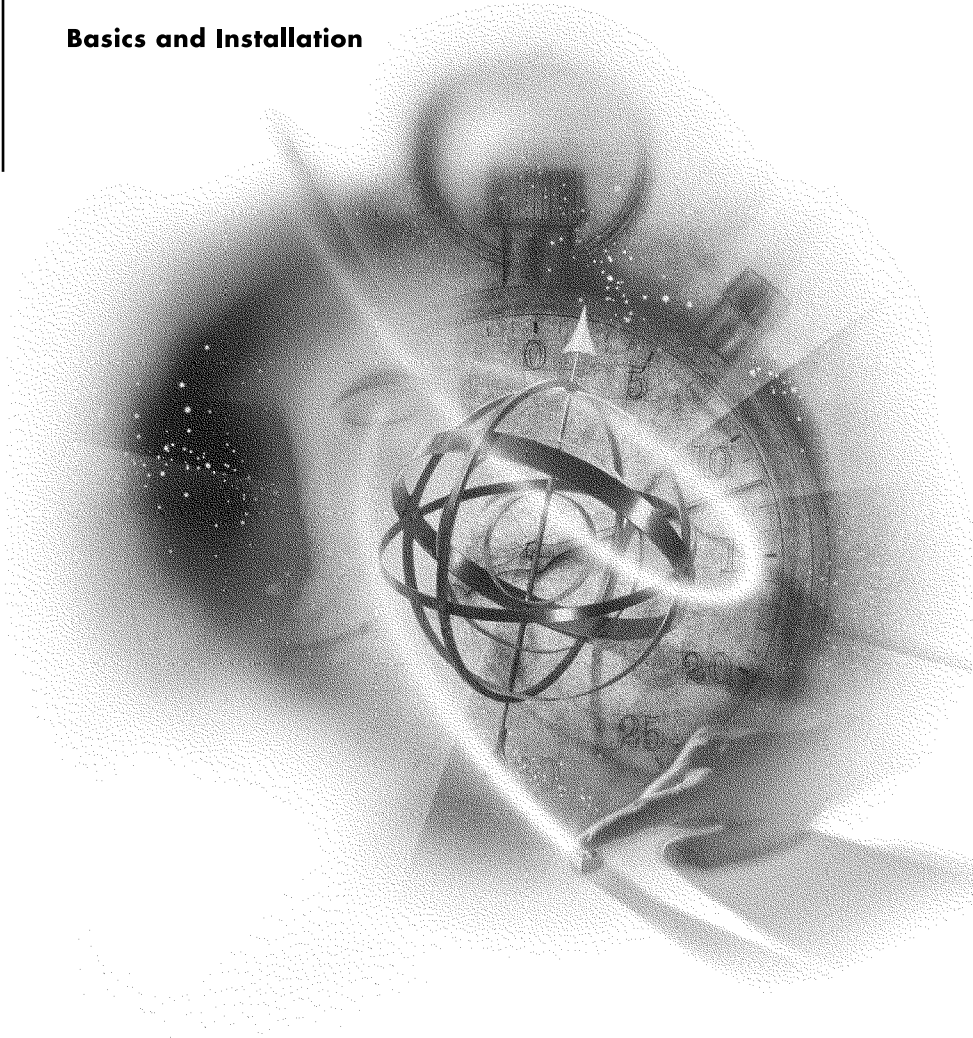


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**NetWare Workstation**

**Basics and Installation**



**NetWare® 3.12**  
NETWORKING SOFTWARE

**Novell®**

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NetWare 3.12 Workstation Basics and Installation  
July 1993

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# How to Use This Manual

**NOTE:** This manual refers to manuals in both the NetWare v4.0 and NetWare v3.12 manual sets. If you choose a cross-reference to a set that is not installed, a message will appear indicating that the manual set is not installed. If you need access to the set, go to the Novell documentation Web site at <http://www.novell.com/documentation/>.

*Workstation Basics and Installation* covers concepts and procedures for installing and using NetWare workstation software on NetWare v2.x, v3.x, and v4.0 networks. References are made to each version of NetWare. Ignore any references which do not pertain to the version of NetWare you are connecting to.

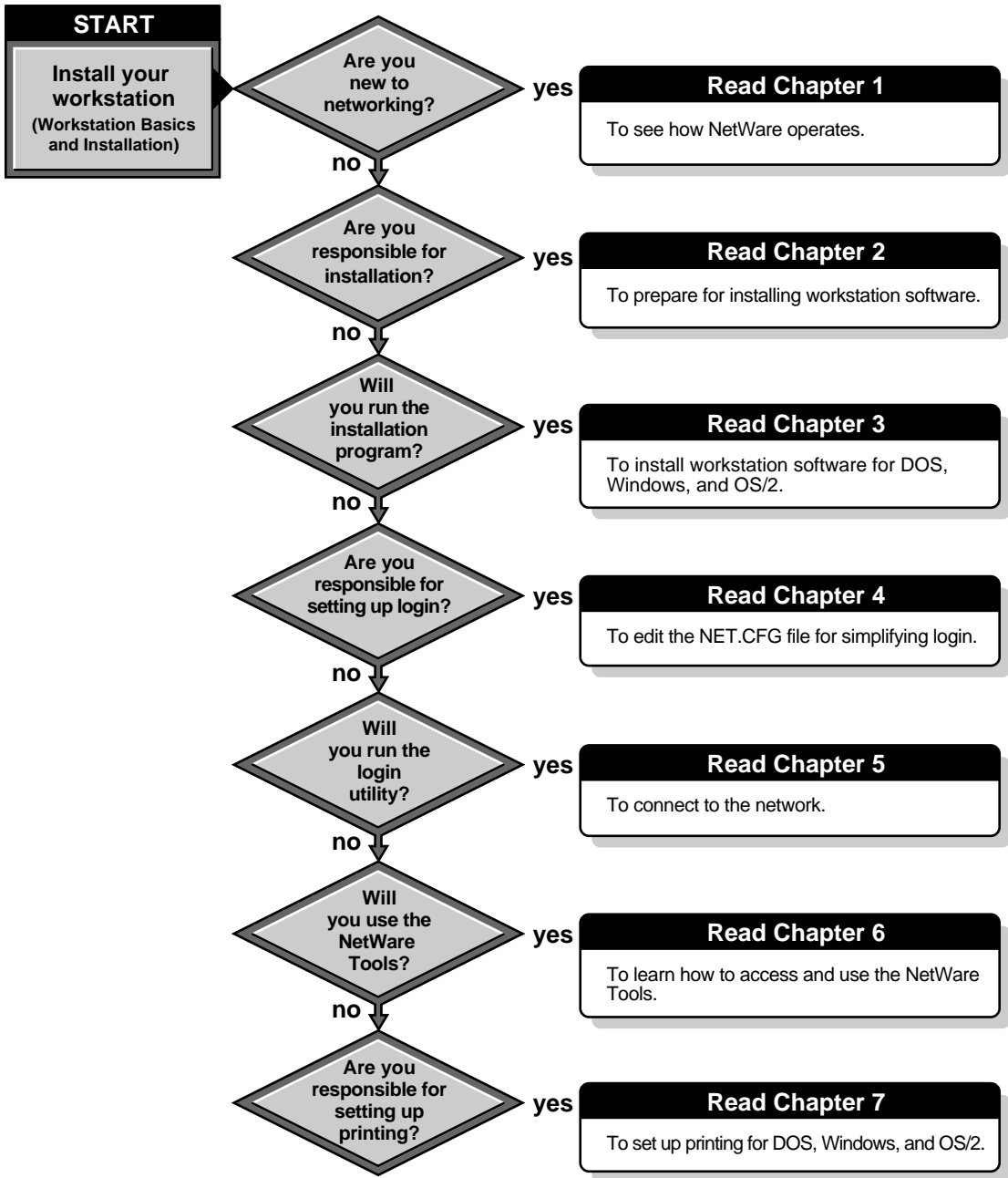
You should read this manual before using the other workstation manuals:

- ◆ *Workstation for DOS and Windows*
- ◆ *Workstation for OS/2*

Use *Workstation for DOS and Windows* and *Workstation for OS/2* for information on managing your workstation and advanced workstation setup.

Use **Figure 1 on page 2** to determine which chapters you should read to install and use network workstations.

Figure 1 Flowchart - Workstation Basics and Installation



# Installation and Setup Checklist

To set up your NetWare workstation, use the chapters in the following checklist in the order shown.

- ◆ Use [Chapter 1, “Understanding Networking Basics,” on page 5](#) to learn more about basic networks and connections. There is a brief discussion about network resources, users, security and the file system. You also introduced to NetWare Directory Services™ and the network file system in NetWare v4.0.
- ◆ Use [Chapter 2, “Preparing to Install Workstation Software,” on page 21](#) to help prepare your workstation hardware, determine your network board settings, and prepare your workstation software for workstation installation. It also guides you through steps on how to get and configure your NetWare workstation software for installation.
- ◆ Use [Chapter 3, “Installing a NetWare Workstation,” on page 35](#) to guide you through the steps for installing DOS, Windows and OS/2 workstations. There is a brief description of the NetWare DOS Requester™ (new to DOS and Windows workstations). There is also information about what happens during installation.
- ◆ Use [Chapter 4, “Setting Up Workstations to Log In to the Network,” on page 53](#) to guide you through basic steps for modifying your NET.CFG file to simplify login to a NetWare Directory Services network.
- ◆ Use [Chapter 5, “Workstation Login,” on page 61](#) for procedures on how to log in to the network from DOS, Windows, and OS/2. The section on OS/2 explains how to log in for VDM, VM BOOT, and the OS/2 Desktop.
- ◆ Use [Chapter 6, “Using Workstation Tools,” on page 71](#) for an overview of how to access and use the features included in the NetWare Tools for your workstation. There are NetWare Tools for DOS, Windows, and OS/2.
- ◆ Use [Chapter 7, “Setting Up Workstation Printing,” on page 107](#) to set up printing for your workstation. This chapter covers initial setup for printing in DOS, Windows, and OS/2 workstations.
- ◆ [Appendix A, “Using the WSUPGRD Utility,” on page 117](#) and [“Using the WSUPDATE Utility” on page 127](#) explain briefly the WSUPGRD and WSUPDATE utilities. You will find WSUPGRD useful for multiple installations. WSUPDATE is useful for new revisions and reinstallations.





# 1

## Understanding Networking Basics

### Overview

This chapter provides a basic overview of the concepts for adding a workstation to your network and for using that workstation.

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**Topic**

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[“Understanding Basic Networks” on page 6](#)

[“Understanding Network Connections” on page 7](#)

[“Understanding Network Resources” on page 8](#)

[“Understanding the Structure of the File System” on page 10](#)

[“Understanding Network Users” on page 13](#)

[“Understanding Login” on page 14](#)

[“Understanding Network Security” on page 16](#)

[“Understanding Network Printing” on page 18](#)

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### Introduction

In order to take advantage of your NetWare workstation, you need to understand how your workstation relates to the NetWare operating system it is connecting to and to review basic networking concepts.

Users connecting to NetWare v2.x and v3.x need to understand how their workstations relate to NetWare bindery server networks.

Users connecting to NetWare v4.0 will need to understand NetWare Directory Services (NDS™) and how it affects their environment.

# Understanding Basic Networks

A network links two or more computers together to share resources and peripherals (such as disk drives, printers, and data). There are two categories of networks: peer-to-peer and client-server.

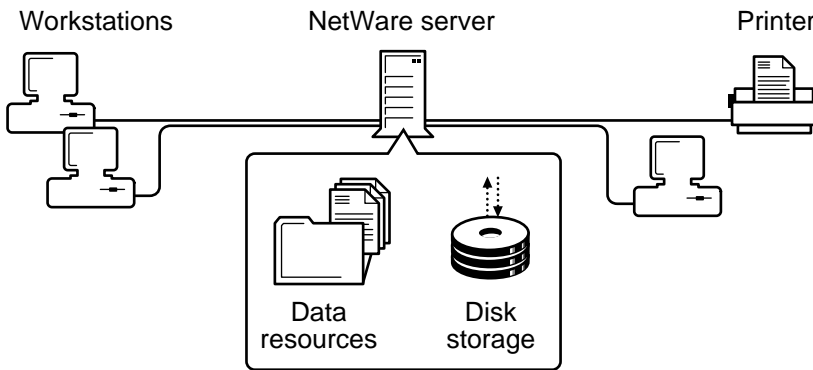
## Peer-to-Peer Networks

The simplest peer-to-peer network has two personal computers connected together, each able to use the resources of the other. All machines on a peer-to-peer network are (or can be) equal. No one machine is designated as the main computer or central point of control.

## Client-Server Networks

The client-server network has at least one personal computer configured as a server. As shown in **Figure 2**, the server is a machine running the network operating system. The server controls communication and shared network resources. The client machines are the individual user workstations connected to the network.

**Figure 2** A simple client-server network



# Understanding Network Connections

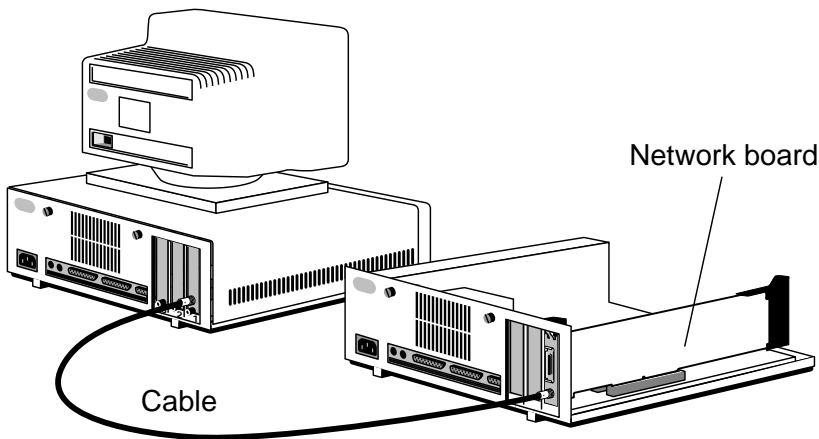
You must make two types of connections to use shared network resources:

- ♦ A physical connection, and
- ♦ A logical connection

## Physical Connection

In order for resources and information to be shared on a network, servers, workstations, and other network devices must be physically connected. Each device on the network must have a network board. A cable attached to the network board provides the communication pathway, as shown in [Figure 3](#).

**Figure 3** Network board and cabling



The physical connection determines the kind of cable used, the way the cable is configured (called the *topology* of the network), and the way information is transmitted over the cable (called the *protocol*).

## Logical Connection

After the physical connection to the network is made, you must make a logical connection to access the network services.

To make the logical connection on a NetWare network, you must prove that you are an authorized user. This is done when you log in to the network and provide the NetWare operating system your user identification and a valid password. By logging in to a network or attaching to a server you make a logical connection.

## Understanding Network Resources

After connecting to a NetWare network, you have access to physical and logical resources across the network. A definition for each resource is maintained in a database used by the NetWare operating system. An example of this is a print queue or group name. How you interact with the resource database depends greatly on which version of the NetWare operating system you are running.

### Understanding the Resources for NetWare v2.x and v3.x

NetWare v2.x and v3.x uses a flat-database structure called a *bindery* for managing network resource definitions. A definition for each network resource is maintained in the bindery. For example, a definition exists for your user information, such as your username and password. A bindery exists for each server in the network and is independent of resource definitions created on other servers.

The bindery structure for each server is flat with a single location for accessing and managing network resources. Therefore, when you use network resources in a multiple server network, you must be aware of their physical and logical locations in order to use them.

### Understanding the Resources for NetWare v4.0

NetWare v4.0 uses a global-database structure called NetWare Directory Services for managing network resource definitions. NetWare Directory Services (NDS) treats all network resources as objects in a distributed database known as the *Directory database*. This database organizes resources in a hierarchical tree structure, independent of their physical location.

The Directory supports an entire network of servers. Instead of storing all information on each individual server as in NetWare v2.x and v3.x, information is distributed over a global database and can be accessed by all servers.

Users can access any network service, such as file services or print services, without having to know the physical location of the server that provides the service.

## Components of a Directory Tree

NetWare Directory Services operates in a logical organization called the *Directory tree*. It is called a Directory tree because objects are stored in a hierarchical tree structure, starting with the root object and branching out.

Three types of objects make up the Directory tree: the root object, container objects, and leaf objects.

- ◆ Root object

The root object is placed at the top of the Directory tree by the installation program.

- ◆ Container objects

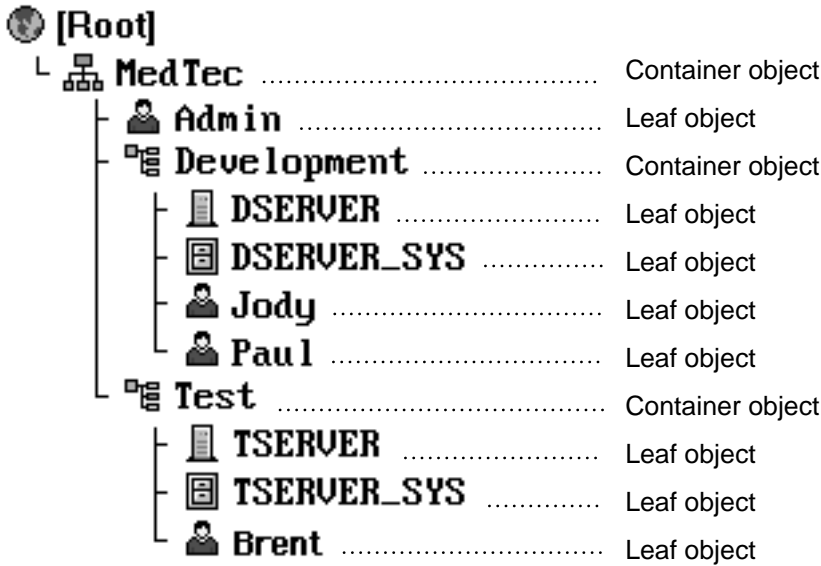
A branch of the Directory tree consists of a container object and all the objects it holds, which can include other container objects.

- ◆ Leaf objects

Leaf objects are at the end of branches and do not contain any other objects. Volumes, Users, and NetWare Servers are some examples of leaf objects.

**Figure 4 on page 10** shows how container objects and leaf objects make up the Directory tree.

Figure 4 Example of a Directory tree



To refer to where an object is in the Directory tree, the term *context* is used. The position of the object within its container is its context. For example, in [Figure 4](#), the context of User object Jody is Development.MedTec.

To identify a particular object, you must know its context. To make it easy for users to locate the objects that they work with on a regular basis, you can set up configuration files to specify the context of each object.

This gives the users a more manageable view of the tree; they do not have to know exactly where each object is located in the tree.

## Understanding the Structure of the File System

The bindery and NetWare Directory Services help you manage network resources such as NetWare servers and printers, but they do not provide control over the file system (volumes, directories, and files). Graphical and text utilities help you manage both network resources and the file system.

The file system structure is separate from the bindery or NetWare Directory Services structure. Physically, all network information is stored on hard disks

that are controlled by a server. But logically, the file system is represented in NetWare v2.x and v3.x as a volume and NetWare v4.0 as a Volume object.

Three types of structures make up the file system: volumes, directories, and files.

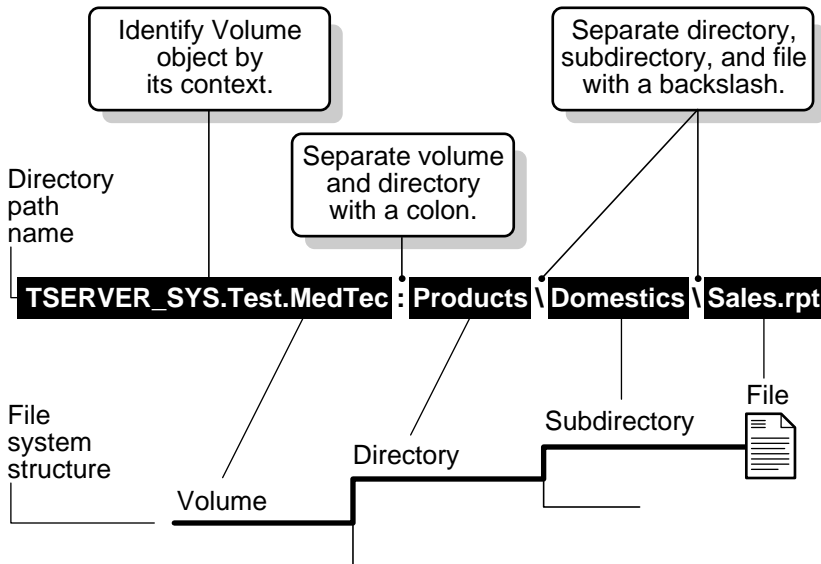
## Understanding the File Structure for NetWare v2.x and v3.x

The file structure in NetWare v2.x and v3.x begins with the file server. The physical hard disks in a file server are divided into volumes, much like a set of books. A volume may contain several physical hard disks, or a single hard disk can be divided into multiple volumes.

A volume marks the base of each directory structure. It appears and acts like a DOS root directory or disk drive. Directories are stored at the volume level and subdirectory levels. Files are stored within directories and subdirectories in the same manner as DOS or OS/2 systems store files.

Figure 5 shows how the file structure of NetWare v2.x and v3.x works.

Figure 5 File system structure and directory path



# Understanding the File Structure for NetWare v4.0

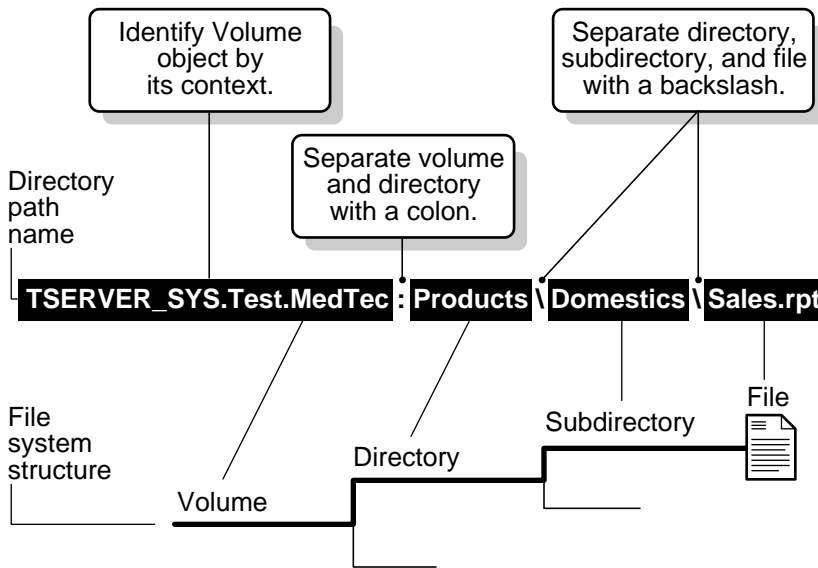
The file structure in NetWare v4.0 begins with the Volume object. A Volume object is one type of leaf object. It refers to a physical volume where files are stored and allows NetWare Directory Services to locate files.

The root directory of a physical volume is also represented as part of a Volume object. It is the highest level of the file system structure. The Volume object provides a link between NetWare Directory Services and each physical volume's file system.

Directories and files are not objects in the Directory tree. They are only a part of the file system. To access directories and files from the Directory tree, open a Volume object or set up Directory Map Objects.

Figure 6 shows how these structures make up the file system.

Figure 6 File system structure and directory path



The position of a file within the file system is its *directory path*.

To identify a file, you must know the context of the Volume representing the physical volume that contains the file, and the directory path through the file system structure, including the name of the file.

You can make it easy for users to find files by setting up Directory Map objects that point to a particular location in a volume's file system structure.



# Understanding Network Users

Before anyone can have access to a NetWare network, they must be identified to the NetWare operating system as a network user.

## NetWare v2.x and v3.x Users

NetWare v2.x and v3.x allow for four types of network users which have varying levels of responsibility on the network. The four types are:

- ◆ Regular network users
- ◆ Operators (file server console operators, print queue operators, and print server operators)
- ◆ Managers (workgroup managers and user account managers)
- ◆ Network supervisors

*Regular network users* are the people who work on the network. They can run applications and work with files according to the rights assigned to them.

*Operators* are regular network users who have been assigned additional privileges. For example, a file server console operator is a network user who is given specific rights to use the FCONSOLE utility.

*Managers* are users who have been given responsibility for creating or managing other users. Workgroup managers can create and manage users; user account managers can manage, but not create, users. Managers function as supervisors over a particular group, but they do not have supervisor equivalence.

*Network supervisors* are responsible for the operation of the whole network. Network supervisors maintain the system, restructuring and updating it as needed.

## NetWare v4.0 Users

NetWare Directory Services identifies the same network users as NetWare v2.x and v3.x. In addition, NetWare v4.0 identifies a User object named ADMIN.

### Using ADMIN for NetWare Directory Services

The first time the network supervisor logs in, it is as User object ADMIN, which is created by default during NetWare v4.0 installation. (The term

*network supervisor* refers to the person responsible for setting up NetWare v4.0. A single network supervisor is not a requirement for NetWare v4.0.)

When User ADMIN is created on the first NetWare v4.0 server that you install, it can manage all objects because it has the Supervisor right to every object. Initially, ADMIN can also manage all directories and files on every volume in the Directory tree.

User ADMIN does not have any special significance like the user SUPERVISOR did in previous versions of NetWare. It is only the first User object created and, therefore, is granted rights to create and manage all objects.

To use the network, every user must have a User object in the Directory tree. The User object represents the individual and keeps track of the person's use of the network.

## Understanding Login

Before you can use any of the network services, you must attach to and log in to the network. Bindery users log in to or attach to individual servers, whereas NetWare Directory Services users log in to the network. Therefore, bindery users need a password for each server they are logging in to. NetWare Directory Services users need only one password to gain access to all network resources that they have the right to use.

Starting up and logging in from a workstation always consists of the same steps.

1. Booting the workstation.

This loads the workstation operating system and is done automatically when you turn on the power or "reboot" by pressing the <Ctrl><Alt><Del> keys at the same time.

2. Loading the network software and drivers.

3. Changing the default drive to a network drive.

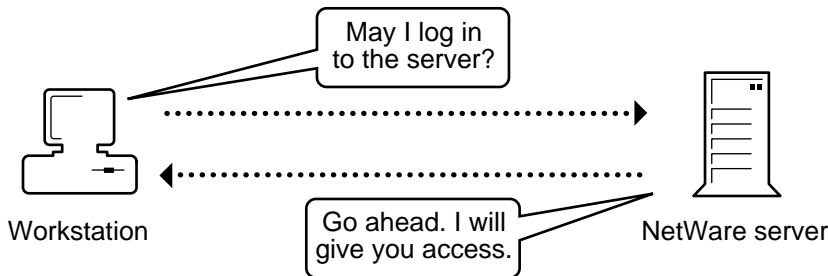
4. Logging in with a username and (usually) a password.

NetWare prompts you for your username and password and completes the network connection. See [Figure 7 on page 15](#).

The way users actually perform these steps depends on how the network supervisor has set up the network and the workstation. All four steps can be

accomplished automatically so that the only thing users do is type their password. For more information, see “[Setting Up Workstations to Log In to the Network](#)” on page 53.

Figure 7 Logging in to the network



For example, users can log in to the network by typing

**LOGIN ESAYERS**

or

**LOGIN SERVERNAME/ESAYERS**

LOGIN is usually executed from the AUTOEXEC.BAT or another batch file. The command line syntax is the same for DOS and OS/2 but is different in NetWare versions v2.x and v3.x without Directory Services, than in NetWare v4.0. If you are using NetWare v3.x, see *Utilities Reference* for a complete description of the utility. If you are using NetWare v4.0, see *Utilities Reference* for a complete description of the utility.

When users access resources on the network, background authentication processes in NetWare v4.0 verify that the users are who they say they are.

Once a user logs in to the network, user trustee rights in the bindery or Directory allow the user access in the network.

# Understanding Network Security

Security is vital in maintaining a productive network environment. NetWare provides an extensive security system to protect the data on the network.

## Network Security Levels

NetWare v2.x, v3.x, and v4.0 have three levels of security that can be used separately or in various combinations. These levels are:

- ◆ File system security
- ◆ Login and password security
- ◆ Server security

## File System Security

File system security consists of rights security and attributes security.

Rights security controls what the user is allowed to access and do to network directories and files. Rights can be granted at either the directory or file level. Rights security is administered by granting trustee assignments to objects and by acquiring effective rights through inheritance and security equivalence.

Attribute security assigns various characteristics to individual directories and files. Directory and file attributes have priority over rights security and can prevent tasks that effective rights would allow. Attributes can be used to prevent users from:

- ◆ Deleting a file or directory
- ◆ Copying a file
- ◆ Viewing a file or directory
- ◆ Writing to a file

Attributes can also be used to:

- ◆ Mark a file for single-user access or multiple-user access
- ◆ Mark a file as modified so that a backup program can select it and leave unmodified files alone
- ◆ Protect a file from corruption by ensuring that either all changes are made or no changes are made when a file is modified

## Login and Password Security

Login and password security controls who can access the network. The network supervisor uses login and password security to:

- ◆ Assign usernames to users of the network
- ◆ Require passwords  
Additional password restrictions include a minimum password length, periodic password changes, unique passwords, and a number of grace logins after password expiration.
- ◆ Control the use of network resources by restricting where and when users can log in
- ◆ Detect intruders who attempt to use a user's account without the correct password
- ◆ Prevent unauthorized access to the server console

## Server Security

Server security controls access to the server console. Access is controlled in three ways:

- ◆ Supervisor rights to the server are granted to give specific users rights to use a console
- ◆ Directory rights are granted so that only specific users have access to the SYS:SYSTEM directory, where key server files are stored
- ◆ Server utilities such as MONITOR and SECURE CONSOLE are used to prevent unauthorized access to the server console.

## NetWare Security for NetWare v4.0

NetWare v4.0 identifies the same network security as NetWare v2.x and v3.x. In addition, NetWare v4.0 identifies NetWare Directory Services security.

## Additional NetWare Directory Services Security

NetWare Directory Services security controls what objects and properties the user is allowed to access.

Object rights control what a trustee can do with an object. These rights control the object as a single piece in the Directory tree, but don't allow access to

information stored within that object (unless the Supervisor object right is granted).

Property rights control a trustee's access to information stored within the object—that is, the information stored in the object's properties. Each object has several properties to which access is controlled separately.

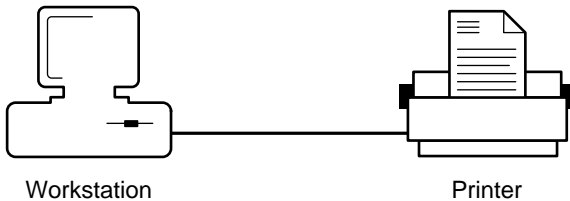
Rights security is administered by granting trustee assignments to objects and by acquiring effective rights through inheritance and security equivalence.

## Understanding Network Printing

### Standalone Printing

A standalone workstation can only print to a printer attached to one of its ports. Print jobs are sent directly to the attached printer. As shown in [Figure 8](#), a printer connected to a single computer allows only the person using that computer to access the printer.

**Figure 8** Standalone printing

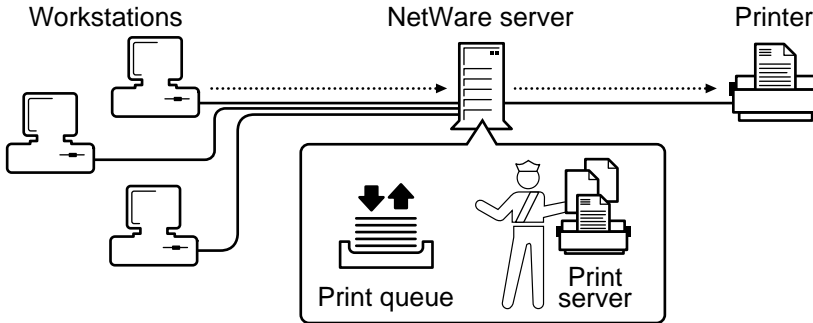


### Network Workstation Printing

Network printing allows all users on the network to share network printers. A printer can be connected to the network by connecting either directly to a server or to a network workstation, depending on the configuration of the printer and the network.

NetWare uses a print queue, print server, and printer driver to allow several network workstations to print to a network printer. The print server takes print jobs from the print queue and sends them to the printer as shown in [Figure 9 on page 19](#).

Figure 9 Network printing



## Where to Go from Here

With a basic understanding of networking and network functions for NetWare, you are ready to upgrade or install your NetWare workstation.

If you want to	Go to
Set up workstation network hardware	<a href="#">"Preparing Your Workstation Hardware" on page 22</a>
Prepare your workstation software for a NetWare workstation installation	<a href="#">"Preparing Your Workstation Software" on page 24</a>
Prepare the installation software	<a href="#">"Preparing Installation Software" on page 25</a>

## Additional Information for NetWare v2.x and v3.x

For more information about	Refer to
Understanding NetWare bindery	"Bindery" in <i>Concepts</i>
Network Printing	"Printing" in <i>Print Server</i>
Print queues	<i>Concepts</i> , under "Print queue"
Print servers	<i>Concepts</i> , under "Print server"

For more information about	Refer to
Printers	<i>Concepts</i> , under "Printers"
NetWare volumes	<i>Concepts</i> , under "Volume"
NetWare file system (directory structure)	<i>Concepts</i> , under "Directory Structure"
NetWare drives	<i>Concepts</i> , under "Network Drive Mapping"

## Additional Information for NetWare v4.0

For more information about	Refer to
Understanding NetWare Directory Services	"Understanding NetWare Directory Services" in <i>Getting Started with NetWare v4.0</i>
Network Printing	"Printing" in <i>Print Services</i>
Print queues	<i>Concepts</i> , under "Print queue"
Print servers	<i>Concepts</i> , under "Print server"
Printers	<i>Concepts</i> , under "Printer"
NetWare volumes	<i>Concepts</i> , under "Volume"
NetWare file system (directory structure)	<i>Concepts</i> , under "Directory structure"
NetWare Directory Services Directory tree	<i>Concepts</i> , under "Directory tree"  "Understanding NetWare Directory Services" in <i>Getting Started with NetWare v4.0</i> .
NetWare drives	<i>Concepts</i> , under "Drive mapping"



# 2

## Preparing to Install Workstation Software

### Overview

This chapter explains what you need to do before installing NetWare workstation software.

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**Topic**

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[“Preparing Your Workstation Hardware” on page 22](#)

[“Preparing Your Workstation Software” on page 24](#)

[“Preparing Installation Software” on page 25](#)

[“Creating Workstation Installation Diskettes from CD-ROM” on page 26](#)

[“Setting Up Your Workstation for Installing from a Network Directory” on page 28](#)

[“Editing the INSTALL.CFG File for DOS and Windows Installation Software” on page 32](#)

[“Upgrading Your IPX Driver to ODI” on page 32](#)

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### Introduction

Proper preparation is important to the ease and success of your installation. Preparation ensures that your hardware and software are configured properly and that you have the necessary information to complete your workstation installation.

This chapter assumes that you are familiar with the following operating systems and hardware:

- ◆ DR-DOS®, PC-DOS®, or MS-DOS® if you are installing NetWare workstation software for DOS
- ◆ Windows v3.x if you are installing NetWare workstation software for Windows
- ◆ OS/2 v2.x if you are installing NetWare workstation software for OS/2

## Preparing Your Workstation Hardware

The following checklists will help you prepare your workstation for installing the NetWare workstation software. If you are upgrading your workstation from a previous version of NetWare, go to [“Preparing Your Workstation Software” on page 24](#).

### DOS and Windows Workstations

- An IBM PC (or compatible) with an XT, AT, 386, or 486 (SX or DX) processor.
- A hard drive with 1.2 MB of storage or a 1.2 MB floppy drive and diskette.
- A Novell® (or compatible) Remote Reset PROM inserted in each workstation that will boot remotely.
- A network board installed in your workstation. Record the board settings to use during installation. See [“Determining Your Network Board Settings” on page 23](#) for more information on how to find your board settings. For more information on installing the network board, see the manufacturer's documentation.
- Network cabling.
  - ◆ Each type of network board requires unique cabling. See the manufacturer's documentation packaged with your network board for requirements.
  - ◆ Token-Ring network boards require a cable connection to the MAU before installing the operating system. Otherwise, the TOKEN driver will not load.

## OS/2 Workstations

- ◆ An IBM PC (or compatible) with a 386 or 486 (SX or DX) processor. OS/2 v2.x operates only with 386 (SX and DX) processors and above because of its 32-bit architecture. OS/2 v1.3x and above cannot operate on an IBM PC or XT.
- ◆ A hard drive with 2.2 MB of storage.
- ◆ A Novell (or compatible) Remote Reset PROM inserted in each workstation that will boot remotely.
- ◆ A network board installed in your workstation. Record the board settings to use during installation. See “[Determining Your Network Board Settings](#)” on page 23 for more information on how to find your board settings. For more information on installing the network board, see the manufacturer's documentation.
- ◆ Network cabling.
  - ◆ Each type of network board requires unique cabling. See the manufacturer's documentation packaged with your network board for requirements.
  - ◆ Token-Ring network boards require a cable connection to the MAU before installing the operating system. Otherwise, the TOKEN driver will not load.

## Determining Your Network Board Settings

The workstation installation program requires specific information about the network board installed in your workstation. Record the values for the following settings before loading the workstation installation program:

- ◆ Hardware interrupt

In most cases, you can use IRQ3 or IRQ5 for your network board. If neither IRQ3 nor IRQ5 is available, see the manufacturer's documentation.
- ◆ Base I/O port

Each hardware device included in your workstation must have a different base I/O port setting. For more information on the base I/O port for your network board, see the manufacturer's documentation.

- ◆ Media frame type

All workstations and servers using a single network address must use the same frame type. See "FRAME frame\_type" in *Workstation for DOS and Windows* and "Specifying Frame Types for a Driver" in *Workstation for OS/2* for information on frame types supported by common network board drivers.

- ◆ Other settings

There are other settings unique to the network board installed in your workstation. See the documentation provided with your network board for more information.

**NOTE:** In most cases, you should leave your network board set to the factory default settings. If you need to change the default settings, see the manufacturer's documentation.

You can obtain setting information for your network board by using the following procedures.

**Table 1** Finding board settings

If you have	Then
EISA or MCA network boards	Run the computer's setup or reference program. This program will list the values for your network board settings.
ISA network boards	Physically view the network board to obtain the specific settings. The documentation provided with your network board will direct you where to locate each value.

**NOTE:** If you have a network connection already, type NVER at the command line to view board settings.

## Preparing Your Workstation Software

The following checklists will help you prepare your workstation software for installing a NetWare workstation.

- If you are using DOS and Windows, you must be running DR DOS v5.x or above, MS-DOS v3.x or above, or PC-DOS v3.x or above.
- Edit the INSTALL.CFG file. See [“Editing the INSTALL.CFG File for DOS and Windows Installation Software”](#) on page 32.

- ❑ If you are using Windows, you must have a copy of Windows v3.x already installed on your workstation.
- ❑ If you are using OS/2, you must have a copy of OS/2 v2.x already installed on your workstation.
- ❑ (Optional) If you have DOS and Windows workstations running a previous version of NetWare, upgrade your IPX drive to ODI. See [“Upgrading Your IPX Driver to ODI” on page 32](#) for instructions.

## Preparing Installation Software

The following checklists and procedures will help you prepare your NetWare workstation software for installation.

If your workstation software is on CD-ROM, go to:

- ◆ [“Creating Workstation Installation Diskettes from CD-ROM” on page 26](#) for preparing to install from diskettes.
- ◆ [“Setting Up Your Workstation for Installing from a Network Directory” on page 28](#) for preparing to install from a network directory.

If your workstation software is on diskette, complete the following checklist.

### Prerequisites

- ❑ If installing for DOS and Windows, have working copies of the following NetWare workstation diskettes:
  - ◆ *WSDOS\_1*
  - ◆ *WSWIN\_1*
  - ◆ *WSDRV\_1*
  - ◆ *WSDRV\_2*
- ❑ If installing for OS/2, have working copies of the following NetWare workstation diskettes:
  - ◆ *WSOS2\_1*
  - ◆ *WSOS\_2*
  - ◆ *WSDRV\_1*
- ❑ (Optional) Have working copies of any NetWare compatible third-party network board drivers.

**NOTE:** You will need a third-party MLID™ driver for the network board installed in your workstation if one is not provided with the NetWare workstation software. NetWare workstation software supports most network boards. If a driver is not listed for your network board, check the packaging or contact the network board manufacturer to obtain a NetWare-compatible driver.

## Creating Workstation Installation Diskettes from CD-ROM

You can install the CD-ROM either as a DOS volume or as a network device.

### Procedure

- 1** Format high-density diskettes using the DOS FORMAT command.
  - ◆ For DOS and Windows, format four diskettes.
  - ◆ For OS/2, format three diskettes.
- 2** Complete the following steps if you set up the CD-ROM as a DOS volume.
  - 2a** Install the CD-ROM drive as a DOS device according to manufacturer's instructions.
  - 2b** Go to the drive corresponding to the CD-ROM.
  - 2c** Change to the CLIENT directory.
  - 2d** Go to **Step 4**.
- 3** Complete the following steps if you set up the CD-ROM as a network device.
  - 3a** Map a drive to SYS:PUBLIC\CLIENT.
  - 3b** Change to the drive letter which is mapped to SYS:PUBLIC\CLIENT.
  - 3c** Continue with **Step 4**.
- 4** Change to one of the following subdirectories.

**Table 2** Client subdirectories

If creating diskettes for	Go to this subdirectory
DOS	DOSWIN
Windows	DOSWIN
OS/2	OS2

- 5 Set the "nwlanguage" environment variable by typing the following at the command line. (For NetWare v4.0 only. Skip to step 6 if you are installing for any other version.

```
SET NWLANGUAGE=language <Enter>
```

Replace *language* with the appropriate language found in the NLS subdirectory under either CLIENT\OS2 or CLIENT\DOSWIN.

- 6 Type

```
MAKEDISK drive_letter: <Enter>
```

Replace *drive\_letter* with the diskette drive letter into which you are inserting the empty formatted diskettes. For example, type either:

```
MAKEDISK A: <Enter>
```

or

```
MAKEDISK B: <Enter>
```

The MAKEDISK utility copies the client installation files from the CD-ROM directory to the diskettes. It prompts you to insert new formatted diskettes.

- 7 Label each diskette with the following names

**Table 3** Client diskette labels

Diskette number	Label for DOS/Windows	Label for OS/2
1	WSDOS_1	WSOS2_1
2	WSWIN_1	WSOS2_2
3	WSDRV_1	WSDRV_1
4	WSDRV_2	

- 8 Save these diskettes until after you have installed all of the NetWare workstations on your network.

## Setting Up Your Workstation for Installing from a Network Directory

The following checklist and procedures will help you set up your workstation for installing NetWare workstation software from a network directory. It is the quickest and easiest way to upgrade your NetWare workstation software.

This section applies only to workstations that already have a previous version of NetWare workstation software installed. If you are installing a new NetWare workstation for OS/2, go to Chapter 3, “[Installing a NetWare Workstation](#)” on page 35. If you are installing a new DOS or Windows workstation, go to “[Editing the INSTALL.CFG File for DOS and Windows Installation Software](#)” on page 32.

### Prerequisites

- You must have a previous version of the NetWare workstation software running on your workstation.
- A copy of the NetWare workstation software must exist on a network. The NetWare server installation program has features to copy these files. See “[Copying Files to a Network Directory](#)” on page 28 for more details.
  - ◆ Files for DOS and Windows workstations should be copied to the PUBLIC\CLIENT\DOSWIN directory on volume SYS:.
  - ◆ Files for OS/2 workstations should be copied to the PUBLIC\CLIENT\OS2 directory on volume SYS:.
- You must be logged in to a NetWare server.
- If you are using DOS or Windows, your workstation must have a drive mapped to the PUBLIC\CLIENT\DOSWIN directory on volume SYS:.
- If you are using OS/2, your workstation must have a drive mapped to the PUBLIC\CLIENT\OS2 directory on volume SYS:.

### Copying Files to a Network Directory

You can use the server installation program on the CD-ROM to copy workstation files to the PUBLIC\CLIENT directory on volume SYS:.

If you are connecting to a NetWare v3.x network, see *Installation and Upgrade* for details on using the server installation program.

If you are connecting to a NetWare v4.0 network, see *Installation and Upgrade* for details on using the server installation program.



## Copying Workstation Software Directly from the CD-ROM

To copy files directly from the CD-ROM, follow the steps below.

### Procedure

- 1** Make a subdirectory named CLIENT under SYS:PUBLIC for the workstation files.
- 2** Install the CD-ROM drive as a DOS device according to manufacturer's instructions.
- 3** Copy files from the CLIENT directory on the CD-ROM to SYS:PUBLIC by typing either:

```
NCOPY source_directory: destination_directory: /s  
/e /c
```

or

```
XCOPY source_directory: destination_directory: /s  
/e
```

For example, type

```
NCOPY D:CLIENT\DOSWIN\ H:\PUBLIC\CLIENT\DOSWIN /s  
/e /c
```

or

```
XCOPY D:CLIENT\DOSWIN\ H:\PUBLIC\CLIENT\DOSWIN /s  
/e
```

Do not use the COPY command for this procedure. It is important that the directory structure within each subdirectory is maintained.

**NOTE:** You can also set up your CD-ROM drive as a volume on your network. This allows you to run the workstation installation programs directly from the subdirectories under CLIENT on the CD-ROM. If you are connecting to a NetWare v3.x network, see Installation and Upgrade for information. If you are connecting to a NetWare v4.0 network, see Supervising the Network for information.

## Copying Workstation Software Directly from the Workstation Diskettes

To copy files directly from the workstation diskettes, follow the steps below.

### Procedure

- 1** Make the following subdirectories under SYS: PUBLIC for the workstation files.

If copying files for	Make this subdirectory
DOS and Windows	CLIENT\DOSWIN
OS/2	CLIENT\OS2

- 2** Copy files from the workstation diskettes to the corresponding directories in the PUBLIC directory on volume SYS:.

Copy files and subdirectories from	To the following subdirectory
WSDOS_1	PUBLIC\CLIENT\DOSWIN
WSWIN_1	
WSDRV_1	
WSDRV_2	
WSOS2_1	PUBLIC\CLIENT\OS2
WSOS2_2	
WSDRV_1	

- 3** Type either

```
NCOPY source_directory: destination_directory: /s
/e /c
```

or

```
XCOPY source_directory: destination_directory: /s
/e
```

For example, type

```
NCOPY A: H:\PUBLIC\CLIENT\DOSWIN /s /e /c
```

or

```
XCOPY A: H:\PUBLIC\CLIENT\DOSWIN /s /e
```

Do not use the COPY command for this procedure. It is important that the directory structure within each subdirectory is maintained.

Table 4 Directory structure for workstation installation directories

<b>PUBLIC\CLIENT\DOSWIN Directory Structure</b>	<b>PUBLIC\CLIENT\OS2 Directory Structure</b>
\DOS	\REQUESTR
\NLS	\LOGIN
	\OS2
	\NLS
	\DOS.NP
	\SQL
	\WINDOWS
	\RPL

## Mapping a Drive for Installing from a Network Directory

Map a drive to the volume and directory containing the NetWare workstation files. The volume and directory are `SYS:PUBLIC\CLIENT\DOSWIN` for DOS and Windows and `SYS:PUBLIC\CLIENT\OS2` for OS/2. The following procedure shows you how to map a drive to the appropriate volume and directory.

### Procedure

- 1 Map the next network drive to `SYS:PUBLIC` by typing

```
MAP N SYS:PUBLIC <Enter>
```

**NOTE:** This mapping may already be set up as a search drive in a login script for your workstation. Use the MAP utility to view a list of existing drive mappings.

- 2 Change to the network drive that is mapped to the PUBLIC subdirectory.

For example, if you mapped network drive G:, type

```
G:<Enter>
```

# Editing the INSTALL.CFG File for DOS and Windows Installation Software

This section applies to DOS and Windows workstations only. If you are using OS/2, go to [Chapter 3, “Installing a NetWare Workstation,”](#) on page 35.

You can set up the installation program software for DOS and Windows to suit your particular networking environment. You should edit the [NETCFG] section of the INSTALL.CFG file before installing the workstation software on multiple workstations with similar NET.CFG files.

NET.CFG is a configuration file that contains section headings and options that deviate from the established defaults of the workstation software. Use entries in the NET.CFG file to change the workstation's network environment or configuration. For more details on how to edit or create a NET.CFG file, see "Configuring Your Workstation" in *Workstation for DOS and Windows*.

## Configuring the [NETCFG] section in INSTALL.CFG

The INSTALL.CFG file is copied on the *WSDOS\_1* diskette. The default configuration for the [NETCFG] section adds a line for the first network drive option only. You will need to edit the INSTALL.CFG file to add lines for other settings under the NetWare DOS Requester™ line option. A sample of the [NETCFG] section in the INSTALL.CFG file is as follows:

```
[NETCFG]

    NetWare DOS Requester
    FIRST NETWORK DRIVE = F
```

**NOTE:** Leave a space of one line between the [NETCFG] heading and the "NetWare DOS Requester" line. Indent all entries under the heading.

## Upgrading Your IPX Driver to ODI

If your workstation is using a dedicated IPX driver, you should upgrade to an ODI (Open Data-Link™ specification) version of IPX gives your workstation greater functionality by supporting multiple communication protocols. You can upgrade in two ways:

- ♦ Use the workstation installation program to upgrade during installation.
- ♦ Use the WSUPGRD utility to upgrade your version of IPX prior to using the installation program. See [Appendix A, “Using the WSUPGRD](#)

Utility,” on page 117 for information and procedures. Upgrading prior to installation makes a workstation installation virtually automatic. The installation program will recognize network board settings from loaded board drivers which support ODI and prompt you to use the driver and settings it recognizes. When you use WSUPGRD, your version of IPX and network board driver will be updated automatically.

## Where to Go from Here

After you have recorded the values for various board settings and your equipment is installed and meets site requirements, you are ready to begin installation. Go to [Chapter 3, “Installing a NetWare Workstation,” on page 35](#) to continue.



# 3

## Installing a NetWare Workstation

### Overview

This chapter explains the procedures for installing NetWare workstation software and gives a brief summary of what happens during installation.

---

**Topic**

---

[“Understanding the NetWare Requester” on page 35](#)

[“Installing NetWare for DOS and Windows Workstations” on page 36](#)

[“What Happens When You Install for DOS and Windows?” on page 40](#)

[“Installing NetWare for OS/2 Workstations” on page 44](#)

[“What Happens When You Install for OS/2?” on page 48](#)

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### Introduction

The installation program installs the NetWare DOS Requester for DOS and Windows and the NetWare Requester™ for OS/2. It also provides resources to edit configuration files for each operating environment to run on NetWare.

### Understanding the NetWare Requester

The NetWare Requester directs network requests from the workstation to the network. After you install the NetWare Requester on your workstation, you can connect to a NetWare network and perform basic network tasks.

See Appendix A, "Technical Information" in *Workstation for DOS and Windows* and Appendix C, "Architecture Diagrams" in *Workstation for OS/2* to learn more about how the Requester works.

If you are installing a DOS and Windows workstation, go to [“Installing NetWare for DOS and Windows Workstations” on page 36](#). If you are installing an OS/2 workstation, go to [“Installing NetWare for OS/2 Workstations” on page 44](#).

## Installing NetWare for DOS and Windows Workstations

DOS and Windows workstations share the same installation program. To provide for this, the installation program runs within the DOS environment.

Review the following checklist to make sure you are prepared to install NetWare workstation software.

- Close Windows before loading the installation program. The workstation installation program will modify some Windows files that are used when in Windows. Do not install from a Windows DOS Box.
- If you are installing from a network directory, make sure you have a drive mapped to SYS:PUBLIC. See [“Mapping a Drive for Installing from a Network Directory” on page 31](#).
- If you are installing from diskettes, make sure you have working copies of the NetWare workstation files.

## What Happens during Installation

The following things happen when you install NetWare workstation software:

- ◆ A directory is created in the root of the drive from which you boot DOS.
- ◆ All workstation files for DOS and Windows are copied to the directory specified during installation. Five kinds of files are copied:

NetWare User Tools files for DOS and Windows

VLM™ (Virtual Loadable Module™) program files

VLM Manager

Network board drivers

Unicode tables with corresponding code pages, numbers, and country codes.



- ◆ DOS, Windows, and NetWare configuration files are created or modified.
- ◆ (Windows) A NetWare User Tools group file is created in Windows Program Manager.

For detailed information, see “[What Happens When You Install for DOS and Windows?](#)” on page 40.

## Loading the Installation Program

For brief instructions, see the Quick Reference Cards for DOS and Windows and the screen instructions to complete the installation. For more detailed information, refer to this manual.

Follow the instructions below for steps on how to load the installation program.

Installing from diskettes	Installing from network directory
<ol style="list-style-type: none"> <li>1. Insert the diskette labeled <i>WSDOS_1</i> into a disk drive.</li> <li>2. Change to the drive that contains the <i>WSDOS_1</i> diskette. For example, type  <code>A: &lt;Enter&gt;</code></li> <li>3. Type  <code>INSTALL &lt;Enter&gt;</code></li> <li>4. Follow the instructions on your screen.</li> </ol>	<ol style="list-style-type: none"> <li>1. Change the PUBLIC directory to the CLIENT\DOSWIN subdirectory. For example, type  <code>CD\CLIENT\DOSWIN</code></li> <li>2. Type  <code>INSTALL &lt;Enter&gt;</code></li> <li>3. Follow the instructions on your screen.</li> </ol>

[Figure 10 on page 38](#) gives an example of the opening screen in the installation program.

Figure 10 DOS and Windows installation program

```
NetWare Client Install v0.11                Sunday June 13, 1993 12:36 pm

STEP 1. Type target directory name for Client Installation.
        C:\NWCLIENT

STEP 2. Client installation requires "LASTDRIVE=Z" in the
        CONFIG.SYS file and "CALL STARTNET.BAT" added to
        AUTOEXEC.BAT. Install will make backup copies.
        Allow changes? (Y/N): No

STEP 3. Do you wish to install support for Windows? (Y/N): No
        Windows Subdirectory:

STEP 4. Press <Enter> to install the driver for your network
        board. You may then use arrow keys to find the
        board name.
        Press <Enter> to see list

STEP 5. Press <Enter> to install.
```

**NOTE:** Use the arrow keys to move between the fields. Press <Enter> to modify a field.

## Installing a Network Board Driver

The following table will help you with Step 4 of the workstation installation program. NetWare workstation software supports a majority of network boards. Follow the steps in the chart below to install the driver for your workstation.

Table 4 Installing network board drivers

If you want to	Do this
Install a driver for a NetWare-supported network board	Press <Esc>, then replace the <i>WSDOS_1</i> diskette with a driver diskette ( <i>WSDRV_x</i> ). Press <Esc> again to display the list. Use the arrow keys or the <PgDn> key to move through the list. Highlight the driver you want to install and press <Enter>.

If you want to	Do this
Install a driver for a network board not listed in display	Press <Esc>, then replace the <i>WSDOS_1</i> diskette with a driver diskette which was included in your network board kit. Press <Esc> again to display the list. Use the arrow keys or the <PgDn> key to move through the list. Highlight the driver you want to install and press <Enter>.
<p>Install a driver for dedicated IPX (non-ODI)</p> <p>This will be the case for any older network boards you may have without ODI support. Contact your board manufacturer for information not displayed in the list.</p>	<p>Press &lt;Esc&gt;, then replace the <i>WSDOS_1</i> diskette with a driver diskette (<i>WSDRV_x</i>). Press &lt;Esc&gt; again to display list. Use the arrow keys or the &lt;PgDn&gt; key to move through the list. Highlight the driver listing for "dedicated ipx" and press &lt;Enter&gt;.</p>

**NOTE:** Make sure that the network board you installed is supported by NetWare or has a NetWare-compatible driver included.

A box will appear, prompting you to modify the value settings for your workstation. The following are some of the main options available:

- ◆ Base I/O port
- ◆ Hardware interrupts
- ◆ Media frame type

There are numerous other options available depending on your network board type and driver.

Refer to the help at the bottom of the page for information about an appropriate value setting for each option.

**NOTE:** If you are unsure of your workstation's network board settings, refer to your records or accept the default settings.

In order for your modifications or new software installation to function, you need to reboot your workstation. Restart your workstation or press <Ctrl><Alt><Del>.

# What Happens When You Install for DOS and Windows?

## A Directory Is Created

A directory is created for the DOS workstation files according to the target directory specified during installation. If you are installing for Windows, the Windows workstation files are copied to the specified Windows directory. (The default is C:\NWCLIENT.)

## Files Are Copied

All workstation files for DOS and Windows are copied to the directories specified during installation.

Five kinds of files are copied:

- ◆ NetWare User Tools for DOS and Windows
- ◆ VLM (Virtual Loadable Module) program files
- ◆ VLM Manager
- ◆ Network board drivers
- ◆ Unicode tables with corresponding code pages, numbers, and country codes

## DOS and NetWare Configuration Files Are Created or Modified

The previous version of CONFIG.SYS and AUTOEXEC.BAT are automatically saved as CONFIG.BNW and AUTOEXEC.BNW. If no previous versions existed, new files are created for you.

### CONFIG.SYS

The line LASTDRIVE=Z is added to your workstation's CONFIG.SYS file.

### AUTOEXEC.BAT

The lines `@CALL drive:\target_directory\STARTNET` and `SET NWLANGUAGE=language` are added to your workstation's AUTOEXEC.BAT file.

## STARTNET.BAT

The installation program creates a file called STARTNET.BAT in the target directory you specified. It contains the following commands:

```
@echo off
drive:
cd\target directory
LSL
NE2000.COM
IPXODI
VLM
cd\
```

## NET.CFG

The installation program creates a new NET.CFG file to set a configuration for the network board installed in your workstation. Your old NET.CFG file is saved as NET.BNW.

The following listing is an example of a NET.CFG file for a Novell NE2000 Ethernet board. It contains the following settings:

```
LINK DRIVER
  NE2000
  PORT 300
  INT 3
  FRAME
  ETHERNET_802.2

NETWARE DOS REQUESTER
  FIRST NETWORK DRIVE = F
```

## Windows Configuration Files Are Created or Modified

When you select "Install Windows pieces," the installation program makes changes to your SYSTEM.INI, WIN.INI, and PROGMAN.INI files:

**IMPORTANT:** For workstations loading Windows from a network server, changes to the SYSTEM.INI and WIN.INI files will need to be made manually.

### SYSTEM.INI

The installation program adds or makes the following modifications to the SYSTEM.INI file:

**[boot]**

The line `network.drv=` is replaced by `network.drv=netware.drv`. This will load NetWare User Tools when Windows.

#### **[boot.description]**

The line `network.drv=` is replaced by `network.drv=NetWare (vx.x)`. This notifies Windows Setup of the NetWare device version you are using.

#### **[386Enh]**

The line `network=dosnet` is replaced by `network=*vnetbios;vipx.386;vnetware.386`. This specifies the type of network used with Windows 386 Enhanced mode.

The line `TimerCriticalSection=` is replaced by `TimerCriticalSection=10000`. NetWare uses this setting to ensure that network traffic on your workstation runs smoothly.

**NOTE:** Many of the modifications may already exist. Make sure that these modifications have been made if you experience any problems.

### **WIN.INI**

The installation program adds or makes the following modifications to the WIN.INI file:

#### **[windows]**

The line `load=` is replaced by `load=nwpopup.exe`. This will cause Windows to run the NetWare User Tools application as an icon when Windows is loaded.

### **PROGMAN.INI**

The installation program adds or makes the following modifications to the PROGMAN.INI file:

#### **[Groups]**

The line `Groupx=C:\nwclient\nwuser.exe` is added to the list of group files. This will cause Windows to run the NetWare User Tools application as an icon when Windows is loaded.

## Modifying Windows Configuration Files on a NetWork Directory

If the workstation installation program cannot find a Windows system directory, it will copy all necessary Windows files to a directory on your local boot disk. The directory it creates is named SYSTEM. The following files will be copied to this directory:

NETWARE.DRV  
NETWARE.HLP  
NWPOPOP.EXE  
VIPX.386  
VNETWARE.386

You will need to copy these files to the system directory for Windows on a network directory. You will also need to make the above changes to the Windows .INI files. See "Loading Windows onto the Network" in *Supervising the Network* for details on where the system directory and .INI files are located.

### Running Windows in Enhanced Mode

The VIPX.386 device driver for Windows in enhanced mode requires the maximum frame size to be less than 8000 bytes. Network packet size can be set in the NET.CFG file using the "Max Frame Size" option. See *Workstation for DOS and Windows* for more information.

### Editing Your AUTOEXEC.BAT File after Installation

This section applies only to workstations that were upgraded from a previous version of NetWare. If you have just installed a new NetWare workstation, go to ["Where to Go from Here" on page 44](#).

The workstation installation program for DOS and Windows requires you to edit your AUTOEXEC.BAT file after installation. This is to ensure that the previous shell and driver are not loading on top of the NetWare DOS Requester and network board driver.

The workstation installation program inserts the line **@CALL drive:\target\_directory\STARTNET** at the beginning to your workstation's AUTOEXEC.BAT file. The STARTNET.BAT file will load the NetWare DOS Requester and network board driver.

Delete or comment out any previous NetWare shells or network board drivers in your AUTOEXEC.BAT that may conflict with the newly installed software. If any of the following files exist in your AUTOEXEC.BAT, delete or comment them out:

LSL.COM

Network board driver (e.g. NE2000.COM)

IPXODI.COM

NETx.COM

IPX.COM

**NOTE:** Your original AUTOEXEC.BAT file is saved as AUTOEXEC.BNW.

## Where to Go from Here

After installation of your NetWare workstation is completed you need to prepare your workstation for logging in to the network.

If you want to	Go to
Set up your workstation to logging in to the network.	<a href="#">Chapter 4, "Setting Up Workstations to Log In to the Network," on page 53</a>
Determine your name context within the Directory tree (NetWare v4.0 only).	<a href="#">"Understanding Logging In to NDS" on page 58</a>

## Installing NetWare for OS/2 Workstations

Review the following checklist to make sure you are prepared to install NetWare workstation software.

- If you are using LAN Server®, LAN Requester®, or Extended Services®, make sure that they are already installed on your workstation.
- If you are installing from a network directory, make sure you have a drive mapped to SYS:PUBLIC. See ["Mapping a Drive for Installing from a Network Directory" on page 31](#).
- If you are installing from diskettes, make sure you have working copies of the NetWare workstation files.



## What Happens during Installation

The following things happen when you install NetWare workstation software:

- ◆ A directory is created in the root of the drive from which you boot OS/2.
- ◆ All workstation files for OS/2 are copied to the directory specified during installation. Five kinds of files are copied:

Requester program files

DLL files (Dynamic Link Libraries)

Network board drivers

Utility files (INSTALL, NPRINTER, NWTOOLS, LOGIN, NLIST, MAP, CX, OS2\_TSA)

Unicode tables with corresponding code pages numbers and country codes

- ◆ OS/2 and NetWare configuration files are created or modified
- ◆ A Novell icon is created in the Desktop window.

For detailed information, see [“What Happens When You Install for OS/2?”](#) on page 48.

## Loading the Installation Program

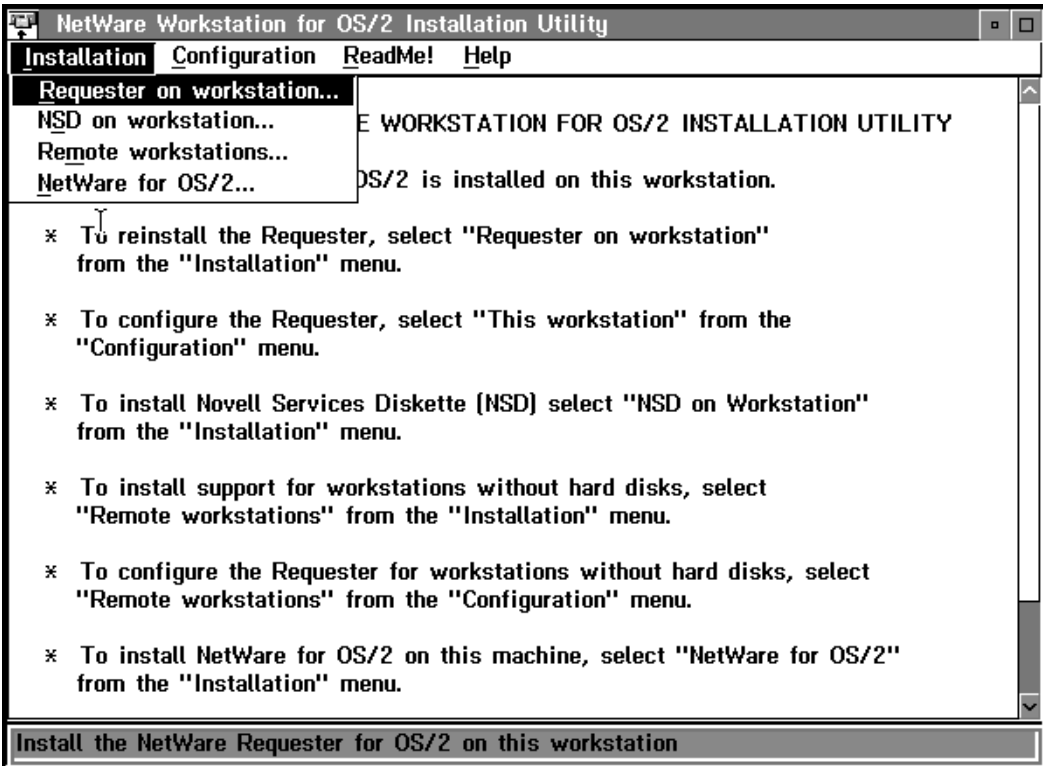
For brief instructions, see the Quick Reference Cards for OS/2 and the online help to complete the installation. For more detailed information, use this manual and the online help

Follow the instructions below for steps on how to load the installation program.

Installing from diskettes	Installing from a network directory
<ol style="list-style-type: none"> <li>1. Insert the diskette labeled <i>WSOS2_1</i> into a disk drive.</li> <li>2. Choose the "Drive A" icon on the desktop.</li> <li>3. Select the "Drive A" icon from the "Drive A Tree-View."</li> <li>4. Select the "INSTALL.EXE" icon to load the installation program.</li> <li>5. Select "Requester on workstation..." from the "Installation" menu.</li> <li>6. Follow the instructions on your screen.</li> </ol>	<ol style="list-style-type: none"> <li>1. On the OS/2 workstation, open an OS/2 Full Screen or Window.</li> <li>2. Change to the PUBLIC directory. For example, if drive G: is mapped to PUBLIC, type <code>G: &lt;Enter&gt;</code></li> <li>3. At the PUBLIC directory, change directory to the CLIENT\OS2 subdirectory. For example, type <code>CD\CLIENT\OS2</code></li> <li>4. Type <code>INSTALL &lt;Enter&gt;</code></li> <li>5. Select "Requester on workstation..." from the "Installation" menu.</li> <li>6. Follow the instructions on your screen.</li> </ol>

Figure 11 on page 47 gives an example of the opening screen in the installation program.

Figure 11 Installation program for OS/2 workstations



**NOTE:** For information on specific topics concerning installation, choose the "Help" option at the top of the screen.

Accept the defaults if you do not know whether to change them. Accepting the defaults will be satisfactory in most cases.

Even though the files are copied, the Requester is not actually installed until the machine is rebooted.

Shut down your computer before you reboot. Press your right mouse button to show the system menu, then choose "Shut down."

If you need to configure the NetWare Requester or you don't know if you need to configure it, see Chapter 4, "How to Configure Your Workstation" in *NetWare Workstation for OS/2*.

# What Happens When You Install for OS/2?

## A Directory Is Created

A \NETWARE directory is created in the root of the drive from which you boot OS/2.

## Files Are Copied

All Requester files are copied to the directory specified during installation. You can change your settings later without copying additional files from the *NWOS2\_1* diskette.

Five kinds of files are copied:

- ◆ Requester program files
- ◆ DLL files (Dynamic Link Libraries)
- ◆ Network board drivers
- ◆ Utility files (INSTALL, NPRINTER, NWTOOLS, LOGIN, NLIST, MAP, CX, OS2\_TSA)
- ◆ Unicode tables with corresponding code pages numbers and country codes

**NOTE:** Most files on the diskette are compressed. The installation program automatically decompresses them. To decompress an individual file, use the NWUNPACK.EXE utility on the diskette. Type **NWUNPACK** and the target directory, followed by the name of a file.

## The Novell Group Icon Is Created

A group icon called Novell is created on the OS/2 desktop. This group contains:

- ◆ The Requester installation program
- ◆ The NetWare User Tools
- ◆ The NPRINTER remote printing utility
- ◆ The OS2\_TSA program

## The CONFIG.SYS File Is Modified

The previous version of CONFIG.SYS is automatically saved as CONFIG.BAK.

The L:\OS2, P:\OS2 and P:\ directories are included at the end of the PATH statement. The P:\ directory works with the P:=SYS:PUBLIC drive mapping for NetWare workstations to access OS/2 utilities. The P:\OS2 directory works with the P:=SYS:PUBLIC drive mapping, which is commonly used in previous versions of NetWare for accessing OS/2 utilities.

The C:\NETWARE directory (or directory you specified) is included at the end of the PATH, LIBPATH, and DPATH statements so that OS/2 can find the Requester files.

Based on the ODI driver and settings you choose, the NetWare Requester section of CONFIG.SYS includes lines loading Requester components. This section is identified by comments before and after.

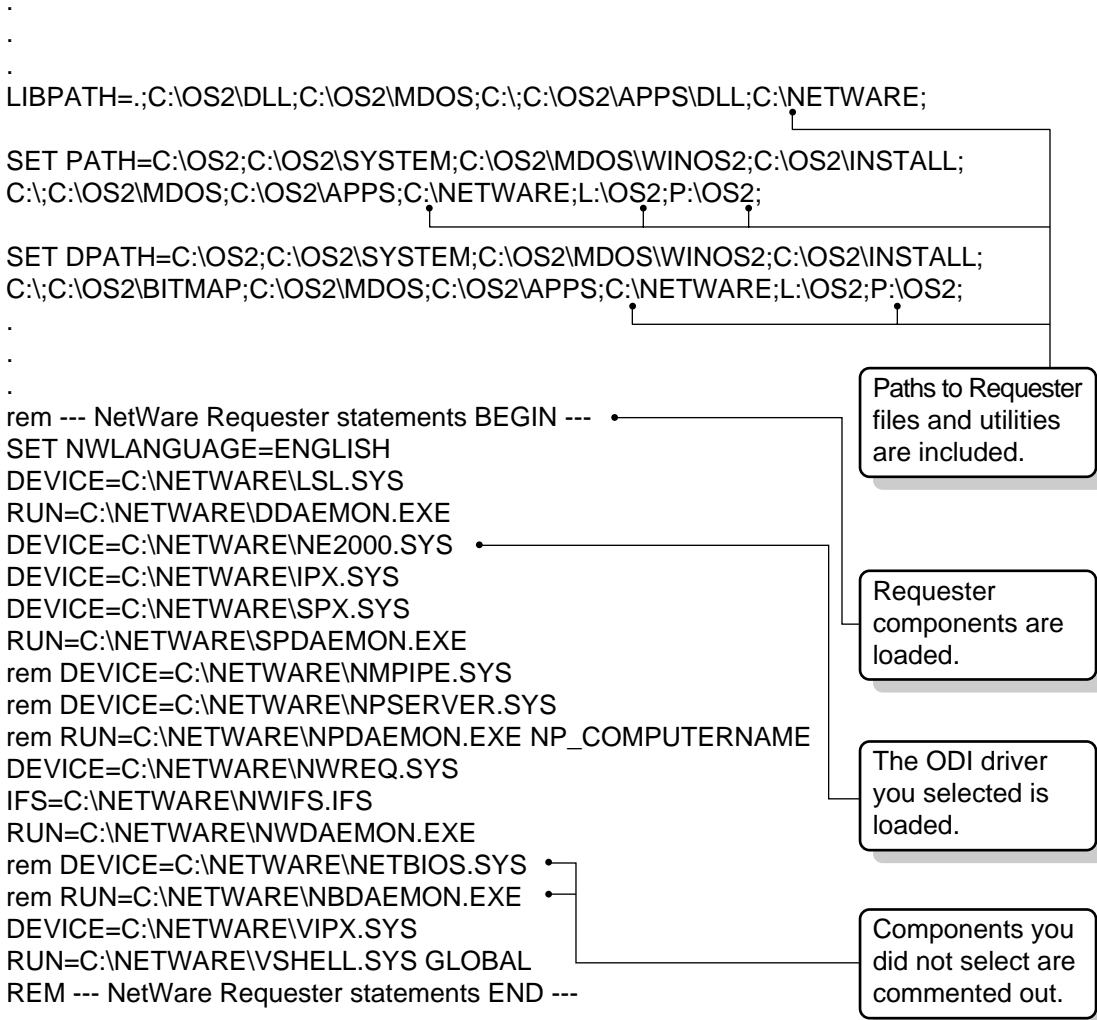
**WARNING:** Do not delete the comments before and after the Requester lines. Everything between these comments is deleted and rewritten when you use the installation program to edit CONFIG.SYS.

If you are also running Extended Services, LAN Requester, or other IBM communications products, CONFIG.SYS may be modified even more. See Appendix C, "Architecture Diagrams" in *NetWare Workstation for OS/2* for more information about interoperability with IBM products.

You should make a backup copy of your CONFIG.SYS file after your workstation installation is completed. Other configuration programs such as IBM's Extended Services may rearrange your CONFIG.SYS file in such a way as to invalidate the NetWare Requester.

Figure 12 on page 50 shows a sample CONFIG.SYS file after installing the Requester.

**Figure 12** Sample CONFIG.SYS file after Requester installation



# Where to Go from Here

With your NetWare workstation installation completed, you are ready to set up your workstation for login to the network.

<b>If you want to</b>	<b>Go to</b>
Set up your workstation to log in	<a href="#">Chapter 4, “Setting Up Workstations to Log In to the Network,” on page 53</a>
Modify your NET.CFG file for NetWare v2.x and v3.x workstations to simplify login	<a href="#">“Modifying Your NET.CFG for Logging In to NetWare v2.x and v3.x” on page 54</a>
Modify your NET.CFG file for NetWare v4.0 workstations to simplify login	<a href="#">“Modifying Your NET.CFG for Logging In to NetWare v4.0” on page 55</a>
Learn more about logging in to NDS	<a href="#">“Understanding Logging In to NDS” on page 58</a>





# 4

## Setting Up Workstations to Log In to the Network

### Overview

This chapter explains how to modify your NET.CFG file to simplify logging in to a NetWare network.

---

**Topic**

---

[“Modifying Your NET.CFG for Logging In to NetWare v2.x and v3.x” on page 54](#)

[“Modifying Your NET.CFG for Logging In to NetWare v4.0” on page 55](#)

[“Editing the NetWare Requester for DOS Section” on page 57](#)

[“Editing the NetWare Requester for OS/2 Section” on page 58](#)

[“Understanding Logging In to NDS” on page 58](#)

---

### Introduction

Proper workstation setup can make logging in to the network virtually transparent. This chapter assumes that the following tasks are completed.

- ◆ A User object or user account is created for each user
- ◆ NetWare workstation software is installed
- ◆ A home directory is created for each user

**IMPORTANT:** Users with NetWare v2.x or v3.x workstation connections to a NetWare v4.0 network must have a User object created in the container where the bindery-based server’s context is set. NetWare v2.x or v3.x users do not need to know their context because they log in to the server rather than the Directory tree.

# Modifying Your NET.CFG for Logging In to NetWare v2.x and v3.x

When logging in to NetWare v2.x and 3.x, you attach to an individual server. Following, you make additional attachments to other servers on which you have a user account.

## Using the Preferred Server Setting

Use the Preferred Server setting in the NET.CFG file to direct the workstation software to the server on which your user information is located. For networks with multiple servers, this setting is very useful to speed up logging in to the network. This setting also allows you to log in with only your username.

The setting for DOS and Windows workstations is as follows:

```
preferred server = server_name
```

The setting for OS/2 workstations is as follows:

```
preferred server server_name
```

**NOTE:** Do not use both the Preferred Server and Preferred Tree settings simultaneously. The second setting will override the first.

## Adding the Preferred Server Setting to NET.CFG for DOS and Windows

The Netware DOS Requester option allows you to configure the way your DOS and Windows workstation software interacts with the network. If you are using OS/2, see [“Editing the NetWare Requester for OS/2 Section” on page 58](#).

### Procedure

- 1 Open your NET.CFG file in a text editor.

Your workstation's NET.CFG file was copied to the target directory for DOS files specified during software installation.

- 2 Under the "NetWare DOS Requester" option, type

```
preferred server=server_name
```

For example, type

```
preferred server=mktsales
```

## Example of the NetWare Requester for DOS Section

```
NetWare DOS Requester
  Preferred Server=mktsales
  First Network Drive=f
```

## Adding the Preferred Server Setting to NET.CFG for OS/2

The Netware Requester option allows you to configure the way your OS/2 workstation software interacts with the network. This section doesn't apply to DOS and Window users. See [“Editing the NetWare Requester for DOS Section” on page 57](#).

### Procedure

- 1 Open your NET.CFG file in a text editor.  
Your workstation's NET.CFG file was copied to the target directory specified during software installation.
- 2 Under the "NetWare Requester" option, type  
**preferred server *server\_name***  
For example, type  
**preferred server mktsales**

## Example of the NetWare Requester Line for OS/2

```
Netware Requester
  Preferred server mktsales
```

Go to [Chapter 5, “Workstation Login,” on page 61](#) for details on how to proceed.

## Modifying Your NET.CFG for Logging In to NetWare v4.0

When logging in to NetWare v4.0, you don't attach to individual servers as with previous versions of NetWare, but you log in to the entire network.

With your complete name (CN), you can simplify the login process by adding information to your workstation's NET.CFG file. You will need to add lines to the NetWare Requester option for OS/2 workstations and NetWare DOS Requester option for DOS and Windows workstations.

If you add lines for the following settings, you will not need to type your complete name each time you log in to the network after booting your workstation. The settings are:

- ◆ Name Context
- ◆ Preferred Tree

You must know your context before making these modifications. Without knowing the context, you will not be able to add entries for the above settings. See [“Understanding Logging In to NDS” on page 58](#).

## Using the Name Context Setting

Using the name context setting in the NET.CFG file will inform the Requester of your name context within the Directory tree. The login utility will then locate your User object and connect you to the network. Add this option setting to your NET.CFG file if you are using NetWare v4.0.

The setting for DOS and Windows workstations is as follows:

```
name context="name_context"
```

The setting for OS/2 workstations is as follows:

```
name context "name_context"
```

The default is at the root for this setting, which may cause confusion if duplicate usernames exist within a Directory tree.

**IMPORTANT:** If you are using a previous version of the NetWare shell on your workstation, the name context setting is invalid. NetWare v4.0 creates a User object for you in the same container as the NetWare Server object to which you will log in. (Bindery emulation is set by default for every NetWare Server object that is installed.) Users log in directly to a server rather than the Directory tree.

## Using the Preferred Tree Setting

Use the Preferred Tree setting in the NET.CFG file to direct the Requester to the Directory tree where your name context is set. The login utility will then search only the preferred Directory tree.

Add this setting to your NET.CFG file if you are using NetWare v4.0 on a network with multiple Directory trees. The setting for DOS and Windows workstations is as follows:

```
preferred tree=tree_name
```

The setting for OS/2 workstations is as follows:

```
preferred tree tree_name
```

The default is at the root for this setting. Because of this, it is important that the Preferred Tree setting is used to avoid confusion if duplicate usernames exist within separate Directory trees.

**NOTE:** Do not use both the Preferred Server and Preferred Tree settings simultaneously. The second setting will override the first.

## Editing the NetWare Requester for DOS Section

The Netware DOS Requester option allows you to configure the way your DOS and Windows workstation software interacts with the network. If you are using OS/2, see [“Editing the NetWare Requester for OS/2 Section” on page 58.](#)

### Procedure

- 1 Open your NET.CFG file in a text editor.

Your workstation's NET.CFG file was copied to the target directory specified during software installation.

- 2 Under the "NetWare DOS Requester" option, type

```
name context="complete_name"
```

For example, type

```
name context="esayers.sales.novell us"
```

- 3 If your network has multiple Directory trees, type

```
preferred tree=preferred_tree_name
```

For example, type

```
preferred tree=novell us
```

### Example of the NetWare Requester for DOS Section

```
NetWare DOS Requester
name context "Esayers.sales.novell us"
preferred tree=novell us
first network drive=f
```

# Editing the NetWare Requester for OS/2 Section

The Netware Requester option allows you to configure the way your OS/2 workstation software interacts with the network. This section doesn't apply to DOS and Window users. See [“Editing the NetWare Requester for DOS Section” on page 57](#).

## Procedure

- 1 Open your NET.CFG file in a text editor.

Your workstation's NET.CFG file was copied to the target directory specified during software installation.

- 2 Under the "NetWare Requester" option, type

```
name context "complete_name"
```

For example, type

```
name context "esayers.sales.novell us"
```

- 3 If your network has multiple Directory trees, type

```
preferred tree preferred_tree_name
```

An example of this is:

```
preferred tree novell us
```

## Example of the NetWare Requester Line for OS/2

```
Netware Requester
name context "esayers.sales.novell us"
preferred tree novell us
```

## Understanding Logging In to NDS

NetWare Directory Services (NDS) makes logging in to the network convenient. User information resides in a global database. Each User is assigned a position or context within the global database that informs the network where your workstation is located in relationship to the entire network. This context is referred to as your *name context*.

When you log in to the network, the LOGIN utility must know where your particular User object is located—its context. The User object's context also

forms its *complete name*. The path from the object to the root of the tree forms the object's complete name, which is unique to other object's names.

Your User object's complete name is a bottom-up traversal of the tree, from the object up to the root.

## Using Your Complete Name for Logging In to the Network

When you use a complete name of a User object, the common name of it is listed first, followed by a period (.), then the name of the container object, also followed by a period, and on up through the Organization object name (and the Country object name, if used).

So your User object's complete name could be represented by:

Common name.Organizational Unit name.Organization name.Country name

This depends on the way your network is defined.

## Specifying the Name Type of an Object

At times, such as when you move from one container object to another, you must include the *name type* of the object when typing out the complete name of the object. A name type distinguishes the class of object to which you are referring, such as a User object or an Organizational Unit object.

For example, you could express:

ESAYERS.SALES PV.SALES.NOVELL US

as:

CN=ESAYERS.OU=SALES PV.OU=SALES.O=NOVELL US

where CN is the common name of the User object, OU is the Organizational Unit name, and O is the Organization name.

## Changing Your Context

If you are referring to an object that is in the same container as your User object, then you need to refer to that object only by its common name, instead of by its complete name. See Chapter 2, "Understanding NetWare Directory Services," in *Getting Started* for more details.

**IMPORTANT:** You must always include the name type of the object in complete names when you include the Country object in your Directory tree. This means that even when you refer to objects located in the same container object, you must designate the name type (CN or OU or O) of the object.

## Logging In to Your Context

### Procedure

**1** Type:

```
login context
```

Replace context with your complete name. For example, type

```
F:\login esayers.sales.novell us
```

**2** Type your user password if required.

### What to Do Now?

- ♦ Make sure that necessary modifications to your NET.CFG file are completed.
- ♦ Log in to your workstation. Go to [Chapter 5, “Workstation Login,”](#) on [page 61](#).



# 5

## Workstation Login

### Overview

This chapter explains how to log in to a NetWare network from a NetWare workstation.

---

**Topic**

---

[“Logging In from the DOS Prompt” on page 62](#)

[“Logging In from Windows” on page 63](#)

[“Logging In from OS/2” on page 65](#)

[“Logging In from NWTOOLS” on page 67](#)

---

### Introduction

This chapter assumes that the following tasks are completed:

- ◆ NetWare workstation software is installed.
- ◆ Your workstation NET.CFG file has been modified for login.

With the necessary modifications made to your NET.CFG file, you need only your username and password to log in to a preferred server or a NetWare v4.0 network.

---

**If you are logging in from:****Go to**

---

A DOS prompt[“Logging In from the DOS Prompt” on page 62](#)

---

Windows[“Logging In from Windows” on page 63](#)

---

If you are logging in from:	Go to
The OS/2 command line	<a href="#">“Logging In from the OS/2 Command Line” on page 65</a>
An OS/2 Virtual DOS Session (VDOS)	<a href="#">“Logging In from an OS/2 Virtual DOS Session (VDM)” on page 66</a>
An OS/2 Virtual MS-DOS BOOT Session (VM BOOT)	<a href="#">“Logging In from an OS/2 Virtual DOS Boot Session (VMBOOT)” on page 67</a>
OS/2 Desktop	<a href="#">“Logging In from NWTOOLS” on page 67</a>

## Logging In from the DOS Prompt

The login program will connect your workstation to the network. The NetWare DOS Requester automatically maps the first network drive to your workstation. Follow the steps below to log in to a bindery server or a NetWare v4.0 network:

### Procedure

#### 1 Load the DOS Requester.

**1a** If your workstation uses an ODI network board driver, load the following programs:

- ◆ LSL.COM
- ◆ Network board driver (e.g. NE2000.COM)
- ◆ IPXODI.COM
- ◆ VLM.EXE

**1b** If your workstation uses a dedicated IPX driver (non-ODI), load the following programs:

- ◆ IPX.COM
- ◆ VLM

#### 2 Change to the first network drive. Type

**F:** <Enter>

The NetWare DOS Requester automatically maps the first network drive for your workstation. The default setting is drive F:. To change the default, edit your NET.CFG file.

**3** Log in to the network in one of the following ways:

**3a** To log in using your username only, type

```
login username
```

For example, type

```
login esayers
```

**3b** To log in to a specific server, type

```
login servername\username
```

For example, type

```
login tsmkt\esayers
```

**4** Type your password if required.

## Logging In to NetWare v4.0 from a NetWare v2.x and v3.x Workstation

### Procedure

**1** Type

```
login server/username /b
```

Replace *server* with the name of the bindery server. Replace *username* with your username. For example:

```
F:\login tsmkt/esayers /b
```

**2** Type your password if required.

## Logging In from Windows

Use the NetWare User Tools in Windows to log in to NetWare v2.x, v3.x, and v4.0.

### Procedure

**1** Load the DOS Requester.

**1a** If your workstation uses an ODI network board driver, load the following programs.

- ♦ LSL.COM
- ♦ Network board driver (e.g. NE2000.COM)

- ◆ IPXODI.COM
- ◆ VLM.EXE

**1b** If your workstation uses a dedicated IPX driver (non-ODI), load the following programs:

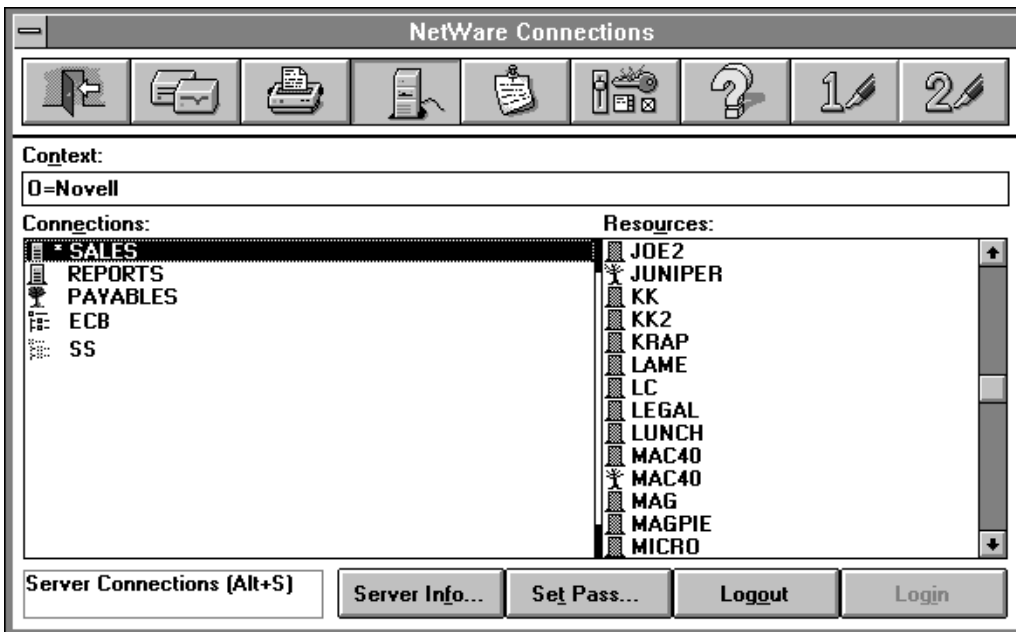
- ◆ IPX.COM
- ◆ VLM

**2** Start Windows.

**3** To load the NetWare User Tools, choose the "NWuser" icon from the "NetWare" group.

The following screen appears:

**Figure 13** NetWare Connections



**4** Choose the server icon.

The "NetWare Connections" window displays available resources.

**5** Choose the resource to which you want to log in from the "Resources" list.

## 6 Choose "Login."

Choose the help button for more details.

**IMPORTANT:** The "Login" option does not run a login script for your workstation. Use the "Permanent" option in the "NetWare Drive Connections window" to set up your workstation drive mappings. If you want to run a login script, your initial login should be done at the command line with the LOGIN utility.

## Logging In from OS/2

OS/2 supports a variety of operating system platforms referred to as *sessions*. The following headings will direct you to the kind of login that works best with the platform you use.

If you are logging in from:	Go to
The OS/2 command line	<a href="#">"Logging In from the OS/2 Command Line" on page 65</a>
An OS/2 Virtual DOS Session (VDOS)	<a href="#">"Logging In from an OS/2 Virtual DOS Session (VDM)" on page 66</a>
An OS/2 Virtual MS-DOS BOOT Session (VM BOOT)	<a href="#">"Logging In from an OS/2 Virtual DOS Boot Session (VMBOOT)" on page 67</a>
OS/2 Desktop	<a href="#">"Logging In from NWTOOLS" on page 67</a>

## Logging In from the OS/2 Command Line

The NetWare Requester automatically maps drive L: to the first network drive mapped to the SYS:LOGIN\OS2 directory. However, you should log in from your NetWare workstation directory. C:\NETWARE is the default directory. The login program connects your workstation to the network.

### Procedure

#### 1 Open an OS/2 Full Screen or Window.

A prompt similar to the following appears:

```
[C: /]
```

#### 2 Log in to the network in one of the following ways:

##### 2a To log in using your username only, type

```
login username
```

For example, type

```
login esayers
```

**2b** To log in to a specific server, type

```
login servername\username
```

For example, type

```
login tsmkt\esayers
```

**3** Type your password if required.

## Logging In to NetWare v4.0 from a NetWare v2.x or v3.x Workstation

### Procedure

**1** Type:

```
login server/username /b
```

Replace *server* with the name of the bindery server. Replace *username* with your username. For example, type

```
F:\login tsmkt/esayers /b
```

**2** Type your password if required.

## Logging In from an OS/2 Virtual DOS Session (VDM)

Logging in from an OS/2 VDM environment is the same as logging in from a DOS prompt. See "Virtual DOS and Windows Sessions" in *Workstation for OS/2* for information.

**NOTE:** You cannot log in to a NetWare v4.0 network from a virtual DOS session unless the network supports bindery emulation. If a NetWare v4.0 network supports bindery emulation, your DOS session will be seen as a bindery-based workstation.

### Procedure

**1** Load the NetWare shell. Type

```
NETX.EXE
```

**NOTE:** The OS/2 VDM environment does not support NetWare Directory Services (NDS) and the v4.0 VLMS. This means that you can log in only to a v3.x server. You must first load NETX.EXE before login is initiated.

**2** Open a VDM Full Screen or Window.

A prompt similar to the following appears:

```
[C:/]
```

- 3 Change to network drive L:. Type

```
L: <Enter>
```

The NetWare Requester automatically maps drive L: to the first network drive.

- 4 Type

```
login server/username /b
```

Replace *server* with the name of the bindery server. Replace *username* with your username. For example, type

```
F:\login tsmkt/esayers /b
```

- 5 Type your password if required.

## Logging In from an OS/2 Virtual DOS Boot Session (VMBOOT)

Logging in from an OS/2 VM Boot environment is the same as logging in from a DOS prompt. See [“Logging In from the DOS Prompt” on page 62](#) for information. See "Virtual DOS and Windows Sessions" in *Workstation for OS/2* for information.

**NOTE:** You must first open a VM BOOT full screen or window before initiating login procedures from the DOS prompt in OS/2.

## Logging In from NWTOOLS

Use NWTOOLS on the desktop to log in to the network.

### Procedure

- 1 Choose the Novell icon on your OS/2 desktop window.
- 2 From the Novell-Icon View on your desktop, choose the "NetWare Tools" icon.

The NetWare Tools windows appears.

- 3 Choose the "Tools" option from the menu bar.

A menu list appears.

- 4** Select the "Tree" option from the menu list.  
The Directory Tree window appears.
- 5** Choose the "Tree" option from the menu bar.  
A menu list appears.
- 6** Select "Login."  
The following dialog appears.

**Figure 14** Login to Directory Tree window

The screenshot shows a dialog box titled "Login to Directory Tree". It features two radio buttons: "Tree" (selected) and "Server". Below the radio buttons are three text input fields: "Name:" with the text "ESAYERS", "Password:" with "\*\*\*\*\*", and a server name field with "WRITETREE3". At the bottom, there are three buttons: "Login", "Cancel", and "Help".

- 7** Log in to the network.
  - 7a** To log in to a v2.x or v3.x or v4.0 server, select "Server."
  - 7b** To log in to a NetWare v4.0 Directory tree, select "Tree."
- 8** Enter your username and password into the appropriate fields.
- 9** Choose "Login."  
If the login is unsuccessful, check your context and try again.

For more information about this Tool, choose Help.

**IMPORTANT:** The "Login" option does not run a login script for your workstation. Use the "Save Settings" option in the "Network" menu to maintain your connections. If you want to run the login script, your initial login should be done at the command line with the LOGIN utility.



## Where to Go from Here

With your login completed, you are ready to use the NetWare User Tools for DOS, Windows, or OS/2, depending on your particular workstation platform. Go to [Chapter 6, “Using Workstation Tools,”](#) on page 71.



# 6

## Using Workstation Tools

### Overview

This chapter briefly explains how you can use the NetWare User Tools to perform common network tasks.

---

**Topic**

---

[“Starting NETUSER” on page 73](#)

[“Starting NetWare User Tools for Windows” on page 77](#)

[“Accessing and Changing Directory and File Attributes” on page 89](#)

[“Starting NetWare User Tools for OS/2” on page 91](#)

---

### Introduction

Use the NetWare User Tools to display and modify the current status of your workstation, drive mappings, servers, printers, queues, volumes, and other necessary information.

NetWare User Tools are compatible with NetWare v2.x, v3.x, and v4.0 networks.

NetWare User Tools are available for DOS, Windows, and OS/2.

# Prerequisites

- ❑ Complete the procedures in [Chapter 5, “Workstation Login,”](#) on page 61.
- ❑ If you are using NetWare v4.0, you should also be familiar with the following topics in *Concepts*:

For more information about	Refer to
NetWare Directory Services	"NetWare Directory Services" in <i>Concepts</i>
Context	"Context" in <i>Concepts</i>
Objects	"Objects" in <i>Concepts</i>
Properties	"Properties" in <i>Concepts</i>
Print queues	"Print queue" in <i>Concepts</i>

- ❑ If you are using NetWare v2.x or 3.x, you should also be familiar with the following topics in *Concepts*:

For more information about	Refer to
Bindery	"Bindery" in <i>Concepts</i>
Objects	"Object" in <i>Concepts</i>
Properties	"Property" in <i>Concepts</i>
Print queues	"Printing" in <i>Concepts</i>

# Starting NETUSER

## Prerequisites

Before you can start NETUSER, your workstation requires the following:

- A physical connection to the network.
- DR DOS, PC-DOS, or MS-DOS loaded and running.
- The DOS Requester files loaded and running. See [“Understanding the NetWare Requester” on page 35](#).
- An attachment to the network.

## Procedure

- 1** Map the next network drive to SYS:PUBLIC by typing

```
MAP N SYS:PUBLIC <Enter>
```

**NOTE:** This mapping may already be set up as a search drive in a login script for your workstation. Use the MAP utility to view a list of existing drive mappings.

- 2** Change to the network drive that is mapped to the PUBLIC subdirectory.

For example, if you mapped network drive G:, type

```
G:<Enter>
```

- 3** Start NETUSER. Type

```
NETUSER <Enter>
```

# Using NETUSER

Figure 15 shows you the tasks you can do with NETUSER.

Figure 15 NETUSER Tasks

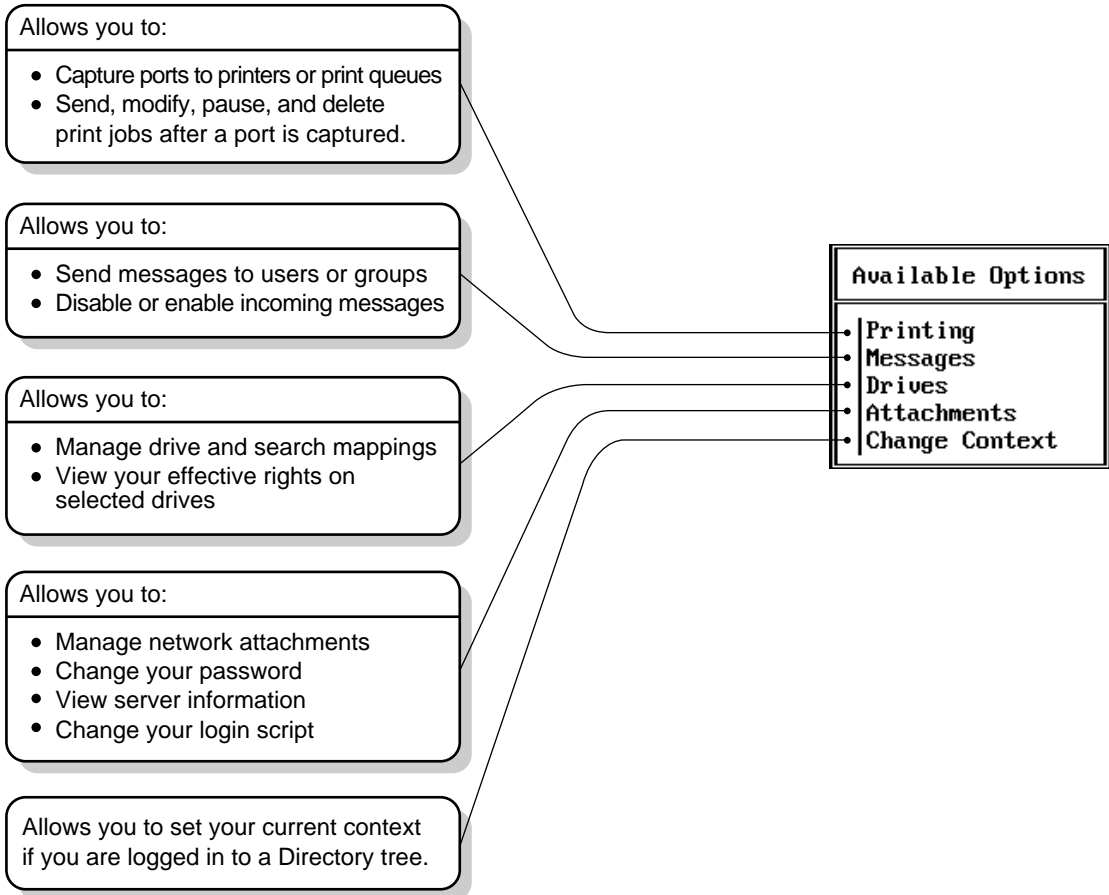


Figure 16 is an example of the NETUSER utility screen.

Figure 16 NetWare User Tools for DOS Menu Options

```
You are CN=admin.0=Novell
LPT1: Local Printer
LPT2: Local Printer
LPT3: Local Printer
Receive message: ON
```

```
Available Options
|
| Printing
| Messages
| Drives
| Attachments
| Change Context
```

## Accessing Online Help

To see a list of commands and the procedures you can perform with NETUSER, press <F1>.

## Printing

Use the "Printing" option to

- ◆ Set up print queues
- ◆ Control network printing
- ◆ View information about network printing
- ◆ Redirect a printer port to the network

## Messages

Use the "Messages" option to

- ◆ Send a brief message from your workstation to one or more users or groups on the network
- ◆ Disable or enable incoming messages sent from other workstations

## Drives

Use the "Drives" options to

- ◆ View current drive mappings
- ◆ Create or change network drive mappings
- ◆ Map a drive to a fake root directory
- ◆ Map the next available drive

## Attachments

Use to "Attachments" options to

- ◆ Create or delete network attachments
- ◆ Change your password
- ◆ View server information
- ◆ Modify login scripts

## Change Context

This option is only available in NetWare Directory Services mode. Use the "Change Context" option to

- ◆ Browse the Directory tree
- ◆ Change your current context

**NOTE:** If the resource you want is not listed, check to see if you are first attached to the server containing this resource. For more information about this option, choose "Help."

## Exiting NETUSER

You exit NETUSER through the "Exit?" menu box. This menu prompts you to choose "Yes" or "No" to exit. You can display this menu box in two ways:

- ◆ Press the <Esc> key until the "Exit?" menu box appears. Then select "Yes" and press <Enter>.
- ◆ Press <Alt><F10> anywhere within NETUSER to display the "Exit?" menu box. Then select "Yes" and press <Enter>.



## Where to Go from Here

With a basic understanding of NETUSER, you are ready to set up network printing for your workstation platform. See [“Setting Up Printing for DOS Workstations” on page 108](#).

## Starting NetWare User Tools for Windows

### Prerequisites

Before you can start NetWare User Tools for Windows, your workstation requires the following:

- A physical connection to the network.
- DR DOS, PC-DOS, or MS-DOS loaded and running.
- The DOS Requester files loaded and running. See [“Understanding the NetWare Requester” on page 35](#).
- A copy of Windows v3.x installed on your workstation.

### Procedure

- 1** Start Windows.
- 2** Press <F6> or select the "NWuser" icon in the "NetWare" program group.

If the NWuser icon is not displayed, you can also access NetWare User Tools for Windows by creating a Program Object in the Windows Program Manager with NWUSER.EXE. You can find the NWUSER.EXE file in your target directory for the workstation installation.

## Using NetWare User Tools for Windows

The NetWare User Tools for Windows provide you with a graphical way of accessing network resources, such as volumes, directories, printers, and users. The NetWare User Tools for Windows also allow you to configure your workstation and customize NetWare User Tools display settings.

You can do the following with the NetWare User Tools for Windows:

- ◆ Manage drive mappings
- ◆ Manage printer connections and setup

- ◆ Manage server connections
- ◆ Send messages
- ◆ Modify settings
- ◆ Set the NetWare User Tools hotkey
- ◆ Change directory and file properties

## Using Quick Keys

Each Tool in the NetWare User Tools for Windows can be accessed by using quick keys. The available quick keys are listed in [Table 7](#).

**Table 7** Quick key menu

Tool	Quick key
Exit	<Alt><X>
NetWare Drive Connections	<Alt><D>
NetWare Printer Connections	<Alt><P>
NetWare Connections	<Alt><C>
NetWare Send Messages	<Alt><M>
NetWare Settings	<Alt><S>
NetWare User Tools for Windows Help	<Alt><H>
User Define 1	<Alt><1>
User Define 2	<Alt><2>

## Using the Menu Bar

The menu bar shows menu options you can use. To complete a task, first choose the button that corresponds with the task or connection you are performing. See [Figure 17](#) for an example of the menu bar.

**Figure 17** Menu bar for NetWare User Tools for Windows



Each time you select a menu option, the corresponding button will depress or a dialog box appears. If an option is grayed, that option is not active or available.

**NOTE:** All connections can be made by choosing the corresponding button or drag-and-drop.

## Accessing Online Help

To see a list of commands and the procedures you can perform with NetWare User Tools for Windows, choose the "Help" button from the menu bar.

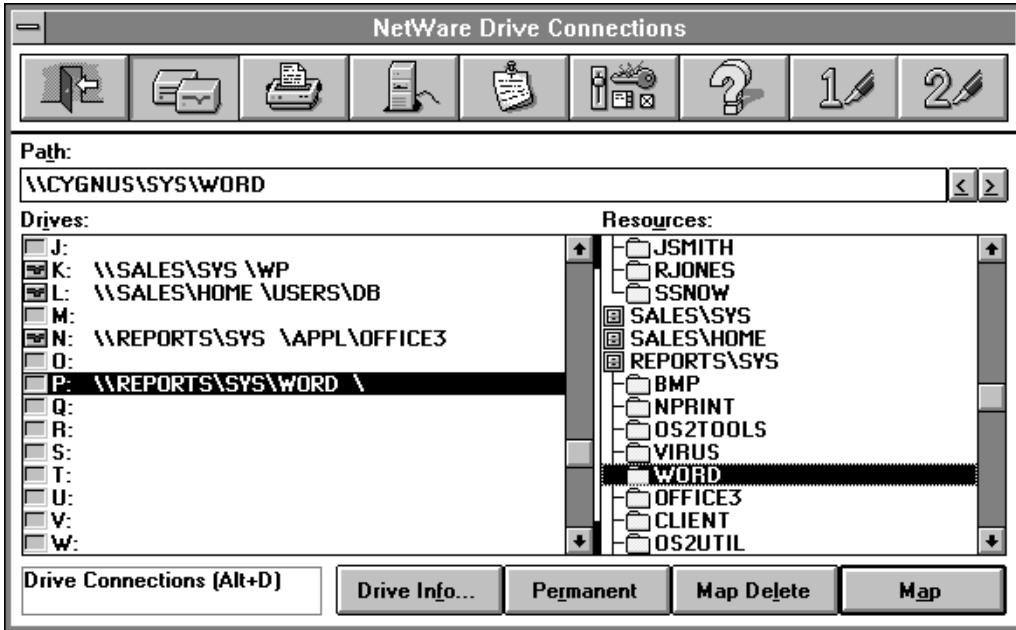
## NetWare Drive Connections

Use the "NetWare Drive Connections" window to map network resources in the Directory Tree and file system to your workstation drives.

Select the resource you want to connect in the "Resources" list, then choose a workstation drive. Now, choose the "Map" button at the bottom of the window. Keyboard entry is done within the "Path" field.

For example, see [Figure 18 on page 80](#) for "NetWare Drive Connections."

Figure 18 NetWare Drive Connections



When using the "NetWare Drive Connections" window, remember:

- ◆ You must first log in to a Directory Services tree or server that contains the object for which you want to connect before using "NetWare Drive Connections."
- ◆ NetWare User Tools for Windows will recognize all drive mappings that exist before starting Windows. However, when you are using a DOS Box inside Windows, your previous search drives are disabled.

### Viewing the "Resources" List

The "Resources" list within the "NetWare Drive Connections" window contains the following:

- ◆ Volumes
- ◆ Directories
- ◆ NetWare Directory Services objects
- ◆ NetWare Directory Services containers

The volumes and directories are listed in a hierarchical structure. Choose the "Volume" icon to display subdirectories.

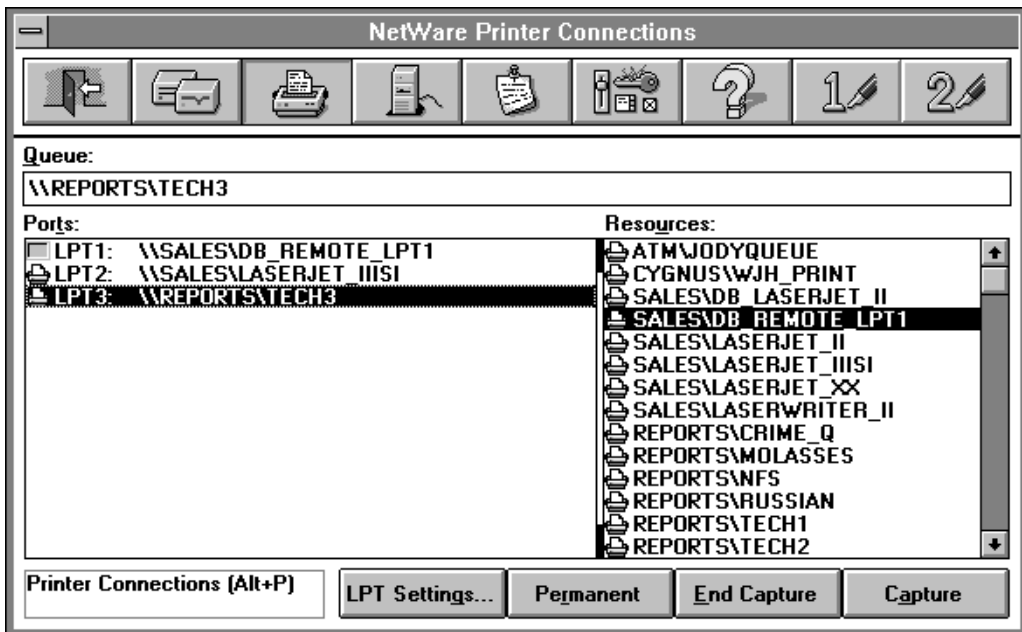
## NetWare Printer Connections

Use the "NetWare Printer Connections" window to capture network print queues to your workstation printing ports.

Select the resource you want to connect in the "Resources" list, then choose a workstation port. Now, choose the "Capture" button at the bottom of the window. Keyboard entry is done within the "Queue" field.

For example, see [Figure 19](#) for "NetWare Printer Connections."

Figure 19 NetWare Printer Connections



When using the "NetWare Printer Connections" window, remember:

- ◆ You must first log in to a server or Directory Services tree that contains the object for which you want to connect before using "NetWare Printer Connections."
- ◆ NetWare User Tools for Windows will recognize all print queue captures that exist before starting Windows.

## Viewing the "Resources" List

The "Resources" list within the "NetWare Printer Connections" window contains the following:

- ◆ Printer objects
- ◆ Print queue objects

## Setting Printer Options

Use the "LPT: Settings" option to access the "Printer Options for LPT:" window. [Table 8](#) lists settings you can assign.

**Table 8** LPT: setting options

LPT: setting option	This function
"Notify"	Provides a confirmation of print job completion.
"Formfeed"	Places a page break between print jobs.
"Copies"	Specify the number of copies to print.
"Enable Tabs"	Specifies the number of characters in a tab stop.
"Enable Timeout"	Specifies the amount of time before the print buffer is closed and the job is sent to a printer.
"Enable Banner"	Allows for a banner page to be printed at the front of your print job.
"Form Name"	Allows you to select a defined print form.
"Auto endcap"	Specifies that the captured printing jobs be closed
"Direct"	If there are no jobs resident, your print job will bypass the print queue (Personal NetWare only).
"Hold"	Stops a print file from being sent to a queue.

See the online help for more information about each option.

If you are connecting to a NetWare v3.x network, Print Server also describes each option in more detail.

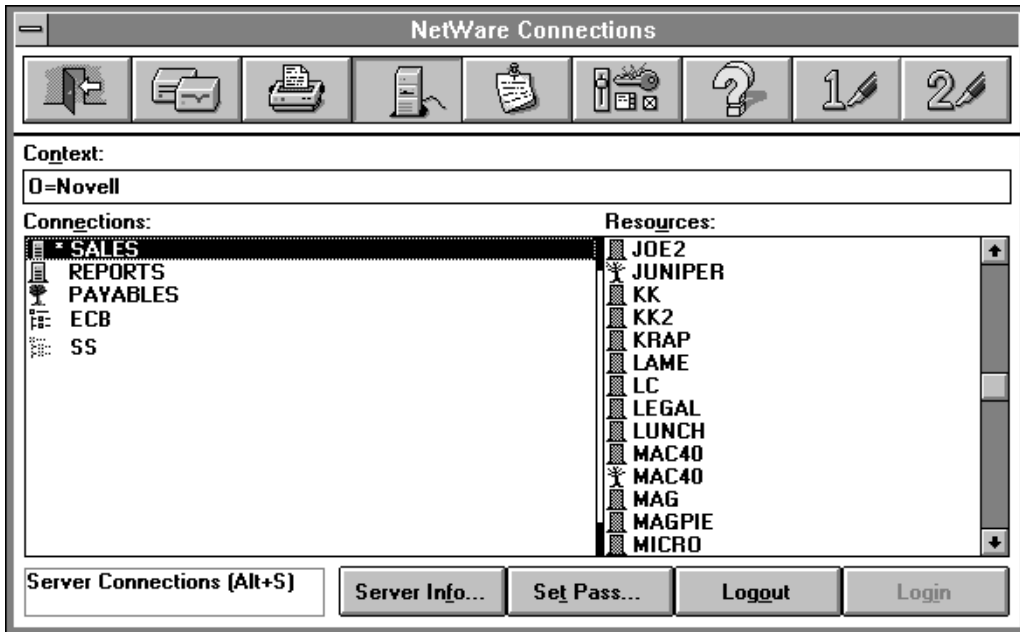
If you are connecting to a NetWare v4.0 network, Print Services also describes each option in more detail.

## NetWare Connections

Use the "NetWare Connections" window to connect to Directory trees and network servers. Select the resource you want to connect to in the "Resources" list, then choose the "Login" button at the bottom of the window.

For example, see [Figure 20](#) for "NetWare Connections."

Figure 20 NetWare Connections



When using the "NetWare Connections" window, remember:

- ♦ "NetWare Connections" can be used for connecting to Directory trees, directly to NetWare Server objects, or to bindery-based servers.

**IMPORTANT:** The "Login" option does not run a login script for your workstation. Use the "Permanent" option in the "NetWare Drive Connections window" to set up your workstation drive mappings. If you want to run a login script, your initial login should be done at the command line with the LOGIN utility. See [Chapter 5, "Workstation Login,"](#) on page 61 for details.

- ♦ If you are connected to a NetWare v4.0 network, log out of a Directory tree before logging in to another Directory tree.

## Viewing the "Resources" List

The resources displayed in the "Resources" list within the "NetWare Connections" window depend on the type of network you are connected to. Your context within a Directory tree in NetWare v4.0 will also influence what is being displayed. The following are some of the possible resources to which you can log in:

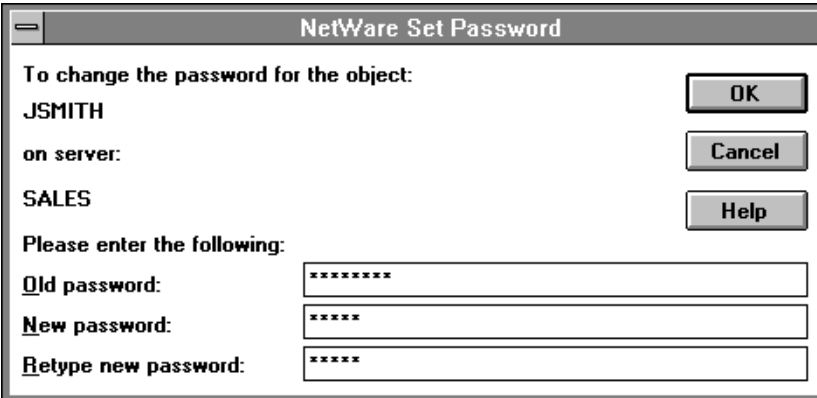
- ◆ An Organization
- ◆ An Organizational Unit
- ◆ A NetWare Server Object
- ◆ A bindery server

**NOTE:** Use the NET.CFG file to set or change your starting context for NetWare v4.0 networks. See page ["Modifying Your NET.CFG for Logging In to NetWare v4.0" on page 55](#) for details.

## Setting a New Password

You can modify your existing password by using the "Set Pass" option in the "NetWare Server Connection" window. Choosing the "Set Pass" button will display the following dialog displayed in [Figure 21](#).

Figure 21 NetWare Set Password



The screenshot shows a dialog box titled "NetWare Set Password". The dialog contains the following text and controls:

- To change the password for the object:** JSMITH
- on server:** SALES
- Please enter the following:**
- Old password:** [password field with asterisks]
- New password:** [password field with asterisks]
- Retype new password:** [password field with asterisks]
- Buttons:** OK, Cancel, and Help.

Choose the "Help" button for procedures and information.

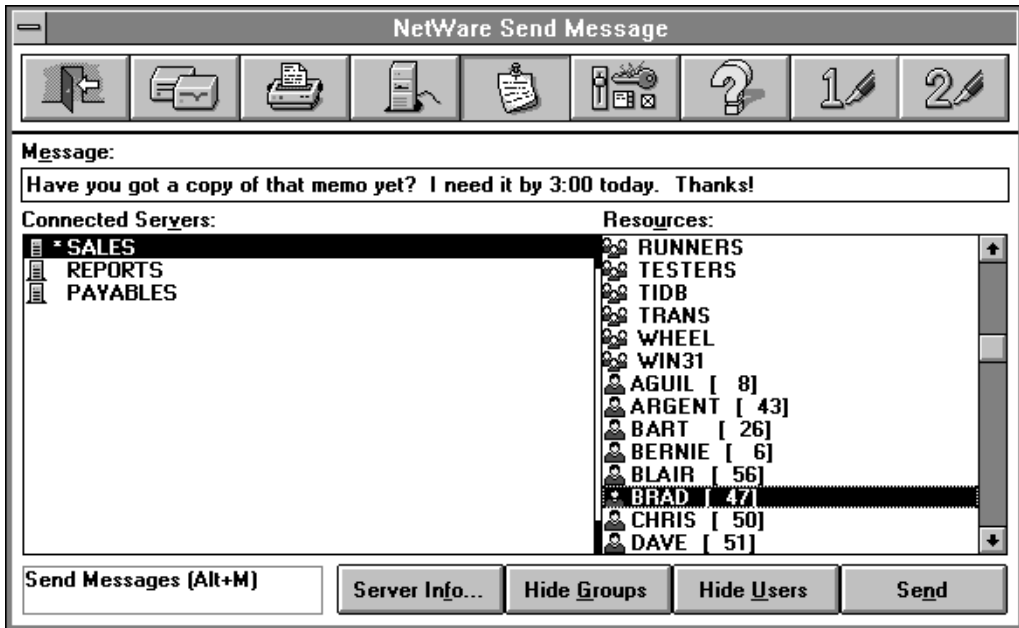


## NetWare Send Message

Use the "NetWare Send Message" window to send a message to a user or group of users on the network. Select the resource you want to send a message to from the "Resources" list, type your message in the box, then choose the "Send" button at the bottom of the window.

For example, see [Figure 22](#) for "NetWare Send Message."

Figure 22 NetWare Send Message



When using the "NetWare Send Message" window, remember that you must first log in to a Directory Services tree or server that contains the object for which you want to send a message.

## Viewing the "Resources" List

The "Resources" list within the "NetWare Send Message" window contains users and groups.

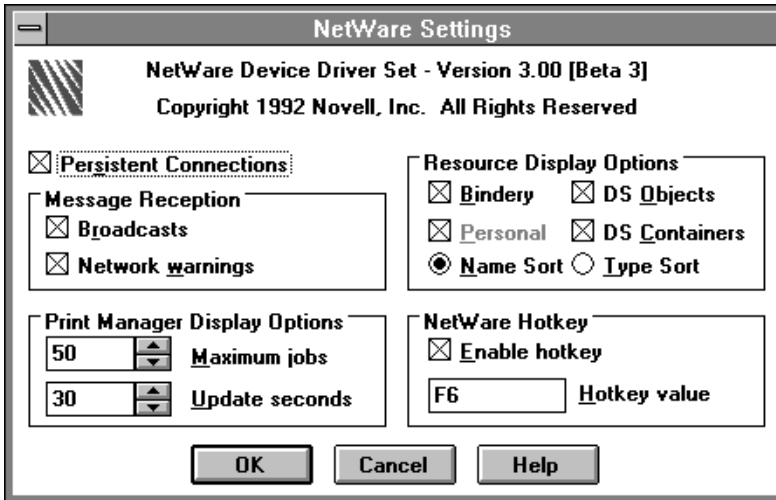
Use the show or hide features to control the displayed resources in the "Resources" list.

# NetWare Settings

Use the "NetWare Settings" window to modify display options, message reception and access to NetWare User Tools for Windows. Select the option you want to modify and choose "OK."

For example, see [Figure 23](#) for "NetWare Settings."

Figure 23 NetWare Settings



When using the "NetWare Settings" window, remember:

- ◆ The settings you choose in the "NetWare Settings" window take effect each time you start Windows. These settings are retained in your NETWARE.INI, WIN.INI, and SYSTEM.INI files.
- ◆ NetWare User Tools for Windows will recognize the previous settings each time you start Windows.

## Using NetWare Settings

Use the "NetWare Settings" window to:

- ◆ Allow or block incoming messages
- ◆ Set display options
- ◆ Change the hotkey value for NetWare User Tools for Windows
- ◆ Allow for persistent connections

Table 9 shows the settings you can modify.

**Table 9** Description of NetWare settings

NetWare Setting Option	Function
Messages Reception	<p>"Broadcasts" allows you to block or receive messages sent to your workstation by other network stations and servers.</p> <p>By default, this box is checked so that you receive broadcast messages.</p> <p>If you block broadcast messages, all messages sent to your station are lost. You cannot retrieve them later.</p> <p>"Network Warnings" alerts you of the following network problems:</p> <ul style="list-style-type: none"><li>◆ The NetWare VLM is not loaded.</li><li>◆ Your DOS Requester configuration is not set up correctly.</li><li>◆ Memory is insufficient to load network support.</li></ul> <p>By default, this box is checked so you are notified of network problems.</p>
Print Manager Display	<p>Allows you to configure the look and content of your Windows Print Manager display. The following option settings are available:</p> <p>"Maximum jobs" allows you to set the number of print jobs that can be stored in the Print Manager queue.</p> <ul style="list-style-type: none"><li>◆ Default: 50</li><li>◆ Maximum: 250</li><li>◆ Minimum: 1</li></ul> <p>"Update seconds" allows you to select how often (in seconds) the Print Manager updates the Print Manager queue.</p> <ul style="list-style-type: none"><li>◆ Default: 30</li><li>◆ Maximum: 65</li><li>◆ Minimum: 1</li></ul>

NetWare Setting Option	Function
Resource Display	<ul style="list-style-type: none"> <li>◆ "Bindery" displays available bindery servers in the "Resources" list.</li> <li>◆ "Personal" displays available Personal NetWare servers in the "Resources" list.</li> <li>◆ "DS Object" displays available NetWare Directory Services objects in the "Resources" list.</li> <li>◆ "DS Containers" displays available NetWare Directory Services containers in the "Resources" list.</li> <li>◆ "Name Sort" displays resources sorted by their name.</li> <li>◆ "Type Sort" displays resources sorted by their type.</li> </ul>
Enable Hotkey	Specifies any hotkey value you want. The default hotkey is <F6>. The hotkey value for NetWare User Tools for Windows takes priority over any other system setting with the same value.
Persistent Connections	Prompts you to reconnect any network connection made in the previous session of Windows.

See the online help for more information about each option.

## Using the User-Defined Buttons "1" and "2"

The "1" and "2" buttons in the right side of the menu bar allow you to load additional programs within NetWare User Tools for Windows. This can be very useful for accessing the Windows File Manager and Print Manager applications. To define the User-Defined buttons, complete the following steps:

### Procedure

- 1 Open the "User Defined Path" dialog.

You can open the "User Defined Path" dialog in the following two ways:

- ◆ Choose the "1" or "2" button, if no previous path is defined.
- ◆ Press <Alt><1> or <Alt><2>.

The "User Defined Path" dialog appears.

- 2 Type the path and program filename in the "Command Line" field. For example, to define the Windows File Manager to load from NetWare User Tools, type

`C:\windows\winfile.exe`

- 3 Choose "OK."

An icon for the particular application appears in the button bar.

## Changing the User-Defined Path

Once a path is set, you will need to use the quick key to access the "User Defined Path" dialog. Press <Alt><1> or <Alt><2>.

# Accessing and Changing Directory and File Attributes

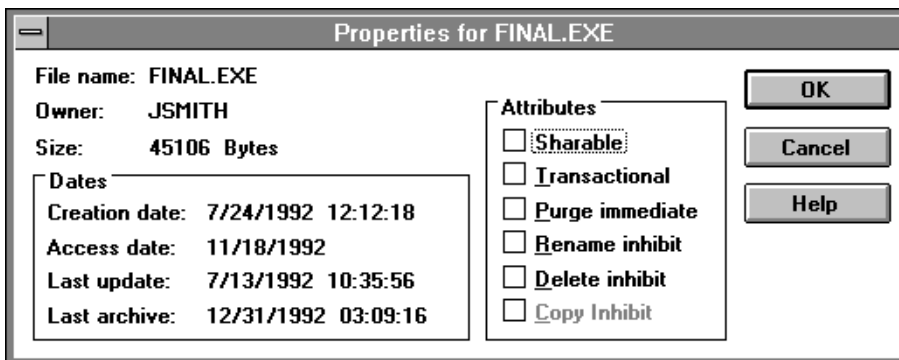
Follow the steps below to access and change file and directory attributes:

## Procedure

- 1 Open the Windows File Manager.
- 2 Select the file for which you want to set attributes.  
This function applies only for files on network drives.
- 3 Choose the "Properties" option from the "File" menu.
- 4 Choose "NetWare" in the "Properties" window.
- 5 Select the appropriate check box to enable or disable an attribute.

Figure 24 show the "Properties" window.

Figure 24 File and directory properties



When using the "Properties" option, remember that you can only set properties for network files and directories. Properties for directories and files on local drives are set within the Windows File Manager.

## Setting File and Directory Attributes

Table 10 lists the settings you can modify.

Table 10 Description of properties settings

Properties setting option	Function
Sharable	Allows users simultaneous access to a file
Transactional	Indicates that a file is protected by the Transactional Tracking System TM
Purge	Notifies NetWare to purge a file when it is deleted
Rename Inhibit	Prevents users from renaming a file
Delete Inhibit	Prevents users from deleting a file
Copy Inhibit	Prevents users from copying a file (Macintosh® workstations only)

Choose the "Help" button for more information about these attributes.

## Exiting NetWare User Tools for Windows

To exit the NetWare User Tools for Windows, complete one of the following:

- ♦ Choose the "Exit" button from the menu bar.
- ♦ Press <Alt><X> or <Alt><F4>.
- ♦ Choose the system menu box (the box in the upper left corner of NetWare User Tools for Windows). A menu appears. Choose "Close."

## Where to Go from Here

With a basic understanding of NetWare User Tools for Windows, you are ready to set up network printing for your workstation platform. See ["Setting Up Printing for Windows" on page 109](#).

# Starting NetWare User Tools for OS/2

## Prerequisites

Before you can start the NetWare User Tools for OS/2, your workstation requires the following:

- A physical connection to the network.
- OS/2 v2.x loaded and running.
- The NetWare Requester files loaded and running. (The OS/2 Requester files are loaded within the OS/2 CONFIG.SYS file during boot up.)

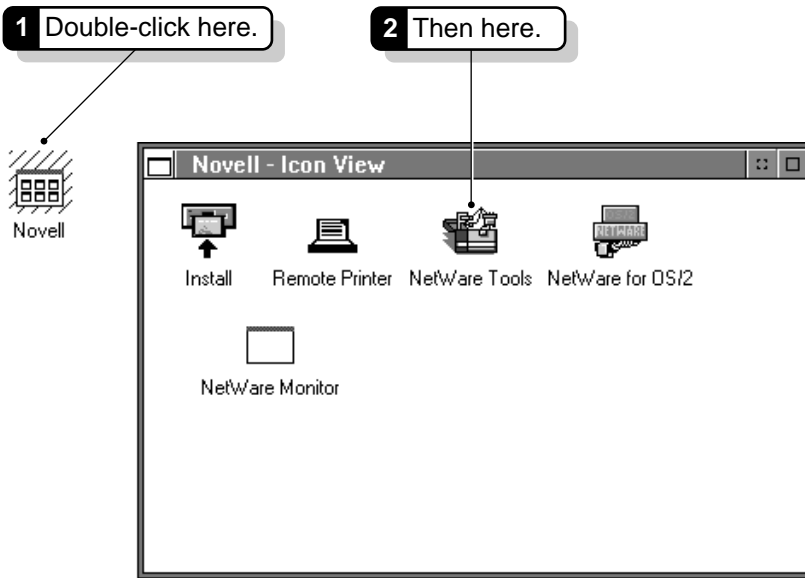
## Procedure

- 1** Choose the Novell icon on your OS/2 desktop window.

If the Novell icon is not displayed, press your right mouse button to show the system menu, then choose "Arrange." If the Novell - Icon folder is still not on your desktop, open an OS/2 full screen or OS/2 window, change to the directory containing Requester files (usually C:\NETWARE), and type NWTOOLS. This will load NetWare User Tools for OS/2.

- 2** From the Novell - Icon View on your desktop, choose the "NetWare Tools" icon.

Figure 25 Opening NetWare User Tools for OS/2



**HINT:** For easier access to the network, you may want to keep the NetWare User Tools Window minimized on your desktop whenever your computer is on.

## Using the NetWare User Tools for OS/2

The NetWare User Tools for OS/2 provide a graphical way of accessing network resources, such as volumes, directories, printers, and users. The NetWare User Tools also allow you a way of configuring your workstation and customizing NetWare User Tools display settings.

NetWare User Tools allow you to do the following:

- ◆ Manage drive mappings
- ◆ Manage printer connections and setup
- ◆ Manage Directory tree and server connections
- ◆ Display network users
- ◆ Send messages



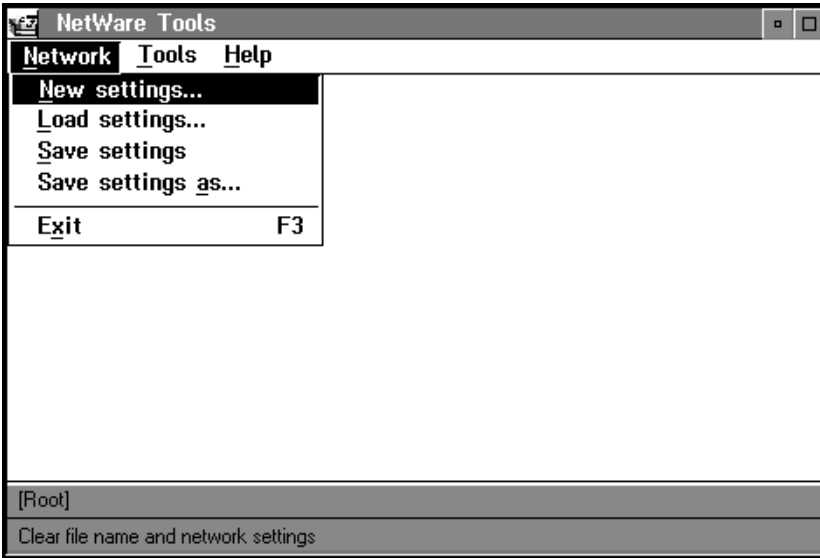
## Using the Menu Bar

The menu bar shows the options you can use. To complete a task, choose the menu option that corresponds with the task you are performing.

Each time you select a menu option, the corresponding menu box will appear. If an option is grayed, that option is not active or available.

Figure 26 shows the "Network" menu option.

Figure 26 Network menu options



Use the "Network" option to modify, save, and reload your workstation network settings. A dialog appears for each option.

**WARNING:** Choosing the "New Settings" option disconnects all current server connections. Make sure that all open files and applications are closed.

For more information about this Tool, choose "Help."

## Tools Menu

Use the "Tools" menu to use the NetWare User Tools. Choosing the "Tools" option causes a menu box to appear with the following options:

- ◆ Disk drives
- ◆ Printer ports

- ◆ Servers
- ◆ Directory
- ◆ User lists
- ◆ Print queues

A window appears for each option.

For easier access, leave open all of the tools you will commonly use. The "Window" option in the menu bar allows you to arrange the "Tools" window display. You can set the display for cascade or tile.

**NOTE:** The menu bar will refresh itself according to the "Tools" window you have activated currently.

For more information about these tools, choose "Help."

## Window Menu

Use the "Window" menu to arrange the windows on the screen and switch between views.

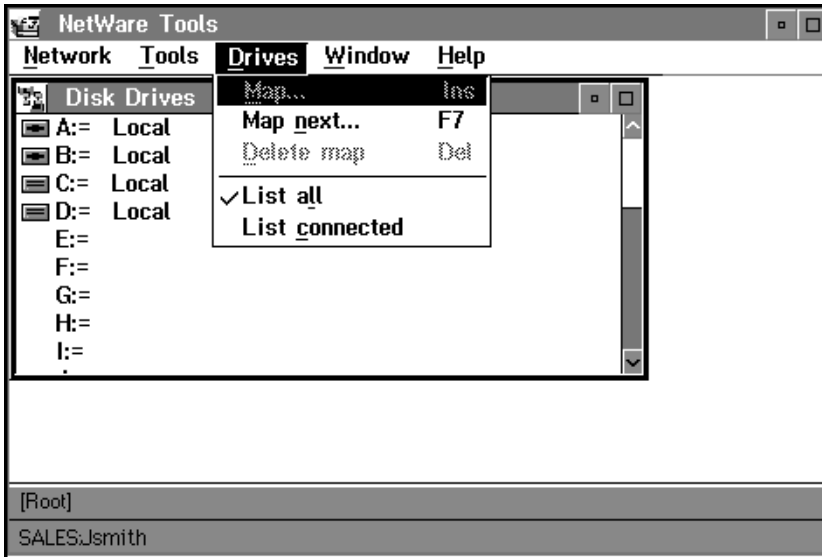
## Help Menu

Use the "Help" menu to access the online help. (You can also press the <F1> key for help.) Use the "Contents" option to see a list of commands, keyboard instructions, and a comprehensive task list.

## Drives Menu

Use the "Drives" menu to map network resources in the Directory tree and file system to your workstation drives. Choose the drive letter for which you want to map a drive.

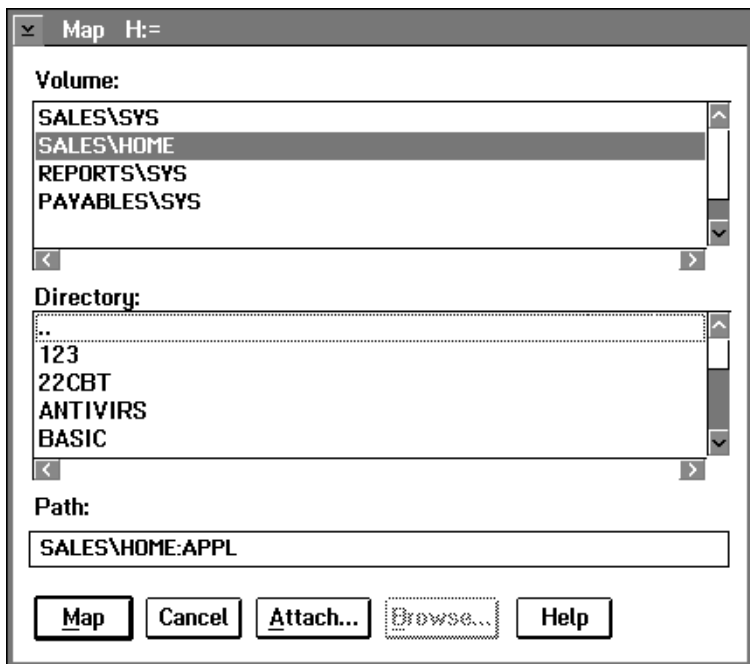
Figure 27 Drives menu



A "Drives" window appears as seen in [Figure 27](#). Select the resource you want to connect to in the "Volume" and "Directory" lists, then choose the "Map" button at the bottom of the window. Keyboard entry is done within the "Path" field.

[Figure 28 on page 96](#) shows the "Map" dialog.

Figure 28 Map window



When using the "Map" window, remember:

- ◆ You must log in to a server or Directory tree or that contains the object for which you want to connect before using the "Drives" menu.
- ◆ NWTOOLS will recognize all drive mappings that are made at the command line.

For more information about this window, choose "Help."

### Viewing the "Volume" and "Directory" Lists

The "Volume" and "Directory" lists within the "Map" window contain the following:

- ◆ Volumes
- ◆ Directories

The volumes and directories are listed in a hierarchical structure. Choose the "Volume" icon to display subdirectories.

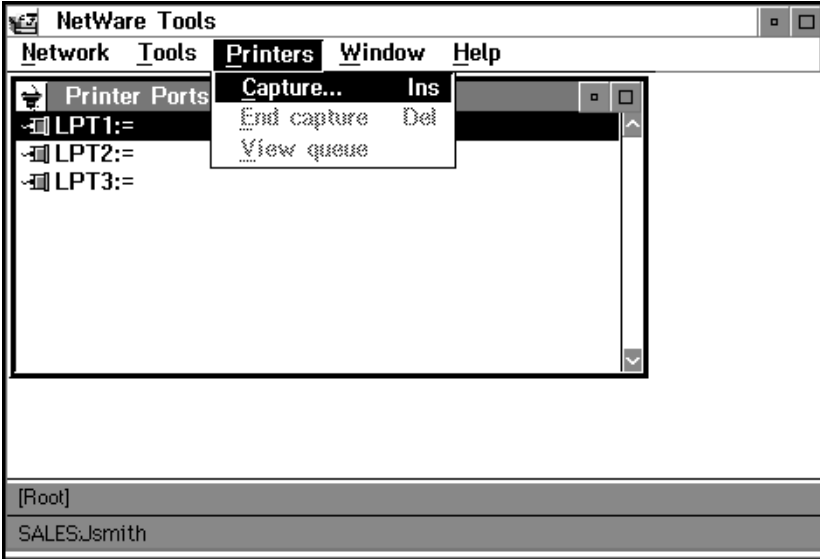
**NOTE:** If the volume or directory you want to map does not appear in the "Volume" or "Directory" list, check to see if you are attached to the server containing this resource. Choose "Server" from the "Tools" option to see connected servers.

## NetWare User Tools "Printer" Menu

Use the "Printers" menu to capture network print queues to your workstation printing ports. Choose the printer port you want to capture.

Figure 29 shows the "Printer" menu.

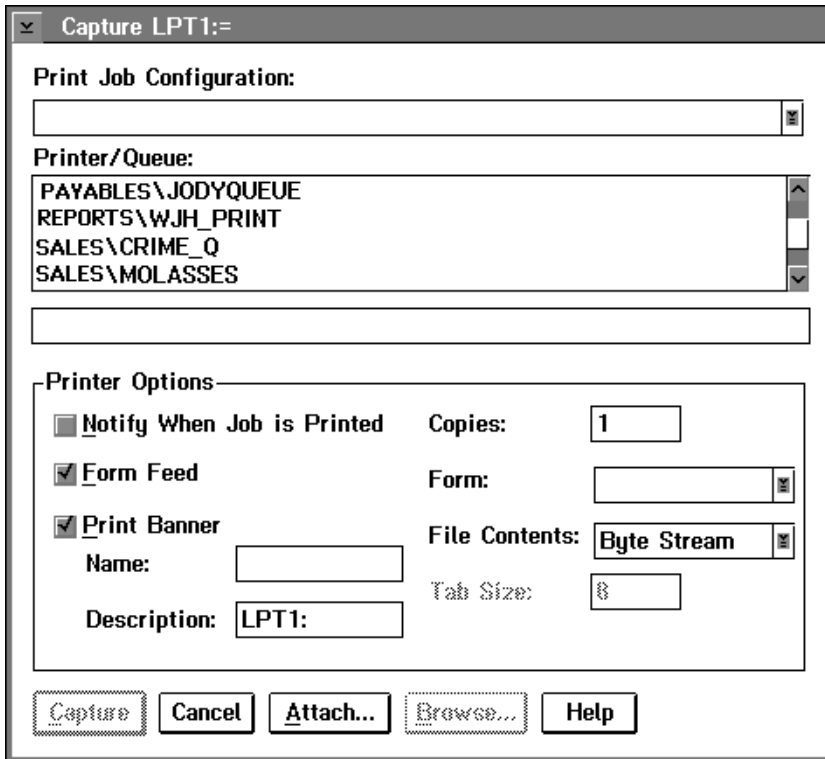
Figure 29 Printers menu



The "Capture" window appears. Select the resource you want to capture in the "Printer/Queue" list, then choose "Capture" at the bottom of the window. Keyboard entry is done within the "Queue" field.

Figure 30 on page 98 shows the "Capture" dialog.

Figure 30 Capture window



When using the "Capture" window, remember:

- ◆ You must first log in to a server or Directory tree that contains the resource you want to capture before using the "Capture" window.
- ◆ NWTOOLS will recognize all print queue captures made at the command line.

For more information about this window, choose "Help."

### Viewing the Printer/Queue List

The "Printer/Queue" list within the "Capture" window contains the following:

- ◆ Printer objects
- ◆ Print queue objects

You must highlight the port to which you want to capture a print queue before choosing the "Capture" button.

You must highlight the port and print queue name you want to view before choosing the "View Queue" option.

**NOTE:** If the print queue you want to capture does not appear in the "Queue" list, check to see if you are attached to the server containing this resource. Choose "Server" under the "Tools" option to see connected servers.

## Setting Printer Options

Use the "Printer Options" field to assign the following settings:

**Table 11** Description of printer options

Printer option	Function
Notify	Confirms print job completion
Formfeed	Places a page break between print jobs
Copies	Specifies the number of copies to print
Tabs Size	Specifies the number of characters in a tab stop
File Contents	Specifies the type of print file being printed
Print Banner	Allows for a banner page to be printed at the front of your print job
Form	Allows you to select a defined print form

See the online help for more information about each option.

If you are connecting to a NetWare v2.x or v3.x network, Print Server describes each option in more detail.

If you are connecting to a NetWare v4.0 network, Print Services describes each option in more detail.

## Tree Option (NetWare v4.0 only)

This tool is only used with NetWare v4.0 networks. For NetWare v2.x and v3.x networks, use the "Servers" option to attach to network servers.

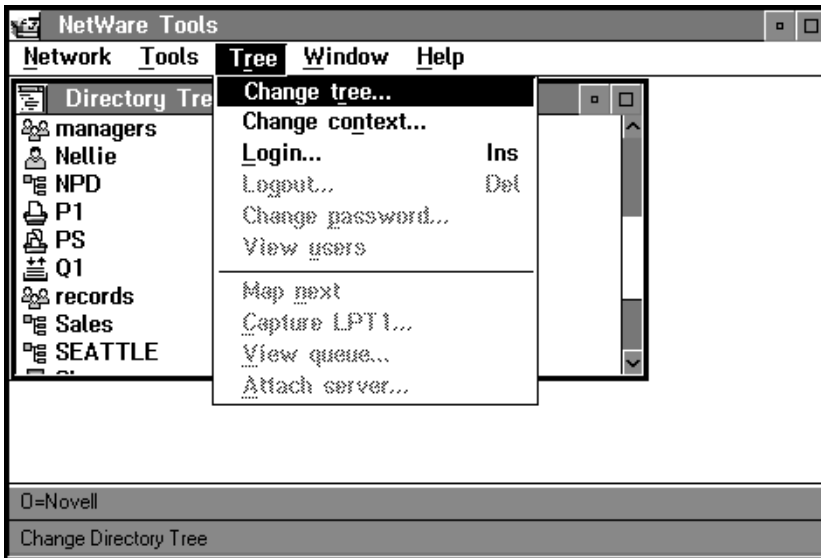
Use the "Tree" option to do the following:

- ◆ Display resources
- ◆ Change Directory trees

- ◆ Change context with the network
- ◆ Log in to the network
- ◆ Change your password

Choose the "Tree" option from the main menu bar. A menu box will appear. **Figure 31** shows the "Tree" menu:

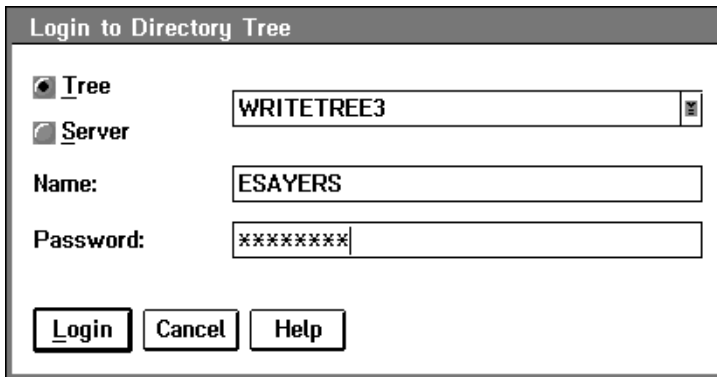
**Figure 31** Tree menu



Choose the "Login" option from the menu box. The "Login to Directory Tree" dialog appears. **Figure 32 on page 101** shows the Login to directory Tree" dialog.



Figure 32 Login to Directory Tree dialog



When using the "Tree" option, it is important that you remember that:

- ◆ The "Login" option does not run a login script for your workstation. Use the "Save Settings" option in the "Network" menu box to maintain your connections. If you want to run a login script, your initial login should be done at the command line with the LOGIN utility. See [“Workstation Login” on page 61](#).
- ◆ You must log out of a Directory tree before logging in to another Directory tree.

For more information about this dialog, choose "Help."

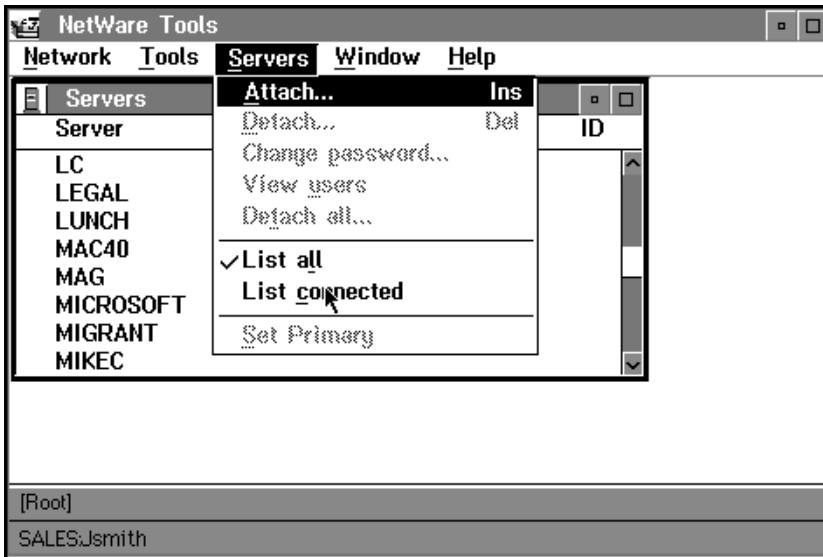
## Servers Option

Use the "Servers" option to do the following:

- ◆ Display Directory Services NetWare Server objects
- ◆ Display bindery-based servers
- ◆ Attach to bindery-based servers
- ◆ Change your password

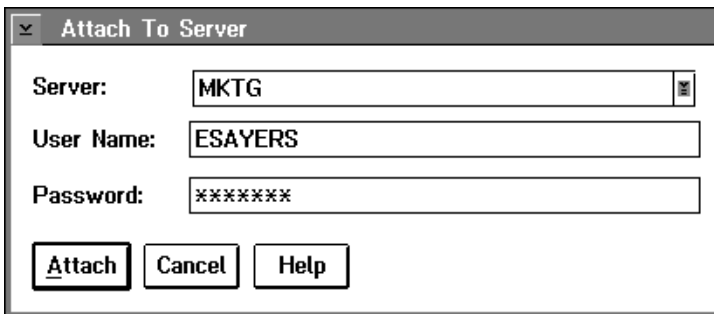
Choose the "Servers" option from the menu bar. The "Servers" menu appears. [Figure 33 on page 102](#) shows the "Servers" menu.

Figure 33 Servers menu



Choose the "Attach" option from the menu. The "Attach To Server" dialog appears. Figure 34 shows the "Attach To Server" dialog.

Figure 34 Attach To Server dialog



When using the "Servers" option, it is important that you remember that:

- ◆ This tool is used with NetWare v2.x, v3.x and v4.0 networks to attach to network servers.
- ◆ The "Attach" option does not run a login script for your workstation. Use the "Save Settings" option in the "Network" menu box to maintain your

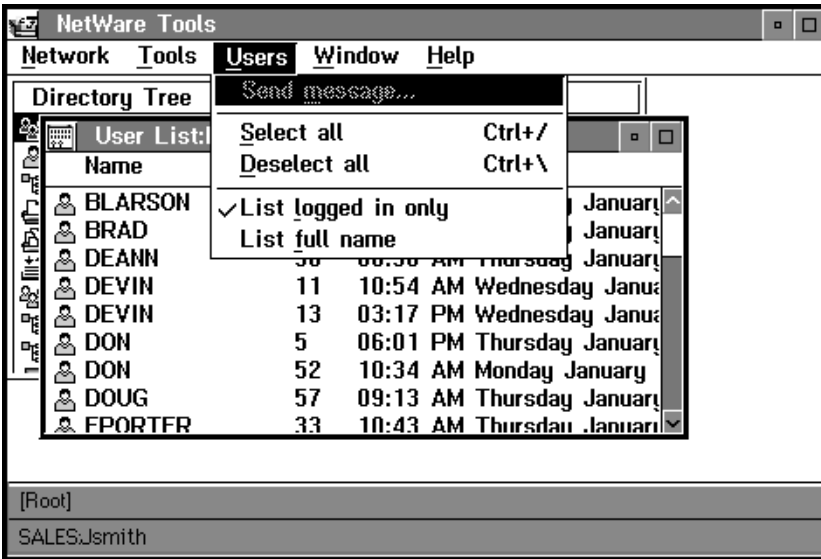
connections. If you want to run a login script, your initial login should be done at the command line with the LOGIN utility.

For more information about this option, choose "Help."

## Users Option

Use the "Users" option to display network users or groups and send a message to them. Select the resource you want to send a message to from the "Users" list. [Figure 35](#) shows the "Users" menu.

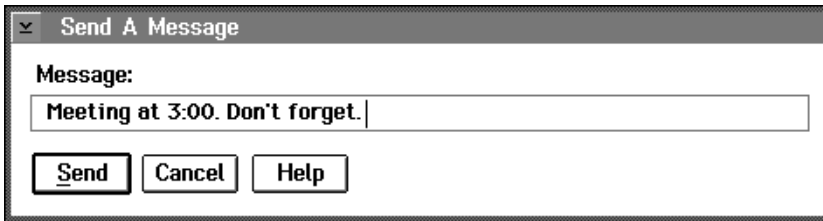
Figure 35 Users menu



You must be logged in to a server or Directory tree that contains the object for which you want to send a message. Then, choose the user or group you to whom you want to send a message.

The "Send a Message" dialog appears. Type your message in the "Messages" field, then choose "Send." [Figure 36 on page 104](#) shows the "Send A Message" dialog.

Figure 36 Send A Message dialog



You must highlight the users to which you want to send a message before choosing the "Send Message" option.

**NOTE:** If the user or group you want to send a messages to does not appear in the "Users" list, check to see if you are attached to the server containing this user or group. Choose "Server" under the "Tools" option to see connected servers.

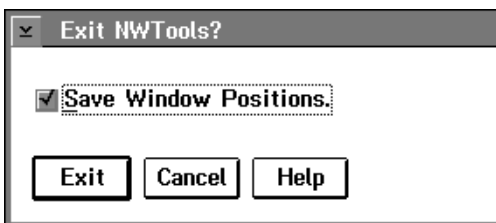
For more information about this tool, choose "Help."

## Exiting NetWare User Tools for OS/2

To exit NetWare User Tools for OS/2, complete one of the following:

- ◆ Choose the "Exit" option within the "Network" menu.
- ◆ Press <Alt><<F4>.
- ◆ Choose the system menu (the box in the upper left corner). A menu box appears. Choose "Close."

Figure 37 Exit NWTools dialog



## Where to Go from Here

With a basic understanding of NetWare User Tools for OS/2, you are ready to set up network printing for your workstation platform. See [“Setting Up Printing for OS/2 Workstations”](#) on page 112.



# 7

## Setting Up Workstation Printing

### Overview

This chapter explains how to set up network printing on your NetWare workstation.

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**Topic**

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[“Setting Up Printing for DOS Workstations” on page 108](#)

[“Setting Up Printing for Windows” on page 109](#)

[“Setting Up Printing for OS/2 Workstations” on page 112](#)

---

### Introduction

NetWare uses a print queue, a print server, and a printer driver to allow several network workstations to print to a network printer. The print server takes print jobs from the print queue and sends them to the printer.

### Prerequisites

- Complete the procedures in [Chapter 5, “Workstation Login,” on page 61](#) to ensure that you are connected to the network and have access to network printing resources
- Install NetWare User Tools for DOS, Windows, and OS/2.
- Go to the appropriate section for the platform you are using.

If you are using	Go to
DOS	<a href="#">"Setting Up Printing for DOS Workstations" on page 108</a>
Windows	<a href="#">"Setting Up Printing for Windows" on page 109</a>
OS/2	<a href="#">"Setting Up Printing for OS/2 Workstations" on page 112</a>

## Setting Up Printing for DOS Workstations

Most applications send print jobs directly to the print queue. If you use an application that prints only to local ports, use NETUSER to redirect printing to a network print queue.

Setting up printing in DOS is done within NETUSER. The following sections explain the procedures.

### Procedure

- 1 Change to the SYS:PUBLIC directory.
- 2 Load NetWare User Tools for DOS. For example, if SYS:PUBLIC is mapped to drive Z:, type

```
Z:\>NETUSER <Enter>
```

The NETUSER menu appears. Press <Enter> to move to the next option. Use the <Esc> key to back out of windows within NETUSER. Use the arrow keys to move between options.

- 3 Choose the "Printing" option.

The "Available Ports" window appears.

- 4 Choose a port from the list.

The "Available Options" window appears.

- 5 Choose the "Change Printers" option.

The "Printer\Print Queues" window appears.

**NOTE:** If the print queue you want to capture is not listed, make sure that you chose the correct server containing this print queue.



- 6** Choose a print queue name from the list.

If you don't know the queue name, use the arrow keys to see the list of available print queues.

- 7** Press <Enter> to capture the print queue to the port you specified.

Your screen will return to the previous window. Your current workstation information in the top portion of your screen will be updated.

## Setting Up Printing for Windows

Setting up workstation printing in Windows requires you to first set up the Print Manager in Windows, then access the "NetWare Printer Connections" option in NetWare User Tools for Windows.

### Procedure

- 1** Activate the Print Manager.

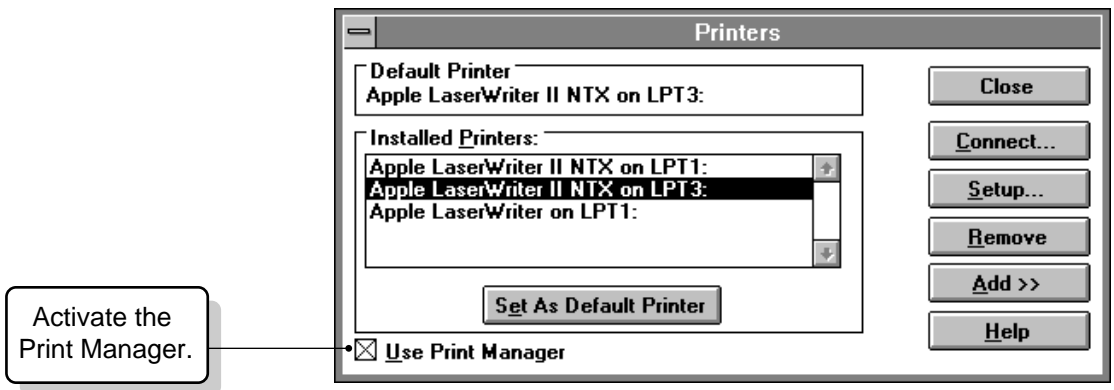
- 1a** In the Windows Control Panel, choose the Printer icon.

The "Printers" dialog appears.

- 1b** Mark the "Use Print Manager" box.

The Print Manger is activated.

Figure 38 Printers dialog



- 2** Select a printer driver from the "Installed Printers" list.

- 2a** If the printer driver for your network printer is not listed, choose "Add" to display the list of available printer drivers.
- 2b** Select a printer driver from the "List of Printers" for your network printer.
- 2c** Choose "Install."

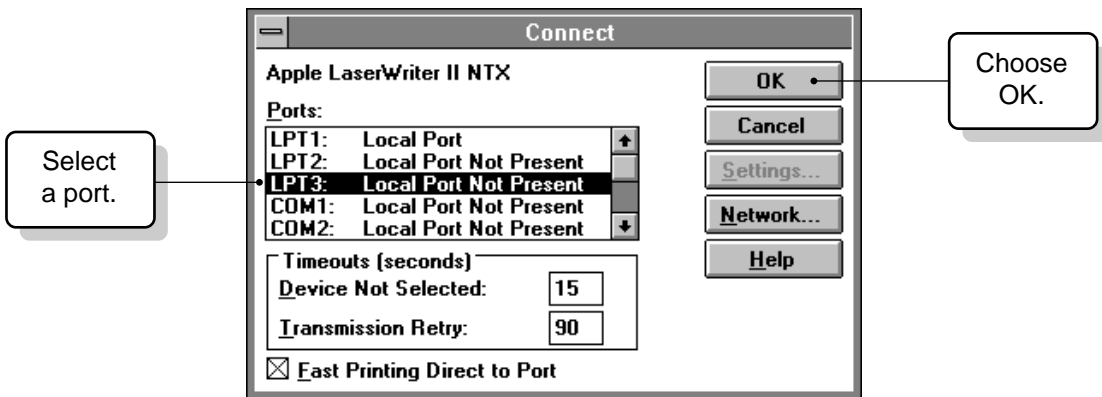
Windows prompts you to insert a Windows diskette and then copies the selected printer driver to the Windows directory.

**3** Assign printing ports to network print queues.

- 3a** Choose "Connect."

The "Connect" dialog appears.

**Figure 39** Connect dialog



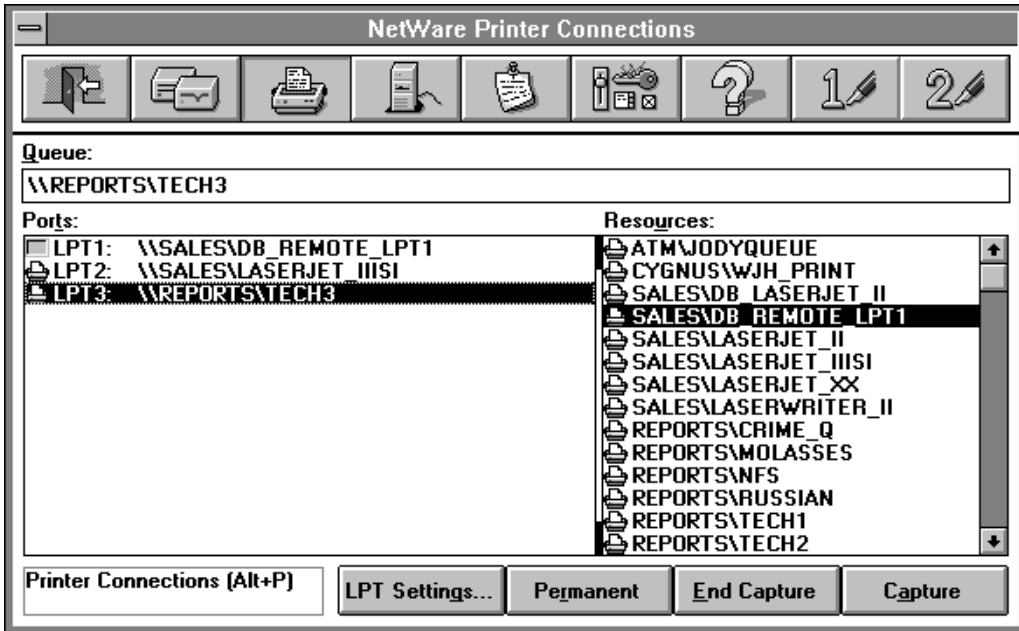
- 3b** Select a port from the "Ports" list.

If you have a local printer, it is recommended that you leave it assigned to the port to which it is already connected.

- 3c** Choose "Network."

The "NetWare Printer Connections" window appears.

Figure 40 NetWare Printer Connections



- 3d** Choose the same port from the "Ports" list that you selected in [Step 3b](#).
- 3e** Choose a print queue name from the "Resources" list.  
If you don't know the queue name, use "Browse" to see available print queues.
- 3f** Choose "Capture."
- 3g** Exit the "NetWare Printer Connections" window.  
Your screen will return to the "Connect" dialog you were in Step 3.
- 3h** Choose "OK."  
Your screen will return to the "Printers" dialog.
- 3i** Choose "Close" to exit the "Printer" dialog.  
This will return you to the "Control Panel" window.
- 4** Close the "Control Panel" window.
- 5** Choose the "Print Manager" icon.  
The "Print Manager" window appears.

- 6 Select the "Options" option.

The "Options" menu appears.

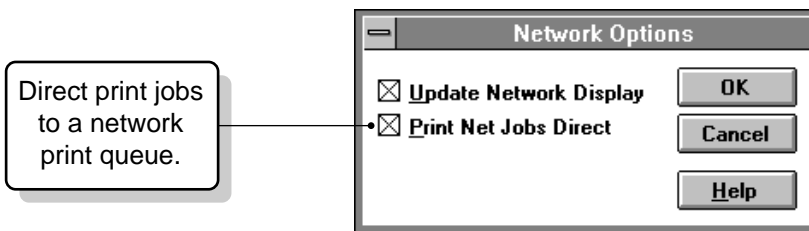
- 7 Choose "Network Settings."

The "Network Options" dialog appears.

- 8 Enable the "Print Net Jobs Direct" option.

With this option marked, Windows bypasses the Print Manager and prints directly to the network print queue, giving you optimal printing performance.

Figure 41 Network Options dialog



## Setting Up Printing for OS/2 Workstations

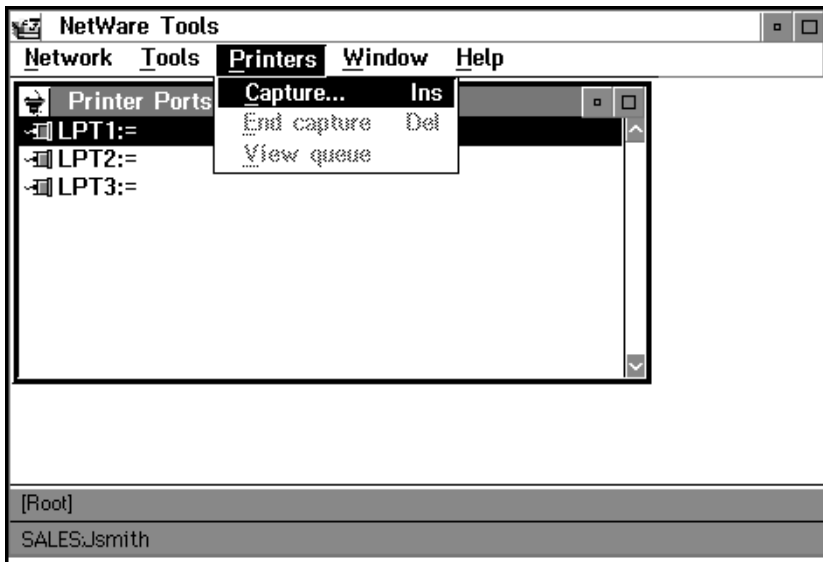
Setting up workstation printing in OS/2 is done within NetWare User Tools for OS/2.

### Procedure

- 1 Choose the Novell Icon from your desktop.
- 2 Choose the "NetWare Tools" icon from the Novell - Icon View window on your desktop.
- 3 Choose the "Tools" menu in the upper menu bar.
- 4 Choose "Printer Ports."

A "Printers" window will appear and a "Printers" option will appear in the menu bar.

Figure 42 NetWare User Tools Printer Option

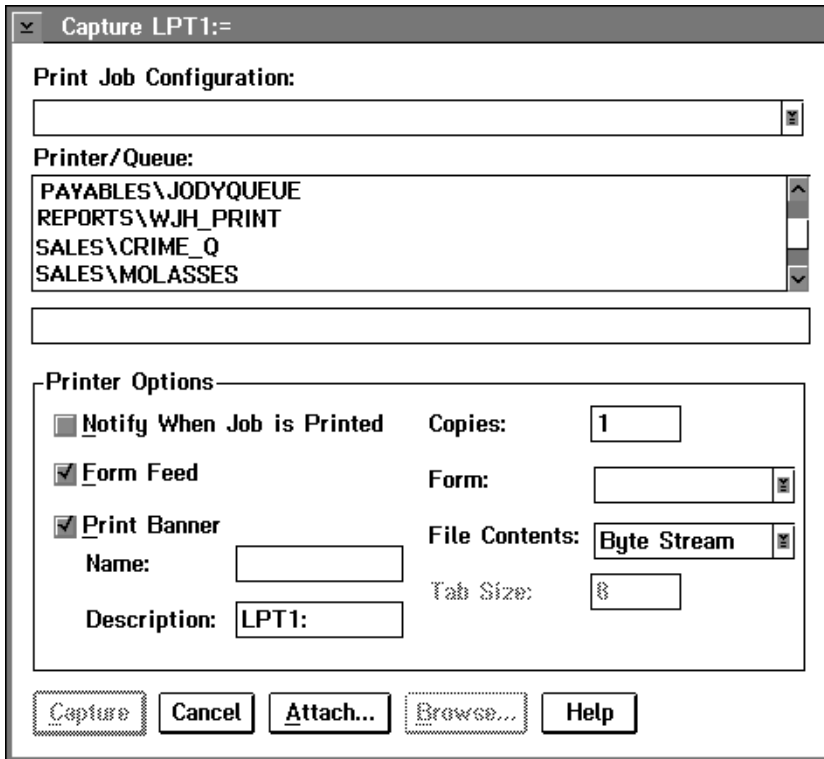


**5** Choose a port.

You can also select a port and choose "Printers" from the upper menu bar in the NetWare User Tools window. Then choose "Capture."

A "Capture" window appears.

Figure 43 Capture dialog



**6** Highlight a print queue name in the "Printers/Queue" list.

**7** Choose "Capture."

**NOTE:** If the print queue you want to capture does not appear in the "Printers/Queue" list, check to see if you are attached to the server containing this resource. Choose "Server" from the "Tools" option to see connected servers.

Use the "Save Settings" option in the "Network" menu to maintain your connections.

For more information about this tool, choose "Help."

## Where to Go from Here

With printing set up on your workstation, you are now ready to use your workstation on the network. See *Workstation for DOS and Windows* and *Workstation for OS/2* for additional information on setting up and configuring your workstation.





# A

## Using the WSUPGRD Utility

### Overview

This appendix contains information about using the WSUPGRD utility for upgrading dedicated IPX drivers to ODI drivers. The following topics are included.

---

**Topic**

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[“Setting Up the Public Directory for WSUPGRD” on page 118](#)

[“Using the WSUPGRD /I Option” on page 119](#)

[“Upgrading Your Network Board Driver from the Command Line” on page 119](#)

[“Upgrading Network Board Drivers from a Login Script” on page 120](#)

---

### Introduction

The WSUPGRD utility upgrades the IPX network board driver on your workstation to the corresponding ODI driver. If your workstation is running a previous version of NetWare, your workstation will be running on an IPX driver or a corresponding ODI driver.

**IMPORTANT:** This utility is recommended for large installations with similar hardware and software configurations. Networks with a variety of network boards and driver types will need to manually upgrade each workstation. It cannot be used for upgrading RPL workstations.

The workstation installation program will provide you with a Novell ODI driver for your network board. The workstation installation program cannot, however, detect board settings from an IPX driver. If you are running an IPX

driver on your workstation, you should upgrade your network board driver to ODI before using the workstation installation program.

The workstation installation program will automatically detect if an ODI driver is used on your workstation and set the driver settings for you. This will make upgrading each network workstation from a previous version of NetWare with the installation program very automatic.

## Setting Up the Public Directory for WSUPGRD

A typical upgrade requires the following files in SYS:PUBLIC:

- ♦ WSUPGRD.EXE
- ♦ LSL.COM
- ♦ IPXODI.COM
- ♦ Appropriate ODI drivers (for example, NE2000.COM)
- ♦ Auxiliary files DRVRXLAT.TXT and *driver\_name*.LDC

### Auxiliary Files

The auxiliary files are optional but can make upgrading a complex network easier if they exist.

#### DRVRXLAT.TXT

The DRVRXLAT.TXT file is in SYS:PUBLIC. This file contains one line for each ODI driver type in use on the network. Each line has the hexadecimal hardware identification of the IPX driver, the path to the files, and the name of the corresponding ODI driver.

If no DRVRXLAT.TXT file exists or if no line with the correct hardware identification is found in the DRVRXLAT.TXT file, then WSUPGRD will look in the PUBLIC directory for an ODI driver with the same name as the existing IPX driver. If it fails to find one, no upgrade will be performed.

#### *driver\_name*.LDC

The .LDC files are in the same directory as the ODI drivers of the same name (*driver\_name*.COM). These files contain lines that are to be copied into the NET.CFG file in addition to any lines the utility creates normally.

# Using the WSUPGRD /I Option

The /I option in WSUPGRD lets you print out the hardware identification for your IPX network board driver.

The DRVRXLAT.TXT file contains a master configuration table. Check the master configuration table to make sure that your IPX driver identification matches a registered driver. The table lists the driver name, the company name, and the hardware identification.

If the listing in the table does not match your IPX driver, you should not use this utility.

If your IPX driver is not registered, the identification that your IPX driver uses may be registered for a different type of network board.

You cannot use the WSUPGRD /I option with any other WSUPGRD options.

## Upgrading Your Network Board Driver from the Command Line

### Procedure

- 1 Map the next network drive to SYS:PUBLIC by typing:

```
MAP N SYS:PUBLIC <Enter>
```

- 2 Change to the drive and directory from which your workstation boots.

For example, if your workstation boots from drive C:, type:

```
C: <Enter>
```

- 3 To start WSUPGRD and specify your network board, type

```
WSUPGRD odi_driver <Enter>
```

For example, type

```
WSUPGRD NE2000 <Enter>
```

# Upgrading Network Board Drivers from a Login Script

You can insert the WSUPGRD command into a system login script for upgrading network board drivers. Use SYSCON for NetWare v2.x and v3.x workstations. Use the graphical NetWare Administrator or the NETADMIN text utility for NetWare v4.0 workstations. All three procedures are documented in this section.

**IMPORTANT:** If this utility is loaded from a system login script, all of the workstations that log in to this server must have drivers with the same name. If this is not the case, users will have to run WSUPGRD from the DOS command line supplying the path to and the name of the IPX driver on their respective workstations.

## Inserting WSUPGRD in a Login Script Using SYSCON

This tool is only used with NetWare v2.x and v3.x networks only. For NetWare v4.0 networks, use the NWADMIN or NETADMIN utility to edit your login script. See [“Inserting WSUPGRD in a Login Script Using the NetWare Administrator” on page 121](#) or [“Inserting WSUPGRD in a Login Script Using NETADMIN” on page 122](#).

### Prerequisites

- A workstation logged into the network, running DOS v3.x or later. For more information on the LOGIN syntax and options, see "LOGIN" in *Utilities Reference*.
- You must have rights to modify a system login script.

### Procedure

- 1** Log in to a server as SUPERVISOR.  
For example, type:  
`LOGIN SUPERVISOR <Enter>`
- 2** Enter a password (if prompted).
- 3** At the workstation command line, type  
`SYSCON <Enter>`
- 4** Enter SYSCON and choose "Supervisor Options" from the "Available Topics" menu.

**5** Choose "System Login Script."

If a system login script already exists, it appears; otherwise, the screen is blank.

**6** Map a drive to SYS:PUBLIC if a mapping does not exist. Type

```
MAP drive:=SYS:PUBLIC
```

**7** Insert the WSUPGRD command after the drive mapping in the login script. Type

```
WSUPGRD odi_driver [option]
```

For example, type

```
WSUPGRD NE2000 /N
```

This command upgrades your IPX driver with an NE2000.COM ODI driver without deleting your IPX driver.

**8** Update any batch files that are run by users at login.

**9** To exit the system login script, press <Esc>.

Confirm changes you made in the login script.

## Inserting WSUPGRD in a Login Script Using the NetWare Administrator

This tool is only used with NetWare v4.0 networks. For NetWare v2.x and v3.x networks, use the SYSCON utility to edit your login script. See ["Inserting WSUPDATE in a Login Script Using SYSCON"](#) on page 129.

### Prerequisites

- A workstation logged into the network, running Windows v3.1 or OS/2 v2.x. For more information on the LOGIN syntax and options, see "LOGIN" in *Utilities Reference*.
- You must have rights to modify a system login script.

### Procedure

**1** Log in to the network as ADMIN.

The login command must include your context. Depending on the Directory tree structure you set up for the server during installation, use

the name typing sequence of Common Name, Organizational Unit, Organization, and Country.

For example, if you installed this server into an Organization called ABC\_INC, with no Organizational Unit or Country defined in the Directory tree, type:

```
LOGIN .CN=ADMIN.O=ABC_INC <Enter>
```

- 2** Enter a password (if prompted).
- 3** Start Windows.
- 4** Choose the "NetWare Administrator" icon.
- 5** Select the object whose login script you want to edit.

A login script can be a property of a container, Profile, or User object.

You may have to browse through the Directory tree to get to the object you want. For information about moving around in the Browser and selecting objects, choose "Help."

- 6** Choose "Object" from the NetWare Administrator menu bar.
- 7** Choose "Details" from the "Object" menu.
- 8** Choose "Login Script" from the pages on the right side of the window.
- 9** To edit the login script, click inside the "Login Script" input box.
- 10** Map a drive to SYS:PUBLIC. Type

```
MAP drive:=SYS:PUBLIC
```

- 11** Insert the WSUPGRD command after the drive mapping in the login script. Type

```
WSUPGRD odi_driver [option]
```

For example, type

```
WSUPGRD NE2000 /N
```

This command upgrades your IPX driver with an NE2000.COM ODI driver without deleting your IPX driver.

- 12** Choose "OK."
- 13** Update any batch files that are run by users at login.

# Inserting WSUPGRD in a Login Script Using NETADMIN

This tool is only used with NetWare v4.0 networks. For NetWare v2.x and v3.x networks, use the SYSCON utility to edit your login script. See [“Inserting WSUPDATE in a Login Script Using SYSCON” on page 129](#).

## Prerequisites

- ❑ A workstation logged into the network, running DOS v3.x or later. For more information on the LOGIN syntax and options, see "LOGIN" in *Utilities Reference*.
- ❑ You must have rights to modify a system login script.

## Procedure

- 1** Log in to the network as ADMIN.

The login command must include your context. Depending on the Directory tree structure you set up for the server during installation, use the name typing sequence of Common Name, Organizational Unit, Organization, and Country.

For example, if you installed this server into an Organization called ABC\_INC, with no Organizational Unit or Country defined in the Directory tree, type:

```
LOGIN .CN=ADMIN.O=ABC_INC <Enter>
```

- 2** Enter a password if prompted.

- 3** At the workstation command line, type

```
NETADMIN <Enter>
```

- 4** Choose "Manage Objects" from the "Netadmin Options" menu.

A login script can be a property of a container, Profile, or User object.

- 5** Select the object whose login script you want to edit by completing the following steps.

**5a** If the object you want appears on the list, select it and press <F10>.

**5b** If the object is not on the list, browse the Directory tree by selecting objects and pressing <Enter> until you see the object you want. Select it and press <F10>.

- 6** Choose "View or edit object properties."

- 7** Choose "Login Script."
- 8** Enter the login script commands and information in the login script text box.
- 9** Map a drive to SYS:PUBLIC. Type  
**MAP drive:=SYS:PUBLIC**
- 10** Insert the WSUPGRD command after the drive mapping in the login script. Type  
**WSUPGRD odi\_driver [option]**  
 For example, type  
**WSUPGRD NE2000 /N**  
 This command upgrades your IPX driver with an NE2000.COM ODI driver without deleting your IPX driver.
- 11** Update any batch files that are run by users at login.
- 12** Press <F10> to save the script.
- 13** Update any batch files that are run by users at login.

## Additional Information

If you are using NetWare v2.x and 3.x, see the following references for more information about WSUPGRD and related topics:

For more information about	Refer to
Login scripts	"SYSCON" of <i>Utilities Reference</i>
Mapping network drives	"MAP" in <i>Utilities Reference</i>



If you are using NetWare v4.0, see the following references for more information about WSUPGRD and related topics:

<b>For more information about</b>	<b>Refer to</b>
Login scripts	Chapter 3, "Creating Login Scripts and Menus," in <i>Supervising the Network</i>
Mapping network drives	Chapter 3, "Using Text Workstation Utilities," in <i>Utilities Reference</i>
Using the WSUPGRD utility	Chapter 3, "Using Text Workstation Utilities," in <i>Utilities Reference</i>



# B

## Using the WSUPDATE Utility

### Overview

This appendix contains information about using the WSUPDATE utility for updating workstation files automatically. The following topics are included.

---

**Topic**

---

[“Updating Files on a Workstation from the Command Line” on page 128](#)

[“Inserting WSUPDATE in a Login Script Using SYSCON” on page 129](#)

[“Inserting WSUPDATE in a Login Script Using the NetWare Administrator” on page 130](#)

[“Inserting WSUPDATE in a Login Script Using NETADMIN” on page 131](#)

---

### Introduction

The WSUPDATE utility allows you to copy updates of workstation files automatically. Use WSUPDATE to:

- ◆ Copy new revisions of files
- ◆ Reinstall NetWare workstation files
- ◆ Copy updates of your own files

**IMPORTANT:** This utility is not recommended for first-time installation of NetWare v4.0 workstation files. WSUPDATE can only update files that exist already on the workstation. Use the workstation installation programs for first-time Netware v4.0 installations. WSUPDATE cannot be used for updating RPL workstations.

## Prerequisites

Before you can start WSUPDATE, make sure that:

- ❑ The files you are copying to the workstation reside in the same directory as the WSUPDATE utility.
- ❑ If you are using WSUPDATE in a login script, each workstation needs to have a search drive mapped to SYS:PUBLIC.

## Updating Files on a Workstation from the Command Line

### Procedure

- 1** Map the next network drive to SYS:PUBLIC by typing:

```
MAP N SYS:PUBLIC <Enter>
```

- 2** Change to the network drive that is mapped to the PUBLIC subdirectory.

For example, if you mapped network drive G:, type

```
G: <Enter>
```

- 3** Start WSUPDATE and specify the file and path you want updated. For example, type

```
WSUPDATE /F=C:\NE2000.COM <Enter>
```

(The /F option lets you specify the file location.)

## Updating Workstation Files from a Login Script

You can insert the WSUPDATE command into a system login script for upgrading workstation files. Use SYSCON for NetWare v2.x and v3.x workstations. Use the graphical NetWare Administrator or the NETADMIN text utility for NetWare v4.0 workstations. All three procedures are documented in this section.

# Inserting WSUPDATE in a Login Script Using SYSCON

This tool is only used with NetWare v2.x and v3.x networks. For NetWare v4.0 networks, use the NWADMIN or NETADMIN utility to edit your login script. See “[Inserting WSUPDATE in a Login Script Using the NetWare Administrator](#)” on page 130 or “[Inserting WSUPDATE in a Login Script Using NETADMIN](#)” on page 131.

## Prerequisites

- A workstation logged into the network, running DOS v3.x or later. For more information on the LOGIN syntax and options, see "LOGIN" in *Utilities Reference*.
- You must have rights to modify a system login script.

## Procedure

- 1** Log in to a server as SUPERVISOR.

For example, type:

```
LOGIN SUPERVISOR <Enter>
```

- 2** Enter a password (if prompted).
- 3** At the workstation command line, type

```
SYSCON <Enter>
```

- 4** Enter SYSCON and choose "Supervisor Options" from the "Available Topics" menu.

- 5** Choose "System Login Script."

If a system login script already exists, it appears; otherwise, the screen is blank.

- 6** In the login script, map a drive to the file on the network you want copied to the workstation.

For example, if you wanted to copy the "NE2000.COM" file from the \DRIVERS directory, add a drive mapping similar to the following:

```
MAP J:=VOL2:DRIVERS\
```

- 7** Insert the WSUPDATE command after the drive mapping in the login script.

For example, if you mapped drive J: as shown in [Step 6](#), add the following command after the drive mapping:

```
#WSUPDATE J: NE2000.COM
```

The above command searches all local drives of the workstation and replaces NE2000.COM with the newer version on drive J:.

It renames any old NE2000.COM files on the local drives to NE2000.OLD.

**8** To exit the system login script, press <Esc>.

Confirm changes you made in the login script.

## Inserting WSUPDATE in a Login Script Using the NetWare Administrator

This tool is only used with NetWare v4.0 networks. For NetWare v2.x and v3.x networks, use the SYSCON utility to edit your login script. See [“Inserting WSUPDATE in a Login Script Using SYSCON” on page 129](#).

### Procedure

**1** Select the object whose login script you want to edit.

A login script can be a property of a container, Profile, or User objects.

You may have to browse through the Directory tree to get to the object you want. For information about moving around in the Browser and selecting objects, choose "Help" from the menu.

**2** Choose "Object" from the NetWare Administrator menu bar.

**3** Choose "Details" from the "Object" menu.

**4** Choose the "Login Script" page button.

**5** To edit the login script, click inside the "Login Script" input box.

**6** In the login script, map a drive to the file on the network you want copied to the workstation.

For example, if you want to copy the "NE2000.COM" file from the \DRIVERS directory, add a drive mapping similar to the following:

```
MAP J: =VOL2:DRIVERS\
```

**7** Insert the WSUPDATE command after the drive mapping in the login script.

For example, if you mapped drive J: as shown in [Step 6](#), add the following command after the drive mapping:

```
#WSUPDATE J: NE2000.COM
```

The above command searches all local drives of the workstation and replaces NE2000.COM with the newer version on drive J:.

It renames any old NE2000.COM files on the local drives to NE2000.OLD.

- 8** Choose "OK."

## Inserting WSUPDATE in a Login Script Using NETADMIN

This tool is only used with NetWare v4.0 networks. For NetWare v2.x and v3.x networks, use the SYSCON utility to edit your login script. See [“Inserting WSUPDATE in a Login Script Using SYSCON” on page 129](#).

### Procedure

- 1** At the workstation command line, type  

```
NETADMIN <Enter>
```
- 2** Choose "Manage Objects" from the "Options" menu.  
A login script can be a property of a container, Profile, or User object.
- 3** Select the object whose login script you want to edit by completing the following steps.
  - 3a** If the object you want appears on the list, select it and press <F10>.
  - 3b** If the object is not on the list, browse the Directory tree by selecting objects and pressing <Enter> until you see the object you want. Select it and press <F10>.
- 4** Choose "View or edit object properties."
- 5** Choose "Login Script."
- 6** Enter the login script commands and information in the login script text box.
- 7** In the login script, map a drive to the file on the network you want copied to the workstation.

For example, if you want to copy the "NE2000.COM" file from the \DRIVERS directory, add a drive mapping similar to the following:

```
MAP J: =VOL2:DRIVERS\
```

- 8 Insert the WSUPDATE command after the drive mapping in the login script.

For example, if you mapped drive J: as shown in [Step 7](#), add the following command after the drive mapping:

```
#WSUPDATE J: NE2000.COM
```

The above command searches all local drives of the workstation and replaces NE2000.COM with the newer version on drive J:.

It renames any old NE2000.COM files on the local drives to NE2000.OLD.

- 9 Press <F10> to save the login script.

## Additional Information

If you are using NetWare v2.x and 3.x, see the following references for more information about WSUPDATE and related topics:

For more information about	Refer to
Login scripts	"SYSCON" of <i>Utilities Reference</i>
Mapping network drives	"MAP" in <i>Utilities Reference</i>

If you are using NetWare v4.0, see the following references for more information about WSUPDATE and related topics:

For more information about	Refer to
Login scripts	Chapter 3, "Creating Login Scripts and Menus," in <i>Supervising the Network</i>
Mapping network drives	Chapter 3, "Using Text Workstation Utilities," <i>Utilities Reference</i>
Using the WSUPDATE utility	Chapter 3, "Using Text Workstation Utilities," <i>Utilities Reference</i>