNTS: (400 MB) needs 0.4 MB.

    Total requirements for FAT tables: 2 MB

2. Add 1 MB for block suballocation on all four volumes.

    Volume SYS: (100 MB) needs 80 KB

    Volume MACVOL: (500 MB) needs 341 KB

    Volume DATA: (1GB) needs 425 KB

    Volume ACCOUNTS: (400 MB) needs 194 KB

    Total requirements for block suballocation: 1 MB

3. Add 666 KB for directory entries on all four volumes.

    Volume SYS: (100 MB) needs 33 KB

    Volume MACVOL: (500 MB) needs 167 KB

    Volume DATA: (1GB) needs 333 KB

    Volume ACCOUNTS: (400 MB) needs 133 KB

    Total requirements for directory entries: 666 KB

    Total approximate RAM requirements for all volumes: 3.67MB

NLM Requirements

Assuming that you need CLIB.NLM (500 KB), INSTALL.NLM (600 KB), and PSERVER.NLM (200 KB), add 1.3 MB for NLMs.

Grand Total

Operating system + Volume + NLM requirements = Grand Total

20.7 MB + 3.67 MB + 1.3 MB = 25.67 (25.7) MB

The approximate minimum RAM requirement for a NetWare system of this size is 25.7 MB.

appendix **B** *NetWare 4 File and Directory Attributes*

Introduction

This appendix describes the file and directory attributes unique to NetWare 4™

NetWare 4 with NetWare Directory Services™ has unique file and directory attributes than NetWare 2 and NetWare 3™. This appendix discusses new attributes available with NetWare 4.

For additional information, see "Rights" and "Security" in *Concepts*.

Object Rights

Object rights apply to NDS objects, but do not affect the properties of the object.

As in the file system, trustees inherit the same rights to an object that they had to the object's parent in the Directory tree, unless some of those rights are blocked by the Inherited Rights Filter.

The following table describes the NetWare 4 object rights.

Table B-1
NetWare 4 Object Rights

Object right	Description
Supervisor	Gives a trustee all rights to the object and all its properties. The Inherited Rights Filter, however, can block the Supervisor right under certain conditions.
Browse	Allows a trustee to see the object in the Directory tree. When a trustee makes a search which matches the object, the name of the object is returned.
Create	Allows a trustee to create a new object below this object in the Directory tree. This right only applies to container objects.
Delete	Allows a trustee to delete the object from the Directory tree. However, a trustee cannot delete an object with subordinates before deleting the subordinates.
Rename	Allows a trustee to change the name of the object.

Property Rights

Property rights apply to the properties of a NetWare Directory Services object. Rights can be assigned to each property, or a default set can apply to all properties of an object when other specific property rights are not set.

The following table describes the NetWare 4 property rights.

Table B-2
NetWare 4 Property Rights

Property right	Description
Supervisor	Gives a trustee all rights to the property. The Inherited Rights Filter, however, can block the Supervisor right.
Compare	Allows a trustee to compare any value to an existing value of the property. The comparison can return True or False, but not give the value of the property.
Read	Allows a trustee to read the values of the property. This right includes the Compare right.
Write	Allows a trustee to add, change, or remove any values of the property. The Write right includes the Add or Delete Self right.
Add [or Delete] Self	Allows a trustee to add or remove itself as a value of the property, but not to change any other values of the property. Only valid for properties that take object names as values.

Migrating Directory and File Rights

In NetWare 4, rights are granted for a specific directory, file, or object by trustee assignments. A user with a trustee assignment to a file, directory, or object is a trustee of that directory, file, or object.

The following table shows the directory and file rights for NetWare versions 2.1x, 2.2, 3.1x, and 4. There is no change in directory and file rights from NetWare 3.1x to NetWare 4.

Table B-3
Evolution of Directory and File Rights

Right	Description	Changes in NetWare 4
Supervisory (3.11)	Grants all rights to the directory, its files, and its subdirectories. **Note:** Do not confuse with Supervisor object right in NetWare 4, which grants all rights to an object, but can be masked with the Inherited Rights Filter.	Name change to Supervisor.
Create (all versions) [directories and files]	Assigned only if Open was also assigned.	Create now allows users to create subdirectories without the need for the Access Control (was Parental) right.
Delete (2.1x-2.15) [directories and files] Erase (2.2/3.11)	Deletes directories and files.	Same as 3.11 Erase.
Modify (2.1x-2.15) [file only] Modify (2.2/3.11) [directories and files]	Renames files or changes their attributes.	Access Control (was Parental) is no longer required to rename directories and files or attributes. Same as 3.11 Modify.

Evolution of Directory and File Rights

Right	Description	Changes in NetWare 4
Open (2.1x-2.15) [directories and files]	Opens directories and files.	Open privileges are included with the Read, Write, and Create rights. (Not assigned because Open is no longer a separate right.)
Parental 2.1x-2.15 [directories and files] Access Control (2.2 and 3.11)	The trustee assignments and Inherited Rights Filters control how other objects can access the object.	All rights assigned to users with Access Control can be revoked at the subdirectory and file level. This right no longer assigns the right to create or rename subdirectories.
Read and Open (2.1x) [file only]	Reads and scans files.	A separate Open right is no longer required.
Search (2.1x) [directories and files]	Searches directories and files.	
File Scan (2.2 and 3.11) [directories and files]	Scans directories and files.	File Scan includes the right to search to the root of a directory. File Scan is assigned automatically when any of the NetWare rights is assigned.
Write and Open (2.1x) [file only] Write (2.2 and 3.11) [directories and files]	Allows the user to write to files.	A separate Open right is no longer required; Write is sufficient.

Migrating File Attributes

NetWare 4.1 reads the attributes that you set (for example, to compress or back up a file) and sets other attributes to tell you what has been done (for example, that a file has been compressed or migrated).

The following table describes file attributes for NetWare versions 2.1x/ 2.2, 3.1x, and 4.

For additional information, see "Attributes" and "Security" in *Concepts*.

Table B-4
Evolution of File Attributes

Attribute	Description	Changes in NetWare 4
Can't Compress [Cc] (4)	A status flag set by NetWare. Indicates that the file cannot be compressed because of limited space savings. This attribute is shown on attribute lists, but cannot be set by the user.	New
Compressed [Co] (4)	A status flag set by NetWare. Indicates that the file is compressed. This attribute is shown on attribute lists, but cannot be set by the user.	New
Copy Inhibit (3.11)	Valid only on Macintosh workstations.	None
Delete Inhibit (3.11)	Restricts deletion of files.	None
Don't Compress [Dc] (4)	Marks the file so that it is never compressed.	New

Table B-4
Evolution of File Attributes

Attribute	Description	Changes in NetWare 4
Don't Migrate [Dm] (4)	Marks the file so that it is never migrated to a secondary storage device (like a tape drive or optical disk).	New
Execute Only (2.1x-2.2)	Prevents copying or backing up .EXE or .COM files.	Not available
Hidden (2.1x-2.2 and 3.11)	Hides files from DOS DIR scans and prevents them from being deleted or copied.	No change
Immediate Compress [Ic] (4)	Marks the file so that it is compressed on disk as soon as the operating system is able to do so, without waiting for a specific event to occur (such as a time delay).	New
Indexed (2.1x-2.2 and 3.11)	Occurs automatically to files that have over 64 disk blocks. Large files don't need to be flagged by the user to be indexed. Cannot be set by the user.	This is now a status flag
Migrated [M] (4)	Is a status flag set by NetWare. Indicates that the file is migrated. This attribute is shown on attribute lists, but cannot be set by the user.	New

Table B-4
Evolution of File Attributes

Attribute	Description	Changes in NetWare 4
Modified Since Last Backup (2.1x) Archive Needed (2.2/3.11)	Lists files modified since last backup. Assigned automatically.	Same as 3.11 Archive Needed
Purge (3.11 and later)	Purges files marked for deletion.	No change
Rename Inhibit (3.11 and later)	Prevents users from renaming files.	No change
Shareable (All)	Allows several users to access a file simultaneously.	No change
Non-Shareable (All)	Restricts multiple-user access to files.	In 3.11 and 4 no character is displayed to indicate the file is non-shareable
Read Only (All)	Restricts file modification.	No change.
Read Write (All)	Indicates a file can be modified.	In 3.11 and 4 this attribute is toggled on automatically when the Read Only attribute is not set
System (All)	Assigned to system files. Hides these files from DOS DIR scans and prevents them from being deleted or copied.	No change

Table B-4
Evolution of File Attributes

Attribute	Description	Changes in NetWare 4
Transactional (All)	Activates the Transaction Tracking System (TTS). Prevents data corruption by ensuring all changes are made to files being modified or none are.	No change

Migrating Directory Attributes

No directory attributes were available in NetWare versions 2.0a, 2.1, 2.11, or 2.12. If you are migrating from any of these versions, set the directory attributes manually after the migration is complete.

The following table describes directory attributes for NetWare versions 2.1x/ 2.2, 3.11, and 4. For additional information, see "Attributes" and "Security" in *Concepts*.

Table B-5
Evolution of Directory Attributes

Attribute	Description	Changes in NetWare 4
Hidden (2.1x-2.2 and 3.11)	Hides directories from DOS DIR scans and prevents them from being deleted or copied.	No change
Immediate Compress [Ic] (4)	Marks the directory so that all files in it are compressed on disk as soon as the operating system is able to do so, without waiting for a specific event to occur (such as a time delay).	New

Evolution of Directory Attributes

Attribute	Description	Changes in NetWare 4
Don't Compress [Dc] (4)	Marks the directory so that files in it are never compressed.	New
Don't Migrate [Dm] (4)	Marks the directory so that files in it are never migrated to a secondary storage device (such as a tape drive or optical disk).	New
Private (2.1x-2.2)	Allows users to see the directory but not its subdirectories.	Not available. Change the trustee assignments (rights, not attributes) for the users that have access to the directories flagged Private. Grant these users only the Create right to the directory.
System (ALL)	Assigned to system directories. Hides them from DOS DIR scans and prevents them from being deleted or copied.	No change
(Normal 2.2)	Indicates no attributes have been set.	Not available
Delete Inhibit (3.11)	Restricts directory deletion.	No change
Purge (3.11)	Purges directories set for deletion.	No change
Rename Inhibit (3.11)	Restricts renaming of directories.	No change

Table B-6
Bindery Objects that Are Upgraded to Directory Objects

NetWare 3.1x bindery object	After upgrading to NetWare 4.1
Group EVERYONE	CN=EVERYONE Object class=Group Members of this group have the same rights to objects (and their properties) they had rights to before the upgrade.
Other groups	CN=group_name Object class=Group Members of these groups have the same rights to objects (and their properties) they had before the upgrade.
User GUEST	CN=GUEST Object class=User GUEST has PUBLIC rights as defined in the tree.
User SUPERVISOR	Effective rights on the Server object are greater than or equal to the Managed right on its ACL property.
Supervisory equivalent	Has supervisory rights to the Volume object and the file system.
Console operator	Becomes an Operator property of the Server object.
Workgroup manager	Has supervisor right to the User objects created in 3.x, the Bindery Context object, and any new objects created.
User Account Manager	Has supervisor rights to objects managed in 3.x (Object Supervisor property). Cannot create new objects.
Print queue operator	Becomes an Operator property of the Print Queue object.

Table B-6 *continued*
Bindery Objects that Are Upgraded to Directory Objects

NetWare 3.1*x* bindery object	After upgrading to NetWare 4.1
Print queue	Becomes a Print Queue object. (Print queues get upgraded to 4.1 queues; Bindery object type=3).
Printer	Becomes a Printer object (if you run PUPGRADE.NLM to upgrade print services).
Printer definition/print job configuration	Become Directory properties in 4.1 (if you run PUPGRADE.NLM to upgrade print services).
Print server	Becomes a Print Server object (if you run PUPGRADE.NLM to upgrade print services).

Table B-7
Bindery Objects that Remain Unchanged in NetWare Directory Services

3.1*x* bindery object	After upgrading to 4.1
Bindery queue	Represents a queue placed in the Directory tree by an upgrade or migration utility, but that NetWare Directory Services cannot identify. This object is for backward compatibility with bindery-based utilities.
Other queues	Become Bindery Queue objects to maintain the original type of queues.

Special Instructions for LAN Server

Upgrading from LAN Server to NetWare 4.1

If you are upgrading from LAN Server* to NetWare® 4.1, you should be aware of the following items:

◆ OS/2* extended attributes and long names are not migrated. Files that use extended attributes or long names are not copied. All files must conform to DOS 8.3 naming conventions.

◆ Add "/API /NMS:2 /NVS:2" to the DOSLAN.INI file. See your LAN Server documentation for order of parameters.

◆ You must either be the domain Administrator or have administrative privileges in the domain.

◆ Use Novell's ODINSUP or LANSUP protocol stack. These products allow for loading dual requesters on DOS clients to allow access to both LAN Server and NetWare server resources.

For more information on ODINSUP, see *NetWare Application Notes* articles entitled "ODINSUP Interoperability Configurations for DOS Workstations" (February 1993) or "NetWare and Windows for Workgroups Integration" (March 1993).

◆ When running interoperably between NetWare and LAN Server or LAN Manager*, use NETX.COM.

◆ You must be logged in to the domain you want to migrate from.

◆ LAN Server permissions (rights) do not flow down, but are limited to the directory where they are set. After the migration to NetWare 4.1, rights do flow down the directory structure.

◆ LAN Server universal rights are not migrated. These rights are similar to NetWare rights given to group EVERYONE.

Table C-1 describes LAN Server and LAN Manager components that are not migrated.

Table C-1
LAN Server and LAN Manager Components That Are Not Migrated

LAN Server component	Explanation	NetWare equivalent
ALERTER	Notifies the administrator of defined events.	None (but NetWare keeps track of many of these events)
AT	Gives execute command at a set time.	None
AUTO LOG OFF	Shuts the system down after extended inactivity.	None
External resources	These are LAN Server-specific resources that don't apply to NetWare.	None
MACHINE ID	Unique workstation name.	Use network board ID
NETRUN	Allows you to run programs at the server.	None
REPLICATOR	Periodically duplicates selected files.	None
RIPL	Remote Initial Program Load	Remote Reset or Remote Boot: the Remote Boot image file must be set up on the NetWare server
Station restrictions	Defines which machine ID can be used by a username to log in to the LAN Server domain.	Station Restrictions: must be set up using NetWare and network board ID.

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