

3+Open™ MS® OS/2 LAN Manager
Administrator Guide

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3Com®

3+ Open MS OS/2 LAN Manager Administrator Guide

**A member of the 3+ Open family of products.
For use with OS/2, version 1.0 or higher, and DOS, version 3.1
or higher.**

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Preface

This *3+Open MS OS/2 LAN Manager Administrator Guide* describes how to perform administrative tasks with the Microsoft® Operating System/2 LAN Manager.

This introductory section provides some basic information about this guide and about the LAN Manager documentation set.

Before You Begin

Before using this guide, you should feel comfortable using MS OS/2 and be able to create and work with files and directories.

If you are not familiar with OS/2, refer to these manuals provided with your 3+Open package:

- *3+Open MS OS/2 LAN Manager User Guide.*
- *3+Open MS OS/2 LAN Manager User Reference.*
- *3+Open MS OS/2 LAN Manager Installation and Setup Guide.*

System Requirements

Before you can use 3+Open OS/2 LAN Manager, you'll need the following:

- An 80286- or 80386-based personal computer with at least one hard disk and 2 megabytes of memory that is running release 1.0 or later of MS or IBM OS/2.
- A network adapter card properly configured and installed in the computer and physically connected to the local area network. (See the hardware documentation that comes with your network adapter card for installation).
- Distribution disks containing the 3+Open LAN Manager software.
- The following manuals in addition to the 3+Open MS OS/2 manuals:

Manual	Contents
<i>3+Open MS OS/2 LAN Manager Installation and Setup Guide</i>	Describes how to install LAN Manager software on servers and netstations, and how to set up network users and resources after installation.
<i>3+Open Network System Guide</i>	Describes how to configure your network for optimum performance and memory utilization. Also describes 3+ and 3+Open internetwork operation guidelines.
<i>3+Open MS OS/2 LAN Manager User Guide</i>	Describes how to use LAN Manager on a netstation. Includes tutorials and instructions on using shared resources.
<i>3+Open MS OS/2 LAN Manager User Reference</i>	Details the LAN Manager menu screens and syntax and options for netstation commands.

Manual	Contents
<i>3+Open MS OS/2 LAN Manager Administrator Reference</i>	Details the LAN Manager menu screens and syntax and options for server commands.
<i>3+Open DOS LAN Manager User Guide</i>	Describes the command-oriented version of LAN Manager that runs on DOS LAN Manager netstations. Includes a complete command reference.

Conventions Used in This Guide

The following conventions are used throughout the guide.

Keys

The table below shows the symbols used to represent the keys on your keyboard.

Spelling	Key Represented
[Esc]	Escape
[Alt]	Alternate
[Ctrl]	Control
[Backspace]	Backspace
[Space bar]	Space bar
[F1]-[Fx]	Function keys F1 through Fx
↵ or [Return] or [Enter]	Return or Enter key

Key Combinations

If two or more keys are to be pressed simultaneously, the keys are linked with a + sign. For example, the following key combination resets a netstation:

[Ctrl]+[Alt]+[Backspace]

Notational Conventions

Throughout this manual, the following conventions are used to distinguish elements of text:

Text Element	Indicates
ALL CAPITAL LETTERS	Command names and filenames.
Bold	New terms.
Bold Courier typeface	Input.
Regular Courier typeface	Screen text.
[Brackets]	Nonalphabetic key names such as [Enter] or command options.
<i>Italics</i>	Variable command option names.
Plain text: /delete	Command options to be typed as is.

Procedural Conventions

Information you should enter is shown in boldface, computer-like type. Terms shown in italics should be replaced with specific information. For example:

makedisk n:.

means that you type the command MAKEDISK followed by a drive identifier and press [Return].

How to Use This Guide

This guide is divided into chapters and appendices. The following provides a quick overview of the topics covered in each part of this manual:

Chapter	Contents
Chapter 1	Introducing LAN Manager network components and concepts.
Chapter 2	Starting, stopping, pausing, and continuing LAN Manager services.
Chapter 3	Managing shared resources.
Chapter 4	Sharing and controlling disk directories.
Chapter 5	Sharing and controlling spooled printers.
Chapter 6	Sharing and controlling communication devices.
Chapter 7	Setting up and using shared programs.
Chapter 8	Managing user-level security.
Chapter 9	Managing share-level security.
Chapter 10	Managing centralized log-on security.
Chapter 11	Managing overall network server administration.
Chapter 12	Monitoring and troubleshooting on the local area network.
Appendix A:	LAN Manager utilities
Appendix B:	Setting up and using the Console version of the LAN Manager screen
Appendix C:	Understanding the LAN Manager command flow diagrams.
Glossary	Glossary of 3+Open LAN Manager terms.

Finding Further Information

The following manuals are included with 3+Open MS OS/2 LAN Manager:

- *3+Open MS OS/2 LAN Manager Installation and Setup Guide*, a short guide to installing 3+Open MS OS/2 LAN Manager.
- *3+Open MS OS/2 LAN Manager User Guide*, a procedural guide to using LAN Manager on a netstation. This guide provides users with tutorials and instructions for LAN Manager tasks.
- *3+Open Network System Guide*, a reference guide for experienced (3Wizard) technical network users on tuning networks for optimum performance and memory usage.
- *3+Open MS OS/2 LAN Manager User Reference*, a reference for users working with LAN Manager commands and the LAN Manager Screen on a netstation. This reference describes each command and dialog box available to the local area network user.
- *3+Open MS OS/2 LAN Manager Administrator Guide*, a procedural guide for the administrator using LAN Manager on a server. This guide describes how to perform administrative tasks on a local area network.
- *3+Open MS OS/2 LAN Manager Administrator Reference*, a reference for the administrator working with LAN Manager commands and the LAN Manager Screen on a server. It describes how to use additional commands and dialog boxes available to administrators.
- *3+Open MS-DOS® LAN Manager User Guide*, a guide to the command-oriented LAN Manager that runs on DOS netstations. This manual includes a complete reference to the commands available on MS-DOS netstations.

Chapter 1: Introduction

As administrator, you will oversee the creation, operation, and maintenance of the local area network. In this chapter, you will learn the following:

- What a local area network is and how it works.
- What 3+Open LAN Manager does.
- What local area network resources are and how to use them.
- How users and administrators use local area networks.
- About LAN Manager menus.

Local Area Networks

When you work with a personal computer, you use certain **resources** to get things done. A resource can be a disk drive, a printer, a modem, or any other physical device you have connected to your computer. Software programs, files, and directories are also resources that you use on a personal computer.

A **local area network (LAN)** joins computers so that they can share resources. This means you can use the resources of other computers as if they belonged to your computer. For example, if you need to print one of your files but do not have a printer in your office, you can send the file to another computer on the local area network that does have a printer.

When a computer makes one of its resources available to the other computers on the LAN, it **shares** the resource. The other computers can then use the resource. For example, when you send a file to a printer that is attached to another computer, you are using that printer; and the computer is sharing it. Resources that can be shared are **network resources**.

3+Open

3+Open is a family of sophisticated local area network products based on the multi-tasking OS/2™. Its open architecture enables you to connect a wide variety of standard OS/2, DOS™, and Macintosh computers into a single network. It uses the power of OS/2 while at the same maintaining compatibility with DOS computers and applications. Netstations using either OS/2 or DOS (including dual-boot OS/2) can run 3+Open software.

3+Open supports the major network protocols, Xerox Network Systems (XNS™) and IBM® NetBEUI/DLC™. It also allows you to use multiple network adapters and protocols in a single computer.

3+Open provides a common user interface across its product line. This interface conforms to the IBM Systems Application Architecture™ (SAA) user interface standards. The use of a single interface for all products in the 3+Open family makes it easier for you to learn and use each of the products.

At the core of 3+Open is the 3+Open LAN Manager. This is described in the next section.

3+Open LAN Manager

3+Open LAN Manager is the network system software that forms the basis of 3+Open. It is an enhanced version of Microsoft's OS/2 LAN Manager™.

3+Open LAN Manager has the following features:

- Log-on scripts and user profiles that give the user uniform access to the network, regardless of what netstation the user logs on from.
- A window-oriented network interface to help assign network resources such as disk directories, files, communication ports, and printers.
- A comprehensive security system that allows the network administrator to regulate who gets access to what resources and provides facilities for monitoring and making a record of resource use.
- Error logging and compilation of network usage statistics.
- The Postscript™ Despooler and a facility for administrating it.
- DOS Manager™ and memory-saving applications for DOS computers.
- 3+Open Installation and Setup Program. This program installs the LAN Manager, sets tuning parameters to standard values, and configures printer services. It also creates server and netstation start-up disks.

OS/2 for Servers

3+Open is shipped with a single copy of OS/2. You should always install the 3Com version on the server, if included with your 3+Open package. If your server hardware does not have its own OS/2, you should be able to install this one on it. For installation instructions, refer to the *3+Open LAN Manager Installation and Setup Guide* shipped with the 3+Open LAN Manager software package.

3+Open Network Components

3+Open supports a variety of network configurations. Servers can be IBM AT-compatible computers, IBM PS/2, or 3Com 3Servers. They must use OS/2. Netstations can be IBM AT-compatible and IBM PC-compatible computers as well as 3Com 3Stations. Netstations can be OS/2- or DOS-based.

How LAN Manager Works

Some of the computers on a local area network are designated to manage the data and equipment that constitute the local area network. These computers are called servers.

Servers make resources available to users of the local area network. Resources can be disk drives, directories, printers, modems, scanners, and other equipment. The process of making a resource available to users is called sharing that resource. Sharing is the core of your work as an administrator—you decide what resources are shared and in what manner.

Once you share a resource, users can access that resource as though it were physically attached to their own computer, even though the actual hard disk, printer, or modem may be across the hall or across the building.

Netstations are the computers on the local area network that use the resources you share from a server. Netstations are where users use word processing, spreadsheet, database, and other applications to accomplish their work. An MS OS/2 computer can simultaneously be a server and a netstation. This is called a concurrent server.

Figure 1-1 is an example of a 3+Open LAN Manager network.

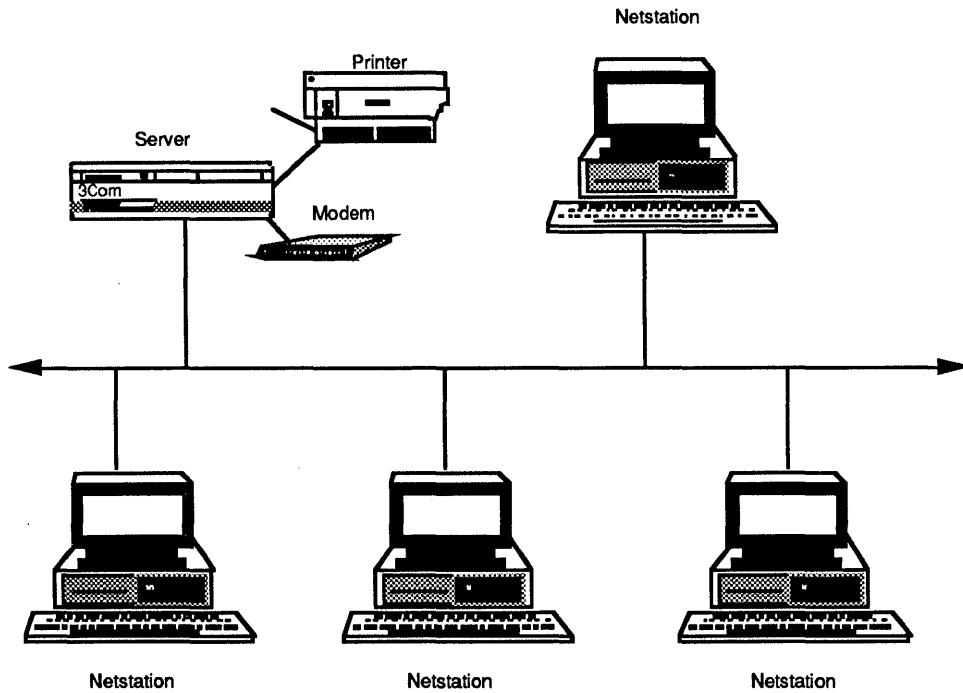


Figure 1-1. 3+Open Network Example

LAN Manager Services

The programs that let servers share resources and let netstations use those shared resources are services. Services represent the major functions of LAN Manager. In addition to the Server and Workstation services, LAN Manager offers the following services listed in Table 1-1.

Table 1-1. LAN Manager Services

Service	Function
Messenger	A netstation that lets users exchange messages on the local area network.
Netpopup	A netstation that displays messages on a computer's screen at the moment they are received.
Spooler	A Server service that manages printing on shared printers.
Netrun	A Server service that lets a user run a program remotely in a server's memory and interact with that program as if it were running on the user's own netstation.
Alerter	A Server service that sends messages to administrators and users about significant events occurring on the server.
Netlogon	A Server service that validates user names and passwords
3+Open Start	A Server service that allows netstations to start up and log on to the network automatically, eliminating the need for individual start-up diskettes.
3+Open Backup	A Server service that allows network administrators to back up server and netstation program and data files onto tape, and to restore stored files back to the servers and netstations when necessary.

Entry Level LAN Manager

Our "Entry" system is a special version of LAN Manager, called 3+Open LAN Manager Entry System, (referred to as the Entry Level LAN Manager in the rest of this book), consisting of one server and up to five netstations. Throughout this manual and other MS OS/2 LAN Manager manuals are references to special properties of this product. For example, since there is only one server on an Entry-Level LAN Manager local area network, the name of the server is set as server. You cannot change the name.

DOS LAN Manager

Computers running DOS can use the same local area network as computers running MS OS/2. DOS LAN Manager lets DOS computers use resources shared by MS OS/2 LAN Manager servers. DOS LAN Manager also provides some features of MS OS/2 LAN Manager such as automatic reconnection (reestablishing a connection you haven't used in a while) and network pathnames (using a resource without first making an explicit connection).

DOS computers running the MS-Net, 3+, or PC-LAN local area network software can also use resources shared from MS OS/2 LAN Manager servers. The advanced features of LAN Manager, however, are not available to these netstations.

How LAN Manager Uses Names

LAN Manager employs a variety of names to help users and programs identify locations and actions on the local area network.

Computer Names and Sharenames

To identify the computers on the local area network, LAN Manager uses **computer names**. Each netstation and server has a unique computer name. A computer name can identify the primary user of the computer or the main task for which the computer is used. For instance, the computer name for a server from which you were sharing several laser printers might be *lasers*. Administrators should assign computer names to netstations and servers.

When administrators share a resource they assign it a **sharename**. A sharename can identify the type of resource being shared (such as disk or printer) or the use intended for the resource (such as reports or figures). A sharename cannot be used twice on the same server but can be used on different servers on the local area network.

You can identify any shared resource on the local area network by combining the sharename of the resource with the computer name of the server from which the resource is shared. This combination is called the **network path** of the shared resource. Network paths consist of two backslashes, the computer name of the server, another backslash, and the sharename of the shared resource (*\\computername\sharename*). Network paths are used with LAN Manager and OS/2 commands and applications.

User Names and Aliases

Just as computers and resources have names, users have names to identify them. Each user's **username** is unique. As administrator, you will assign user names to all users on the local area network. User names are essential for assigning permissions to shared resources and sending messages to users.

An **alias** is a name that can receive messages sent across the local area network. Any number of aliases can be added to a netstation or server.

Security for Shared Resources

When you share a resource, you assign it **permissions** that govern who can use that resource and how they can use it. Permissions for a server's shared resources work in one of two ways, depending on whether the server is running with **user-level security** or **share-level security**. See Chapter 8: Managing User-Level Security and Chapter 9: Managing Share-Level Security.

User-Level Security

With user level security, each user has a set of permissions for each shared resource he or she can use. One shared resource can have as many different sets of permissions as there are users who can use the resource. Each user has an **account** on each server they can use. Accounts identify the user to the server and specify one of three **privileges**: guest, user, or administrative. The privilege associated with a user's account, along with that user's permissions for a shared resource, determines how the user can use the shared resource.

Share-Level Security

All users are subject to the same password and permissions: anyone who knows the password can use the shared resource.

Log-on Security

In addition to user level and share level security, LAN Manager provides **log-on security**. This feature adds another layer of security to the local area network. Under log-on security, the user name and password that a user supplies when trying to log on to the local area network determine whether the user is granted access to the local area network as a whole, rather than on a per-server or per-resource basis. Log-on accounts can be stored on one server or distributed among several servers on the local area network. Once users pass through this log-on procedure, their use of resources is governed by the user-level or share-level security controls in force on individual servers.

For more information on user-level, share-level, and log-on security, see Chapter 8: Managing User Level Security, and Chapter 9: Managing Share Level Security and Chapter 10: Managing Log-on Security.

What An Administrator Does

The administrator of a local area network is responsible for setting up and maintaining all local area network resources. The person who takes on this responsibility should be the following:

- An experienced user of OS/2 or DOS.
- Able to use a word processing or text editing program.
- Able to perform LAN Manager tasks from the OS/2 prompt or with the LAN Manager screen.

This section describes the various responsibilities of an administrator. These include the following:

- Planning and setting up the local area network.
- Managing shared resources.
- Controlling security and user accounts on the local area network.
- Maintaining the local area network.
- Educating users.

Planning a Local Area Network

There are a few things you need to consider when planning a local area network. First, you should know which resources each local area network user needs to access. Ask users these kinds of questions:

Shared Resources Issues

- What kind of printer does your job require?
- Do you need access to a modem?
- Are there certain directories that the members of your department or group all need to use?

Security Issues

Next, you should probe security issues. Consider these types of questions:

- Are there files that should be available to some users but not to others?
- Should users who need to access these files be allowed to revise them or delete them?
- Should certain devices be available only to a specific group of users?

Server Needs

Then decide how many servers your local area network needs and which files, directories, and devices should be on each server. Consider these types of questions:

- How many computers are to be on your local area network?
- Which users and groups of users need to use which resources?
- How many users are to be local area network administrators?

If you are using the entry-level LAN Manager product, your local area network can only have one server.

Device Needs

Finally, try to estimate what the demand for printers and communication devices will be and determine whether you should create device pools. When you pool similar devices, LAN Manager searches for, and connects the user to, the first available device in the pool. This saves users the trouble of hunting around for an available device and assures that the devices you share will be available as quickly and as often as possible.

Working with Other Network Products

MS OS/2 LAN Manager software works with other local area network products as shown in figure 1-2.

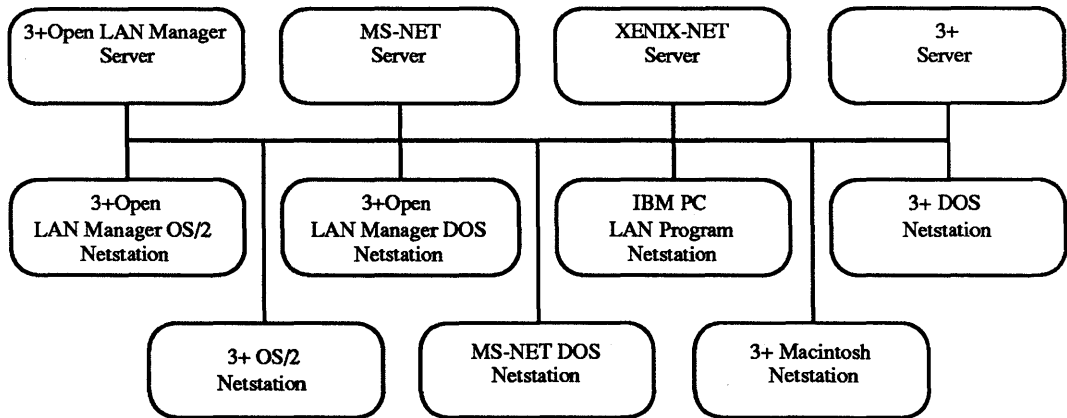


Figure 1-2. Mixed Network Products Diagram

In a local area network of mixed products, some LAN Manager features are not available to other netstations. For example, you cannot send network administration commands to an MS OS/2 LAN Manager server from a DOS LAN Manager netstation. For the most part, however, any netstation on the local area network can connect to, and use resources of, an MS OS/2 LAN Manager server as long as both systems are running the same network transport protocols. 3+ for Macintosh netstations can run on mixed 3+Open and 3+ networks. Macintosh netstations may only use a 3+ Server, however, any other netstation can share information with the Macintosh netstation by accessing the data from the 3+ server.

Managing Shared Resources

Shared resources like **printers, modems and hard disks**, need a fair amount of maintenance. You need to make sure that users don't waste disk space by filling up shared directories with nonessential files and directories. For shared printers and communication devices, you need to tend to the mechanical requirements of the printer, such as paper and toner or ribbons, and to monitor the workload on the devices to assure users won't have to wait an unreasonable amount of time before they can use the device.

You can share a server's software and memory, letting users run programs on the server while doing other work on their netstations. You must keep server performance in mind, however, when you do this, if too many users run large programs at once, the server may bog down or stop. You decide which programs can be run, who can run them, and how many can run at one time.

Once you've determined which resources to share and how to maintain them, you'll need to develop a security system for these shared resources. The next section explains more about controlling the security of resources on the local area network.

Controlling Security on the Network

One of your chief responsibilities as administrator is maintaining security on the local area network. You are responsible for deciding whether each server will use user level security, which controls the access of each user to each resource, or share level security, which lets you assign passwords to control access to resources. You are also responsible for assigning access rights to resources and for adding user accounts to the local area network.

Accounts and permissions

For a user to be able to use a user level server and its resources, you must create a **user account** for that person on the server. In addition to creating accounts for new users, you need to maintain existing user accounts to be sure users have the appropriate level of privilege and the necessary permissions to use needed shared resources. You can simplify the job of managing security on the local area network by creating **groups** of users and then setting permissions for each group. With groups, you can assign one set of permissions to a large number of users, instead of to many individual users of the same resource. Chapter 8: Managing User Level Security explains how to create and modify user accounts, assign passwords, and create groups.

Permission Considerations

Once all the local area network users have accounts, you need to assign permissions for the shared resources. You'll need to consider the following:

- Whether a server is running with user level or share level security.
- Who needs to use the shared resources of the server, and in what manner.

Chapter 8: Managing User Level Security and Chapter 9: Managing Share Level Security discuss user level and share level security.

Security for DOS Netstations

DOS netstations are subject to the security measures of MS OS/2 LAN Manager servers. While DOS LAN Manager, MS-Net, and PC-LAN have no allowance for user names or user accounts, an MS OS/2 LAN Manager server maintains an account under the netstation's computer name.

Maintaining the Local Area Network

The administrator's job is not over when the local area network is set up and all of the user and group accounts are in place. The administrator's on-going role is to maintain the local area network and monitor its activities. Chapter 12: *Monitoring and Troubleshooting Server Operations* shows you how to use a server's statistics and logs to diagnose problems.

Over time, your local area network will change. You'll need to add and remove user accounts, computers, and resources. As changes occur, you'll be responsible for tuning the local area network to operate efficiently. The *3+Open Network System Guide* explains how you can improve the way your server functions by modifying entries in the LANMAN.INI file.

Virtually any task you can perform as administrator on a local server you can also perform on a network server without leaving your MS OS/2 netstation. This ability to control network servers can simplify your work as an administrator. Chapter 11: *Administrating a Network Server* discusses network administration.

DOS LAN Manager, MS-Net, and PC-LAN netstations cannot perform network administration.

Educating Users

The goal of all your work as an administrator is to bring people and resources together as effectively as possible. To this end, you need to educate users about the specific requirements and features of the local area network and about the habits and etiquette that are appropriate on a local area network.

You need to educate users about the following:

- How to find and use the various resources available on the local area network.
- What they should or should not do with shared resources.

For instance, you should tell users not to remain connected to shared modems when they're not actually using them, and not to use shared directories as dumps for software they no longer want on their own computers. Much of this type of education you can accomplish by providing accurate, detailed remarks to accompany servers and shared resources.

DOS LAN Manager, MS-Net, and PC-LAN users require extra information. These people cannot look at server resources; they must know the exact name of a resource before connecting to it. You must provide this information.

Local Area Network Etiquette

Although each local area network has its own requirements for ensuring smooth operation, general guidelines for users to learn include the following:

- Respecting the needs of other users by not monopolizing resources.
- Closing shared files after working with them.
- Changing passwords frequently and keeping them secret.

Using Menus and Commands

There are two ways you can work with LAN Manager:

- Use the menus and dialog boxes of the LAN Manager screen.
- Type commands and options at the OS/2 prompt.

The LAN Manager screen is a full-screen graphic interface that displays resources and actions and lets you select the ones you want. The major advantages of the LAN Manager screen are the following:

- Interactive menus and dialog boxes guide you through the various LAN Manager procedures.
- No need to memorize complicated commands or syntax.

When you first start administrating a local area network with LAN Manager, you'll probably feel more comfortable using the LAN Manager screen for most of your work. Later, when you're familiar with LAN Manager and want to start writing batch files to automate administrative tasks, you can start learning LAN Manager command syntax. (For detailed information on LAN Manager commands and batch files, see the *3+Open MS OS/2 LAN Manager Administrator Reference*.)

For more specific information on how to use the LAN Manager screen menus and commands, refer to Chapter 2 in the *3+Open MS OS/2 LAN Manager User Guide*.

Using the LAN Manager Screen

The LAN Manager screen provides a system of menus and dialog boxes that guide you through the various LAN Manager tasks.

Before you select a menu to start a task with the LAN Manager screen, and after you complete a task and have cleared all menus and dialog boxes from the screen, you see the LAN Manager screen background panel:

```
View  Message  Config  Status  Accounts  F1=Help
----- Microsoft OS/2 LAN Manager 1.0 -----
Your username:          ADMIN      Administering:  \\PRINT1
Your computername:     \\PRINT1  0 remote administrators

0 network files are open.          0 shared files are open.

Server operating in user security mode.

0 users are logged on.
0 bad password attempts.
0 errors have occurred.
```

Press the ALT key to select a menu

Figure 1-3. LAN Manager Screen Background Panel

The Background Panel

The background panel shows you:

- Your user name.
- Name of your server.
- Name of a network server, if you are using the LAN Manager screen to issue commands on that server.
- Number of local area network resources that you are using on other servers.
- Number of local area network resources on your server that others are using.
- Security mode of your server (share level or user level).
- Status of the local area network.

Starting the LAN Manager Screen

You can start the LAN Manager screen in any of three ways:

- By typing NET at the OS/2 prompt. This starts the user version of the LAN Manager screen, the same version used by netstations.
- By typing NET ADMIN at the OS/2 prompt. This starts the administrator version of the LAN Manager screen, which adds extra server functions to the general user version of the LAN Manager screen.

All discussion of the LAN Manager screen in this manual refers to the administrator version except where otherwise noted. A quick way to verify that you are in the administrator version of the LAN Manager screen is by checking the menu bar at the top of the screen: If there are five menus listed, then you are in the administrator version; if there are only four, then you are in the user version, which is lacking the Accounts menu.

- By typing NET CONSOLE at the OS/2 prompt. This starts the server console version of the LAN Manager screen, a limited-access screen that lets users perform selected low-security LAN Manager functions at an unattended server console.

The console version of the LAN Manager screen is useful for giving users limited access to certain server functions. For example, an unattended server running the console version in a printer room could let users check on the status of their print jobs.

For more information about the user version of the LAN Manager screen, see the *3+Open MS OS/2 LAN Manager User Guide*. For more information about the server console version of the LAN Manager screen, see Appendix B: LAN Manager Screen Console Version.

Using the LAN Manager Screen

When you use the LAN Manager screen, you move through a series of displays, making selections and entering information. You encounter two types of displays:

- Menus.
- Dialog boxes.

As you work with the LAN Manager screen, you can press [Esc] at any time to cancel the current operation. To clear all the menus and dialog boxes from the LAN Manager screen, keep pressing [Esc] until you see just the background panel.

LAN Manager Menus

A menu is your starting point for any LAN Manager operation. The names of the available menus appear at the top of the LAN Manager screen:

Table 1-2. LAN Manager Menus

Menu	Purpose
View	Displays the names of servers and shared resources across the local area network and at your own server; lets you make connections to shared resources; lets you examine print and communication queues; lets you exit the LAN Manager screen.
Message	Lets you send messages to other users; lets you read messages that have been sent to you; lets you specify aliases and message log files.
Config	Lets you save or restore a prearranged set of connections; lets you change your password or stop LAN Manager altogether.
Status	Displays status information about your server and the local area network.
Accounts	Lets you set or change permissions for shared resources and user accounts on your server.

For more specific information on how to use LAN Manager menus and commands, refer to Chapter 2 in the *3+Open MS OS/2 LAN Manager User Guide*.

LAN Manager provides more information when you need it by displaying information or error messages and providing on-line help for both the LAN Manager screen and LAN Manager commands.

On-Line Help

Whether you are performing local area network tasks using the LAN Manager screen or LAN Manager commands, you can get additional information or help. When you are working in the LAN Manager screen, you can press the [F1] key to get context-sensitive help. For example, if you are working in the Device Status dialog box and press [F1], information is displayed about using that particular dialog box. This facility also includes an index from which you can choose topics of interest to you, including general information about how to use menus and dialog boxes.

LAN Manager also provides a special help command with LAN Manager commands. To get information about using a particular LAN Manager command, type NET HELP followed by the command name. If the command begins with the word *net*, type NET HELP followed only by the second word of the command. For example, if you want more information about using the NET USE command, type:

```
net help use
```

LAN Manager displays the following information:

```
The syntax of this command is :  
net use [device | \\computer name\sharename]  
net use [device] \\computer name\sharename [password]  
[/print | /comm]  
net use [device | \\computer name\sharename] /delete
```

You can also type NET HELP by itself to get a listing of topics for which NET HELP is available:

Help is available on:

AT COMPACT NET

Help on the following NET commands is available:

ACCESS	ADMIN	AUDIT	COMM	CONFIG
CONSOLE	CONTINUE	COPY	DEVICE	ERROR
FILE	FORWARD	GROUP	HELP	LOAD
LOG	LOGOFF	LOG ON	MOVE	NAME
PASSWORD	PAUSE	PRINT	RUN	SAVE
SEND	SEPARATOR	SESSION	SHARE	START
STATS	STATUS	STOP	USE	USER
VIEW				

Error Messages

If you type a LAN Manager command with an option that LAN Manager doesn't recognize, you will see an error message in this form:

NET####: Message text

is a four-digit number that uniquely identifies the LAN Manager message. *Message text* is a short message that describes the error.

You can use the OS/2 HELPMMSG command to get further information about any LAN Manager message that appears at the OS/2 prompt. To get more information, type the HELPMMSG command followed by the message identification (NET####). For example, suppose you meant to type the NET START command but instead typed the following:

```
net strat
```

This message would display:

```
net2622: This command is unknown.
```

Type:

```
net help
```

to view a list of commands.

To get more information about the message itself, type:

```
helpmsg net2622
```

LAN Manager then displays an explanation of the message and a suggestion for the action you should take next.

When you are working in the LAN Manager screen, messages are displayed by **message boxes**. Some of the messages displayed are the same as those LAN Manager displays at the OS/2 prompt. Other messages displayed are specific to the LAN Manager screen. To get more information about a message displayed by the LAN Manager screen, press [F1].

Chapter 2: Starting and Using Network Services

In this chapter, you will learn how to:

- Start and stop the services that comprise OS/2 LAN Manager.
- Log on to and off from the local area network.
- Pause and continue certain LAN Manager services.

LAN Manager Services

In Chapter 1 you learned that the LAN Manager software consists of separate programs, known as services, that provide the main functionality of LAN Manager.

The most fundamental services are the Workstation service and the Server service. The Workstation service establishes and controls communication between the local area network and a personal computer netstation. From a netstation, a user can access shared resources on the local area network.

A computer must be running the Workstation service in order to run the Server service. The Server service provides the software that turns a netstation into a local area network server. From a server, an administrator can manage shared resources, assign permissions and privileges, and monitor activity on the local area network.

Starting LAN Manager Services

Before you can use local area network resources, you must:

- Install and start the OS/2 LAN Manager software that connects and identifies your computer to the local area network.
- Log on to the local area network to identify yourself to the local area network.

Starting the Workstation service identifies a computer to the local area network. Starting the Server service lets you share resources from your computer with users of the local area network. Depending on your needs, you may also choose to start one or more of the other services when you start the Server or Workstation service.

When you start LAN Manager in one OS/2 session, it affects not only that session, but all other sessions you have started or will start. Likewise, any local area network connections you make with LAN Manager can be used from any of your OS/2 sessions or even from the DOS session. The restriction is that you can only type LAN Manager commands from any of your OS/2 sessions, and not from the DOS session. See the *3+Open MS OS/2 LAN Manager User Reference* for more information about the OS/2 and DOS sessions.

The NET START Command

To start any of the LAN Manager services, use the NET START command with the following option:

```
net start service
```

service is the service that you are starting.

For example, to start the Messenger service, type:

```
net start messenger
```

You can also type the NET START command by itself to see which services are currently running on your computer:

```
net start
```

A display like this appears:

```
The following LAN Manager services are running:  
WORKSTATION    MESSENGER      NETPOPOP
```

```
The command completed successfully.
```

You can also modify your STARTUP.CMD file to start LAN Manager services automatically when you start your computer.

Starting Services Automatically

If no services are running when you type the NET START command by itself, LAN Manager asks if you want to start the workstation software. Type the [Y] and press the [Enter] key to start the netstation.

When you type a LAN Manager command, LAN Manager automatically checks to see if all the services necessary for that command are in fact running. If a required service is not running, LAN Manager tells you that it needs a particular service to be started in order to run your command. In many cases LAN Manager offers to start the service for you. For example, if you haven't yet started the Workstation service when you type the NET LOGON command, this message appears:

```
WORKSTATION not started.  
OK to start it? (Y/N): [Y]
```

Type [Y] and press [Return] to start the Workstation service before NET LOGON runs.

Many LAN Manager prompts offer a default response. The default is the response option enclosed in brackets. To accept the default response, simply press [Enter].

For more information about commands that automatically start LAN Manager services, see the *3+Open MS OS/2 LAN Manager User Reference* and the *3+Open MS OS/2 LAN Manager Administrator Reference*.

Using the LANMAN.INI File to Start Services

You can modify your LANMAN.INI file to start services automatically when you start the Server or Workstation service. This lets you avoid having to type a separate command for each service you want to start.

The 3+Open Installation and Setup Program, along with other installation programs from other 3+Open services like 3+Open Start and 3+Open Backup automatically change *wrkservices* and *srvservices* as they are installed.

There are two entries in the LANMAN.INI file that you can change to start services automatically. You can change the *wrkservices=* entry to start certain services automatically when you start the Workstation service. You can also change the *srvservices=* entry to start services automatically when you start the server.

For example, to start the Messenger and Netpopup services each time you start the workstation, you would edit the *wrkservices=* entry in your LANMAN.INI file to read as follows:

```
wrkservices=messenger,netpopup
```

Then, after starting the Workstation service, you could type NET START to see which services were running. You would see the following display:

The following LAN Manager services have been started:

```
WORKSTATION      MESSENGER      NETPOPUP
```

The command completed successfully.

Logging On to the Local Area Network

After connecting your computer to the local area network by starting the Workstation service, you should identify yourself to the local area network by logging on with your user name and password.

Logging on lets you access resources shared by servers on the local area network that run user-level security. LAN Manager uses the user name and password you provide to verify your permission to use various shared resources. Permissions are contained in your user account and are assigned by the server's administrator.

If you want to use a resource shared by a server running share-level security, you must supply the password for that particular shared resource rather than your user account password. (This is the essential difference between share-level and user-level security.)

For more information about setting up user accounts, see Chapter 8: Managing User-Level Security.

NET LOGON Command

To log on to the local area network, use the NET LOGON command with the following options:

```
net logon username [password]
```

username is your user name.

password is your log-on password (if you have one).

For example, when Mike Greenbaum wants to log on to the local area network, he types:

```
net logon mikeg wkendorbust
```

This tells LAN Manager that when Mike wants to use a shared resource, LAN Manager should check his account (*mikeg*) to see if he has permission to use the resource. LAN Manager also looks at Mike's password, *wkendorbust* (Mike likes weekends), to verify that the person logging on is Mike.

If you forget to log on before typing a LAN Manager command that requires your user name or password, LAN Manager automatically prompts you to log on by displaying these messages:

```
Type your user name, or press ENTER if it is <default>:
```

```
Enter your password:
```

In the first message, *<default>* is the user name defined in the user name= entry of your LANMAN.INI file. When you type your user name, or accept the default by pressing [Enter], the second message appears. When you type the correct logon password for your user name, LAN Manager logs you on to the local area network, then performs your command.

Logging On from the LAN Manager Screen

When you start the LAN Manager screen without logging on first, the Log Into Network dialog box appears.

Follow these steps to log on using this dialog box:

1. In the Username text box, type your user name, or accept the default user name.
2. In the Password text box, type your password, if you have one.
3. Choose the OK command button.

The LAN Manager screen now displays your user name in the upper left part of the screen once you are logged on.

Example

Mike Greenbaum never uses the NET LOGON command. He prefers to have LAN Manager prompt him to log on when he starts the LAN Manager screen. When Mike arrives in the morning, he types NET START SERVER at his server. This automatically starts the Workstation and Server services. Mike then types NET ADMIN to start the LAN Manager screen. When the LAN Manager screen appears, it displays the Log Into Network dialog box. Mike accepts the default user name (*mikeg*), types his password in the appropriate text box, and chooses the OK command button to log on to the local area network.

Logging Off from the Local Area Network

On most local area networks, it is important to keep security issues in mind. Logging off from the local area network is one way to ensure that your account won't be used by anyone else to gain access to confidential files or other secured resources. Because your administrative privilege allows you to do so many things on the local area network, it is especially important that you log off from the local area network when you leave your computer.

You should log off from the local area network:

- When you are going to be away from your computer for an extended amount of time.
- When someone else is going to log on to the local area network from your computer.

Only one person can be logged on to a netstation or server at a time. If you are sharing a computer with someone, only one of you can be logged on to the local area network from that computer at any given time.

When you log off from the local area network, two things happen:

- All connections between your computer and shared resources are ended. (LAN Manager asks for your approval before actually ending the connections.)
- Your user name is removed from message-alias and forwarded-alias lists for your computer.

Logging off

To log off from the local area network, do the following:

1. **Select the Config menu and choose the Logoff menu item.**

A message box appears, displaying a confirmation.

2. **Choose the OK command button to clear this message box from the screen.**

NET LOGOFF Command

You can also use the NET LOGOFF command to log off from the local area network. At the OS/2 prompt, type:

```
net logoff
```

Changing Your Logon Password

It is a good idea to change your logon password regularly. This makes it harder for someone to learn your password so as to log on to the local area network with your user name. LAN Manager lets you change your default password for any server.

To change your password, follow these steps:

1. **Select the Config menu and choose the Change password menu item.**

The Change Logon Password at a Server dialog box appears.

2. **Select the name of the server on which you want to change your password from the Visible servers list box, or type the server's computer name in the Servername text box.**
3. **If your user name is not already displayed, type your user name in the Username text box.**
4. **Type your existing password and your new password in the corresponding text boxes.**

The new password cannot be the same as the old password.

5. **Choose the OK command button.**

Example

Mike Greenbaum changes the password for his account on the *mis* server on the first of each month by selecting the Config menu and choosing the Change password menu item. When the Change Logon Password at a Server dialog box appears, he types *mis* in the Visible servers text box, types his old password in the Old password text box, and types his new password in the New password text box. When he chooses the OK command button, LAN Manager changes his password on the *mis* server.

NET PASSWORD Command

To use LAN Manager commands to change your password for a server, use the NET PASSWORD command with the following options:

```
net password \\computername username oldpassword  
newpassword
```

computername is the server on which you are changing your password.

username is your user name.

oldpassword is your current password on the server.

newpassword is the new password on the server.

Pausing and Continuing Services

You will occasionally need to pause a local area network service after you have started it. A paused service stops processing new requests. For example, if you wanted to turn off the server in an hour but wanted to be sure the printer and communication-device queues were empty first, you could pause the server. The existing requests in the queues would be processed, but the server would accept no new requests.

LAN Manager allows you to pause four services—Workstation, Server, Netrun, and Netlogon. You cannot pause other services.

Pausing the Workstation service temporarily disables use of all network printer and communication device queues.

When you pause the server, no new requests to use a resource are accepted. Currently opened or outstanding requests for resource-sharing, however, are not affected.

When you pause the Netlogon service on a server, the server stops checking log-on information for other computers on the local area network. The server does continue to check its own user and group accounts to verify access permissions for users.

For more information about access permissions, see Chapter 8: Managing User-Level Security. For more information about log-on security, see Chapter 10: Managing Log-on Security.

Pausing a Service

You can pause the Workstation, Server, Netrun, or Netlogon service by using the NET PAUSE command with the following option:

```
net pause service
```

service is the Workstation, Server, Netrun, or Netlogon service.

For example, to pause the Server service, type:

```
net pause server
```

Continuing a Service

You can continue a paused Workstation, Server, Netrun, or Netlogon service by using the NET CONTINUE command with the following option:

```
net continue service
```

service is the Workstation, Server, Netrun, or Netlogon service.

For example, to restart the paused Server service, type:

```
net continue server
```


Example

If Mike has just sent a document to a spooled printer queue when Mary pauses the server, the print job is not affected. However, if Mike sends another document to print after Mary pauses the server, LAN Manager denies Mike access to the printer.

Stopping a Service

If you find you no longer need to have a particular service running, you can stop that service. Stopping a service removes that service's program from your computer's memory. You can stop any service except the Workstation service and still continue running the Server service on your computer.

If you want to stop sharing resources with the local area network, you can stop the Server service. Note that when you stop the Server service, any service that you started automatically when you started the server will now stop automatically. (You can specify services to start automatically when you start the server by adding service names to the `srvservices=` entry in the `LANMAN.INI` file.)

If you want to stop using the local area network altogether, you can stop the Workstation service. When you stop the Workstation service, all other services are stopped automatically. LAN Manager logs you off from the local area network and, with your approval, breaks any connections between your computer and shared resources.

You can stop the Netrun, Spooler, Alerter, or Server services from the LAN Manager screen. To stop any one of these services, follow these steps:

1. Select the Config menu and choose the Server options menu item.

The Set Server Configuration dialog box appears.

2. Move the cursor to the appropriate check box and remove the X mark to stop the corresponding service.

Table 2-1. Configuration Table

Check box	Service
Netrun Service	Netrun
Print Spooler	Spooler
Admin Alerter	Alerter
Start Server	Server

3. Choose the OK command button.

NET STOP Command

You can also stop any of the LAN Manager services from the OS/2 prompt. To stop a LAN Manager service, use the NET STOP command with the following option:

```
net stop service
```

service is the name of the service you want to stop.

Chapter 3: Managing Shared Resources

The main reason people set up local area networks is so that a person at one computer can use resources attached to another computer. Administrators make resources such as printers and directories available to local area network users. This process is known as sharing resources.

In this chapter you will learn:

- How to share resources with the local area network.
- How to pause and continue sharing resources.
- How to modify the STARTUP.CMD file to share resources automatically.

To be able to perform the actions described in this and subsequent chapters, you'll need to know how to use the menus and dialog boxes of the LAN Manager screen. For detailed information on using the LAN Manager screen, see Chapter 2 in the *3+Open OS/2 LAN Manager User Guide*.

About Shared Resources

When you set up your local area network, you'll want to make printers or other devices available to local area network users. LAN Manager allows you to share a server's directories, printers, and communication devices with users of the local area network.

Local Versus Network Devices

When you use a disk drive or printer that is physically attached to your computer, you are using a **local device**. Local devices are identified to the computer by **device names** such as LPT2: COM1: and (for a disk drive) C:.

With LAN Manager, users can use **network devices**, connected to a server elsewhere on the local area network, in addition to local devices. Users connect to network devices and then use them just as they would use local devices.

About Sharenames

When you share one of your local resources with the local area network, you assign it a **sharename**. Users connect to your shared resources by attaching one of their local device names to the sharename. Thus, if you shared a laser printer that had the local device name LPT2: on your computer under the sharename *laser*, local area network users would connect to *laser* by attaching one of their local device names (such as LPT1:) to that sharename.

Example

Mary Sullivan wants to share the Lanhints directory on drive C: of her server (*mis*). To do this, she assigns the sharename *hints* by typing:

```
net share hints=c:\lanhints
```

This makes the directory available to local area network users.

Later, Jenny Tibbett wants to use files in that directory, so she types:

```
net use m: \\mis\hints
```

This connects one of Jenny's local device names (M:) to a disk resource (*hints*) shared by a server (*mis*).

MS OS/2 imposes restrictions on device names. The following table shows the possible device names for each type of device:

Table 3-1. OS/2 Device Names

Type of Device	Possible Device Names
Spooled printers and (nonspooled) Communication Devices	LPT1:, LPT2:, LPT3:, COM1:, COM2:
Disks	A:, B:, C:, . . . , Z:

Sharenames are not so restricted. You could, for example, share a spooled printer as *laser*, share a communication device as *modem1*, and share a directory as *accounts*. The example above further illustrates this point.

Types of Shared Resources

LAN Manager allows you to share four kinds of resources:

- Disk directories.
- Spooled printer queues.
- Communication-device queues.
- Reserved administrative resources.

Each type of resource has to be shared in a slightly different way. The next few sections describe how LAN Manager works with each of these different types of resources.

Disk Directories

LAN Manager allows you to share either the root directory or a subdirectory with users of the local area network.

To share all directories on a disk, you specify the root directory of that disk. For example, to share all directories on drive C:, you would specify this device name:

`C:\`

To share the contents of a single directory on a disk, you must specify the drive letter plus a path. For example, to share the Memos directory on drive D:, you would specify:

`D:\memos`

If you shared this resource with a user, that user would be able to access all of the directories and files in the Memos directory.

For more information about sharing directories, see Chapter 4: Managing Shared Directories. For information about assigning permissions to shared directories, see Chapter 8: Managing User-Level Security. For information about assigning passwords to shared directories, see Chapter 9: Managing Share-Level Security.

Printers and Communication Devices

Before you can share communication devices or printers with the local area network, you must create queues for those devices. With LAN Manager, you don't actually share the device—you share a queue that routes requests to the device.

Sharing Device Queues

LAN Manager uses **queues** to control the traffic to printers and communication devices. Queues are necessary for printers and communication devices because only one user at a time can use these resources. Queues are not necessary for disk resources because several users can use the same shared directory simultaneously.

If three different users all want to use the same shared printer at the same time, then obviously two of them are going to have to wait. The queue for that printer stores the requests, and then sends them on to the printer one by one in the same order as they came in.

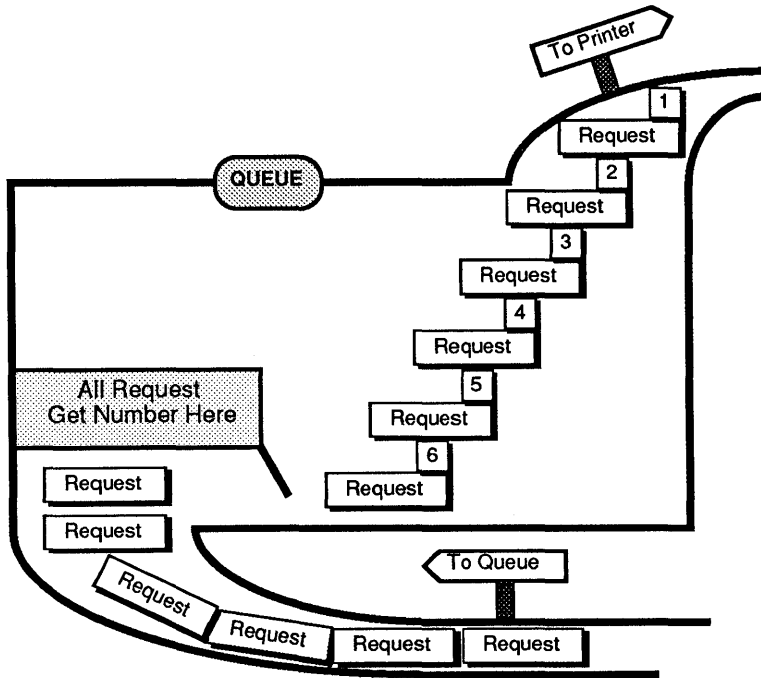


Figure 3-1. How Printer Queues Work

Device Pooling

LAN Manager allows you to direct a single queue to two or more similar devices. This is called **device pooling**. When you direct a queue to a pool of devices, LAN Manager automatically searches the pool for an available device and sends your request to that device.

Device pooling makes it easy for you to create queues and assign permissions. It also helps users by making optimum use of available resources.

For more information about device pooling, see Chapter 5: Managing Shared Printers and Chapter 6: Managing Shared Communication Devices.

Reserved Administrative Resources

In addition to disk, printer, and communication-device resources, LAN Manager allows you to share certain special resources with reserved sharenames that end with the \$ character. These resources let administrators perform certain tasks over the local area network.

IPC\$ and ADMIN\$

The first two reserved administrative resources are called IPC\$ and ADMIN\$. LAN Manager automatically shares both of these resources for you when you start a user-level-security server.

If you start a server with share-level security, LAN Manager does not share IPC\$ and ADMIN\$ automatically. Since administrators can assign passwords to resources on share-level-security servers, LAN Manager lets you assign a password for these resources when and if you decide to share them.

IPC\$ is a shared resource that lets users run programs in the server's memory. You must also share IPC\$ to allow network administration of the server and to allow users to view a list of the server's resources from another computer on the local area network. For more information about the IPC\$ resource, see Chapter 7: Managing Shared Programs.

ADMIN\$ is a shared resource that lets an administrator perform administrative tasks on one server from another netstation or server on the local area network. When you connect to the **ADMIN\$** resource, you are automatically regarded as an administrator for that server. For more information about network administration, see Chapter 11: Administrating a Network Server.

LAN Manager also reserves sharenames for each drive on a server. These sharenames combine a drive letter with the \$ character. Thus, for a server with drives A through D, LAN Manager reserves sharenames A\$, B\$, C\$, and D\$ and automatically shares them. An administrator can use one of these shared resources to view the directories and files of a particular disk on the server from a network computer on the local area network.

To find out which resources a server is currently sharing, you can use the LAN Manager screen to view a list of shared resources. You can also add or delete an item or modify the status of resources currently shared by a server. The following sections explain how to use the LAN Manager screen to do these things.

Listing Shared Resources

Listing shared resources lets you see which of a server's resources are being shared with the local area network. When you want to share a new resource from your server, you should first check to see which resources you are currently sharing and what their corresponding sharenames are.

To list the shared resources for your server, follow these steps:

- 1. Select the View menu and choose This server menu item.**

The Resources This Server Is Sharing With the Network dialog box appears.

The list box in this dialog box shows the sharename, the path or device name, the resource type, and a remark for each shared resource. Below the list box is a check box that shows whether printer queues are paused or not.

There are three types of resources that can appear in this list box:

- If the server is running user-level security, the reserved administrative resources IPC\$ and ADMIN\$ appear in the list of resources.
- The reserved sharenames for the server's disk drives (A\$, B\$, C\$, and D\$) are always listed.
- Any resources that you or another administrator have shared from this server are listed.

2. **To see more information about a shared resource, select it from the list box and choose *Zoom*.**

The Shared Resource Information dialog box appears.

This dialog box repeats all of the information for this resource that was available in the Resources This Server Is Sharing With the Network dialog box. It also shows the maximum number of users that can use this resource and lists all users who are currently using the resource.

If your server is running with user-level security, the Admin only check box shows whether or not this is a resource that can be accessed only by administrators. For share-level servers, this dialog box shows permissions for this resource and contains a text box that you can use to change the resource's password. In fact, you can change any of the information that appears in a text box.

Example

Mary Sullivan is sharing a new resource on the *mis* server. Before sharing the resource, she wants to see how the server is currently set up. In particular, she wants to find out which users are currently using shared resources on *mis*. She selects the View menu and chooses the This server menu item. In the list box of the Resources This Server Is Sharing With the Network dialog box, Mary sees only one printer queue. She selects it, and chooses the Zoom command button. In the Shared Resource Information dialog box, Mary sees that eight users are currently using the printer queue and that eight is also the maximum number of users that are allowed to use the resource at one time. Mary realizes that it's definitely time to share a new printer from this server.

Using NET SHARE to Share Server Resources

To list the server's shared resources, type the following command at the server's OS/2 prompt:

```
net share
```

You will see a display that resembles the list box in the Resources This Server is Sharing With the Network dialog box.

Sharing Resources

As an administrator, you decide when and how a resource should be shared with the local area network. To share a resource with local area network users, follow these steps:

1. **Select the View menu and choose the This server menu item.**

The Resources This Server Is Sharing With the Network dialog box appears.

2. **Choose the Add share command button.**

The What Would you like to share? dialog box appears.

3. **Select the option button that matches the type of resource that you want to share:**
 - Disk directory to share a disk resource.
 - Spooled printer to share a printer queue.
 - Comm device queue to share a communication-device queue.
 - Admin share to share an IPC\$ or ADMIN\$ resource.
4. **Choose the OK command button.**

Depending on which option button you select, one of four dialog boxes appears next. In the dialog box that appears, you can type specific information about the shared resource. For more information about sharing printer queues, communication-device queues, or disk directories, see Chapter 5, 6, or 7, respectively.

Sharing IPC\$ and ADMIN\$

If your server is running share-level security, you can share IPC\$ and ADMIN\$ resources by selecting the Admin Share option button from the What Would you like to share? dialog box (see the preceding procedure.) User-level-security servers share IPC\$ and ADMIN\$ resources automatically when you start them. However, you can use this procedure to reshare one of these resources if you had stopped sharing it.

To share IPC\$ or ADMIN\$ for a server with share-level security, follow these steps:

1. **Select the Admin Share option button from the What would you like to share? dialog box and choose the OK command button.**

The Add a Reserved Administrative Share dialog box appears.

2. Select one of the two option buttons:

- ADMIN\$.
- IPC\$.

NOTE: To share both ADMIN\$ and IPC\$, you must complete this procedure twice.

3. Type a descriptive comment about the resource you want to share in the Remark text box.

4. Specify the maximum number of users that are to be able to access this resource at any one time in the Max.users text box.

You can mark the No limit check box instead to allow unlimited access.

5. If the server is running share-level security, type a password for this shared resource if you want the resource to have a password.

This is the password that users must provide in order to be able to use this resource. By assigning a password to ADMIN\$ and revealing that password to only one or two administrators, you can restrict the number of people who can remotely administrate the server.

6. Choose the OK command button.

NOTE: It's a good idea always to assign the same password both to IPC\$ and ADMIN\$. If these resources are shared with different passwords, and an administrator wanting to administrate the server remotely must explicitly use both IPC\$ and ADMIN\$ for that server before attempting to administrate the server.

Example

Mary Sullivan set up the *print1* server to run with share-level security. Mary wants to be able to administrate *print1* from any other computer on the local area network, so she needs to share both the IPC\$ and the ADMIN\$ resources from the *print1* server. To do this, Mary selects the View menu and chooses the This server menu item. Next, she chooses the Add share command button to see the What would you like to share? dialog box. Mary selects the Admin share option button and chooses the OK command button. The Add a Reserved Administrative Share dialog box appears next. She selects the ADMIN\$ option button, types in a description and password for the resource, and then chooses the OK command button to share the ADMIN\$ resource. Mary repeats this procedure for the IPC\$ resource, making sure to use the same password.

Using NET SHARE to Share IPC\$ and ADMIN\$

To share IPC\$ and ADMIN\$ from the OS/2 prompt, use the following LAN Manager commands from the server:

```
net share IPC$ [password]
net share ADMIN$ [password]
```

password is the password you are assigning to this shared resource (if any). A password is relevant only for a share-level-security server.

(Now Mary could share other resources on the *print1* server from the computer in her own office.)

Pausing Shared Resources

Pausing shared resources lets you temporarily suspend network business. Specifically, you can pause:

- A service, including the Server service.
- One or all of the servers' spooled printer queues.
- A specific printer.

When you pause the Server service, users cannot make any new connections to the server's shared resources, although current connections remain unaffected.

Pausing a printer queue prevents requests from being passed on to the printers from a queue. Pausing a specific printer prevents new requests from being printed on that printer. Pausing gives a server exclusive use of its paused resources. Administrators can pause a server's printers, for example, to service the printers.

Pausing Printer Queues

To pause a server's shared printer queues, follow these steps:

1. **Select the View menu and choose the This server menu item.**

The Resources This Server Is Sharing With the Network dialog box appears.

2. **Mark the Pause all sharing check box to pause the server's printer queues.**

Continuing Printer Queues

When you are ready to continue sharing printer queues, follow these steps:

1. **Select the View menu and choose the This server menu item.**
2. **Clear the mark from the Pause all sharing check box.**

Example

A printer company is sending someone to MacroCorp to service the printers. The morning before the technician arrives, Mary sends mail to all users of the *print1* server saying she will be pausing all printer queues for the server at 1 p.m. At 1 p.m. Mary selects the View menu and chooses the This server menu item. There, she marks the Pause all sharing check box.

When the technician leaves, Mary again selects the View menu and chooses the This server menu item. This time she unmarks the Pause all sharing check box. Mary then sends mail to all the people who use the server, letting them know that the printers are available once again.

Pausing a Printer

To pause a spooled printer shared from your server, follow these steps:

1. **Select the Status menu and choose the Device status menu item.**

The Shared Device status dialog box appears.
2. **Select the printer you want to pause and choose the Pause command button.**

NOTE: You can only pause printers with the word spooled next to the device name in the list box.

Continuing a Paused Printer

When you are ready to continue a paused printer, follow these steps:

1. **Select the Status menu and choose the Device status menu item.**

The Shared Device status dialog box appears.

2. **Select the paused printer and choose the Continue command button.**

NET PAUSE Command

You can pause individual spooled printers from the OS/2 prompt. To pause a server's printers, use the NET PAUSE command with the following option:

```
net pause print[=devicename]
```

devicename specifies a particular spooled printer.

If you omit the *devicename*, all printers for that server are paused.

NET CONTINUE Command

To continue a paused printer, use the NET CONTINUE command with the following option:

```
net continue print[=devicename]
```

devicename specifies a particular spooled printer.

Stop Sharing a Network Resource

Administrators also have responsibility for deciding when to stop sharing a resource with the local area network. You might opt to stop sharing a resource when it no longer meets users' needs or when sharing the resource poses a security problem.

To stop sharing a resource, follow these steps:

1. **Select the View menu and choose the This server menu item.**

The Resources This Server Is Sharing With the Network dialog box appears.

2. **Select the resource you want to stop sharing.**
3. **Choose the Delete command button.**

A message box appears, prompting you to confirm your decision.

4. **Choose the OK command button.**

Example

During a busy period, MacroCorp rented some extra equipment for the temporary staff. Mary shared an extra printer from the *print1* server during this time. After a month, the company is ready to return the rented printer. To stop sharing the printer, Mary selects the View menu and chooses the This server menu item. In the Resources This Server Is Sharing With the Network dialog box, she selects the sharename of the rented printer and chooses the Delete command button. The printer promptly disappears from the list of shared resources. Mary can now disconnect the printer from the server.

Using NET SHARE to Stop Sharing Resources

To stop sharing a resource from the OS/2 prompt, use the NET SHARE command with the following options:

```
net share sharename /delete
```

sharename is the name of the resource being deleted.

/delete is the option that tells LAN Manager to delete the resource.

Sharing Resources Automatically

You may want to set up your server to share certain resources automatically each time you start the computer. The alternative is to share the various resources one by one every time you start the Server service. You can share resources automatically by placing NET SHARE commands in the computer's STARTUP.CMD file, immediately following the NET START SERVER command. NET SHARE is the command you would use at the OS/2 prompt to share resources. Commands in the STARTUP.CMD file are run whenever you start OS/2 on your computer.

NOTE: This procedure is not recommended for resources being shared with a password, since this would require listing your password in the STARTUP.CMD file, where anyone can read it. You should share password-protected resources by typing out the individual NET SHARE commands when you start the server with share-level security.

You can also use profile files to save NET USE, NET SAVE, NET COMM, and NET PRINT commands that you want to run automatically when you use the NET LOAD command with this option:

```
net load filename
```

filename is the name of the profile file.

For more information about using profiles, see the *3+Open MS OS/2 LAN Manager User Guide*.

Example

To automatically share a printer and the directories *documents* and *memos* each time the *print1* server is started, Mary places the following entries in the STARTUP.CMD file on the server:

```
net start workstation
net start server
net share printer=lpt1:
net share docs=c:\documents
net share memos=c:\memos
```

Chapter 4: Managing Shared Directories

3+Open LAN Manager lets administrators control access to a server's directories. You can share an entire disk, a disk's root directory, or any and all subdirectories on a disk.

In this chapter you will learn to:

- Start and stop sharing directories.
- Manage shared directories.
- List and close opened files.

For more information about using shared disk devices, see the *3+Open MS OS/2 LAN Manager User Guide*.

Sharing Directories

You can use LAN Manager to share some or all of a server's disk directories. You can also specify what individual users can or cannot do with a directory's contents. For example, you could allow one group of users to read files in a directory but not write to them, while allowing another group to write information to existing files but not to create new ones.

For information about assigning resource permissions, see Chapter 8: Managing User-Level Security and Chapter 9: Managing Share-Level Security.

How Users Use Shared Directories

There are two ways local area network users can use shared disk directories. The first way is by assigning a drive letter not currently used for a local disk drive to the directory. For example, when Jenny Tibbett wants to use a shared directory with the sharename *help* from the *mis* server, she types:

```
net use m: \\mis\help
```

Then, to look at the contents of that directory, she types:

```
dir m:
```

Using a Network Path

The second way for someone to use a shared directory is by using the **network path** for that resource. The network path is the computer name of the server followed by the sharename of the resource. For example, from time to time Mike Greenbaum needs to copy a file to a shared directory on the *print2* server. Mike does not have to type the NET USE command in order to connect to this directory. Instead, he can specify the network path by typing:

```
copy report.feb \\print2\status\report.new
```

The difference is that Jenny goes to the extra trouble of assigning one of her device names to the shared directory, while Mike just specifies the shared directory's network path as though it were a local directory on his netstation. Either method is equally valid.

Whether a user assigns a local device name or uses the network path of a disk resource, two things happen:

- A connection is established between the user's computer and the server.
- The user works from the server's directory as though it were a local directory (on the user's own computer.)

Why Share Server Directories

By sharing a server's directories, you can share data and programs with a number of people on the local area network. This provides for data integrity by ensuring that everyone has access to a single source. It also saves overall disk space by eliminating the need for duplicate copies of files on everyone's computers.

Sharing directories saves time. When users use shared directories to access files over the local area network, they no longer have to walk to another computer to look at a file or copy it to a floppy disk.

Sharing directories also makes it possible for users to archive files on a server's hard disk rather than on floppy disks. Hard-disk storage is generally more reliable than floppy-disk storage.

Organizing a Server's Disks

Before you share directories over the local area network, you should decide how to organize them. Generally, you will be able to organize files into directories related to particular projects or groups of people.

Although it might seem easiest to share an entire hard disk (by specifying its root directory) with everyone on the local area network, it can be a mistake not to anticipate the organizational and security problems that can result.

Be careful not to share directories that contain sensitive files or programs that should not be shared. Files that are confidential should either be kept on an individual's netstation or should be accessible only to appropriate individuals.

NOTE: If security is an important factor, be sure to run the server with user-level security. This ensures maximum protection for your shared resources. For more information about user-level security, see Chapter 8: Managing User-Level Security.

About Sharenames

When you share a server's directory, you must assign it a sharename. A sharename does not have to be identical to the actual name of the directory you are sharing. A good sharename should describe the resource and be easy to remember.

Maintaining a Shared Disk

When you share directories on a server's hard disk, it is important for the disk to be well organized. If several people use the same directory for a lot of different projects, the directory will soon be a clutter of unrelated files. You should spend some time creating and sharing separate directories for different groups of users. If each user or group has a well-defined work area on the hard disk, it will be easier to keep files straight.

Because several people can create files in a shared directory, it is likely that a server's hard disk will fill up much more quickly than a netstation's hard disk would. As administrator, you should closely monitor how much disk space is being used. (The LAN Manager Alerter service automatically tells an administrator when the server's disk is near full capacity.) To conserve disk space, you should encourage users to take inventory of their files from time to time and to delete files they no longer need.

Finally, it is important to back up all shared directories on a regular basis. You should have a backup copy for each of the server hard disks in case anything happens to the disks. It is also helpful to back up copies of files you no longer want on the hard disk.

For information about creating backups using the BACKUP and RESTORE commands, see the *3+Open MS OS/2 LAN Manager User Reference*.

Sharing Directories

When you share a directory, you make all files and subdirectories of that directory available to specified users of the local area network. You might share a directory to make a group of files available to several users or to give users additional work space.

To share a directory, follow these steps:

1. **Select the View menu and choose the This server menu item.**

The Resources This Server Is Sharing With the Network dialog box appears. This dialog box shows all resources currently being shared from your server.

2. **Choose the Add share command button.**

The What would you like to share? dialog box appears.

3. **Select the Disk directory option button.**

4. **Choose the OK command button.**

The Share a Disk Resource With the Network dialog box appears.

5. Complete the text boxes in the Share a Disk Resource With the Network dialog box as shown in Table 4-1.

Table 4-1. Share a Disk Resource With the Network Dialog Box

Text box	What to Do
Sharename	Specify the sharename you want the new shared directory to have.
Path	Specify the drive letter and path of the directory you are sharing.
Remark	Type a descriptive comment for the directory.
Max. users	Specify the maximum number of users able to access the directory at one time (you can also mark the No limit check box.)
Password	If you are running the server with share-level security, you can type a password for the shared directory in this text box.

6. If you are running the server with share-level security, move to the Permissions check boxes.

Use these boxes to assign access permission for the directory. Press [Space bar] to place an X in an empty check box or to remove an X from a marked check box.

7. Choose the OK command button.
8. If you are running the server with user-level security, the Edit File Permissions dialog box appears.

Use this dialog box to specify which users and groups can use the new shared directory and what kind of permissions they are to have. See Chapter 8: Managing User-Level Security for information on how to actually assign permissions for a shared directory.

Example

The head of MacroCorp's Public Relations department has asked Mary Sullivan to create a shared directory for the Public Relations staff. Since Public Relations is a fairly security-minded department, Mary decides to create and share the directory on *mis*, a server running user-level security. This will allow the Public Relations people to assign different permissions for different users of the shared directory.

Mary's first step is to use the MS OS/2 MKDIR command to create a Pubrel directory on the *mis* server. Next she must share this directory. To do this, she starts the administrator's version of the LAN Manager screen, selects the View menu, and chooses the This server menu item. In the Resources This Server Is Sharing With the Network dialog box, Mary chooses the Add share command button. Then, in the What would you like to share? dialog box, she selects the Disk directory option button.

In the Share a Disk Resource With the Network dialog box, Mary starts filling in the text boxes. First she shares the Pubrel directory as pubrel. This means that members of the Public Relations staff will be able to connect to their shared directory by specifying the pathname `\mis\pubrel`. Mary types `c:\pubrel` in the Pathname text box to tell LAN Manager where to find the directory on the server's hard drive. In the Remark text box she just types Public Relations. Since *mis* is running user-level security, there's no need to specify a password. Finally, in the last text box Mary sets the maximum number of users at 20 (there are 15 people in the Public Relations department right now, so 20 gives them a little flexibility.)

When Mary chooses the OK command button, the Edit File Permissions dialog box appears on her screen. To find out how Mary assigns permissions for the Pubrel directory, see Chapter 8: Managing User-Level Security.

Using NET SHARE to Share Directories

To share directories from the OS/2 prompt, use the NET SHARE command with the following options:

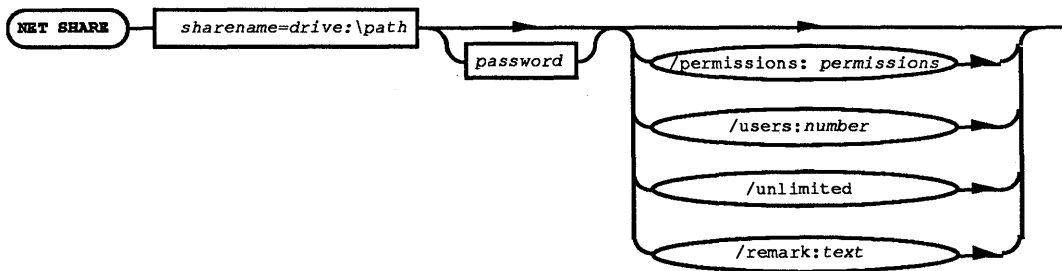


Figure 4-1. NET SHARE Options

sharename is the sharename you are assigning to the directory.

drive:\path specifies the location of the directory on the server.

password specifies the password users must type to use this resource. Specify a password only if your server is running share-level security.

/permissions:permissions assigns share-level permissions for the disk resource.

/users:number specifies the maximum number of users that are to be able to access this resource at the same time.

/unlimited specifies that there is to be no limit on the number of users accessing this resource.

/remark:text is a descriptive remark for the resource.

NOTE: For instructions on how to use the command flow diagram chart, refer to Appendix C. For more information about the NET SHARE command, see the *3+Open MS OS/2 LAN Manager Administrator Reference*.

Stop Sharing a Directory

You may occasionally need to stop sharing a directory when it is no longer being used and you want to delete it or when a project requiring the use of shared files is completed. Whatever the reason, you can use the LAN Manager screen to stop sharing a directory with local area network users.

To stop sharing a directory, follow these steps:

- 1. Select the View menu and choose the This server menu item.**
- 2. From the Resources This Server Is Sharing With the Network dialog box, select the sharename of the directory you want to stop sharing.**
- 3. Choose the Delete command button.**

The Stop Sharing a Network Resource dialog box appears, asking you to confirm your decision to stop sharing the resource.

- 4. Choose the OK command button.**

The directory promptly disappears from the server's list of shared resources.

Example

Mary Sullivan has been sharing a directory on the *mis* server with a number of MacroCorp's top executives. This directory, which Mary has assigned the sharename *fiscal*, contains highly sensitive financial data. The President decides that this information should be moved to the senior accountant's netstation, since the accountant is now the only one who still needs to use these files.

Before removing the directory from *mis*, Mary must stop sharing it. To do this, Mary selects the View menu and chooses the This server menu item. She selects *fiscal* from the list box. In the Resources This Server Is Sharing With the Network dialog box, Mary chooses the Delete command button. When the Stop Sharing a Network Resource dialog box appears, she checks to make sure she is deleting the right directory from the list before choosing the OK command button to stop sharing the directory.

Using NET SHARE to Stop Sharing Directories

To stop sharing a directory from the OS/2 prompt, use the NET SHARE command with the following options:

```
net share drive:\path /delete
```

drive:\path specifies the directory you want to stop sharing.

/delete tells LAN Manager to stop sharing the directory.

Chapter 5: Managing Shared Printers

As the local area network administrator, you must decide which printers to share with the local area network users and how to share them. When you share printers, you must set up printer queues and determine whether or not to create printer pools.

In this chapter, you will learn how to:

- Share individual printers or pools of printers.
- Create printer queues.
- List the print requests contained in a printer queue.
- Reorganize the print requests within a printer queue.
- Change the options for a printer queue.
- Hold and restart a printer queue.
- Stop sharing printer queues.

Sharing Spooled Printers

LAN Manager recognizes three types of devices: disk devices, communication devices, and spooled printers. Spooled printers are printers that work with a LAN Manager program known as the *spooler*. Other printers must be shared as communication devices, which are covered in Chapter 6.

The 3+Open Postscript Despooler server, which works in conjunction with the LAN Manager spooler software, allows network users to select which files to print and which network printers to use. It also allows administrators to manage the printer queue and troubleshoot printer problems.

A spooled printer can be connected to any of a computer's parallel (LPT) or serial (COM) ports.

NOTE: The Spooler service must be running on your server to enable users to access the server's spooled printers across the local area network. The *3+Open LAN Manager Installation and Setup Guide* describes how to install the PostScript despooler.

Printers that are not spooled must be shared as communication devices. See Chapter 6: Managing Shared Communication Devices for information on how to share communication devices.

How Shared Printers Work

When users send documents over the local area network to a spooled printer, they are actually sending the documents to a spooled printer queue, where the documents are held as **print requests** and assigned job numbers.

If there is more than one print request in the queue, the queue holds the requests, passing them on to the spooler in the same order as it receives them.

3+Open LAN Manager comes with a print processor which supports PostScript printers. For more information refer to the *3+Open LAN Manager Installation and Setup Guide*.

You can have the spooler run a special print processing program on print requests in a particular printer queue. For example, a certain printer queue could be set up for print requests that contained special formatting characters. The spooler would run a program to translate these characters for the printer before sending a request on to the printer.

The spooler passes the print requests on to the printer, which prints the document.

Automatic Print Notification

LAN Manager automatically sends messages to users as soon as the document is done printing:

```
From: SERVER at \\PRINT1
To:   BENP
Subj: ** PRINTING NOTIFICATION **
Date: May 25, 1988 at 12:23:33
```

```
Print job 3325 has finished printing on LPT1.
Job was queued to POOL1 on May 25, 1988 at
12:07:21. Size of job is 24,431 bytes.
```

LAN Manager also notifies users if there are problems with print requests, such as when a printer runs out of paper, or when the status of a print request changes (for instance, if an administrator pauses the queue).

Setting Up Printer Queue Options

LAN Manager allows you either to create a simple printer queue that serves one printer or to create more sophisticated printer queues. There are several options to consider when setting up printer queues:

- Which printers should receive documents from a queue.
- What priority level you want to assign to a queue.
- Whether you want to use a print processor program to process documents sent to a queue.
- Whether you want a separator page to be printed between documents for a queue, and if so, what its appearance will be.

When you define a queue, LAN Manager keeps a record of the options you have chosen for it in the Lanman\Spool directory.

You can also specify another spool directory by changing the `spooldir=` entry of your LANMAN.INI file. The `spooldir=` entry should be in the following form:

```
spooldir= [drive:\]path
```

drive:\path identifies the spool directory you've created.

For complete information on the LANMAN.INI file, refer to the *3+Open Network System Guide*.

LAN Manager creates a separate subdirectory in the Spool directory for each queue that you create.

The next several sections describe the various options associated with spooled printer queues.

Configuring Printer Queues

There are a number of ways you can configure printer queues. In order of increasing complexity, you can connect:

- One printer queue to one printer.
- Two or more printer queues with different options to the same printer.
- One or more printer queues to a pool of two or more printers.

The simplest queue to create is one that sends requests to a single printer not served by any other queue. To create such a queue, you must specify:

- A sharename for the queue.
- The server device name for the printer.

For example, the following command creates a printer queue called *print* that routes documents to the printer connected to the server's COM1 port:

```
net share print=com1
```

Creating a Pool of Printers

When you connect a printer queue to two or more printers of the same kind, you are creating a **pool** of printers. With this option, LAN Manager searches for an available printer so that network users don't have to. LAN Manager routes documents from a printer queue to the first available printer in a pool of printers.

The Alerter service then sends messages to users telling them where their documents have been printed.

To create a printer queue that sends requests to two or more printers, you must define:

- The sharename of the queue.
- The device names for all printers in the pool.

For example, the following command creates a printer queue called *draft* that routes documents to printers connected to the server's LPT1: and LPT2: ports:

```
net share draft=lpt1;lpt2
```

Using NET SHARE to Route Printer Queue Requests

LAN Manager also allows you to route a queue's requests to connect to two or more servers. To include a network printer as part of a spooled printer queue for your server, follow these steps:

1. **From the network server, share the network printer as part of a (nonspooled) communication device queue. (For example, use a command of the following form:**

```
net share sharename=device/comm
```

2. **From the local server, redirect a device name to the network shared communication device queue. Use a command of the following form:**

```
net use device \\computername\sharename
```

3. **Create a spooled printer queue at the local server. Use a command of the following form:**

```
net share sharename /print
```

4. Redirect output for the new spooled printer queue at the local server to the network printer that is shared as part of a communication device queue. Use a command of the following form:

```
net print sharename /route:devicename
```

Printer Queue Options

If you decide to assign two or more spooled printer queues having different options to the same printer or pool of printers, you may want to vary the following printer queue options:

- The users or groups who can use the various queues.
- The priority levels of the queues.
- The times at which the different queues can send requests to printers.

These printer queue options are described in the following sections.

You can specify the users or groups who can use a queue either by editing the file permissions (on a server running with user level security) or by controlling the resource's password (on a share level server). See Chapter 8: Managing User Level Security, and Chapter 9: Managing Share Level Security for more about restricting access to a resource.

The Queue Priority Option

Administrators can assign priority levels to spooled printer queues. If you find that certain print requests are more time-critical than others, you can create two printer queues for the same printer or printer pool. For example, you could create one queue *high* with a priority of 1 and another queue *average* with a priority of 5. Requests in the *high* queue would be printed before requests in the *average* queue. Then you can give access permissions for *average* to all users, and access to *high* only to users who need to print time-critical documents.

You can use the NET PRINT command to assign a priority level to an existing spooled printer queue.

The highest priority is 1, the lowest is 9, and the default is 5.

For example, to assign a priority of 1 to the *high* queue, type:

```
net print high /priority:1
```

The Scheduling Option

The scheduling option specifies the times at which a queue can send requests to the printers. Users can submit documents to the queue at any time, but the queue holds all requests until its designated start-printing time.

You can use the NET PRINT command to define a print schedule for an existing spooled printer queue. For example, to specify that documents in the *latenite* queue should print between 8 p.m. and 11 p.m., type:

```
net print latenite /after:8:00pm /until:11:00pm
```

The Print Processor Option and Parameters

Certain programs, such as page-design programs, create document files containing special characters that must be translated before printing. A print processor program translates these characters into something that the printer can recognize and print.

You can set up a printer queue to run a print processor on all documents before sending them to the printer.

You can create two printer queues to allow users creating documents from various programs (some needing a particular print processor and some not) to use the same printer or pool of printers.

You can use the NET PRINT command to define a print processor program to run on all documents for an existing spooled printer queue. For example, to specify that a print processor called POSTSCRIP.EXE run on all documents sent to the *docs* queue, type:

```
net print docs /processor:c:\spool\lanman\postscrp.exe
```

The Separator Page Option

You can choose to define and use a page to separate print documents sent by a given queue to the printer. Separator pages make it easier for you to see where one printed document ends and another begins. They typically include such information as the name of the person who printed the document and/or the name of the document. As an administrator, you can specify the contents of the separator pages for your printer queues.

You can define a separator page by creating a file of escape-character codes that define the contents of that page. You should follow the guidelines.

Separator Page Guidelines

- To readily identify the file as a separator page definition file, use the filename extension .SEP.
- Determine the escape character to use in the file. (The @ character is used in the list of escape codes that follows.) You define an escape character by typing it alone on the first line of your separator page definition file.
- Only use spaces as part of a string of text; do not use spaces between escape characters.

Table 5-1 lists the escape codes and their functions. (Although you may specify any character as the escape character, the @ character is used in this list):

Table 5-1. Separator Page Escape Codes

Escape Code	Function
@ <i>Ltext</i>	Prints the specified text.
@D	Prints the date the spool file was created.
@T	Prints the time the spool file was created.
@N	Prints the sharename of the printer queue or the user name and computer name of the document's originator.
@I	Prints the document's job number.
@ <i>Hnn</i>	Sets the printer-specific control sequence: <i>nn</i> is a hexadecimal number which is sent directly to the printer. See your printer manual for these numbers.
@ <i>Wnn</i>	Sets the separator page width (in characters).
@ <i>n</i>	Skips <i>n</i> number of lines. Range 0-9.
@B	Creates block characters.
@S	Creates single-width block characters. Use after the @B code.
@M	Creates double-width block characters. Use after the @B code.
@U	Turns off block-character printing.
@E	Ejects a page from the printer. Use this when you want to start a new page or when you have finished creating your banner page file.

Sample Separator Page

If no *pathname* is given and a DEFAULT.SEP file is not in the printer spool directory, LAN Manager automatically uses the following separator page:

```
@
@B@S@N@4
@B@S@I@4
@D@Lb@b@b@T@0
@E
```

This default separator page definition file:

- Prints the sharename of the printer queue, or the user name and computer name of the document's originator in block characters, then skips four blank lines.
- Prints the job number of the document in block letters and then skips four more lines.
- Prints the date (followed by four spaces) and the time.
- Ejects the printed separator page.

Creating and Sharing Printer Queues

Once you have decided how to set up your shared printers, you are ready to create a shared printer queue. To share a printer with local area network users:

1. **Select the View menu and choose the This server menu item.**

The Resources This Server Is Sharing With the Network dialog box appears.

2. **Choose the Add share command button.**

The What would you like to share? dialog box appears.

3. Select the Spooled printer option button and choose the OK command button.

The Share a Print Queue With the Network dialog box appears.

4. Complete the text boxes according to the instructions in Table 5-2.

Table 5-2. Print Queue Dialog Box Options

Text box	What to Do
Sharename	Specify the sharename you want the new shared printer queue to have.
Remark	Type a descriptive comment for the printer queue.
Max. users	Specify the maximum number of users that are to be able to use this queue at any one time (you can also mark the No limit check box.)
Password	If you are running the server with share-level security, you can type a password for the printer queue in this text box.

5. Choose the OK command button.

If the printer queue does not already exist, a message box displays this message:

```
The specified printer queue does not exist.  
Click <OK> to create the queue <sharename>.
```

NOTE: The sharename of the queue you are creating is displayed in the place of *sharename*.

6. Choose the OK command button to create the printer queue.

The Printing Options for Queue dialog box appears.

7. Complete the text boxes according to the instructions in Table 5-3.

Table 5-3. Print Options for Queue Dialog Box Options

Text box	What to Do
Priority	Set the priority for this queue. 1 is the highest, 9 is the lowest, and 5 the default.
Device Name	Specify the device name(s) to which the printer or printers for this printer queue are connected on the server.
Separator file	Specify the pathname of the separator file you want to use with this queue, if any.
Print after	Specify the time at which the printer queue can start sending requests to the printer(s). Use 24-hour format (00:00—23:59).
Print until	Specify the time after which the printer queue can no longer send requests to the printer(s). Use 24-hour format (00:00—23:59).
Print processor	Specify the name of the print processor to be used with this queue, if any.
Parameters	Specify any parameters that are required by the print processor program.
Remark	Type a descriptive comment for the printer queue.

8. Choose the OK command button.
9. If you are running the server with user-level security, the Add Permissions dialog box appears.

Use this dialog box to identify which users and groups can use this queue. See Chapter 8: Managing User-Level Security for information about how to assign access permissions for printer queues.

Example

Mary Sullivan is setting up two printers to be shared by the *print1* server. She decides to create a single printer queue for the two printers. To do this, Mary selects the View menu and chooses the This server menu item. Then she chooses the Add share command button. In the What would you like to share? dialog box Mary selects the Spooled printer option button and chooses the OK command button. In the Share a Spooled Printer Queue dialog box she types the sharename of the queue she wants to create (*pool1*) and then a description of the queue. Because the *print1* server runs share-level security, Mary also types in a password for the printer queue before selecting the OK command button.

The Printing Options for Queue dialog box appears next. In this dialog box, Mary types the device names for both printers in the Devicename text box:

```
lpt1;lpt2
```

Mary also types in the name of the separator file that is to print between each document, and a remark that she will see if she decides to change the print options later. When she chooses the OK command button, the new *pool1* queue appears in the list of shared resources for the *print1* server.

Using NET SHARE to Share Printer Queues

You can also share a printer queue from the OS/2 prompt. To share a printer queue, use the NET SHARE command with the following options:

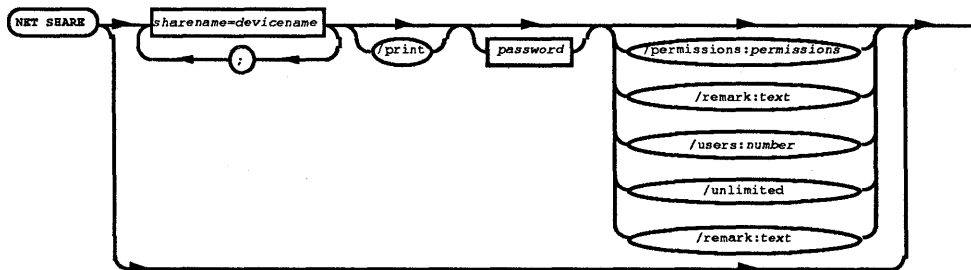


Figure 5-1. NET SHARE Command

sharename is the sharename you are assigning to the printer queue.

devicename specifies the printer to which this printer queue is to route documents. (Separate two or more device names with commas or semicolons.)

/print identifies the shared resource as a printer queue. (This is a default.)

password is the password you are assigning to this resource (for share-level-security servers only).

/users:n specifies the maximum number of users (*n*) that are to be able to use this printer queue at the same time.

/unlimited specifies that there is no limit on the number of users who can access this resource at the same time.

/remark:text provides a descriptive remark for the printer queue. Remember to enclose the comment in quotation marks.

NOTE: For instructions on how to use the command flow diagram chart, refer to Appendix C. For more information about the NET SHARE command, see the *3+Open MS OS/2 LAN Manager Administrator Reference*.

Listing and Controlling Print Requests

Listing the print requests for each printer queue shared by a server lets you monitor the status of each print request. You can also do the following:

- Delete requests.
- Change the position of a request in a printer queue.
- Restart a document that was interrupted while printing.

- Hold a request in a printer queue so that it does not print.
- Release a held request so that it can be printed.

To select any of these request options, follow these steps:

1. Select the View menu and choose the Print queues menu item.

The Show Print Queues For dialog box appears

2. Identify the printer queue or queues you want to examine by doing one of the following:

- Type the name of the server sharing the queue in the server text box, OR
- Select the server from the Server list box, OR
- Select the local device name that is connected to the queue from the Redirected device list box.

3. Choose the Zoom command button.

The Print Queues for (Server) dialog box appears.

The list box in this dialog box shows the sharename and status for each printer queue shared from the server. It also shares the requests in the individual queues.

4. Select the print request you want to delete, move, or restart.

5. Choose the appropriate command button from the list in Table 5-4.

Table 5-4. Print Request Command Buttons

Command button	Function
Hold	Holds a document in the queue without printing it.
Release	Releases a held print request so the document can be printed.
Restart	Restarts a print request that has stopped because of a printer error or for some other reason. The document is reprinted from the beginning.
Zoom	Lets you see specific information about the request and change the request's location in the queue.
Delete	Removes a print request from the queue.

Example

Mary Sullivan hears that there's something wrong with the *pool1* printer queue on the *print1* server. On her server (*mis*), Mary selects the View menu and chooses the Print queues menu item. She selects the *print1* server from the Show Print Queues for dialog box and chooses the Zoom command button.

The Print Queues for (Server) dialog box appears, showing Mary that both printers are out of paper and that several documents are waiting in the queue. Mary walks to the printer room and tends to the printers. (She also starts the Alerter service to make sure users get No paper messages in the future.) When she returns to her office, she sends mail to the users who had jobs waiting to let them know the printers are now working.

Using NET PRINT to Check Printer Queues

To list the contents of a shared printer queue from the OS/2 prompt, use the NET PRINT command with the following option:

```
net print [sharename]
```

sharename is the printer queue.

If you type the NET PRINT command by itself, LAN Manager lists the contents and status of each printer queue for the server.

To list the contents of one or more printer queues at a network server, use the NET PRINT command with the following options:

```
net print \\computername [sharename]
```

computername is the name of the network server.

sharename is the name of the shared printer queue.

Using NET DEVICE to Manage Printers

To list the status of a particular printer, use the NET DEVICE command with the following option:

```
net device [devicename]
```

devicename specifies the printer.

If you type the NET DEVICE command by itself, LAN Manager reports the status of all print and communication devices shared by the local server.

To restart printing of a document at a specific printer, use the NET DEVICE command with the following options:

```
net device devicename /restart
```

devicename specifies the printer.

To delete the document currently being printed by a particular printer, use the NET DEVICE command with the following options:

```
net device devicename /delete
```

devicename specifies the printer.

/delete tells LAN Manager to delete the document.

Changing Printer Queue Status

Just as you can change the status of print requests in a printer queue, you can change the status of the queue itself. Specifically, you can change the following:

- Hold a printer queue so that all documents after the one currently being printed are held.
- Release a printer queue from the held state.
- Delete a printer queue.
- Purge a printer queue of all print requests.

To change the status of a printer queue, follow these steps:

- 1. Select the View menu and choose the Print queues menu item.**

The Show Print Queues For dialog box appears.

2. **Identify the printer queue or queues you want to examine by doing one of the following:**
 - Type the name of the server sharing the queue in the Server text box, OR
 - Select the server from the Visible servers list box, or
 - Select the local device name that is connected to the queue from the Redirected devices list box.
3. **Choose the Zoom command button.**

The Print Queues for (Server) dialog box appears.
4. **Select the sharename of the printer queue you want to hold, release, delete, or purge.**
5. **Choose the appropriate command button listed in Table 5-5.**

Table 5-5. Print Queues For Server Dialog Box Command Buttons

Command button	Function
Hold	Holds all print requests (except the one that is currently being printed) in the queue.
Release	Reactivates a held printer queue.
Zoom	Displays the Printing Options for Queue dialog box. See the following section, Changing Printer Queue Options.
Delete	Deletes a printer queue once it is empty.
Purge	Removes all print requests from the printer queue without deleting the queue itself.

Example

Mike Greenbaum needs to print a huge report. He needs to use a printer on the *print2* server that's shared as *lineprt*. He decides that the easiest thing for him to do is to hold the queue and then just use the printer directly from *print2*. Mike sends mail saying he will be tying up the lineprinter connected to LPT3: (served by *lineprt*) on the *print2* server from 2:00 to 4:00 p.m.

At 2 o'clock, Mike selects the View menu and chooses the Print Queues menu item. In the `\\print2` from the Show Print Queues for dialog box he selects the *print2* server. Finally, in the Show Print Queues for `\\PRINT2` dialog box he selects the *lineprt* printer queue and chooses the Hold command button.

When Mike's finished using the printer, he releases the printer queue by selecting *lineprt* and choosing the Release command button in the Show Print Queues for `\\PRINT2` dialog box.

Holding Shared Printers Using the NET PRINT Command

To hold a shared printer queue, use the NET PRINT command with the following options:

```
net print sharename /hold
```

sharename specifies the printer queue you want to pause.

/hold tells LAN Manager to hold all print requests.

To release a held printer queue, use the NET PRINT command with the following options:

```
net print sharename /release
```

sharename specifies the printer queue you want to release.

/release tells LAN Manager to release the printer queue.

Changing Printer Queue Options

LAN Manager allows you to change the characteristics of an existing printer queue. For example, you may want to add another printer to the queue, revise the queue's description, or change some other option.

To change the printer queue options for a printer queue, follow these steps:

1. **Select the View menu and choose the Print queues menu item.**

The Show Print Queues For dialog box appears.

2. **Identify the printer queue or queues you want to examine by doing one of the following:**

- Type the name of the server sharing the queue in the Server text box, OR
- Select the server from the Visible servers list box, or
- Select the local device name that is connected to the queue from the Redirected devices list box.

3. **Choose the Zoom command button.**

The Printer Queues for (Server) dialog box appears.

4. **Select the sharename of the printer queue you want to change.**

5. **Choose the Zoom command button.**

The Printing Options for Queue dialog box appears, showing the current options for this printer queue.

6. Use the instructions in Table 5-6 to change the options for the selected queues.

Table 5-6. Print Options for Queue Dialog Box Text Boxes

Text box	What you can do
Priority	Change the priority level for requests in this queue. 1 is the highest; 9 is the lowest.
Device Name	Add, delete, or change the server device names that are connected to this queue. If the queue routes documents to a pool of printers, separate the device names with semicolons, commas, or spaces. For example: <code>1pt2;1pt3</code>
Separator file	Change the filename of the separator file that you want to print between requests in this printer queue.
Print after	Change the time at which the queue can start sending requests to the printer(s). Use 24-hour notation (00:00—23:59).
Print until	Change the time after which the queue can no longer send requests to the printer(s). Use 24-hour notation (00:00—23:59).
Print processor	Change the drive letter, path and filename of the print processor that is run by the spooler on requests in this queue.
Parameters	Change the parameters for the print processor.
Remark	Change the remark for the queue.

7. Choose the OK command button.

Example

Mary Sullivan has created a new separator file to use with the *pool1* printer queue. To add the name of the new separator file to the printer queue options, Mary selects the View menu and chooses the Print queues menu item. In the Show Print Queues for dialog box she selects the *print1* server and chooses the Zoom command button. In the Printer Queues for \PRINT1 dialog box she selects *pool1* and chooses the Zoom command button. When the Printing Options for Queue dialog box appears, she moves to the Separator file text box, types the name of the new separator file, and chooses the OK command button. The next time someone prints a document using the *pool1* queue, the new separator page is automatically printed after the document.

Using NET PRINT to Change Printer Queue Options

To change the options for an existing spooled printer queue from the OS/2 prompt, use the NET PRINT command with the following options:

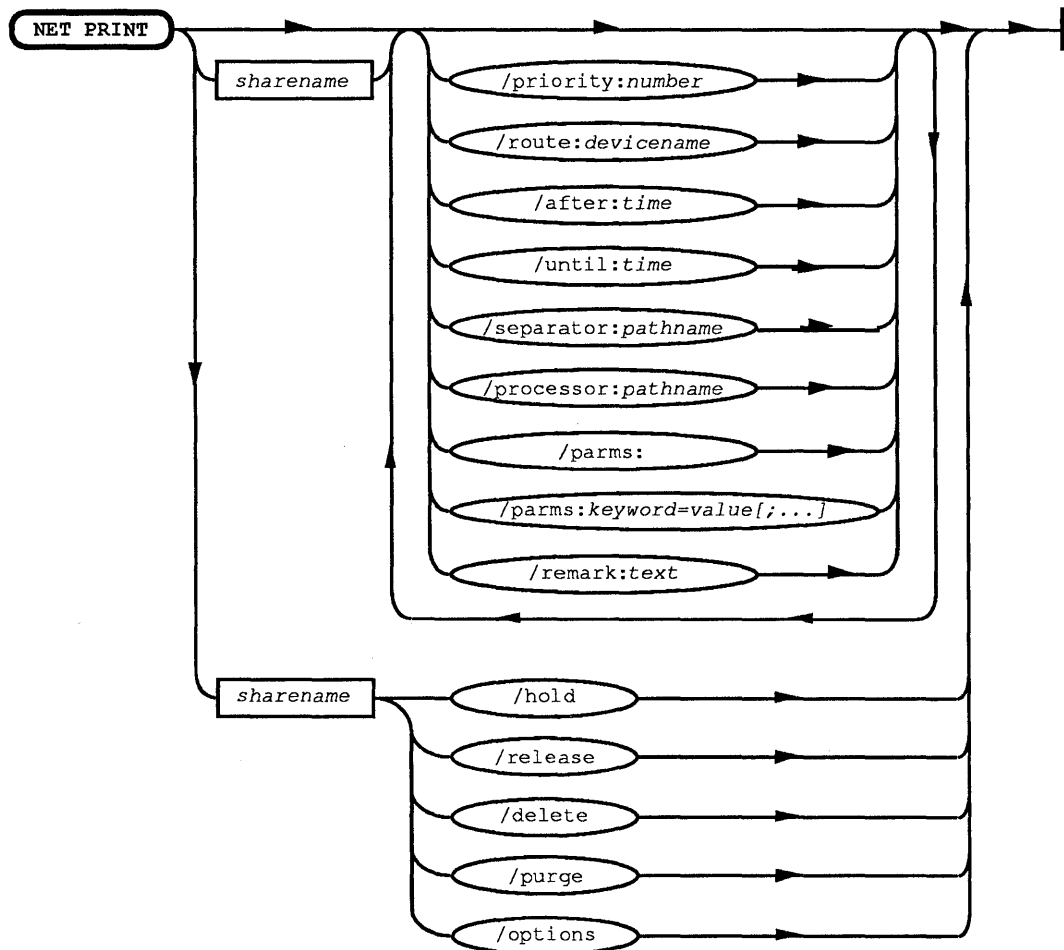


Figure 5-2. NET PRINT Command

sharename is the printer queue that you want to change.

/priority:number sets the priority for the queue (the highest is 1, the lowest is 9, and the default is 5).

/route:devicename specifies which printer or printers can receive documents from this queue.

/after:time specifies the time at which this printer queue can begin sending documents to the printer(s).

/until:time specifies the time after which the queue can no longer send documents to the printer(s).

/separator:pathname identifies the filename of a separator page to print between documents in the queue. Unless you provide another path, LAN Manager assumes this file is in the Lanman\Spool directory.

/processor:pathname specifies the print processor to be used on document files sent to this queue.

/parameters:keyword specifies parameters for the print processor program. Valid keywords are defined by the print processor program you are using.

/remark:text allows you to provide a descriptive comment for the spooled printer queue. Remember to enclose your remark in quotation marks.

NOTE: For instructions on how to read the command flow diagram chart refer to Appendix C.

Making Shared Printer Queues Unavailable

You may want to stop sharing a printer queue at some point. It could be that you are reorganizing your printer queues, removing a printer, or users no longer need a particular printer queue. Whatever the reason, to stop sharing a printer, follow these steps:

1. **Select the View menu and choose the This server menu item.**
2. **In the Resources This Server Is Sharing With the Network dialog box, select the name of the printer you want to stop sharing and choose the Delete command button.**

The Stop Sharing a Network Resource dialog box appears, asking you to confirm your decision to stop sharing the printer.

3. **Choose the OK command button.**

Example

Ben Preston tells Mary Sullivan that it's OK to share his department's new printer with the local area network until a new administrative assistant can be hired. When Ben hires his new assistant, he tells Mary that he needs his printer back. To stop sharing the printer, Mary selects the View menu and chooses the This server menu item. In the Resources This Server Is Sharing With the Network dialog box, she selects the name of the printer queue connected to the borrowed printer, then chooses the Delete command button to stop sharing the spooled printer queue.

Using NET SHARE to Stop Sharing a Print Queue

To stop sharing a printer queue, use the NET SHARE command with the following options:

```
net share sharename /delete
```

sharename is the printer queue you want to stop sharing.

/delete tells LAN Manager to stop sharing the printer queue.

Using NET PRINT to Delete a Print Queue

To delete the printer queue (that is, to remove the record defining the printer queue from the server so that it cannot be reshared later), use the NET PRINT command with the following options:

```
net print sharename /delete
```

sharename is the name of the printer queue you want to delete.

/delete tells LAN Manager to delete the printer queue.

Chapter 6: Managing Shared Communication Devices

LAN Manager allows users to connect to shared **communication devices** such as modems, scanners, and PostScript printers. Communication devices are nonspooled devices connected to a computer's serial (COM) or parallel (LPT) ports.

Administrators are responsible for setting up communication device queues and pools, and for sharing these queues with local area network users.

In this chapter, you will learn how to:

- Share individual communication devices and pools of devices.
- Check or modify the status of requests in a communication device queue.
- List the contents of a communication device queue.
- Change the options for a communication device queue.
- How to stop sharing communication device queues.

Setting Up Communication Device Queues

When you share a communication device, you are actually sharing a communication device queue. You can share either a single communication device or a pool of similar communication devices under the same sharename.

When a user uses a communication device queue connected to a single communication device such as a modem, only one user at a time can access that device. Other users will find the device busy and must either connect to another communication device queue or wait for the first one to become available. When a user uses a communication device queue that shares a pool of similar communication devices, LAN Manager does most of the work for the user by finding the available communication device in the pool—if there is one—and automatically sending the user's request to that device.

To allow administrators greater flexibility in controlling device access and priority, LAN Manager is designed to permit more than one queue to send requests to a single device or device pool. Administrators can then assign different priority levels to different queues connected to the same device or device pool.

For example, as administrator, you might create two communication device queues for a modem—one with low priority and one with high priority. When both queues try to send requests to the modem at the same time, the request with the high priority would always be processed first.

Deciding Which Devices to Share

LAN Manager allows you to share virtually any communication device with the local area network. There are several types of communication devices: serial printers, image scanners, modems, mice, light pens, joysticks, etc.

Generally you would only share devices that a user does not have to see to use. (These would include devices like modems, serial printers, mice, light pens, image scanners, and joysticks.) However, it is up to you to determine which communication devices should be shared for your environment.

Sharing a Communication Device Queue

To give local area network users access to a communication device attached to a server, you must first create and share a queue for that device.

- 1. Select the View menu and choose the This server menu item.**

The Resources This Server Is Sharing With the Network dialog box appears.

- 2. Choose the Add share command button.**

The What would you like to share? dialog box appears.

- 3. Select the Comm queue option button and choose the OK command button.**

The Share a Device Resource With the Network dialog box appears.

- Complete the text boxes according to the instructions in Table 6-1.

Table 6-1. Comm Device Dialog Box Text Boxes

Text box	What to do
Sharename	Specify the sharename you want the new shared communication device to have.
Devicename	Specify the device name(s) of the communication device(s). If you want to create a pool of shared modems, include the device names for all devices to be included in the pool. Be sure to use semicolons (;), commas (,), or spaces to separate the device names.
Remark	Type a descriptive comment about the comm device queue.
Max. users	Specify the maximum number of users that may access this queue at one time (you can also mark the No limit check box.)
Priority	Set the priority level for this queue. 1 is the highest; 9 the lowest; and 5 the default.
Password	If you are running this server with share-level security, you can type a password for the communication device queue in this text box.

- Choose the OK command button.

If you are running the server with user-level security, the Add Permissions dialog box appears. (Or, if you have shared a communication device queue with this sharename before and an access record already exists for the queue, the Change Permissions dialog box appears.) Use this dialog box to identify which users and groups may have access to this queue.

See Chapter 8: Managing User-Level Security for information on assigning access permissions and for instructions on how to complete the Change Permissions dialog box.

Example

Mary Sullivan is adding a modem to the local area network. She decides to share the new modem from the *mis* server (a server running with user-level security) as *modem*. To do this, Mary selects the View menu and chooses the This server menu item. From the Resources This Server Is Sharing With the Network dialog box, she chooses the Add share command button. Then, in the What do you want to share? dialog box, she selects the Comm device option button and chooses the OK command button. In the Share a Device Resource With the Network dialog box, Mary types the sharename of the queue (*modem*), the device name of the modem (COM2), and a remark for the queue: 2400-baud dial-out modem. Mary doesn't need to complete any of the other text boxes, so she chooses the OK command button.

Because the *mis* server is a user-level-security server, the Add Permissions dialog box appears next. Mary uses this dialog box to give various users access to the new queue. When she chooses the OK command button, the *modem* queue is added to the list of shared resources for *mis*.

Using NET SHARE to Share a Comm Device

To share a communication device queue, use the NET SHARE command with the following options:

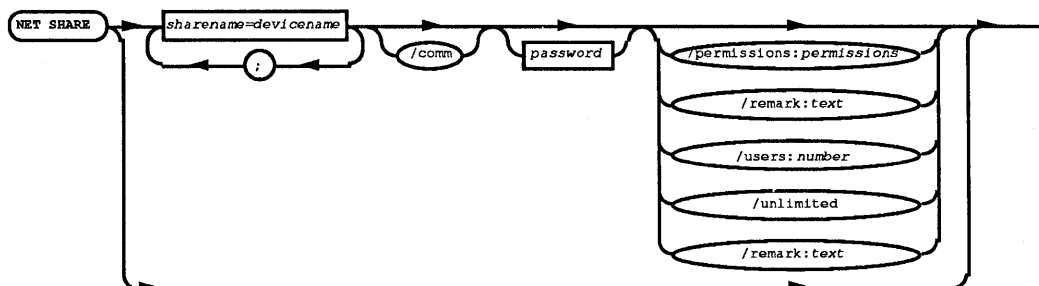


Figure 6-1. NETSHARE Command

sharename is the sharename you are assigning to the communication device queue.

devicename specifies the communication device(s) to which the queue is to route requests.

/comm tells LAN Manager that the new shared resource is a communication device queue.

password is the password that users must know to access this queue. (Use this option only if your server is running with share-level security.)

/users:n specifies the maximum number of users (n) that can use this communication device queue at the same time.

/unlimited specifies that there is to be no limit on the number of users that can use this resource at the same time.

/remark:"text" provides a descriptive remark for the communication device queue. Remember to enclose the remark in quotation marks.

NOTE: For instructions on how to read the command flow diagram chart, refer to Appendix C.

Checking a Queue's Status

When you check the status of a communication device queue, LAN Manager shows you how many requests are currently in the queue, what the priority level of the queue is, and which devices are being served by the queue. When you check a queue's status, you can change its priority or change the server device names to which the queue routes requests.

To list the status of a particular communication device queue, follow these steps:

1. **Select the View menu and choose the Comm queues menu item.**

The Show Comm Queues For dialog box appears.

2. **Identify the communication device queue or queues you want to examine by doing one of the following:**

- Type the name of the server sharing the queue in the Server text box.
- Select the server from the Visible servers list box.
- Select the local device name that is connected to the queue from the Redirected devices list box.

3. **Choose the Zoom command button.**

The Comm Queues for (Server) dialog box appears, showing the communication device queues for the selected server.

4. **Select the name of the comm device queue you are interested in and choose the Zoom command button.**

The Options for Comm Queue dialog box appears, showing the current status of the queue.

5. **You can change the priority of the queue or change the device names of the communication devices served by this queue by changing the information in the appropriate text box.**

6. **Choose the OK command button.**

Example

In the last example, Mary Sullivan shared a modem on the *mis* server by creating the *modem* communication device queue. Several people have complained to Mary that the modem is almost never free, and so Mary has decided to share a second modem from the server. To serve users as effectively and as fairly as possible, she decides to share both modems through the *modem* communication device queue.

Mary selects the View menu and chooses the Comm queues menu item. In the Show Comm Queues For dialog box, she selects the *mis* server and chooses the Zoom command button. In the Comm Queues for \\MIS dialog box, Mary selects the *modem* communication device queue and chooses the Zoom command button. The Options for Comm Queue dialog box appears next. Mary moves to the Devices text box and types the following:

```
com1 ; com2
```

After Mary chooses the OK command button, LAN Manager revises the *modem* comm device queue to serve both modems in the pool.

Using NET COMM to List Comm Devices

To list the current status of communication device queues for the local server from the OS/2 prompt, use the NET COMM command with the following option:

```
net comm [sharename]
```

sharename is the name of the communication device queue.

NOTE: If you type NET COMM with no sharename, LAN Manager shows the status of all communication device queues for the server.

Using NET DEVICE to List a Particular Comm Device

To list the status of a particular communication device, use the NET DEVICE command with the following option:

```
net device [devicename]
```

devicename specifies the communication device.

If you type NET DEVICE with no device name, LAN Manager shows the status of all printers and communication devices shared by the server.

Using NET COMM to Change Comm Device Queues

You can also change the priority of a queue and/or device names to which the queue is routed by using the NET COMM command with the following options:

```
net comm sharename [/priority:n] [/route:devicename]
```

sharename is the communication device queue.

/priority:n sets the priority (*n*) for the queue. 1 is highest and 9 is lowest.

/route:devicename identifies one or more devices to which the queue is to be routed.

Removing Requests from a Queue

If something goes wrong with a communication device queue or the device to which it is routed, you may need to delete all requests from the queue.

1. **Select the View menu and choose the Comm queues menu item.**

The Show Comm Queues For dialog box appears.

2. **Identify the communication device queue or queues you want to examine by doing one of the following:**

- Type the name of the server sharing the queue in the Server text box.
- Select the server from the Visible servers list box.
- Select the local devicename that is connected to the queue from the Redirected devices list box.

The Comm Queues for (Server) dialog box appears, showing the communication device queues shared by the selected server.

3. **Select the sharename of the comm device queue you are interested in and choose the Purge all command button.**

A message box appears, asking you to confirm your decision to purge all requests from the queue.

4. **Choose the OK command button.**

Example

Jenny Tibbett has decided to try a new software package that is supposed to access a financial bulletin board. Because of a bug in the software, Jenny ends up trying to access the modem pool several times, and eventually ties up both modems. Jenny finally gives up and calls Mary to delete the erroneous requests from the communication device queue.

To purge the *modem* queue of all requests, Mary selects the View menu and chooses the Comm queues menu item. In the Show Comm Queues For dialog box, she selects the *mis* server and chooses the Zoom command button. In the Comm Queues for \\MIS dialog box, she selects the *modem* queue and chooses the Purge all command button to purge all requests from the queue.

Using NET COMM to Delete Comm Device Requests

You can use LAN Manager commands to delete the active communication device request for a particular queue. To do this, type the NET COMM command with the following options:

```
net comm sharename /purge
```

sharename specifies the communication device queue.

To delete the active request at a specific communication device queue, use the NET DEVICE command with the following options:

```
net device devicename /delete
```

where *devicename* specifies the communication device where the request is running.

/delete stops processing of the request and deletes it.

Changing Comm Device Queue Options

From the list of shared resources for a server, you can view the options for a particular communication device queue. You can also change the following:

- The devices to which the queue is routed.
- The description of the queue.
- The maximum number of users that can access the queue at one time.

To change the options for a comm device queue, follow these steps:

1. **Select the View menu and choose the This server menu item.**

The Resources This Server Is Sharing With the Network dialog box appears.

2. **Select the sharename of a comm device queue and choose the Zoom command button.**

The Shared Resource Information dialog box appears. This dialog box shows the options for the communication device queue.

3. **To change one or more of these options, follow the instructions in Table 6-2.**

Table 6-2. Shared Resource Information Dialog Box Text Boxes

Text Box	What You Can Do
Devices	Use this text box to change the device name(s) for the communication device(s) in this queue. If this is a device pool, separate the device names with semicolons. For example: <code>com2 ; com3</code>
Remark	Use this text box to change the remark for the communication device queue.
Max. users	Use this text box to change the maximum number of users that can access this queue at one time (you can also mark the No limit check box).

4. **Choose the OK command button.**

Example

A few weeks after adding the second modem to the *modem* queue, Mary finds that she needs to increase the maximum number of users that can access the queue at one time. To increase this number, Mary selects the View menu and chooses the This server menu item. In the Resources This Server Is Sharing With the Network dialog box, Mary selects the *modem* queue and chooses the Zoom command button. Then, in the Shared Resource Information dialog box, she moves to the Max. users text box, types in 10 to allow ten people to access the queue at one time, and chooses the OK command button.

Using NET SHARE to Change Comm Device Queue Options

To change the options for a communication device queue from the OS/2 prompt, use the NET SHARE command with the same options you would use to create a queue:

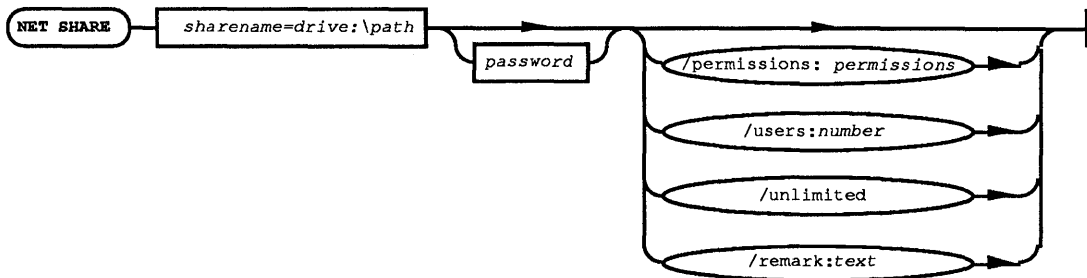


Figure 6-2. NET SHARE Options

sharename is the name of the queue.

devicename specifies one or more communication devices to which the queue routes requests.

/comm specifies that the resource is a communication device queue.

password is the password that users must know to access this queue (you can use this option only with share-level-security servers).

/users:number specifies the maximum number of users (*n*) that can use this communication device queue at the same time.

/unlimited specifies that there is to be no limit on the number of users that can access this resource at the same time.

/remark:"text" is a descriptive remark for the communication device queue. (Remember to enclose the remark in quotation marks.)

NOTE: For instructions on how to read the command flow diagram chart, refer to Appendix C.

Making Comm Devices Unavailable

You may want to stop sharing a communication device queue at some point. Perhaps the queue is no longer serving its intended purpose, or the communication device is to be removed from the local area network. Whatever the reason, to stop sharing a communication device, follow these steps:

1. **Select the View menu and choose the This server menu item.**

The Resources This Server Is Sharing With the Network dialog box appears.

2. **Select the sharename of the communication device queue you want to stop sharing.**
3. **Choose the Delete command button.**

The Stop Sharing a Network Resource dialog box appears, asking you to confirm your decision to remove the shared comm device queue.

4. **Choose the OK command button to remove the queue.**

Example

Mary wants to move a shared modem from the *print1* server to the *print2* server. To do this, she must remove a communication device queue from the *print1* server. Mary selects the View menu and the This server menu item at the *print1* server. In the Resources This Server Is Sharing With the Network dialog box, Mary selects the sharename of the queue and chooses the Delete command button. The Stop Sharing a Network Resource dialog box appears, asking Mary to confirm her decision. Mary chooses the OK command button to remove the queue from the list of shared resources for *print1*.

Using NET SHARE to Stop Sharing Comm Devices

To stop sharing a communication device queue, use the NET SHARE command with the following options:

```
net share sharename /delete
```

sharename is the communication device queue.

/delete tells LAN Manager to stop sharing the queue.

Chapter 7: Managing Shared Programs

LAN Manager lets administrators share executable programs with the local area network. Users can run these programs in the server's memory while controlling input and output from their netstations.

In this chapter you will learn how to:

- Prepare your server to share programs.
- Share a program.
- Remove a shared program.

For information about how to use shared programs, see the *3+Open MS OS/2 LAN Manager User Guide*.

Sharing Programs

You can use LAN Manager to share executable programs on a server. You can also specify which individual users can or cannot use those programs. For example, you can allow a group of users to compile C programs on the server, using the server's memory and processing power, while allowing another group to look at C programs on the server and to copy them over to their netstations, but not to run them on the server.

There are three ways local area network users can use programs that are on a server by:

- By copying the program and then running it on the netstation.
- By running the program in netstation memory without copying it to the netstation.
- By running the program in the server's memory. This is a shared program.

For example, when Jenny Tibbett wants to run a program called *cal* that prints calendar pages, and she knows that the CAL.EXE file is in the Mis\Misc shared directory, she types:

```
net copy \\mis\misc\cal.exe c:\cal.exe c:\cal
```

This runs the *cal* program in the memory of her netstation. (See the *3+Open MS OS/2 LAN Manager User Guide* for a description of the NET COPY command.)

For example, Jenny could simplify what she did in the last example by simply typing:

```
\\mis\misc\cal
```

This runs the *cal* program in the memory of her netstation, even though the actual CAL.EXE file is on the *mis* server.

For example, when Mike Greenbaum wants to run a time-consuming program named *sched.exe* that formats schedules in a calendar form, he types:

```
net use m: \\mis\misc
m:
net run sched jan feb mar apr may june
```

The difference is that Jenny runs the program in her netstation's memory, causing a load on her netstation, while Mike runs the program in the server's memory, allowing the server to do the work.

Sharing programs gives users the benefit of the superior resources of a server. Typically, servers are more powerful than netstations in terms of memory, disk space, and processing speed. By giving work to the server, users keep their netstations running as smoothly as possible.

Some programs can only be run on computers with a large amount of memory or disk space. Without shared programs, users might not otherwise be able to run these programs at all.

Preparing to Share Programs

Setting up a server to share programs involves two tasks:

- Establishing a "run path" for shared programs.
- Starting the LAN Manager Netrun service.

The following sections define these tasks in detail.

Defining the Run Path

Before you share programs over the local area network, you should decide how to organize them. Generally, you have two choices:

- To put all the programs in one directory and then allow users to run shared programs in that directory.
- To allow users to run shared programs in many directories.

When you set up a server for shared programs, you define a *run path* that tells LAN Manager where to look for shared programs on the server. Any program not in the run path cannot be run with the NET RUN command.

You can keep the run path simple, and make sure that the programs you want are in that path, or you can distribute shared programs among many directories and make sure that the run path includes those directories. The problem with the second method is that you may accidentally share some programs that you did not mean to share.

For example, if you put the Lanman\Netprog directory (containing LAN Manager commands) in the run path, anyone with a valid account on the server and execute permission on that directory can run LAN Manager commands on the server.

To avoid this kind of problem, it's a good idea to use only a single directory or a small number of directories for shared programs. You can keep track of permissions and the run path much more easily this way.

Once you have decided which directories to use for shared programs, use the following steps to define the run path:

1. Edit the `runpath=` entry in the LANMAN.INI file to read:

```
runpath=directory1[:directory2;...]
```

where the path is a list of directories, separated by semicolons. The syntax for path specification is the same as for OS/2 paths.

2. **For each directory on the run path, assign the R or X permission to the .exe programs that you want users to be able to run.**

With user-level security you can define this permission separately for each user. Share-level permissions have no effect on network execution; you must be very careful about choosing a run path since any user can run any program on the run path.

NOTE: Refer to the *3+Open Network System Guide* for detailed information on the LANMAN.INI file.

Starting the Netrun Service

When you have set up the run path and prepared the directories, the server is ready to share programs. The LAN Manager service that actually shares the programs is the Netrun service.

1. **Edit the `srvservices=` entry in the LANMAN.INI file to add the Netrun service to the list of services that automatically start with the Server service.**

See Chapter 2: Starting and Using LAN Manager Services for more information on starting services.

2. **Edit the `maxruns=` entry in the LANMAN.INI file to define how many shared programs can run at one time.**

The more shared programs you allow, the busier your server may be in handling these programs. If server speed is important to you, set this entry to a small value. The default value is 5.

3. **Stop the Server service and restart it, or type the following at the OS/2 prompt:**

```
net start netrun
```


4. Check that the IPC\$ resource is being shared.

This special administrative resource must be shared for users to be able to gain access to shared programs. The IPC\$ resource is automatically shared under user-level security; under share-level security you must share it and may assign it a password.

With user-level security, you can define who can and who cannot use shared programs. The IPC resource `\pipe\lanman\netrun` controls access to the Netrun service.

For example, you could prevent *jennyt* from using any shared programs by typing:

```
net access \pipe\lanman\netrun /grant jennyt:n
```

The server is now sharing programs.

Maintaining Shared Programs

When you have set up your server to share programs, as described in the last section, your further role as administrator is one of maintenance. The following sections provide detailed procedures for two tasks:

- Adding shared programs.
- Removing shared programs.

Adding Shared Programs

In the course of preparing the server for sharing programs, as described earlier in the "Preparing to Share Programs" section, you defined some shared programs. The procedure in this section describes how to add to that list of shared programs.

1. **Move the program (the .EXE file) to a directory on the established run path or add the program's directory to the run path.**

If you are expanding the run path, check for other *.exe* programs in the directory you are adding, and decide if you really want to share this directory.

2. **If this is a user-level server, assign the R or X permission to the .EXE file that you want users to be able to run. You can define this permission separately for each user.**
3. **Edit the runpath= entry in the LANMAN.INI file to add the program's directory to the run path (if it is not already there).**
4. **Stop and restart the Netrun service with the following commands:**

```
net stop netrun
net start netrun
```

Removing a Shared Program

You have three options for removing a shared program:

- You can move the program to a directory that is not on the run path, or
- If this is a user-level server, you can remove the R and X permissions for the program. This is appropriate if you are temporarily removing access or if you want to bar some users while allowing others. Note that users with *admin* privilege will still be able to run the program. With user-level security you can define this permission separately for each user, or
- You can delete the program from the server's hard disk.

Chapter 8: Managing User-Level Security

This chapter, and the following two chapters, discuss LAN Manager security. As an administrator, you have to make decisions about who should and who shouldn't be able to use server resources.

Network Security

There are two ways of controlling access under LAN Manager:

- **Logon security** controls access to the entire local area network. See Chapter 10: *Managing Logon Security*, for a discussion of logon security.
- **Resource security** controls access to particular resources. This chapter and Chapter 9 discuss resource security.

Resource Security

There are in turn two ways of controlling resource security:

- **User-level security** controls access on a per-user basis. You specify which resources each user can use and what they can do with each resource. This chapter discusses user-level security.
- **Share-level security** controls access on a per-resource basis. You assign a password to each resource and then control access by giving the password only to users who need it. Chapter 9: Managing Share-Level Security, discusses share-level security.

Every server on your local area network must be either a user-level or a share-level server.

In this chapter, you will learn how to set up and maintain a user-level server. After reading this chapter, you will be able to add or remove user accounts from the local area network and control user access to resources.

User-Level Security

The difference between the two security modes (user-level and share-level) is subtle but important. User-level security provides *exact control* over every aspect of access, and is best for sites with a wide variety of users, all with differing needs. Share-level security provides more general control, and may be appropriate for sites that are using other local area network products in addition to LAN Manager.

Each server must use one security mode or the other. You cannot mix security modes on one server. You can, however, have both user-level and share-level servers on the same local area network.

If you don't know what security mode your server is running, check the background of the LAN Manager screen. Look for the following line:

```
Server operating in user security mode.
```

Figure 8-1 shows what happens when a user tries to access a resource shared by a user-level server:

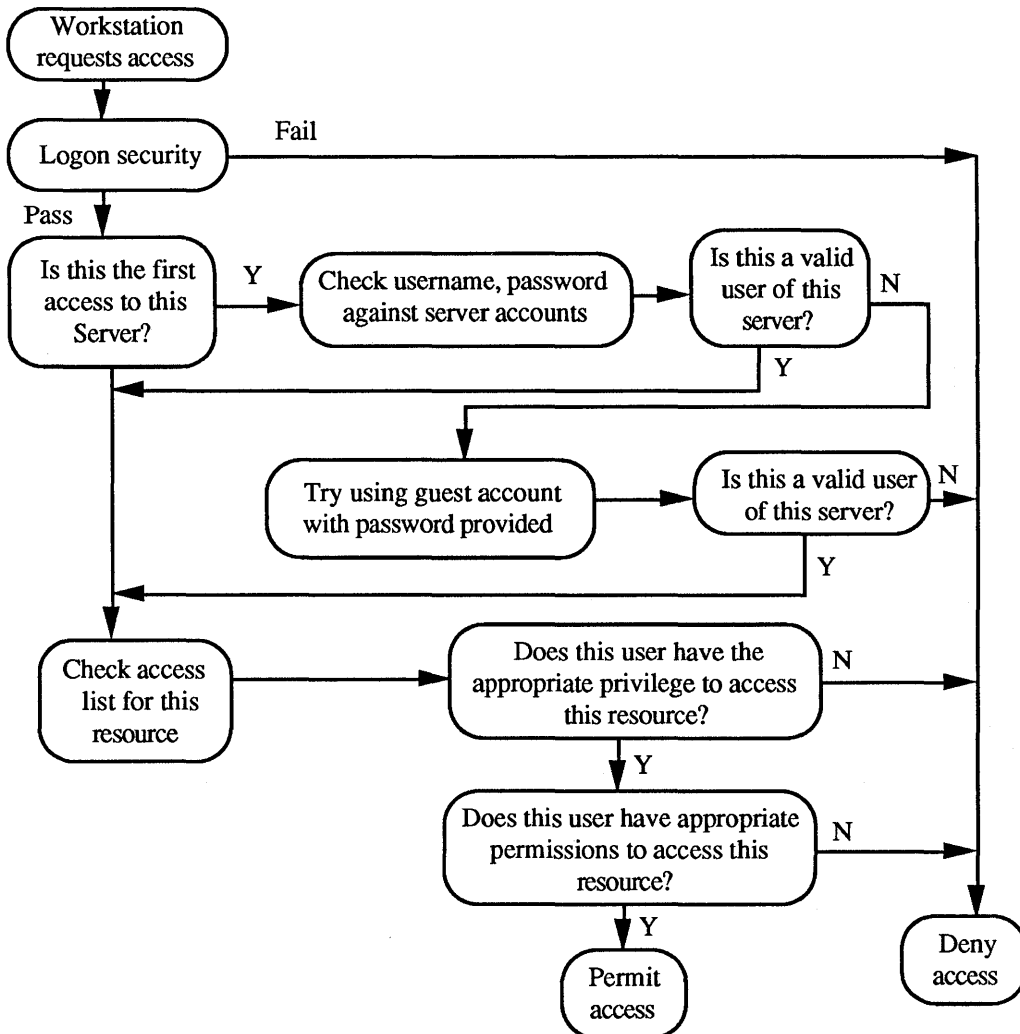


Figure 8-1. Access Under User-Level Security

This flowchart shows what happens when a user tries to use a resource shared by a user-level server.

Username and Passwords

A **username** is the name by which a server recognizes a user. A **password** is a secret code, known only to the user, that verifies the user's identity. As an administrator, you must help users to understand and use usernames and passwords.

Accounts

A user-level server maintains a list of users who can access resources on that server. Each entry in that list is known as an *account* and consists of a username and password.

When you add or remove a user from the server, you are actually adding or removing an account, and when you change a user's password or privilege, you are modifying an account.

Some local area network products do not support the concept of a username. DOS LAN Manager, MS-Net, and PC-LAN netstations instead supply a computername, and the server treats this as if it were a username.

The Guest and Admin Accounts

LAN Manager provides two ready-made user accounts on each server:

- Guest is a generic account for guests.
- Admin is a generic account for administrators.

You should assign passwords for each of these accounts when you install a user-level server. You can later delete these accounts if you want, or change their names. If you change the name of the *guest* account, you must also change the `guestacct=` entry in the LANMAN.INI file.

Groups

For ease in dealing with large numbers of users, you can define groups of users and assign them *groupnames*. Then, when you need to make a change that affects the users in a group, you avoid having to exhaustively list all of the group's members by user name.

A group cannot contain other group names. For example, *jackst* and *jennyt* can be members of the group *modem-users*, but *modem-users* cannot in turn be a member of another group.

NOTE: Beware the similarity of the terms **group** and **LAN group**. A group is a collection of usernames, whereas a LAN group is a collection of computernames.

When LAN Manager displays a groupname, it prints an asterisk at the beginning of the name. This asterisk is not part of the name; it simply indicates that this is a groupname rather than a username. For example, when you type NET GROUP at the OS/2 prompt, LAN Manager shows you all the groups on the server:

```
User Groups for \\MIS
```

```
-----  
*USERS           *MODEM-USERS     *WORD-USERS
```

The Users Group

LAN Manager provides one ready-made group on each server. The users group includes every user who has an account on the server except users who have guest privilege. See the next section for a discussion of the guest privilege.

You cannot delete or change the automatic membership of the users group.

A user can be a member of any number of groups.

Privileges

Every user's account has an assigned privilege level. The privilege level determines what kinds of actions that user can take on this server.

The three privilege levels are listed in Table 8-1.

Table 8-1. User Account Privilege Levels

Privilege Level	Purpose
User	Can perform all local area network tasks except those specifically reserved for administrators. The <i>user</i> privilege level is the one you will assign to most users.
Guest	Same as <i>user</i> privilege, except that users are not members of the <i>users</i> group. This lets administrators control a guest's use of the local area network.
Admin	Can create accounts, assign permissions for resources, manage device queues, and grant privileges to other users. Any user to whom you grant this privilege level should have the same qualifications and knowledge as the administrator, since that person will have full access to every part of this server. The <i>admin</i> privilege overrides all other permissions and privileges, so assign it with discretion.

Privilege is an attribute of user accounts, rather than of specific resources. The next section explains resource permissions.

Permissions

You can define who can and cannot use each resource on a user-level-security server, and what each user can do with each resource. This is known as defining user permissions for that resource. You can assign a different set of permissions to each user of a resource.

Setting Access Permissions

The most basic permission you can give a user is permission to access a resource. You do this by dividing users into two categories: those who can access the resource and those who cannot. Groups are very useful here, especially the default group *users* which includes all user accounts except those with *guest* privilege. If you do not give access permission to a user, either individually or as part of a group, that user cannot access the resource.

As a special case, you can give users the ability to set their own permissions on selected resources. For example, you might set up a home directory for a user on your server, then give the user the ability to set permissions on anything within that directory. The user can then control who else can read, write, or modify files in that directory. See the discussion of the P permission in the "Disk Resource Permission" section later in this chapter.

How LAN Manager Determines Access

LAN Manager evaluates a request for access to a resource in this order:

1. Does the user have *admin* privilege? If so, grant the request. The *admin* privilege overrides all permissions.
2. Does this user have specific permissions for this resource? If so, use those permissions to determine access. User permissions override group permissions.

3. Does this user belong to a group (or groups) that have specific permissions for this resource? If so, use the "union" of those permissions to determine access. For example, if the user belongs to two groups, one with read permission and one with write permission, the user has both read and write permission.
4. If the user fails all of these tests, deny access to the resource.

Setting Other Permissions

After you define who can use a resource, you must decide how each user can use the resource. There are different types of permissions for different types of resources.

The following sections describe the permissions for each type of resource as shown in Table 8-2 in detail:

Table 8-2. Resource Permissions

Resource Type	Permission
Disk	C Create D Delete R Read W Write X Execute A Change Attributes P Change Permissions Y Yes (RWCD A) N No
Spooled Printer Queue	Y Yes (C) N No
Communication Device Queue	Y Yes (RWC) N No
IPC	Y Yes (RWC) N No

Disk Resource Permissions

A disk resource is a disk drive, a directory, or a file. The permissions for a disk resource are as follows:

- **Create (C)** permission allows a user to create files and directories within the shared disk resource. The C permission does not grant read or write access to existing files. After creating a file, a user can read or write to that file only until closing it.
- **Delete (D)** permission allows a user to delete files and directories within the disk resource (but not to delete the disk resource itself).
- **Read (R)** permission allows a user to read or open files and to change directories.
- **Write (W)** permission allows a user to write to a file.
- **Execute (X)** permission allows a user to open a file for execution.

NOTE: If you assign R permission, you do not need to assign X permission. If you assign X permission without R permission, LAN Manager netstations can execute the file but not read it, while DOS netstations cannot read or execute the file.

- **Change Attributes (A)** permission allows a user to change physical file attributes. OS/2 provides four physical file attributes:
 - R (Read only).
 - H (Hidden).
 - S (System).
 - A (Change Attributes).

These file attributes take precedence over LAN Manager permissions. For example, if a file in a shared directory has the LAN Manager *W* permission but also the OS/2 *R* attribute, the user cannot write to the file.

- **Change Permissions (P)** permission allows a user to change the LAN Manager permissions for the resource. See the "Changing Permissions as a Non-Administrative User" section later in this chapter.
- **Yes (Y)** permission is a convenient abbreviation for the *RWCDA* group of permissions.
- **No (N or none)** permission prevents a user from doing anything. For disk resources, the *N* permission is sometimes indicated by a colon with nothing after it; you don't actually see the letter "N". When you assign this permission, you cannot assign any other permissions. Use this permission to exclude individual users from access despite whatever groups to which those individuals might belong. For example, if you give read and write permissions to the *users* group, you can exclude a specific user in the *users* group by assigning that user the *N* permission.

The *N* permission should not be assigned to groups. When evaluating group permissions, LAN Manager considers the union of all applicable group permissions. For example, if you give *RWC* permission on a directory to the *users* group, but *N* permission to the *modem-users* group, members of *modem-users* could still use the directory if they were also members of *users*. You gain nothing by assigning *N* permission to groups.

The LAN Manager screen provides convenient groupings of these permissions, so that you can easily assign common permission combinations. Thus, you can find *RW* (read and write) or *RWCDA* (read, write, create, delete, and change attributes) permissions, for example, in the Edit File Permissions dialog box.

Spooled Printer Queue Permissions

A spooled printer queue is a resource that accepts spooled requests. A spooled request is a collection of data, such as a file, that you send to a queue. You have no further interaction with the queue. Spooled printer queues are commonly associated with LPT ports on servers.

Yes (Y) permission allows a user to use a particular spooled printer queue; **No (N)** permission prevents a user from using the printer queue.

Communication Device Queue Permissions

A communication device queue is a resource that accepts non-spooled requests. A non-spooled request is an active process that requires interaction (input/output) with the resource. Users would need to use a communication device queue to connect to a modem, for instance. Communication device queues are commonly associated with COM ports on servers.

Yes (Y) permission allows a user to use a particular communication device queue; **No (N)** permission prevents a user from using the queue.

IPC Resource Permissions

An IPC (interprocess communication) resource is a mailslot or named pipe.

Yes (Y) permission allows a user to use the IPC resource; **No (N)** permission prevents a user from using the resource.

Setting Up User-Level Security

In this section, you will learn how to prepare your server for user-level security. You need to do this if you want to control access to resources on a per-user basis.

You should already have read the first sections of this chapter, explaining the concepts and rules for user-level security.

Checklist for User-Level Security

The following checklist summarizes what you must do in order to make user-level security work on your server:

1. Set the security= entry in the LANMAN.INI file to user.
2. Make certain that you have the necessary software files in place.
3. Set up logon security, if necessary.
4. Create user accounts.
5. Define access permissions for each shared resource.
6. Maintain accounts and permissions.

The following sections describe each of these steps in detail.

Defining the Security= Entry

You must define the LANMAN.INI security= entry to enable user-level security by editing the LANMAN.INI file. Find the security= entry and edit the line to read:

```
security=user
```

See the *3+Open Network System Guide* for details on this and other LANMAN.INI entries.

After defining the security= entry, you must stop and restart the LAN Manager Server service to make the change effective. See Chapter 2: Starting and Using LAN Manager Services, for details on starting and stopping services.

Checking for Necessary Files

LAN Manager requires the following directories and files for user-level security:

- The Lanman\Accounts directory.
- The 3open\Users directory.
- The LANMAN\ACCOUNTS\NET.ACC file.

You will encounter the following error if the access control database file, LANMANACCOUNTS\NET.ACC, is missing:

```
There is a problem with the system configuration:  
Security Failure.
```

If you receive this error, you must stop and create the net.acc file before you can proceed. Move to the Lanman\Accounts directory and use the MAKEACC command with the following options:

```
makeacc N lanroot
```

N is the number of accounts you want the access control database to be able to handle. The maximum is 1048. Make room for more accounts than you expect to have; filling up the database can hurt performance. Ideally, you should fill 60% of the database.

lanroot is the root of the Lanman directory, usually c:\3open\Server\Lanman.

The more accounts the database can handle, the larger the NET.ACC file is, so keep an eye on available disk space.

The MAKEACC command prompts you for passwords for the guest and admin accounts. Choose unique passwords for these accounts. The guest account provides access to this server for people without their own accounts, so a null (blank) password here allows anyone access to the server. The admin account is for administrators only; anyone with the password for this account can control the server.

Setting Up Logon Security

NOTE: Chapter 10: Managing Logon Security, explains logon security in detail. If the following brief explanation is not clear, see Chapter 10. If you do not choose to use logon security on this local area network, you can skip this section.

For the purposes of basic user-level security, there are two possible concerns with logon security:

- If this server is to be a central logon validator, then you must establish an account on this server for each possible user of the local area network.
- If a different server is to be a central logon validator, then you may want to assign passwords on this server that match those on the central logon validator server. This would mean that users would only need to know one password to use both servers. (Of course, users can change their passwords later if they want to.)

Creating User Accounts

See the "Adding Users" section, later in this chapter, for details on how to create user accounts. For now, note that you must do the following for each account:

- Assign a user name.
- Assign a privilege level.
- Assign group memberships.

You can also assign a password, if you choose, along with some other account-related things, but these three are the basic necessities.

Defining Access Permissions

For each resource that you share, you must define who can access that resource and what they can do with it. See the "Permissions" section, earlier in this chapter, for a full discussion of access permissions.

For a user to be able to access a resource, you must satisfy both of these conditions in defining permissions:

- The user's user name must be in the Permitted access list, either by user name or by inclusion in a group name.
- The permission assigned in the Permitted access list must not be the N permission.

The N permission for individual users overrides all other permissions. For example, if you give the users group RW access permission, but give a particular user the N permission, that user cannot access the resource even though he is a member of users.

Maintaining User-Level Security

After setting up user-level security, your role as administrator is largely one of maintenance. You must tend to the user accounts, adding or deleting them as necessary. You must also assign permissions each time that you share a new resource. You can also modify existing accounts and permissions at any time.

The remaining sections in this chapter provide detailed procedures for these and related tasks.

Managing Users

A user is anyone who uses network resources. Anyone who wants to use resources shared from a user-level server must have a user account on that server. The following sections provide detailed procedures for three tasks:

- Adding user accounts.
- Changing a user's password.
- Removing user accounts.

These procedures pertain to user accounts. To control access to specific resources, see the "Managing Resources" section, later in this chapter.

Adding Users

You need to add user accounts to a server under the following circumstances:

1. When you are installing a server. There are two ways you can do this:
 - By copying the existing accounts from another server's LANMANACCOUNTS\NET.ACC file to your server. This copies the entire access control database, including user accounts and resource permissions. You should make any necessary changes to the accounts and permissions for the new server. Both servers must be running the same release of LAN Manager for this method to work.
 - By creating each account from scratch.
2. When you add a new netstation to the local area network. If the person or people who are to use the netstation already have accounts on this server, you do not need to add any new accounts.

3. When a new person needs to use the local area network. You must create a user account, regardless of whether this person will use a netstation, another server, or this server.
4. When you want to establish an *anonymous* account. Sometimes you may want to create an account not tied to any particular person, such as a guestprtr account for people who only need to use the local area network for occasional printing. It is usually more efficient to establish groups for this purpose; anonymous accounts are a potential security problem.

LAN Manager stores user account information in the LANMANACCOUNTS\NET.ACC file. If this file is missing or too small, there can be problems when you try to add an account. See the "Checking for Necessary Files" section, earlier in this chapter, if you need to create the NET.ACC file.

Adding an Account

To add a user account to the server, follow these steps:

1. **Select the Accounts menu and choose the Users/Groups menu item.**

The Users/Groups dialog box appears.

2. Select an item from the Username list box:

- Select [NEW] to create an entirely new account.
- Select an existing account if the account you are creating is to be modeled after that account. The new account will have the same privilege and group membership as the selected account. You can change the account permissions later.

3. Choose the Add command button.

The Add User Account dialog box appears. If you selected an existing account, some of the text boxes in this dialog box are already filled in.

NOTE: You may encounter an error at this point if the access control database is not large enough. You must either remove some accounts or stop and make the database bigger before you can proceed. Refer to "Adding Space for More Accounts" section immediately after this procedure. You will need to exit out of the LAN Manager screen program to perform the task.

4. Complete the text boxes in the Add User Account dialog box according to instructions in Table 8-3.

Table 8-3. Add User Account Dialog Box Text Boxes

Text Box	What to Do
<p>Username</p>	<p>Supply a user name for the new user. User names can be up to 20 characters long and can be composed of letters, numbers, or the following characters:</p> <p>\$ % ; - _ @ { } ~ ` ! # ()</p> <p>When possible, use letters, numbers, and the hyphen. All lowercase letters are automatically converted to uppercase letters.</p> <p>If the account is for a DOS LAN Manager, MS-Net, or PC-LAN user, the user name is actually the user's computer name.</p>
<p>Password</p>	<p>Assign a password for the user. The possible characters for a password are the same as for a user name.</p>
<p>Directory</p>	<p>Specify a name for the user's home directory on the server. LAN Manager creates this directory as a subdirectory of the 3open\Users directory.</p> <p>If you leave this text box blank, the user has no home directory. This does not affect the user's ability to access server resources.</p>
<p>Script</p>	<p>Specify the pathname of a logon script. See Step 6 for further information. If you type just a filename without a path, the path defaults to 3open\Users.</p>
<p>Comment</p>	<p>Supply a descriptive comment for this user. This comment can be seen only by administrators of this server. A typical remark might be the user's full name and phone number. The remark can be up to 48 characters long, though text boxes in the LAN Manager screen will not show the entire remark.</p>

5. Use the [Tab] key to move to the column of option buttons on the right of the Add User Account dialog box. Select the privilege level for this user: guest, user, or admin. See the "Privileges" section earlier in this chapter for descriptions of the different privilege levels.
6. Mark or unmark the following check boxes as needed:
 - Use script—If this server is a logon validator and you want it to be able to validate this user's logon requests, you should mark this check box. This does not guarantee that this server will actually be validating the user (in the case of distributed logon security). If you mark this check box you should also supply the pathname of a script in the Script text box.

The default script is:

```
3open\users\scripts\netlogon.cmd
```

See Chapter 10: Managing Logon Security, for details about logon scripts.
 - Disabled—By checking this box, you prevent the user from using resources on this server. This is equivalent to temporarily removing the user's account.
7. Use the two list boxes and the Move command button to specify the groups to which the user is to belong.
8. Choose the OK command button.

If you created a home directory for the user in Step 4, make sure the new user has access to that directory. Usually, permissions on a home directory should allow full access (RWCDAP) for the user and an N permission for all others. See the "Managing Resources" section later in this chapter for information on changing directory permissions.

Home directories are where users should keep private files on the server. As an administrator, you may need to keep an eye on how much disk space the home directories are consuming and issue warnings accordingly.

When you have completed this procedure, you have added a new user account to this server. Now you need to grant the new user access to local area network resources. See the "Managing Resources" section later in this chapter.

Adding Space for More Accounts

If necessary, use this procedure to enlarge the access control database:

1. **Switch to another MS OS/2 session or exit the LAN Manager screen.**
2. **Move to the Lanman\Accounts directory.**
3. **Use the GROWACC command with the following option at the OS/2 prompt:**

```
growacc N
```

N is the number of accounts you want the access control database to be able to handle. The maximum is 1048.

Make room for more accounts than you expect to have; filling up the database can hurt performance. Ideally, you should fill 60% of the database.

The more accounts the database can handle, the larger the NET.ACC file is, so keep an eye on available disk space.

4. **Return to the LAN Manager screen.**

You can now continue with the procedure for adding a user account.

Example

A new user, John O'Clare, needs to be able to use the *mis* server. Mary Sullivan must set up an account for him.

In the LAN Manager screen, Mary selects the Accounts menu and chooses the Users/groups menu item. In the Users/Groups dialog box, she moves to the Username list box and selects [NEW]. She then chooses the Add command button.

In the Add User Account dialog box, Mary begins filling in information. She types the user name *johnoc* in accordance with company policy on forming user names from people's real names. Moving to the Password text box, she types the password she gives to every new user: *newuser*. She will later tell John to change his password to something personal.

In the Directory text box, Mary types the name of a home directory for John to use on *mis*. By established convention, she gives home directories the same name as the user account, so she types *johnoc*, which creates the directory `3open\Users\Johnoc`.

The next text box is Script. Mary has created a logon script for new employees that establishes some basic connections to printers and central servers. The script is in the `3OPENUSERS\SCRIPTS\NEWUSER.CMD` file, so she types `scripts\newuser.cmd` in this text box.

In the Comment text box, Mary types a remark for this account. Following the pattern of other *mis* accounts, she types in John O'Clare's full name and telephone extension. Pressing the [Tab] key, she moves to the column of option buttons defining privilege level. Since John is a junior accounting clerk with a limited need to access resources, she marks the Guest option button. This bars *johnoc* from membership in the *users* group; in the list boxes below, the users group name moves from the Member of to the Not a member of list box.

Mary then moves to the Use script check box. Since *mis* is a central logon validator, she marks this check box. When John logs on, LAN Manager will run a logon script for him at his netstation.

The next check box is Disabled. Since this is to be an active account, Mary leaves this box unmarked.

Finally, Mary moves to the two list boxes at the bottom of the dialog box. Because of the *guest* privilege level, *johnoc* cannot be a member of the *users* group. However, he should be a member of the *accounting* group so that he can reach the appropriate resources for his job. She moves the *accounting* groupname from the Not a member of list box to the Member of list box.

The information in this dialog box is now complete; Mary chooses the OK command button, and a confirmation dialog box appears, asking if it is all right to create the home directory for *johnoc* in the *lanman\accounts\userdirs* directory. Mary chooses the OK command button to create the directory.

Since LAN Manager is creating a new directory on *mis*, it brings up the Edit File Permissions dialog box. Mary sees that *johnoc* is in the Permitted list box and has full permission (RWCXDAP). This means that John can do whatever he wants in this directory, even change the permissions of other users to access this directory. When Mary chooses the OK command button, she is done with adding this user account.

Mary has two responsibilities after this:

- To give John information about his user name, password, and home directory. She should also tell him about changing his password and about the connections that are automatically made for him by the *newuser.cmd* logon script.
- To assign access permissions for John to specific resources. Since *johnoc* is a member of the *accounting* group, John already has access to some resources. If he needs to use other resources, Mary must give him additional group memberships or modify the permissions on the relevant resources.

Using NET USER to Add a User Account

To create a user account, use the NET USER command with the following options:

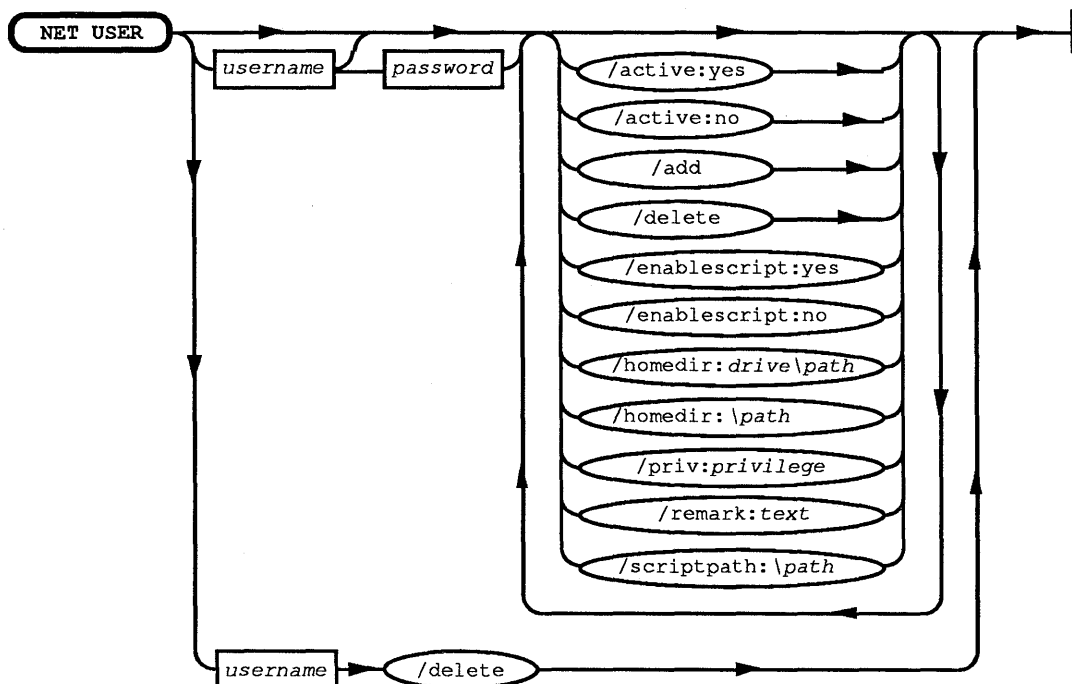


Figure 8-2. NET USER Command

username is the name of the new account.

password is the user's password. If you leave this out, the user can access the server without supplying a password.

/add is the option that tells LAN Manager to add this account.

/priv:privilege is the user's privilege level: type *user*, *guest*, or *admin*.

/home:homedir is the home directory for the user on this server. If you leave this out, it does not affect the user's ability to access other resources on this server. If you establish a home directory, remember that you must assign permissions for that directory with the NET ACCESS command. See the "Managing Resources" section later in this chapter.

remark is a descriptive comment about this user. If you leave this out, it does not affect the account in any way. Remember to enclose the remark in quotes.

NOTE: Figure 8-2 shows the NET USER command with all the command options. You may wish to refer back to this figure when the different options of the command are discussed in succeeding sections.

Using NET USER to Define a Logon Script

To define a logon script for a user account, use the NET USER command with the following options:

```
net user username /enable:y /scriptpath:pathname
```

username is an established user account.

/enable:y is the option that tells LAN Manager to use a logon script for this user. If you set this option to **n**, the server will not validate this user's logon requests.

/scriptpath:pathname is the pathname of a script file, relative to the 3open\users directory. If you omit this option, the default script is *scripts\netlogon.cmd*.

Using NET USER to Disable a User Account

To disable a user account, use the NET USER command with the following option:

```
net user username /active:n
```

username is an established user account.

You can combine all of the above NET USER commands on one command line, if you choose. See the *3+Open MS OS/2 LAN Manager Administrator Reference* for details on the NET USER command.

Example

In the previous example, Mary set up a user account for John O'Clare from the LAN Manager screen. If she had wanted to do the exact same thing from the OS/2 prompt, she could have typed:

```
net user johnoc newuser /add /priv:guest
net user johnoc /home:johnoc
net user johnoc /rem:"John O'Clare, x2222"
net user johnoc /enable:y
/scriptpath:scripts\newuser.cmd
net group accounting johnoc /add
mkdir c:\lanman\accounts\userdirs\johnoc
net access c:\lanman\accounts\userdirs\johnoc /add
johnoc:
RWCDAP
```

For an explanation of the NET GROUP and NET ACCESS commands, see the "Managing Groups" and "Managing Resources" sections later in this chapter.

Changing a User's Password

To ensure security, all passwords on the local area network are protected by a process known as encryption. An administrator cannot see a user's password. However, as administrator, you can change users' passwords. You may want to change a user's password under the following circumstances:

- When users forget their passwords.
- When users fail to change their passwords for a long time.
- When you need to "force" a new password for security reasons.

Changing a user's password at this server does not change that user's passwords at other servers. If this server is a logon validator, however, changing a user's password can affect the user's access to the local area network.

Changing a Password

To change a user's password, follow these steps:

1. **Select the Accounts menu and choose the Users/groups menu item.**

The Users/Groups dialog box appears.

2. **Select a user name from the Username list box.**

3. **Choose the Zoom command button.**

The Change User Account dialog box appears.

4. **Type the new password for this user in the Password text box of this dialog box.**

5. **Choose the OK command button.**

The Edit File Permissions dialog box may appear, letting you change permissions on the user's home directory (if there is one).

6. **Inform the user of the password change.**

Using NET PASSWORD to Change a User's Password

To change a user's password, use the NET PASSWORD command with the following options:

```
net password [computername] username oldpassword  
newpassword
```

computername is the computer name of the server at which you want to change the password. If you leave this out, it means that you are changing the password on the server you are currently administering.

username is the account whose password you are changing.

oldpassword is the old password.

newpassword is the new password.

This command can be typed by anyone who knows the user name and existing password for the account.

Using NET USER to Change an Unknown Password

An administrator may sometimes need to change the password without knowing the current password; in this case, use the NET USER command with the following options:

```
net user username password
```

username is the user whose password you are changing.

password is the new password.

Unlike the NET PASSWORD command, the NET USER command requires *admin* privilege.

Example

John O'Clare, a new user on the *mis* server, needs to change his password. His administrator has told him that his user name is *johnoc* and his temporary password is *newuser*. He must change the temporary password to one that only he knows and that he can remember.

Choosing the name of his favorite aunt, John changes his password by typing the following at the OS/2 prompt:

```
net password \\mis johnoc newuser mathilda
```

Removing Users

This section explains how to remove a user account—it does not explain how to revoke permissions for access to specific resources. For information about revoking permissions on a per-resource basis, see the "Managing Resources" section later in this chapter.

You may want to remove a user account under the following circumstances:

- When you change a user name (by creating a new account and then deleting the old one).

- When a user is no longer using the local area network.
- When a user is no longer using this particular server.
- When you must close the account for security reasons.

You can temporarily disable a user account without removing it. When an account is disabled, the user cannot access server resources. See the "Adding Users" section earlier in this chapter for information on how to disable a user account.

Removing an Account

To remove a user's account from the server, follow these steps:

1. **Select the Accounts menu and choose the Users/groups menu item.**

The Users/Groups dialog box appears.

2. **Select the user name you wish to remove from the Username list box.**
3. **Choose the Delete command button.**

A dialog box appears, asking you to confirm your decision.

4. **Press [Enter].**

Example

David Wilkins has gotten married, and has changed his name to David Burney-Wilkins. By company standards, this means that his user name should change from *davidw* to *davidbw*. Since there is no way to change the user name of an account, Mary Sullivan must add a new account for David and then delete his old account.

In the LAN Manager screen, Mary selects the Accounts menu and chooses the Users/groups menu item. She then selects *davidw* from the Username list box and chooses the Add command button. This creates a new user account with the same attributes as the existing *davidw* account, thus saving Mary some trouble in transferring information to the new account. Mary gives the user name *davidbw* to this new account.

After creating the new account, Mary is ready to delete the old *davidw* account. In the Users/Groups dialog box, where she has just finished creating the new account, she moves into the Users list box, selects *davidw* , and chooses the Delete command button. In the confirmation dialog box that appears, she chooses the OK command button. The *davidw* user account is now gone.

This concludes the discussion of dealing with user accounts. The next section includes procedures for dealing with groups.

Using NET USER to Remove an Account

To remove a user account, use the NET USER command with the following option:

```
net user username /delete
```

username is the account you want to remove.

/delete is the option that tells LAN Manager to remove the account.

Managing Groups

A group is a set of local area network users that have something in common. For a more detailed description of groups, see the "User-Level Security" section earlier in this chapter.

The following sections provide detailed procedures for four tasks:

- Adding groups.
- Adding members to a group.
- Removing members from a group.
- Removing groups.

Adding Groups

Groups can greatly simplify your job as administrator. It is easier to keep track of a few groups and their common interests than to keep track of all users and their individual needs. Users don't need to know about group names, since those are only meaningful to an administrator; users only need to know whether or not they can access a given resource.

To add a new group to the server, follow these steps:

1. **Select the Accounts menu and choose the Users/groups menu item.**

The Users/Groups dialog box appears.

2. Select an item from the Groupname list box:

- Select [NEW] to create an entirely new group.
- Select an existing group name if the group you are creating is to be modeled after that group. The new group will have the same group members as the selected group. You can change the membership later.

3. Choose the Add command button.

The Add Group Account dialog box appears.

If you select an existing group, the Members list box should have entries; if you select [NEW], the Members list box should be empty. In either case, the user names of all users who have accounts on this server appear in one of the two list boxes.

4. Type the name of the new group in the text box at the top of this dialog box.

The name of the group should be easy to remember, and should reflect the group's purpose. Group names can be up to 20 characters and can contain letters, numbers, or the following characters:

\$ % ; - _ @ { } ~ ` ! # ()

When possible, use letters, numbers, and the hyphen (-). All lowercase letters are converted to uppercase letters.

5. Use the two list boxes and the Move command button to specify the membership for this group.

6. Choose the OK command button and press [Enter].

You have added a new group to this server. Now you need to grant the new group access to local area network resources. See the "Managing Resources" section later in this chapter.

Example

The *mis* server has four modems; Mary wants to share this pool of modems with certain individuals. She could assign individual permissions to each person, but instead she decides to establish a *modem-users* group so that she can assign permissions easily.

In the LAN Manager screen, Mary selects the Accounts menu and chooses the Users/groups menu item. In the Users/Groups dialog box, she moves into the Groupname list box, selects [NEW], and chooses the Add command button. In the Add Group Account dialog box, Mary types the name of the group (*modem-users*) in the Groupname text box. She is now ready to define group membership.

The Members list box is empty, since she did not select an existing group before adding this new group. Mary moves to the Non-members list box, selects a username that she wants to add to the Members list box, and then chooses the Move command button. She repeats this **select and move** action until she has defined the group membership to her satisfaction. She completes the process by choosing the OK command button.

Using NET GROUP to Add Groups

To add a group, use the NET GROUP command with the following options:

```
net group groupname /add
```

groupname is the group that you want to add.

/add is the option that tells LAN Manager to add the group.

To add members to the group, see the "Adding Members to a Group" section immediately following this section.

Adding Members to a Group

When you add a new user to the local area network, you might need to include that user in some of the existing groups on the local area network. You can define group memberships when you add the user account, as described under "Adding Users" earlier in this chapter, or on a later occasion. A user can be a member of up to four groups, not counting the users group.

1. **Select the Accounts menu and choose the Users/groups menu item.**

The Users/Groups dialog box appears.

2. **In the Groupname list box, highlight the name of the group to which you want to add a member and choose the Zoom command button.**

The Change Group Account dialog box appears.

3. **In the Change Group Account dialog box, highlight the user name you want to add as a member to the group from the Non-members list box and choose the Move command button.**
4. **Repeat steps 2 and 3 until you are done adding members to the group.**
5. **Choose the OK command button.**

Example

In creating the *modem-users* group, Mary forgot that the new accounting clerk, John O'Clare, will need to use a modem in order to dial in to a bulletin board service. She must add John's user name (*johnoc*) to the *modem-users* group.

In the LAN Manager screen, Mary selects the Accounts menu and chooses the Users/groups menu item. In the Users/Groups dialog box, she moves into the Groupname list box, selects *modem-users*, and chooses the Zoom command button.

In the Change Group Account dialog box, Mary moves to the Non-members list box, selects *johnoc*, and then chooses the Move command button. This moves *johnoc* to the Members list box. Finally, Mary chooses the OK command button.

Using NET GROUP to Add Group Members

To add members to a group, use the NET GROUP command with the following options:

```
net group groupname username[ username[ ...]] /add
```

groupname is the name of an established group.

username is the user name that you want to add to this group. You can type more than one user name, separated by spaces.

/add is the option that tells LAN Manager you are adding to the group.

Removing Members from a Group

You'll need to remove a user from a group if you are restructuring groups or if a person no longer needs to belong to a group.

1. **Select the Accounts menu and choose the Users/groups menu item.**
The Users/Groups dialog box appears.
2. **In the Groupname list box, select the group name of the group you want to change and choose the Zoom command button.**
3. **In the Change Group Account dialog box, select the user name you want to remove from the group and choose the Move command button.**
4. **Choose the OK command button.**

Example

In creating the *modem-users* group, Mary included Jack Starkey's user name in the group membership, since he uses a modem to contact his home computer. Jack has since purchased a modem for his office computer, since his modem use is mostly recreational. Mary decides to remove Jack's user name (*jackst*) from the *modem-users* group membership.

In the LAN Manager screen, Mary selects the Accounts menu and chooses the Users/groups menu item. In the Users/Groups dialog box, she moves into the Groupname list box, selects *modem-users*, and chooses the Zoom command button.

In the Change Group Account dialog box, Mary moves to the Members list box, selects *jackst*, and chooses the Move command button. This moves *jackst* to the Non-members list box. Finally, Mary chooses the OK command button.

Using NET GROUP to Remove Group Members

To remove a group member, use the NET GROUP command with the following options:

```
net group groupname username[ username[ ...]] /delete
```

groupname is the name of an established group.

username is the user name (or user names) that you want to remove from this group. If you are typing more than one user name, separate them with spaces.

/delete is the option that tells LAN Manager to delete one or more user names from the group.

Removing Groups

Defining groups is a powerful way of keeping the local area network attuned to the needs of its users. Removing a group can have great impact. Before removing a group, consider the consequences and be sure to notify users if it will change their abilities to access resources. Users don't need to know about group names, since those are only meaningful to administrators; users only need to know whether or not they can access a given resource.

1. **Select the Accounts menu and choose the Users/groups menu item.**

The Users/Groups dialog box appears.

2. From the Groupname list box, select the group name you want to delete and choose the Delete command button.

A message box appears, asking you to confirm your decision.

3. Choose the OK command button.

Example

Mary has been evaluating some project management software. To solicit opinions, she put the software on the *mis* server, then invited people to try out the software with the NET RUN command. To control access to the software, she defined a group *project*. Her evaluation completed, Mary now wants to remove the *project* group.

In the LAN Manager screen, Mary selects the Accounts menu and chooses the Users/groups menu item. In the Users/Groups dialog box, she moves into the Groupname list box, selects *project*, and chooses the Delete command button. She confirms her choice by choosing the OK command button, and the *project* group ceases to exist.

This concludes the discussion of dealing with groups. The next sections include procedures for setting and changing permissions for individual resources.

Using NET GROUP to Remove Groups

To remove a group, use the NET GROUP command with the following options:

```
net group groupname /delete
```

groupname is the name of the group that you want to remove.

/delete is the option that tells LAN Manager to delete the group.

Managing Resources

A resource is anything you can share with LAN Manager. For a more detailed description of resources and resource permissions, see the "User-Level Security" section at the beginning of this chapter.

The following sections provide detailed procedures for four tasks:

- Looking at permissions.
- Changing permissions for disk resources.
- Assigning default and inherited permissions.
- Changing permissions for other resources.

Looking at Permissions

When you share resources under user-level security, you should assign permissions for each resource. You may need to review the assigned permissions under the following circumstances:

- When someone who should have access to a resource can't use it.
 - When someone who shouldn't have access to a resource is using it.
 - When you want to change the permissions for a resource.
1. **Select the Accounts menu and choose one of the following menu items:**
 - Choose the File permissions menu item to look at permissions for a disk resource. The File Access Permissions For dialog box appears.
 - Choose the Other permissions menu item to look at permissions for all other types of resources (printer queues, communication device queues, and IPC resources). The Other Access Permissions dialog box appears.

2. **For disk resources, use the list box and the File Access Permissions For dialog box Dir command button to move through the directories to find the resource.**

When you have found the drive, directory, or file that you want to examine (either in the list box or by typing its pathname in the text box), choose the Zoom command button to look at permissions.

If you are looking at any other type of resource, select a resource from the list box of the Other Access Permissions dialog box and choose the Change command button to look at permissions.

3. **Find the Permitted list box. In the Edit File Permission dialog box (or Change Permissions for other types of resources), the Permitted list box shows all users and groups with permissions for this resource. Each entry is of the form:**

name:permissions

name is the user name or group name.

permissions specifies the assigned permissions.

4. **Choose the Cancel command button to leave this dialog box without making changes.**

A user whose name does not appear in the Permitted list box can only use the resource if the user has *admin* privilege or the user is a member of a group that is permitted to use the resource.

Changing Permissions for Disk Resources

Under user-level security, LAN Manager maintains a database of permissions for resources regardless of whether those resources are being shared at any given time. Thus, if you stop sharing a resource and then decide later to start sharing it again, LAN Manager remembers the permissions you have previously assigned for that resource. Every resource starts with default permissions; if you change those default permissions, they remain changed until you choose to change them again. For a description of default permissions, see the "Assigning Default and Inherited Permissions" section immediately following this one.

The LAN Manager screen automatically asks you for permissions when you create a new home directory for a user account (see the "Managing Users" section earlier in this chapter). Under all other circumstances, you must assign permissions for each drive or directory, or else accept the default permissions.

You may want to change permissions for a disk resource under the following circumstances:

- When you want to stop using the default permissions for a resource.
- When you want to assign, change, or delete permissions for a user or group.

Changing Disk Permissions

To change the permissions for a disk resource, follow these steps:

1. **Select the Accounts menu and choose the File permissions menu item.**

The File Access Permissions For dialog box appears.

2. **Use the list box and Dir command button to move through the directories to find the resource server.**

You can also type the pathname of the resource in the Filename text box.

3. Choose the Zoom command button.

The Edit File Permission dialog box appears.

4. Select the Set explicit permissions option button.

- If you want to use default permissions, see the "Assigning Default and Inherited Permissions" section immediately following this one.
- If you want to remove the current permissions and start from scratch, choose the Clear permissions command button.

5. Mark or unmark the following check boxes as needed:

- **Audit this resource**—If you want to keep track of who uses this resource, when, and what they do with it, you should mark this check box. See Chapter 12: Monitoring and Troubleshooting Server Operations, for details on resource auditing.
- **Copy permissions to descendants**—If you want to assign the permission for this resource to every directory and file below it in the directory structure, you should mark this check box. See the "Assigning Default and Inherited Permissions" section immediately following this one for details on inherited permissions.

6. Use the two list boxes, the Permission option buttons, and the Move command button to specify the permissions for each user and group as follows:

- To add a user or group to the Permitted list box, select that username or group name from the Not permitted list box and choose the Move command button. The user or group moves to the Permitted list box with whatever permissions are currently selected among the permission option buttons. Each resource can have up to 64 entries in the Permitted list box.
- To remove a user or group from the Permitted list box, select that username or group name and choose the Move command button.

- To change the permissions for a user or group in the Permitted list box, choose that user name or group name and select one of the permission option buttons. If you select the Other option button, you can type a set of permissions in the text box below the option button.

See the "User-level Security" section earlier in this chapter for detailed descriptions of each permission option button.

7. Choose the OK command button.

Example

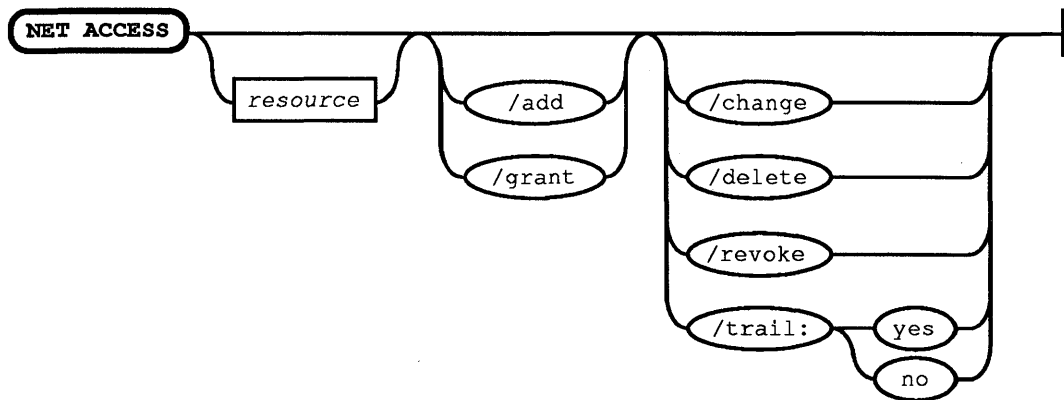
Mary Sullivan wants to share the *c:\accounts* directory on the *mis* server with the accounting group. She wants the group's members to be able to read or write to existing files in the directory.

In the LAN Manager screen, Mary selects the Accounts menu and chooses the File permissions menu item. In the File Access Permissions For dialog box, she selects [C:] in the Tree: list box and chooses the Dir command button. This displays the contents of drive C in the list box.

Mary selects the *accounts* directory in the list box and chooses the Zoom command button. In the Edit File Permission dialog box, she selects the RW option button, then moves the *accounting* group from the Not permitted list box to the Permitted list box. Mary finishes by choosing the OK command button. Having changed the permissions on the *c:\accounts* directory, she is now ready to share it.

Using NET ACCESS to Manage Network Permissions

You can use the NET ACCESS command to manage user and resource permissions on the network. The following sections explain the different options in detail.



Using NET ACCESS to Change Resource Permissions

To change the permissions for a spooled printer, disk, communication queues and IPC resources, use the NET ACCESS command with the following options:

```
net access resource [/add|/grant|/change]
account:permissions
```

resource is the full pathname of the drive, directory, or file.

/add is the option that tells LAN Manager to add this resource to the access control database; use this if this is the first time you are assigning permissions for this resource.

/grant is the option that tells LAN Manager to add permissions for a user or group to the access control database; use this if you are adding to the list of users or groups that have permission to use the resource.

/change is the option that tells LAN Manager to modify the existing permissions for a user or group.

account is the user name or group name whose permissions you want to change.

permissions is the permissions that you want to assign.

NOTE: For instructions on how to use the command flow diagram chart refer to Appendix C.

Using NET ACCESS to Remove User Permissions

To remove permissions for a user or group, use the NET ACCESS command with the following options:

```
net access resource /revoke account
```

resource is the full pathname of the drive, directory, or file.

/revoke is the option that tells LAN Manager to revoke permissions.

account is the user name or group name whose permissions you want to remove.

Using NET ACCESS to Remove Resource Permissions

To remove all permissions for a resource, use the NET ACCESS command with the following options:

```
net access resource /delete
```

resource is the full pathname of the drive, directory, or file.

/delete is the option that tells LAN Manager to remove this resource from the access control database.

Using NET ACCESS to Audit a Resource

To turn on audit trailing for a resource, use the NET ACCESS command with the following options:

```
net access resource /trail:y
```

resource is the full pathname of the drive, directory, or file.

trail:y is the option that tells LAN Manager to enable audit trailing.

Changing Permissions as a Nonadministrative User

When you give the P permission to a user, you allow that user to change permissions on a disk resource. This is very different from granting administrative privilege. Someone with *admin* privilege can change permissions on any resource, while a user with the P permission can change permissions only on the specific resource for which you grant the P permission.

Since permissions are usually the concern of administrators rather than users, the procedure for using the P permission is discussed here rather than in the *3+Open MS OS/2 LAN Manager User Guide*. Since an administrator on one server may not necessarily have *admin* privilege on another server, administrators may also need to use the information in this section.

If you don't know whether you have the P permission for a given resource, try following the steps in this section. If you don't have the proper permissions, you will not be able to complete the steps.

Changing Disk Permissions as a User

To change the permissions for a disk resource, when you have the P permission for the resource but you do not have *admin* privilege, follow these steps:

1. **Check that the resource for which you have the P permission has been shared at the server.**

If the resource is not shared, you cannot access it from another computer.

2. **Use the resource, assigning it a local drive letter.**

You can do this from the LAN Manager screen or with the NET USE command at the OS/2 prompt.

3. **Use the NET ACCESS command to change permissions on the resource.**

This is described in the "Changing Disk Resource Permissions" section earlier in this chapter. You must use the local drive letter plus the full pathname in referring to the resource, rather than using the net pathname.

For example, you must refer to *x:\marys\file* rather than *\mis\homes\marys\file*.

NOTE: If you use the NET ACCESS /ADD command to assign permissions to a resource, remember to add your own username with a set of permissions. Otherwise, you will not be able to access this resource, even though it is in a directory for which you have the P permission. Of course, an administrator can always access any resources regardless of permissions.

Example

John O'Clare has the P permission for his home directory on the *mis* server. John wants to allow Jenny Tibbett (*jennyt*) to read a certain file in his home directory.

First, John checks that home directories are being shared on the *mis* server by typing the following command:

```
net view \\mis
```

Net Name	Type	Used as	Remark

HOMES	Disk		Home directories

John uses the shared resource with the NET USE command:

```
net use h: \\mis\homes
```

John's home directory is `\\mis\homes\johnoc`, and the file that he wants to let Jenny read is named *testfile* in that directory. John grants the proper permission with the following command:

```
net access h:\johnoc\testfile /add jennyt:R  
johnoc:RWCDXAP
```

Note that if John does not add his own name and permissions to this command, he would be in the embarrassing position of giving Jenny permission to read the file while excluding himself from any access to the file. He would not even be able to delete the file; he would have to ask an administrator to do it for him.

Assigning Default and Inherited Permissions

Every drive, directory, or file on a server must have a set of permissions. If you do not explicitly set permissions for a resource (file or directory), then that resource has *default* permissions. Default permissions are determined by certain other permissions that you have set.

LAN Manager uses the following series of tests to determine the default permissions for a disk resource:

- If the resource is a disk drive, it must have explicit permissions. Every disk drive starts with a null (blank) set of explicit permissions.
- If the resource has explicit permissions, LAN Manager uses those permissions.
- If the resource has a *parent* that has explicit permissions, LAN Manager uses those permissions. The parent of a file is the directory in which the file is located. The parent of a directory is the next higher directory (if one exists).
- If the parent has no explicit permissions, use the permissions for the drive on which this resource is located.

Effects of Default Permissions on Disk Resources

These rules have effects that may not be obvious:

- Any explicit permissions that you set for any disk resource override default permissions that you set for the disk drive.
- If a directory does not itself have explicit permissions, then any file or subdirectory in that directory takes default permissions from the drive. This is true even if the directory itself takes default permissions from its parent.
- If you give anyone with *guest* privilege explicit permissions at the drive level, you must be careful to exclude that user with the N permission from any sensitive resource on that drive. This is tricky because you might assign the N permission to the *users* group for a resource, thinking that this excludes all users, when *guest* users are still able to access the resource (since they are not members of *users*).
- When you create a directory for any purpose, you should assign explicit permissions to it if you want it to have something other than default permissions.

If you want to avoid the pitfalls of default permissions, you can assign inherited permissions for an entire directory *tree* (a directory plus all of its files and subdirectories). If you later add subdirectories or files to this directory, they will not **inherit** these inherited permissions unless you reset inherited permissions for the entire tree. Inherited permissions are permissions that trickle down to each file and subdirectory under a particular directory.

Assigning Inherited Permissions

To set inherited permissions for a disk resource, follow these steps:

1. **Select the Accounts menu and choose the File permissions menu item.**

The File Access Permissions For dialog box appears.

2. **Use the list box and Dir command button to move through the server's directories to the directory.**

You can also type the pathname of the directory in the Filename text box.

3. **Choose the Zoom command button if you want to examine the existing permissions for this resource.**

When you're ready to continue, you can return to the File Access Permissions For dialog box by pressing [Esc].

4. **Select the Permit tree command button. This assigns the current permissions for this directory to all of the directory's descendants.**
5. **If you want to remove an entire directory tree from the access control database, select the Revoke tree command button. This removes all permissions throughout the directory tree, no matter how those permissions were assigned.**

You can also assign inherited permissions from the Edit File Permissions dialog box by marking the Copy permissions to descendants check box. This performs the same action as the Permit tree command button in the File Access Permissions For dialog box.

Example

Mary wants to assign the *accounting* group RW permission for all subdirectories and files in the C:\Accounts directory.

Mary selects the Accounts menu and chooses the File permissions menu item. In the File Access Permissions For dialog box, she selects [C:] in the Tree: list box and chooses the Dir command button. This puts the contents of the drive C in the list box.

Mary then selects the Accounts directory and chooses the Permit tree command button.

This concludes the discussion of permission for disk resources. The next section discusses permissions for other resources.

Using NET ACCESS to Assign Inherited Resource Permissions

To assign inherited permissions for a resource, use the NET ACCESS command with the following options:

```
net access resource /tree
```

resource is the full pathname of the drive, directory, or file.

/tree is the option that tells LAN Manager to assign inherited permissions throughout the directory tree.

To remove permissions for an entire directory tree from the OS/2 prompt, use the NET ACCESS /REVOKE command to revoke all permissions on the directory, then use the NET ACCESS /TREE command to assign the null (blank) set of permissions throughout the directory tree.

Changing Permissions for Other Resources

LAN Manager uses three types of resources in addition to disk resources: spooled printer queues, communication device queues, and IPC resources. See the "User-Level Security" section earlier in this chapter for a description of each of these resource types.

To look at or change permissions for a disk resource, you must supply the pathname of the drive, directory, or file. To look at or change permissions on other types of resources, you supply one of the following names:

- *\print\sharename* for spooled printer queues.
- *\comm\sharename* for communication device queues.
- *\pipe\sharename* for IPC resources.

For each of these resource types, LAN Manager maintains a default set of permissions. You can change the default permissions by changing permissions on these special sharenames:

- *\print* for spooled printer queues.
- *\comm* for communication device queues.
- *\pipe* for IPC resources.

When you change permissions on one of these special sharenames, you change the default permissions for that type of resource.

You can create spooled printer queues and communication device queues automatically by sharing a queue that does not yet exist. When you do this, the LAN Manager screen prompts you for permissions for the new queue.

You may want to change permissions for a resource under the following circumstances:

- When you want to stop using the default permissions for the resource.
- When you want to assign, change, or delete permissions for a user or group.

Changing Print, Comm, and IPC Permissions

1. **Select the Accounts menu and choose the Other permissions menu item.**

The Other Access Permissions dialog box appears.

2. **In the list box, select the resource whose permissions you want to change and choose the Change command button.**

The Change Permissions dialog box appears.

3. **Choose the Set explicit permissions option button.**

If you want to use default permissions, choose the Use default permissions option button and do not change permissions in this dialog box.

NOTE: The *\comm*, *\pipe*, and *\print* resources must always have explicit permissions, since they represent the defaults for other resources.

- If you want to remove the current permissions and start from scratch, choose the **Clear permissions** command button.
4. **Mark or unmark the following check box as needed:**
 - **Audit this resource**—If you want to keep track of who uses this resource, when they use it, and what they do with it, you should mark this check box. See Chapter 12: Monitoring and Troubleshooting Server Operations, for details on resource auditing.

5. **Use the two list boxes, the permission option buttons, and the Move command button to specify the permissions for each user and group.**
 - To add a user or group to the Permitted list box, choose that username or groupname in the Not permitted list box and select the Move command button. The user or group moves to the Permitted list box. Each resource can have up to 64 entries in the Permitted list box.

NOTE: If the permission option button is set to **No** when you move a user name into the Permitted list box, then what you are in effect doing is stipulating that that user cannot use the resource, regardless of whatever groups that individual may belong to.

- To remove a user or group from the Permitted list box, select that username or group name and choose the Move command button.
 - To change the permissions for a user or group in the Permitted list box, select that user name or group name and select one of the permission option buttons.
6. **Choose the OK command button.**

Example

Mary has set up a spooled printer queue *laser* on the *mis* server. She now wants to give the *accounting* group Y permission for this queue.

From the LAN Manager screen, Mary selects the Accounts menu and chooses the Other permissions menu item. In the Other Access Permissions dialog box, she selects \print\laser in the list box and chooses the Change command button.

In the Change Permissions dialog box, she selects the Y option button and then moves the *accounting* group from the Not permitted list box to the Permitted list box. Since this is the only permission she wants to allow, Mary finishes by choosing the OK command button. She is now ready to share the *laser* spooled printer queue.

Using NET ACCESS to Change Other Resources

For information on how to use the NET ACCESS command to change and remove user and resource permissions or audit a resource, refer to "Using NET ACCESS to Manage Network Permissions" earlier in this chapter.

Chapter 9: Managing Share-Level Security

This chapter describes share-level security, an alternative to user-level security. Share-level security controls access on a per-resource basis, rather than on a per-user basis as with user-level security. See Chapter 8: Managing User-Level Security, for definitions of the two types of security.

Share-Level Security

Under share-level security, you assign a password and a single set of permissions to each resource that you share on a server. Anyone who knows the password can use that resource, within the limits of the permissions.

If you don't know what security level your server is running, look for the following line in the LAN Manager screen:

```
Server operating in share security mode.
```

Figure 9-1 shows what happens when a user tries to access a resource shared by a share-level server.

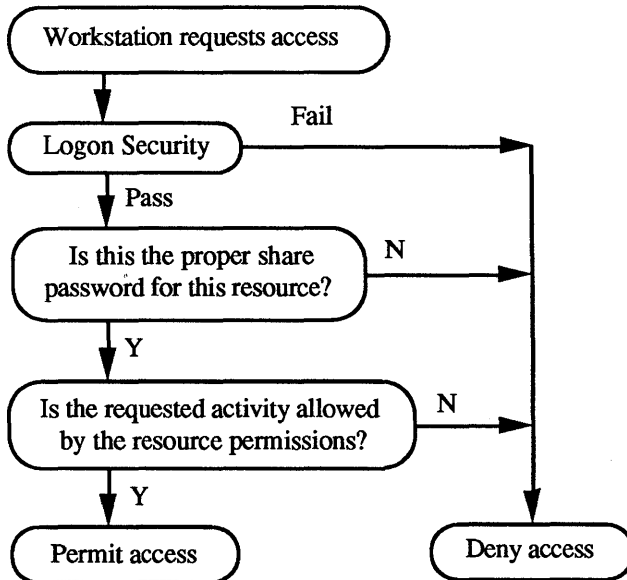


Figure 9-1. Access Under Share-Level Security

Passwords

Under user-level security, a user needs to know only one password in order to access resources on a server; that password is part of his or her user account. Once the server verifies the password, it will not ask for it again.

Share-level servers do not maintain user accounts. If the password supplied by the user matches the password for the resource, access is granted. The user may have to supply a different password for each resource. You cannot change a password without deleting the sharename and reestablishing it with a different password.

A user at a netstation does not need to know, and may in fact not be able to tell, if a server is running user-level or share-level security. Under either security method, you provide a user name and password when you log on to the local area network. The user issues the same commands to request access to the server, and the server responds in the same way.

Permissions

Under share-level security, when you share a disk resource you assign a set of access permissions for that resource. Share-level security grants that same set of permissions to each user who knows the password for the resource. The meaning of most of the disk resource permissions (RWCDXA) is the same as for user-level security. There are certain differences, however. Under share-level security:

- All users have the same set of permissions.
- The P permission, which means "Change permissions" in user-level security, means "administrators only" in share-level security. See the following section for a discussion of administration and the P permission.
- The server does not keep permanent records of permissions; you must specify permissions each time you share a resource.

Under user-level security, permissions are a permanent (yet alterable) aspect of a resource, meaning that they persist whether you are sharing the resource or not. The access control database keeps track of permissions for all resources.

Share-level security doesn't use an access control database. Each sharing of a resource is an independent event; the permissions assigned are effective only until you stop sharing the resource.

How LAN Manager Determines Access

Share-level servers evaluate user requests for access to a resource in this order:

- Is the P permission set for this resource? If not, then continue to the next check. The P permission ("administrators only" in share-level security) overrides all other permissions and passwords.
- Does the user's password match the resource's? If so, then continue to the next check. If not, prompt once for a different password. If this one doesn't match, deny access to the resource.

- Do the share permissions allow the requested activity? If so, grant the request. If not, deny access to the resource.

As under user-level security, MS OS/2 physical file attributes (R: *Read Only*, H: *Hidden*, S: *System*, and A: *Change Attributes*) co-exist with LAN Manager permissions. Access must be granted by both MS OS/2 and by LAN Manager. For example, if a file in a shared directory has the LAN Manager W permission but also the OS/2 R attribute, the user cannot write to the file.

Administrators

Under user-level security, an administrator is anyone with the *admin* privilege level. Share-level security does not recognize the concept of privileges.

Under share-level security, an administrator is anyone who is using the ADMIN\$ special administrative resource. This is not automatically shared under share-level security, and so you must deliberately share it and assign a password if you want to allow administrative access to your server. See the “Sharing the Special Administrative Resources” section later in this chapter for details on how to share the ADMIN\$ resource.

A user must explicitly use the ADMIN\$ resource, supplying the proper password, before administrating your server. For example, if Mary sets the password “pass1” for ADMIN\$ on the *mis* server, a user would have to type the following command before administrating the *mis* server:

```
net use \\mis\admin$ pass1
```

Do not share the ADMIN\$ resource without a password, since this would allow any user to be an administrator on the server.

An administrator can use resources that have the P permission and issue LAN Manager commands on the server (see Chapter 11: Administrating a Network Server).

Setting Up Share-Level Security

In this section, you will learn how to prepare your server for share-level security. You need to do this if you want to control access to resources on a per-resource basis.

Checklist for Share-Level Security

The following checklist summarizes what you must do in order to make share-level security work on your server:

1. Set the security= entry in the LANMAN.INI file to "share."
2. Share a set of resources, defining a password for each resource and permissions for each disk resource.
3. Share the special administrative resources IPC\$ and ADMIN\$ as necessary.

The following sections describe each of these steps in detail.

Defining the Security= Entry

You can define the security= entry in the LANMAN.INI file to enable share-level security.

- By using the 3+Open LAN Manager installation program, **netsetup**. When prompted for the security type, answer "share".

- By editing the LANMAN.INI file. Find the security= entry and edit the line to read:

security=share

See the *3+Open Network System Guide* for details on this and other LANMAN.INI entries.

After defining the security= entry, you must stop and restart the LAN Manager Server service to make the change effective. See Chapter 2: Starting and Using LAN Manager Services, for details on starting and stopping services.

Sharing Resources

For each resource that you share, you may define a password and a set of permissions.

For a user to be able to access a resource:

- The user must know the password for the resource, if you have set one.
- The action that the user wants to take must be allowed by the assigned permissions.

Sharing the Special Administrative Resources

LAN Manager sets up some special shared resources every time you start the server. The sharenames of these resources end in a dollar sign (\$), identifying them as special administrative resources. In share-level security they are accessible only if you decide to share them.

Two resources require special handling under share-level security:

- **IPC\$** is for interprocess communication (IPC). Without this shared resource, users cannot look at (“view”) resources on the server, though they can use a resource if they already know its sharename. If you want to make the Netrun service available on the server, you must share this resource.
- **ADMIN\$** is for network administration of the server. If you want to allow administration of this server from another computer, you must share this resource.

You may want to share the IPC\$ resource with no password, since this allows all users to see resources on the server and run shared programs. The password for IPC\$, however, is the only security for shared programs, so you may want to assign a password if this security is important to you.

See the “Administrators” section earlier in this chapter for a further description of the ADMIN\$ resource. See Chapter 3: Managing Shared Resources for instructions on how to share these and other resources.

NOTE: Do not assign the P permission to the ADMIN\$ resource. The P permission means “administrators only,” and you cannot be an administrator until you use this resource. Therefore, no one can remotely administrate this server if the ADMIN\$ resource has the P permission.

Dealing With Resources

A resource is anything you can share with LAN Manager. The following sections provide detailed procedures for three tasks:

- Looking at passwords and permissions.
- Changing permissions.
- Changing passwords.

See Chapter 3: Managing Shared Resources for information about how to share resources.

Looking at Passwords and Permissions

When you share resources under share-level security, you must assign a password and a set of permissions to each resource. You may need to check the passwords or permissions under the following circumstances:

- When someone who should have access to a resource can't use it.
- When you have forgotten the passwords or permissions for a resource and need to look them up.
- When you want to change a password or the permissions for a resource.

To look at the password and permissions for a resource, follow these steps:

1. **Select the view menu and choose the This server menu item.**

The Resources This Server Is Sharing With the Network dialog box appears.

2. **Select the resource you want to examine from the list box.**

3. Choose the Zoom command button.

The Shared Resource Information dialog box appears. The password for this shared resource is in the Password display field. The permissions are in the Permissions display field.

If the Password display field of the Shared Resource Information dialog box is empty, then there is no password on this resource, which means that:

- If the P permission is set, only administrators can access the resource.
- If the P permission is not set, anyone can access the resource (subject to the other permissions).

Example

Mike Greenbaum runs MacroCorp's *print2* server, located in the second-floor printer room, as a share-level server. Mike prefers the simplicity of share-level security, where he doesn't have to keep track of user names or group names or individual access permissions. The *print2* server shares six printers and several directories with the local area network.

Jenny Tibbett, Executive Vice-President of Finance, sends a message to Mike saying that she is unable to write a file to the `\\Print2\Scratch` directory (a large shared directory intended for general-purpose use). Mike suspects that he forgot to include the W permission when he shared the directory that morning.

In the LAN Manager screen at *print2*, Mike selects the view menu and chooses the This server menu item. In the Resources This Server Is Sharing With the Network dialog box, he selects *scratch* and chooses the Zoom command button.

In the Shared Resource Information dialog box, Mike sees that the permission set for *scratch* is RCDAX; he did indeed forget to specify W permission. In the next section, you will see how he corrects his error.

Using NET SHARE to View Resource Permissions

You cannot look at resource passwords from the OS/2 prompt. However, to look at resource permissions, use the NET SHARE command with the following option:

```
net share sharename
```

sharename is the resource you want to examine.

Changing Permissions

Passwords and permissions control access to resources. You may want to change permissions for a resource under the following circumstances:

- When you restrict or expand what users can do with the resource.
- When you want to set or remove the P permission, closing off or allowing access to the resource.

You can only change permissions on a resource that is being shared. If a resource is not being shared, it has no permissions for you to change.

Using NET SHARE to Change Permissions

You cannot change permissions from the LAN Manager screen. Use the NET SHARE command with the following options:

```
net share sharename perm:permissions
```

sharename names the shared resource.

perm: tells LAN Manager to change permissions.

permissions specifies the permission set for this resource (any combination of RWCDXAP).

Changing Passwords

Passwords and permissions control access to resources. You may need to change a password for security reasons.

To change the password for a resource, you must stop sharing the resource and then reshare it with the new password. You cannot change the password when the resource is being shared.

- 1. Make a note of the current password and permissions for the shared resource that you want to change.**

Refer to the procedure in the “Looking at Passwords and Permissions” section.

- 2. Select the view menu and choose the This server menu item.**
- 3. In the Resources This Server Is Sharing With the Network dialog box, select the resource you want to change from the list box.**
- 4. Choose the Delete command button.**

The Stop Sharing a Network Resource dialog box appears.

- 5. Choose the OK button to delete the shared resource.**

You now see the Resources This Server Is Sharing With the Network dialog box again.

- 6. Choose the Add share command button.**

The What would you like to share? dialog box appears.

7. **Select the option button for the type of resource you want to share and choose the OK command button.**

A dialog box appropriate to that resource type appears. In this dialog box, type the sharename for the resource in the Sharename text box and the desired password in the Password text box. (You'll probably want to use the same sharename as last time.)

8. **For a disk device, move to the column of option buttons labeled Permissions and mark the check boxes for the permissions that you want.**

The Admin only check box is the P permission.

9. **Choose the OK command button.**

Example

Mike wants to change the password and permissions for the \\Print2\Scratch directory. He wants to add the W permission and to remove the X and A permissions.

Mike selects the view menu and chooses the This server menu item. In the Resources This Server Is Sharing With the Network dialog box, he selects *scratch* from the list box and chooses the Delete command button. When he chooses the OK command button in the confirmation dialog box, the Resources This Server Is Sharing With the Network dialog box reappears; Mike can see that *scratch* is gone.

Mike proceeds to choose the Add share command button. In the What would you like to share? dialog box, he selects the Disk directory option button and chooses the OK command button. The Share a Disk Directory dialog box appears.

Mike types the same sharename, path, and remark for this resource as last time. In the Password text box, he types the new password. Moving to the Permissions option buttons, he selects the Read, Write, Create, and Delete option buttons and chooses the OK command button. The \\Print2\Scratch directory is shared again, but with a different password and set of permissions.

Using NET SHARE to Change Passwords

1. **To change the password for a shared resource, first delete the existing sharename.**

Use the NET SHARE command with the following options:

```
net share sharename /delete
```

sharename specifies the shared resource.

/delete is the option that tells LAN Manager to stop sharing the resource.

2. **Recreate the sharename, but with the changed password.**

Use the NET SHARE command with the following options for disk resources:

```
net share sharename=pathname [password] perm:permissions.
```

sharename is the sharename you want to assign to the resource.

pathname is the pathname of the resource.

password is the password you want to use (if any).

permissions is the permission set for this resource (any combination of RWCDXAP).

See the *3+Open MS OS/2 LAN Manager User Reference* for the equivalent commands for spooled printer queues, communication device queues, or IPC resources.

Chapter 10: Managing Logon Security

The previous two chapters dealt with access to specific servers and resources; this chapter covers the wider concept of access to the local area network itself. *Logon security* is LAN Manager's way of controlling access to a local area network.

Logon Security

Logon security provides a measure of control over who can use the local area network, and allows administrators to tailor the working environments of individual users.

If you do not choose to install logon security, resources are still protected by user-level or share-level security.

NOTE: DOS netstations are not subject to logon security. Logon security applies only to MS OS/2 LAN Manager OS/2 netstations.

Logon security is not enabled on the LAN Manager distribution disks. If you want to use logon security, you must choose one of the following:

- Centralized logon security.
- Distributed logon security.

The following sections describe these two alternatives, as well as the concept of *scripts*, which are essentially batch files that you can have LAN Manager run whenever a user logs on.

If you are using the Entry-Level LAN Manager product, the local area network has only one server. Centralized logon security is the simplest choice in this case.

Centralized Logon Security

Under centralized logon security, you designate one server as the central validator of users. When someone tries to log on to the local area network, this server checks their user name and password and either grants or denies them access to the local area network.

Advantages of Centralized Logon Security

Centralized logon security is best for small local area networks or for local area networks centered around a single server. Centralized logon security has the following advantages:

- The administrator only has to deal with one server in maintaining a central account database. Other servers may have their own account databases, but the central server is a gateway through which all users must pass. This can make an administrator's job much easier.
- By changing a user's account on the central server, you can affect that user's access to the entire local area network.

- For local area networks made up of share-level servers, a central server can serve as the sole method of controlling access to resources by user name.
- The response a user receives when logging on won't vary according to which server validates the request.
- Centralized logon security spans an entire local area network regardless of LAN groups.

Disadvantages of Centralized Logon Security

Centralized logon security also has the following drawbacks:

- The central server must maintain accounts for all valid users.
- The central server bears the burden of processing all requests to log on. This can affect the general performance of the server.
- A user can specify any LAN group when logging on.
- If the central server is not running, no one can log on.

To run centralized logon security, you should have a server that can be running during all hours when you want to allow access to the local area network. See the “Managing Centralized Logon Security” section later in this chapter for details on how to run centralized logon security.

Distributed Logon Security

Under distributed logon security, you divide the responsibility for validating users among multiple servers. When a user tries to log on to the local area network, the logon request can go out simultaneously to all servers in the LAN group (defined by the langroup= entry in the LANMAN.INI file). Any server running the proper software can evaluate the user name and password, with the following results:

- If a server recognizes the user name and password as valid, it responds to the logon request as if it were a central server.
- If a server does not recognize the user name and password, it does not respond. If no server responds to the logon request, the user cannot log on.

Advantages of Distributed Logon Security

Distributed logon security is best for large local area networks or for local area networks that divide well into clusters of users and computers. Distributed logon security has the following advantages:

- Each server maintains accounts only for valid users of that server. You don't need to maintain duplicate user accounts on a central server and on the server where a user normally works.
- No one server bears the burden of processing all logon requests.
- If one server is not running, users may still be able to log on through other servers.
- A user can only log on in a LAN group where a server can validate the logon request.

Disadvantages of Distributed Logon Security

Distributed logon security has the following drawbacks:

- The administrator has to deal with more than one server in maintaining a consistent account database.
- The administrator may have to change a user's account on several servers in order to affect the user's access to the entire local area network.
- A user can get inconsistent responses when logging on, if servers with different accounts for that user are both validating logon requests.

In order to run distributed logon security, you should have more than one server acting as a logon validator, and you must have an account on at least one of those servers for each user of the local area network. See the “Managing Distributed Logon Security” section later in this chapter for details on how to run distributed logon security.

Setting Up Logon Security

In this section you will learn how to prepare your local area network for logon security. You need to do this if you want to control access to the local area network or if you want to run scripts on users' computers when they log on. This section applies to both centralized and distributed logon security.

Checklist for Logon Security

The following checklist summarizes what you must do in order to make logon security work on your local area network:

1. Set the centralized= entry in the LANMAN.INI file to the appropriate value (yes or no).
2. Set up user-level security on each server that is to be a logon validator (one server for centralized logon security, more than one server for distributed logon security).
3. Start the Netlogon service on each server that is to be a logon validator.
4. Prepare all other computers (netstations and other servers) for logon security.
5. Maintain logon security by keeping track of user accounts, properly installing new servers, and providing scripts.

The following sections describe each of these activities in detail.

Defining the Centralized= Entry

Your first decision is whether to run centralized logon security or distributed logon security. The centralized= entry in the LANMAN.INI file defines the logon security method. Individual procedures later in this chapter describe how to set this entry and what its effects are.

You should set this entry on every server on the local area network, even those that will not be logon validators, to reflect your choice of either centralized or distributed logon security. You may decide later to run a different (or additional) server as a logon validator, and you need to be sure that all servers agree on the method of logon security.

Setting Up User-Level Security

Logon security involves checking user names and passwords. Only a user-level server has access to this information—a share-level server does not know about user names and passwords. Any server that validates logon requests must therefore be running user-level security.

See Chapter 8: Managing User-Level Security, for instructions on how to set up user-level security.

Starting the Netlogon Service

Logon security is a LAN Manager service. Each server that is to validate logon requests must be running the Netlogon service. Netstations and other servers do not need to run this service.

You should set up LANMAN.INI to start the Netlogon service automatically whenever you start the server. See Chapter 2: Starting and Using LAN Manager Services, for instructions on starting the Netlogon service.

Preparing Other Computers

So far, you have prepared the servers that are to be logon validators. You must also prepare all other computers (netstations and other servers) on the local area network to work under logon security.

Users can actually decide whether they want to participate in logon security. They can do this either by setting an entry in the LANMAN.INI file or by using a switch with the NET START command. You can make this decision for them by editing the logonserver= entry in the LANMAN.INI file on all computers.

Procedures throughout the rest of this chapter explain different options for the logonserver= entry in the LANMAN.INI file. There are many possible values for this entry; see the appropriate procedures later in this chapter.

Maintaining Logon Security

After setting up logon security, there are three things you must do to keep it running in good order:

- Maintain the user accounts on servers that are to function as logon validators. The central server in centralized logon security must have an account for every possible user, and each account must have logon validation enabled. Under distributed logon security, you must ensure that every possible user has an account on at least one of the logon servers, and that at least one of these accounts has logon validation enabled.
- Maintain consistency across the local area network. All servers must agree on the method of logon security (centralized or distributed), so you must make sure that each new server is in line with others on the network.
- Maintain user scripts. If you use scripts, you must continue to make sure that they reflect the realities of your local area network and the needs of its users.

The remaining sections in this chapter provide procedures that you can use to set up and maintain logon security.

Managing Centralized Logon Security

Centralized logon security is one server validating all logon requests on the local area network.

The following sections provide detailed procedures for three tasks:

- Setting up the central server.
- Setting up other servers.
- Setting up netstations.

Setting Up the Central Server

If you have decided to use centralized logon security on your local area network, and have chosen a server to use as the central logon validator, then you are ready to start setting up the server.

1. **If the server you have selected is already running the Netlogon service, you must first stop this service.**

At the OS/2 prompt, type:

```
net stop netlogon
```

2. **You must also stop any other network server running the Netlogon service.**
3. **Edit the `srvservices=` entry in the server's LANMAN.INI file to add the Netlogon service to the list of services that automatically start with the Server service.**

See Chapter 2: Starting and Using LAN Manager Services for more information on starting services.

4. **Edit the `centralized=` entry in the LANMAN.INI file to read:**

```
centralized=yes
```

Only one server at a time can be the central logon validator. When you set the `centralized=` entry to `yes`, you ensure that only one server can start the Netlogon service. No other server that tries to start the Netlogon service will be able to.

5. **Make sure that the server is running user-level security.**

Make sure that the `security=` entry in the LANMAN.INI file reads:

```
security=user
```

See Chapter 8: Managing User-Level Security for details on setting up user-level security.

6. **Edit the `logonserver=` entry in the LANMAN.INI file to read:**

```
logonserver= \\computername
```

computername names this server.

No one can log on to the local area network until you have started the Server and Netlogon services at the central logon server.

You are now finished editing the LANMAN.INI file.

7. **For each account that you want to be validated by this server, mark the Use script check box in the Change User Account dialog box.**

If you do not mark this check box for an account, that user will not be able to log on to the local area network. See Chapter 8: Managing User-Level Security for details on how to change user accounts and on exactly what the Use script check box does.

8. Type the following command at the OS/2 prompt:

```
net start netlogon
```

You can also simply restart the server.

This server is now running as the central logon validator for the local area network. Now you need to set up all of the other computers on the local area network to run under centralized logon security. If you want to provide scripts for users, see “Managing Scripts” later in this chapter.

Example

Ben Preston, the manager of Human Resources for MacroCorp, has the job of setting up and maintaining accounts for people when they join the company. Since he doesn't like to keep track of accounts on a lot of different servers, he decides to set up the local area network with centralized logon security. He can then maintain accounts on one server while other administrators can keep accounts straight on the other servers.

Ben decides to set up the *humanr* server as the central logon validator for all of MacroCorp. This server is already a user-level server, and it already has an account for every valid user of the MacroCorp local area network.

Sitting at the *humanr* keyboard in his office, Ben checks the other servers in the building to see if any of them are running the Netlogon service. Seeing that the *print1* server is running this service, he stops the Netlogon service on *print1* by typing:

```
net admin \\print1 /c net stop netlogon
```

(See Chapter 11: Administrating a Network Server for more information on how to issue commands that affect other servers.)

Ben now must edit the LANMAN.INI file on *humanr*. There are three lines in the file that he must change; they must look like this:

```
logonserver=  \\humanr
srvservices=spooler, alerter, netlogon
centralized=yes
```

In the LAN Manager screen, Ben selects the Accounts menu and chooses the Users/groups menu item. The Users/Groups dialog box appears.

In the Users/Groups dialog box, he moves into the Users list box. Choosing each account in turn, Ben selects the Zoom command button and marks the Use script check box for that account. This enables logon validation for each account.

Finally, Ben types the following at the OS/2 prompt:

```
net start netlogon
```

The *humanr* server is now running as a central logon validator. Next, Ben must prepare the other servers on the local area network for centralized logon security.

Setting Up Other Servers

Your purpose in preparing the other servers is to ensure that they will not interfere with the function of the central server. In addition, these servers must themselves be made subject to logon validation by the central server.

To set up the servers on your local area network for centralized logon security, make the following changes to each server's LANMAN.INI file (except the central server, which you've already prepared):

1. Find the `srvservices=` entry; if the Netlogon service is listed, remove it.
2. Edit the `logonserver=` entry to read:

```
logonserver=\\computername
```

computername names the central server.

Every computer on the local area network should have this line in the LANMAN.INI file.

3. **(Optional). Edit the LANMAN.INI file on the LAN Manager server distribution disks to reflect these changes .**

This ensures that any server installed from these disks is properly prepared for centralized logon security.

You have now prepared all of the servers for centralized logon security. Continue to the next section to prepare the netstations.

Example

Ben has set up *humanr* as the centralized logon validation server for MacroCorp's local area network. He must now prepare all other servers to work under centralized logon security.

Moving to each of the four other servers in turn, Ben edits their LANMAN.INI files to create the following lines (in their appropriate places):

```
logonserver=\\humanr  
srvservices=spooler,alerter
```

Now he can be sure that no other server will interfere with the logon validation server.

Next, Ben must prepare all of the netstations on the local area network to work under centralized logon security.

Setting Up Netstations

Your purpose in preparing the netstations is to ensure that they will send logon requests to the central server.

If it is impractical for you to set up all of the individual netstations on the local area network yourself, you can send instructions to the users of the netstations so that they can make the necessary change themselves.

To set up netstations under centralized logon security, make the following change to each netstation's LANMAN.INI file:

1. Edit the logonserver= entry to read:

```
logonserver=\\computername
```

computername names the central server.

2. Every computer on the local area network should have this line in its LANMAN.INI file.

If you want, you can edit the LANMAN.INI file on the LAN Manager netstation distribution disks to reflect these changes. This ensures that any netstation installed from these disks is properly prepared for centralized logon security.

You have now prepared all of the computers on the local area network for centralized logon security. If you want, you can now create scripts for users; see the "Managing Scripts" section later in this chapter for details on how to make and use scripts.

Example

Ben has set up *humanr* as the central server for the MacroCorp local area network. Due to the size of the local area network, it would be very difficult for him to prepare all of the netstations himself.

Ben sends out a memo to all users of the local area network, telling them to edit the logonserver= entry of their LANMAN.INI files to read:

```
logonserver=\\humanr
```

He also sends a broadcast message, using the Message menu in the LAN Manager screen. Finally, he edits the LANMAN.INI file on MacroCorp's master LAN Manager netstation distribution disks, ensuring that future netstation installations will have the proper setup.

This concludes Ben's preparations for logon security. Other administrators may choose to set up scripts on *humanr* for individual users; Ben is only concerned with logon validation.

Managing Distributed Logon Security

Under distributed logon security, more than one server on the local area network validates logon requests.

The following sections provide detailed procedures for two tasks:

- Setting up servers.
- Setting up netstations.

Setting Up Servers

If you have decided to use distributed logon security on your local area network, and have identified the servers that you want to use as logon validators, then you are ready to start setting up the servers. Before you do, though, make sure that the servers you have selected to perform logon validation are running user-level security.

To set up the servers on your local area network for distributed logon security, make the following changes to each server's LANMAN.INI file:

- 1. For servers to be logon validators, edit the `srvservices=` entry to add the Netlogon service to the list of services that automatically start with the server service.**

2. Change the centralized= entry to read:

```
centralized=no
```

3. Set the logonserver= entry according to the following guidelines:

- If you want another specific server to validate logon requests for this server, set the logonserver= entry to read:

```
logonserver=\\computername
```

where: *computername* is a server that can perform logon validation.

- If you want the server to broadcast a message to the local area network requesting validation from any other server, set the logonserver= entry to read:

```
logonserver=\\*
```

Enabling Logon Account Validation

You must enable logon validation for each user's account on at least one of the distributed logon validators. Enable logon validation for a user's account only on the server or servers that you want to respond. All other servers will ignore logon requests from that user.

- 1. In the LAN Manager screen, select the Accounts menu and choose the Users/groups menu item.**

The Users/Groups dialog box appears.

- 2. In the Users list box, choose the account for which you want to enable logon validation.**

- 3. Choose the Zoom command button.**

The Change User Account dialog box appears:

4. Mark the Use script check box. This enables logon validation for the account.

You have now set up the servers on your local area network to run distributed logon security. If you want, you can edit the LANMAN.INI file on the LAN Manager server distribution disks to reflect these changes. This would ensure that any server installed from these disks is properly configured for distributed logon security.

If you want to specify a script for this account, see the “Managing Scripts” section later in this chapter.

Example

Ben Preston, the manager of Human Resources for MacroCorp, has the job of setting up and maintaining accounts for people when they join the company. Since the netstations at MacroCorp cluster naturally around three servers, Ben decides to set up the local area network with distributed logon security. He can then leave to other administrators the job of maintaining accounts on each server.

The three servers that will be logon validators are already running user-level security. Ben edits the LANMAN.INI file on each of these three servers. There are three lines in the file that he must change; this is what he changes them to:

```
logonserver= \\*  
srvservices=spooler,alerter,netlogon  
centralized=no
```

In the LAN Manager screen of each server in turn, Ben selects the Accounts menu and chooses the Users/groups menu item. In the Users/Groups dialog box, he moves into the Users list box. For each account that he wants this server to validate, Ben chooses the Zoom command button and marks the Use Script check box for that account. This enables logon validation for these accounts.

Finally, Ben types the following on each server at the OS/2 prompt:

```
net start netlogon
```

The three servers are now running as distributed logon validators. To prepare the other servers on the local area network, Ben edits the LANMAN.INI file of each server. There are two lines in the file that he must change; this is what they must look like:

```
logonserver= \\*  
centralized=no
```

Next, Ben must prepare the netstations on the local area network for distributed logon security.

Setting Up Netstations

Your purpose in preparing the netstations is to ensure that they will send logon requests to the appropriate logon validator servers.

If it is impractical for you to set up all of the individual netstations on the local area network yourself, you can send instructions to the users of the netstations so that they can make the necessary change themselves.

To set up netstations under distributed logon security, make the following change to each netstation's LANMAN.INI file:

1. Set the logonserver= entry according to the following guidelines:

- If you want a specific server to validate logon requests from this netstation, set the logonserver= entry to read:

```
logonserver=\\computername
```

where: *computername* is the computer name of the server that you want to validate logon requests for this netstation. If the user of this netstation does not have an account on that server, or if logon validation is disabled for the account at that server, the user cannot log on to the local area network.

- If you want the netstation to broadcast logon requests to all available servers, set the `logonserver=` entry to read:

```
logonserver=\\*
```

Any logon validator server with an enabled account for the requesting user can respond.

2. **(Optional) If you want, you can edit the LANMAN.INI file on the LAN Manager netstation distribution disks to reflect these changes.**

This ensures that all netstations installed from these disks are properly prepared for distributed logon security.

You have now prepared all of the computers on the local area network for distributed logon security. If you want, you can now create scripts for users; see the “Managing Scripts” section later in this chapter for details on how to make and use scripts.

Example

Ben has set up three servers as distributed logon validators for the MacroCorp local area network. Due to the size of the local area network, it would be very difficult for him to prepare all of the netstations himself.

Ben sends out a memo to all users of the local area network, telling them to edit the `logonserver=` entry of their LANMAN.INI files to read:

```
logonserver=\\*
```

Finally, he edits the LANMAN.INI file on MacroCorp's master LAN Manager netstation distribution disks, ensuring that future netstations will have the proper setup.

This concludes Ben's preparations for logon security. Other administrators may choose to set up scripts on their logon validator servers for individual users; Ben is only concerned with logon validation.

Managing Scripts

Under either centralized and distributed logon security method, a server must validate each logon request. You can arrange it so that when a server recognizes a valid user name and password, it sends a set of commands to run on the requesting computer. This set of commands is known as a **script**.

Scripts are entirely optional. You can use no scripts at all, use scripts only for certain users, or use scripts for all users.

A script ordinarily contains some LAN Manager commands that set up basic connections in the local area network. For example, if most users need to access the \\Mis\Data directory every time they log on, a script can establish this connection automatically every time someone logs on to the local area network.

A script can also contain OS/2 commands that provide information or prepare the user's computer for LAN Manager operations. For example, a script could print a message on the user's screen about what resources are available on the local area network.

There are two ways you can use scripts:

- You can create a general script that gives everyone on the local area network the same basic setup. This approach is best for local area networks where most users have the same resource needs.
- You can create scripts tailored to the needs of individual users. For instance, you could create one script for novice users and another for advanced users, or you could create special scripts for individual users. This approach is best for local area networks with a wide variety of different types of users.

The following sections provide detailed procedures for two tasks:

- Using scripts.
- Creating scripts.

Using Scripts

Under logon security, you must enable logon validation for individual user accounts on at least one server. In the LAN Manager screen, this means marking the Use script check box in the Change User Account dialog box. When you do this, you have two choices in regard to scripts:

- Leave the Script text box blank if you don't want a script to run when this user logs on.
- Type the pathname of a script in the Script text box if you do want a script to run when this user logs on.

You should keep scripts in the 3open\Users directory. The LAN Manager screen expects all pathnames for scripts to be relative to 3open\Users, either in the Scripts subdirectory or in the individual home directories of users. You can change the location or name of the 3open\Users directory by changing the userpath= entry in the LANMAN.INI file.

When you start the Netlogon service, it automatically shares the Userdirs directory (whatever its name) with the sharename *users*. Do not delete this sharename; it gives users access to their home directories.

LAN Manager provides one default script, *scripts\netlogon.cmd*. This script performs the following actions in response to a logon request:

- It displays the name of the server that is validating the logon request. If you don't supply this information with a script, the user cannot be certain which server has responded to the logon request.
- It establishes a connection to the user's home directory on the server, if there is one.

Example

Ben has set up a user account for John O'Clare (*johnoc*) on the humanr server. Ben now wants to enable logon validation for the *johnoc* account.

In the LAN Manager screen, Ben selects the Accounts menu and chooses the Users/groups menu item. In the Users/Groups dialog box, he moves to the Username list box and selects *johnoc*. He then chooses the Zoom command button.

In the Change User Account dialog box, Ben notes that the Use script check box is marked, showing that this server will validate *johnoc*'s logon requests. Ben moves to the Script text box and types the name of the default script, *scripts\netlogon.cmd*.

Creating Scripts

You can create your own LAN Manager scripts if you choose not to use the default *netlogon.cmd* script. You can create any of three kinds of scripts:

- Batch files.
- Programs (executable files).
- LAN Manager profiles.

You should keep all scripts in the 3open\Users\Scripts directory.

Batch Files

When you create a batch file as a LAN Manager script, you can put any OS/2, DOS, or LAN Manager commands in it, with the following restrictions:

- Do not use the NET LOGOFF command inside a script. There is no way to stop a logon request from inside a script.
- Errors that occur during the running of the logon script do not stop the logon procedure. The user receives an error message and the logon continues.

DOS batch files are for DOS LAN Manager Enhanced netstations. Be careful about assigning the correct type of batch file for the operating system that the user is likely to be using.

You can use the following variables as shown Table 10-1 in a batch file script:

Table 10-1. DOS Batch File Variables

Variable	Meaning
%1	The user name of the user requesting logon validation.
%2	The computer name of the logon validator server.
%3	The sharename of the 3open\Users directory.
%4	The path of the user's home directory, relative to 3open\Users .

See the *netlogon.cmd* script for an idea of how to use these variables.

For a further description of batch files, see the *3+Open MS OS/2 User Reference*.

Programs

You can create a DOS or MS OS/2 executable file (program) as a LAN Manager script. Use whatever means you like to create the program. The four variables available to batch files are also passed to programs.

LAN Manager Profiles

This is the easiest way to create scripts. To do this, you just set up a netstation the way you want it, take a snapshot of that setup, and use the snapshot as a script.

NOTE: Do not create profiles for scripts at the server. When you save a server profile, you save the NET SHARE commands as well as the NET USE commands (or their LAN Manager screen equivalents). Such a profile will not load correctly on a netstation.

Creating a Profile Script

1. **Create the profile script from a netstation, not a server.**

Ideally, use the netstation on which this script will run.

2. **In the LAN Manager screen, or with LAN Manager commands, make the connections that you want to be in the script.**

If you specify redirected drive letters, use letters that will not conflict with netstation devices. For example, some netstations may have a hard drive D:, so you may not want to use any letter before E: as a device name in a profile.

3. **Save a LAN Manager profile with the Config menu's Save Configuration dialog box.**

(You can also use the NET SAVE command).

See the *3+Open MS OS/2 LAN Manager User Guide* for details on how to save profiles.

4. **Move the profile to the Lanman\Accounts\Userdirs\Scripts directory on the server.**

5. **Specify the filename of the profile in the Script text box of the Change User Account dialog box.**

(You can also use the NET USER /SCRIPT command).

Example

Ben wants to create a script for new users that:

- Uses the \\Humanr\Public directory as the local P: drive.
- Uses the \\printr\laser spooled printer queue as the local LPT1: device.

Sitting at a netstation, Ben uses the LAN Manager screen to make the desired connections. He then selects the Config menu and chooses the Save profile menu item. In the Save Configuration dialog box, he types the filename NEWUSERS.PRO in the Filename text box and chooses the OK command button to create the profile.

At the OS/2 prompt, Ben copies the newly-created profile to the *humanr* server with the following command (typed all on one line):

```
net copy c:\lanman\profiles\newusers.pro  
  \\humanr\c$\lanman\accounts\userdirs\scripts
```

Since Ben is an administrator on the *humanr* server, he can use the special *c\$* resource, representing the C: drive of the server. See Chapter 8: Managing User-Level Security for more information about special administrative resources.

Ben can now use the *newusers.pro* script when setting up user accounts.

Chapter 11: Administering a Network Server

3+Open LAN Manager lets you administer a server from any local area network computer. If you have administrative privilege on a number of servers, you can manage them all from your office. When you use the LAN Manager screen for network administration, you see the same information on your computer's screen that you would see if you were working directly at the network server.

In this chapter, you will learn how to:

- Start an administrative session with a network server.
- Perform administrative tasks at a network server.

Using a Network Server

You can perform any administrative task on a server from your local server or from any computer on the local area network, as long as two conditions are met:

- You have administrative privilege for the network server.

- The server or workstation you are working from must be running MS OS/2 LAN Manager.
- ADMIN\$ and IPC\$ resources must be shared by that server.

For more information about sharing the ADMIN\$ and IPC\$ resources, see Chapter 3: Managing Shared Resources.

NOTE: The term Remote on the menu screen is used to indicate a network server as opposed to a local server.

Starting a Network Administration Session

You can control a network server from the LAN Manager screen of any other computer on the local area network. To connect to a server, follow these steps:

- 1. Select the View menu and choose the Other server menu item.**

The Connect to a Remote Server dialog box appears. This list box shows the visible servers in your LAN group.

- 2. From the list box, select the name of the server you want to access or type the name of the server in the Visible servers text box.**
- 3. Type your password for this server in the Password text box, if it differs from the one you used to log on to the local area network.**

If this server is running with share-level security, type the password for the server's ADMIN\$ resource (if there is one).

4. Choose the OK command button.

When the Connect to a Remote Server dialog box disappears, the LAN Manager screen shows information about the network server instead of your local computer. (The computername of the network server appears in the Administrating display field in the upper-right corner of the LAN Manager screen.) Any tasks that you now perform affect the network server, rather than your local computer.

Example

Mike Greenbaum wants to perform some administrative tasks on the *print2* server down the hall. Rather than walk to the *print2* server, Mike decides to administrate the server over the network. From his server, he selects the View menu and chooses the Other servers menu item. In the Connect to a Remote Server dialog box, Mike types *print2* in the Visible servers text box, types his password for this server in the Password text box, and chooses the OK command button. When the Connect to a Remote Server dialog box disappears, Mike sees that the Administrating display field on the LAN Manager screen shows the computer name *print2*. This verifies that anything Mike now does will affect the *print2* server rather than his own.

Using NET ADMIN to Administer a Network Server

To start an administrative session for a network server, use the NET ADMIN command with the following options:

```
net admin \\computername [password] /command
```

\\computername is the name of the network server you want to administrate.

password is your password on the network server. You only need to supply a password if your password for the network server is not the same as your password for your local server. If the network server is running with share-level security, this is the password for the server's ADMIN\$ resource.

/command starts an administrative session in which you can type commands to run on the network server.

When you use the NET ADMIN command, your prompt automatically changes to display the name of the network server.

Example

Mary Sullivan wants to do some work on the *printl* server from her own office. On her server, Mary types the following at the OS/2 prompt:

```
net admin \\printl /command
```

Mary does not need to specify a password because her password is the same for both her local server and the network server *printl*.

LAN Manager displays the following message:

```
Type Exit or ^Z to exit.
```

The prompt in Mary's current MS OS/2 session changes to show the name of the server Mary is administrating:

```
[\\PRINT1]
```

All commands Mary types from this point on are interpreted as though they were typed directly at the *printl* server.

When Mary has finished her work on *printl*, she types **exit** to end the network administration session.

Using NET START to Monitor More than One Server

You can take advantage of MS OS/2's multitasking capabilities to administrate more than one network server at a time from your local server. For example, if your local area network has three servers, you could create three OS/2 sessions on your local computer and monitor a different server in each session.

Example

Mary wants to monitor the status of two network servers, *admsvc* and *print1*, in addition to her local server, *mis*. Here's what she does:

1. **After starting MS OS/2, Mary starts the netstation and Server services with the following command:**

```
net start server
```

2. **At the OS/2 prompt, Mary types the NET ADMIN command to start the LAN Manager screen.**

The LAN Manager screen shows information about her local server. The Administrating display field shows the name of her local computer:

```
ADMINISTRATING:  \\MIS
```

3. **Next, Mary presses [Control]+[Esc] to display the program selector.**

Mary selects the OS/2 command prompt option from the column labeled Start a Program. This starts a new OS/2 session.

4. **In her second session, Mary types NET ADMIN again.**

This time, when the LAN Manager screen appears, she selects the View menu and chooses the Other server menu item. Mary types *admsvc* in the Servername text box of the Connect to a Remote Server dialog box, and then selects the OK command button.

The Administrating display field now shows that she is administering the network server:

```
ADMINISTRATING:  \\ADMSVC
```

5. Mary starts a third session, once again starting the LAN Manager screen, selecting the View menu, and choosing the Other server menu item.

This time in the Connect to a Remote Server dialog box, she types `\\print1` in the Servername text box and chooses the OK command button to start a remote (network) administrative session for the *print1* server. The Administrating display field for this LAN Manager screen looks like this:

```
ADMINISTRATING:  \\PRINT1
```

Now Mary can press [Alt]+[Esc] to switch from one server's session to the next. If she forgets which server's information she is viewing, she can check the Administrating display field in the upper-right corner of the LAN Manager screen.

Using NET ADMIN to Start Multiple Network Servers

You can also start multiple remote (network) administration sessions from the OS/2 prompt. To do this, start a separate session for each server you want to monitor. Then, in each session, use the NET ADMIN command with the following options:

```
net admin \\computername [password] /command
```

`\\computername` specifies the network server.

password is your password for the network server. You only need to supply a password if your password for the network server is not the same as your password on the local server. If the network server is running with share-level security, this is the password for the server's ADMIN\$ resource.

`/command` starts an administrative session in which you can type commands to run on the network server.

Use the `\\computername` option to specify a different server in each session.

Example

Mary wants to monitor two network servers. To do this, she starts a new OS/2 session for each of the servers. In the first session, she types:

```
net admin \\admsvc /command
```

LAN Manager changes the prompt in this session to look like this:

```
[ \\ADMSVC]
```

In the second session, Mary types the following command to start a remote (network) administrative session for the *\\humanr* server:

```
net admin \\humanr /command
```

In this session, the prompt now looks like this:

```
[ \\HUMANR]
```

Mary can now press [Alt]+[Esc] to switch between the sessions for *admsvc* and *humanr*. Each session's prompt reminds Mary of which server she is working with.

Running Commands on a Network Server

Once you have connected to a network (remote) server, administrating that server with the LAN Manager screen is the same as administrating your local server. You can perform any of the administrative tasks on the server that you can on your local server.

Example

Mike Greenbaum wants to see a list of resources for the *print2* server. Mike has already started a network administrative session for *print2*. (He can confirm this by looking at the Administrating display field on his LAN Manager screen.) To list the resources currently shared by *print2*, Mike selects the View menu and chooses the This server menu item. Mike now sees the Resources This Server is Sharing With the Network dialog box. If he selects ADMIN\$ from the list box and chooses the Zoom command button, he sees his own user name in the list box of the Shared Resource Information dialog box. This is because Mike is currently using ADMIN\$ to remotely administrate the *print2* server.

Using NET ADMIN to Run Commands on a Network Server

You can run a LAN Manager command on a network server without actually starting a network administration session by using the NET ADMIN command with the following options:

```
net admin \\computername \ [password] /command command
```

\\computername specifies the network server.

password is your password for the network server, if it is not the same as your logon password. If the network server is running with share-level security, this is the password for the server's ADMIN\$ resource.

/command tells LAN Manager that the following command is to be run on the network server.

command is the command that you want to run at the network server.

When you use the NET ADMIN command with these options, your prompt does not change. You must use the NET ADMIN command again to run subsequent commands on the network server.

Example

Mary periodically checks the statistics of each server on the local area network. To check the server statistics for the *admsvc* server, Mary types:

```
net admin \\admsvc /command net statistics server
```

The following display appears on Mary's screen:

```
Network Statistics for \\ADMSVC
```

```
Statistics since Apr 28, 1988, 13:28:51
```

Sessions accepted	1	Bytes received (bytes)	36
Sessions timed out	0	Bytes sent (bytes)	3
Sessions errored out	0	Average response time (msec)	26
Network errors	17	Network I/O's performed	93
System errors	0	Files accessed	0
Password violations	0	COMM devices accessed	0
Permissions violation	0	Print jobs spooled	0

The command completed successfully.

This would be equivalent to typing the following command at the *\\admsvc* server:

```
net statistics server
```

Ending a Session with a Network Server

To resume administrating the local server after using the LAN Manager screen to administrate a network server, follow these steps:

1. **Select the View menu and choose the Other server menu item.**

The Connect to a Remote Server dialog box appears.

2. **From the list box, select the computer name of the local server or type this computer name in the Servername text box.**

If you are not running the Server service on your local computer, do not select or type anything.

3. **Choose the OK command button.**

The Administrating display field in your LAN Manager screen now shows the name of the local computer.

Example

When Mike Greenbaum has finished working with the *print2* server, he selects the View menu and chooses the Other server menu item. In the Connect to a Remote Server dialog box, Mike types the computer name of his local server, *greenbaum*, in the Servername text box and chooses the OK command button. Now the Administrating display field shows the computer name of his local server.

Using EXIT to End a Session

To end a network administration session, type the following command at the OS/2 prompt:

```
exit
```

You can also press [Control]+[Z] to end the network session.

Chapter 12: Monitoring and Troubleshooting Server Operations

As an administrator, you should keep track of what's happening on the local area network and be able to solve problems that come up. There are two kinds of problems that you might encounter:

- Hardware problems—see the documentation that accompanies your local area network equipment.
- Software problems—consult this chapter.

When you can identify a problem, you're halfway to correcting it. LAN Manager keeps records of activities and errors; you can use these records to isolate problem areas and work out solutions.

In this chapter, you will learn how to:

- Set up automatic alerts.
- Look at a server's audit trail.
- Look at server statistics.
- Control user connections to the server.
- Look at a server's error log.
- Deal with access problems.

What to Watch For

You should watch for these problem areas:

- Poor server performance.
- Security and access problems.
- User session problems.
- Printer problems.

Server performance problems can include sluggish response, lack of disk space, or other problems with the operation of the server itself. To correct performance problems of this nature, refer to the *3+Open Network System Guide*. To identify performance problems, you can review statistics of server activities and the *error log*, a record of errors that have occurred at the server. See the "Looking at Statistics" and "Looking at the Error Log" sections later in this chapter.

Users need to be able to get to resources, and you need to be able to control their access. Chapters 8, 9, and 10 describe the security features of LAN Manager and how to set them up. The *audit trail*, a record of activities at each server, is your best tool for monitoring security and access problems. See the "Looking at the Audit Trail" section later in this chapter. Also, see the "Preventing Access Conflicts" section later in this chapter for information on how to keep local operations (things you do at the keyboard of the server) from interfering with local area network operations.

You may find it necessary to interfere with a user's connections to the server, either for security reasons or because the user is having trouble. You can close a user's *session* (set of connections to a single server) or close individual connections. See the "Looking at Sessions" section later in this chapter.

Printer problems are a special class, due to the complexity of shared printer queues as compared to other shared resources. The Alerter service can inform you of many common printer problems. For more information on how to set up and maintain print queues, see Chapter 5: Managing Shared Printers.

Setting Up Automatic Alerts

LAN Manager sends automatic alert messages when certain problems occur. LAN Manager informs you under these conditions:

- Disk drive is full.
- Excessive errors have occurred.
- Excessive bad password attempts have occurred.
- Excessive bad access attempts have occurred.
- The audit trail file is full.
- The error log file is full.
- A printer is out of paper.
- A printer is malfunctioning.
- A print request has been deleted.
- A print request has completed.

In the first four cases, you can control the exact conditions under which LAN Manager sends an alert. See the *3+Open Network System Guide* for information about setting these LANMAN.INI entries:

- Diskalert= for "disk full" alerts.
- Erroralert= for "error log full" alerts.
- Netioalert= for "excessive I/O errors" alerts.
- Logonalert= for password attempts.
- Accessalert= for access attempts.
- Alertsched= for how often LAN Manager sends alerts of any kind.

A special LAN Manager service, the Alerter service, can forward alert messages to other users on the local area network. To make this work, you must do the following things:

- Start the Alerter service (see Chapter 2: Starting and Using LAN Manager Services).
- Set the alertnames= entry of the LANMAN.INI file (see the *3+Open Network System Guide*).

Looking at Statistics

LAN Manager maintains a record of statistics for server performance. To look at these statistics, follow these steps:

1. **Select the Status menu and choose the Server statistics menu item.**

The Server Statistics Information dialog box appears.

For a full description of each statistic in this dialog box, see the *3+Open MS OS/2 LAN Manager Administrator Reference*.

2. **To clear the current statistics for this server and restart statistical tallies, select the Clear statistics command button.**

Looking at the Error Log

The error log stores a record of the problems that have occurred during server operation. It is not unusual for some errors to occur—most are minor communication problems from which LAN Manager automatically recovers.

If LAN Manager fails to recover from a problem, the error log can provide you with information about the problem. You can then evaluate the cause of the problem, using information in the *3+Open Network System Guide*. You may want to contact your software vendor or distributor for further assistance. While you may be able to fix many of the hardware problems listed in the error log, you probably need to contact your software vendors for errors related to application programs.

Displaying the Error Log

To display the server's error log, follow these steps:

1. **Select the Status menu and choose the Error log menu item.**

The Network Error Log dialog box appears. This dialog box contains a list box showing all entries in the error log.

2. **Select the error log entry you are interested in.**
3. **Choose the Zoom command button.**

The Error Log Record dialog box appears. This dialog box shows:

- Service which encountered the error.
- Error identification number.
- Date and time at which the error occurred.
- Brief explanation of the error.
- Hexadecimal code related to the error.

If you are searching for the cause of a problem, and you cannot find any relevant errors in the error log, look at the audit trail as described in the next section. For example, a bad password attempt is recorded in the audit trail rather than the error log.

Clearing the Error Log

To clear the error log for this server, follow these steps:

1. **Select the Status menu and choose the Error log menu item.**
2. **In the Network Error Log dialog box, choose the Clear command button.**

Looking at the Audit Trail

The audit trail keeps track of who has used server resources and for what purpose. You can turn the recording of audit information on and off, for all resources or for specific resources.

When you start the server, auditing is turned on or off according to an entry in the LANMAN.INI file (or an option to the NET START SERVER command). See the *3+Open Network System Guide* for information on how to set the auditing= entry. If auditing is turned off when you start the server, you cannot record audit information.

Under user-level security, you can turn auditing on or off for specific resources. See Chapter 8: *Managing User-Level Security*, for information. Under share-level security, you decide whether to audit a resource as you share it. See Chapter 9: *Managing Share-Level Security*, for information.

The audit trail records only the opening of connections, not subsequent actions that involve the resource. For example, individual reads to a file are not recorded, only the initial open.

Because LAN Manager records audit information on every opening of a file, some applications may generate a large number of audit entries during normal operation. If you find that an application is generating too much audit information, you can take either of two actions:

- Turn off auditing for this resource.
- Turn on auditing only for a specific file in the application directory, leaving auditing off for the other files. You may have to experiment to find out which file or combination of files will give you the amount of audit information that you want.

Displaying the Audit Trail

To display the contents of the audit trail, follow these steps:

1. **Select the Status menu and choose the Audit trail menu item.**

The Network Audit Trail dialog box appears. This dialog box shows attempts (successful and unsuccessful) by users to access server resources. Specifically it shows:

- User name of the person who requested access.
- Type of access requested. There are several such types:

Table 12-1. Network Audit Trail Access Types

Type of access	Context
Server	For server actions
Session	For user sessions
Share	For starting or stopping sharing
Access	For access by users
Access Denied	For access violations
Other	

The dialog box also displays a brief description of what operation was performed or attempted and the date and time of the operation.

Clearing and Saving the Audit Trail

1. To clear the audit trail for this server and restart audit recording, choose the Clear command button.
2. To save the contents of the audit trail in a file, choose the Save command button.

If you chose the Save command button, LAN Manager asks you if you want to save the log to the AUDIT.SAV file.

3. Choose the OK command button.

Looking at Sessions

Each time a user communicates with a server, even if just to look at the list of available resources, the user establishes a session to the server. As an administrator, you can look at and control these sessions at each server.

The list of user sessions can tell you:

- Who is connected to the server.
- How long each user has been connected to the server.
- How long each connection has been idle.

From this information, you can gauge the workload on the server. You can also determine if a user has forgotten to disconnect from server resources and is now tying them up. Under some circumstances, you may decide to force a session closed to free up a resource or to assist a user who is unable to close a session.

Displaying Session Information

To display the session information for a server, follow these steps:

1. **Select the Status menu and choose the Session status menu item.**

The Sessions to This Server dialog box appears. The text box in this dialog box lists all the current sessions to the server.

2. **To see more specific information about a session, select a user name from the list box.**
3. **Choose the Zoom command button.**

The Session Information dialog box appears. The display fields in this dialog box list the user name, amount of time the session has been open, and amount of time the session has been idle. A list box shows information about each resource to which a user is connected. Specifically, it shows the following information for each connection:

- Sharename of the resource.
- Type of the resource.
- Number of locks on the resource.

Closing Sessions

If you find that a user has been connected to a resource for a long time without actually using the resource, you can disconnect the user from the server using the Disconnect command button at the bottom of the Sessions to This Server dialog box.

If this happens frequently, you might consider changing the amount of time that the server allows idle sessions to remain connected. See the *3+ Open Network System Guide* for information on how to change the maximum amount of idle time.

Closing a user's session does not prevent the user from reconnecting. In fact, with LAN Manager's automatic reconnection feature, a user can reestablish a session and never even know that it was closed. If you want to close a session and ensure that the user cannot reconnect, you must change the permissions on the resource or pause the user's account.

Forcing a Session Closed

To force a session closed on the server, follow these steps:

1. **Select the Status menu and choose the Session status menu item.**
2. **In the Sessions to This Server dialog box, select the user name belonging to the session you want to disconnect.**
3. **Choose the Disconnect command button.**
4. **Choose the OK command button in the message box that appears.**

After disconnecting a user, you should send that user a message mentioning that his or her session to the server was disconnected, and that users ought to disconnect their own sessions if their sessions will be idle for an extended period of time.

NOTE: A message is automatically sent if the Alerter service is running.

Closing Files

When a user uses a shared file, the file is said to be *open*. Sometimes a file will be left open—perhaps even with a lock on it—because of a program error or some other problem. Such files are said to be stuck open and are therefore temporarily unavailable to other users. Administrators, however, can close these files.

To close a file, follow these steps:

1. **Select the Status menu and choose the Opened files menu item.**

The Opened Files on This Server dialog box displays a list of all the server files currently in use.

2. **From the list box, select the name of the file you want to close. The number of locks on a file is listed in the # Locks column of the list box.**
3. **Choose the Close command button.**
4. **Choose the OK command button in the message box that appears.**

Preventing Access Conflicts

When you share a resource with the local area network, LAN Manager has many ways of preventing conflicts between simultaneous access attempts. For example, spooled printer queues keep a list of requests and service them one at a time; disk resources can allow simultaneous reads while allowing only one write at a time.

Since a server is also a computer running MS OS/2 and you can type MS OS/2 commands at any time at the server's keyboard, you could conceivably cause trouble by doing something to a resource while it was being shared. Commands that you type at the keyboard are not necessarily subject to the cautious controls of LAN Manager. For example, if someone were editing a shared LAN Manager file, and you wrote to that file, you could destroy their work. Similarly, if you sent a file to one of the server's printers, bypassing the LAN Manager queue structure, you could wreak havoc with whatever is printing.

The safest measure you can take to prevent these problems is to use your own server's resources as if they were on another server. Then everything that you do will be safeguarded by LAN Manager. You will also gain the advantage of convenient LAN Manager features such as printer queues and automatic alerts.

If you set up your server as described in this section, the extra safeguarding step will not noticeably affect your server's performance. You will set up a local loopback mechanism so that you can access your server's resources without actually tying up the local area network hardware in your computer.

Preventing Access Conflicts

To prevent access conflicts, run the NETSETUP program and install or modify your computer's LAN Manager configuration to use the LOOPBACK driver. The LOOPBACK driver is an option to select when Netsetup asks for "Network Protocol".

Appendix A: LAN Manager Utilities

This appendix describes the utilities included with LAN Manager. These utilities help with local area network operation, administration, and performance.

The 3+Open Installation and Setup program copies the following files as shown in Table A-1 to the Netprog subdirectory of the LAN Manager Lanman directory:

Table A-1. LAN Manager Utility Files

Program	Purpose
COMPACT.EXE	Frees up space on a disk and speeds up disk access by reorganizing file storage.
AT.EXE (servers only)	Runs a command on a server at a specified time.
MAKEACC.EXE (servers only)	Creates an access control database for user-level-security servers; creates the file LANMANACCOUNTS\NET.ACC.
GROWACC.EXE (servers only)	Changes the size of the access control database for user-level-security servers; changes the size of the file LANMANACCOUNTS\NET.ACC.

A

To run any of these utilities, type the name at the OS/2 prompt.

COMPACT.EXE is for netstations and servers; the others are for servers only. If you have a netstation, you need only read about the COMPACT utility.

COMPACT Utility

The COMPACT utility reorganizes disks by joining all fragmented files and subdirectories and eliminating deleted entries from directories, improving overall server disk performance.

For complete information on the COMPACT utility, refer to the *3+Open Network System Guide*. The utility is also described in the *3+Open MS OS/2 LAN Manager Administrator Reference*.

AT Utility

The AT utility schedules a program or command to run at a later date and time on a server. It also displays the list of programs and commands scheduled to be run.

For more information about the AT utility, see the *3+Open MS OS/2 LAN Manager Administrator Reference*.

MAKEACC Utility

The MAKEACC utility creates an access control database required by user-level security servers. The access control database keeps track of user accounts and individual access permissions for resources on the server. Without the access control database, a server cannot run user-level security. The access control database is contained in the file LANMAN\ACCOUNTS\NET.ACC.

When you install LAN Manager on a server, you can choose user-level, and 3+Open Installation and Setup program runs MAKEACC for you.

You need to run MAKEACC yourself under the following circumstances:

- The LAN Manager distribution disks are set for share-level security, and you want to install a user-level-security server.
- You have installed a share-level-security server and want to change to user-level security.
- The LANMAN\ACCOUNTS\NET.ACC file is missing or damaged.

To run MAKEACC, follow these steps:

1. **If the Server service is running, you must stop it before running MAKEACC.**

Type the NET STOP SERVER command at the OS/2 prompt.

2. **Type MAKEACC at the OS/2 prompt with the following options:**

```
makeacc #accounts directory
```

#accounts is the number of accounts you want the access control database to be able to handle. The maximum is 1,048. You can change this limit later with the GROWACC utility.

directory is the top directory of the LAN Manager software, usually C:\3open\Server\Lanman.

The more accounts the database can handle, the larger the NET.ACC file is, so keep an eye on available disk space.

MAKEACC asks you for passwords for the *guest* and *admin* accounts. Choose unique passwords for these accounts. The *guest* account allows access to this server for people without their own accounts, so a null (blank) password here allows anyone access to the server. The *admin* account is for administrators only; anyone with the password for this account can control the server. You can change these passwords later if you want.

GROWACC Utility

The GROWACC utility changes the size of the access control database used by user-level-security servers. This does not affect any of the current entries in the database.

When you install LAN Manager on a server running user-level security, or when you run the MAKEACC utility yourself, you specify a limit on the number of accounts that the access control database can hold. The GROWACC utility lets you change that limit.

You should run GROWACC under the following circumstances:

- The access control database is full of accounts, and you want to add more accounts.
- The LANMANACCOUNTS\NET.ACC file is bigger than you need it to be; you want to reduce the access control database to make the file smaller.

To run GROWACC, follow these steps:

1. **If the Server service is running, you must stop it before running GROWACC.**

Type the NET STOP SERVER command at the OS/2 prompt.

2. **Type GROWACC at the OS/2 prompt with the following options:**

```
growacc #accounts
```

#accounts is the number of accounts you want the access control database to be able to handle. The maximum is 1,048.

The more accounts the database can handle, the larger the NET.ACC file is, so keep an eye on available disk space.

Appendix B: LAN Manager Screen Console Version

The console version of the LAN Manager screen is a special feature of 3+Open LAN Manager that lets administrators set up special, unattended servers in printer rooms and other areas.

The idea behind the console version is to allow users to perform certain specific and relevant tasks on the unattended server, such as checking on the status of queues or sending messages, without giving them full administrative privilege or compromising the security of the local area network.

This appendix is divided into two parts:

- An introduction for administrators, which explains how to set up an unattended server.
- A manual for users, which explains how to use an unattended server.

NOTE: The appendix is designed so that the second part—the manual for users—can be separated and placed near an unattended server, where users can refer to it as needed.

Introduction for the Administrator

As a local area network administrator, one of your chief concerns is security. You carefully plan your local area network so that each individual can access the appropriate resources. You also plan where servers should be located and what resources they should share. Often, it makes sense to locate a server in a printer room or some other place where the server must be left unattended.

To provide ample security for unattended servers, LAN Manager provides a special, limited version of the LAN Manager screen. The console version of the LAN Manager screen lets you start LAN Manager services and a version of the LAN Manager screen that gives users limited access to dialog boxes that control queues and related local devices.

In this appendix, you will learn how to:

- Ensure proper security on an unattended server.
- Set up an unattended server for access by users.
- Log on to and off from the local area network from an unattended server.

NOTE: The 3+Open LAN Manager Netsetup service performs all of these steps if you select "dedicated" when prompted for the type of server.

Setting up an Unattended Server

To set up an unattended server on the local area network, you must do the following:

1. **Modify the server's CONFIG.SYS file to ensure proper security on the unattended server.**
2. **Start the appropriate LAN Manager services.**

3. Share the appropriate resources from the unattended server for access by users on the local area network.
4. Log on to the local area network and start the console version of the LAN Manager screen.

The following sections describe each of these steps in more detail.

Ensuring Proper Security

You need to make sure that users cannot modify an unattended server by accessing OS/2 or LAN Manager commands. There are two things you need to do:

1. Include the following line in your CONFIG.SYS file to prevent users from starting a DOS session:

```
protectonly=yes
```

2. Make sure that the PROTSHELL command line in your CONFIG.SYS file specifies the filename of the security-check program, ADMINCMD.EXE, for example,

```
protshell=c:\shell.exe c:\admincmd.exe /k  
c:\os2init.cmd
```

The ADMINCMD program allows users to start new OS/2 sessions only if they can supply the administrative password for the unattended server.

NOTE: The ADMINCMD.EXE file must be in the same directory as the CMD.EXE file.

B

Starting LAN Manager Services

You must start the Workstation and Server services on an unattended server just as you would on any other server:

```
net start workstation
net start server
```

You may also want to start other LAN Manager services. Table B-1, When to Start LAN Manager Services, describes when you would want to start them on an unattended server:

Table B-1. When to Start LAN Manager Services

Service	When you should use it
Workstation	You must start this service.
Server	You must start this service.
Messenger	Start this service if you want users to be able to send messages to or from the unattended server.
Alerter	Start this service to enable LAN Manager to send alert messages from the unattended server to you and/or other recipients on the local area network.
Netpopup	This service is not recommended for unattended servers. Start this service only if you want broadcast messages (that is, messages that are sent to all computers on the local area network) or other messages sent to this computer to appear on the screen as they are received.
Spooler	Start this service if you are sharing printer queues from the unattended server.
Netrun	Start this service to allow users to run programs on the unattended server from other computers, using the unattended server's memory.
Netlogon	Start this service if the unattended server is a logon server.

NOTE: To start services automatically when you start MS OS/2 on the unattended server, include the appropriate NET START commands in the server's STARTUP.CMD file or modify the srvservices= and wrkservices= entries in the LANMAN.INI file. For more information about the STARTUP.CMD file, see the 3+*Open MS OS/2 Setup Guide* For more information about modifying the LANMAN.INI file, see the 3+*Open Network System Guide*.

Sharing Resources

Before you start the console version of the LAN Manager screen, you should share the resources you want to make available from the unattended server.

The first time you start the unattended server, you must share resources the same way you would for any other server on the local area network.

Once you have defined a set of shared resources for the server, you can create a profile file of those shared resources. The next time you start the server, you need only type the following to share the same set of resources.

```
net load filename
```

filename is the name of the profile file.

For more information about creating profiles, see the 3+*Open MS OS/2 LAN Manager User Guide*.

Logging On and Starting the LAN Manager Screen

When you have started the Workstation and Server services, and have shared the server's resources, you are ready to start the console version of the LAN Manager screen. To do so, follow these steps:

1. **Type the following at the OS/2 prompt:**

```
net console
```

The console version of the LAN Manager screen appears. The Set Exit Password dialog box also appears.

2. **Type in a password for this NET CONSOLE session.**

This assures that the server console will remain connected until you or someone else types the exit password.

Logging Off from a Server Console

To end a NET CONSOLE session, follow these steps:

1. **Select the view menu and choose the Exit menu item.**

The Enter Password dialog box appears.

2. **Type the password you used when you started the NET CONSOLE session.**
3. **Choose the OK command button to exit the server console version of the LAN Manager screen.**

For more information about specific LAN Manager commands or dialog boxes, see the *3+Open MS OS/2 User Reference* and the *3+Open MS OS/2 LAN Manager Administrator Reference*.

Introduction for the User

NOTE: Keep these instructions near the unattended server as a manual for users.

These pages are intended as a kind of User's guide for the console version of the LAN Manager screen. The console version of the LAN Manager server is designed especially to run on unattended servers. Your local area network administrator has set up this unattended server to control one or more printers or communication devices that are shared with users of the local area network.

The console version of the LAN Manager screen looks essentially like the Workstation version that you see on your regular computer. There are differences, however, that will be covered in the following pages.

The console version of the LAN Manager screen lets you check on the status of:

- Printer and communication device queues.
- Individual print requests held in a queue.
- Queues directed to a specific local device.

In this document you will learn how to:

- View a list of shared local area network resources.
- Send network messages.
- List or change the status of a printer queue's contents.
- List the contents of a communication device queue.
- Check the status of a local device.

NOTE: If the console version of the LAN Manager screen is not started on the unattended server, contact your local area network administrator.

Using an Unattended Server

The console version of the LAN Manager screen includes four menus: View, Message, Config, and Status. The screen may look like the LAN Manager screen on your netstation, but the menu items for this version are different from those on your netstation.

When you hold down the [Alt] key and press the first letter of one of these menu names, a menu listing one or more menu items appears. Table B-2 lists the menu items associated with each menu name.

Table B-2. LAN Manager Screen Main Menu Items

Menu	Menu Item
View	Print queues Comm queues Exit
Message	Send
Config	Change password
Status	Device status

The following sections explain how to use these menu items to perform tasks on the unattended server.

Working with Spooled Printer Queues

The console version of the LAN Manager screen displays the status of each spooled printer queue shared by the unattended server.

You can use the view menu to look at the contents, status, and configuration of spooled printer queues at an unattended server. With the appropriate password, you can also change the status of a request in a spooled printer queue or the status of a queue.

Viewing Printer Queue Options

To see the options for a printer queue shared by this server, follow these steps:

1. **Select the view menu and choose the Print queues menu item.**

The Print Queues for (server) dialog box appears. This dialog box shows the name and status of each printer queue for that server. The identification number and size of each request in each queue are listed also.

2. **Select the name of the printer queue you are interested in and choose the Zoom command button.**

The Printing Options for Queue dialog box appears. The text boxes in this dialog box show the current options for this printer queue as shown in Table B-3.

Table B-3. Printer Options for Queue Text Boxes

Text box	Shows this information
Priority	The priority level, from 1 to 9 (1 is highest), for requests in this queue.
Printer device(s)	The device name(s) to which this queue directs print requests
Separator file	The filename of the separator file that prints between requests in this printer queue, if any.
Print after	The time at which the queue can start sending requests to the printer(s).
Print until	The time after which the queue can no longer send requests to the printer(s).
Print processor	The filename of the print processor used for requests in this queue, if any.
Parameters	Parameters for the print processor program.
Comment	A descriptive comment about the queue.

Changing the Status of a Printer Queue

To change the status of a spooled printer queue, you must know the administrative password for the unattended server. With this password you can hold, release, purge, or delete a printer queue.

To change the status of a printer queue, follow these steps:

1. **Select the view menu and choose the Print queues menu item.**

The Print Queues for (server) dialog box appears.

2. **Select the name of the printer queue you are interested in and choose one of the following command buttons shown in Table B-4.**

Table B-4. Printer Queue Command Buttons

Command button	Function
Hold	Suspends all requests in the printer queue except for the document that is currently printing.
Release	Reactivates a held queue.
Delete	Deletes the printer queue itself.
Purge	Removes all requests from the printer queue.

Changing the Status of a Print Request

You can use the LAN Manager screen to hold, release, restart, or delete a print request in a spooled printer queue shared by the unattended server.

To change the status of a print request, follow these steps:

1. **Select the view menu and choose the Print queues menu item.**

The Print queues for (server) dialog box appears.

2. **Select a print request from the list box and choose one of the following command buttons from Table B-5.**

Table B-5. Print Request Command Buttons

Command button	Function
Hold	Keeps the selected print request in the queue.
Release	Allows the selected request to be sent to the printer after it has been held.
Restart	Reprints an interrupted document from the beginning.
Delete	Removes the selected print request from the printer queue.

Getting More Information About a Print Request

The console version of the LAN Manager screen also lets you examine an individual print request, and to move it to either the beginning or the end of the queue. To view the print options for a print request, follow these steps:

1. **Select the view menu and choose the Print queues menu item.**

The Print queues for (server) dialog box appears.

2. **Select a print request from the list box and choose the Zoom command button.**

The Printing Options for Job dialog box appears. This dialog box contains several display fields that show information about the selected print request listed in Table B-6.

Table B-6. Print Request Display Fields

Display field	Shows this information
Job #	The job number for this request.
User name	The owner of this request.
Sharename	The sharename of the printer queue.
Size	The size in bytes of the document to be printed.
Time queued	The length of time in the queue.
Time printing	The length of time at the printer.
Printing on	The device name of for the printer to which the request is routed.
Status	Whether the job is Spooled, Held, Printing on (device), Held on (device), Out of paper on (device), Error on (device), Offline on (device), or Waiting.

The Printing Options for Job dialog box also contains a text box that lets you supply a comment for the request, and a set of option buttons that let you move the request to the top or the bottom of the queue. See the next section for information on how to use these option buttons.

Changing the Position of a Print Request

From the Printing Options for Job dialog box, you can change the position of a request in a printer queue by following these steps:

1. Select one of the following option buttons:

- Unchanged.
- First in queue.
- Last in queue.

NOTE: You must know the administrative password to move a request to the beginning of the queue. You must know your own user account password to move a request to the end of the queue.

2. Choose the OK command button.

Working with CommDevice Queues

You can use the console version of the LAN Manager screen to check the availability of communication device queues at an unattended server.

- Select the view menu and choose the Comm queues menu item.

The Comm Queues for (server) dialog box appears. This dialog box lists all communication device queues shared by this server. It also shows the number of requests ahead of each request, and the number of total request that are waiting for a device.

Sending Messages

You can use the Message menu from the console version of the LAN Manager screen to send a message to one or more people on the local area network. You can type a message of up to 512 characters if you are sending a message to an individual user, or to all users on this server. If you are sending a broadcast message to all local area network users, your message cannot be longer than 128 characters.

1. Select the Message menu and choose the Send menu item.

The Send a Message dialog box appears.

2. Identify the recipient in one of three ways:

- By typing the message alias of the person to whom you are sending the message. If you are sending the message to more than one person, separate the aliases by semicolons, commas, or spaces, as in the following example:

```
marys; johnoc
```

- By selecting the All users of this Server option button to send the message to all users who are currently connected to this server.
 - By selecting the All LAN users option button to send the message to all users on the local area network.
- 3. Type the text of the message in the Message text text box.**
- 4. Choose the OK command button to send the message.**

Changing Your Logon Password

You can use the Config menu from the console version of the LAN Manager screen to change your logon password for this server or for another server.

1. **Select the Config menu and choose the Change password menu item.**

The Change Logon Password at a Server dialog box appears. There are four text boxes in this dialog box. Complete these text boxes according to the instructions in Table B-7.

Table B-7. Change Server Logon Password Text Boxes

Text box	What to do
Servername	Specify the computer name of the server for which you want to change your password.
User name	Type in your user name.
Old password	Type in your old logon password. What you type will not appear on the screen.
New password	Type in your new logon password. What you type will not appear on the screen. Your new password must differ from your old password, and can be up to 14 characters long.

2. **Choose the OK command button.**

Working with Shared Device Status

You can use the Status menu from the console version of the LAN Manager screen to check the status of specific devices shared from the server. With the appropriate password, you can also change the status of a device, or of the requests directed to that device.

- **Select the Status menu and choose the Device status menu item.**

The Shared Device Status dialog box appears. This dialog box lists the device name of each device shared from this server. This list also shows the status, connection time, and the users who are currently using each device.

Changing the Status of a Device

To change the status of a specific printer or communication device, you must know the administrative password for the unattended server. With this password, you can pause or continue a printer, restart a print job, or make a communication device or printer unavailable on the local area network.

1. **Select the Status menu and choose the Device status menu item.**

The Shared Device Status dialog box appears.

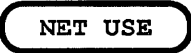
2. Select the device you are interested in and choose one of the command buttons shown in Table B-8.

Table B-8. Shared Device Status Command Buttons

Command button	Function
Pause	Pauses a printer. (Communication devices cannot be paused.) Pausing a printer also pauses the document that is currently printing.
Continue	Restarts a paused printer.
Restart	Reprints an interrupted document from the beginning. (This applies to printers only.)
Kill	Interrupts and removes the current request in a printer or communication device queue.

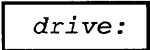
Appendix C: Bubble Diagrams

Bubble diagrams illustrate some commands in this manual.



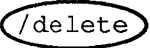
NET USE

A bold, rounded-corner rectangle surrounds the command name. The command name is in all capital letters and bold type.



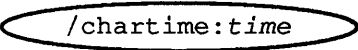
drive:

A rectangle surrounds variables. The variable is in lowercase italics. This shape says "substitute something here."



/delete

An oval surrounds arguments that you type as is.



/chartime:time

Sometimes an oval surrounds an argument that has a variable portion. You replace the italicized text with an appropriate value.



;

A circle surrounds punctuation.

C



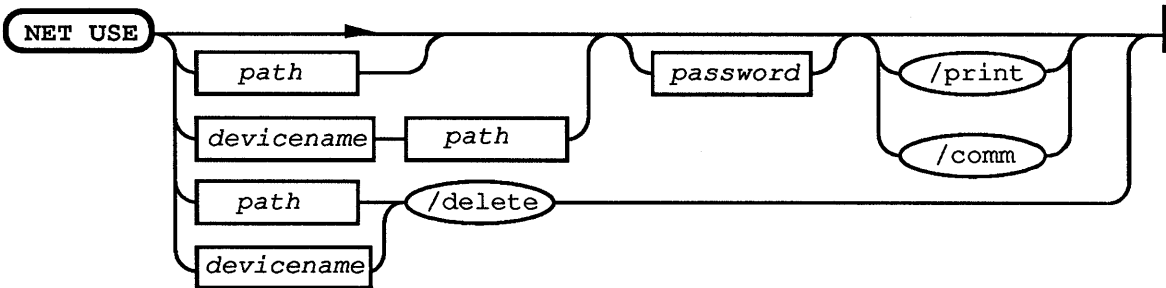
Arrows indicate direction.



A vertical line indicates a return.

Each element must be separated by a space.

To read a bubble diagram, start at the command name, in the bold, rounded-corner rectangle. You may follow any line through the command, as long as you follow the direction of the arrows. For example, when you come to the first decision point in the NET USE diagram shown below, you could enter either a drive or a printer name, which must then be followed by a path. After the path, you have the choice of entering a password (which is not required by the command, although it might be required by the shared resource). Then you must type a return.



Glossary

Account	The record of a user on a server. To use the shared resources of a server, a user must first have an account on a server. Administrators create accounts on servers. Accounts are assigned user names and passwords. See <i>Administrator</i> , <i>Password</i> , and <i>Username</i> .
Administrator	The individual ultimately responsible for the local area network. This person typically sets up the network, assigns passwords and privileges, and helps users with problems they may have while using the local area network.
Alias	A name used to receive messages. This is not the same as a user name. See <i>Username</i> .
Application	A program used for a particular kind of work, such as word processing or database management.

Batch file	An executable file which contains a group of commands that are performed whenever the batch file is run. MS OS/2 batch files always have the filename extension .CMD. A batch file called STARTUP.CMD runs whenever you start MS OS/2.
Broadcast messages	Messages sent to all users on the local area network.
Check box	A small, square box that appears in a dialog box. Check boxes are generally associated with multiple options that you can set. To set a check box option, move to it and press the [Space bar] or click the left mouse button.
Choose	To specify a menu item or command button. You choose commands or actions. See <i>Select</i> .
Click	To press and release a mouse button quickly. When you click a mouse button, you should hear and feel a faint click.
Command	A word or phrase that you type at the OS/2 prompt to carry out an action when you press the [Enter] key.
Command buttons	An option enclosed in angle brackets at the bottom of a dialog box (for example, Zoom). The most common command buttons for MS OS/2 LAN Manager are OK, Cancel, Zoom, Add, Done, and Delete. Selecting a Zoom command button always leads to another dialog box.
Computer	A server or a netstation. A computer is known to LAN Manager by its computer name and can have only one computer name. Only one user name at a time may be associated with a given computer name. A computer can have multiple aliases associated with it. See <i>Alias</i> , <i>Computername</i> , and <i>Username</i> .

Computername	The name of a server or a netstation on a local area network. In a network path, the computer name is preceded by two backslashes (for example, <i>\\print1\lanman</i>). Computer names cannot be duplicated on the local area network.
Communication device queue	A LAN Manager resource that routes user requests to nonspooled devices such as modems or printers connected to a server's serial or parallel ports.
Configuration	The way your netstation, server, or local area network is set up. This includes both hardware and software.
Connect	The act of associating a name of a local device with a shared resource. See <i>Devicename</i> and <i>Resource</i> .
Connection	The software link between a netstation and a shared resource. See <i>Session</i> .
Continue	To restart a LAN Manager service or function that was paused. See <i>Pause</i> .
[Control] key	Used in combination with other keys to produce control characters that affect a command LAN Manager or MS OS/2 is executing. For example, [Control]+[C] tells MS OS/2 to stop the current command.
Cursor	Usually a blinking line or small box on the computer screen that shows where the next character you type will appear. In the LAN Manager screen, you move the cursor to various areas to enter information or make selections.
Cursor keys	There are four arrow keys—Up, Down, Right and Left. These keys, marked with arrows, are located on the keyboard to the right of the alphabetic keys.

Device	A piece of hardware that is connected to a computer and performs a specific function. There are three types of devices—disks, spooled printers, and nonspooled communication devices. See <i>Device driver</i> .
Device driver	A file that lets your netstation recognize and use a device. LAN Manager provides these installable device drivers: <i>sy.sys</i> , <i>ub8drv.sys</i> , <i>netwksta.sys</i> , and <i>fastopen.sys</i> .
Devicename	The name given to LAN Manager to identify a specific printer, disk, or other device. A disk device is named by the letter of its drive (for example, A: or Z:). A spooled printer or nonspooled communication device connected to a parallel port is named by the parallel port name (for example, LPT1: or LPT2:). A device connected to a serial port is identified by the name of the port to which it is connected (for example, COM1: or COM2:).
Dialog box	A box that appears when a menu item is selected. Dialog boxes typically present you with a number of options from which to choose. Sometimes choosing an option from one dialog box causes another dialog box to appear.
Directory	A structure for organizing your files into convenient groups. A directory can contain files and subdirectories of files.
Disk device	A device that stores information. Disk devices are known to LAN Manager by their device names. See <i>Devicename</i> .
DOS	An acronym meaning Disk Operating System which refers to either MS-DOS or PC-DOS.

Drag	To hold the mouse button down while moving the mouse. For example, you drag a scroll box to see additional items in a list box.
[Enter] key	The key you usually press after typing data or text to move to a new line, or after you type an MS OS/2 command to tell MS OS/2 to execute the command.
Error messages	Messages that appear on the screen if LAN Manager detects a problem while processing a command.
File	A collection of related information. A file on a disk can be compared to a file folder in a file cabinet. For example, a file folder named FRIENDS might contain the names and addresses of your friends. A file on a disk could contain the same information, and could also be named FRIENDS. Programs are also stored in files.
Filename	A unique name for a file that can be from one to eight characters in length and may be followed by a filename extension consisting of a period (.) and one to three characters. See <i>Filename extension</i> .
Filename extension	The period (.) and one to three characters that may be appended to a filename. For example, MS OS/2 batch files always have the filename extension .CMD. See <i>Filename</i> .
Format	A way of preparing a disk so that it can hold information. Formatting a disk erases whatever information was previously on it. You can use the MS OS/2 FORMAT command to prepare disks for use by MS OS/2 and LAN Manager.
Group	Refers to a group of users. See <i>Groupname</i> .

Groupname	The name assigned by an administrator to a group of users. These groups of users usually have something in common, such as work assignments or positions in the company.
Hardware	The equipment that makes up a computer system, not to be confused with the programs, or software.
Highlight	Highlighting indicates that the object is selected and will be affected by your next action.
Home directory	The location of a user's primary account on a server that is working in user-level security.
LAN	See <i>Local area network</i> .
LAN group	The set of computers to which a given computer belongs; a netstation may belong to only one LAN group.
LAN Manager screen	The menu-oriented interface for LAN Manager. This term also refers to the primary screen of this interface.
List box	An area within a dialog box containing a list of items from which a user can select. See <i>Scroll</i> , <i>Scroll bar</i> , and <i>Scroll box</i> .
Local	Refers to the netstation at which a user is working. See <i>Network</i> .
Local area network	The grouping of all computers and other hardware physically attached to each other by cable.
Log	A file containing an historical list of information. With LAN Manager, the administrator can set up an error log, statistical log, message log, and audit trail.

Log off	To remove your user name and password from a netstation.
Log on	To set your user name and password at a netstation.
Memory	The active part of computer storage that is used when the computer runs a program or command.
Menu	A small box that appears when you select its name from the menu bar on the LAN Manager screen. A menu lists several items that you may choose from. Except for Exit, each menu item leads to a dialog box.
Menu bar	On the LAN Manager screen, the horizontal bar at the top of the screen that lists the names of available menus.
Menu item	One of the items listed on a menu in the LAN Manager screen. Users select menu items to indicate the type of task they want to perform and to reach dialog boxes. See <i>Dialog box</i> and <i>Menu</i> .
Message box	A box that displays messages received at your netstation.
Message forwarding	The ability to reroute messages that would be received by a user at one computer to another computer.
Message logging	Saving all messages received. When saved, messages can be stored in a file or sent to a printer.
Mouse	A pointing device that you move across a flat surface to move the pointer on your screen. A mouse has one or more buttons that you press to carry out various actions.
MS OS/2	Microsoft Operating System/2. This is the operating system on which LAN Manager runs. See <i>Operating system</i> .

Name	The label by which LAN Manager knows a user, a computer, etc., for a given purpose. For example, a computer (netstation or server) is known by its computername. See <i>Alias</i> , <i>Computername</i> , <i>Filename</i> , and <i>Username</i> .
Netstation	A computer used by a user to work with LAN Manager. See <i>Workstation</i> .
Network	Describes any server, netstation, or resource that is not located where the user is currently working. See <i>Local</i> .
Network path	A computer name of a server followed by the sharename of a shared resource (for example, <i>print1\style</i>).
OS/2 prompt	For example, [C:\]. See <i>Prompt</i> .
Operating system	A group of programs that translates your commands to the computer, helping you perform such tasks as creating files, running programs, and printing documents. LAN Manager runs on the Microsoft Operating System/2 (MS OS/2).
Option	Part of a command whose use is not required. In syntax, options are shown in brackets.
Option button	A button that lets you select among a group of options. Within a group of related option buttons, you can select only one option. To select an option button, use the arrow keys or click the option button with the mouse.

Password	With user-level security, a word owned by the user that is typed when the user logs on at a netstation. Administrators can change these passwords but not read them. With share-level security, a password is associated with a resource. The person who shared the resource can change its password. See <i>Share-level security</i> and <i>User-level security</i> .
Path	Includes the name of one or more directories, where each directory name is preceded by a backslash (\). For example, \custsvr\corp\acct is a path. See <i>Network path</i> and <i>Pathname</i> .
Pathname	Includes the name of one or more directories followed by a filename. Each directory name and filename within the pathname is preceded by a backslash (\). For example, the pathname \PROJECT\MONTHLY.rpt points to a file named MONTHLY.RPT in the project directory.
Pause	To suspend a LAN Manager service or function. The opposite of pause is continue. See <i>Continue</i> .
Permission	A setting on a shared resource that determines which users can use the resource and how. Permissions are controlled by administrators.
Point	To move the pointer on the screen until it rests on the object you want. See <i>Pointer</i> .
Pointer	A small graphic symbol that shows mouse users their location on the screen. The mouse pointer is usually shaped like an arrow but changes shape during certain tasks.
Pool	A group of similar devices to which a queue is directed.

Printer queue	See <i>Spooled printer queue</i> .
Privilege	A setting assigned by the administrator to a user or group account on a server that determines what type of access that account has to shared resources on that server. See <i>Group</i> and <i>User</i> .
Prompt	The symbol that tells you an operating system or program is ready to receive a command. You type commands at the prompt. The OS/2 prompt shows the current drive and directory enclosed in brackets (for example, [C:\LANMAN]).
Resource	Something that can be shared over a local area network. This includes, but is not limited to, printers, modems, image scanners, disk drives, and directories.
Root directory	On a computer, this is the top-level directory which is a subdirectory of no other directories. This is not the same as home directory. See <i>Home directory</i> .
Run	To start a program or command.
Scroll	To move data or text up and down, or left and right, to see parts of the file that cannot fit on the screen.
Scroll bar	The shaded bars that appear at the right side or bottom of some list boxes. You use scroll bars to move through a list box that contains more information than can be shown in one screen. The scroll bar at the right side of a list box scrolls vertically.

Scroll box	The small white box in the scroll bar. The scroll box reflects the position of the information within the window in relation to the total contents of the file. For example, if the scroll box is in the middle of the scroll bar, then the text or data in the window is in the middle of the file. If you have a mouse, you can scroll by dragging the scroll box in the scroll bar.
Select	To indicate the object that the next command or option you choose will affect. See <i>Highlight</i> .
Separator page	A sheet of paper which is automatically placed between documents printed via a spooled printer queue.
Server	A computer on a local area network that controls access to resources such as files, printers, and modems. Servers are run by administrators.
Service	Programs that represent the main functions of LAN Manager. The LAN Manager services include Workstation, Server, Messenger, Netpopup, Alerter, Netlogon, Netrun, and Spooler.
Session	A link between a netstation and a server. A session consists of one or more connections to shared resources. See <i>Connection</i> .
Setup program	A program included with LAN Manager that installs LAN Manager software on a netstation or server.
Share	The act of making a resource available for users to use. Only resources attached to a server can be shared. Administrators share resources.
Shared resource	A resource available to a user via the local area network. See <i>Resource</i> .

Share-level security	One of two security modes allowed by LAN Manager. With share-level security, the administrator can assign passwords and permissions to resources. See <i>Password, Permission</i> and <i>User-level security</i> .
Software	The programs, routines, or instructions written in a computer language that instruct the computer to perform one or more tasks. Some examples of software include operating systems, word-processing programs, and spreadsheet programs.
Spooled printer queue	A LAN Manager resource that routes requests to one or more spooled printers connected to a server's serial or parallel ports.
Text box	A box where you type information. A text box appears within a dialog box. What you type appears to the left of the prompt. The text box may be blank when the dialog box appears, or the text box may contain text if there is a default option. (Default options are options that LAN Manager automatically suggests.)
Title bar	The place at the top of the LAN Manager screen or a dialog box where titles appear.
User	Someone who uses the local area network.
User-level security	One of two types of security modes allowed by LAN Manager. With user-level security, the administrator can assign passwords to users and multiple permission settings to a shared resource. See <i>Password</i> and <i>Share-level security</i> .
Username	The name a user types when they log on to a netstation.

Wild-card character

A character that can be included in a filename in a command line to indicate any character or group of characters that might match that position in other filenames. With LAN Manager and MS OS/2, you can use an asterisk (*) or a question mark (?) as wild cards. The asterisk denotes all characters and the question mark denotes any character. For example, the filename MARKET.* refers to all files named MARKET with any filename extension. The filename ANNEX?.LST would be equated with filenames like ANNEX1.LST and ANNEX2.LST.

Workstation

A computer used by a user to work with LAN Manager. See Netstation.

Zoom

To access a dialog box that provides more detail about a Zoom field which is highlighted. To zoom an item, select the command button at the bottom of the dialog box.

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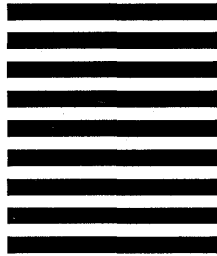
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