User's Guide

Communications Family

IBM

**Personal
Computer
Software**

IBM PC Network Program

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Computer
Software**

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About This Book

This book provides you with the information you need to use the IBM PC Network Program on your IBM Personal Computer.

This book has ten chapters and three appendixes:

* Chapter 1 introduces you to the IBM PC Network Program, describes the parts of the program and the various ways you can use it.

* Chapter 2 explains how to install the program on your computer.

* Chapter 3 explains how the menus work.

* Chapter 4 explains how to use the PC Network Program with menus.

* Chapter 5 describes tasks you may want to do with the PC Network Program and how to do them.

* Chapter 6 explains how to use the PC Network Program with commands.

* Chapter 7 describes the PC Network commands.

* Chapter 8 describes IBM DOS commands that are included with the PC Network Program.

* Chapter 9 describes the CONFIG.SYS file and how it is used with the PC Network Program.

* Chapter 10 provides guidelines for supervising the PC Network.

- Appendix A lists the error messages you may see while using the PC Network Program. The appendix also tells you how to recover from errors.

- Appendix B provides programming guidelines for application developers who are writing applications for the PC Network.

- Appendix C lists the programming interfaces to the PC Network Program.

How to Use This Book

If you are new to using a computer or new to using DOS, or if you prefer to use menus, you should use the following:

- Chapter 1

- Chapter 2

- Chapter 3

- Chapter 4

- Chapter 5

- Appendix A

If you are familiar with computers and DOS and prefer to use commands, you should use the following:

- Chapter 1

- Chapter 2

- Chapter 5

- Chapter 6

- Chapter 7

- Chapter 8

- Chapter 9

- Appendix A

If you are going to share your devices and directories
with other computers or if you are responsible for
supervising the use of the PC Network, you should also
read Chapter 10.

If you are developing applications for use with the PC
Network, you also should read Appendix B and
Appendix C.

Contents

Chapter 1. Introduction

Contents

Introduction

The IBM PC Network Program is a powerful new tool
for you to use with your personal computer because it
allows you to become part of a *local area network*.
Through the network, you can share and use valuable
resources among several people. You and other
members of the network can all share and use
equipment that previously was owned by only one
person. Equipment, such as letter quality printers and
fixed disks, now can be made available to everyone.
Everyone can also share important data files and
programs. With the network, you'll have the resources
you need, available quickly, without having to leave
your computer.

You can see that the network can make your work
easier *and* make your equipment more flexible.

Sharing Programs Over the Network

IBM Personal Computer program license agreements
permit the use of a program on a single machine. The
customer is responsible for ensuring that each user on
the network is appropriately licensed to use any
program shared over the network.

For non-IBM programs, you should consult your license
agreement or the vendor of the program to determine
what is required for you to share the program over the
network.

Before You Begin

You need DOS Version 3.10 to use the PC Network
Program. You should also check to be sure that your
computer has the following:

- Minimum of one 320KB or higher diskette drive

- Minimum of 128K bytes of memory

- IBM PC Network Adapter

IMPORTANT

Before you use the PC Network Program, you need to
know how to use DOS. If you don't know how to use
DOS, you should read the *DOS User's Guide* now.
Come back to this book when you're finished.

What Is a Network?

A network is a group of computers connected together through adapters and cables. Your telephone is connected to other telephones through the telephone lines.
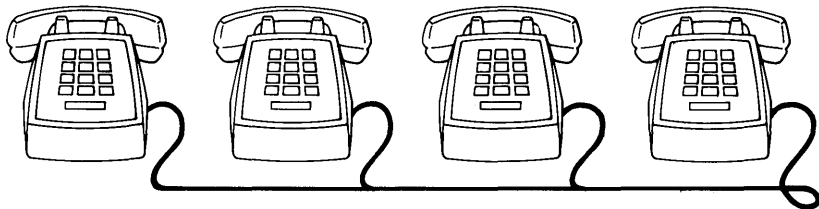
Similarly, your computer is connected to other computers through the network.
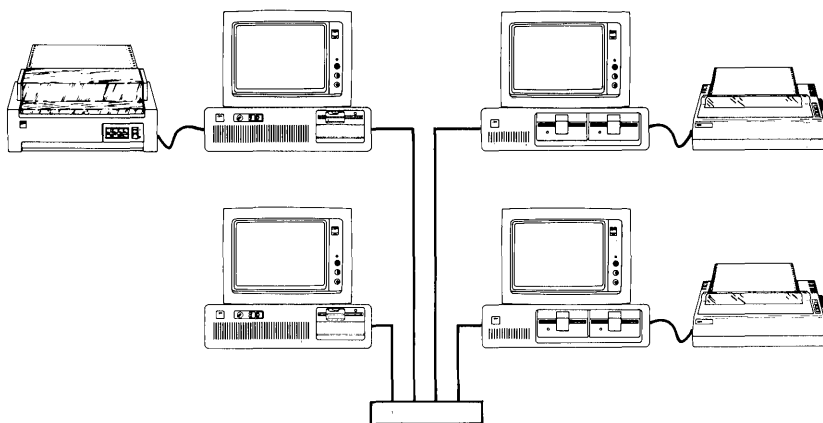
The IBM PC Network Program allows your computer to communicate with the other computers on the network.

The network makes your computer more powerful because:

*   You can make hardware, such as a letter-quality printer, available to everyone on the network.

    For example, suppose you're on the network and your computer has a letter-quality printer attached to it. Some of the other people on the network don't have letter-quality printers attached to their computers and need to use yours.

    With the network, you can *share* your printer with the network. Then, other people can *use* your printer, just like they would use their own printer. Everyone on the network, including you, can print files on the printer.
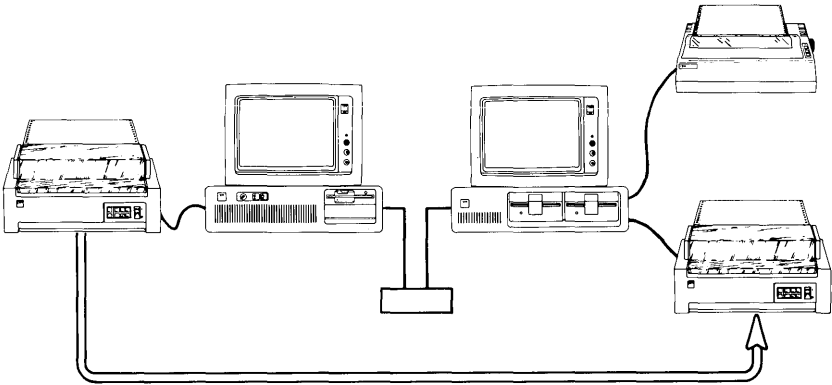
• You can make applications or programs, such as word processing or accounting applications, available to everyone.

For example, suppose your computer has a fixed disk. You've installed a lot of applications in a directory on your fixed disk. The other people on the network want to use your applications.

You can *share* your application directory with the network. Then, other people can *use* the applications in the directory. Of course, you can use your applications, too.
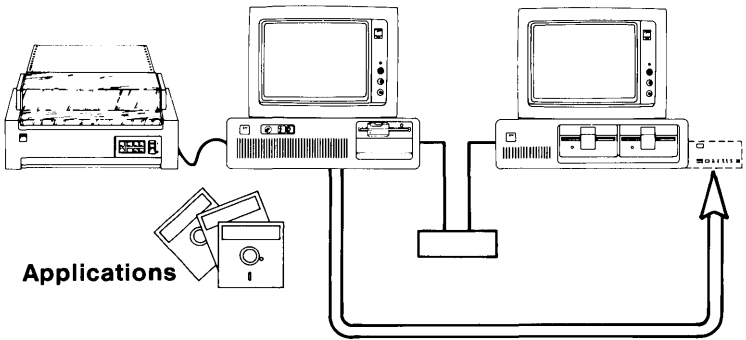
Applications

- You can make the most up-to-date data files for the applications available to everyone.

  For example, suppose you also have data files for your applications in a directory on your fixed disk. You and several other people on the network need to use the most up-to-date files for your applications.

  With the network, you can *share* the data file directory with the network. Then, other people can *use* the files in the directory.

Data
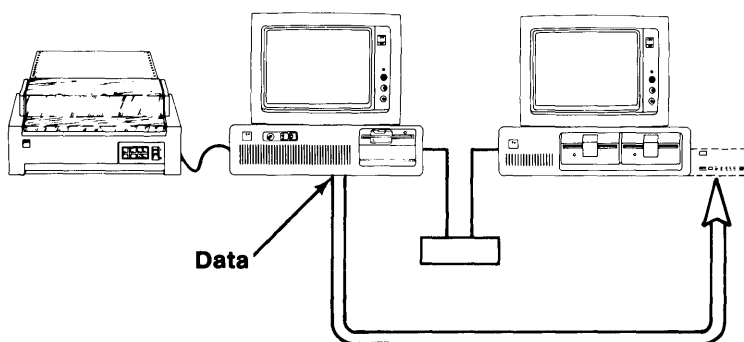
Menus and Commands

You can give instructions to the PC Network Program in two ways: *menus* or *commands*.

Menus

If you're new to using a computer, menus are easier. The menus lead you through all the steps you need to complete the task. The menus also tell you when you've completed the task or when you've made a mistake.

```
                ___  ___   ___      ___
                ___  ___   ___      ___
                ___  ___   ___      ___
                ___  ___   ___      ___
                ___  ___   ___      ___
                ___  ___   ___      ___
                ___  ___   ___      ___


                Personal  Computer

            ┌─────────────────────────────┐
            │   IBM PC  Network  Program   │
            │        Version  1.0          │
            └─────────────────────────────┘

       (C)  Copyright  IBM  Corporation  1984,  1985



 Press  ENTER  to  continue


       Enter  -  Continue        F1  -  Help
       Esc  -  Previous  menu    Ctrl-Home  -  Return  to  Main  Menu
```
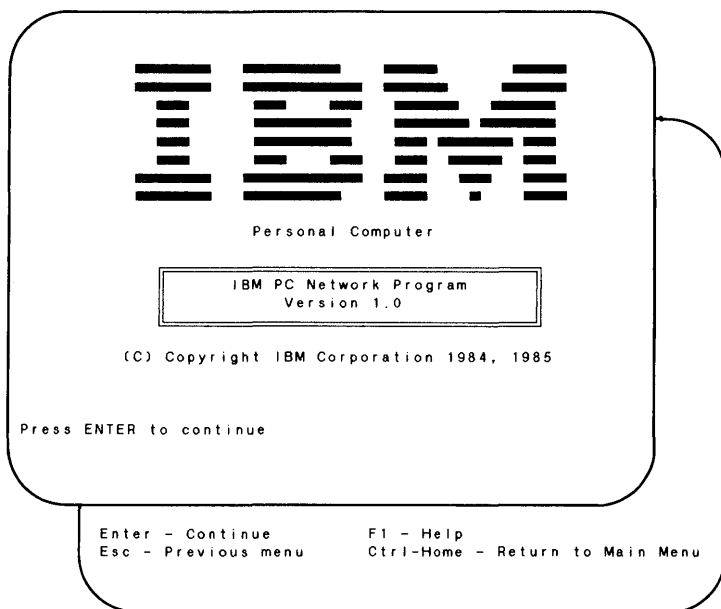
Commands

If you're familiar with DOS commands, you may prefer to use the PC Network Program commands. The

commands are similar to DOS commands. You should
try the menus also, just to see how they work.

DOS and the PC Network Program

The PC Network Program works with DOS. To use the
PC Network Program, you need to know about DOS.

DOS has preset names for each device; such as a disk
drive, a printer, or a display, attached to your computer.
These names are called *device names*. DOS uses the
device names to give instructions to each of your
devices.

For example, if you have a computer with a display,
two diskette drives, and a printer, DOS sees your
computer like this:

The first diskette
drive is A

CON:

A: B: LPT1:
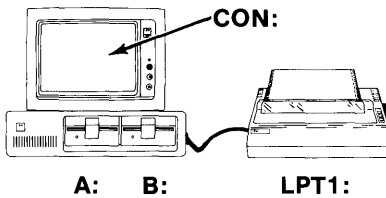
The second diskette
drive is B

The display is CON
(for console)

The printer is PRN
or LPT1 (for printer
or line printer 1)

If you have a computer with a display, one diskette drive, one fixed disk, and a printer, DOS sees your computer like this:
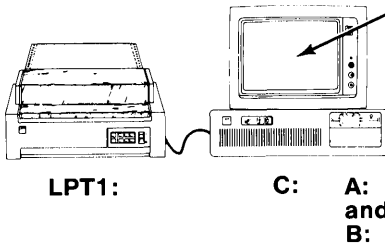
The first diskette drive is A *and* drive B

The first fixed disk drive is C

The display is CON (for console)

The first printer is PRN or LPT1 (for printer or line printer 1)

More information about device names is in the *DOS User's Guide*, Version 3.10, under "DOS Reserved Device Names."

Installing Applications to Share

If your computer has a fixed disk, you may want to share applications from your fixed disk with other computers on the network.

Before you start the PC Network Program, your applications must be correctly installed in a directory on your fixed disk. You must also install a *private directory* on your fixed disk for each person who uses your applications. A private directory is a directory that is assigned to a person for his own use. For example, network users can store their own personal files in their private directory. The PC Network Program Installation Aid stores special application program files in the private directories.

To help you install your application easily and help you create private directories for the people who use your applications, you can use the *PC Network Program Installation Aid.* The aid helps you install DOS 3.10, the PC Network Program, your IBM applications, and private directories on your fixed disk. You'll find that the aid is easy to use and has menus to prompt you through the installations. You'll learn how to use the aid in Chapter 2.

Starting the PC Network Program

To make your computer work on the network, you have to start DOS and then start the PC Network Program.

When you start the PC Network Program, you need to identify your computer from all of the other computers on network. To do this, you give your computer a *network name* when you start the PC Network Program. The network name identifies your computer on the network.

Let's look at an example to understand what a network name is. The examples in this book show only two computers on the network. Your network probably has

more computers on it. But even though your computer is on the network, it's still a *personal computer*. You can control how you use the network, and you can quit using the network any time.

Example

Suppose two computers are attached to a network. The computers belong to Dave and Ann. Dave has a fixed disk and a letter-quality printer attached to his computer.

LPT1:   **C: A:**   **A: B:**   **LPT1:**
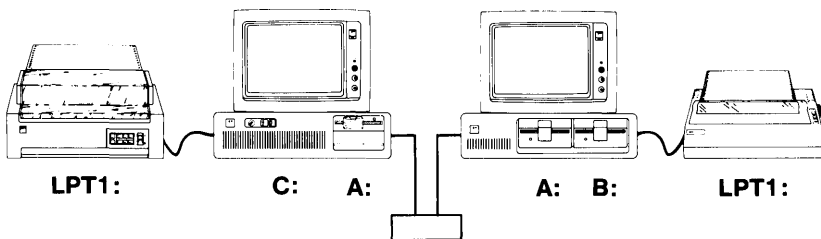
Dave and Ann want to use the PC Network Program to communicate through the network. First, Dave and Ann start DOS 3.10 on their computers. Then Dave and Ann start the PC Network Program with the network names DAVE and ANN.

DAVE   **ANN**

LPT1:   **C: A:**   **A: B:**   **LPT1:**
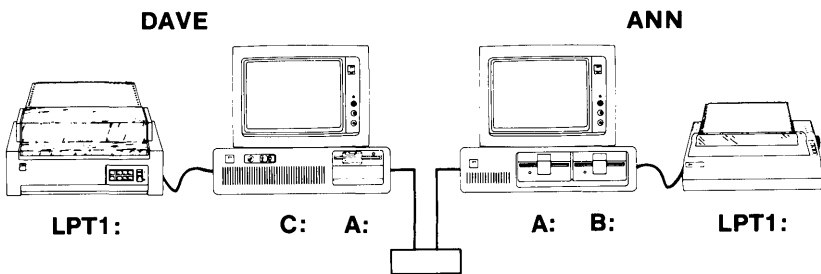
Setting Up Your Computer On the Network

After you start the PC Network Program, you have to *set up* your computer. Set up means that you specify devices you want to share or devices that you want to use.

Sharing Your Devices

If you install the PC Network Program on a fixed disk, you can share your disks, directories, and printers with other network computers.

To share devices, you give them a *network name* that the network can recognize. The network name for your computer and the network name for the device you want to share are combined to form a unique name on the network.

For example, ANN may call her applications directory APPS, and DAVE may also call his applications directory APPS. But, when the two network names are put together, Ann's directory is \\ANN\APPS and Dave's is \\DAVE\APPS.

Example

In our example, Dave used the installation aid to install some applications on his fixed disk. The applications are in a directory named APPS. Dave also installed a private directory for Ann and named it ANN.

Now, Dave has started the network and is ready to share his APPS directory and the ANN directory. He also wants to share his letter quality printer, LPT1.

Dave shares the APPS directory as network name APPS, the ANN directory as network name ANN, and the printer as network name LTRPRINT. The directories and the printer are available for Ann to use.

DAVE   **ANN**

LPT1:
LTRPRINT

C: A:
C:\APPS
C:\ANN

A: B:
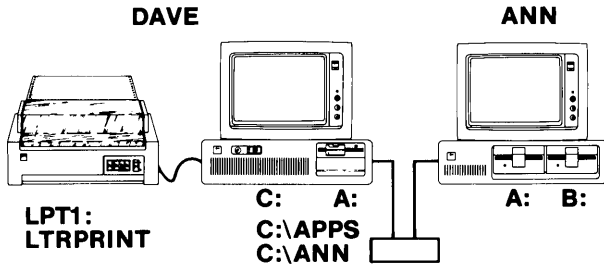
Using Network Devices

Everyone on the network can set up their computers to use devices that are shared with the network. To use the shared devices, you have to know the network name of the computer that shared the device and the network name of the device you want to use. Then you have to give the network device a DOS device name. The DOS device name lets DOS on your computer recognize the device as if it were really attached to your computer.

For example, if you use a network device as your drive N, DOS on your computer now recognizes N as a drive on your computer. If you use a network device as your drive B and you have a diskette drive B attached to your computer, DOS on your computer now recognizes the network device as drive B. Your diskette drive B is unavailable while you are using the network device as your drive B.

Example

Suppose Ann wants to use the devices that DAVE has shared. Ann needs to know the network name for Dave's computer (DAVE). She also needs to know the network names for the directories and the printer that Dave has shared (APPS, ANN, and LTRPRINT). Then Ann has to give each network device a DOS device name so that DOS on her computer recognizes the devices.

Ann can use the APPS directory as her drive N. She uses ANN (her private directory) as her drive K, and she uses LTRPRINT as her second printer, LPT2. Now Ann's computer has a drive N, a drive K, and a letter quality printer, LPT2.

Dave can still use his directories and his printer.

DAVE   ANN

                                              LPT1:

LPT1:   C: A: A: B: K: N:
LTRPRINT
                   APPS
                   ANN   LPT2:
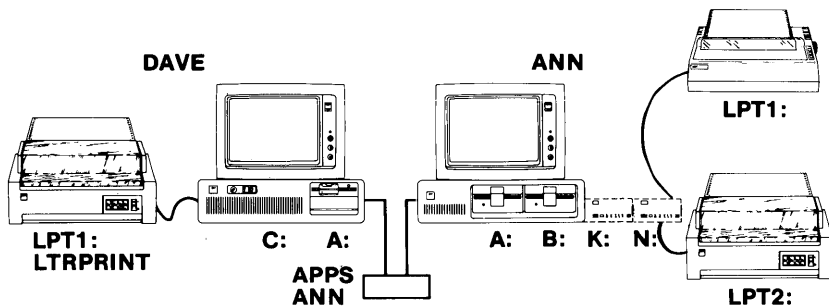
Now Dave and Ann have set up their computers on the network. Their computers are named DAVE and ANN. Dave is sharing the APPS directory as network name APPS, the ANN directory as network name ANN, and his LPT1 as network name LTRPRINT. Ann is using APPS as if it were her drive N, ANN as if it were her drive K, and LTRPRINT as if it were her LPT2.
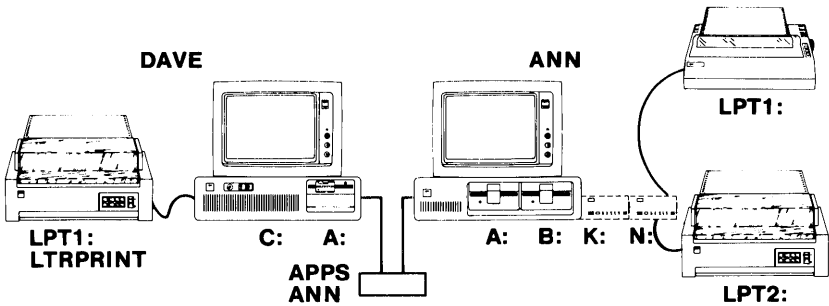
Saving Your Network Setup

After you've started the PC Network Program and you've set up your computer on the network, you may want to *save* your PC Network Program setup. Saving your setup means that you keep a copy of all the tasks you did to set up your computer on the network in a file named AUTOEXEC.BAT. Each time you start DOS, your computer finds the file. You'll see a prompt asking you if you want to start the network. If you choose to start the network, the tasks you saved are executed and your computer is automatically set up on the network.

> **Note:** If you already have an AUTOEXEC.BAT file, your file is renamed to AUTOUSER.BAT. AUTOUSER.BAT is executed after AUTOEXEC.BAT.

Example

Now that Dave and Ann have started the PC Network Program and set up their computers on the network, they can save their setups. Whenever they start DOS on their computers, they can automatically start the network and set up their computers. Of course, since Dave is sharing devices with Ann, Dave needs to start his computer first so that his devices are ready for Ann to use.

If you're sharing your devices with other network computers, you need to properly maintain your devices. You should:

• Be sure that you start DOS and the PC Network Program, then set up your computer on the network *before* the other computers start.

• Be sure that you don't restart DOS (Ctrl-Alt-Del) or switch off your computer while others are using your devices. When you restart DOS, you stop the PC Network Program on your computer and your devices are no longer available for others to use.

   If you're planning to restart DOS or switch off your computer, send a message to everyone and give them a chance to finish their work with your devices.

• Be sure that your printer is online and ready for use.

Using Your Applications with the Network

After you've set up your computer to use the network, you're ready to do your normal work. Even though you can't see it, the PC Network Program is still working on your computer, behind your application and DOS. If you're sharing devices with the network, the devices are still shared. If you're using devices from the network, the devices are still available for you to use, right from your application.

Using Applications that You've Shared

If you've shared your applications with the network, the applications are still available for you to use. If the applications were installed with the installation aid, you can start the application from any disk or directory on your computer. And, if you can't remember how to start the application, you can enter HELP at the DOS prompt to see a list of your applications and how to start them.

Using Applications from Another Computer

If you're using applications from another computer, you can use the applications as you normally do.

If the applications were installed with the installation aid, you need to do the following steps *before* you use the applications:

1. Change your current drive to the drive that contains the applications.

2. Enter NETPATH at the DOS prompt. NETPATH lets you access the applications from your computer.

3. Change your current drive to any drive *except* the drive that contains the applications. (You'll probably want to make the drive that contains the data files for your application your current drive.)

4. Now you can start your application. If you can't remember how to start an application, you can enter HELP at the DOS prompt to see a list of the applications and how to start them.

Example

In our example, Dave and Ann are ready to use their applications. First, Dave and Ann go back to the DOS prompt.

Dave wants to do some work with a spread-sheet application that he's installed with the installation aid. So, Dave goes to the DOS prompt and enters HELP to find out how to start the application. Then Dave starts the application.
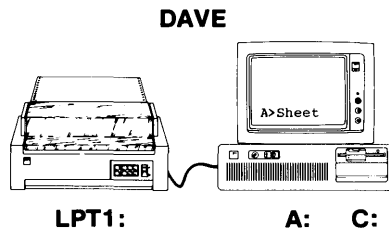
DAVE

Ann needs to use a word processing program that's in her drive N on the network. So, Ann makes N her current drive. Next, Ann enters NETPATH.

Ann wants to put her data files in her private directory that resides on Dave's computer, so she makes K her current drive. Then Ann starts the application.
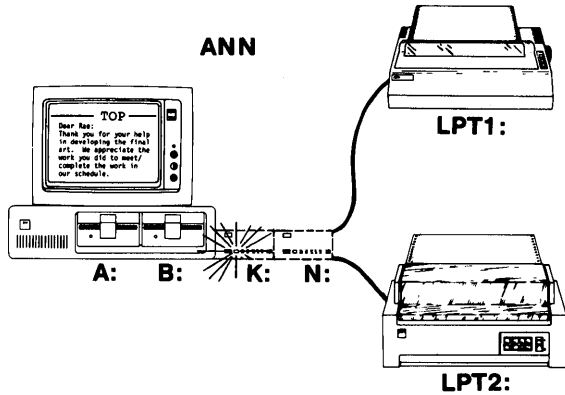
Ann can also use her word processing program to print files on LPT2, which is the printer on Dave's computer. Dave can print files on the printer, too.
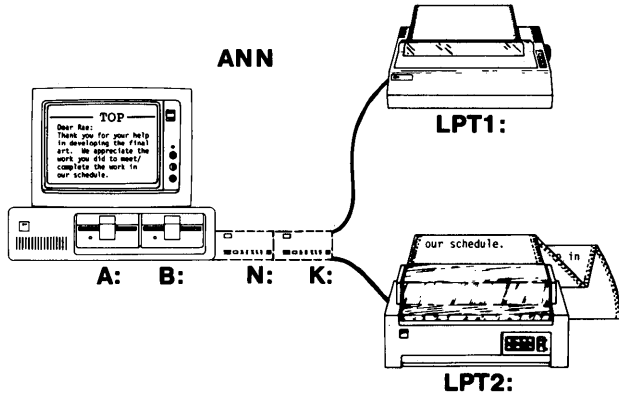
Using the Network Request Keys to Interrupt Your Application

You may need to do something on the network after you've already started an application. For example, you may be in your application and remember that you need to use a network directory that contains data files for the applications.

If you chose to use the *Network Request keys* (Ctrl-Alt-Break keys) when you started the network, you can quickly go from your application to the PC Network Program, then back to your application.

If you chose not to use the network request keys when you started your application, you can't go from your application to the PC Network Program. You have to end your application and go back to the DOS prompt, go to the PC Network Program, and then start your application again.

Example

Suppose Ann chose to use the network request keys when she started the PC Network Program, and she is in her word processing application. She forgot to use Dave's printer. She needs the printer to print her documents.

Ann presses Ctrl-Alt-Break (the network request keys) to get to the PC Network Program. Ann uses LTRPRINT from DAVE as her LPT2.

Then Ann presses Ctrl-Break and Enter to go back to her word processing application.

Ctrl-Alt-Break

Main Menu

Ctrl-Break then Enter
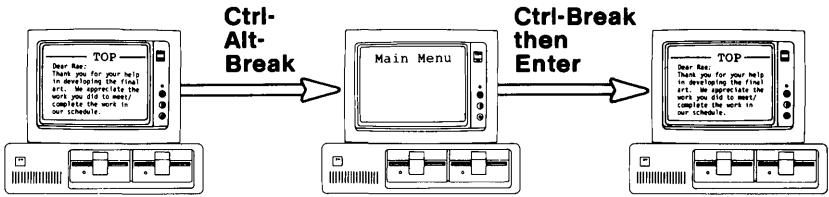
If Ann wasn't using the network request keys, she would have to quit using her application and go back to the DOS prompt. Then Ann would have to go to the PC Network Program and use Dave's printer. To get back to her application, Ann has to start the application again.

Go to DOS

A>net

Go to Network

Main Menu

Start Application

A>edit

Go to DOS
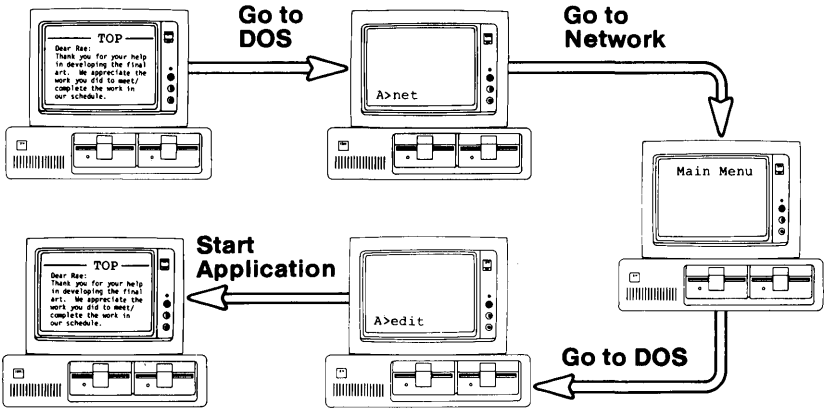
Sending and Receiving Messages on the Network

You can use the network to send and receive messages.

Sending Messages

All you have to do to send a message is tell the network the network name of the computer that you want to send the message to, and type the message. The network finds the network name, if it's on the network, and delivers your message.

You can also send a message to every computer on the network all at the same time. A message to every computer is called a *broadcast message*. Instead of using a network name, you use an asterisk (*).

Example

In our example, Dave wants to send Ann a message and tell her that his directory is ready for her to use. So, he sends a message to network name ANN saying "APPS is on the network."

DAVE
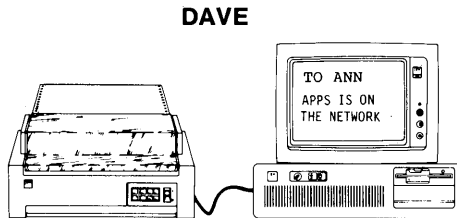
Receiving Messages

You can also receive messages at your computer. The way you receive messages at your computer depends on how you started the PC Network Program:

- If you chose *not to use* the network request keys, you'll receive messages on your screen, on top of whatever is on your screen. You will hear a *beep* when you receive the message. You can *refresh* your screen to erase the message. Refresh means to redisplay what's on your screen, or change to a new screen. Some applications do not provide a way to redisplay what's on your screen.

  If you chose not to use the network request keys, you should save or log your messages in a file. If you save your messages, you won't be interrupted and you can choose to look at them when you're ready.

- If you chose *to use* the Network Request keys, you'll hear a *beep* and be notified when you receive a message. You can then press Ctrl-Alt-Break (the network request keys) to see the message, or you can wait until later to see the message. Your screen is saved for you so that you don't have to refresh your screen. If you don't want to be interrupted at all, you can save your messages in a file and look at them later.

Example

Suppose Ann is on the network and is using a word processing program. Ann is receiving messages on her screen and is using the network request keys.

Ann receives the message from Dave, hears a beep, and is notified that she's received a message.

TO:— Message —

Dear Rae:
Thank you for your help
in developing the final
art. We appreciate the
work you did to meet/
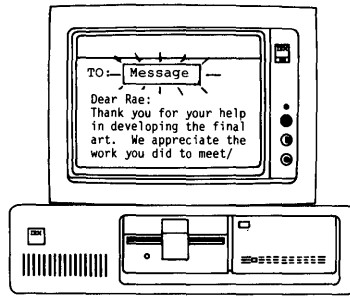
Ann wants to see the message, she presses Ctrl-Alt-Break (the network request keys) and the message is displayed.

Ctrl-Alt-Break

— TOP —

Dear Rae:
Thank you for your help
in developing the final
art. We appreciate the
work you did to meet/
complete the work in
our schedule.

Esc

Message

Dear Rae:
Thank you for your help
in developing the final
art. We appreciate the
work you did to meet/
complete the work in

— TOP —

Dear Rae:
Thank you for your help
in developing the final
art. We appreciate the
work you did to meet/
complete the work in
our schedule.

Ann reads the message. Then Ann goes back to her application. She's back to her work, without losing any of her text.

Suppose Ann is receiving messages on her screen and is not using the Network Request keys. When she receives Dave's message, she sees the message overlaying (on top of) the text that's on her screen.
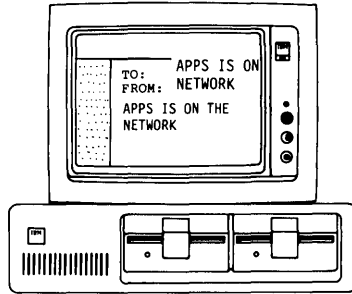
Ann reads the message, then refreshes the screen. The screen can be refreshed, in some applications, by pressing the PgDn key to scroll forward.

DOS Functions and the Network

Using The PrtSc Key

Printing a Screen (Shift-PrtSc)

If you are sharing your first printer (LPT1) with the network or if you are using a network printer as your LPT1, you cannot use Shift-PrtSc to print a screen. If you press Shift-PrtSc, you'll hear a "beep" telling you that you can't print the screen.

Stop sharing or using the network printer before doing a Shift-PrtSc. You can also pause print redirection. See Pause and Continue tasks in Chapter 5, or the NET PAUSE command in Chapter 7.

Printing What You Type (Ctrl-PrtSc)

If you are sharing your printer (LPT1) with the network or if you are using a network printer as your LPT1, you cannot use Ctrl-PrtSc to echo what you type to the printer. If you press Ctrl-PrtSc, you'll hear a "beep" telling you that you can't print what you type.

Stop sharing or using the network printer before doing a Ctrl-PrtSc. You can also pause print redirection. See Pause and Continue tasks in Chapter 5, or the NET PAUSE command in Chapter 7.

Commands

You can use most of the DOS commands on network disks, directories, and printers.

For example, you can use the DIR command to list the contents of a network disk or directory:

```
dir k:
```

You can use the COPY command to copy files from a network disk or directory. You can copy the files to your own disk or to a network disk or directory:

```
copy b:letter k:
```

You *cannot use* use the following DOS commands with devices that you're sharing or network devices that you're using. If you try to use these commands with a network device, you'll receive an error message telling you that you can't use the command. (You can still use the commands with the your disks, directories, and printers that are not on the network.)

You can't use:

- CHKDSK (Check Disk)
- DISKCOMP (Disk Compare)

     Note: You can use the COMP (Compare) command to compare files instead.

- DISKCOPY (Disk Copy)

     Note: You can use the COPY command to copy files, instead.

- FDISK
- FORMAT
- JOIN

- LABEL

     Note: You cannot change the volume ID of a
     network device you are using. You can change
     it on a device you are sharing.

- PRINT

     Note: Use the PRINT command if you are
     using network devices. You cannot use the
     PRINT command if you are sharing devices
     with the network. Use the NET PRINT
     command if you are sharing devices.

- RECOVER
- SUBST (Substitute)
- SYS (System)
- VERIFY

     Note: The VERIFY command won't work for
     files on a network device. You can use the
     VERIFY command for files on a device
     attached to your computer.

Deciding How You Want to Use the PC Network Program

Now that you know a little about how the PC Network Program works, you can decide how you want to use the program. The way that you use the PC Network Program depends on:

• Whether your computer has a fixed disk

• How much memory your computer has

• The tasks you want to do

You can use the following table to decide how you're going to use the PC Network Program:

The memory sizes for each configuration in the following table are the minimum requirements for DOS and the PC Network Program, of which 64K is available for applications and DOS external commands. If your application requires more than 64K, add the memory requirement to the additional memory needed for your application to arrive at the minimum total memory requirement for your personal computer.

More memory may also be needed if some of the PC Network Program defaults are changed.

> **Note:** See your application manual for information about the memory requirements of your applications and programs.

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If your computer has:	You can use the PC Network Program to:
A minimum of: One fixed disk One 320KB or larger diskette drive 320K bytes of memory (for DOS and the PC Network Program)	Send messages Use network disks, directories, and printers Receive messages Save (log) messages Use the network request keys (Ctrl-Alt-Break) Receive messages for other names Transfer messages to other computers Share your disks, directories, and printers
A minimum of: One 320KB or larger diskette drive 256K bytes of memory (for DOS and the PC Network Program)	Send messages Use network disks, directories, and printers Receive messages Save (log) messages Use the network request keys (Ctrl-Alt-Break) Receive messages for other names Transfer messages to other computers

If your computer has:	You can use the PC Network Program to:
A minimum of:	Send messages
One 320KB or larger diskette drive	Use network disks, directories, and printers
192K bytes of memory (for DOS and the PC Network Program)	Receive messages Save (log) messages
A minimum of:	Send messages
One 320KB or larger diskette drive	Use network disks, directories, and printers
128K bytes of memory (for DOS and the PC Network Program)	

Summary

Let's review what we've learned so far.

• You have to start the PC Network Program first.

• When you start the program, you give your computer a network name.

• If you've installed the PC Network Program on a fixed disk, you can share your devices with other computers. (Of course, you can also use other computers' devices, too.)

• You cannot share devices, if your computer doesn't have a fixed disk. However, you can use devices from other computers.

- You can send and receive messages.

- You can use your applications just like you normally do. The PC Network Program is still running on your computer, even though you can't see it.

- The network request keys are a quick way for you to interrupt your application and do PC Network Program tasks without having to end your application.

- Using network request keys allows you to be notified when you receive a message and choose to look at the message or wait till later to see the message.

- You can use all of the DOS Commands *except* CHKDSK, DISKCOMP, DISKCOPY, FDISK, FORMAT, JOIN, LABEL, PRINT, RECOVER, SUBST, SYS, and VERIFY with network devices.

You Are Ready to Start

You're ready to get started with the PC Network Program. First, you need to install the program. Go to "Chapter 2. Installing Your Programs" on page 2-1 to get started.

If you've already installed the PC Network Program or if someone installed it for you, you can skip Chapter 2. Go to "Chapter 3. How the Menus Work" on page 3-1 instead.

Chapter 2. Installing Your Programs

Contents

Introduction

Now that you've learned a little about what a network is and how you can use it, you're ready to install the PC Network Program for use on your computer.

This chapter tells you how to:

- Check to be sure your computer is connected to the network

- Make a backup copy of your PC Network Program diskette

- Install the PC Network Program

- Install applications

Making Sure Your Computer is Connected to the PC Network

Check your computer to see if you have an IBM Local Area Network Adapter in your computer. The adapter should have a network cable attached to it.

If your adapter is installed and the cable is connected, continue with "Making a Copy of Your PC Network Program Diskette."

If you don't have the adapter or if the adapter isn't connected to a cable, you must install the PC Network adapter and attach the cable. See the setup instructions that you received with the adapter for more information.

Making a Copy of Your PC Network Program Diskette

The PC Network Program diskette that you received with your manual is on a 320KB (double-sided) diskette. You have to use a computer that has at least one 320KB (double-sided) or higher drive to copy the diskette.

You should make a copy of your PC Network Program diskette before you start using the program.

You should use the copy to do your work and keep the original diskette in a safe place.

Use the DOS DISKCOPY command to make the copy. If you are not familiar with the DOS DISKCOPY procedure, follow the instructions in Chapter 5, "Copying Your Diskettes" of the *DOS User's Guide* (Version 3.10) to make a copy of your PC Network program diskette.

Note: If your computer has a 2HC (high-capacity) drive *and* a 320KB (double-sided) drive, be sure that you have read "Drive Considerations" in the *DOS User's Guide* before you install your PC Network Program.

Installing the PC Network Program

After you've made a copy of the PC Network Program, you're ready to install the program for use on your computer.

If your computer only has diskette drives, go to "Installing for Diskette Drives" for instructions.

If your computer has a fixed disk, go to "Installing for a Fixed Disk" on page 2-14 for instructions.

Installing for Diskette Drives

The way that you install the PC Network Program depends on the kind of diskette drive that you plan to use the program from.

You may want to use the program from one of the following kinds of diskette drives:

- A 320KB (double-sided) diskette drive

- A 2HC (high-capacity) diskette drive

You also need to know how much memory your computer has.

> **Note:** You can use the Diagnostics diskette that came with your *Guide to Operations* manual to determine the kinds of drives and the amount of memory your computer has.

Decide which kind of drive you plan to use the PC Network Program from and make sure you know how much memory your computer has. Then, do *one* of the following:

- If you want to install the program for a 320KB drive, go to "Installing for a 320KB Drive" to continue.

- If you want to install the program for a 2HC drive, go to "Installing for 2HC Drives" on page 2-10 to continue.

    Note: You cannot install the PC Network Program for use on a 160KB (single-sided) drive.

Installing for a 320KB Drive

Follow these instructions to install the PC Network Program for a 320KB drive:

1. Check to be sure that:

    a. You are using a computer with at least one 320KB drive or higher to install the PC Network Program.

    b. You have your copy of the PC Network Program diskette and your copy of DOS 3.10 ready to use.

    c. You have one blank diskette.

    d. Your DOS 3.10 diskette is in drive A.

    e. You have started DOS 3.10 and are at the DOS prompt and your current drive is A.

2. Follow these steps to format the blank diskette:

  a. Enter the following command:

    ```
    format b: /s
    ```

    You'll see a prompt asking you to insert the diskette for drive **B**.

  b. Do *one* of the following:

    • If your computer only has one drive, remove the DOS diskette and insert the blank diskette in the drive. Remember that your one drive is your drive **A** *and* your drive **B**.
    • If your computer has two drives, insert the blank diskette in drive **B** (the second drive).

  c. Follow the instructions on your screen. You'll see a message when **FORMAT** completes.

  d. When **FORMAT** completes, remove the formatted diskette.

  e. Write the following name on the formatted diskette's label (use a felt-tip pen):

    ```
    DOS/PC Network (320KB)
    ```

    Your diskette is formatted and contains the system. You should be at the DOS prompt.

3. If you have a diskette in drive A, remove the diskette.

4. Insert your copy of the PC Network Program diskette in drive A.

5. Do *one* of the following:

    •   If your computer only has one drive, go to step 6.
    •   If your computer has two drives, insert the formatted diskette that you labeled **DOS/PC Network (320KB)**, in drive B.

6. Enter the following command:

    `install b: ds`

    IMPORTANT: If your computer only has one drive, you'll be prompted to switch your diskettes. When you're prompted to insert the diskette for drive B, insert the diskette that you labeled **DOS/PC Network (320KB)**. When you're prompted to insert the diskette for drive A, insert your copy of the PC Network Program diskette. Remember that your one drive is your drive A *and* your drive B.

7. Follow the instructions on the screen.

    The PC Network Program files for your configuration are installed on the diskette.

    The DOS prompt is displayed when the PC Network Programs are installed. Your installed PC Network diskette contains all the information that you need to start DOS and the PC Network Program.

    NOTES: When you installed the PC Network Program, you also installed a CONFIG.SYS file. If you already had a CONFIG.SYS file, the PC Network Program alters your file to include additional commands needed by the PC Network. The CONFIG.SYS file contains special commands that help tailor the way that you want to use your computer's memory with DOS.

If you normally use a CONFIG.SYS file, you may want to edit the CONFIG.SYS file that the PC Network Program installed, so that the new file includes the additional information from the CONFIG.SYS file that you normally use.

For example, you may need the files created or used by the DOS SELECT command (CONFIG.SYS, AUTOEXEC.BAT, and KEYB*xx*.COM files). You would need to edit the new CONFIG.SYS file to include the COUNTRY=*xxx* command. You would also need to copy the AUTOEXEC.BAT file created by the DOS SELECT command and needed KEYB*xx*.COM files.

You can change the CONFIG.SYS file by editing the file with the text editor you normally use (such as EDLIN). The CONFIG.SYS commands you can use in a CONFIG.SYS file are shown in "Chapter 9. CONFIG.SYS Commands Used with the PC Network Program" on page 9-1. Also, if you want to make changes for DOS, you can use the CONFIG.SYS commands shown in the Chapter 4, "Configuring Your System" in *DOS Reference, Version 3.10.*

8. Remove the diskettes from the drives.

9. Put the DOS/PC Network (320KB) diskette into drive A.

10. Restart DOS by pressing Ctrl-Alt-Del.

    IMPORTANT: From now on, you should always use the DOS PC Network (320KB) diskette that you just made to start DOS and the PC Network Program on your computer.

11. Go to the next chapter to continue.

Installing for 2HC Drives

Follow these instructions to install the PC Network Program for a 2HC drive:

1. Check to be sure that:

    a. You are using a computer with at least one 2HC drive to install the PC Network Program. (Your drive A should be a 2HC drive.)

    b. You have your copy of the PC Network Program diskette and your copy of DOS 3.10 ready to use.

    c. You have one blank 2HC diskette.

    d. Your DOS 3.10 diskette is in drive A.

    e. You have started DOS 3.10 and are at the DOS prompt and your current drive is A.

2. Follow these steps to format the blank 2HC diskette:

    a. Enter the following command:

        ```
        format a: /s
        ```

        You'll see a prompt asking you to insert the diskette for drive A.

    b. Insert the blank diskette in the drive.

    c. Follow the instructions on your screen. You'll see a message when FORMAT completes.

    d. When FORMAT completes, remove the diskette.

e. Write the following name on the diskette label (use a felt-tip pen):

```
DOS/PC Network (2HC)
```

Your diskette is formatted and contains the system. You should be at the DOS prompt.

3. Do *one* of the following:

 • If your computer only has one diskette drive,

   a. Insert the PC Network Program diskette that you received with your manual in drive A.

   b. Enter the following command:

   ```
   install b: hc
   ```

   You'll be prompted to switch your diskettes. When you're prompted to insert the diskette for drive B, insert the diskette that you labeled **DOS/PC Network (2HC)**. When you're prompted to insert the diskette for drive A, insert your copy of the PC Network Program diskette. Remember that your one drive is your drive A *and* your drive B.

   c. Follow the instructions on the screen to install the program.

   d. Go to step 4 when you're finished installing the diskette.

 • If your computer has two diskette drives,

   a. Insert your copy of the PC Network Program diskette in drive B.

   b. Type **B:** and press Enter to make B your current drive.

c. Enter the following command:

```
install a: hc
```

d. Follow the instructions on the screen to install the program.

When you install the PC Network Program, a subdirectory named NETWORK is created on your 2HC diskette. The PC Network Program files for your configuration are installed in the subdirectory. NETWORK is a subdirectory of the root directory.

The DOS prompt is displayed when the PC Network Program is installed. Your installed PC Network diskette contains all the information that you need to start DOS and the PC Network Program.

NOTES: When you installed the PC Network Program, you also installed a CONFIG.SYS file. If you already had a CONFIG.SYS file, the PC Network Program alters your file to include additional commands needed by the PC Network. The CONFIG.SYS file contains special commands that help tailor the way that you want to use your computer's memory with DOS.

If you normally use a CONFIG.SYS file, you may want to edit the CONFIG.SYS file that the PC Network Program installed, so that the new file includes the additional information from the CONFIG.SYS file that you normally use.

For example, you may need the files created or used by the DOS SELECT command (CONFIG.SYS, AUTOEXEC.BAT, and KEYB*xx*.COM files). You would need to edit the new CONFIG.SYS file to include the COUNTRY=*xxx* command. You would also need

to copy the AUTOEXEC.BAT file created by the
DOS SELECT command and needed
KEYB*xx*.COM files.

You can change the CONFIG.SYS file by editing
the file with the text editor you normally use (such
as EDLIN). The CONFIG.SYS commands you
can use in a CONFIG.SYS file are shown in
"Chapter 9. CONFIG.SYS Commands Used with
the PC Network Program" on page 9-1. Also, if
you want to make changes for DOS, you can use
the CONFIG.SYS commands shown in the
Chapter 4, "Configuring Your System" in *DOS
Reference, Version 3.10*.

4.   Remove the diskettes from the drives.

5.   Put the DOS/PC Network (2HC) diskette into
     drive A.

6.   Restart DOS by pressing Ctrl-Alt-Del.

     IMPORTANT: From now on, you should always
     use the DOS/PC Network (2HC) diskette that you
     just made to start DOS and the PC Network
     Program on your computer.

     When you see the DOS prompt, you're ready to
     start the network.

7.   Go to the next chapter to continue.

Installing for a Fixed Disk

The PC Network Program Installation Aid Diskette

You can use the PC Network Program Installation Aid diskette that you received with this manual to easily install the PC Network Program on your fixed disk (drive C).

The PC Network Program Installation Aid has menus that guide you through installing your programs and applications. The PC Network Program Installation Aid organizes your fixed disk so that you can efficiently install your programs and applications. After you've installed your programs and applications, you'll be able to efficiently share them with the network, if you want to. Of course, you'll be able to use your programs and applications as you normally do.

You can use the PC Network Program Installation Aid to do the following:

- Install DOS on your fixed disk drive C so that other network users can use it

- Install the PC Network Program on your fixed disk drive C

- Install applications on your fixed disk drive C so that you can efficiently share the applications across the network

- Make private subdirectories for each computer user who wants to use your applications

- Print a list of what you need to share with the network

- Print a list of what others need to use from your computer

The PC Network Program Installation Aid is also used to install additional users and install additional applications.

If you want to know more about the disk organization that the PC Network Program Installation Aid creates, see "Chapter 10. Managing the Server Computer" on page 10-1.

Before you start using the PC Network Program Installation Aid, you should make a copy of the diskette and set up the copy with DOS.

Copying the PC Network Program Installation Aid Diskette

The PC Network Program Installation Aid diskette that you received with your manual is on a 320KB (double-sided) diskette. You have to use a computer that has at least one 320KB or higher drive to copy the diskette.

You should make a diskcopy of your PC Network Program Installation Aid diskette before you start using the PC Network Program Installation Aid. Label your copy of the PC Network Program Installation Aid "PC Network Program Installation Aid (Copy)."

You should use the copy to do your work and keep the original diskette in a safe place.

Use the DOS DISKCOPY command to make the copy. If you are not familiar with the DOS DISKCOPY procedure, follow the instructions in Chapter 5, "Copying Your Diskettes" of the *DOS User's Guide* (Version 3.10) to make a diskcopy of your PC Network program diskette.

> **Note:** If your computer has a 2HC (high capacity) drive *and* a 320KB drive, be sure that you have

read "Drive Considerations" in the *DOS User's Guide* (Version 3.10) before you install your PC Network Program.

The PC Network Program Installation Aid

Before you start the PC Network Program Installation Aid, find the "PC Network Program Installation Aid Quick Reference Card" at the back of this manual. The card lists IBM applications that you can use with the PC Network Program and gives you the following information about the applications:

• Tells you the instructions you should use to install the application

• Tells you if the application can be shared across the network

• Tells you if data for the application can be shared across the network

• Tells you how to start the application

If you're planning to install IBM applications, you should refer to this card before you install them. If you want to install an application that isn't on the card, refer to "Chapter 10. Managing the Server Computer" on page 10-1 for guidelines about installing the application.

Starting the PC Network Program Installation Aid

Follow these steps to start the PC Network Program Installation Aid:

1. Insert the DOS (Version 3.10) diskette in drive A.

    > **Note:** If you will be installing DOS (Version 3.10) onto drive C, you must reset (Ctrl-Alt-Del) your computer with the DOS (Version 3.10) diskette.

2. Switch on your computer, *or* if your computer is already on, press Ctrl-Alt-Del.

    DOS starts and you're prompted to enter the date and the time.

3. Enter the date and the time.

    The DOS prompt A> is displayed.

4. Remove your DOS diskette from drive A.

5. Insert your diskette labeled **PC Network Program Installation Aid (Copy)** in drive A.

6. Type G and press Enter.

    The logo screen is displayed.

7. Press Enter to get to the first PC Network Program Installation Aid menu.

The PC Network Program Installation Aid can also be started if you are currently using DOS (Version 3.10) as follows:

1. Insert your diskette labeled **PC Network Program Installation Aid (Copy)** in drive A.

2. Type A: and press Enter.

3. Type G and press Enter.

    The logo screen is displayed.

4. Press Enter to get to the first PC Network Program Installation Aid menu.

Using the PC Network Program Installation Aid

The menus tell you what you need to do to install the PC Network Program and your IBM applications on your computer. *If this is the first time that you've used the aid, you should look at the Help information (Press the F1 "HELP" key) when you start the aid.*

Use the PC Network Program Installation Aid to do the following tasks:

1. Install DOS on your fixed disk so that other network users can use it. Even if you don't think that you're going to be sharing your disks and directories, install DOS. You may need it later.

2. Install the PC Network Program next.

    When you install the PC Network Program, different subdirectories are created on you fixed disk C. The PC Network program is installed in the C:\APPS\NETWORK directory and is also installed in the C:\NETWORK directory. The C:\NETWORK directory is for the server user (user who shares devices) and the

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C:\APPS\NETWORK directory is for the remote users. The subdirectory named APPS will be used for your applications.

NOTES: When you installed the PC Network Program, you also installed a CONFIG.SYS file. If you already had a CONFIG.SYS file, the PC Network Program alters your file to include additional commands needed by the PC Network. The CONFIG.SYS file contains special commands that help tailor the way that you want to use your computer's memory with DOS.

If you normally use a CONFIG.SYS file, you may want to edit the CONFIG.SYS file that the PC Network Program installed, so that the new file includes the additional information from the CONFIG.SYS file that you normally use.

For example, you may need the files created or used by the DOS SELECT command (CONFIG.SYS, AUTOEXEC.BAT, and KEYB*xx*.COM files). You would need to edit the new CONFIG.SYS file to include the COUNTRY=*xxx* command. You would also need to copy the AUTOEXEC.BAT file created by the DOS SELECT command and needed KEYB*xx*.COM files.

You can change the CONFIG.SYS file by editing the file with the text editor you normally use (such as EDLIN). The CONFIG.SYS commands you can use in a CONFIG.SYS file are shown in "Chapter 9. CONFIG.SYS Commands Used with the PC Network Program" on page 9-1. Also, if you want to make changes for DOS, you can use the CONFIG.SYS commands shown in the Chapter 4, "Configuring Your System" in *DOS Reference, Version 3.10.*

3. If you need to install applications on your fixed disk, do that next. Refer to the "PC Network Program Installation Aid Quick Reference Card"

that you received with this manual for information
about your IBM applications before you install
them.

4. If you're planning to let other network users use
    your applications, name the users next.

5. **IMPORTANT:** When you're finished installing
    applications and naming users, print the
    information about your applications and the
    information for network users.

    Make the information for network users available
    to the network users.

6. **IMPORTANT:** Read the information that you
    print. You may need to do some additional steps to
    finish installing some of your applications. The
    information tells you what you need to do.

7. Remove the diskette from the drive.

8. Press Ctrl-Alt-Del to restart DOS.

    When you see the DOS prompt, you're ready to
    start the network.

Installing Additional Users or Applications.

Whenever you need to install additional users or
applications you must use the PC Network Program
Installation Aid.

Some applications cannot be installed when the PC
Network is currently active. For example, DOS, PC
Network, and the IBM Personal Computer Assistant
Series cannot be installed when the PC Network is
currently active.

If the application that you are trying to install indicates
that it cannot be installed when the PC Network

Program is active, you must first stop the PC Network Program and reset (Ctrl-Alt-Del) your computer, then start the PC Network Program Installation Aid.

> **Note:** Notify the network users, if you are taking the Network down before starting the PC Network Program Installation Aid.

You should be at the DOS prompt; follow these steps to start the PC Network Program Installation Aid:

1. Insert your diskette labeled **PC Network Program Installation Aid (Copy)** in drive A.

2. Type A: and press Enter.

3. Type G and press Enter.

   The logo screen is displayed.

4. Press Enter to get to the first PC Network Program Installation Aid menu.

5. Choose the task you want to do from the menu.

6. When you finish using the PC Network Program Installation Aid follow the instructions on the menu to return to DOS.

   > **Note:** See "The PC Network Program Installation Aid" on page 2-16 for additional information on how to start and use the PC Network Program Installation Aid.

Chapter 3. How the Menus Work

Contents

MENUS

Introduction

The PC Network Program menus let you use the PC
Network Program without having to enter commands.
The menus guide you through each task you want to do
and keep you from getting lost. You can get help to
complete each menu just by pressing a key.

What Are Menus?

The PC Network menus are like a path through all the
tasks you can do with the PC Network program. The
menus lead you through starting the program to the
"Main Menu." The Main Menu is the starting point for
all of the tasks you can do. You choose the kind of task
you want to do from the Main Menu and more menus
step you through the tasks.

```
┌─────────────┐
│ Starting    │
│ the         │
│ Network     │
└─────────────┘
       │
       ▼
┌─────────────┐
│ Main        │
│ Menu        │
└─────────────┘      ┌─────────────┐
       │             │ Message     │
       │             │ Tasks       │
       │             └─────────────┘
       │             ┌─────────────┐
       │             │ Printer     │
       │             │ Tasks       │
       │             └─────────────┘
       │             ┌─────────────┐
       │             │ Disk or     │
       │             │ Directory   │
       │             │ Tasks       │
       │             └─────────────┘
       │             ┌─────────────┐
       │             │ Print       │
       └────────────▶│ Queue       │
                     │ Tasks       │
                     └─────────────┘
                     ┌─────────────┐
                     │ Network     │
                     │ Status      │
                     │ Tasks       │
                     └─────────────┘
                     ┌─────────────┐
                     │ Pause and   │
                     │ Continue    │
                     │ Tasks       │
                     └─────────────┘
                     ┌─────────────┐
                     │ Save        │
                     │ Network     │
                     │ Setup       │
                     └─────────────┘
```
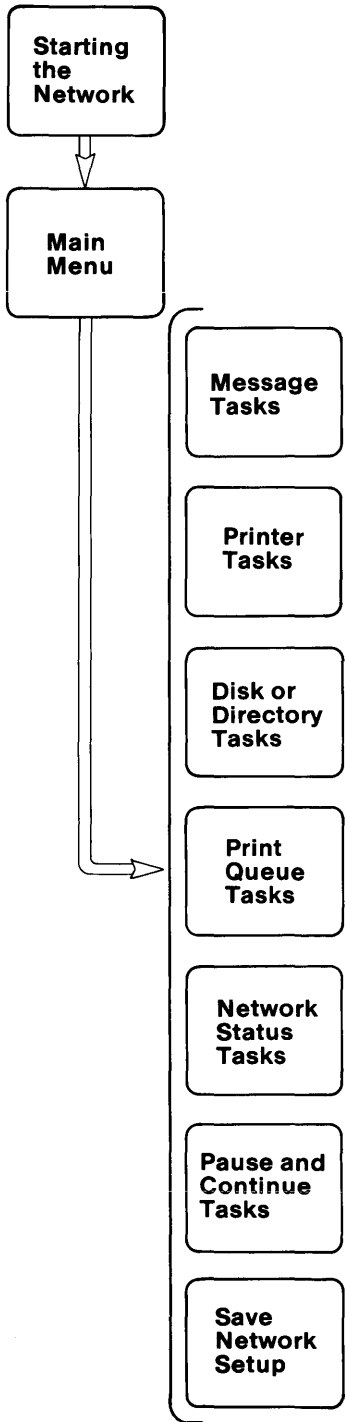
The first menus lead you through starting the PC
Network Program. You see these menus only when you
start the program.

Starting the Network (continued)

Starting the Network

Personal Computer

IBM PC Network Program
Version 1.0

(C) Copyright IBM Corporation 1984, 1985

Press ENTER to continue

Ente
Esc

Network s

Enter -
Esc - Ex
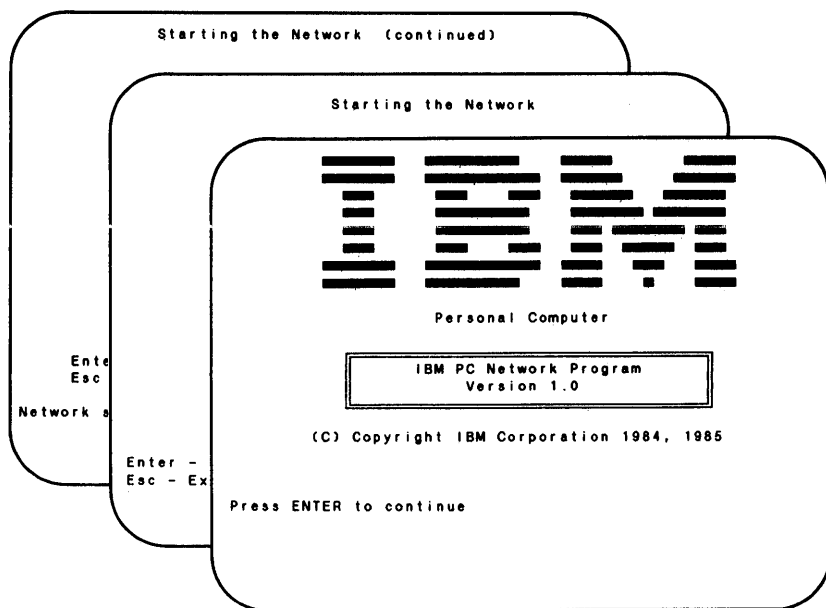
MENUS

The next menu you see is the "Main Menu—Task Selection" menu. The Main Menu lets you choose the kinds of tasks you want to do.

```
                                                          IBM PC NETWORK
                        Main Menu - Task Selection


   1.  Message tasks

   2.  Printer tasks

   3.  Disk or directory tasks

   4.  Print queue tasks

   5.  Network status tasks

   6.  Pause and continue tasks

   7.  Save or cancel the network setup




   1   Choice

   Enter - Continue                        F1 - Help
   Esc - Exit
```
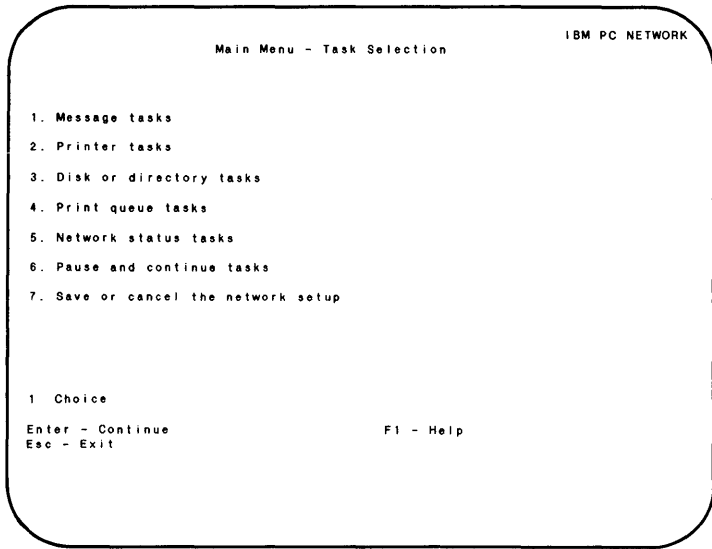
You may not have all the choices shown above, depending upon how you installed and started the PC Network Program. But that's okay; the menus all work the same way.

For example, suppose you want to send a message to another computer. You would start at the Main Menu and choose "Message Tasks."

```
┌──────────────┐
│ Main Menu    │
│ Task         │
│ Selection    │
└──────────────┘
        │
        │      ┌──────────────┐
        └─────▶│ Message      │
               │ Tasks        │
               └──────────────┘
```
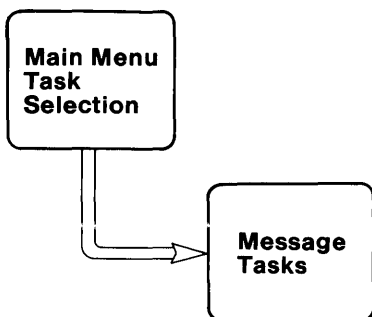
The "Message Tasks" menu shows you different tasks you may want to do with messages. You would choose "Send Messages."

```
┌──────────────┐
│ Main Menu    │
│ Task         │
│ Selection    │
└──────────────┘
      │
      │    ┌──────────────┐
      └───▶│ Message      │
           │ Tasks        │
           └──────────────┘
                  │
                  │    ┌──────────────┐
                  └───▶│ Send         │
                       │ Messages     │
                       └──────────────┘
```
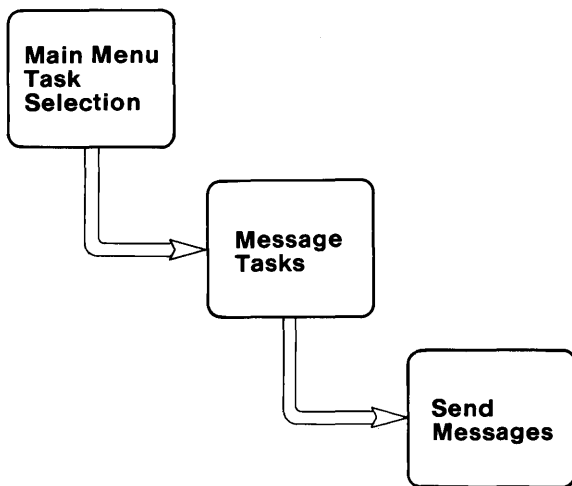
On the "Send Messages" menu, you would type and
enter the name of the computer you're sending the
message to and the message. When you enter this
information, you send the message. You see a message
at the bottom of the menu telling you that you've
finished the task.

```
                                                        IBM PC NETWORK
                            Send Messages

Send the message to: (* for all computers)    jeffm

Type message below :

Hello!




















Ctrl-Enter - Send message              Esc - Previous menu or Exit
Tab - Cursor to next field             Ctrl-PgDn - Erase message
Ctrl-Home - Return to Main Menu
F1 HELP            F2 COMMAND LINE      F3 ADJUST PARAGRAPH F4 VIEW MESSAGES
Message sent...and successfully received
                                               Characters Free    1592
```

When you finish the task, you can go back to the Main Menu and do something else.

```
┌─────────────┐
│ Main Menu   │
│ Task        │
│ Selection   │
└─────────────┘
        ┌──────────────┐
        │ Message      │
        │ Tasks        │
        └──────────────┘
                ┌──────────────┐
                │ Send         │
                │ Messages     │
                └──────────────┘
```
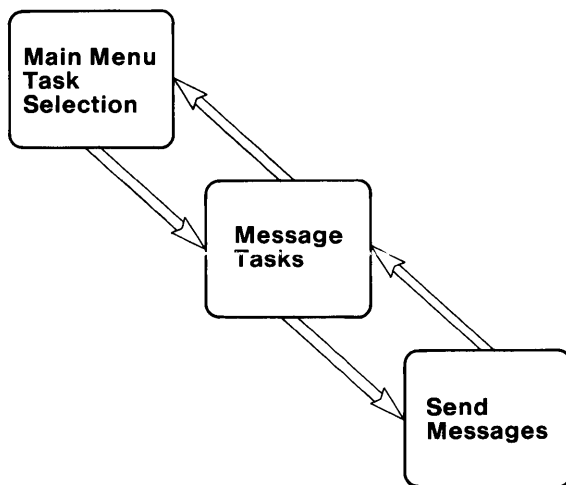
The menus allow you to do tasks and make sure you do each task in the right order. You can't get lost because you always can get back to the Main Menu by pressing Ctrl-Home.

Parts of the Menus

Let's look at the menus a little more closely.

Fields

You'll notice that the cursor is always at an underlined area of the menu. (If you have a color display, the area is highlighted.) This area is called a **field**. Some menus have more than one field. The field is where you fill in information. If you enter invalid characters in a field, you'll hear a *beep*, and see an error message.


```
                                    Send Messages                         IBM PC NETWORK

Send the message to: (* for all computers)    jeffm_____

Type message below :
_____
```

Field
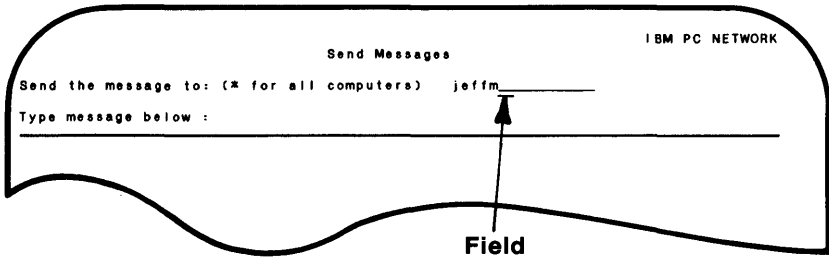
Message Line

When you complete a task, you'll see a message at the bottom of your menu on the **message line** telling you that you've done the task.


```
Message sent...and successfully received
```
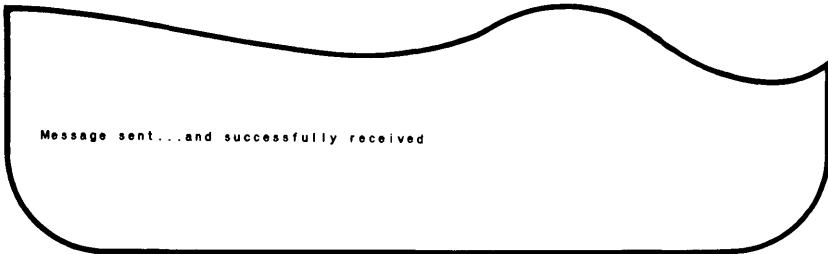
If you make a mistake on a menu or if an error occurs, you'll see a message on the message line telling you what the problem is. You can look up the message in "Appendix A. Messages" on page A-3 to find out how to fix the problem.

NET014: Cannot find name on network
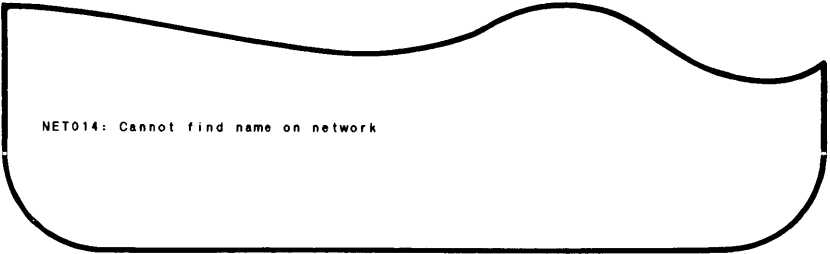
Status Line

If you are using Insert, Num-Lock, or Caps-Lock, the **status line** at the bottom of your menu will let you know which ones you're using.

CapsLock   NumLock   Insert
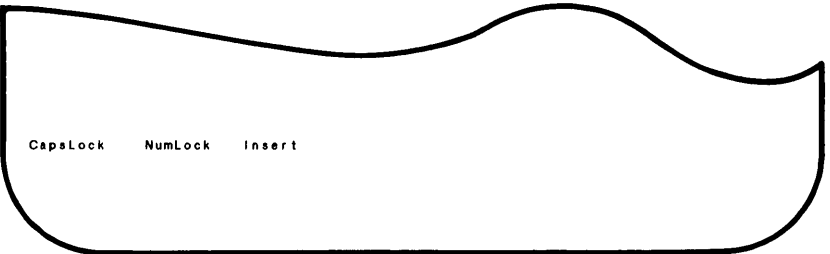
Keys

At the bottom of each menu, you'll see a list of keys most often used with the menus.

```
Enter  -  Continue                F1  -  Help
Esc  -  Previous menu             Ctrl-Home  -  Return to Main Menu
```
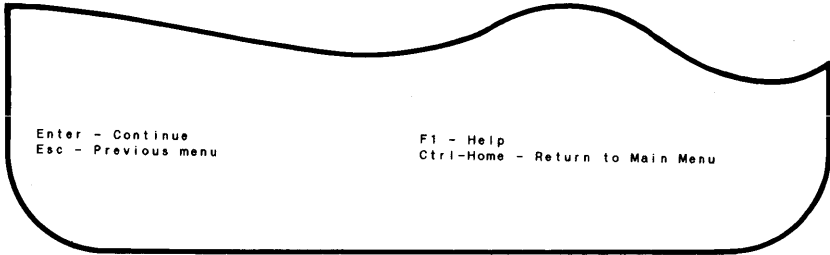
Note: As you start using the menus, you may want to refer to the "Keys for the PC Network Menus" table on the *Quick Reference Card* that you received with this manual.

F1

Press **F1** to get Help to complete a menu.

F1
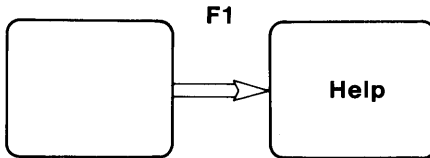
Help

IMPORTANT: Every menu has a Help screen. If you don't understand a menu, press F1 for Help.

Tab

If a menu has more than one field, press **Tab** to move
the cursor from one field to the next field.

```
                                                    IBM PC NETWORK
                              Send Messages
        Send the message to: (* for all computers)   lindag
Tab     Type message below :
        ‒
        ▼◄
```
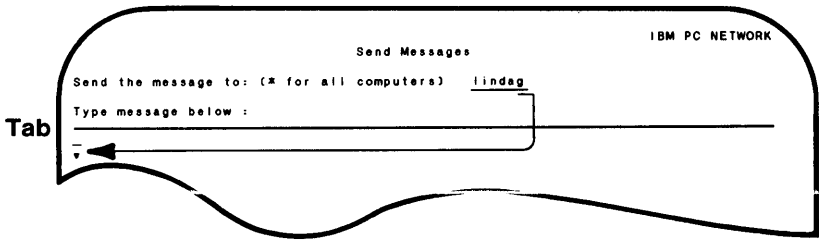
Enter

Press **Enter** to enter the information you have on the
menu and continue the task. If you finish the task,
you'll see a message at the bottom of your menu after
you press Enter.

```
        Message sent...and successfully received
```

Esc

Press **Esc** to get out of the menu you're in and go back to the previous menu.
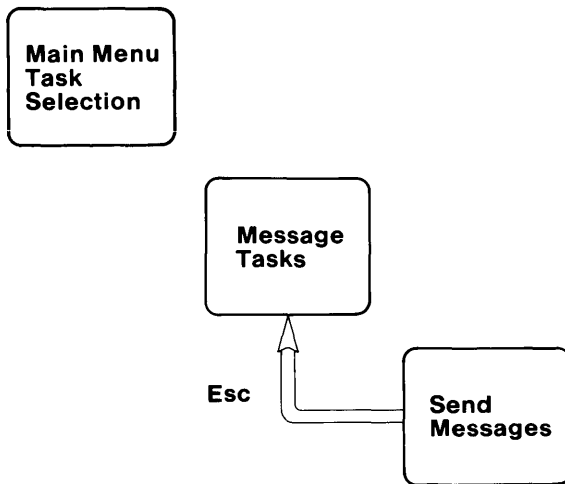
Ctrl-Break

Press **Ctrl-Break** and then Enter to get out of the PC Network Program menus and return to DOS. When you press Ctrl-Break, you see the following prompt:

Are you sure you want to exit the menus? (Y/N) Y

Press Enter, with the Y in the (Y/N) field, to exit the menus and return to the DOS prompt. If you change your mind, type **N** and press Enter.

Ctrl-Home

Press **Ctrl-Home** to get out of the menu you're in and go back to the Main Menu.

```
┌─────────────┐
│ Main Menu   │
│ Task        │
│ Selection   │
└─────────────┘
      ↑
      │      ┌─────────────┐
      │      │ Message     │
      │      │ Tasks       │
      │      └─────────────┘
      │
      │                ┌─────────────┐
      │                │ Send        │
Ctrl-─┘                │ Messages    │
Home                   └─────────────┘
```
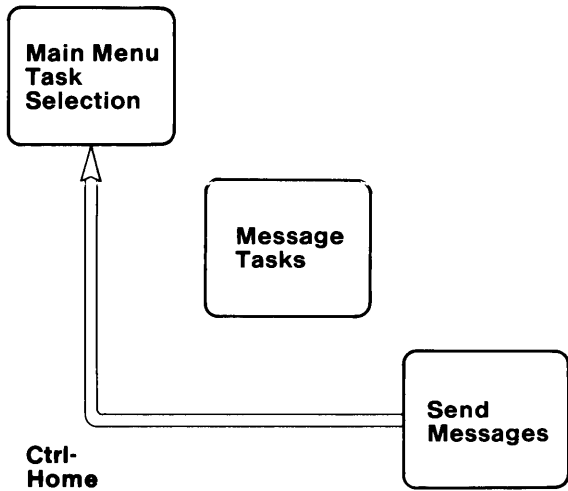
F2

If you want to enter a PC Network Program command instead of completing the menus, you can press **F2** to display a command line. You can type the PC Network Program command on the line and press Enter to enter the command. Then press Esc to return to the menu.

NET _____
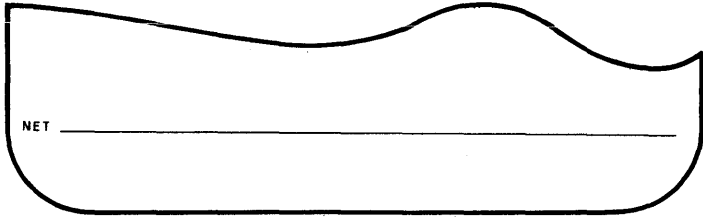
F3

If you have a color monitor, you can press F3 on the Main Menu to change the menu colors. You can choose to see the menus with a blue background or with a black background.

Editing Keys

You can also use the editing keys that you normally use. Some of the keys you may want to use are the following:

←	Moves the cursor left
→	Moves the cursor right
End	Moves the cursor to the end of a field
Home	Moves the cursor to the beginning of a field
Ctrl–End	Erases characters to the right of the cursor
← **(Backspace)**	Moves the cursor to the left and deletes characters to the left of the cursor
Ins (Insert)	Allows you to insert characters without erasing anything (you'll see "Insert" at the bottom of the menu)
Del (Delete)	Deletes characters

You Are Ready to Use the Menus

Now that you know how the menus work, you are ready to start. Go to "Chapter 4. Using the PC Network Program Menus" on page 4-1 to begin using the PC Network Program.

Chapter 4. Using the PC Network Program Menus

Contents

MENUS

Introduction

This chapter tells you how to use the PC Network Program through the menus. You'll learn how to:

- Start the PC Network Program

- Set up your computer for use on the network

- Save your setup

- Start applications while your computer is on the network

- Use applications while your computer is on the network

- Interrupt your applications to do PC Network Program tasks

- Do other network tasks

Getting Help

Remember, if you don't understand a menu, press F1 to display help for the menu. You should press F1 if you don't understand something on the menu. You'll see a Help screen that explains the menu.

If you don't remember which keys to use with the menus, you can refer to the "Keys for the Menus" table in the *Quick Reference Card* that you received with this manual.

If you don't know what DOS name or what network name to use for your devices, you can refer to the "Device Names and Network Names" table in the *Quick Reference Card* that you received with this manual.

Now let's start the PC Network Program.

Starting the PC Network Program

Starting the PC Network Program means that you are putting a copy of the PC Network Program in your computer's memory. You're also giving the PC Network Program some information about how you plan to use the network.

Follow these steps to start the program:

1. You should have already installed the PC Network Program and any applications that you want to share with the network. If you have not installed the program, go to "Chapter 2. Installing Your Programs" on page 2-1 for instructions.

2. Follow *one* of these steps:

    *   If you are using the PC Network Program from a 320KB diskette,

        a. Insert your PC Network/DOS (320KB) diskette in drive A and start DOS.

            The DOS prompt should be displayed.

        b. Go on to step 3.

    *   If you are using the PC Network Program from a 2HC drive,

        a. Insert your PC Network/DOS (2HC) diskette in drive A and start DOS.

            The DOS prompt should be displayed.

b. Enter the following command:

```
cd \network
```

You are in the network subdirectory of your 2HC diskette.

c. Go on to step 3.

• If you are using the PC Network Program from a fixed disk:

a. Start DOS from your fixed disk.

The DOS prompt should be displayed.

b. Enter the following command:

```
cd \network
```

You are in the network subdirectory of your fixed disk.

3. If you are using an IBM *Portable* Personal Computer display or any other composite monitor, you need to change the mode of your display so that you'll be able to see the menus. Enter the following DOS command:

```
MODE BW80
```

4. Enter the following at the DOS prompt:

```
NET
```

The PC Network Program logo screen is displayed.

5. Press Enter to display the "Starting the Network" menu. Your cursor is at the first field.

The "Starting the PC Network Program" menus prompt you to give the PC Network Program information about how you plan to use the network.

6. Fill in the fields on the menu. (Be sure that you press Enter each time you fill in a field.)

    The following list gives you some hints about how to fill in the fields.

    > **Note:** You'll only see the fields or prompts that you need for tasks that you wish to do on your computer, so don't worry if you don't see all of the fields we've listed.

```
Please type in a network name for your computer
```

This is the name by which your computer is known on the network. You can use any name, but you can't use any spaces, blanks, or more than 15 characters in the name.

Enter your first name and last initial, without any spaces. For example, if your first name and last initial is Rich A., type RICHA for your computer's network name and press Enter.

7. Do you want to:

```
Share your printer? disk? directories?
```

This asks if you want to be able to share your devices or directories on the network. Other network computers can use the devices that you choose to share.

If you Enter **Y**, your computer should have at least 320K bytes and a fixed disk. The PC Network Program should be installed on your fixed disk. If you enter **Y**, go to step 10.

8. Do you want to:

   `Add usernames, forward messages, and use the`
   `network request key?`

   "Add usernames" means that you want to be able
   to receive messages for more names, in addition to
   the name you give your computer.

   "Forward messages" means that you want to be
   able to transfer messages sent to your computer on
   to another computer.

   "Use the network request key" means that you
   want to be able to use Ctrl-Alt-Break (the
   Network Request keys) to go from your
   application to the PC Network Program menus.

   If you Enter **Y**, your computer needs at least 256K
   bytes of memory. If you enter **Y** go to step 10.

9. Do you want to:

   `Receive and save messages?`

   This asks if you want to be able to receive
   messages at your computer. You can receive
   messages on your screen or save messages in a file.
   (You won't be able to use the Network Request
   Keys.)

   If you Enter **Y**, your computer needs at least 192K
   bytes of memory.

MENUS

10. Do you want to:

```
Change defaults for starting?
```

Lets you change some of the preset values that are used to start the PC Network Program. Change the defaults if you want to do any of the following while you're on the network:

- Receive messages for more than one other name

- Use more than five devices at the same time

- Share more than five devices at the same time

- Have more than 1600 characters of space to store waiting messages in (approximately five small messages)

- Have more than 512 characters of space to store information that's being sent to a printer that you share on the network

Hint: Enter **N** if you don't want to change the defaults. Enter **Y** if you want to change any of the defaults. If you chose "N" for "Change defaults for starting the network?," go to step 11. If you chose "Y" for "Change defaults for starting the network?," you'll see the "Change Defaults for Starting the Network" menu next.

> **Note:** Depending on your previous selections, you may not have all of the items shown in the following list on your menu.
>
> Selecting values greater than the defaults may cause the PC Network Program and DOS to use more memory than the minimum requirements stated above.

The following list gives you some hints about how
to fill in the fields on the menu.

```
5      Number of devices to be used? (1 - 32)
```

This is the total number of network disks,
directories, and printers that you think you're
going to use at one time (5 is the default).

Hint: Type a number that's a little larger than the
number you really think you need, in case you need
to use more devices than you estimated. For
example, if you think you're going to use 7 devices,
type 9 in the field.

```
1600   Size of buffer for messages
       waiting? (256 - 60000 characters)
```

This is the size of the memory area reserved to
receive your messages (1600 is the default).
Messages that you receive (but don't log) are
stored here until you view them. If you think
you're going to receive a lot of messages, you may
want to make the area bigger. You can specify the
area in characters, such as 60000, or in K bytes,
such as 48K.

> **Note:** A buffer of 1600 characters holds
> about 5 small messages.

```
1      Number of additional names that will
       be receiving messages? (0 - 12)
```

This is the number of names, in addition to the
name you used for your computer, that you want
to be able to receive messages for (1 is the
default).

Hint: Type a number that's a little larger than the
number you really think you need, in case you need
to receive messages for more names than you
estimated. For example, if you think you're going
to receive messages for 7 additional names, type 9
in the field.

10   Number of devices to be shared? (1 - 150)

This is the total number of disks, directories, and printers that you think you're going to share with the network at one time (10 is the default).

Hint: Type a number that's a little larger than the number you really think you need, in case you need to share more devices than you estimated. For example, if you think you're going to share 7 devices, type 9 in the field.

512   Size of buffer for printing?
       (512 - 16384 characters)

This is the size of the memory area that holds information being sent to a printer that you're sharing with the network (512 is the default). The larger the area, the more efficiently your printer works. The more memory your computer has, the larger you should make the buffer. You can specify the area in characters, such as 16384, or in K bytes, such as 16K.

Hint: If your computer has 512K bytes or more memory, you should increase the size of the area. Type 8K in the field this time. You may want to try using different sizes until you find the size that best suits your needs.

10   Number of network computers that will
       be using your devices? (1 - 25)

This is the total number of network computers that will be using the disks, directories, and printers that you share (10 is the default).

11. Next, you'll see the "Starting the Network (continued)" menu. The menu lists how you've chosen to start the network and asks you if this is what you want to do.

    The cursor is at the bottom of the menu.

12. Do *one* of the following:

    • If you want to change what you've chosen, enter **N** in the field. You'll go back to the first start menu and can change your answers to the questions.

    • If you want to be able to do the tasks listed, enter **Y** and press Enter.

    The PC Network Program starts. You'll see a message telling you that the program is started. While the PC Network Program starts, you hear your computer beeping.

    Note: The PC Network Program beeps when starting, and also beeps for some tasks. The beeps means that the program is working and that you should wait. If you hear more than approximately 20 beeps (an error occurred), you should restart DOS and the PC Network Program.

13. The "Main Menu—Task Selection" is displayed.

    Note: If you receive a message from another computer after you've started the network and need instructions, see "Receiving Messages" on page 1-25.

Setting Up the PC Network Program for Your Computer

Just as you have to "set up" your computer before it works, you need to "set up" the PC Network program so that the program knows how to operate on your computer.

For example, if you want to use a printer that's on the network, you have to tell the network which printer you want to use. Or if you want to share a directory on your computer with the network, you have to tell the network which directory you want to share.

Everyone on the network wants to set up his computer on the network differently. *You* have to decide how you want to set up your computer. You may want to go to "Chapter 5. Tasks You Can Do With the PC Network Program" on page 5-1 for more information about network tasks you can do.

These instructions give you guidelines for setting up your computer. You may want to change or add to the tasks that you do.

If you're going to share devices or directories with the network, follow the instructions in "Setting Up to Share Devices With the Network" on page 4-16. If you're going to use devices or directories from other computers, follow the instructions in "Setting Up to Use Network Devices."

Setting Up to Use Network Devices

These instructions give you guidelines about how to set up your computer on the network so that you can use devices and directories that other computers (server's) have shared with the network.

If you are going to use network devices, the person who operates the server computer should give you information about the network devices and how you should use them.

The following steps assume that the server is ready and has already shared the devices you want to use, and you are starting at the Main Menu.

1. Before you get started setting up your computer, look through the menus to get an idea of the tasks you can do. Try choosing each of the tasks on the Main Menu and looking at the menus for each of the tasks. (Don't worry, you can't "break" anything!) Press Ctrl-Home to return to the Main Menu.

    When you're ready, go on to the next step.

2. If you want to use a network disk or directory, choose "Disk or directory tasks" and press Enter.

    You'll see the "Disk or Directory Tasks" menu.

    Choose the tasks you want to do and follow the menus to select the task and fill in the necessary fields.

    IMPORTANT: If you're using applications from another computer, you should have received a list from the person at the other computer. The list tells you what directories to use.

3. Repeat step 2 to use each network disk or directory that you need.

    When you've finished using the network disks and directories that you want to use, press Ctrl-Home to go back to the Main Menu.

4. If you're going to use a network printer, choose "Printer tasks" and press Enter.

   You'll see the "Printer Tasks" menu.

   Choose the tasks you want to do and follow the menus to complete the task.

   IMPORTANT: Use LPT1 if you want the network printer as your first printer. If you have a printer attached to your computer and you want to use it, pause using the network device. You'll be able to use your printer. When you're finished using your printer, continue using network devices. You'll be able to use the network printer again. If you already have a printer that you're using as your first printer (LPT1), and you do not want to "pause using network device," use the network printer as your second printer (LPT2).

5. Repeat step 4 to use each network printer that you need.

   When you've finished using the printers that you want to use, press Ctrl-Home to go back to the Main Menu.

6. If you want to save (log) your messages in a file, choose "Message Tasks" and press Enter.

   You'll see the "Message Tasks" menu.

   Choose the tasks you want to do and follow the menus to complete the task.

   Hint: You should save your messages unless you're expecting an important message from someone.

   You may want to save your messages on the network disk or directory that you're using. You can use your initials and an extension of LOG as the name of the file in which you want to save your

messages. For example, if your initials are MRD, you could use MRD.LOG as the name of the file in which to save your messages.

If you want to use a diskette, make sure that the diskette that you want to save messages on does not have a write-protect tab. The diskette must also be in your specified drive ready to log messages.

> **Note:** Do not save messages on your PC Network program diskette.

7. When you've finished telling the program where you want to log your messages, press Ctrl-Home to go back to the Main Menu.

8. You may also want to do the following tasks:

    • Add names for which you can receive messages (Choose "Message tasks")

    • Change the mode of a printer (Choose "Printer tasks")

    You should use the menus to do any other tasks you want to do to set up your computer on the network.

9. When you've finished setting up your computer on the network, go to "Saving Your Network Setup" on page 4-19 to continue.

MENUS

Setting Up to Share Devices With the Network

These instructions give you guidelines about how to set up your computer on the network so that you can share your devices and directories with other computers.

1. Start at the Main Menu.

2. If you want to share your disks or directories with the network, choose "Disk or directory tasks" and press Enter.

    You'll see the "Disk or Directory Tasks" menu.

    Choose the tasks you want to do and follow the menus to complete the task.

    IMPORTANT: If you've used the PC Network Program Installation Aid to install your applications, you should have printed a list of instructions that tell you what directories to share with the network. The instructions also tell each of the other network users what directories they need to use. Be sure that you've given each of the other users a copy of these instructions.

3. Repeat step 2 to share each disk or directory that you want to make available to the network.

    When you've finished sharing your disks and directories, press Ctrl-Home to go back to the Main Menu.

4. If you're going to share a printer with the network, choose "Printer tasks" and press Enter.

You'll see the "Printer Tasks" menu.

Choose the tasks you want to do and follow the menus to complete the task.

5. Repeat step 4 to share each printer that you want to make available to the network.

6. You may not want to print a separator page on each printer that you've shared. The separator pages help you to identify the documents that are printed.

Choose "Start or stop printing a separator page" on the "Print Queue Tasks" menu and press Enter. Follow the menus to stop printing the separator page. The separator page is printed on the first page of each file sent to the network printer.

Hint: Use the filename PQ.SEP as the name of the file that contains your separator page. PQ.SEP is a separator page that's provided for you with the PC Network Program.

When you've finished setting up to share your printers and specifying separator pages for each printer, press Ctrl-Home to go back to the Main Menu.

7. If you want to save (log) your messages in a file, choose "Message Tasks" and press Enter.

You'll see the "Message Tasks" menu.

Choose the tasks you want to do and follow the menus to complete the task.

Hint: You should save your messages unless you're expecting an important message from someone. You can use your initials and an extension of LOG as the name of the file in which you want to save your messages. For example, if your initials are MRD, you could use MRD.LOG as the name of the file in which to save your messages.

When you've finished logging your messages, press Ctrl-Home to go back to the Main Menu.

8. You may also want to do the following:

- Add names for which you can receive messages (Choose "Message tasks")

- Change the mode of a printer ("Printer tasks")

You should use the menus to do any other tasks you want to do to set up your computer on the network.

9. Do *one* of the following:

- You may want to use devices or directories that other computers have shared with the network. If you do, go to "Setting Up to Use Network Devices" on page 4-12 to continue setting up your computer on the network.

- If you're finished setting up your computer on the network, go to "Saving Your Network Setup" on page 4-19 to continue.

Saving Your Network Setup

If you think that you're going to use the same PC Network Program setup each day, you can save your setup. You won't have to go through all of the tasks to start and setup your computer on the network each day. Instead, each time you start your computer, the PC Network Program is automatically started, and your computer is setup on the network again.

You only have to save your setup once. The saved setup is put on your disk so that you can use it again and again. If you save your setup, you won't see the "Starting the PC Network Program" menus when you start the program because the program is automatically started for you.

NOTES: When you save your network setup the first time, the PC Network Program creates an AUTOEXEC.BAT file. If you already have an AUTOEXEC.BAT file, it is renamed to AUTOUSER.BAT before the new AUTOEXEC.BAT file is created. If you did not have an AUTOEXEC.BAT file, an AUTOUSER.BAT file is created with only the DATE and TIME commands. The new AUTOEXEC.BAT file contains a special *user area*, the commands to start the PC Network Program, and an AUTOUSER command.

The new AUTOEXEC.BAT file is created as follows:

```
:*** Network batch file ***
      { user area }
:***
      •
      • { PC Network commands }
      •
AUTOUSER
```

The user area is defined by two lines in the file as
follows:

```
:*** Network batch file ***
      { user area }
:***
```

The user area is for commands that must execute before
the PC Network is started. For example, you need to
install a different country keyboard routine before the
PC Network Program starts. You would move the
KEYB*xx* command from your AUTOUSER.BAT file
(original AUTOEXEC.BAT file) into the user area.

If you normally use an AUTOEXEC.BAT file, you may
want to edit your AUTOUSER.BAT file and the
AUTOEXEC.BAT file that the PC Network Program
created.

Only add commands to the AUTOEXEC.BAT file for
those programs that must execute before the PC
Network Program starts. Add all other commands to
your AUTOUSER.BAT file. If you need to add
commands to the AUTOEXEC.BAT file, you must add
them between the lines defining the user area of the
AUTOEXEC.BAT file that the PC Network Program
created.

> **Note:** The next time you save your PC Network
> Program configuration, the area of the
> AUTOEXEC.BAT file outside of the user area is
> deleted. The new commands to start your current
> PC Network setup, and the AUTOUSER
> command, are then added.

You can change the AUTOUSER.BAT and
AUTOEXEC.BAT files by editing them with the text
editor you normally use (such as EDLIN).

Follow these steps to save your setup:

1. Make sure that the DOS/PC Network Program is
    in your current (default) drive.

Note: If you are using the DOS/PC Network Program on diskette remove the write-protect tab before saving the setup.

2. Choose "Save or cancel the network setup" on the "Main Menu" and press Enter.

3. Choose "Save your network setup" and press Enter.

   You'll get a message when your setup is saved.

4. If you're ready to leave the menus and go to DOS, press Ctrl-Break or press Esc until you see the following message:

   `Are you sure you want to leave the menus? Y`

5. Enter **Y**.

   The DOS prompt is displayed.

   If you need to change your setup, you can cancel the one you've saved. Then you can create a new setup and save it.

   If you want to temporarily change your setup, you can make changes while you're using the network and not save the changes. The changes will be in effect until the next time you restart DOS.

   Note: When you use a "saved network setup," be sure all the computers that you wish to use have started and have shared all the devices and directories that you wish to use. If the other computers are not started, your saved setup cannot be fully recreated.

Starting Applications While Your Computer is on the Network

After you've started the PC Network Program and set up the program, you're ready to start your applications. Just remember that, even though you can't see it, your computer is still on the network.

> **Note:** The following procedure assumes that the applications were installed, by the server, using the IBM PC Network Program Installation Aid.

1. You should be at the DOS prompt.

   If you're in the Network menus, press Ctrl-Break and Enter to go to the DOS prompt.

   If you're using network devices, make the network drive that contains your *private* directory your current (default) drive. Check the instructions you received from the server, or check with the server, to see which network drive has your private directory. For example, if your private directory is your network drive N, your DOS prompt is N> to show that N is your current (default) drive.

   If you're sharing your devices with the network, your root directory of drive C should be your current directory (C:\).

2. Enter the following command at the DOS prompt:

   ```
   netpath
   ```

   The NETPATH command is only needed at the beginning of each computer session on the network. It is only necessary to enter the NETPATH command again if the DOS PATH or the PC Network APPEND commands are used to change the current path.

After entering the NETPATH command, you can access the server's applications from any DOS current drive.

> **Note:** If the server did not use the PC Network Program Installation Aid or if you've created your own path, NETPATH will not work.

3. Enter the following command at the DOS prompt:

help

"HELP" gives you a list of the installed applications and the commands to start them.

> **Note:** Refer to your application manual for more instructions on how to use the application.

If you are using applications from the network, the person who installed the application gave you some information about how to start the applications that are available to you. If the information was not given to you, ask the person who installed the application or is responsible for the server computer for the information. Use the information to start your applications.

If you installed the applications with the PC Network Program Installation Aid and are sharing them, you printed some information about how to start the applications. Make sure that this information is available for the network users who plan to use the applications.

MENUS

Using Applications While Your Computer is on the Network

Use your applications the same way that you normally do. Your application runs "on top of" the PC Network Program. The PC Network Program is still working for you, even though you can't see it. The following tells you a little about sharing and using applications and data for applications.

> **Note:** If you're using a color display, some applications may change your display to black and white. Use the following DOS MODE command to change your display back to color:

```
MODE C080
```

Sharing and Using Applications

Many applications can be shared across the network. One computer has a copy of the application and shares the application with the network. The other network computers can use the application. The other computers can access the application at the same time, if they want to. This way, each computer doesn't have to have a copy of the application in their computer.

Some applications cannot be shared across the network. Each computer must have its own copy of the application in its computer.

IBM Personal Computer program license agreements permit the use of a program on a single machine. The customer is responsible for ensuring that each user on the network is appropriately licensed to use any program shared over the network.

For non-IBM programs, you should consult your license agreement or the vendor of the program to determine what is required for you to share the program over the network.

Sharing and Using Data for Applications

Data files for many applications can also be shared across the network. One computer has the data files for an application in a subdirectory and shares the subdirectory with the network. The other computers can use the directory that contains the data files. Then they can access the data files, if they want to, or create new ones. This way, each computer can have the most up-to-date copy of the data without keeping copies of everything.

> **Note:** When you are using a shared data file and another user tries to access the same data file, the other user will get an error message (error opening file). Only one user at a time is allowed access to data files.

Printing Files from Applications

Files that you send to a network printer or to a printer that you've shared may not be put in the print queue immediately. The files must have an end-of-file indicator (EOF character) to be able to start printing. You can press Ctrl-Alt-PrtSc to put an end-of-file indicator on a file after you send the file to be printed.

To determine if a Ctrl-Alt-PrtSc is needed, you should use the Print Queue display to see if your file is in the queue. See "Check or Change the Print Queue" in Chapter 5, or the NET PRINT command in Chapter 7.

For example, you may be using an application and send a file to a network printer, or to a printer that you've shared. While you're in the application, press Ctrl-Alt-PrtSc to send the end-of-file indicator to the queue.

Wait until your application has sent the entire file to be printed before pressing the Ctrl-Alt-PrtSc. If you press the Ctrl-Alt-PrtSc keys too soon, your print file can split into two print files.

MENUS

Sharing and Using Private Directories

Private directories are separate directories that the person who's sharing applications with the network creates for each of the other network users who are using the applications. The other network users can use their private directories to store personal files in.

Interrupting Applications and Programs To Do Network Tasks

After you've started using your applications, you may need to go back to the PC Network Program to do a network task. For example, you may need to use a network printer that you didn't use before. Or, you may need to pause sharing a directory with other people on the network so that you can get some important work finished.

The way that you interrupt your application to do a network task depends on whether or not you chose to use the Network Request Keys when you started the network.

Interrupting Your Application With the Network Request Keys

If you are using the Network Request keys, follow these steps:

1. Press the Network Request keys (Ctrl-Alt-Break).

2. The "Main Menu—Task Selection" is displayed.

3. Use the menus to do your tasks.

4. Press Ctrl-Break and then Enter to get back to your application.

Interrupting Your Application Without the Network Request Keys

If you are not using the Network Request keys, follow these steps:

1. Stop your application and go back to the DOS prompt.

2. Check to be sure the PC Network Program is in your current drive and that you are at the DOS prompt.

3. Enter the following command:

   NET

4. Press Enter.

   The "Main Menu—Task Selection" is displayed.

5. Use the menus to do your tasks.

6. When you finish your tasks, press Esc repeatedly until the following prompt is displayed:

Are you sure you want to exit the menus? (Y/N) Y

7. Press Enter to return to the DOS prompt.

8. Restart your application.

Doing Other Network Tasks

After you have started the PC Network program, set the program up, and started using your applications, you'll want to do other tasks on the network. Or you may want to change a task that you've already done.

You should refer to "Chapter 5. Tasks You Can Do With the PC Network Program" on page 5-1 for descriptions of all of the PC Network tasks you can do. The chapter also tells you why you may want to do the task and the choice you should make on the Main Menu to do the task. You may want to look through the menus as you read Chapter 5. Try choosing the choice on the Main Menu and looking at the menu for each of the tasks. (Don't worry, you can't "break" anything!)

Chapter 5. Tasks You Can Do With the PC Network Program

Contents

TASK REFERENCE

TASK REFERENCE

Introduction

This chapter gives you a short description of the network tasks you may want to do. You can use this chapter as a reference to network tasks.

For each task, you'll see a description of what the task is and why you may want to do the task. You'll also see any special instructions or information you need to do the task.

If you're using menus, you'll see a short list of the menu choices you should make to start the task.

If you're using commands, you'll see the command you should use and where to look up the command if you need more information to use it.

Starting the PC Network Program

Starting the PC Network Program means that you are loading a copy of the PC Network programs that you want to use into your computer's memory.

You should start the PC Network Program right after you've started DOS. This way, your computer will be on the network as you do your daily work.

> **Note:** If you've saved the way you started the network from the last time that you used the network, you don't have to start the PC Network Program again. The program is automatically started for you.

Menus

- If this is the first time that you've started the network, see "Starting the PC Network Program" on page 4-4 for instructions.
- If you're familiar with the Starting the Network menus, do the following:

  1. Make sure that you've started DOS from the PC Network diskette or from your fixed disk. If you're using diskettes, your DOS/PC Network diskette should be in your current drive.

  2. Enter the following command:

     ```
     NET
     ```

Commands

- Make sure that you've started DOS from the PC Network diskette or from your fixed disk. If you're using diskettes, your DOS/PC Network diskette should be in your current drive.
- "NET START Command" on page 7-68.

Change the Defaults When You Start the PC Network Program

Changing defaults allows you to tailor the PC Network Program to your needs.

You should change defaults if you want to:

- Use more than five network devices at one time.
- Change the size of the buffer used for waiting messages (the default size is 1600 characters).
- Receive messages for more than one additional name on your computer.
- Share more than five of your devices at one time.
- Change the size of the buffers used for printing (the default size is 512 characters).
- Change the number of network computers that will be using your devices (the default is 10).

If you're sharing devices with other computers on the network, you should change the defaults to optimize the performance of your computer on the network.

Selecting values greater than the defaults may cause the PC Network Program and DOS to use more memory.

Menus

- If this is the first time that you've started the network, see "Starting the PC Network Program" on page 4-4 for instructions.
- On the Starting the Network menu, choose **Y** for "Change defaults for starting."

Commands

- "NET START Command" on page 7-68. Specify values for the *parameters* of the NET START command.

Task Selection

The PC Network tasks discussed in the following sections are grouped in the following order:

1. Message tasks

    a. Send messages
    b. View received messages
    c. Start or stop saving messages
    d. Start or stop receiving messages for another name
    e. Start or stop forwarding messages.

2. Printer or print queue tasks

    a. Start or stop sharing your printer
    b. Start or stop using a network printer
    c. Print a file
    d. Change the print size on a network printer
    e. Start or stop printing a separator page.

3. Disk or directory tasks

    a. Start or stop sharing your disk or directory
    b. Start or stop using a network disk or directory.

4. Network status tasks

    a. Check or change print queue on your computer
    b. Check print queue on another computer
    c. Display names that can receive messages at your computer
    d. Display devices you are sharing
    e. Display network devices you are using.

5. Pause and continue tasks

    a. Pause or continue using network disks and
        directories
    b. Pause or continue using network printers
    c. Pause or continue receiving messages
    d. Pause or continue sharing your devices
    e. Pause or continue printing files.

6. Save or cancel the network setup

    a. Save your network setup
    b. Cancel your current network setup.

7. Application and PC Network Program tasks

    a. Install new applications
    b. Do a PC Network Program task from an
        application
    c. Return to your application from the PC
        Network Program.

8. Network Control Tasks

    a. Close a File
    b. Display the error list
    c. Display users and locks for a file.

Messages Tasks

Send Messages

This task allows you to send a message to another network computer or to all (broadcast message) the computers on the network.

If you insert characters in a message, some of the message may go past the right margin of your screen. To correct the margin, move the cursor to the first line of your message and press the F3 (adjust paragraph) key.

> **Note:** The longest broadcast message you can send is 128 characters (approximately two 60-character lines).

Menus

- Main Menu - Message tasks
- Message Tasks menu - Send Messages

  Type the name of the other network computer you want to send the message to, or type an asterisk (*) as the name you want to send the message to for a *broadcast message*.

Commands

- "NET SEND Command" on page 7-52

View Received Messages With the Network Request Keys

If you are not saving messages and you chose to use the network request keys when you started the PC Network Program, you'll get a message like this on your screen when you receive a message:

```
MESSAGE FROM IDSRV1

Press Ctrl-Break to continue
Press Ctrl-Alt-Break to view message
```
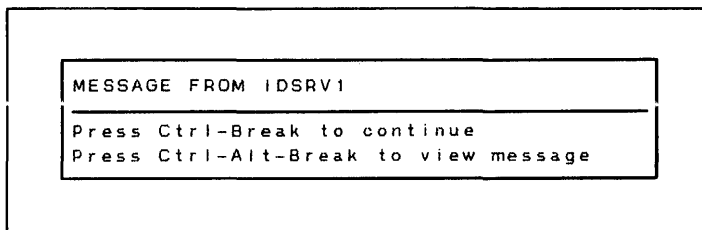
You can do one of the following:

- Press Ctrl-Break to erase the message on your screen and go back to your work. The message is put in a waiting area for you. You can use the menus to look at the message later.

- Press Ctrl-Alt-Break (the network request keys) to go to the menus and view the message.

You should view your waiting messages frequently so that you don't run out of room for messages. When you're finished looking at messages, you can press Esc to go back to your work.

> **Note:** If you don't want to be interrupted when you receive a message, you should save your messages in a file.

TASK REFERENCE

You can use the menus to view the saved (logged) messages. You can also view the saved (logged) messages by using the DOS TYPE command to type the contents of your log file to your screen.

You can view your saved messages whenever you want to.

Menus

- Main Menu - Message tasks
- Message Tasks menu - View messages

    On the View Messages menu, you'll see a list of keys at the bottom of the menu. If you *are not* logging messages, press F3 to see messages that are waiting for you to view. If you *are* logging messages, press one of the following keys:
    - F5 to view the first message (the oldest) message in your log file.
    - F6 to view the next message that you've received in your log file. Press F6 again to continue seeing messages from the log file.

    If you want to store a message that you received on your screen in your log file, press F7.
    You must have specified a log file before you can save messages in a log file..
    To specify a log file from the view screen, press F2 and enter the following commands:

    ```
    log \name.log
    log /off
    ```

    The *name.log* is the file name and extension of the log file you want to use. The first command specifies a log file and the second command allows you to still receive messages on your screen. After this command sequence you can save the messages by pressing the F7 key on the view screen.

View Received Messages Without the Network Request Keys

If you chose *not* to share your devices or use the Network Request keys when you started the PC Network Program, your messages are displayed on your screen when you receive them, even if you are in an application. You should refresh (re-display) your screen to erase the message.

You must refresh your screen through your application. You may need to scroll the information on your display or change screens. If the application allows you to refresh your screen, you won't lose what was on your screen. If you're in DOS and you receive a message, press Enter.

> **Note:** If you don't want to be interrupted when you receive a message or if the application that you are using cannot refresh the screen, you should save your messages in a file.

If you chose to save messages in a log file, your messages are saved in the log file.

You can view the logged messages by using the DOS TYPE command to type the contents of your log file to your screen.

Start Saving Messages

This task allows you to tell the PC Network Program that you want to put your incoming messages in a file (to view later) or on a DOS device, such as a printer.

You may want to send your messages to a file or a printer so that you're not interrupted each time you receive a message. You can then look at the saved messages whenever you want to.

If you are not using the Network Request keys (Ctrl-Alt-Break), you should save your messages in a file so that your application won't be interrupted by messages you receive.

If you want to save messages in a log file, you must specify a log file to use. You may want to save messages to a file on your own machine or to a file on a network disk which you are using. If you are logging messages to a file on a diskette, be sure that the diskette *does not* have a write-protect tab on it, and make sure the diskette is in the drive specified. This diskette must always stay in that drive because you never know when a message will be sent to you.

Menus

- Main Menu - Message tasks
- Message Tasks menu - Start or stop saving messages - Start saving messages

  Specify a filename or DOS device as the device you want to log messages to (if the file doesn't exist, the file is created for you).

  Do not save messages to a printer on another computer, or to your printer if it is shared with others on the network.

  If you want the file to be available to save waiting messages in, but don't want to save your incoming messages in the file, go back to the Start or Stop Saving Messages menu and choose to stop saving messages.

Commands

- "NET LOG Command" on page 7-29 (to start logging messages and name a log file for them)
- NET LOG command again (to stop logging the messages)

Stop Saving Messages

This task allows you to tell the PC Network Program that you no longer want to save your incoming messages, because you want to display them.

You may want to stop sending your messages to a file if you're expecting an important message and want to see it as soon as it arrives.

You may want to stop sending your messages to the printer if you need to use the printer for something else.

Menus

- Main Menu - Message tasks
- Message Tasks menu - Start or stop saving messages - Stop saving messages

Commands

- "NET LOG Command" on page 7-29

Start Receiving Messages for Another Name

This task allows you to add names to your computer for which you can receive messages. The additional names cannot send messages.

You may want to use this task if you need to get messages for people in addition to yourself, or if more than one person is using the same computer. For example, if you are covering for someone who is on vacation, you may want to receive his messages in addition to yours.

Menus

- Main Menu - Message tasks
- Message Tasks - Start or stop receiving messages for another name

Commands

- "NET NAME Command" on page 7-36

Stop Receiving Messages for Another Name

This task allows you to stop receiving messages for other names.

> **Note:** You can't stop receiving messages for the name you gave your computer.

You may want to use this task if you no longer need to get messages for others.

Menus

- Main Menu - Message tasks
- Message Tasks - Start or stop receiving messages for another name

Commands

- "NET NAME Command" on page 7-36

Forward Messages to Another Computer

This task allows you to send to another computer messages that you're receiving at your computer. You can forward messages sent to you or you can forward messages sent to another name on your computer. You can only forward messages once. The computer that receives the forwarded messages can't forward them again.

You may want to forward messages when you don't want to receive them anymore at your computer. Or if you are leaving your office for awhile, you may want to forward your messages while you are gone. The other computer will receive your forwarded messages even if you turn your computer off.

Menus

- Main Menu - Message tasks
- Message Tasks - Start or stop forwarding messages

Commands

- "NET FORWARD Command" on page 7-26

Stop Forwarding Messages to Another Computer

This task allows you to stop forwarding messages to another computer. You will start receiving the messages at your computer again.

You may want to stop message forwarding if the computer to which you forwarded the messages is leaving the network or if you need to see the messages again at your computer.

Menus

- Main Menu - Message tasks
- Message Tasks - Start or stop forwarding messages

Commands

- "NET FORWARD Command" on page 7-26

Printer or Print Queue tasks

Sharing Your Printer

You can do this task only if you chose to share devices when you started the PC Network Program.

This task allows you to share your printer with other network computers. You can share up to three printers.

You should share your printer if you have a printer that other network computers need to use. The PC Network Program will queue files to be printed on your printers.

Menus

- Main Menu - Printer tasks
- Printer Tasks menu - Start or stop sharing your printer

Commands

- "NET SHARE Command" on page 7-58

Stop Sharing Your Printer

You can do this task only if you're sharing the printer with the network.

This task allows you to stop sharing your printer with other network computers. If you want to share the printer again, you have to start sharing the printer again.

You should stop sharing your printer before you switch off your computer. Or you may want to stop sharing your printer if you need to share another device and you're already sharing as many devices as you can.

You should also stop sharing your printer if you no longer want other computers to use it until the next time you start DOS and the PC Network Program. If files are queued to be printed, the files still print. To stop the files from printing, you have to change the print queue.

Menus

- Check to be sure that no one is using your printer before you stop sharing it.
- Main Menu - Printer tasks
- Printer Tasks menu - Start or stop sharing your printer

Commands

- Check to be sure that no one is using your printer before you stop sharing it.
- "NET SHARE Command" on page 7-58

Use a Network Printer

This task allows you to use a network printer that another computer is sharing with the network.

You should use a network printer if you don't have the printer that you need attached to your computer. Your files will be printed on the network printer.

Menus

- Main Menu - Printer tasks
- Printer Tasks menu - Start or stop using a network printer

Commands

- "NET USE Command" on page 7-85

Stop Using a Network Printer

This task allows you to stop using a network printer.

You should stop using a network printer if you no longer need the printer, or if you need to use another device and you're already using as many devices as you can.

Menus

- Main Menu - Printer tasks
- Printer Tasks menu - Start or stop using a network printer

Commands

- "NET USE Command" on page 7-85

Print a File

Use this task to print a file on a printer that you're sharing with the network, or to print a file on a network printer that you're using.

Menus

- Main Menu - Printer and print queue tasks
- Printer and Print Queue Tasks menu - Print a file on a network printer

or

- Main Menu - Print Queue tasks
- Print Queue Tasks menu - Print a File on a Network Printer

Commands

- "NET PRINT Command" on page 7-47

Change the Print Size (Mode) on a Network Printer

This task allows you to change the type size in which your files are printed. You can change the type size even if the printer is not attached to your computer. The print size is changed only for your files.

You should use this task if you are sending files to a printer and want to be sure that your files are printed in the correct type size.

Menus

- Main Menu - Printer and print queue tasks
- Printer and Print Queue Tasks menu - Change the print size on a network printer

or

- Main Menu - Print tasks
- Print Tasks menu - Change the print size on a network printer

Commands

- "MODE Command" on page 8-9

Printing a Separator Page

You can only do this task if you're sharing the printer with the network.

This task allows you to print the default separator page (file PQ.SEP) or your own separator page, between the files printed on your printer. You can use a different separator page for each printer that you are sharing on the PC Network.

You should use a separator page to help you identify the end of one file and the beginning of the next file. The page also helps you identify the owner of the file.

The PC Network Program has a standard separator page (default separator page) that you can use. The standard separator page is in a file named PQ.SEP, and is shown with "Using Separator Pages on Shared Printers" on page 10-19. If you are using an IBM printer, use the PQ.SEP separator page file. If you are using a non-IBM-compatible printer, use the PQ.OEM separator page file.

You can also create your own separator pages.

Note: The standard separator page is for the IBM Personal Computer Color Printer. You may need to modify the standard separator page file for other printers. If you need instructions to create or modify a separator page, see "Using Separator Pages on Shared Printers" on page 10-19.

Menus

- Main Menu - Print queue tasks
- Print Queue Tasks menu - Start or stop printing a separator page

  Specify **PQ.SEP** as the separator page file for the default separator page, or specify your file as the separator page file.

  > **Note:** You must be at the \NETWORK directory when the default separator page **PQ.SEP** is specified.

Commands

- "NET SEPARATOR Command" on page 7-54

Stop Printing a Separator Page

You can do this task only if you're sharing the printer with the network.

This task allows you to stop printing a separator page (the default separator page or your own) between files on the network printer.

You should use this task if you no longer need the separator page.

Menus

- Main Menu - Print queue tasks
- Print Queue Tasks menu - Start or stop printing a separator page

Commands

- "NET SEPARATOR Command" on page 7-54

Disk or Directory Tasks

Share Your Disk or Directory

This task allows you to share your disks or directories
with other network computers. You can share a disk or
directory only if you chose to share your devices when
you started the PC Network Program. You can share a
fixed disk or a diskette drive.

You should share your disk or directory if you have files
on your disk that other network computers need to use.

If you want to share a single file with the network, you
must put the file in a directory by itself, then share the
directory with the network. You can't share a file by
itself; the file must be in a directory.

Follow these steps to share a single file with the
network:

1. You should be at the DOS prompt.
2. Make a directory (use the DOS MKDIR
   Command).
3. Put the file you want to share in the directory that
   you just made.
4. Use the PC Network Program to share the
   directory with the network.

Menus

- Main Menu - Disk or directory tasks
- Disk or directory tasks menu - Start or stop sharing
  your disk or directory

Commands

- "NET SHARE Command" on page 7-58

Share (Permit) Your Disk or Directory Temporarily

You can use this task to temporarily share your disk or directory with the network, *without starting the PC Network Program in your computer.* When you start the PC Network Program, you don't have to choose to share your devices when you start it. Computers that want to use your disk or directory must start the PC Network Program in their computers.

You can *permit* one or all network computers to use your disk or directory. You won't be able to use your computer while your disk or directory is *permitted.*

You may want to use this task if you want to copy a file from someone else's disk or if you want to copy one of your files to their disk.

Menus

• You can't temporarily share your disk to be used with the menus. You must use commands.

Commands

• "PERMIT Command" on page 8-11

Stop Sharing Your Disk or Directory

This task allows you to stop sharing your disk or directory with the network. If you want to share the disk or directory again, you have to *start sharing the disk or directory* again.

You should stop sharing your disk or directory before you switch off your computer. Or you may want to stop sharing your disk if you need to share another device and you're already sharing as many devices as you can.

You should also stop sharing your disk or directory if you no longer want other computers to use it until the next time you start DOS and the PC Network Program. If other computers are using the disk (or directories on the disk), the computers lose access to it and receive error messages.

Menus

- Check to be sure that no one is using the disk or directory
- Main Menu - Disk or directory tasks
- Disk or directory tasks menu - Start or stop sharing your disk or directory

Commands

- Check to be sure that no one is using the disk or directory
- "NET SHARE Command" on page 7-58

Using a Network Disk or Directory

This task allows you to use a network disk or directory as though it is a fixed disk on your computer.

You should use a network disk or directory if you need to use applications or data files on another computer's disk, or if you need to use a fixed disk and don't have a fixed disk on your computer.

Menus

- Main Menu - Disk or directory tasks
- Disk or directory tasks menu - Start or stop using your disk or directory

Commands

- "NET USE Command" on page 7-85

Stop Using a Network Disk or Directory

This task allows you to stop using a network disk or directory.

You should stop using a network disk or directory if you no longer need to use it. Or if you need to use another disk or directory and don't have enough memory left in your computer to use another one, without deleting (stop using) one.

Menus

- Main Menu - Disk or directory tasks
- Disk or directory tasks menu - Start or stop using your disk or directory

Commands

- "NET USE Command" on page 7-85

Network Status Tasks

Check or Change Print Queue on Your Printer

You can do this task only if you're sharing your printer with the network.

This task allows you to change the way in which files are printed on your printer. You can change the print queue only if you are sharing the printer. If you're using a network printer, you can only check the print queue.

You should use this task whenever you need to change the order in which files will be printed, or delete files from the print queue.

> **Note:** The size of the files shown in the print queue may be one character smaller than the size of the file sent to the queue. The size doesn't include the end-of-file character from the file.

Menus

- Main Menu - Print Queue tasks
- Print Queue Tasks menu - Check or change the print queue

Commands

- "NET PRINT Command" on page 7-47 to display the print queue
- Use the menus to change the queue

> **Note:** You cannot change the queue with NET PRINT. You must use the menus to change the queue.

Check Print Queue on Another Computer

This task allows you to see where your files are in the print queue for a network printer. If you're sharing the printer, you'll see a list of all the files to be printed on your printer. If you're using a printer, you'll see only your files and their positions in the print queue.

> **Note:** The size of the files shown in the print queue may be one character smaller than the size of the file sent to the queue. The size doesn't include the end-of-file character from the file.

Menus

- Main Menu - Printer and print queue tasks
- Printer and Print Queue Tasks menu - Check print queue on another printer

or

- Main Menu - Print Queue tasks
- Print Queue Tasks menu - Check print queue on another computer

Commands

- "NET PRINT Command" on page 7-47

Display Names That Can Receive Messages At Your Computer

This task lets you display a list containing the name of your computer and any other additional names for which you are receiving messages. If you are forwarding messages for any of the names on your computer, the name of the computer you are forwarding messages to is also displayed.

You may want to display names on your computer if you've forgotten the name you gave your computer, or if you've forgotten who you're receiving messages for.

Menus

- Main Menu - Network status tasks menu
- Network status tasks menu - Display names that can receive messages at your computer

Commands

- "NET NAME Command" on page 7-36

Display Devices You are Sharing

This task lets you display a list of the network names and DOS names for devices that you've shared with the network, and the names of the computers that are using each device.

You may want to display the devices you're sharing if you've forgotten the name you gave a device, or if you need to know who is using your devices.

Menus

- Main Menu - Network status tasks menu
- Network status tasks menu - Display devices you are sharing

Commands

- "NET SHARE Command" on page 7-58

Display Network Devices You are Using

This task lets you display a list of the network names and DOS names for devices that you're using from the network.

You may want to display the devices you're using if you've forgotten the name you gave a device that you're using, or if you've forgotten which computer the device belongs to.

Menus

- Main Menu - Network status tasks menu
- Network status tasks menu - Display devices you are using

Commands

- "NET USE Command" on page 7-85

Pause and Continue Tasks

This task allows you to temporarily change the way you're using the network without erasing your task. Pause allows you to temporarily stop something; continue allows you to start again, the same way as before you paused.

Pause Using Network Disks and Directories

This task allows you to temporarily stop using network disks and directories.

You may want to pause using network devices if the network device is taking the place of a device that you have and you want to use your own device again. For example, suppose you have two diskette drives, A and B, and you are using a network directory as your drive B, and you want to do a DISKCOPY. You could pause using network devices so that your drive B is available to you again. You can do the DISKCOPY, then continue using network devices.

Menus

- Main Menu - Pause and continue tasks
- Pause and Continue Tasks menu - Pause or continue using network disks and directories

Commands

- "NET PAUSE Command" on page 7-40

Continue Using Network Disks and Directories

This task allows you to continue using network disks and directories. The same network devices are available to you that you were using before you paused using.

Menus

- Main Menu - Pause and continue tasks
- Pause and Continue Tasks menu - Pause or continue using network disks and directories

Commands

- "NET CONTINUE Command" on page 7-13

Pause Using Network Printers

This task allows you to temporarily stop using network printers. If you are using the server configuration and pause using network printers, printing files from the print queue for your printer also pauses.

You may want to pause using network printers if the network printer is taking the place of a local printer that you have, and you want to use your local printer again.

Menus

- Main Menu - Pause and continue tasks
- Pause and Continue Tasks menu - Pause or continue using network printers

Commands

- "NET PAUSE Command" on page 7-40

Continue Using Network Printers

This task allows you to continue using network printers. The same network printers are available to you that you were using before you paused using. If you are using the server configuration, files in your print queue also continue printing.

Menus

- Main Menu - Pause and continue tasks
- Pause and Continue Tasks menu - Pause or continue using network printers

Commands

- "NET CONTINUE Command" on page 7-13

Pause Receiving Messages

This task allows you to temporarily stop receiving messages. You won't receive messages on your screen, in a log file, or on a printer. When you want to receive messages again, you can continue receiving messages.

Menus

- Main Menu - Pause and continue tasks
- Pause and Continue Tasks menu - Pause or continue receiving messages

Commands

- "NET PAUSE Command" on page 7-40

Continue Receiving Messages

This task allows you to continue receiving messages. The messages are sent to the same device that you were receiving them on when you paused receiving messages.

Menus

- Main Menu - Pause and continue tasks
- Pause and Continue Tasks menu - Pause or continue receiving messages

Commands

- "NET CONTINUE Command" on page 7-13

Pause Sharing Your Devices

This task allows you to temporarily stop sharing network disks, directories, and printers. If you pause sharing, receiving messages also pauses.

You no longer are sharing your disks and directories so other computers can no longer access your disks and directories. You no longer are sharing your printers so other computers can no longer send files to the print queue. However, the files that are in the print queue continue to be printed. If you try to send files to your printer, you should pause printing on the printer *before* you send files to the printer. If you don't pause printing and you send a file to the printer, errors may occur.

You may want to pause sharing network devices if you need to have the device back temporarily for your exclusive use. For example, suppose you are sharing a data directory and other computers are accessing it. You have some important updates to make to a file in the directory. You can pause sharing the directory so that you can make the updates, then continue sharing the directory so that it's available to the network again.

Only pause sharing when it is very important to do so.
Other computers using your shared devices will get
errors while you have sharing paused.

Menus

- Check to be sure that no one is using your disk,
  directory, or printer *before* you pause it
- Main Menu - Pause and continue tasks
- Pause and Continue Tasks menu - Pause or
  continue sharing network devices

Commands

- Check to be sure that no one is using your disk,
  directory, or printer *before* you pause it
- "NET PAUSE Command" on page 7-40

Continue Sharing Your Devices

This task allows you to continue sharing your network
disks, directories, and printers. The same devices that
you were sharing before you paused sharing are shared
with the network again.

Only the computer that paused sharing the devices can
continue sharing them.

Menus

- Main Menu - Pause and continue tasks
- Pause and Continue Tasks menu - Pause or
  continue sharing network devices

Commands

- "NET CONTINUE Command" on page 7-13

Pause Printing Files (on a Printer that You've Shared)

This task allows you to temporarily stop printing files on a network printer that you've shared. The files that are in the queue for that printer stay in the queue. If you only pause printing files (you don't pause sharing), the other computers can still send files to the queue for the printer. You may want to pause printing because:

- You've shared several printers and you want a different printer to print while you service the first printer
- You want the printer back for your use only

> Note: If you want the printer back, you should pause using a network printer.

If you are sharing more than one printer and you pause sharing the printer that's currently printing, the next printer that you've shared becomes active. For example, suppose you've shared your LPT1 and your LPT2. Some of the files in your print queue are for LPT1 and some are for LPT2. Currently, the file being printed is for LPT1. If you pause printing on LPT1, the file being printed on LPT1 stops. LPT2 becomes the active printer, and the first file for LPT2 starts printing.

> Note: If a file is printing when you pause printing, the file is cancelled and put into the queue, ready to print again from the beginning.

Menus

- Main Menu - Pause and continue tasks
- Pause and Continue Tasks menu - Pause or continue printing files

Commands

- "NET PAUSE Command" on page 7-40

Continue Printing Files (on a Printer that You've Paused)

This task allows you to restart printing for files on a network printer that you've paused. The files that are in the queue for that printer begin printing again.

Only the computer that paused printing can continue printing.

Menus

- Main Menu - Pause and continue tasks
- Pause and Continue Tasks menu - Pause or continue printing files

Commands

- "NET CONTINUE Command" on page 7-13

Save or Cancel the Network Setup

Save Your Network Setup

This task allows you to save the way you're using the network. The next time you start DOS and the network, you'll be using the network the same way you were using it the last time.

You should save your network setup if you're planning to use the network about the same way every day. You won't have to go through all of the tasks to set up your computer for the network. Of course, you can still make changes to the way you are using the network.

This task also allows you to change a setup that you've already saved. Your new setup replaces your existing saved setup. You should change your setup if you need to use the network differently the next time you start the PC Network Program. The next time you start the PC Network Program your new setup is used.

> **Note:** If you want to change your starting configuration (server, messenger, receiver, or redirector), first cancel the network setup, then do a system reset (Ctrl-Alt-Del). Start the network the new way, then save the new network setup.

Menus

- If this is the first time that you've saved the network, see "Saving Your Network Setup" on page 4-19 for instructions. If you're familiar with saving the network, do the following:
- Main Menu - Save or cancel the network setup
- Save or cancel the network setup menu - Save the network setup

Commands

- You must create an AUTOEXEC.BAT file and place the commands you used to start and set up your computer for the network in the file. See "Automatic Program Execution" in *DOS Reference*, Version 3.10, for more information about creating and using AUTOEXEC.BAT files.

> **Note:** You may want to use menus to save your network setup, then edit the AUTOEXEC.BAT file that is created for you.

Cancel Your Current Network Setup

This task lets you cancel (delete) the setup that you've saved. You should cancel your network setup if you want to change the way you start the PC Network Program. For example, if you decide that you're not using the network request keys and decide that you want to use them now, you'll need to change the way you start the program.

Menus

- Check to be sure that you have an AUTOEXEC.BAT file *and* an AUTOUSER.BAT file in the root directory
- Main Menu - Save or cancel the network setup
- Save or cancel the network setup menu - Cancel the network setup

Commands

- Make sure you are at the DOS prompt and that the PC Network Program is in your current drive.
- Type the following:

```
del autoexec.bat
```

- Press Enter.
- Type the following:

```
rename autouser.bat autoexec.bat
```

(You may get a message telling you that you don't have an AUTOUSER.BAT file. Ignore the message.)

Your network setup is deleted.

TASK REFERENCE

Application and PC Network Program Tasks

Install New Applications to Share on The Network

You can install new applications that you want to share on the network by using the PC Network Program Installation Aid. See "The PC Network Program Installation Aid" on page 2-16 for more information about using the PC Network Program Installation Aid.

Do a PC Network Program Task From an Application

You can only do a network task from an application if you chose to share or if you chose to use the Network Request keys when you started the PC Network Program.

You can use this task to do a network task while you're using an application.

You may want to do this task if you're using an application and have forgotten to use a network device that you need. For example, if you want to print a file on a network printer but have forgotten to use the printer, you can go to the network, use the printer, then return to your application.

Follow these steps:

1. Press Ctrl-Alt-Break.

2. If you want to do the task from the menus, choose the task and follow the menus.

3. If you want to do the task with a network command, press F2 to display the command line at the bottom of the menu. Enter the command.

4. To return to your application, press Ctrl-Break, then press Enter.

Return to Your Application from the PC Network Program

You can only do a network task from an application if you chose to share or if you chose to use the network request keys when you started the PC Network Program.

You can use this task if you're in the PC Network Program menus and you want to get back to your application again.

To return to your application, press Ctrl-Break, then press Enter.

Network Control Tasks

Close a File

You can only do this task if you're sharing devices with the network.

This task allows you to close a file that is open. The file may be on a disk or a directory that you've shared.

You should close a file only when an application or program has opened a file and failed to close and terminate it. If you don't close the file, other

applications can't open it. See "Chapter 10. Managing the Server Computer" on page 10-1 for more information about when to close files.

Menus

- You can't close a file with menus. You have to use commands.

Commands

- "NET FILE Command" on page 7-23

Display the Error List

You can only do this task if you're sharing devices with the network or if you have requested the network request keys (Ctrl-Alt-Break).

This task allows you to list the errors that occurred when other computers incorrectly used a network device on your computer.

You should do this task if you are sharing your devices and directories on the network and are responsible for correcting errors that occur while your devices and directories are shared. See "Chapter 10. Managing the Server Computer" on page 10-1 for more information about when to display the error list.

Menus

- You can't display the error list with menus. You have to use commands.

Commands

- "NET ERROR Command" on page 7-19

Display Users and Record Locks for a File

You can do this task only if you're sharing devices with the network. You can display users and locks for all of your files even if you haven't shared the disk or directory that contains the files.

This task allows you to see a list of the computers that are using a file that's on a disk or directory that you've shared. The list also shows you the number of record locks for the file.

You should do this task whenever you've shared a disk or directory and need to know if you can close a file. If you close a file that other computers are using, the other computers receive errors and can no longer use the file. See "Chapter 10. Managing the Server Computer" on page 10-1 for more information about when to display the error list.

Menus

- You can't display users and record locks with menus. You have to use commands.

Commands

- "NET FILE Command" on page 7-23

Chapter 6. Getting Started with Commands

Contents

COMMANDS

Introduction

The PC Network Program Commands are similar to DOS commands. The commands let you use the PC Network Program from the DOS prompt. You'll only have to use the menus for a few tasks, instead of for every task.

Use the *PC Network Program Quick Reference Card* as a quick reference aid to the PC Network commands.

This chapter tells you:

- How to choose the PC Network Program configuration you want to use

- How to use the commands to start the PC Network Program

- How to use the commands to set up the PC Network Program for your computer

- How to use a AUTOEXEC.BAT file to save your PC Network Program setup

- How to start your applications while your computer is on the network

- How to use your applications while your computer is on the network

- How to interrupt your applications to use the network

- How to use the commands to do network tasks

- How to do network commands with batch files

COMMANDS

Some of the tasks you may want to do require that you use the menus. These tasks are:

- Sending a message longer than 128 characters

- Viewing a waiting message (if you are using the Network Request Keys)

- Viewing a logged message (you can also use the DOS TYPE command to view logged messages)

- Checking or changing the print queue

- Saving your network setup

Before you start using the commands, you need to know a little about the configurations that you can use and the names you must use with the PC Network Program.

Choosing a PC Network Program Configuration

The PC Network Program has the following four configurations:

- Server

- Messenger

- Receiver

- Redirector

  Note: If you've been using the menus, you haven't seen the names of the network configurations. But you've been choosing one of the configurations by choosing what you want to do on the "Starting the Network" menus.

You choose the configuration that you want to use when you start the network. Each configuration can do a different amount of tasks on the network. (For example, the server can do more tasks than the messenger.)

Each configuration also needs a different amount of memory in your computer. (For example, the server uses more memory than the messenger.) So, the configuration that you choose depends on how much memory your computer has and what PC Network Program tasks you want to do. You must be sure that you have enough memory to use the configuration (with DOS) and your applications and programs.

  Note: If you are not sure how much memory your application needs, check the manual that came with the application for the amount.

Tasks You Can Do With the Network Configurations

Each configuration can do *some* of the following tasks:

- **Share your disks, directories, and printers**

  This means that you will be able to let other computers use your devices. Of course, you have to tell the network which devices you want to share. *You must install and start the PC Network Program on a fixed disk to share your devices.*

- **Transfer messages to other computers**

  This means that you can move a name for which you are receiving messages to another computer. Then the other computer receives messages for the name. You may want to do this if you are leaving, but you want someone else to get messages for your names.

- **Receive messages for other names**

  This means that you can give your computer more network names for which you want to receive messages. You may want to do this if your office has several people for whom you need to get messages.

- **Use the Network Request Keys to interrupt your work and use PC Network**

  This means that, even if you are in an application, you can press Ctrl-Alt-Break (the Network Request keys) so that you can do a PC Network Task.

  You will be notified when you receive messages. A message window is displayed in the middle of the screen. You can press Ctrl-Alt-Break to go see the message or you can press Ctrl-Break to go back to your work.

If you don't use the Network Request Keys, you'll have to go to the DOS prompt to use the PC Network Program. You will receive messages on your screen and have to re-display or "refresh" your screen to go back to your work.

- **Log messages in a log file**

  This means that you can put messages that you receive into a file. You won't be interrupted when you receive messages. Instead, your messages go into the file. You can go and look at them whenever you want to.

- **Receive messages from other computers**

  This means that you'll get messages from other network computers.

- **Use network disks, directories, and printers**

  This means that you can use disks, directories, and printers that other computers share with the network. Of course, you have to tell the network which devices you want to use.

- **Send messages to other computers**

  This means that you can send a message to one computer or to all the computers on the network.

COMMANDS

Server Configuration

Tasks

The server configuration allows you to do the
following:

- Share your disks, directories, and printers
- Transfer messages to other computers
- Receive messages for other names
- Use the Network Request Keys to interrupt your
  work and use PC Network
- Save messages in a log file
- Receive messages from other computers
- Use network disks, directories, and printers
- Send messages to other computers

Memory Requirements

If you want to use the server, your computer should
have at least 320K bytes of memory. You must also
start the server from a fixed disk.

Notes:

1. The parameters you choose to enter with the NET
    START command can change the memory that the
    server requires. See the "NET START
    Command" on page 7-68 for more information.
    The command parameters in your CONFIG.SYS
    file can also change the amount of memory that the
    server requires. See "Chapter 9. CONFIG.SYS
    Commands Used with the PC Network Program"
    on page 9-1 for more information.

2. If you use the server configuration, you should also
    read "Chapter 10. Managing the Server
    Computer" on page 10-1 for more information
    about operating your computer as a server.

Messenger Configuration

Tasks

The messenger configuration allows you to do the following:

- Transfer messages to other computers

- Receive messages for other names

- Use the Network Request Keys to interrupt your work and use PC Network

- Save messages in a log file

- Receive messages from other computers

- Use network disks, directories, and printers

- Send messages to other computers

Memory Requirements

If you want to use the messenger, your computer should have at least 256K bytes of memory.

> **Note:** The parameters you choose to enter with the NET START command can change the memory that the messenger requires. See the "NET START Command" on page 7-68 for more information. The command parameters in your CONFIG.SYS file can also change the amount of memory that the messenger requires. See "Chapter 9. CONFIG.SYS Commands Used with the PC Network Program" on page 9-1 for more information.

COMMANDS

Receiver Configuration

Tasks

The receiver configuration allows you to do the following:

- Save messages in a log file

- Receive messages from other computers

- Use network disks, directories, and printers

- Send messages to other computers

Memory Requirements

If you want to use the receiver, your computer should have at least 192K bytes of memory.

> **Note:** The parameters you choose to enter with the NET START command can change the memory that the receiver requires. See the "NET START Command" on page 7-68 for more information. The command parameters in your CONFIG.SYS file can also change the amount of memory that the receiver requires. See "Chapter 9. CONFIG.SYS Commands Used with the PC Network Program" on page 9-1 for more information.

Redirector Configuration

Tasks

The redirector configuration allows you to do the following:

- Use network disks, directories, and printers

- Send messages to other computers

Memory Requirements

If you want to use the redirector, your computer should have at least 128K bytes of memory.

> **Note:** The parameters you choose to enter with the NET START command can change the memory that the redirector requires. See the "NET START Command" on page 7-68 for more information. The command parameters in your CONFIG.SYS file can also change the amount of memory that the redirector requires. See "Chapter 9. CONFIG.SYS Commands Used with the PC Network Program" on page 9-1 for more information.

COMMANDS

Summary of Network Configurations

The way that you use the PC Network Program
depends on:

- Whether your computer has a fixed disk

- How much memory your computer has

- The tasks you want to do

The following table lists the names of the network
configurations, the requirements for each configuration,
and the tasks that each configuration can do. You can
use the following table to decide how you're going to
use the PC Network Program:

The memory sizes for each configuration in the
following table are the minimum requirements for DOS
and the PC Network Program, of which 64K is
available for applications and DOS external commands.
If your application requires more than 64K, add the
memory requirement to the additional memory needed
for your application to arrive at the minimum total
memory requirement for your personal computer.

More memory may also be needed if some of the PC
Network program defaults are changed.

> **Note:** See your application manual for information
> about the memory requirements of your
> applications and programs.

Configuration	You can use the PC Network Program to:
Server Requires a minimum of: One fixed disk One 320KB or larger diskette drive 320K bytes of memory (for DOS and the PC Network Program)	Send messages Use network disks, directories, and printers Receive messages Save (log) messages Use the network request keys (Ctrl-Alt-Break) Receive messages for other names Transfer messages to other computers Share your disks, directories, and printers
Messenger Requires a minimum of: One 320KB or larger diskette drive 256K bytes of memory (for DOS and the PC Network Program)	Send messages Use network disks, directories, and printers Receive messages Save (log) messages Use the network request keys (Ctrl-Alt-Break) Receive messages for other names Transfer messages to other computers

COMMANDS

Configuration	You can use the PC Network Program to:
Receiver Requires a minimum of: One 320KB or larger diskette drive 192K bytes of memory (for DOS and the PC Network Program)	Send messages Use network disks, directories, and printers Receive messages Save (log) messages
Redirector Requires a minimum of: One 320KB or larger diskette drive 128K bytes of memory (for DOS and the PC Network Program)	Send messages Use network disks, directories, and printers

Starting the Network With Commands

You should decide if you want to use the server, messenger, receiver, or redirector configuration before you start the PC Network Program. You can see "Choosing a PC Network Program Configuration" on page 6-5 for more information about the configurations.

Use the NET START command to start the PC Network Program. See "NET START Command" on page 7-68 for a description of the command.

Remember:

1. You should have already installed the PC Network Program and any applications that you want to share with the network. If you have not installed the PC Network Program, go to "Chapter 2. Installing Your Programs" on page 2-1 for instructions.

2. Follow *one* of these steps:

    •   If you are using the PC Network Program from a 320KB diskette,

        a. Insert your PC Network/DOS (320KB) diskette in drive A and start DOS.

            The DOS prompt should be displayed.

        b. Go on to step 3.

    •   If you are using the PC Network Program from a 2HC drive,

        a. Insert your PC Network/DOS (2HC) diskette in drive A and start DOS.

            The DOS prompt should be displayed.

b. Enter the following command:

   `cd \network`

   You are in the NETWORK subdirectory
   of your 2HC diskette.

   c. Go on the step 3.

 • If you are using the PC Network Program
   from a fixed disk,

   a. Start DOS from your fixed disk.

   The DOS prompt should be displayed.

   b. Enter the following command:

   `cd \network`

   You are in the NETWORK subdirectory
   of your fixed disk.

3. If you are using an IBM *Portable* Personal
   Computer display, or any other composite monitor,
   you need to change the mode of your display.
   Enter the following command:

   `MODE BW80`

   You're ready to start the Network with the NET
   START command.

4. Go to "NET START Command" on page 7-68 for
   instructions about using the NET START
   command.

Setting Up Your Computer for Use on the Network

After you start the PC Network Program, you should "set up" the program so that your computer is operating the way you want it to on the network. For example, if you want to share a disk, directory, or printer with other network computers, you should use the NET SHARE command to share the device. Other computers that want to use your device can't use it until you share it.

You may need to do the following tasks to set up your computer for the network:

Server Configuration

- Share a disk, directory, or printer

  See "NET SHARE Command" on page 7-58 for a description of the command.

- Use a disk, directory, or printer

  See "NET USE Command" on page 7-85 for a description of the command.

- Log (or save) your messages in a file or on a printer

  See "NET LOG Command" on page 7-29 for a description of the command.

- Start printing a separator page on a printer you share

  See "NET SEPARATOR Command" on page 7-54 for a description of the command.

- Add names for which you can receive messages

  See "NET NAME Command" on page 7-36 for a
  description of the command.

- Change the mode of a printer

  See "MODE Command" on page 8-9 for a
  description of the command.

  > **Note:** MODE is a DOS command, so you
  > don't type NET in front of the command
  > when you enter it.

Messenger Configuration

- Use a disk, directory, or printer (NET USE)

  See "NET USE Command" on page 7-85 for a
  description of the command.

- Log (or save) your messages in a file or on a
  printer (NET LOG)

  See "NET LOG Command" on page 7-29 for a
  description of the command.

- Add names for which you can receive messages
  (NET NAME)

  See "NET NAME Command" on page 7-36 for a
  description of the command.

- Change the mode of a printer (MODE)

  See "MODE Command" on page 8-9 for a
  description of the command.

  > **Note:** MODE is a DOS command, so you
  > don't type NET in front of the command
  > when you enter it.

Receiver Configuration

- Use a disk, directory, or printer (NET USE)

  See "NET USE Command" on page 7-85 for a description of the command.

- Log (or save) your messages in a file or on a printer (NET LOG)

  See "NET LOG Command" on page 7-29 for a description of the command.

- Change the mode of a printer (MODE)

  See "MODE Command" on page 8-9 for a description of the command.

    Note: MODE is a DOS command, so you don't type NET in front of the command when you enter it.

Redirector Configuration

- Use a disk, directory, or printer (NET USE)

  See "NET USE Command" on page 7-85 for a description of the command.

- Change the mode of a printer (MODE)

  See "MODE Command" on page 8-9 for a description of the command.

    Note: MODE is a DOS command, so you don't type NET in front of the command when you enter it.

COMMANDS

The CONFIG.SYS File

If you installed the PC Network Program, you also installed a CONFIG.SYS file. This file gives your computer instructions about how to use memory for your network configuration.

You may want to create a CONFIG.SYS file or change the values in your existing CONFIG.SYS file if:

- You are using the server configuration and expect a large number of other computers to use your fixed disk or directory. You may want to change the BUFFERS, FCBS, and FILES commands in the CONFIG.SYS file.

- You are using the server, messenger, receiver, or redirector configuration and need to use more than 14 DOS names for drives (such as A, B, C, ...). You may want to change the LASTDRIVE command in the CONFIG.SYS file.

  Note: If you installed the PC Network Program, the CONFIG.SYS file contains LASTDRIVE=N. Therefore, drives A through N are available for your use.

Changing the values in the CONFIG.SYS file allows you to use your computer's memory more efficiently.

You can change the CONFIG.SYS file by editing the file with the text editor you normally use (such as EDLIN). The CONFIG.SYS commands you can use in a CONFIG.SYS file are shown in "Chapter 9. CONFIG.SYS Commands Used with the PC Network Program" on page 9-1. Also, if you want to make changes for DOS, you can use the CONFIG.SYS commands shown in "Configuring Your System" in *DOS Reference, Version 3.10*.

6-20

Saving Your Network Setup

You can enter the network commands that you used to start and set up your computer on the network in an AUTOEXEC.BAT file so that your computer is automatically put on the network each time you start DOS.

See "Saving Your Network Setup" on page 4-19 for more information about saving your setup.

Starting Your Applications While Your Computer is on the Network

After you've started the PC Network Program and set up the program, you are ready to do your normal work. The PC Network Program is still running in your computer. You can go back to the PC Network Program if you need to do a task on the network.

You can use the PC Network Program Installation Aid to install the PC Network Program on your fixed disk and install your applications. See "Installing for a Fixed Disk" on page 2-14 for more information about using the aid.

COMMANDS

Using Your Applications While Your Computer is on the Network

After you've started and set up the PC Network Program on your computer, you're ready to start your applications. The network will continue to work while you are using the application or program. For example, if you are using a printer on another computer and you use your application's print function to print a file, the file is printed on the network printer.

Follow these steps.

1. You should have started DOS and the PC Network Program and set up your computer for use on the network.

    Note: This procedure assumes that the applications were installed, by the server, using the IBM PC Network Program Installation Aid.

2. You should be at the DOS prompt.

    If you're in the Network menus, press Ctrl-Break and Enter to go to the DOS prompt.

3. If you're using network devices, make the network drive that contains your *private* directory your current (default) drive. Check the instructions you received from the server, or check with the server, to see which network drive has your private directory. For example, if your private directory is your network drive N, your DOS prompt is N> to show that N is your current (default) drive.

    If you're sharing your devices to the network, your root directory of drive C should be your current directory (C:\).

4. Enter the following command at the DOS prompt:

```
netpath
```

>   **Note:** If the server did not use the PC
>   Network Program Installation Aid or if you've
>   created your own path, NETPATH will not
>   work.

5. Enter the following command at the DOS prompt:

```
help
```

"HELP" gives you a list of the installed
applications and the commands to start them.

>   **Note:** Refer to your application manual for
>   more instructions on how to use the
>   application.

If you are using applications from the network, the
person who installed the application gave you some
information about how to start the applications
that are available to you. If the information was
not given to you, ask the person who installed the
application or is responsible for the server
computer for the information. Use the information
to start your applications.

If you installed the applications with the PC
Network Program Installation Aid and are sharing
them, you printed some information about how to
start the applications. Make sure that this
information is available for the network users who
plan to use the applications.

COMMANDS

6. After you've started your applications, see the
    following section and "Interrupting Applications
    and Programs To Do Network Tasks" on page
    4-26 for instructions about using the PC Network
    Program while your applications are running.

    > **Note:** If you're using a color display, some
    > applications may change your display to black
    > and white. Use the following DOS MODE
    > command to change your display back to
    > color:

    MODE C080

Printing Files from Applications

Files that you send to a network printer or to a printer
that you've shared may not be put in the print queue
immediately. The files must have an end-of-file
indicator (EOF character) to be able to start printing.
You can press Ctrl-Alt-PrtSc to put an end-of-file
indicator on a file after you send the file to be printed.

To determine if a Ctrl-Alt-PrtSc is needed, you should
use the Print Queue display to see if your file is in the
queue. See Check or Change the Print Queue in
Chapter 5, or the NET PRINT command in Chapter 7.

For example, you may be using an application and send
a file to a network printer, or to a printer that you've
shared. Then, while you're in the application, press
Ctrl-Alt-PrtSc to send the end-of-file indicator to the
queue.

Wait, until your application has sent the entire file to be
printed, before pressing the Ctrl-Alt-PrtSc. If you
press the Ctrl-Alt-PrtSc keys too soon, your print file
can split into two print files.

Interrupting Your Applications to Use the Network

If you are using the redirector or receiver configuration, you cannot interrupt your applications to do a network task. You must enter commands to do tasks at the DOS prompt.

If you are using the server or the messenger configuration, you can interrupt your applications to do a PC Network Program task. Follow these instructions:

1. Press the Network Request keys (Ctrl-Alt-Break).

   The "Main Menu—Task Selection" is displayed.

   > **Note:** If you press the Network Request keys (Ctrl-Alt-Break) while a network command is running, the network request is delayed until after the command completes.

2. Press F2.

   A command line is displayed at the bottom of your menu.

3. Type your network command. (Notice that "NET" is already on the command line, so you don't need to type it.)

4. Press Enter.

5. Press Esc to get back to your application.

   > **Note:** You cannot enter DOS commands, including MODE and PERMIT, from the command line. If you want to enter a DOS command, you must go the the DOS prompt.

Doing Network Tasks With Commands

After you have started the PC Network Program, set the program up, and started using your applications and programs, you may want to make changes to the way you are using the program, or you may want to do another task. You can enter PC Network Program commands to do network tasks.

You should go to "Chapter 5. Tasks You Can Do With the PC Network Program" on page 5-1 for descriptions of each PC Network task you can do. Chapter 5 also tells you why you may want to do the task and the command you should use to do the task.

For example, you may want to:

- Share a disk, directory, or printer (NET SHARE)

- Stop sharing a disk, directory, or printer (NET SHARE)

- Use a disk, directory, or printer (NET USE)

- Stop using a disk, directory, or printer (NET USE)

- Pause sharing a disk, directory, or printer (NET PAUSE)

- Pause using a disk, directory, or printer (NET PAUSE)

- Continue sharing a disk, directory, or printer (NET CONTINUE)

- Continue using a disk, directory, or printer (NET CONTINUE)

- Print a file on a network printer (NET PRINT)

- Check the print queue on a network printer (NET PRINT)

- Change the print queue on a printer you've shared (NET PRINT)

- Print a separator page on a printer you've shared (NET SEPARATOR)

- Stop printing a separator page on a printer you've shared (NET SEPARATOR)

- Send a message to one computer (NET SEND)

- Send a message to all computers (NET SEND)

- Log messages to a file or printer (NET LOG)

- Stop logging messages to a file or printer (NET LOG)

- Add names to your computer for which you can receive messages (NET NAME)

- Stop receiving messages for a name on your computer (NET NAME)

- Forward messages for a name on your computer (NET FORWARD)

- Stop forwarding messages for a name on your computer (NET FORWARD)

COMMANDS

Doing Network Commands with Batch Files

Any network command can be placed in a DOS batch file (.BAT file) to ease repetitive use of the commands. You can create batch files for starting up the network or to do any series of operations you do frequently.

Example Batch File:

```
echo off
net start srv server
if errorlevel 1 goto nostart
echo Network started
   •
   •    (other commands)
   •
goto done
:nostart
echo *** NETWORK NOT STARTED ***
:done
```

All network commands set the DOS ERRORLEVEL value. This allows the batch file to determine if the network command was successful. The ERRORLEVEL value is set to zero if successful or greater than zero if an error occurred. A PC Network command ends in error if a message starting with NETxxx is displayed.

For more information about Batch files and how to use ERRORLEVEL, see the *DOS Technical Reference*, Version 3.10.

Chapter 7. PC Network Program Command Reference

Contents

COMMANDS

Introduction

The PC Network Program commands are like DOS
commands. All of the PC Network Program commands
are *external* commands which means that the commands
must be read from a diskette or fixed disk before they
execute.

Use the *PC Network Program Quick Reference Card* as
a quick reference aid to the PC Network commands.

Command Information Format

The following tells you the format of, and how to use,
the command information in this chapter.

Purpose   Tells you what the command does.

Use with   Tells you the PC Network configurations
                 where the command is valid.

Format   Tells you the way in which you must type
                 the command.

                 Multiple format commands include a title
                 line next to the format number. The
                 format for these commands is shown
                 below the title line.

Syntax   The syntax includes any special symbols
                 you must use with the command and the
                 parameters and *operands* for the command.
                 Parameters and *operands* are information
                 that you can include with your commands
                 to identify additional information for the
                 command. *Parameters* start with a slash
                 (/). *Operands* do not start with a slash.

Some parameters and operands are
required and others are optional. Some
have default values, which means that, if
you do not include the parameter or
operands in your command, the system
provides a default value.

Remarks   Tell you other information you need to
know about the command.

Examples   Show some ways that you can use the
command.

Command Format

The formats for the PC Network commands are shown
with the same symbols and characters that you used for
DOS commands.

Remember:

* **Uppercase (A,B,C, etc.)** indicates a keyword
  parameter or operand. You must type the word
  exactly as it is shown using uppercase and/or
  lowercase letters.

* *Italics (a,b,c,* etc.) indicate a replaced word
  parameter or operand. You must replace the word
  with the correct word. For example, you must
  replace the word *device* with the correct device
  name for your system, such as LPT2. You can type
  the correct word using uppercase and/or lowercase
  letters.

- **Brackets []** indicate an optional parameter or operand or a group of optional parameters or operands. You can use the parameter or operand shown in brackets if you want to. Do not type the brackets.

- **Braces {}** indicate a group of parameters or operands. You must use one of the parameters or operands in the group. Do not type the braces.

- **Bars |** indicate a choice of parameters or operands. You must choose one of the parameters or operands separated by the bar. For example, you must choose YES or NO if the operands are shown as YES | NO. Do not type the bar.

- **Ellipses ...** indicate a repeatable parameter or operand. You can use the parameter or operand as many times as you want to use it. Do not type the ellipses.

- You must include all punctuation (except brackets, braces, ellipses and bars) such as periods, equal signs, slashes, and backslashes where shown.

COMMANDS

PC Network Command Parameters and Operands

You can use the following parameters and operands in the PC Network commands:

Parameter or Operand	Definition
d:	Drive specifier, A - Z, of a computer. You must type the letter followed by a colon (:).

filename	Name, 1 to 8 characters, of a file or of a device. When you type a filename, DOS checks for invalid characters. The following characters are *invalid* in filenames:
	
	`.  "  /  \  [  ]  :  |  <  >  +  =  ;  ,  *  ?`
	
	`ASCII characters less than 20H`
	
	You can use any other characters in the filename.
	
	You can also use an *extension* with the filename.
	
	You can use the following names for devices:
	
	• CON for console (your display)
	• PRN or LPT1 for your first parallel printer
	• LPT2 for your second parallel printer
	• LPT3 for your third parallel printer

Parameter or Operand	Definition
	• AUX or COM1 for a device, such as a serial printer, attached to your first Asynchronous Communications Adapter port • COM2 for a device, such as a serial printer, attached to your second Asynchronous Communications Adapter port • Installable device driver names These names are **reserved device names** meaning that the names are already defined in DOS to be the name by which DOS recognizes the device.
.ext	Extension or extra name for a filename or dirname. The extension consists of a period followed by 1 to 3 characters. The following characters are *invalid* in an extension: . " / \ [ ] : | < > + = ; , * ? ASCII characters less than 20H You can use any other characters in the extension.

Parameter or Operand	Definition
shortname	Name, 1 to 8 characters, for a network device or directory. You may want to use a shortname so that other users do not need to know a directory path and so that you can change the path without affecting network users. You can use the same characters in the shortname that you can use in a filename. You cannot use an underscore (__) as the leading character of a shortname.
path	Route to a DOS directory in the following format: [\ ][*dirname*][\ *dirname*[...]] The first \ tells DOS to start the path at the root directory. If you do not use the first \, DOS starts the path at your current directory (the directory you are using when you enter the command). The dirname is the name of the next level of directory that you want to go to.
dirname	Name, 1 to 8 characters, for a DOS directory. You can also use an extension (a period and 1 to 3 characters) with the dirname. For example, you may have a *dirname.ext* of **pay.apr** for a payroll directory for the month of April. You can use the same characters in the directory that you can use in a filename.

Parameter or Operand	Definition
password	Security name, 1 to 8 characters, for a device or directory. You can use the same characters in the password that you can use in a filename. You cannot use an extension with a password.
message	Information you want to send to another computer name or user name on the PC Network. Some control characters, such as a tab, are not always processed as expected, so you should not use these characters in a message. You can use any printable characters and spaces in the message.
printdevice	DOS reserved device name for a printer. You can use the following names for the printdevice: • PRN or LPT1 for your first parallel printer • LPT2 and LPT3 for your second and third parallel printers • AUX or COM1 for your first serial printer (attached to a communications adaptor) • COM2 for your second serial printer (attached to a communications adaptor) • Installable printer device drivers

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Parameter or Operand	Definition
printname	DOS name for a network printer. You can use the following printnames: • PRN or LPT1 • LPT2 • LPT3
configuration or *program*	Name of a network configuration or program. The configuration or program can be the following: • RDR or REDIRECTOR for the Redirector • RCV or RECEIVER for the Receiver Program • MSG or MESSENGER for the Messenger Program • SRV or SERVER for the Server Program
addname or *username*	Network name, 1 to 15 characters, for an additional user that can receive messages on a computer. You can use the same characters in the username that you can use in a filename. You cannot use an extension with a username.

Parameter or Operand	Definition
computername or \ \ *computername*	Name, 1 to 15 characters, of a computer on the network. You must use the \ \ characters if you are using the computername with a path. You can use the same characters in the computername that you can use in a filename. You cannot use an extension with a computername.

NET
Command

Purpose: Use the NET command to start the PC Network Program menus.

Use with: Server, Messenger, Receiver, Redirector

Format: **Starting the menus**

NET

Remarks: If you enter the NET command before you start the network, you see the first network screen.

If you have started the network and enter the NET command, you see the "Main Menu—Task Selection."

Example: **Displaying network menus**

In this example, you want to use the network menus to do a network task.

> **Note:** You need to be in the \NETWORK directory, if you've using the PC Network Program on a 2HC diskette or fixed disk.

Enter the following command:

net

You see the first network screen or the task selection screen.

NET CONTINUE
Command

Purpose: Use the NET CONTINUE command to restart the
PC Network Server, Messenger, Receiver, Disk
Redirection, or Print Redirection after you have
temporarily stopped the function using NET PAUSE.
NET CONTINUE restores the function to the same
status as before the function was temporarily
stopped.

Use with: Server, Messenger, Receiver, Redirector

Format 1:   **Continuing a function**

NET CONT[INUE] *function* [*function*] ...

Format 2:   **Continuing printing** (Server only)

NET CONT[INUE] PRINT [=*printdevice*]

Syntax:

function   PC Network function you want to
continue:

DRDR

Continues the Disk Redirection so
that you can use network disks and
directories again.

PRDR

Continues the Print Redirection so
that you can use network printers
and continue spooling files to all
printers again.

NET CONTINUE
Command

                RCV or RECEIVER

                Continues the Receiver so that you can receive messages again.

                MSG or MESSENGER

                Continues the Messenger so that you can receive messages for yourself and other names again.

                SRV or SERVER

                Continues the Server so that you can share your disks, directories, and printers again.

PRINT or PRT   Continues spooling files to all printers.

=printdevice   DOS name for the printer you want to continue (only the specified printer is continued).

Remarks: If you are using the Server, printing on all of your printers is automatically restarted if you restart the Print Redirection (PRDR).

You cannot continue MSG if sharing (SRV) is paused. If the server is paused, you have to enter the NET CONT SRV command to continue receiving messages. If you enter the NET CONT MSG command while the SRV is paused, you will get the following error message:

```
NET821: Sharing temporarily paused
```

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NET CONTINUE
Command

If you are using the server, receiving messages is automatically restarted when you restart the server.

You cannot continue PRINT if the Print Redirection (PRDR) is paused. If the Print Redirection is paused, you have to enter the NET CONT PRDR command to continue printing on all of your printers. If you enter the NET CONT PRINT command while the PRDR is paused, you get the following error:

```
NET822: Print or Disk redirection is paused
```

NET CONTINUE PRINT restarts printing on all of your printers. Printing begins with the first file in the print queue. If you paused printing while a file was being printed, NET CONTINUE PRINT reprints the file starting at the beginning of the file. This file may not be the first file printed.

Examples: **Continuing the Disk Redirection**

In this example, you used a network disk as your drive A. You then wanted to use your real drive A, so you paused the Disk Redirection so that your requests to use drive A are no longer redirected to a network disk. Now, you want to use the network disk as your drive A again. Enter the following command:

```
net cont drdr
```

You can use network disks again.

NET CONTINUE
Command

Continuing the Print Redirection

In this example, you used a network printer as your
LPT1. You then wanted to use your real printer
LPT1, so you paused the Print Redirection so that
your requests to use LPT1 are no longer redirected
to the network printer. Now, you want to use the
network printer as your printer LPT1 again. Enter
the following command:

```
net cont prdr
```

You can use network printers again.

Continuing the Messenger

In this example, you have temporarily stopped the
Messenger so that you cannot receive messages. You
want to start receiving messages again. Enter the
following command:

```
net cont msg
```

or

```
net continue messenger
```

You can receive messages again.

Continuing the Server

In this example, you have temporarily stopped the Server so that other computers cannot use the disk and printer you have shared or send you messages for other computers. You want to let other computers use your disk and printer again and receive messages for other computers again.

Enter the following command:

```
net cont srv
```

or

```
net continue server
```

Other users can use your devices again and you can receive messages for other computers again.

Continuing more than one function

In this example, you have paused the Print Redirection and the Disk Redirection so that you cannot use network disks and printers. You want to use network disks and printers again. Enter the following command:

```
net cont drdr prdr
```

You can use network devices again.

COMMANDS

NET CONTINUE
Command

Continuing printing

In this example, you temporarily stopped printing
network files on your printer. Now, you want to
start printing network files on your printer again.
Enter the following command:

```
net continue print
```

Your printers start printing network files again.

Continuing printing on a specified printer

In this example, you were sharing two printers, LPT1
and LPT2. You want to print on LPT1 again, but
not LPT2. Enter the following command:

```
net cont prt=lpt1
```

Only your printer LPT1 will print files.

Other computers can use your printer again. Your
printer continues printing beginning with the first file
in the print queue.

NET ERROR
Command

Purpose: Use NET ERROR to display a list of errors that have occurred on the network.

Use with: Server, Messenger

Format: NET ERROR [/D]

Syntax:

        /D   Deletes the error list (displays and then deletes the list)

Remarks: You should use NET ERROR to check the status of the network. If you are using the Server or Messenger configuration, you should use NET ERROR to check errors that may have occurred on your computer.

The error list size is limited. If the size is exceeded, the "oldest" error is deleted and the new error is added to the top of the error list. You should enter NET ERROR /D when you display the error list so that you don't lose errors.

All errors include the time of the error and a message; some errors include specific information about the error.

NET ERROR
Command

The possible error list entries are the following:

- UNABLE TO ACCESS *d:\ path\ filename.ext*

  This error indicates that either the Messenger or Server could not access the specified file because:

  - The file was on a diskette and the diskette was not in the correct drive or the drive door was open.
  - The file was on a write-protected diskette.
  - The file has been deleted or renamed.
  - The file has been relocated because of a DOS JOIN, SUBST or ASSIGN command or because of a NET USE command.
  - The file was in use by another computer when the Messenger or Server tried to access it.

- NETWORK ERROR

  This error indicates that an unexpected NET BIOS error has occurred. The PC Network Program was unable to complete a request that was sent to it.

  The actual network error is displayed as the internal (hexadecimal) representation of the NET BIOS Control Block (NCB). See the *PC Network Technical Reference* for more information about the error.

- PRINT FILE ERROR

   This error indicates that the Server could not access the print queue file containing the text to print. The print queue ID number and the submitter of the file is displayed. The Server could not access the specified file because:

   – The file was on a diskette and the diskette was not in the correct drive or the drive door was open.
   – The file has been deleted or renamed.
   – The file has been relocated because of a DOS JOIN, SUBST or ASSIGN command or because of a NET USE command.

- SERVER ERROR

   This error indicates that the Messenger or the Server received an invalid request from the network. This request couldn't be processed and was ignored.

   If the text "FFSMB" is displayed, then the error may have been caused by someone on the network trying to use a Messenger as a Server. If "FFSMB" is not displayed, the request that caused the error probably was made by a network application program and was sent to this computer by mistake.

   The actual network error is displayed as the internal (hexadecimal) representation of the SERVER MESSAGE BLOCK (SMB).

NET ERROR
Command

- *message*

  The error is an error message that is explained by the text of the message. See "Appendix A. Messages" on page A-3 for more information.

NET FILE
Command

Purpose: Use NET FILE to display the current users and current record locks for a file and to close a file that is opened by other computers or that has locked records.

Use with: Server

Format 1: **Check the status of all open files**

NET FILE

Format 2: **Check the status of a specific file**

NET FILE [*d*:][*path*]*filename*[.ext]

Format 3: **Closing a file on your computer**

NET FILE [*d*:][*path*]*filename*[.ext] /C

Syntax:

d:	Drive specifier for the drive that contains the file (A:, B:, C:, etc.)
path	Route to a DOS directory (if the file is in a directory) in the format [\][*dirname*] [\ *dirname*[...][\]]
filename	Name of the file that you want to check or close
.ext	Extension for the filename
/C	Close the file

NET FILE
Command

Remarks: Only the server computer can enter NET FILE. You should use NET FILE to recover from errors caused by files being left open or by files being locked. The locked files cannot be accessed by other computers. You can use NET FILE to close the files and release the locks so that the other computers can access the file. If you enter NET FILE with only a filename, status information about the file is displayed. If you enter NET FILE without a filename, information about all open files is displayed. The information lists the user or users for each file and the number of locks each user has on the file.

You can use NET FILE as many times as necessary after you start DOS and the PC Network Program.

If you enter NET FILE with /C, the specified file is closed.

IMPORTANT: You should not close a file unless you are sure that the file is not being used. If you close a file while another computer is using the file, the other computer loses use of the file and receives an error.

Examples: **Checking the status of all open files**

In this example, you want to see the status of all open files on your machine. Enter the the following command:

```
net file
```

A list of all open files, with the users and record locks for each file, is displayed.

Checking the status of a file

In this example, you want to see if a file named
april.dat in subdirectory **payroll** of your fixed disk **C** is
closed. Enter the the following command:

```
net file c:\payroll\april.dat
```

If APRIL.DAT is open, a table showing the users of
APRIL.DAT and the open record locks is displayed.

Closing a file on your computer

In this example, you want to close a file named
april.dat in subdirectory **payroll** of your fixed disk **C**.
Enter the following command:

```
net file c:\payroll\april.dat /C
```

A warning prompt is displayed, if you answer yes,
the file is closed.

IMPORTANT: In this example, if the file is being
used by another computer, the other computer loses
the use of the file and receives an error.

NET FORWARD
Command

Purpose: Use the NET FORWARD command to forward
messages sent to a computername or additional name
on your computer to a computer name or additional
name on another network computer.

Use with: Server, Messenger

Format 1: **Forwarding to another computer**

NET FOR[WARD] {*computername1* | *username1*}
{*computername2* | *username2*}

Format 2: **Stop forwarding**

NET FOR[WARD] {*computername1* | *username1*}
/D

Syntax:

computername1	Name of your computer (if you want to forward your own messages)
username1	Name of an additional user on your computer (if you want to forward messages for another name on your computer)
computername2	Name of the computer to which you want to forward messages

NET FORWARD
Command

username2	Name of the user to whom you want to forward messages
/D	Delete or stop forwarding messages for computername1 or username1

Remarks: You can only forward messages to another Server computer or Messenger computer because the person at the other computer must be able to add the name. If they didn't change the number of additional names they can have on their computer when they started the network, they only have room for 1 additional name. Messages can only be forwarded once for a computername or username. For example, if you are receiving forwarded messages for computername ANN, you can't forward messages for ANN to another computer.

You can use NET FORWARD /D to stop forwarding for a name only if you entered NET FORWARD to forward the messages. For example, if you are receiving forwarded messages for computername ANN because another computer entered NET FORWARD to forward the messages to you, you cannot use NET FORWARD /D to stop the forwarding. However, you can enter NET NAME /D to remove the forwarded computername or username from your computer.

COMMANDS

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NET FORWARD
Command

Example: **Forwarding messages**

In this example, computername RICK wants to forward his messages to SCOTT. RICK enters the following command:

```
net forward rick scott
```

Messages to RICK are forwarded to SCOTT's computer.

> **Note:** SCOTT will receive RICK's messages even if RICK switches off his computer.

Stop forwarding messages

In this example, RICK forwarded his messages to another computer. RICK no longer wants to forward his messages. RICK enters the following command:

```
net forward rick /d
```

RICK receives his own messages again.

Stop receiving forwarded messages

In this example, SCOTT is receiving RICK's messages because RICK forwarded his messages to SCOTT. SCOTT doesn't want to receive RICK's messages any more. Scott enters the following:

```
net name rick /d
```

SCOTT no longer receives RICK's messages. RICK receives his own messages again.

NET LOG
Command

Purpose: You can use the NET LOG Command to start or stop placing messages that you receive into a specified device or file. You can also use NET LOG to display the status of logging.

Use with: Server, Messenger, Receiver

Format 1: **Logging to a file**

NET LOG [{*d:* | \ \ *computername*}]
[*path*]*filename*[*.ext*]

Format 2: **Logging to a device**

NET LOG {*printdevice* | CON}

Format 3: **Turning on or off previous logging**

NET LOG {/ON | /OFF}

Format 4: **Displaying the status of logging**

NET LOG

Syntax:

> *d:*   Drive specifier for the drive that contains the log file (A:, B:, C:, etc.)
>
> \ \ *computername* Name of the network computer that has the file or device to which you want to log messages.

NET LOG
Command

path	Route to a directory (if the log file is in a directory) in the format [\][*dirname*][\ *dirname*[...][\]]
filename	Name of the file to which you are logging messages
.ext	Extension for the filename
printdevice	Name of the printer to which you are logging messages (PRN, LPT1, LPT2, LPT3, COM1, COM2, AUX or installable device drivers)
CON	Console or display
/ON	Start logging (default)
/OFF	Stop logging

Remarks: You can use NET LOG to indicate that messages sent to any additional name or computername on your computer should be directed to a specified file or device. The file or device can be attached to your computer or can be a network file or device.

If you are using a server or messenger configuration, messages are logged to memory (a window appears on your screen when a message is received, to inform you that a message is waiting to be viewed), unless you specify another place to log them. If you are using a receiver configuration, messages are logged to your console, unless you specify another place to log them.

Do not save messages to a printer on another
computer, or to your printer if it is shared with
others on the network. Due to activity on the server
computer there is the possibility that when the
message is printed, it will print in more than one
piece (each piece can have a separate separator
page). It is also possible that the reception of a
message, when logging to a network printer, can
cause data, being sent by your application to the
printer, to split in a similar manner. This occurs
because data sent to the printer arrives from two
different sources at the same time. The network
program automatically separates the data when this
happens but it results in the splitting up of printer
output.

If you start logging messages to a file that is on a
diskette, the diskette must be inserted in the drive
that you specified in the NET LOG Command. The
diskette must stay in the drive as long as logging is
ON. If the diskette is not in the correct drive and the
person receiving the message is using the Receiver
configuration, the sender gets an error message. If
the diskette is not in the correct drive and the person
receiving the message is using the Server or
Messenger configuration, the sender doesn't get an
error message. The message is stored in memory as a
"waiting" message, and an error message is logged to
the error file (see the "NET ERROR Command" on
page 7-19).

If you enter NET LOG and specify an existing file in
which to log messages, messages are logged at the
end of the file. If you specify a new file in which to
log messages, the file is created and messages are
logged starting at the beginning of the file.

COMMANDS

NET LOG
Command

NET LOG /OFF stops logging. Messages are displayed on the console again. NET LOG /ON starts logging to the file or device that you last specified with NET LOG.

If you enter NET LOG without any parameters, the status of logging for your computer is displayed. The status includes the name of the file or device to which you are logging messages and if logging is ON or OFF.

You can view your logged messages by:

- Using the PC Network Program Menus and choosing to "View Messages," if you are using the server or messenger configuration.

- Displaying the contents of your log file. You can use an editor such as DOS EDLIN, or you can use the DOS TYPE command to display the file.

To delete messages from the log file:

- If you are using the server or messenger configuration, you must use the PC Network Program Menus and choose to "View Messages." Then, use the delete message key (Ctrl-PgUp).

- If you are using the receiver configuration, you must use an editor such as DOS EDLIN.

Examples: **Log messages in a new file**

In this example, you want to store your messages in a
new DOS file on your computer. The file is called
MSG.LOG. You want the file to be in your root
directory. Enter the following command:

```
net log \msg.log
```

The DOS file MSG.LOG is created. All messages
for you or any other usernames on your computer
are stored starting at the beginning of the file. You
no longer see messages on your screen.

Log messages in an existing file

In this example, you want to store your messages in
an existing DOS file on your computer. The file is
called MSG.LOG. The file is in the root directory
on your computer. Enter the following command:

```
net log \msg.log
```

All messages for you or any other usernames on
your computer are stored at the end of the file
MSG.LOG. You no longer receive messages on your
screen.

NET LOG
Command

Stop logging messages

In this example, you want to stop storing messages in your DOS file called MSG.LOG. Enter the following command:

```
net log /off
```

Messages for you or any other usernames on your computer are no longer stored in the file. You now see messages on your screen.

Start logging messages again

In this example, you want to start logging messages again. You entered NET LOG previously and specified the file MSG.LOG as the file in which to log your messages. Enter the following command:

```
net log /on
```

Messages are logged at the end of the file MSG.LOG again.

Displaying messages on the printer

In this example, you want to print your messages on your second printer. Enter the following command:

```
net log lpt2
```

Messages are printed on your printer LPT2.

NET LOG
Command

Log messages in a file on a network computer

In this example, you want to store your messages in a
DOS file named MSG.LOG in subdirectory named
DIR2 on a network computer named RICK. Enter
the following command:

```
net log \\rick\dir2\msg.log
```

> **Note:** The previous example assumes computer
> Rick has previously shared his root directory
> with the command:
>
> ```
> net share \
> ```

If you have used the network directory
\\RICK\DIR2 for a drive letter such as B, then
you can enter the following command:

```
net log b:\msg.log
```

Your messages are stored in the file MSG.LOG on
Rick's computer.

NET NAME
Command

Purpose: Use the NET NAME command to specify additional names for which you want to receive messages. You can also use NET NAME to display the computer name, additional names, and forwarded names on your computer.

Use with: Server, Messenger, Receiver, Redirector

Format 1: **Adding a name for messages** (Server or Messenger only)

NET NAME *addname*

Format 2: **Deleting an additional name for messages** (Server or Messenger only)

NET NAME *addname* /D

Format 3: **Displaying your computer's name, additional names, and forwarded names**

NET NAME

Syntax:

addname	Name for an additional user that can receive messages on your computer
/D	Delete the specified additional name

NET NAME
Command

Remarks: The names you add with NET NAME can receive messages on your computer but cannot send messages. Only the computer name that you specified when you used NET START to start the PC Network Program can send messages from your computer.

You must specify the number of names for which you want to receive messages when you start the PC Network Program. You can use the /USN parameter of the NET START command to specify that you want to receive messages for a total of up to 12 additional names and forwarded names. If you do not use the /USN parameter, you can receive messages for only one additional name.

The /D parameter allows you to delete an additional name from your computer. You no longer receive messages for that name. Also, if you are receiving forwarded messages for a name, you can use /D to delete the forwarded name from your computer. You cannot delete your computer name from your computer using /D.

If you enter NET NAME without any parameters, a list of your computer's name and additional names for which you are receiving messages (including forwarded names) is displayed.

COMMANDS

NET NAME
Command

Examples: **Adding a name for messages to your computer**

In this example, you want to add the name PATTY
to your computer. Enter the following command:

```
net name patty
```

You now can receive messages for PATTY on your
computer. Any messages you send are sent only
from the computername you entered when you
started the network.

Deleting a username

In this example, you want to delete the additional
name PATTY that you added to your computer.
Enter the following command:

```
net name patty /d
```

You can no longer receive messages for PATTY on
your computer.

Displaying your computer name and additional names

In this example, you want to list the names that can
receive messages on your computer. Enter the
following command:

```
net name
```

A list of the names for which you are receiving
messages is displayed.

NET NAME
Command

Check if a name is active on the network

In this example, you want to see if RICKE is on the network. Enter the following command:

```
net name ricke    >NUL
```

If you get a "Name already exists on the network" message, then the name is in use (active). If you do not get the message, the following command removes the name if it was successfully added on your computer:

```
net name ricke /d  >NUL
```

This example can be used to see if someone (RICKE in this example) is on the network before attempting to send them a long message.

NET PAUSE
Command

Purpose: Use the NET PAUSE command to temporarily stop the PC Network Server, Messenger, Receiver, Disk Redirection, or Print Redirection functions. The functions remain in your computer's memory.

Use with: Server, Messenger, Receiver, Redirector

Format 1: **Pausing a function**

NET PAUSE *function* [*function*] [...]

Format 2: **Pausing printing** (Server only)

NET PAUSE PRINT[=*printdevice*]

Syntax:

function	PC Network function you want to pause (DRDR, PRDR, RCV or RECEIVER, MSG or MESSENGER, SRV or SERVER)
PRINT or PRT	Pause printing
printdevice	DOS name for the printer that you want to pause (LPT1, LPT2, ...)

NET PAUSE
Command

Remarks: You may want to use NET PAUSE to temporarily regain private use of your devices or files. For example:

- If you are using a network device as your drive A, you can't use your real drive A. But, if you pause the Disk Redirection, the network device or directory is no longer your drive A and you can use your real drive A.

- If you are using a network printer as your LPT1, you can't use your real LPT1. But, if you pause the Print Redirection, the network printer is no longer your LPT1 and you can use your real printer as your LPT1.

- If you are receiving messages, you may want to stop receiving them temporarily. If you pause the Messenger or Receiver (depending on which function you started), you no longer receive messages.

- If you are sharing a device or directory with other network computers, you no longer have the only access to the device or directory. But, if you pause the Server, other computers can no longer use the device or directory and you regain private use of the device or directory.

NET PAUSE does not delete the network names you have specified with NET SHARE or NET USE, and it does not delete the user names you have specified with NET START or NET NAME. The names are still in your computer's memory.

NET PAUSE
Command

You can use the NET CONTINUE command to
start the function again. The original network names
and user names you used with the functions are still
in your computer's memory.

If you are using the Server function and pause the
server, your messenger function is automatically
paused also.

If you are using the Server function and pause the
Print Redirection, spooled printing on all your
printers is automatically paused also.

You can only pause the Server if no one is using a
disk or directory that you've shared. You'll receive
an error message if you try to pause the Server while
your computer has shared network files that are
being used.

If you are sharing your printer and then pause the
Server, other users can no longer use your printer.
The Server no longer accepts files that are sent to
your print queue; however, files that are already in
the print queue are printed.

If you want to pause printing the files in the print
queue, you must use the PRINT parameter. Entering
NET PAUSE PRINT causes the printing to be
cancelled; however, the file that is being printed
remains in the print queue. The file will be printed
when you restart printing with the NET CONTINUE
command. Other files in the print queue also remain
in the queue. You must enter NET CONTINUE
PRINT to continue printing the files in the queue.

Examples: **Pausing the Disk Redirection**

In this example, you are using a disk on a network computer as your drive B because your application uses drive B to store data. Now, you want to use your real drive B so that you can copy files to another diskette. Enter the following command:

```
net pause drdr
```

Pausing the Print Redirection

In this example, you are using a printer on a network computer as your LPT2. Now, you want to use your real printer LPT2. Enter the following command:

```
net pause prdr
```

Pausing the Receiver

In this example you started the receiver configuration, and have decided to temporarily stop receiving messages. Enter the following command:

```
net pause rcv
```

or

```
net pause receiver
```

You no longer will receive messages, but you can still send messages. Enter NET CONTINUE RCV if you want to start receiving messages again.

COMMANDS

NET PAUSE
Command

Pausing the Messenger

In this example you started the messenger or server configuration, and have decided to temporarily stop receiving messages. Enter the following command:

```
net pause msg
```

or

```
net pause messenger
```

You can no longer receive messages, but you still can send messages. Use NET CONTINUE MSG when you're ready to start receiving messages again.

Pausing the Server

In this example, you are sharing your fixed disk D with other network computers. You want to backup your disk but want to be sure that no one uses any files from the disk while you back it up. You must temporarily quit sharing so that you can back up the disk. Enter the following command:

```
net pause srv
```

or

```
net pause server
```

Other users can no longer use your devices, but you can still use your devices. Use NET CONTINUE SRV to let other users share your devices again.

NET PAUSE
Command

Pausing more than one function

In this example, you want to temporarily stop using network disks and printers. Enter the following command:

```
net pause drdr prdr
```

You can no longer use network devices, but you can still use your devices. Use NET CONTINUE DRDR PRDR to use network disks and printers again.

Pausing printing on all printers

In this example, you need to check the paper and ribbons in the printers you are sharing with the network.

You want to allow other computers to keep sending files to your printers, but you want to temporarily stop printing files so that you can service the printers. Enter the following command:

```
net pause print
```

The files in the print queue are not printed. The files, including the file that was being printed when you entered NET PAUSE PRINT, remain in the queue. Other computers can still send files to the print queue.

COMMANDS

NET PAUSE
Command

When you've serviced the printers, you can use NET CONTINUE to continue the printers. The file that was being printed is reprinted from the beginning. Files from the print queue will be printed.

> **Note:** When pausing printing, a file currently being printed will be cancelled and put back in the queue. This file will be restored when printing is continued.

Pausing printing on a specified printer

In this example, the printer you are sharing, LPT1, needs to be fixed. You want to allow other computers to keep sending files to your printer, but you want to temporarily stop printing files on the printer so that it can be fixed. Enter the following command:

```
net pause print=lpt1
```

The files in the queue are not printed. The files, including the file that was being printed when you entered NET PAUSE PRINT, remain in the queue. Other computers can still send files to the print queue.

After you fix the printer, you can use NET CONTINUE to continue the printer. The file that was being printed is reprinted from the beginning. Files from the print queue will be printed.

NET PRINT
Command

Purpose: Use the NET PRINT command instead of the DOS Print command. The NET PRINT command allows you to send a file to a printer that you are sharing with other network users or to a network printer that you are using. You can also use the NET PRINT command to display the status of your print queue or of a network print queue.

Use with: Server, Messenger, Receiver, Redirector

Format 1: Printing on a remote or local printer

NET PRINT [*d:* | \ \ *computername1*]
[*path*]*filename*[*.ext*] *printdevice*

Format 2: Displaying print status of a remote print queue

NET PRINT \ \ *computername2*

Format 3: Displaying print status of the local print queue (server only)

NET PRINT

Syntax:

d:	Drive specifier for the drive that contains the file you want to print (A:, B:, C:, etc.)

NET PRINT
Command

\ \ *computername1*	Name of the network computer that has the file you want to print
path	Route to a directory (if the file is in a directory) in the format [\ ][*dirname*] [\ *dirname*[...][\ ]]
filename	Name of the file you want to print
.ext	Extension for the filename
\ \ *computername2*	Name of the computer to which the remote printer is attached
	You can enter NET USE to find out which computer the printer is attached to.
printdevice	DOS name for the printer you want to use (LPT1, LPT2, LPT3, AUX, COM1, COM2, or installable device drivers)
	Note: Only LPT1, LPT2, or LPT3 can be specified if the printer is not attached to your machine.

Remarks: You should use NET PRINT to send a file to a PC
Network printer to be printed even if the printer is
attached to your computer.

You can use the command shown in format 1 to print
a file even if the printer is not a network printer.
You must specify a print device on this command.

If the printer is not attached to your computer, you
can use the command shown in Format 2 to display
the print queue. A list of all the files that you have
submitted to the printer and the status of the files are
displayed. You cannot change the status of the files
in the queue. Only the computer to which the printer
is attached can change the status of the queue.

You can also use NET PRINT to display status
information about PC Network printers. If the
printer is attached to your computer, you can enter
NET PRINT (Format 3) to display a list of the print
queue, the files in the queue, and the status of the
files. You can use the PC Network menus to change
the print queue.

> **Note:** For servers only, if the file to be printed
> is not on your computer, and the device you are
> printing to is not LPT1, LPT2, or LPT3 (for
> example, COM1) the file will not be spooled
> (queued) but will be sent directly to COM1. To
> avoid this, it is suggested that if you share
> COM1, that you also use it yourself as well.

NET PRINT
Command

The NET PRINT command does not support the DOS global characters (* and ?) in the filename. To submit multiple files, you must use the DOS FOR command to repeat the NET PRINT for each file. For example, to print all .ASM files from the DOS command line, enter the following:

```
for %i in (*.asm) do net print %i lpt1
```

To make a batch file (NETPRINT.BAT) to do multiple NET PRINT commands, enter the following:

```
copy con netprint.bat
for %%i in (%1) do net print %%i %2
<F6> <enter>
```

To print all .ASM files, enter the following:

```
netprint *.asm lpt1
```

Examples: **Sending a file to a printer**

In this example, you are using a printer attached to another computer on the PC Network. The other computer is known as SAM. The printer is known as LPT1. You want to send your file named SAMLTR.TXT in a subdirectory named LETTERS to the printer. Enter the following command:

```
net print \letters\samltr.txt lpt1
```

NET PRINT
Command

Your file is sent to the print queue to be printed on LPT1.

> **Note:** You should have entered the correct NET USE command to use the printer before you send the file to the printer. If a NET USE is not done, the file will be printed locally.

Displaying status of a PC Network printer

In this example, you want to display the status of all the files that you've sent to be printed on the printer(s) attached to computername SAM. Enter the following command:

```
net print \\sam
```

A list of all the files that you have sent to SAM along with the current status of each file is displayed.

Displaying status of your PC Network printer

In this example, you are sharing your printer named LPT1 with other PC Network computers. You want to display the status of all the files that have been sent to be printed on your printer. Enter the following command:

```
net print
```

A list of the files that have been sent to your printer and the status of the files are displayed. If you want to change the print queue, you must use the PC Network Program menus.

COMMANDS

NET SEND
Command

Purpose: Use the NET SEND command to send messages to other computernames or usernames on the network.

Use with: Server, Messenger, Receiver, Redirector

Format: **Sending a message**

NET SEND {*computername* | *addname* | ***} *message*

Syntax:

computername	Name of computer that you want to send a message to
addname	Name of an additional user on a computer that you want to send a message to
*	Message is sent to all names
message	Message you want to send

Remarks: You can send a message of up to approximately 100 characters. The actual maximum message size varies depending on the length of the computer name or username. If you want to send a longer message, you must use the menus. The computer name or the additional name is the computer or user that you want to send a message to. After you send a message to a computer name or an additional name, you'll see a confirmation message telling you if the message was sent and received.

You can use * instead of a computer name or additional name if you want to send a message to all of the computers on the network (a *broadcast* message). You do not receive a confirmation message if you send a broadcast message.

If you want to send a message and use the message editor, you can use the PC Network Program menus and go to the "Send Messages" screen.

Examples: **Sending a message to one computer name or additional name**

In this example, you want to send a message to another computer named RICK. Enter the following command:

```
net send rick my printer is ready to use
```

The message is sent to RICK. A confirmation message is displayed on your computer.

Sending a message to all computer names

In this example, you want to send a message to all the names on the network. Enter the following command:

```
net send * my printer is ready to use
```

The message is sent to all the computernames on the PC Network. You do not receive a confirmation message.

COMMANDS

NET SEPARATOR
Command

Purpose: You can use NET SEPARATOR to control whether
or not a separator page is printed at the beginning of
your print file.

You can use NET SEPARATOR only if your
computer is a Server computer. You can use NET
SEPARATOR as many times as necessary after you
start DOS and the PC Network Program.

Use with: Server

Format 1:   **Printing a separator page that you created**

NET SEP[ARATOR] *printdevice*
[*d*:][*path*]*filename*[*.ext*]

Format 2:   **Printing the default separator page**

NET SEP[ARATOR] *printdevice*

Format 3:   **Stop printing previously specified separator page**

NET SEP[ARATOR] *printdevice* /D

Format 4:   **Separator Page Status**

NET SEP[ARATOR]

NET SEPARATOR
Command

Syntax:

printdevice	DOS name for the printer attached to your computer that you want to use (LPT1, LPT2, LPT3, AUX, COM1, COM2, or installable device drivers).
	The device must be shared before you can print a separator page on it.
d:	Drive specifier for the drive that contains the separator page file (A:, B:, C:, etc.)
path	Route to a directory (if the file is in a directory) in the format [\][*dirname*][\ *dirname*[...][\]]
filename	Name of the separator page file (the file must be on the Server computer, if not an error occurs)
.ext	Extension for the filename
/D	Stop printing the separator page

Remarks: If you do not want to print separator pages, you must use the NET SEPARATOR /D command. If you want to print your own separator page, you must enter the NET SEPARATOR command and specify the filename that contains the separator page you want to print.

NET SEPARATOR
Command

Each printer shared can have it's own separator page.

The default separator page is in a file named PQ.SEP and is provided with your PC Network Program. If you are using an IBM printer, use the PQ.SEP separator page file. If you are using a non-IBM-compatible printer, use the PQ.OEM separator page file.

> **Note:** The standard separator page is for the IBM Personal Computer Color Printer. You may need to modify the standard separator page file for other printers.

The separator page is an ASCII file.

You can also create your own separator pages. If you need instructions about creating or modifying a separator page, see "Using Separator Pages on Shared Printers" on page 10-19.

Examples: **Printing the default separator page**

In this example, you are sharing your LPT2 (a letter quality printer). You want to print the default separator page at the beginning of your files that are printed on the printer. Enter the following command:

```
net separator lpt2
```

The default separator page is printed between each file printed on LPT2.

NET SEPARATOR
Command

Printing a separator page that you create

In this example, you are sharing a letter quality
printer named LPT1. You want to print a separator
page that you create at the beginning of the files that
are printed on your printer.

You create a separator page named **BANNER.PG** in
your directory named **PRINTERS**. Enter the
following command:

```
net separator lpt1 c:\printers\banner.pg
```

Your separator page is printed at the beginning of
your files. See "Using Separator Pages on Shared
Printers" on page 10-19 for information on how to
create your own separator page.

Stop printing a separator page

In this example, you are using a letter quality printer
named COM1. You want to stop printing a
separator page at the beginning of your files that are
printed on the printer. Enter the following
command:

```
net separator com1 /d
```

A separator page will not print at the beginning of
your files.

NET SHARE
Command

Purpose: Use the NET SHARE command to let other computers use your devices or directories or to stop letting other computers use your devices or directories. You can also use NET SHARE to display a list of the devices you are sharing and the computers that are using the devices.

See "Chapter 10. Managing the Server Computer" on page 10-1 for more information about managing shared devices.

Use with: Server

Format 1: Sharing a disk

NET SHARE *shortname=d*:[\]
[*password* | *][/R | /W | /RW | /WC | /RWC]

Format 2: Stop sharing a disk

NET SHARE *shortname* /D

Format 3: Sharing a directory with a shortname

NET SHARE *shortname=*[*d*:]path
[*password* | *] [/R | /W | /RW | /WC | /RWC]

Format 4: Stop sharing a directory with a shortname

NET SHARE *shortname* /D

Format 5: Sharing a directory without a shortname

NET SHARE *path* [*password* | *]
[/R | /W | /RW | /WC | /RWC]

Format 6: **Stop sharing a directory without a shortname**

NET SHARE *path*
[/R | /W | /RW | /WC | /RWC] /D

Format 7: **Sharing a printer**

NET SHARE *printdevice* [*password* | *]

Format 8: **Sharing a printer with a shortname**

NET SHARE *shortname=printdevice* [*password* | *]

Format 9: **Stop sharing a printer**

NET SHARE *printdevice* /D

Format 10: **Stop sharing a printer with a shortname**

NET SHARE *shortname* /D

Format 11: **Displaying sharing status**

NET SHARE

IMPORTANT: If you share devices with the format shown in Format 5 (Sharing a directory without a shortname) or Format 7 (Sharing a printer without a shortname), people who are using the menus will not be able to use your devices. The menus do not support using network devices that do not have shortnames.

NET SHARE
Command

Syntax:

d: Drive specifier for the drive you want to share or the drive that contains the directory you want to share (A:, B:, C:, etc.)

> **Note:** If you want to share your entire disk, type *d:*\ to share your disk at the root directory

path   Route to the directory you want to share in the format [\ *dirname*] [\ *dirname*[...]

password   Security name for the disk or directory

*   Prompt for a password

/R   Read-only access

/RW   Read/Write access

/W   Write-only access

/WC   Write/Create/Delete access

/RWC   Read/Write/Create/Delete access (Default parameter if an access parameter is not specified)

/D   Delete sharing the disk, directory, or printer

shortname   Short name for the disk, directory, or printer

printdevice   DOS name for the printer attached to your computer that you want to use (LPT1, PRN, LPT2, LPT3, AUX, COM1, COM2, or installable device drivers)

Remarks: If you enter NET SHARE without any parameters, a list of the devices and directories on your computer that you are sharing with other computers is displayed. The computername of the PC Network computers using the devices and directories is also displayed.

You must use NET SHARE to share a device (such as a printer or a fixed disk) or a directory on your computer with other PC Network computers.

If you specify only the root directory of the drive (such as C:\), other computers can use all the files on that drive. If the path includes string substitutions (specified in the DOS SUBST Command) or combined names (specified in the DOS JOIN Command), these names must be specified in the NET USE command.

You can specify a "shortname" for a directory path. The shortname is a replacement for the real path. If you use a shortname, other PC Network computers only need to know the shortname to be able to access the path and cannot specify the real path to use the device or directory.

> **Note:** Since you cannot use drive specifiers (such as B, C, ...) in path names, you must use a shortname for a drive if you want to share a drive.

COMMANDS

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NET SHARE
Command

You can use a password to allow only users that
know the password to use the devices or directories.
You can specify different passwords with different
access rights on the same path. You can use * as the
password if you are entering NET SHARE in a batch
file and do not want to type the password in the file.
When the batch file executes, you will be prompted
for the password.

> **Note:** You cannot use * as the password if you
> are entering the command from the command
> line of the PC Network screen interface.

If you share the same path with different access
rights, then the access right is required to delete the
share. For example:

```
net share \dos readpw /r
net share \dos writepw /rwc
```

To delete:

```
net share \dos /r /d
net share \dos /rwc /d
```

If you share a printer named PRN, LPT1, LPT2, or
LPT3, the PC Network Program automatically does
a system share and system use of the printer for you.
For example, if you enter NET SHARE LPT1 or
NET SHARE LQPRT=LPT1, the share command
automatically generates two commands as follows:

```
net share _lpt1=lpt1
net use lpt1: \\servername\_lpt1
```

The share and use entries can be displayed on the status lists.

> **Note:** If you share a printer, you cannot USE a remote printer with the same name. For example, if you share LPT1, you cannot use a remote printer as LPT1.

If you delete a shared printer
(NET SHARE LPT1 /D or
NET SHARE LQTRT /D), the share delete command automatically deletes the system share and system use of the printer for you.

You are not allowed to delete the system share
(NET SHARE __LPT1 /D). If you attempt to do so, you will get the following error message:

Net079: Cannot delete; System share

You are allowed to delete the system use
(NET USE LPT1: /D), but the PC Network Program will soon reconnect it. If reconnection succeeds, you will get the following message:

System printer(s) have been deleted and reconnected

If reconnection fails, you will get the following message:

Net080: Unable to reconnect; All shared printers should be deleted

Therefore, if the system use of a printer has an error status, you are able to recover your system use of the printer, by using this reconnect operation.

COMMANDS

NET SHARE
Command

If you share a printer with a DOS device name of AUX, COM1, or COM2 or a printer with an installable device driver name, you must enter a NET USE Command and use the printer as your PRN, LPT1, LPT2, or LPT3. If you don't enter NET USE for the printer, information you print is sent directly to the printer and isn't queued. Your data is intermixed with other files that are queued for the printer causing errors. Only printers specified with the DOS device names of PRN, LPT1, LPT2, or LPT3 can be used by your computer if your computer is on the network.

If you use /D, sharing is deleted for the specified path or shortname. Other users can no longer use the device or directory. When sharing is deleted (/D) on a printer, the printer is not immediately available, all the files in the queue destined to this printer must be printed first.

Notes:

1. You must include yourself in the number of redirectors your server will support. See the /RDR parameter in the NET START command. Increase the the value of /RDR by 1 if you are going to share printers.

2. You should share all your printers immediately after you start the network to be sure that the NET USE done by NET SHARE can succeed.

Examples: **Sharing a disk**

In this example, you want to share the root directory of your fixed disk C (C:\) with other network users. You want your disk to be known as **DISKC** on the network. Enter the following command:

```
net share diskc=c:\ secret /RWC
```

The disk is available to other network computers as DISKC. The disk has a password of **secret**. Other users can read, write, and create files on the disk.

Sharing a directory

In this example, the directory you want to share is named **checks** and is in a subdirectory of the **payroll** directory on your drive C. You want the directory to be known as **pay** on the network. Enter the following command:

```
net share pay=c:\payroll\checks secret /R
```

The directory is known as **pay** on the network and has a password of **secret**. Other computers can read the file but cannot write to the file to change it.

NET SHARE
Command

Sharing your printer

In this example, you want to share your high-speed printer named **LPT1** with other network users. You want the printer to be known as **hsprt** on the network. Enter the following command:

```
net share hsprt=lpt1 secret
```

The printer is available to other network computers as HSPRT and has a password of **secret**.

> **Note:** You could have used **prn** instead of lpt1.

Sharing a printer attached to a communications line

In this example, Sam wants to share his letter quality printer with other network users. The printer is attached to the first Asynchronous Communications Device Adapter port (COM1) of his computer. Sam enters the following command:

```
net share lqprt=com1 secret
```

> **Note:** You could have used **aux** instead of com1.

Then, Sam enters the following command so that he can use the printer as his LPT3:

```
net use lpt3 \\sam\lqprt secret
```

The printer is available to other network computers as LQPRT and has a password of **secret**. You should use NET USE so that you can use the printer on your computer. For example, if TOM is the computername for your computer, and you want to use Sam's LQPRT as your LPT2, enter the following command:

```
net use lpt2 \\tom\lqprt secret
```

Stop sharing

In these examples, you want to stop sharing the disk, directory, and printer that you shared in the preceding examples. Enter the following commands:

```
net share diskc /d
net share pay /d
net share lqprt /d
```

You want to also quit using the printer over the network for yourself. Enter the following command:

```
net use lpt3 /d
```

Other network users can no longer use your disk, directory, or printer.

COMMANDS

NET START
Command

Purpose: The NET START Command starts the Server, Messenger, Receiver, and Redirector configuration. NET START is the first command that you enter to begin using PC Network.

You can use NET START only once after you start DOS. If you try to enter the command more than once after you have started DOS, you see an error message. See "Choosing a PC Network Program Configuration" on page 6-5 for more information about the configurations and memory requirements.

Format: **Starting PC Network Configurations**

NET START *configuration computername* [/*parameters*] [...]

Syntax:

configuration PC Network configuration you want to start. You can use the following to specify the configuration:

RDR or REDIRECTOR
RCV or RECEIVER
MSG or MESSENGER
SRV or SERVER

See the "Summary of Network Configurations" on page 6-12 to help decide which configuration to start:

computername Name of your computer

parameters Additional command information.

NET START
Command

If you started the REDIRECTOR, the RECEIVER, the MESSENGER, or the SERVER, you may want to specify the following parameters:

/SRV:n Defines the maximum number, from 1 to 31, of different computers that you can use (with NET USE) at one time. If you do not enter /SRV, the default for n is 2 (3 on a server configuration).

The maximum value for the /SRV parameter is determined by the configuration and the values of the other parameters. Please refer to the /SES parameter for more information.

/ASG:n Defines the maximum number, from 1 to 32, of different network devices and directories that you can use (with NET USE) at one time. If you do not enter /ASG, the default for n is 5.

/SES:n Defines the maximum number, up to 32, of NETBIOS sessions allowed on your computer. The required value for /SES is determined by the configuration and the value of other parameters as follows:

- /SRV + 1 for a Redirector.
- /SRV + 2 for a Receiver
- /USN + /SRV + 2 for a Messenger.
- /RDR + /USN + /SRV + 2 for a Server.

If you do not enter /SES, the default for n is:

- 16 for a Redirector or a Receiver configuration.

COMMANDS

NET START
Command

- The greater of 16 or
  /USN + /SRV + 2 for a Messenger.
- The greater of 16 or
  /RDR + /USN + /SRV + 2 for a
  Server.

/CMD:*n* Defines the maximum number, up to 32, of
NETBIOS commands that you can enter on
your computer. The required value for
/CMD is determined by the configuration
and the value of other parameters as
follows:

- 1 for a Redirector.
- 3 for a Receiver
- /USN + 3 for a Messenger.
- /REQ + /USN + 4 for a Server.

If you do not enter /CMD, the default for *n*
is:

- 8 for a Redirector or a Receiver
- The greater of 8 or /USN + 3 for a
  Messenger.
- The greater of 8 or /REQ + /USN +4
  for a Server.

Note: You should set /SES and /CMD to the
lowest values that work for your environment
because the network runs faster if the values are
low.

If you run an application that uses the network
directly then you should increase the /SES and
/CMD beyond the minimum value. The amount
to add to /SES and /CMD minimum values
should be described in your application manuals.

/NBC:*n*   Defines the maximum number, from 1 to 64, of network buffers. The default number of buffers is 3 (2 for computers with 128K or less memory).

In general, the larger the /NBC value is, the faster the network is. The /NBC value should be set to a value greater than the number of files that can be concurrently open (and accessed) over the network. This will allow the Redirector to assign a buffer to each open file. This prevents multiple transfers of file information to and from the server due to buffer reassignment to different concurrently open files.

/NBS:*n*   Defines the maximum size in bytes, from 512 to 32K bytes, of the network buffer. The default size of the buffer is 512 bytes. A /NBS value greater than or equal to 2K (2048) is highly recommended. The buffer requires the memory in your computer that you specify as *n*.

In general, the larger the /NBS value is, the faster the network is. The /NBS parameter is most effective for applications that do sequential file access (such as word processing applications), and least effective for applications that do random access (such as data base management applications), but it is beneficial for both. For random access files it is important that the /NBS parameter be larger than the file's largest record and if possible an integer multiple of the record size.

Note: The defaults for /NBC and /NBS were chosen to reduce the amount of memory used.

COMMANDS

NET START
Command

The maximum settings for the /NBC and /NBS parameters is determined by the following formula:

/NBC * /NBS $\leq$ 32K

The combination of /NBC and /NBS can have dramatic effects on the network performance of certain applications. The /NBC and /NBS parameters are the most important NET START parameters to adjust if you are trying to improve your network performance.

/PBx:n   Defines the maximum size in bytes, from 80 to 16K bytes, of the print buffer that is used for print files that you send to a network printer you are using.

The x identifies the printer for which you are defining a buffer. You can use the following values for x:

1   LPT1 or PRN
2   LPT2
3   LPT3

The buffer size value n you use should be less than or equal to the value you use for the /RQB parameter of the server you are going to use (or yourself if you are the server and share PRN, LPT1, LPT2, LPT3). If the value is greater than the value for /RQB, then PBx - RQB bytes are not used.

The default for n is 1024 bytes (512 bytes for computers with 128K or less memory) for $x=1$ and 128 bytes for $x=2$ or $x=3$.

The buffer requires the memory in your computer that you specify as *n*.

You should use LPT1 when redirecting, unless the parameters are changed to allow LPT2 or LPT3 to perform equally.

If you are using three printers, you will not be able to specify 16K bytes for each of the printers. The maximum value for each printer is dependent upon the system configuration, the number of printers used, and the start parameters /ASG, /SRV, /NBC, /NBS and may be less for any given set of conditions.

NET START
Command

If you started the MESSENGER or the SERVER configuration, you may want to specify the following parameters:

/MBI:*n* Defines the size in bytes, from 512 to approximately 60K bytes, of the message buffer that is used to receive your messages. If you do not enter /MBI, the default for *n* is 1750 bytes.

The buffer requires the memory in your computer that you specify as *n*. Each message sent to you takes some memory overhead beyond the number of characters in the message. The overhead varies based on the size of the message. When choosing a /MBI:*n* value, make sure that you plan for this overhead.

Messages use the space reserved by /MBI as follows:

- For each message an 85 (5 control, 80 text) character entry is created.
- For each 128 characters of text a 132 (5 control, 128 text) entry is created.
- If the message is not a multiple of 128 characters long, the last entry will have less text.

For example:

- An 80 character message takes: (5+80) + (5+80) = 170 bytes
- A 1000 character message takes: (5+80) + 7(5+128) + (5+104) = 1125 bytes

/TSI:*fb*   Defines the time slice intervals in units for foreground (*f*) and background (*b*) tasks. The *f* and *b* are replaced by a value from 0 to 9. If you do not enter /TSI, the default is 54 (5 foreground intervals, 4 background intervals).

Use the following table to select a /TSI value:

/TSI Value	Timer Ticks
0	1
1	2
2	3
3	5
4	7
5	11
6	15
7	21
8	28
9	36

Where each timer tick is 1/18.2 seconds long.

This parameter can be used to adjust the relative response time of remote requests versus the response time of local requests made on the Server computer.

COMMANDS

NET START
Command

You may want to use the following values:

00   No time slicing (optimum value for network)

22   Even response for all requests

26   Good response for network requests

62   Good response to the Server user

To get the best network response, select /TSI:00 when you start the network. If you do not intend to use the server to run applications, press Ctrl-Alt-Break to enter the network program menus.

/**USN**:*n* Defines the maximum number of additional names and forwarded names (total), from 0 to 12, that you can have on your computer at one time. If you do not enter /USN, the default is 1 additional name or 1 forwarded name (in addition to your computer name). Each name that you use requires approximately 600 bytes of memory in your computer.

If you intend to start the SERVER configuration, you may want to specify the following parameters:

/REQ:n Defines the number of Server receives-of-messages from 1 to 3, to be issued. If you do not specify /REQ, the default is 2.

The value of /REQ times /RQB (/REQ * /RQB) cannot be larger than 48K bytes. If the memory is available and you intend to have more than four users sharing your devices, these parameters should be changed to /REQ=3 and /RQB=16K.

/RQB:n Defines the size in bytes, from 512 bytes to 32K bytes, that the Server can use to perform receives-of-messages. The larger the size, the faster the network will run. If you do not specify /RQB, the default is 8K bytes.

/SHB:n Defines the size in bytes, from 512 bytes to 60K bytes, of the buffer used by file sharing and block locking to keep account of all computers that have files opened and have portions of opened files locked. If you do not specify /SHB, the default is 2K bytes. The memory required is the value of n.

/SHL:n Defines the maximum number (from 20 to 1000) of active locked ranges in files that you have shared with the network. If you do not specify /SHL, the default is 20. Each lock uses 14 bytes. You should be sure that: (/SHB+(/SHL*14)+size of share command) $\leq$ 64K bytes

COMMANDS

NET START
Command

/PRB:n Defines the size in bytes, from 512 bytes to 16K bytes, of the print buffer used by PSPRINT to hold data being spooled to the printer. If you do not specify /PRB, the default is 512 bytes. The memory required is twice the value of n.

The larger the value for /PRB, the less often background printing on the Server will pause due to lack of access to the file being printed.

/PRP:n Defines the priority for printing the contents of the background print buffer. You can use the following priorities for n:

1   low priority
2   medium priority
3   high priority (default)

Low priority gives the Server user's program more time. High priority gives printing more time.

> **Note:** The combination of /PRB:512 and /PRP:3 are the optimum values for the IBM Color Printer and the IBM Graphics Printer. Different values may work better for other printers.

/SHR:n Defines the maximum number of devices (from 1 to 150) that you can share with NET SHARE at a time. If you do not specify /SHR, the default is 5.

The memory required is approximately the value of n multiplied by 350 bytes.

/**RDR:**n Defines the maximum number (from 1 to 29) of active Redirectors that can use the Server. The maximum value of /RDR decreases as the /USN and /SRV parameters are increased. If you do not specify /RDR, the default is 10.

Remarks: The computername is your username on the network and is the name used by other network computers to identify your computer. The computername also is used by the Messenger as the name from which messages are sent and as the name that can receive messages.

You must choose the configuration that you want to use when you enter NET START. The configuration requires memory in your computer. You should make sure your computer has enough memory to use the configuration you choose and still leave your computer with enough memory so that you can use your applications or programs.

NET START
Command

Examples: **Starting the Redirector**

In this example, you have a computer with 128K
bytes of memory. You want to use disks, printers,
and/or directories that are on other network
computers. You don't want to receive messages, but
you do want to send messages. You want to use
your first name as the computername (we use the
name BARRY). Enter the following command:

```
net start rdr barry
```

The Redirector starts and your computername is
BARRY. You can use up to 5 different devices and
directories on 2 different network computers by
entering NET USE. Any messages you send using
NET SEND or the message editor are sent from
BARRY.

Starting the Redirector with parameters

In this example, you have the same computer and
want to do the same tasks as in the preceding
example. But, you're going to be printing large files
on the network printer that you use as your LPT1.
Enter the following command:

```
net start rdr barry /pb1:8K
```

The Redirector starts and your computername is
BARRY. You can use up to 5 different devices and
directories on 2 different network computers by
entering NET USE. Any messages you send using
NET SEND are sent from BARRY. Your computer
will use an 8K buffer to send your files to LPT1.

7-80

NET START
Command

Starting the Receiver

In this example, you have a computer with 128 K
bytes of memory. You want to use disks, printers,
and/or directories that are on other network
computers. You want to also be able to receive and
send messages and store messages in a file. You
want to use your first name as the computername
(we use the name BARRY). Enter the following
command:

```
net start rcv barry
```

The Receiver is started and your computername is
BARRY. You can use up to 5 different devices and
directories on 2 different network computers by
entering NET USE. Any messages you send using
NET SEND are sent from BARRY. You can receive
messages sent to BARRY.

Starting the Receiver with parameters

In this example, you have the same computer and
want to do the same tasks as in the preceding
example. But, you're going to be printing large files
on the network printer that you use as your LPT1.
You want to also use 8 devices from 6 different
computers. Enter the following command:

```
net start rcv barry /pb1:8K /asg:8 /srv:6
```

The Receiver starts and your computername is
BARRY. You can use up to 8 different devices and
directories on 6 different network computers by
entering NET USE. Any messages you send using
NET SEND are sent from BARRY. Your computer
will use an 8K buffer to send your files to LPT1.

COMMANDS

NET START
Command

Starting the Messenger

In this example, you have a computer with 256K
bytes of memory. You want to use disks, printers,
and/or directories that are on other network
computers. You want to also be able to receive and
send messages for yourself and other usernames.
You want to use your first name as the
computername (we use the name BARRY). Enter
the following command:

```
net start msg barry
```

The Messenger is started and your computername is
BARRY. You can use up to 5 different devices and
directories on 2 different network computers by
entering NET USE. Any messages you send using
NET SEND are sent from BARRY. You can receive
messages sent to BARRY. You can also receive
messages for 1 other username on your computer by
entering NET NAME.

Starting the Messenger with parameters

In this example, you have the same computer and
want to do the same tasks as in the preceding
example. But, you're going to be printing large files
on the network printer that you use as your LPT1.
You want to use 8 devices from 6 different
computers. You need to receive messages for 5
additional names. Enter the following command:

```
net start msg barry /pb1:8K /asg:8 /srv:6
/usn:5 /nbc:4 /nbs:2K
```

The Messenger starts and your computername is
BARRY. You can use up to 8 different devices and
directories on 6 different network computers by
entering NET USE. Any messages you send using

NET SEND are sent from BARRY. Your computer will use an 8K buffer to send your files to LPT1. You can add 5 additional names to your computer for messages.

Starting the Server

In this example, you have a computer with 512K bytes. Your computer has a fixed disk that you want to share with other network computers. You also have a printer that you want to share with other network computers. You want to be able to receive and send messages. You want to use your first name as the computername (we use the name BARRY). Enter the following command:

```
net start srv barry
```

The Server is started and your computername is BARRY. You can use up to 5 different devices and directories on 2 different network computers by entering NET USE. Any messages you send using NET SEND are sent from BARRY. You can receive messages sent to BARRY. You can also receive messages for 1 other username on your computer by entering NET NAME. You can share up to 5 of your devices with network computers.

NET START
Command

Starting the Server with parameters

In this example, you have the same computer and want to do the same tasks as in the preceding example. But, you're going to be printing large files on the network printer that you use as your LPT1. You want to use 8 devices from 6 different computers. You need to receive messages for 5 additional names. You expect to use network directories for all of your work and want to have your requests processed quickly. You have a high-speed printer that will be used to print a lot of the files from other computers. You have most of the data files that other computers will be using, so you'll probably have a lot of files open and in use all the time. Enter the following command:

```
net start srv barry pb1:8K /asg:8 /srv:6
/usn:5 /nbc:4 /nbs:2K /rqb:16K
/req:3
/prb:8K /shr:30 /shb:16K /shl:500
```

The Server starts and your computername is BARRY. You can use up to 8 different devices and directories on 6 different network computers by entering NET USE. Any messages you send using NET SEND are sent from BARRY. Your computer will use an 8K buffer to send your files to LPT1. You can add 5 additional names to your computer for messages. Your computer has three 16K byte buffers in which to process your network requests. Your computer has an 8K byte buffer in which to hold files that are waiting to be printed. You can share 30 devices and directories with the network. You can have up to 500 active locked ranges in files that are in the disks and directories that you share.

NET USE
Command

Purpose: Use the NET USE command to specify a device or directory on a network computer that you want to use or to stop using the devices or directories. You can also use NET USE to display a list of the network devices that you're using.

Use with: Server, Messenger, Receiver, Redirector

Format 1: **Using a disk or directory as a local drive**

NET USE *d*: \ \ *computername*\ { *path* | *shortname* } [*password* | *]

Format 2: **Stop using a disk or directory as a local drive**

NET USE *d*: /D

Format 3: **Using a disk or directory**

NET USE \ \ *computername*\ { *path* | *shortname* } [*password* | *]

> **Note:** If you want to use a root directory as a local drive, enter the following:
>
> NET USE [*d*:] \ \ *computername* [*password* | *]

Format 4: **Stop using a disk or directory**

NET USE \ \ *computername*\ {*path* | *shortname*} /D

NET USE
Command

Format 5: Using a printer

NET USE *printname* \ \ *computername*
\ { *shortname* | *printdevice*}[*password* | *]

Format 6: Stop using a printer

NET USE *printname* /D

Format 7: Displaying the devices and directories you are using

NET USE

Syntax:

d: Drive specifier which the network disk or directory will be known by on your computer. (A:, B:, C:, etc.)

Note: If you are using the CONFIG.SYS file that came on your PC Network Program diskette, you can only use drive specifiers A through N. If you want to use the drive specifiers O through Z, you can change the LASTDRIVE command in your CONFIG.SYS file to define the range of letters that you want to use for *d:*.

\ \ *computername*   Name of the network computer that has the disk, directory, or printer that you want to use.

path   Route to the directory you want to use in the format
[\ ][*dirname*][\ *dirname*[...]

NET USE
Command

shortname Short name for the disk, directory, or
printer

password Security name for the disk or directory

* (asterisk) Prompt for a password

/D Stop using the disk, directory, or printer

printname Device name by which the network
knows the printer you are using

printdevice Device name by which DOS knows the
printer you are using (PRN, LPT1,
LPT2, LPT3, AUX, COM1, COM2, or
an installable device driver name)

Remarks: If you enter NET USE without any parameters, a list
of the network devices you are using and their device
names on your computer is displayed.

If the device or directory was shared with a
shortname for the path, you must specify the
shortname instead of the path.

If the device or directory has a password, you must
also specify the password. You can specify * for the
password if you are entering NET USE in a batch
file and do not want to type the password in the file.
You will be prompted for the password when the
batch file executes. You cannot use * for the
password if you are entering the command on the
Command Line of the PC Network Program menus.

COMMANDS

NET USE
Command

If you specify a device name *d*: such as A, B, C, etc.
for the device or directory, the device or directory is
known as that name on your computer. You should
use a device name for a device that you don't have,
such as E so that you do not lose the use of your own
devices.

> **Note:** If you are using an application that only
> recognizes drive A and drive B, you must use
> drive A and drive B to run these applications.
> Many applications developed for DOS 1.1 only
> recognize drive A and drive B.

If you are using an application that references a DOS
device name (such as B or PRN) and you want to use
a network device or directory for that application,
you should give the network device or directory the
name that is required by the application.

If you do not specify a device name *d*: such as A, B,
C, etc. for the device or directory, the device is
known as the path or shortname on your computer.

You can use /D to stop using a network device or
directory.

If you share a printer named PRN, LPT1, LPT2, or
LPT3, the PC Network Program automatically does
a system share and system use of the printer for you.
For example, if you enter NET SHARE LPT1 or
NET SHARE LQPRT=LPT1, the share command
automatically generates two commands as follows:

```
net share _lpt1=lpt1
net use lpt1: \\servername\_lpt1
```

NET USE
Command

The share and use entries can be displayed on the status lists.

> **Note:** If you share a printer, you cannot USE a remote printer with the same name. For example, if you share LPT1, you cannot use a remote printer as LPT1.

If you delete a shared printer
(NET SHARE LPT1 /D or
NET SHARE LQTRT /D), the share delete
command automatically deletes the system share and system use of the printer for you.

You are not allowed to delete the system share
(NET SHARE __LPT1 /D). If you attempt to do so, you will get the following error message:

Net079: Cannot delete; System share

You are allowed to delete the system use
(NET USE LPT1: /D), but the PC Network
Program will soon reconnect it. If reconnection succeeds, you will get the following message:

System printer(s) have been deleted and reconnected

If reconnection fails, you will get the following message:

Net080: Unable to reconnect; All shared printers should be deleted

Therefore, if the system use of a printer has an error status, you are able to recover your system use of the printer, by using this reconnect operation.

NET USE
Command

Examples: **Using a network disk as a local drive**

You want to use a network disk named **DISKC** that is on a computer named **SHEILA**. The disk has a password of **secret**. You want to use the disk as your drive B (You only have one real drive on your computer). Enter the following command:

```
net use b: \\sheila\diskc secret
```

You can now use the network diskc as your drive B. Each time you enter a command for drive B, you use the network disk.

Using a network disk

You want to use a network disk named **DISKC** that is on a computer named **SHEILA**. The disk has a password of **secret**. Enter the following command:

```
net use \\sheila\diskc secret
```

You can now use the network disk DISKC as the path \\SHEILA\DISKC. Each time you enter a command for the path \\SHEILA\DISKC, you use the network disk.

NET USE
Command

Using a network directory as a local drive

You want to use a network directory with the name
PAYROLL as your drive E. The directory is on a
computer named **SHEILA** and has a password of
secret. Enter the following command:

```
net use e. \\sheila\payroll secret
```

You can now use the network directory SHEILA as
your drive E. Each time you enter a command for E,
you use the network directory.

Using a network directory

You want to use a network directory with the name
PAYROLL. The directory is on a computer named
SHEILA and has a password of **secret** Enter the
following command:

```
net use \\sheila\payroll secret
```

You can now use the network directory
\\SHEILA\PAYROLL as the path
\\SHEILA\PAYROLL. Each time you enter a
command for \\SHEILA\PAYROLL, you use the
network directory.

For example, you could enter the following DOS
TYPE command to see the contents of the file
RECORDS:

```
type \\sheila\payroll\records
```

NET USE
Command

Stop using a network disk

You want to stop using the network disk
\\SHEILA\DISKC as your drive B. Enter the
following command:

```
net use b: /d
```

The network disk is no longer your drive B.

Stop using a network directory

You want to stop using the network directory
\\SHEILA\PAYROLL as your drive B. Enter the
following command:

```
net use b: /d
```

The network directory \\SHEILA\PAYROLL is
no longer your drive B.

Chapter 8. DOS Commands for the PC Network Program

Contents

COMMANDS

Introduction

You can use the APPEND, MODE, and PERMIT commands to:

- Specify alternate directories to be used when searching for files with extensions other than .BAT, .COM, and .EXE.

- Change the mode of a network printer

- Temporarily permit another computer to use your disk, directory, or file

You may want to use APPEND to access a data file (file with an extension other than .BAT, .COM, or .EXE) located in another directory. Using the APPEND command removes the need for having the entire application and data files in the same directory. APPEND allows you to separate your programs from your data, while you call your applications from any subdirectory.

You may want to use MODE if you are using a network printer and want to change the mode of operation of the printer.

You may want to use PERMIT if you want to temporarily share your disks, directories, or files with another network computer even though you have not started the server program on your computer. While the other computer is using your device or directory, your computer is busy and you cannot use it. For example, you may want to use PERMIT to give another computer a chance to copy a file on your computer.

COMMANDS

Computers that use a disk or directory that you have shared with PERMIT can use the disk or directory in two ways:

1. By entering NET USE to use the disk or directory as long as necessary, and then entering NET USE with /D to delete the use of the disk or directory. You cannot use your computer until the other computer has entered NET USE with /D.

2. By entering one DOS command and specifying the drive specifier, shortname, and/or path (as required) for your disk or directory. After the DOS command executes, the other user can no longer use the device or directory. You can use your computer again.

APPEND
Command

Purpose: The APPEND command is used with the DOS
PATH command to locate files outside of the current
directory that have extensions other than
EXE, COM, and BAT.

Format: **Specifying directories to be searched**

APPEND [*d:*]*path*[[;[*d:*]*path*]...]

Deleting the usage of the append command

APPEND ;

Displaying the list of appended directories

APPEND

Syntax:

d: the drive specifier

path   the directory path

Remarks: Each time you enter an APPEND command, it takes
the place of the preceding APPEND command. The
appended directories can be "local" directories on
your computer, or they may be "remote" directories
on a server computer, or a combination of both.

Some applications read a file that was found in an
appended directory and then write the file back out
to disk. When the application writes the file to the
disk, it writes the file in the current directory leaving
the original copy unchanged.

COMMANDS

APPEND
Command

The APPEND command requires approximately 2.5K bytes of memory.

The APPEND command is included in your system if you use the PC Network Program Installation Aid.

You can append as many directories as you can specify in a total of 128 characters.

If you are using the DOS ASSIGN command, the APPEND command must be entered before the ASSIGN command.

The search sequence for a specified file is:

1. Search the specified directory, or the current directory if the directory is not specified.
2. Search the directories indicated by the current APPEND command.

Examples: **Using the APPEND command for local files**

The APPEND command allows you to have applications stored only once on your fixed disk and use those applications without going to the directory that contains the application.

In this example, you write letters that normally fall into several categories. You would like each letter category to be stored in its own directory depending upon the letter's content. You don't want to have all of your editors, word processors and spelling aid programs to be duplicated in each of these directories. You don't want to go through the trouble of copying each letter into the directory containing the application, editing the letter then copying it back to the directory that it is to be stored in.

APPEND
Command

Install your editing, word processing, and spelling aid applications in one directory (for example, called C:\TEXT). Define a directory for each of your letter categories. Always work in the directory that contains the letters. Before you invoke any word processing, editor, or spelling aid application, use the following commands once:

```
path c:\text
append c:\text
```

Now you can use an application that was installed in C:\TEXT as if it were in your current directory. In fact, because you specified the device id (C: in this case), you can also do editing on your diskette drives or on drive D.

Using the APPEND command for remote files

In this example, we are using the same letters problem stated in the previous example, only now you want to have all of your programs stored once on the server's machine. You would again use the PATH and APPEND commands to access the server's applications. The only difference is that you first have to connect to the server's directory that contains the applications.

Install your editing, word processing, and spelling aid applications in one directory located on the server's machine. In this example, Server1 is the name of the machine, and the directory is called C:\APPS\TEXT. The server would then share the C:\APPS\TEXT directory by using the following command:

```
net share apps=c:\apps /r
```

APPEND
Command

You as a remote user would use the server's shared
directory by using following command:

```
net use n: \\server1\apps
```

Define a directory for each of your letter categories.
Always work in the directory that contains your
letters. Before you invoke any word processing,
editor, or spelling aid application, use the following
commands once:

```
path n:\text
append n:\text
```

You can now use an application that was installed in
the server's C:\APPS\TEXT directory as if it were
in your current directory. In fact, because you
specified the device id (N: in this case), you can also
do editing on any of your diskette or fixed disk
drives.

MODE
Command

Purpose: You can use the MODE Command to set the horizontal character spacing and vertical line spacing of a network printer. See the *DOS Reference* (Version 3.10) for a complete description of the MODE command.

Format: **Changing the mode of operation of a network printer**

MODE LPTy:[n][,[m]]

Syntax:

y printer number (1, 2, or 3 only)

n characters printed in a horizontal line (80 or 132)

m lines printed in a vertical inch (6 or 8)

Remarks: You can only use MODE to set the mode of operation for parallel printers LPT1, LPT2, and LPT3. If you do not use the n or m parameters or if you use incorrect values for n or m, the existing value for the parameter is used. The default for n is 80 characters per horizontal line. The default for m is 6 lines per vertical inch.

COMMANDS

MODE
Command

If you are using MODE to change the mode of
operation on a printer you are using on the network,
you must first enter NET START and start the
appropriate PC Network programs. Next, you must
enter NET USE and give the printer a *printname* of
LPT1, LPT2, or LPT3 on your computer. Then, you
can use MODE to change the mode of operation of
the printer. Modes set before NET USE do not take
effect after NET USE.

Example: **Changing the mode of a network printer**

In this example, you're using a network printer as
your LPT1. You want to print a file on the printer in
condensed type (small type). Enter the following
command:

```
mode lpt1:132,8
```

PERMIT
Command

Purpose: The PERMIT command allows a computer on the
network to act as a temporary, dedicated file server
to a single network user. Printers and other
peripherals may not be shared using the PERMIT
command, only disks and directories. A network
user accesses the permitted disk or directory with the
NET USE command. When use of the permitted
disk or directory is stopped by the network user, the
PERMIT command terminates and returns to DOS.

The PC Network Program does not have to be
started in order for the user to invoke PERMIT. The
PERMIT command will work whether or not the
network has been started.

Format 1:   **Permitting a disk or directory with a shortname**

PERMIT *shortname*=[*d:*][\][*path*]
[/R¦/W¦/RW¦/WC¦/RWC]
{*computername1*¦*} *computername2*

Format 2:   **Permitting a disk or directory without a shortname**

PERMIT \[*path*][/R¦/W¦/RW¦/WC¦/RWC]
{*computername1*¦*} *computername2*

Syntax:

shortname   Is an equivalent name (alias) for the disk
or directory to be shared. This must be
known by the user who wants to access
the specified disk or directory, as it is
part of the network path specified in the
NET USE command.

d: Drive specifier A:, B:, C:, etc.

PERMIT
Command

path	Is a valid DOS path to the directory to be shared in the form: [\][*dirname*][\ *dirname*[...]]
/R	Read-only access
/W	Write access
/RW	Read-Write access
/WC	Write-Create-Delete access
/RWC	Read-Write-Create-Delete access
	/RWC is the default if you do not specify an access

computername1	Name of the computer on the network that you want to share your disk, directory, or file with.
*	Any computer can use your directory, disk, or file. Only one computer can use it at a time.
computername2	Name of your computer on the network. If you've started the network, this name must not be the same name you gave your computer.

PERMIT
Command

Remarks: If you do not specify *d:*, the default drive is used.

Once the PERMIT command is invoked on a computer to allow disk or directory sharing, the computer is dedicated to PERMIT and cannot be used for other foreground tasks until either:

1. A network user has accessed and relinquished use of the disk or directory.

   or

2. CTRL-BREAK has been pressed to terminate the PERMIT command. This may be done at any time, even though a user has begun to use your shared disk or directory.

If you've used NET START to specify a computername for your computer, you must specify a different computername with PERMIT. The computername specified with the PERMIT command will be active only as long as the command is running. Once PERMIT terminates, that computername no longer exists on the network.

Other computers that want to use your disk or directory should do *one* of the following:

- To use the disk or directory for as long as necessary, the other computer can enter the correct NET USE command. You cannot use your computer until the other computer enters NET USE with /D to stop the use of your disk or directory.

- To use the disk or directory for one DOS command only, the other computer can enter

PERMIT
Command

the DOS command at the DOS prompt, using
one of the following formats to specify the disk
or directory to be used in the command:

\ \ *computername\ shortname*

(if you used a shortname for the disk,
directory, or file)

\ \ *computername\[path\] filename[.ext]*

(if you specified a path to the directory or
file)

After the DOS command executes, the other
computer can no longer use the device or
directory. You can use your computer again.

Note: Not all of the DOS commands work
with a disk you're using through PERMIT.

Examples: In the following examples, computer DIXON is using
the PC Network Program and has started the
Redirector configuration. The computername MIKE
is used by the PERMIT command on a computer
that is currently not using the PC Network Program.

1. In this example, computer MIKE wants to share
his entire disk C with computer DIXON. The
following can be entered on computer MIKE:

```
permit \ DIXON MIKE
```

On computer DIXON, enter the following to
use the shared disk as drive E:

```
net use e: \\MIKE
```

Computer DIXON now has read, write, and create access to the entire fixed disk C on computer MIKE.

2. In this example, computer MIKE wants to share his subdirectory PUBLIC as read-only access with computer DIXON. The following can be entered on computer MIKE:

```
permit pub=c:\PUBLIC DIXON MIKE /r
```

On computer DIXON, enter the following to use the shared disk as drive E:

```
net use e: \\MIKE\pub
```

Computer DIXON now has read-only access to subdirectory PUBLIC and all its subdirectories on computer MIKE.

3. In this example, computer MIKE wants to share his current directory with computer DIXON. The following can be entered on computer MIKE:

```
permit current=c: DIXON MIKE
```

On computer DIXON, enter the following to use the shared disk as drive E:

```
net use e: \\MIKE\current
```

Computer DIXON now has access to the current directory on computer MIKE and all its subdirectories.

PERMIT
Command

4. In this example, computer MIKE wants to share
    his directory RESPONSE with any network
    user. The following can be entered on computer
    MIKE:

    ```
    permit \RESPONSE * MIKE
    ```

    To use the shared directory, any network user
    may enter the following:

    ```
    net use e: \\MIKE\RESPONSE
    ```

In all of the above examples, use of the shared disk
or directory by the remote station is stopped
(deleted) by entering:

```
net use e: /d
```

At this point, the PERMIT command will complete
and return to the DOS prompt on computer MIKE.

All of the above examples would be valid even if the
PC Network Program were started on computer
MIKE, as long as the name MIKE had not been
previously used anywhere on the network.

Chapter 9. CONFIG.SYS Commands Used with the PC Network Program

Contents

COMMANDS

Introduction

A CONFIG.SYS file is a DOS file that contains special commands that help tailor the way you want to use your computer's memory with DOS. If you don't have a CONFIG.SYS file, that means that you're using the default values that DOS automatically sets up for you.

When you start DOS, it searches the directory of the drive or directory from which it was started for the CONFIG.SYS file. If DOS finds CONFIG.SYS, it reads the file and executes the commands within the file. When you installed the PC Network Program, you installed a CONFIG.SYS file. The CONFIG.SYS file that you installed with the PC Network Program tailors your computer's memory so that you can share and use devices and directories more efficiently on the network

If you don't have a CONFIG.SYS file, you may want to create one. If you do have a CONFIG.SYS file, you may want to edit your CONFIG.SYS file in order to further tailor DOS for your computer. You may want to change the values in the commands that the file already contains, add commands for the PC Network Program, or add commands that are not specifically for the PC Network Program. All of the CONFIG.SYS commands are shown in the *DOS Reference*, Version 3.10. Only the CONFIG.SYS commands that are for the PC Network Program are shown in this chapter.

> **Note:** If a CONFIG.SYS command is not included in the CONFIG.SYS file, the default value for the command is used.

COMMANDS

BUFFERS
Command

Purpose: Use the BUFFERS command to indicate to DOS the number of disk buffers to allocate in memory when you start DOS.

Format: BUFFERS=*xx*

Parameters:

xx   Number of buffers from 1 to 99 (default is 2; but for the Personal Computer AT, the default is 3; the default is 10 when installed on a fixed disk)

Remarks: In a server computer, Read/Write requests to disk occur randomly, since multiple applications access different files at the same time. Disk buffering usually improves overall performance for a computer in which random access is occurring. On a server computer, you may want to increase the number of buffers to improve performance. You can determine the optimum value for *xx* by using different values, such as 10, 15, and 20, and evaluating performance. See the *DOS Reference*, Version 3.10, for more information about the BUFFERS Command.

> **Note:** The BUFFERS=*xx* command has no affect on network performance when used on non-server computers.

If you installed the PC Network Program on a fixed disk, your CONFIG.SYS file contains BUFFERS=10.

FCBS (File Control Blocks) Command

Purpose: Use the FCBS command to specify the number of file control blocks (FCBs) that can be open concurrently.

Format: FCBS = m,n

Parameters:

m Total number of files that can be open at one time. The default value is 4 (16 when the PC Network Program is started); the range is 1 to 255.

n Number of files opened by FCBS that cannot be closed automatically by DOS if a program tries to have more than m files open at one time. The first n open files are protected from being closed. The default value is 0 (8 when the PC Network Program is started); the range is 0 to 255.

Remarks: The FCBS command is only valid when file sharing is loaded. Some application programs use file control blocks to create, open, delete, read, and write to files. DOS keeps track of the least recently used file control block (FCB). If the program tries to open more than m files, the action DOS takes depends on whether file sharing is loaded. The following sections describe the action DOS will take if a program tries to open more than m files.

COMMANDS

FCBS (File Control Blocks) Command

With Sharing: On a server configuration (file
sharing), when a program tries to open more than m
files, DOS closes the least recently used FCB and
opens the new file. Note than the first n files are not
included in the list of files that DOS tracks for the
least recently used FCB. The first n files are
protected from being closed this way. If a program
tries to read or write to a file that has been closed
because it is the least recently used FCB, DOS issues
the message "FCB not available."

On the network, most remote computers open files
with FCBs. If the file is on a server computer, the
file also is opened at the server using file handles.
The remote computer may receive messages from the
PC Network Program such as:

```
NET 367:  No more files
```
or
```
NET 384:  FCB unavailable.
```

Or, the remote computer may receive massages from
the application such as:

```
Error opening file
```
or
```
Directory is full.
```

The messages mean that the server is out of file
handles or that the remote computer is out of FCBs.

Without File Sharing: If sharing is not started, the
number of files that can be open at the same time is
not limited.

Notes:

1. The value of m must be greater than or equal to
    the value for n.

FCBS (File Control Blocks) Command

2. If a program receives critical errors because DOS closed FCB files, you should increase the value of *m* in order to prevent the errors from occurring.

3. If a program uses two or more different FCBS to refer to the same file, DOS only counts this as one FCB used.

4. If you set *m* equal to *n*, files cannot be closed by DOS if a program tries to open more than *m* files. If a program tries to open more than *m* files, DOS will not open the new file. You should not set *m* equal to *n*.

Example: **Setting the FCBS**

In this example, you want to set the total number of FCB files than can be open at one time to 128 and and the number being protected to 64. You would include the following command in your CONFIG.SYS file:

```
fcbs=128,64
```

FILES
Command

Purpose: Use the FILES Command to indicate to DOS the maximum number of files and handles on your shared disks or directories that can be open at one time. When you start DOS, the value *xxx* of the FILES=*xxx* command tells DOS how much memory to allocate to maintain required information about the opened files. See *DOS Technical Reference*, Version 3.10, for a complete description of FILES.

Format: FILES=*xxx*

Parameters:

xxx Number of files and handles that can be opened, from 8 to 255 (default is 8)

Remarks: The FILES command indicates the maximum number of all open concurrent file handle calls. If you exceed the value of *xxx*, you receive an error. On a Server computer, you may want to increase the value for FILES to increase the number of files that can be opened at one time on the server computer. You can determine the optimum value for *xxx* by using different values and evaluating performance.

The value specified for FILES= must be large enough to provide for the programs run on the server as well as for the programs on the network using the server.

FILES
Command

On the network, most remote computers open files with FCBs. If the file is on a server computer, the file also is opened at the server using file handles. The remote computer may receive messages from the PC Network Program such as:

```
 NET 367:  No more files
```
or
```
 NET 384:  FCB unavailable.
```

Or, the remote computer may receive massages from the application such as:

```
 Error opening file
```
or
```
 Directory is full.
```

The messages mean that the server is out of file handles or that the remote computer is out of FCBs.

If you installed the PC Network Program on a fixed disk, your CONFIG.SYS file contains FILES=100. If you installed the PC Network Program on a 320KB diskette, your CONFIG.SYS file contains the default, FILES=8.

COMMANDS

LASTDRIVE
Command

Purpose: Use the LASTDRIVE command to indicate to DOS the maximum number of virtual and real drives that you can use at one time. When you start DOS, LASTDRIVE tells DOS how much memory to allocate in order to maintain the required information about the drives.

Format: LASTDRIVE=x

Parameters:

x Last virtual drive, from A to Z (default is E or 5 drives)

Remarks: You can use drive specifiers (d:) to refer to drives that you have on your computer and to refer to drives that you do not have on your computer but are using on the network. For example, you may refer to a network drive or directory as your E drive even though you don't have a real E on your computer. The network drive is called a *virtual* drive. DOS recognizes the characters A through Z as drive specifiers.

If you installed the PC Network Program on a fixed disk or a 320KB diskette, your CONFIG.SYS file contains the LASTDRIVE=N command.

If LASTDRIVE is specified in the CONFIG.SYS file to be less than the physically attached number of drives, then the PC Network Program uses the highest drive ID of physically attached drives as the highest drive ID allowed for the NET USE command.

Chapter 10. Managing the Server Computer

Contents

MANAGING SERVER

MANAGING SERVE

Introduction

This chapter tells you more about managing the server computer, organizing the server's fixed disk, and controlling performance on the server computer.

You should have already read the following chapters:

- Chapter 1, "Introduction"

- Chapter 2, "Installing Your Programs"

- Chapter 5, "Tasks You Can Do With the PC Network Program"

- Chapter 6, "Getting Started With Commands"

- Chapter 7, "PC Network Program Command Reference"

- Chapter 8, "DOS Commands for the PC Network Program"

- Chapter 9, "CONFIG.SYS Commands Used With the PC Network Program"

Computers on the Network

Local area networks give you the capability to share devices and information among a group of computers. You may share physical devices, such as a printer or a fixed disk, or information, such as a directory on a fixed disk that contains data.

A computer that shares devices or data with other computers on the network is the server. The server owns the shared devices and data. A network may have several servers.

The computers that use the shared devices and data are called remote computers. Remote computers use the shared devices and data as if the devices are theirs.

The server computer can be a computer that you use regularly to do your work and also use as a server. Or, the server computer can be a dedicated server, meaning that it is used only as a server computer. No one uses it as a computer for their daily work.

In a network, a server computer is usually the center of activity, because its devices and data are being used by many remote computers. In addition, someone may be using the server as a personal computer for their work.

The speed of operations across the network is influenced by the speed with which the server can process requests and the availability of memory and disk space on the server. The computers you choose to use as servers should provide as much memory, fixed disk space, and processing speed as possible.

Guidelines for Sharing

If you operate the server computer, you need to understand and manage some or all of the following:

- Sharing disks and directories

- Sharing printers

- Pausing and continuing sharing

- Backing up and restoring the disk

- Stopping the network

- Handling critical errors on the server

- Using the NET ERROR command

- Using the NET FILE command

- Providing security for shared devices

Sharing Disks and Directories

You can share data from the server by sharing directories from the server's disk or by sharing the entire disk. Remote computers then can use the shared data and can use space on the server's fixed disk to store their data in.

When to Share Disks and Directories

You should start the server computer and share the disks and directories that remote users need for their work *before* the remote users start their computers. If the shared devices are not available when the remote users start their computers, the users receive errors.

Sharing With or Without a Network Name

You can share disks and directories by specifying the path to the disk or directory or by specifying a network name and the path to the disk or directory. If you share by specifying a path, remote users must know the complete path to use the disk or directory. If you share by specifying a network name and a path, remote users only need to know the network name. Specifying a network name and the path gives you more flexibility because you can change the path without affecting the remote users.

Example: Suppose a server named Tom has a directory named \PAYROLL\PAY84 on disk C. Tom could share it by entering the following command:

```
net share \payroll\pay84
```

Remote computers then use PAY84 as their drive E by entering the following command:

```
net use e: \\tom\payroll\pay84
```

Or, Tom could share PAY84 with a network name by entering the following command:

```
net share pay=c:\payroll\pay84
```

Remote users then use PAY84 as their drive E by entering the following command:

```
net use e: \\tom\pay
```

Now, suppose Tom no longer wants to share PAY84. Instead, he wants to share a new subdirectory for the 1985 payroll, C:\PAYROLL\PAY85.

Tom can share PAY85 by entering the following command:

```
net share \payroll\pay85
```

Remote computers have to know the new path, \PAYROLL\PAY85, to use the directory.

```
net use e: \\tom\payroll\pay85
```

But, Tom could share PAY85 as the network name PAY.

```
net share pay=c:\payroll\pay85
```

Even though Tom shared a different subdirectory, the remote computers don't have to know the new path. Because the network name is still PAY, they enter the same command that they previously entered to use the new directory.

```
net use e: \\tom\pay
```

Sharing Directories

Normally, you should share directories on your fixed disk so that you can control the parts of your disk that are shared. The contents of the directory, including the contents of any subdirectories in the directory, are available to the network.

Sharing an Entire Disk

You can share your entire disk with the remote computers by sharing the root directory of your disk. For example, if you wanted to share your drive C with the network, you could share the C:\ directory. Everything on drive C is available to the remote computers including any subdirectories that are on drive C.

Sharing a File

You may want to share a single file with a remote
computer. However, the network only allows you to
share disks and directories. So, to share a single file,
you need to make a directory and put the file in the
directory.

Sharing Diskette Drives

If possible, do not share diskette drives across the
network. Sharing diskette drives can cause problems
because:

* Diskettes may be write-protected

* Diskette drive doors can be left open.

These problems can result in data being lost.

To prevent this problem, you should not share diskette
drives. If you must share diskette drives, be sure that
the drive and diskette are ready for use by the remote
computers. Also, do not share diskette drives when you
can expect multiple users to use the shared drive at the
same time.

Example: Suppose two remote computers, A and B are
on the network. Both computers are using a diskette
drive from a server computer. The diskette drive
contains a write-protected diskette.

* Remote computer A writes data to the diskette
  drive. DOS on the server stores the data in a
  buffer and returns a successful write to remote
  computer A.

* Remote computer B writes data to the same
  diskette. DOS on the server needs a buffer to
  store the data in. So DOS tries to write the data
  that's in the buffer (from remote computer A) to
  the diskette and empty the buffer for use by

remote computer B. DOS gets a Write Protected
critical error when it tries to write the data because
the diskette in the drive is write-protected. DOS
returns the critical error to the computer that's
trying to write data when the error occurs, remote
computer B (not remote computer A).

• Remote computer B responds "Abort" to the
  error.

• The buffer is deleted.

• The data in the buffer is lost. However remote
  computer A does not know that the data is lost
  because it never received the error message.

Security for Shared Disks and Directories

To ensure security for each of the directories on the
server, you can assign a password to each subdirectory
when you share it. Only users who know the password
can use the subdirectory.

You can specify a password for a disk or directory that
you share. You should give the password only to the
people that you want to let use the disk or directory.
For example, if you want to share a user subdirectory
named LINDAG with the remote computer user named
Linda Gray, you may want to give the subdirectory a
password, such as PRIVATE. You can use the menus
or the commands to share the subdirectory with a
password. For example, if you are using commands,
you would enter the following:

```
net share lindag=c:\lindag private
```

If you put network commands in an AUTOEXEC.BAT
file, you can use an asterisk (*) instead of the password.
When the batch file runs, you'll be prompted to enter a
password to go with the command. You should use an

asterisk instead of the password so that others can't look at your AUTOEXEC.BAT file and see the password.

For example, if you put the previous command in an AUTOEXEC.BAT file, you should replace PRIVATE with an asterisk, like this:

```
net share lindag=c:\lindag *
```

When you switch on your computer and your AUTOEXEC.BAT file executes, you would see the following:

```
net share lindag=c:\lindag *
Enter a password:
```

You should enter PRIVATE at the prompt.

If you are using menus and choose to save your network setup, your passwords are automatically replaced with an asterisk. You'll be prompted for the password.

Access Rights for Shared Disks and Directories

The PC Network Program allows you to share a disk or a directory on your disk with an *access right* so that you can control how remote network computers use your disk or directory. The access right you assign allows you to specify what the remote computers can do to the information you have stored on the disk.

Access Rights for Remote Computers

Read-Only Access: Read-only (R) access means that the remote users can only view the information contained in these files. They can't make changes to the information. You should use Read-only access to share directories that you don't want changed.

Note: Remote users can copy files from a Read-only subdirectory to a Read/Write/Create subdirectory. Then, they can make changes to their copy in their own subdirectory.

Read/Write/Create Access: Read/Write/Create (RWC) access means that remote users have the same access rights that you normally have. Remote users can view the files, make changes to the files, create files, and delete files. You should use Read/Write/Create access to share directories that you want remote computers to be able to change.

Write–Only Access: Write-only access means that remote users can only modify the information in the files, but they can't view the information that's already in the files. Use Write-only (W) access with applications specifically designed for use on a network.

Write/Create Access: Write-Create access means that remote users can change the information in the file, delete files, and create new files, but they can't view the contents of existing files. Use Write-Create (WC) access with applications specifically designed for use on a network.

Read/Write Access: Read/Write access means that remote computers can view and make changes to existing files, but they can't create new files or delete existing files. Use Read/Write (RW) access with applications specifically designed for use on a network.

Sharing the Same Disk or Directory With Different Access Rights

You may want to share the same subdirectory with more than one remote user, but want to give different access rights to different remote users.

To share the same subdirectory with different access rights, you have to share the subdirectory more than once. Each time you share the subdirectory, you give

the subdirectory a different network name, password, and access right. You then tell each remote computer the network name that you want it to use for the subdirectory. Sharing the same directory more than once gives you more flexibility to control the way the files in your subdirectories are used by different remote computers.

Example: Suppose you have a subdirectory named LETTERS that you want to share with two remote computers named LEWK and LINDAG. LETTERS contains form letters. LEWK needs to copy the form letters to his disk so that he can send them to his customers. LINDAG needs to add some new form letters to the subdirectory and delete some of the old form letters.

For LEWK, you could share the subdirectory as FORMS and give it Read-only access.

```
net share forms=c:\letters /r
```

LEWK can use FORMS and will be able to copy the letters to his private subdirectory.

For LINDAG, you could share the subdirectory as LETTERS and give it Read/Write/Create access.

```
net share letters=c:\letters /rwc
```

LINDAG can use LETTERS and will be able to add new letters, delete old letters, and edit existing letters.

Access Rights for the Server

Even if you are sharing the server's disks and directories, you can also use the server to do work while the remote computers are using it.

The access rights that you specify when you share a disk or directory do not affect you at the server

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computer. You have Read/Write/Create access to the files in the shared disks and directories. You can use the shared disk or directory as you normally would.

However, since you have Read/Write/Create access to all of the disks and directories, remote users cannot access files while you are using them. To change the access that you have to the files in the directory, you must use the DOS Attribute command.

Changing the Access Rights with the DOS Attribute Command

To change the access rights that the server has to files, you can use the DOS Attribute (ATTRIB) command. The ATTRIBUTE command allows you to change the access right to Read only or to Read/Write/Create. For example, if you wanted to change the server's access rights to each file in the BATCH subdirectory to read-only access, you would enter the following DOS commands:

```
cd c:\batch
```

(This makes BATCH your current directory.)

```
attrib +R *.*
```

(This changes the access rights to all of the files in the BATCH subdirectory to read-only.) After you enter the ATTRIB command, the server's access rights are changed.

> **Note:** The PC Network Program Installation Aid changes the access rights of the APPS subdirectory to read-only for you.

Sharing Printers

The PC Network Program also allows you to share the server's printers. The remote computers can send files to be printed on the shared printers. The server can share up to three printers at one time.

The server can share any parallel printer (LPT1 or PRN, LPT2, or LPT3), any serial printer (AUX or COM1, COM2), or an installable device driver. Files that are sent to be printed on a server's printer are put in a print queue for the server. The server can check or change the print queue, but remote computers can only check the print queue.

Sharing With or Without a Network Name

You can use a DOS name to share a printer or you can share a printer by specifying the DOS name and a network name. Sharing with a DOS name and network name gives you flexibility because you can change the printer that you share without telling everyone the new DOS name.

Example: For example, suppose you've been sharing your LPT1 as PRINT1.

```
net share print1=lpt1:
```

Now, you have a new printer as your LPT2 that's faster than LPT1. You want to share LPT2 instead of LPT1. All you have to do is share LPT2 as network name PRINT1 instead of sharing LPT1.

```
net share print1=lpt2:
```

Even though you've switched printers, the remote computers still only need to know the name PRINT1. They don't have to change the devices that they use.

Allowing the Server to Use a Shared Printer

If you share a parallel printer (LPT1 or PRN, LPT2, or LPT3), the PC Network Program automatically enters a NET USE command for you so that you can use the printer. Files that you send to the printer (LPT1 or PRN, LPT2, or LPT3) are automatically put in the print queue.

But, if you share a serial printer (AUX, COM1, or COM2) or an installable device driver, the PC Network Program does not automatically use the printer. Your print files are not automatically sent to the print queue. You must enter a NET USE command and use the serial printer through the network as if it were a parallel printer.

If you don't use a serial printer that you've shared as a parallel printer, your files will be intermixed with files sent to the printer by remote computers. The server will receive printer errors.

Example: Suppose Tom has a parallel printer named LPT1 and a serial printer named COM1. Tom shares COM1 as the network name LTRPRT:

```
net share ltrprt=com1:
```

Tom also wants to use the printer for his work. To do this, Tom has to use COM1 as if it is a parallel printer on his computer named LPT2.

```
net use lpt2: \\tom\ltrprt
```

Stop Sharing a Network Printer

When you stop sharing a printer, the printer is no longer available for use on the network. However, files that are already in the print queue continue to be printed until the print queue is empty.

If you want to send files to the printer, you should also pause printing on the printer. Then, you can use the NET PRINT command, the menus, or the DOS COPY command to send your files to the printer.

Security for Printers

You can specify a password for a printer that you share and tell the password only to people who need to use the printer. For example, if you want to share your LPT1 as PRINT1 on the network, you could give it a password such as SECRET. You can use the menus or the commands to share the printer with a password. For example, if you are using commands, you would enter the following:

```
net share print1=lpt1: secret
```

If you put network commands in an AUTOEXEC.BAT file, you can use an asterisk (*) instead of the password. When the batch file runs, you'll be prompted to enter a password to go with the command. You should use an asterisk instead of the password so that others can't look at your AUTOEXEC.BAT file and see the password.

For example, if you put the previous command in an AUTOEXEC.BAT file, you should replace SECRET with an asterisk, like this:

```
net share print1=lpt1: *
```

When you switch on your computer and your AUTOEXEC.BAT file executes, you would see the following:

```
net share print1=lpt1 *
Enter a password:
```

You should enter SECRET at the prompt.

If you are using menus and choose to save your network setup, your passwords are automatically replaced with an asterisk. You'll be prompted for the password.

Using Separator Pages on Shared Printers

You can use a separator page with a shared printer so that you can easily identify files that are printed on the printer. The default for using a separator page is OFF. If you want to use a separator page, you must specify ON for the separator page through the menus or with the NET SEPARATOR command.

We've provided two separator pages named PQ.SEP and PQ.OEM. Use PQ.SEP as your separator page if you're using an IBM Color Printer and you want all of the printer controls reset between each file that's printed. Use PQ.OEM if you have another printer and you don't want any printer controls reset. You may want to edit PQ.OEM and add the printer controls for your printer to the page.

Creating Separator Pages

You can create your own separator page only if you are sharing your devices with the network.

You'll need to use an editor, such as Personal Editor, to create and edit your separator page file. If you don't have an editor, you can use EDLIN or the DOS COPY CON command to create and edit the file.

You should know what information you want printed on the separator page before you create it. For example, you may want to have the following information on the page:

- The network name of the computer that sent the print file to your printer

- The date that the file was printed

- The time that the file was printed

- Other information such as the name of your company, a logo, or your name

The following instructions tell you how to create the separator page file:

1. You should be at the DOS prompt.

    Note: If you want your separator page to be in the same directory as PQ.SEP, you should be at the DOS prompt for the C:\NETWORK subdirectory.

2. Start your editor.

3. Create your separator page file on your fixed disk. Name the file any name except PQ.SEP or PQ.OEM. For example, you could name the file PRINT.SEP.

4. On the first line of the file at the first character position, type a character that you want to use as the escape character.

    Hint: Use the @ character.

5. Type the characters to define the text and formatting for the separator page. See "Designing the Format for Your Separator Page" below for information about characters you can use to define the format of the separator page.

    Note: You can type all of the characters on one line, or you can type them on different lines. Spaces are only allowed within a literal.

Save the file, and use the PC Network Program menus or commands to start using the separator page file.

Designing the Format for Your Separator Page

To design a separator page, you create a file and then use special characters to define the text and format for the page.

The Escape Character: The first character you type in the separator page file is the *escape character*. The escape character lets the PC Network Program know how to process the file. You should use a character that you don't plan to use anywhere else in the file. You can use any character as the escape character *except* a blank.

> **Note:** In the following, @ is used as the escape character.

Next, you define the text and the formatting for the page. The following tells you the characters you can use to define and format the page.

@L*string*   Prints a string of characters, where *string* is the string of characters you want printed.

@F"*filespec*" Prints the contents of another file (*filespec*) as a part of the separator page.

@D   Prints the current date.

@T   Prints the current time.

@N   Prints the network name. Use it, for example, to print the network name of the computer that sent the file to your printer.

@I   Prints the print queue ID number for the file.

@H*nn*   Is used to do printer-specific controls. The *nn* is a hex printer control character. You can define the number of characters that you want to print on a line by specifying a hex value (*nn*). For example, you may want

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to print narrow characters so that you can fit more on a line. Use **@H0F** to print narrow characters, and **@H12** to print normal-width character.

@0   Is used to end a line. You must specify where you want lines to end when the separator page is printed.

@n   Is used to skip *n* lines; where, *n* is the number of lines you want to skip, from 1 to 9. You must specify where you want to skip blank lines when the separator page is printed.

@B   Is used to specify block characters. Block characters are the larger characters that we printed "IBM PC NETWORK" with on our PQ.SEP separator page. Block characters can be narrow (single-width) or wide (double-width). For example, the following are single-width block characters:

```
 ##     ##    ## ##    ## ######
####    ###   ## ###   ##   ##   ##
## ##   #### ## #### ##   ##   ##
## ##   ## #### ## ####   #####
######  ##  ### ##  ###   ##   ##
## ## ##    ## ##    ##   ##   ##
## ## ##    ## ##    ## ######
```

These are double-width block characters:

```
 ###########      ##########        ####
####     ####  ####       ####    ######
####    ######  ####     ######     ####
####  ########  ####  ########      ####
########  ####  ########  ####      ####
######    ####  ######    ####      ####
  ##########      ##########    ############
```
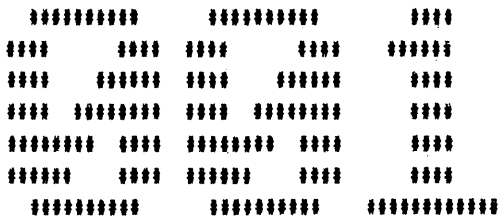
If you don't specify any kind of character, the text is printed in normal-sized characters. If you specify block characters but don't specify a width, the characters are printed in single-width.

@S   Is used to specify single-width block characters. Specify @S *after* you've specified the @B for block characters.

Single-width block characters are printed until you turn off block characters or specify double-width block characters.

@M   Is used to specify double-width block characters. Specify @M *after* you've specified the @B for block characters.

Double-width block characters are printed until you turn off block characters or specify single-width block characters.

@U   Is used to turn off block characters. If you want to stop printing block characters, you must turn them off.

@E   Is used to eject the page. When you want to go to a new page or when you end the separator page, you must eject the page from the printer.

For example, here's what a separator page printed with the PQ.SEP file looks like:
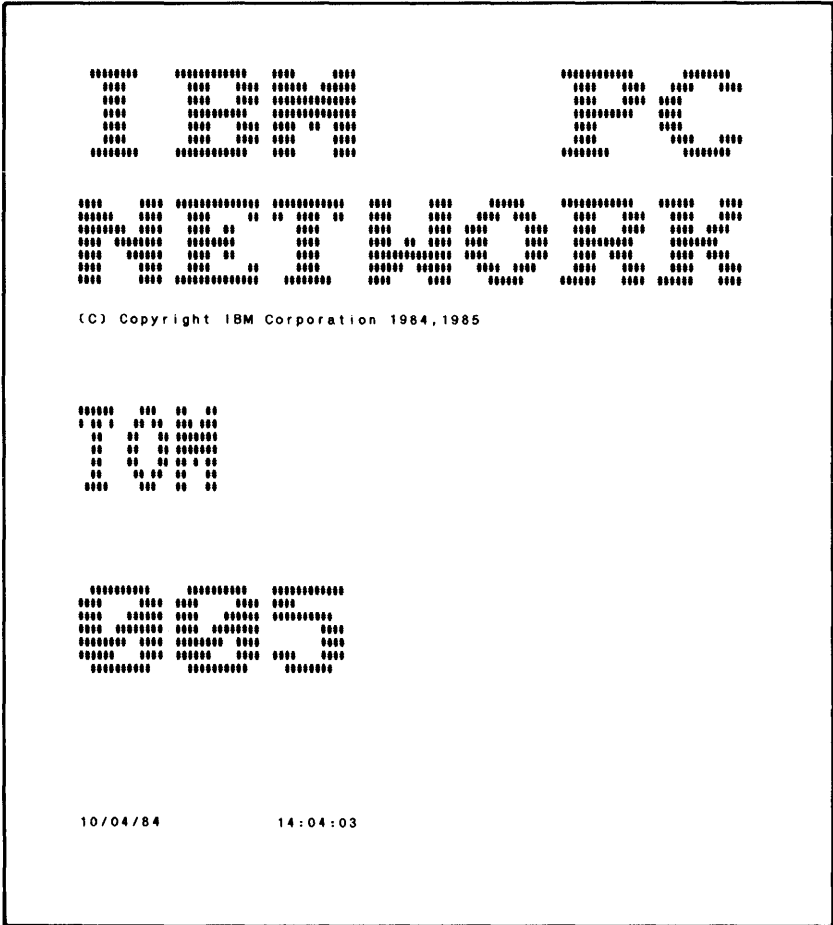
This separator page file was created for the IBM Color Printer. To use this file on a IBM Personal Computer Matrix, or Graphics Printer, you need to delete the lines that contain IBM Color Printer control characters. The shaded lines in the following file listing are the lines that you need to delete.

The PQ.OEM separator page file is provided for printers that are not compatible with IBM Printers. If the standard (default) separator page file PQ.SEP is not compatible with your printer, use the PQ.OEM separator page file or create one for your printer.

You may also want to delete the PQ.SEP file and rename the PQ.OEM file (or your own separator page file) to PQ.SEP to print as the default separator page.

Here's the PQ.SEP file we used to define the text and format for the page:

```
@
@H1B@H32
@H1B@H39
@H1B@H43@H42
@H1B@H46
@H1B@H48
@H1B@H54
@H1B@H57@HØØ
@H1B@H49@HØ1
@H1B@H55@HØØ
@H1B@H6E@HØØ
@H1B@H2D@HØØ
@H1B@H37
@H1B@H43@HØØ@HØB
@HØF@Ø
@H1B@H3Ø@Ø
@B@M@LIBM   PC@Ø
@1@LNETWORK@Ø
@U@H12@L(C) Copyright IBM Corporation 1984, 1985@Ø
@B@HØF@Ø
@4@S@Ø
@N@Ø
@4@M@Ø
@I@Ø
@4@H12
@U@Ø
@4@D@L       @T@Ø
@E
@H1B@H32
```

In this separator page,

   @ is the escape character

@H1B@H32 is for 6 LPI

@H1B@H39 is for cancel ignore end of paper

@H1B@H43@H42 is for 66 lines per page

@H1B@H46 is for emphasized off

@H1B@H48 is for double strike off

@H1B@H54 is for subscript/superscript off

@H1B@H57@HØØ is for double width off

@H1B@H49@HØ1 is for data quality

@H1B@H55@HØØ is for bi-directional printing

@H1B@H6E@HØØ is to set aspect ratio to 5:6

@H1B@H2D@HØØ is to cancel underline

@H1B@H37 is to select character set 1

@H1B@H43@HØØ@HØB is to set 11 inches per page

@HØF@Ø sets a line length of 132 characters

@H1B@H3Ø@Ø is the printer setup string for the IBM color printer

@Ø means to return to the left margin of the next line

@B starts block characters

@M defines double-width block characters

@LIBM PC specifies that the string "IBM PC" should be printed

@∅ means to return to the left margin of the next line

@1 means to return to the left margin and skip one line

@LNETWORK specifies that the string "NETWORK" should be printed

@∅ means to return to the left margin of the next line

@U@H12 turns off block characters and specifies that normal-size characters should be used for printing

@L (C) Copyright IBM Corporation 1984, 1985 specifies that the string "(C) Copyright IBM Corporation 1984, 1985" should be printed

@∅ means to return to the left margin of the next line

@B@H∅F starts block characters and defines a line length of 132 characters (narrow characters)

@∅ means to return to the left margin of the next line

@4 means to return to the left margin and skip four lines

@S means to print with single-width block characters

@∅ means to return to the left margin of the next line

@N specifies that the network name of the computer that sent the file should be printed

@∅ means to return to the left margin of the next line

@4 means to return to the left margin and skip four lines

@M means to print with double-width block characters

@Ø means to return to the left margin of the next line

@I means to print the print queue ID number

@Ø means to return to the left margin of the next line

@4 means to return to the left margin and skip four lines

@H12 specifies that normal-size characters should be used for printing (80 characters per line)

@U turns off block characters

@Ø means to return to the left margin of the next line

@4 means to return to the left margin and skip four lines

@D means to print the date from DOS

@L means to print a string of blanks

@T means to print the time from DOS

@Ø means to return to the left margin of the next line

@E means to eject the page

@H1B@H32 is the printer setup string for the IBM color printer, that returns the printer back to the standard setting.

Note: The separator page provided attempts to reset as many printer control functions as possible. If the applications you use in your network do not change the printer settings, you do not need to reset as many printer functions.

Managing Shared Printers

Checking or Changing the Print Queue

Files submitted to the server's printer to be printed are temporarily placed on the server's fixed disk in the directory that contains the network programs. These files are printed in first-in, first-out order.

The print queue can have up to 99 files. The server is responsible for controlling the print queue.

The print queue shows the status of each file in the queue. You'll see the following:

- CANCELLED means the file has been cancelled and won't be printed. You can't change the status of a cancelled file; if you want to print it, the file has to be sent to the printer again.

- HELD means the file will not be printed until it is released.

- PAUSED means that the printer that the file is destined to print on is currently paused. All files for this printer display PAUSED until the printing is CONTINUED.

- PRINT FILE ERROR means the file to be printed could not be found (probably due to its being deleted).

- PRINTER ERROR means an error has occurred on the printer when attempting to print a file. To

correct the error, you should first check the printer for a problem. Then, choose RELEASE or PRINT NOW to correct the status of this file.

- PRINTING means the file is being printed. You can change the status of a printing file.

- SPOOLING means the file is being sent to the queue. You can't change the status of a spooling file. When it's finished spooling, you can change the status.

- WAITING means the file is waiting to be printed. You can change the status of a waiting file.

The Check or Change the Print Queue menu allows you to see the files that are waiting to be printed on your printers and make changes to the queue. You can:

- HOLD files in the queue so that they remain in the queue and are not printed.

    Note: Holding a file that is printing, stops the file from printing. The file is re-queued. When you release the file, the file is printed from the beginning.

- RELEASE files in the queue that are being held or have a printer error so that the file can be printed.

- CANCEL a file in the queue so that the file is removed from the queue and isn't printed.

    Note: You can cancel a file that is printing or a file that is waiting to be printed.

- Choose PRINT NOW for a file in the queue that you want to print immediately. The file that is currently printing stops printing and the specified file starts printing.

Note: If you choose PRINT NOW and the file is already being printed, the file is printed again.

- Choose PRINT NEXT for a file in the queue that you want to print after the file that is currently printing.

The user on the server computer must determine from requests by the remote computers how to control the print queue. For example, if a user on a remote computer has a file that needs to be printed quickly, the user on the server computer has to change the print queue so that the file is printed next or now.

Correcting Errors on the Print Queue

If you receive a message that an error has occurred on your print queue, you can correct the error by deleting the print spool file, then replacing it with the backup copy of the file.

Go to the DOS prompt. Change your current directory to the directory that contains the PC Network Program. Enter the following command to delete the print queue files from the directory that contains the PC Network Program on your fixed disk:

```
del pq*.spl
```

Now, copy the file named PQ.SPL from the PC Network Program diskette that you received with this manual to the c:NETWORK directory on your fixed disk.

Changing the Paper and the Ribbon

You are also responsible for maintaining the paper and the ribbon on the server's shared printers. If several remote computers are using your printers, you should check the paper and the ribbon frequently. If you need to change the paper or the ribbon, you should pause printing *before* you take the printer offline to change the paper or the ribbon. When the printer is ready to be used again, you should continue printing and put the printer online again.

Correcting Errors on Shared Printers

The PC Network Program allows servers to share many different printers and can't always determine if a printer error has occurred or if the printer is just offline. So, if a printer error occurs, the file that's being printed is shown in the queue with a status of PRINTER ERROR. The PC Network Program will still try to print the file. If the printer is offline and is put back online, the "PRINTER ERROR" status on the print queue is cleared.

If you see PRINTER ERROR as the status for a file that's being printed on a printer that's not offline, you should try to determine the cause of the printer error. For example, the printer can be out of paper, or the printer can have a printer hardware error. If you think that the printer can't be used anymore but you have other printers shared, you can PAUSE the broken printer. Once the printer is paused, files begin printing on the other printers that are shared.

If you put the printer back online and files are still in the queue for the printer with a status of PRINTER ERROR, you can RELEASE the file or choose PRINT NOW for the file to correct the error.

Pausing and Continuing Sharing

Pausing allows you to *temporarily* stop sharing the server's disks, directories, and printers with the remote computers. When you pause sharing, you put the device on hold. You can *continue* the sharing later (take it off of hold).

The server may want to do the following:

• Pause sharing all its disks, directories, and printers (NET PAUSE SRV command)

• Pause printing on all printers or on a specified printer (NET PAUSE PRINT [=*printdevice*] command)

Pause Sharing

The server can pause allowing remote computers to use its shared disks, directories, and printers with the NET PAUSE SRV command. If the server is sharing a printer, no more files are accepted from the remote computers and no more files are placed in the print queue. However, files that are already in the queue are printed. If the server is sharing a disk or directory, the remote computers won't be able to use the disks or directories. The server can pause sharing *only* if no one is actively using the server's shared resources.

Pause Printing

The server can pause allowing files to be printed on all of its printers or on a specified printer with the NET PAUSE PRINT command. If a file is being printed and the server pauses printing, printing stops. You may want to pause printing so that you can fix a printer that's not working correctly, change a ribbon on the printer, or change the paper. If you specify only a certain printer when you PAUSE then all other printers continue to operate.

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Continue Sharing

The server can continue sharing its resources again.
With the NET CONTINUE SRV command, the same
resources that were available before the server paused
sharing are available for the remote computers to use
again.

Continue Printing

The server can continue allowing files to be printed on
its printer again (NET CONTINUE PRINT command).
Whichever file was printing when the printer was
paused is started over from the beginning of the file
(unless the server changed the queue while the printer
was paused).

Backing Up and Restoring the Disk

Occasionally, power or equipment failures can cause
you to lose data. So that you don't lose important data,
you should make frequent backup copies of your
programs and data files. You may need to only make a
backup copy once of applications and programs that are
not changed. You should make frequent backup copies
of any programs or data files that you or anyone else on
the network makes changes to.

You can use the DOS BACKUP command to make
backup copies. If you need to use the backup copies,
you can use the DOS RESTORE command. See the
DOS Reference, Version 3.10 for more information
about backing up and restoring files.

Stopping the Network

If you are running the server computer and you want to
stop sharing your resources on the network, you should
make sure that no one is using your resources before
you stop sharing them. You should send a broadcast

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message and tell everyone that you're going to stop sharing. Ask everyone to stop using your resources. You can check the list of devices that you're sharing (by using the menus or by entering NET SHARE) so that you'll know when everyone has stopped using your devices. Once everyone has stopped using your devices, you can stop sharing your devices. You can use the menus or use the correct NET SHARE command to stop sharing each of your devices.

If you are using network devices that other people have shared, you should enter the correct NET USE /D command to stop using the devices before you switch off your computer.

Critical Errors on the Server Computer

Critical errors are errors detected by DOS that require DOS to stop operation. DOS informs the user of the error and waits for the user to respond.

Critical errors have one of the following formats:

```
<type> error reading/writing <device>
Abort, Retry, Ignore?
          or
<error message>
Abort, Retry, Ignore?
```

For example, the following message is a critical error:

```
Not ready error reading drive A
Abort, Retry, Ignore?
```

On the network, you may receive new types of critical errors. For example, a server may share a directory with Read/Write/Create access. Then, the server tries to access a file in the directory that a remote user already is using. The server receives the following message:

```
Sharing violation error writing drive C
Abort, Retry, Ignore?
```

Since both users have Read/Write/Create access to the
file, they both can't access the file at the same time.

While DOS waits for you to respond to the error, users
at the remote computers cannot access files or submit
print files to the server. It seems to the remote
computers that the server computer is no longer
responding to their requests. The remote users hear
beeping, meaning that the server computer is not
available to do their request.

The error does not mean that the network needs to be
restarted. You can correct the error at the server
computer by responding to the error. However, if you
don't correct the error immediately, remote users may
think that the network is not operating because they
can't access the server.

If the critical errors occur while you are using the server
computer, you must respond to the error as quickly as
possible. Some of the critical errors that may occur at
the server are:

```
Not ready error reading/writing drive X

Write protect error writing drive X

Network device no longer exists error
        reading/writing drive X

Sharing violation error reading/writing
        drive X
```

You can correct errors such as Not ready or Write
protect immediately by correcting the problem and
choosing **Retry**. To correct an error such as Network
device no longer exists, you must choose **Abort**,
correct the problem, and then retry the request.

You also must choose **Abort** to correct an error such as
Sharing violation. The sharing violation occurs
because a remote computer is accessing a file that the
server computer is attempting to access. The server
computer cannot access the file until the remote

computer is finished with the file. However, the remote computer won't be able to finish with the file until the server computer exits the critical error and allows DOS to continue.

If a critical error occurs on a server computer, you should try to correct the problem immediately and choose **Retry**. Correcting the error may require you to close a diskette drive door, remove a write-protect tab, or perhaps switch on a printer.

If you don't know how to correct the error, you should choose **Abort** and then correct the problem.

> **Note:** These situations only occur on server computers. If critical errors occur on remote computers, the errors do not affect the server. The server computer is available to respond to requests from other remote computers.

Using the NET ERROR Command

The PC Network Program has tasks that operate while you're running applications. If the tasks encounter errors, the tasks don't report the errors because you're using the screen for your application. So, the error is written to a buffer. You can display the contents of the buffer by entering the NET ERROR command. You can see up to 512 bytes of the last error information recorded.

Using the NET FILE Command

The NET FILE command allows you to display the state of open files and to force an open file to close. For example, you may need to close files for applications that stop because of a sharing violation.

If you use NET FILE, be careful. Applications do not expect you to close a file; applications usually close

their own files. You can cause errors in an application if you close a file and the application is still using the file.

Additional Ways to Manage Security

We've already discussed the following security features for disks, directories, and printers:

- Using passwords for your shared devices.

- Sharing only selected directories. Sharing only some of your directories allows you to keep your private files off of the network.

- Using network names (or shortnames) for the real path that you're sharing so that you don't have to tell remote computers the paths on your computer. You are also able to change the paths without having to tell anyone else.

- Using access modes for directories. The access modes allow you to restrict the way that others use your resources.

In addition to these security features, the Personal Computer AT computer has a keylock. The keylock allows you to lock your keyboard so that others can't use your computer.

Organizing the Server's Fixed Disk

If you are managing a server computer, you need to organize the fixed disk so that:

- Applications can easily and efficiently be shared with remote computers

- More than one remote computer can access each application at the same time

- Data files can easily be shared with remote computers

- Remote computers can have private files on your disk

- Remote computers can easily access applications, data files, and their private files

  Note: IBM Personal Computer program license agreements permit the use of a program on a single computer. The customer is responsible for ensuring that each user on the network is appropriately licensed to use any program shared over the network.

To meet these requirements, we recommend that you organize at least part of your fixed disk C like this:

```
                        ┌─────────┐
                        │  C: \   │
                        └─────────┘
                             │ ╲
                             │  ╲
                    COMMAND.COM    CONFIG.SYS
                    AUTOEXEC.BAT   VDISK.SYS
                                   ANSI.SYS
                                   AUTOUSER.BAT

  ┌─────────┬─────────┬─────────┬─────────┬─────────┐
┌────────┐┌────────┐┌────────┐┌──────────┐┌────────┐
│NETWORK ││BATCH   ││ APPS   ││USER.MDL  ││ USER   │
│(SRV)   ││(SRV)   ││        ││          ││        │
└────────┘└────────┘└────────┘└──────────┘└────────┘
                        │          │ ╲ ╲
                        │          │  ╲  ╲
                        │     ┌────────┐┌─────────┐
                        │     │ BATCH  ││PROFILES │   NETPATH.BAT
                        │     └────────┘└─────────┘
                        │
  ┌──────┬───────┬──────┼──────┬───────┬────────┐
┌──────┐┌──────┐┌──────┐┌──────┐┌──────┐┌────────┐
│ DOS  ││BATCH ││APP 1 ││APP 2 ││APP 3 ││NETWORK │
│      ││(RDR) ││      ││      ││      ││(RDR)   │
└──────┘└──────┘└──────┘└──────┘└──────┘└────────┘
```
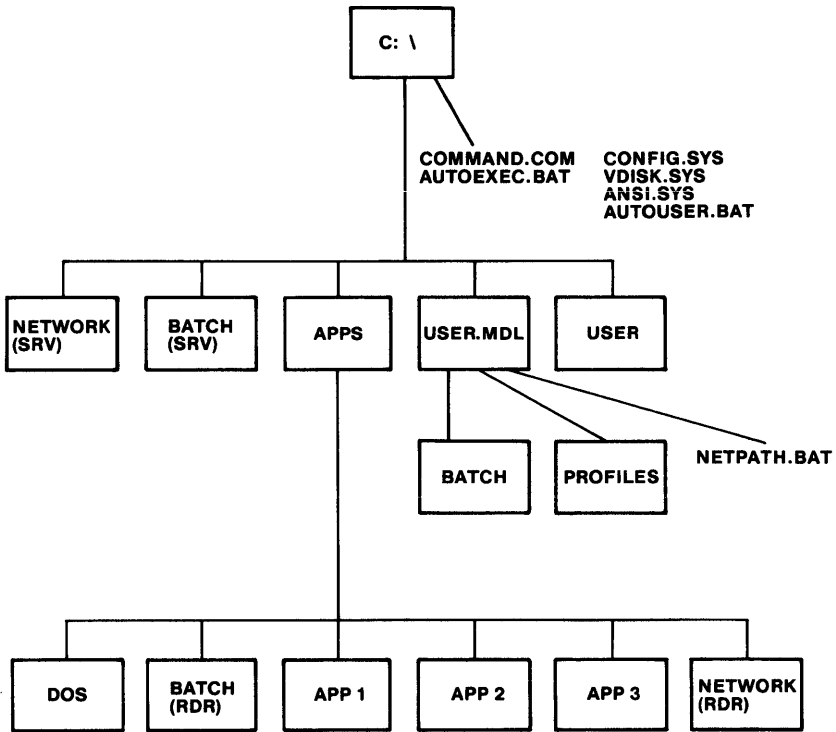
You can use the PC Network Program Installation Aid to create the organization we've shown, or you can use DOS commands to create it.

If you choose to use the Installation Aid, you'll only need to follow the Installation Aid menus. The Aid automatically creates the organization we've shown for you. The Aid also installs your IBM applications and programs onto your fixed disk, and creates the batch files that you and the remote computers need. If you already have subdirectories on the fixed disk, the Installation Aid won't move or delete them. The Aid only organizes part of the disk for the network, without changing anything you already have on the disk.

> **Note:** If you already have the directory structure we've shown on your fixed disk, the Installation Aid will not change it. Any files or subdirectories you need in addition to what you have will be created for you.

If you choose to use DOS commands, you'll need to make the directories that we've shown, install your applications and programs, and create batch files. If you already have files and subdirectories on your fixed disk, you don't need to change or move anything that you already have.

Of course, you can add subdirectories to your fixed disk in addition to the ones we've shown.

If you want to install applications that are not included on the Installation Aid, you can use DOS commands to create the subdirectories, copy the application, and create any other files that you need.

Let's look more closely at the disk organization we've shown.

The Root Directory

```
┌──────────────┐
│              │
│   C: \        │
│              │
└──────────────┘
          \
           \
            \
             COMMAND.COM    CONFIG.SYS
             AUTOEXEC.BAT   VDISK.SYS
                            ANSI.SYS
                            AUTOUSER.BAT
```
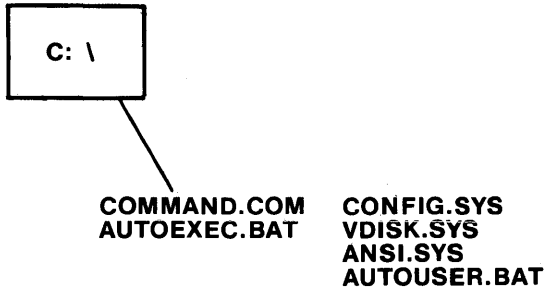
The root directory of your fixed disk (\ ) must contain
the minimum DOS system files that you need to start
DOS. If you have an AUTOEXEC.BAT file or an
AUTOUSER.BAT file, they should be in your root
directory too.

If you use the Installation Aid, you'll be prompted to
install DOS. The Installation Aid will install the DOS
files we've shown above. The remaining DOS files will
be installed in the APPS Subdirectory shown below.
When the DOS files are installed, they are marked
"Read Only" with the DOS ATTRIB (Attribute)
command.

The NETWORK Subdirectory

```
        ┌──────────┬──────────┐
        │          │          │
    ┌───┴──────┐  ┌┴─────────┐
    │NETWORK   │  │BATCH     │
    │(SRV)     │  │(SRV)     │
    │          │  │          │
    └──────────┘  └──────────┘
```
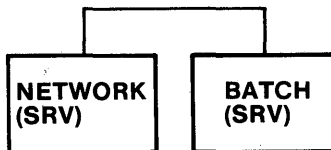
The NETWORK subdirectory contains the PC Network Program for use by your computer. The Installation Aid installs the program in the directory and includes NETWORK in a PATH command that's executed by an AUTOEXEC.BAT file. You'll be able to access the PC Network Program from any disk or directory on your computer.

The APPS Subdirectory
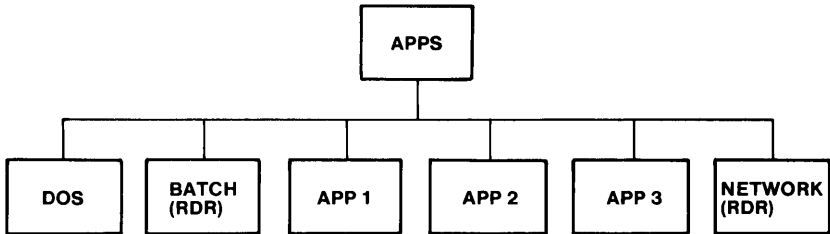
The most efficient way to share your applications is to be able to do one task from the menus or enter one NET SHARE command to share all of your applications. To do this, you need to have all of the applications in one subdirectory. When you share the subdirectory that contains the applications, all of the applications are available to the network at once.

If you use the Installation Aid, the Aid:

1. Creates the APPS subdirectory for you.

2. Creates batch files for the applications.

3. Installs your IBM applications.

4. Marks each program file of your application "Read Only" with the DOS ATTRIB command.

5. Tells you where the applications are installed.

Because space on your fixed disk is limited, you probably want to have only one copy of an application in your APPS subdirectory. But, you may need to let more than one person use the same application at the same time. To do this, you need to share your APPS subdirectory with read-only access. This way, multiple remote users can access the subdirectory at the same time and run the applications from it.

The USERs Subdirectories

```
              ┌─────────┐
              │         │
        ┌─────┴───┐ ┌───┴─────┐
        │USER.MDL │ │  USER   │
        └────┬────┘ └─────────┘
             │   ╲  ╲
             │    ╲  ╲
        ┌────┴───┐ ┌──╲──────┐      NETPATH.BAT
        │ BATCH  │ │PROFILES │
        └────────┘ └─────────┘
```
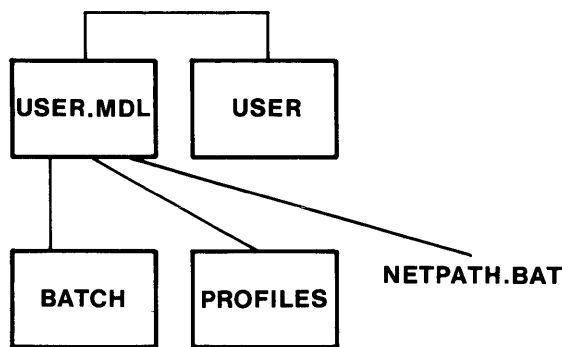
Some applications have program files that need to be in a subdirectory with read/write/create access. For example, a text editor application can create profiles, so the application needs to be able to write a profile in a subdirectory. Since only one remote computer can write to a file at a time, each remote computer needs to have a copy of the files.

Remote computers users may want to store files on your disk in a private subdirectory so that only they have access to the files. To do this, the server computer needs to have separate subdirectories for each remote computer user.

If you use the Installation Aid, the Aid will prompt you for the network names of remote computers that want to use your applications. The Installation Aid will create private subdirectories for each remote computer

user you specify. Each private directory contains two
other directories, the BATCH directory and the
PROFILES directory.

The server shares each private subdirectory separately
with read/write/create access so, that each remote
computer can read files, create new files, and write to
files in the subdirectory.

The USER.MDL subdirectory is an "outline" of a user
subdirectory that is used to create subdirectories for
specific users.

If you have information that you want copied into all
new user's directories, enter that information into the
root directory of the USER.MDL directory before you
define your users. The files in the USER.MDL root
directory will be copied into each new user directory.

The BATCH Subdirectory for Remote Computers

Remote computers also need to be able to access
applications easily. So, you need to provide batch files
for the remote users that allow them to access the
applications.

If you use the Installation Aid to organize your disk and
install your applications, the Aid will automatically
create the batch files that the remote computers need.
Through the path in the NETPATH command, the
user's BATCH directory is searched after the current
directory and any appended directories.

If you do not use the Installation Aid, you'll have to
create the BATCH subdirectory and create the batch
files for the remote computers.

If you normally use an application or program by
starting it from a batch file, the batch files created by
the Installation Aid may change the way that you
normally use the application or program.

You can create your own batch files to execute a program. To create your own batch file, use the batch files created by the Installation Aid as a model. Be sure to include the APPEND command and the calling statement from the Installation Aid batch file in your batch file.

> **Note:** See the *PC Network Program Installation Aid Quick Reference Card* at the back of this manual for information about using your application.

The PROFILES Subdirectory for Remote Computers

If the remote user wants to use applications that have profiles or other program files that require Read/Write/Create access, the PROFILES directory is used to store the files in. If you use the Installation Aid to install the user, the PROFILES directory is created and an APPEND command is entered when the remote user starts the network. The APPEND command causes the PROFILES subdirectory to be searched first (after the current directory) for any application program files, such as an application profile.

If you do not use the Installation Aid, remote users need to enter an APPEND command before they start the PC Network Program to append the directory that contains read/write/create application program files to their application directory.

The BATCH Subdirectory for the Server

The server needs to access the applications easily, no matter which subdirectory or drive is the current drive. To do this, the server needs batch files that allow it to access the applications.

If you use the Installation Aid, the Aid will automatically create the batch files that the server needs for each application that you install.

If you do not use the Installation Aid, you'll have to create batch files for the server.

The NETPATH Command

The NETPATH command is included in both the remote user's private directory and the server's root directory. NETPATH is a batch file that contains a path command to subdirectories that contain files with COM, EXE, and BAT extensions. NETPATH allows the remote users to easily access the applications installed on the server from any disk or directory on their computer.

To gain access to all of the applications, DOS, and the PC Network Programs installed in the server's APPS directory, you must first type NETPATH, using one of the following procedures, to setup the correct PATH and APPEND commands.

Do one of the following two steps after you have started the PC Network Program and have access to your private directory:

• Change to your private directory on the server computer by changing your DOS default drive to the drive ID that was defined by your "using network command" for your private directory. For example, if drive E is the ID defined for your

private directory, type E: and press enter. Then
type CD\ and press enter. Then type NETPATH
and press enter.

- Enter the NETPATH directly by
  typing E:\NETPATH and pressing enter.

In either case you get a message indicating that you can
now use the server's applications.

You can tailor the NETPATH.BAT file PATH and
APPEND commands, but be careful that you do not
delete or change the order of the commands. You
should add to the back (end) of the PATH and
APPEND commands.

The following example shows the PATH and APPEND
commands in the PC Network NETPATH.BAT file for
the server computer:

```
PATH=C:\BATCH;C:\APPS\TEXT;C:\APPS\DOS;C:\NETWORK;C:\;\
APPEND=\
```

The following example shows the PATH and APPEND
commands in the PC Network NETPATH.BAT file for
the remote computer:

Note: This example assumes that the server
specified that the APPS directory be used as
drive K.

```
PATH=\BATCH;K:\BATCH;K:\TEXT;K:\DOS;K:\NETWORK;\
APPEND=\
```

Subdirectories You May Want To Add

You may want to share different kinds of data files
separately. To do this, you may want to make some
additional subdirectories for your data files.

For example, suppose you have some accounting data
files and some personnel data files on your disk. You

want others to have access to the accounting files, but not the personnel files. If you had all of the files in the root directory (\ ) and you shared the root directory, the remote computers could access *all* of the files.

But, if you put the files in separate subdirectories, such as ACCTDAT (accounting files) and PERSNL (personnel files), you could share only the ACCTDAT directory. Remote users could access the accounting files, but not the personnel files.
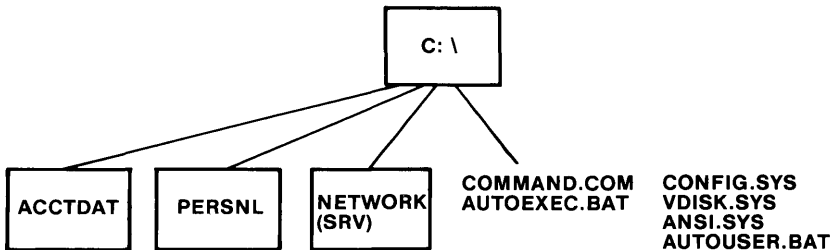
Installing Applications with the Installation Aid

After you've organized your disk, you may want to install applications on the server's disk. Many applications can be installed in the APPS subdirectory so that you can share many applications at one time.

You can use the Installation Aid to automatically install many of your IBM applications that can be used with DOS 3.10. The applications are installed in the server's APPS subdirectory.

Some IBM applications cannot be installed in the server's APPS subdirectory. Each computer must have its own copy of these applications.

You can refer to the *PC Network Installation Aid Quick Reference Card* at the back of this manual for a list of IBM applications that can be used with DOS 3.10, and instructions for how to install them. If your IBM application isn't on the card, check your application manual for instructions to install the application for use on the network.

Sharing Application and User Subdirectories

If you use the Installation Aid, you can print a list of the application and user subdirectories that you need to share. Then, you can use the menus or you can enter NET SHARE commands to share the subdirectories. You can also print a list for the remote users that tells each remote user the directories that they need to use.

You may want to share some data subdirectories for the applications. The Installation Aid won't print a list of the data subdirectories you need to share, since only you know the names that you gave them. You should add the names of any data subdirectories that you want to share to the list that the Aid prints.

The Installation Aid will also print a list of the application subdirectory and the user subdirectories that each remote computer needs to use. If the remote computers need to use a data subdirectory, you should add the name of the subdirectory to the list. You should give a copy of the list to each remote computer. The remote computers can use the menus or the remote computers can enter NET USE commands to use the subdirectories.

Sharing the APPS Subdirectory

You should share the APPS subdirectory with read-only access. Sharing with read-only access allows more than one person to use the same application at the same time.

Note: If you want to know more about access rights, see "Access Rights for Shared Disks and Directories" on page 10-12.

Sharing the APPS subdirectory means that everything in the APPS subdirectory can be accessed by remote users. All of the subdirectories that contain applications and the BATCH subdirectory are shared.

```
                        ┌─────────┐
                        │  APPS   │
                        └────┬────┘
    ┌──────────┬─────────┬───┴─────┬─────────┬──────────┐
┌───────┐ ┌─────────┐ ┌───────┐ ┌───────┐ ┌───────┐ ┌─────────┐
│  DOS  │ │ BATCH   │ │ APP 1 │ │ APP 2 │ │ APP 3 │ │NETWORK  │
│       │ │ (RDR)   │ │       │ │       │ │       │ │(RDR)    │
└───────┘ └─────────┘ └───────┘ └───────┘ └───────┘ └─────────┘
```
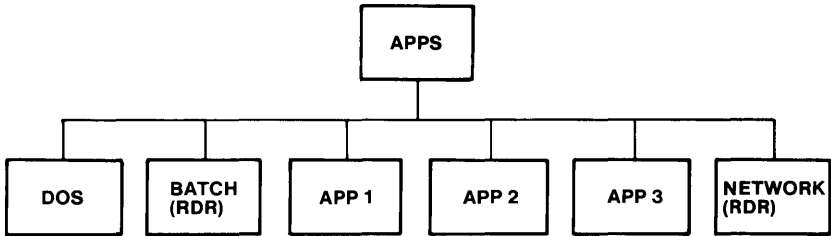
For example, you could share C:\APPS as network name APPS.

The remote computers each use the APPS subdirectory as a drive on their computer, such as N. If you use the Installation Aid, you identify the drive specifier with which the remote users should use the directory. The drive specifier you define is used in the PATH and APPEND commands for the remote users. For example, suppose you defined drive N as the drive specifier that remote users should use for APPS. TIMG is a remote user who wants to use your applications. The log you print for TIMG will tell him to use APPS as if it were his drive N and the PATH and APPEND commands in his NETPATH command will contain N in the directory paths.

The remote computers sees the APPS subdirectory as if it were a root directory on their computer, with subdirectories, like this:

```
         ┌─────────┐
         │  N: \   │
         └────┬────┘
    ┌────┬────┼────┬────┬────┐
┌───┴──┐┌─┴───┐┌─┴───┐┌─┴───┐┌─┴───┐┌──┴─────┐
│ DOS  ││BATCH││APP 1││APP 2││APP 3││NETWORK │
│      ││(RDR)││     ││     ││     ││(RDR)   │
└──────┘└─────┘└─────┘└─────┘└─────┘└────────┘
```
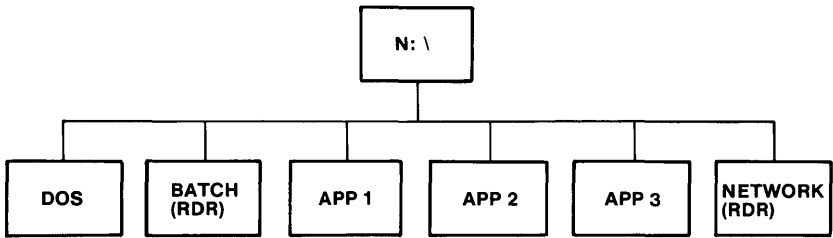
Even though the applications are in subdirectories, the files in the BATCH subdirectory allow the remote computers to access the applications from their root directory or from any subdirectory.

Sharing the USER Subdirectories

You should share each USER subdirectory with read/write/create access. Sharing each subdirectory with read/write/create access means that only one remote computer can use a file in the directory at a time. You may also want to give each shared subdirectory a password for security.

```
              ┌─────────┐
              │   C:\   │
              └────┬────┘
        ┌─────────┼─────────┐
  ┌─────┴──┐ ┌────┴───┐ ┌───┴────┐
  │ USER 1 │ │ USER 2 │ │ USER 3 │
  └────────┘ └────────┘ └────────┘
```
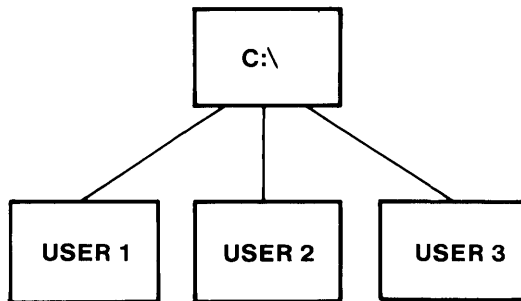
For example, you could share a user subdirectory of
C:\ANNB as network name ANNB.

The remote computers use their private subdirectory as
a drive on their computer, such as B. If you used the
Installation Aid to install remote users, remote users
can use their private directories as any drive specifier
they choose. The remote computers sees their
subdirectory as if it is a root directory, like this:

```
┌──────────┐
│ B:\      │
│          │
└──────────┘
```
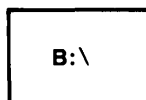
Sharing Data Subdirectories

If you have data subdirectories that you want to share
and you want remote users to be able to make changes
to the files in the directories, you should share each
subdirectory with read/write/create access. Sharing
each subdirectory with read/write/create access means
that only one remote computer can use a file at a time.
You may also want to give each subdirectory a
password for security.

```
                              ┌──────────┐
                              │ C:\      │
                              │          │
                              └──────────┘
              ┌─────────┐ ┌─────────┐
              │ DATA 1  │ │ DATA 2  │
              │         │ │         │
              └─────────┘ └─────────┘
```
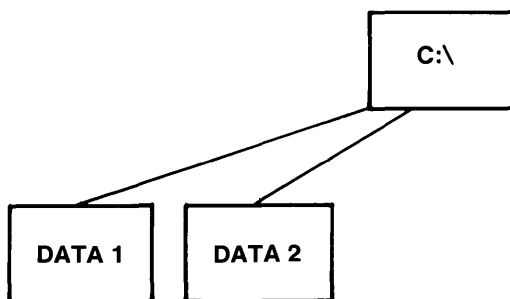
For example, you could share a data subdirectory of
C:\LETTERS that contains letters as the network
name LETTERS.

The remote computers can use the data subdirectory
that they need as if it were a drive on their computer,
such as C. Each remote computer sees the data
subdirectory as if it were a root directory, like this:

```
┌─────────────┐
│             │
│   C:\       │
│             │
└─────────────┘
```
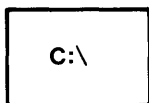
Installing Other Applications

You may want to install other applications similar to the
way that the Installation Aid installs IBM applications.
If you want to install the application in the \APPS
subdirectory, you should be sure that the application
can be used from a read-only directory before you
install it. Follow these steps to install the application:

1. Create a subdirectory in the \APPS subdirectory
    for the application.

2. Use the DOS COPY command to copy the
    application program files into the subdirectory.

    Notes:

    a. You may not need all of the files in the
        application subdirectory. When you're
        familiar with the application, you can erase
        any unneeded files.

    b. Some applications have BASIC and BASICA
        on the diskette. You can erase these files
        from the application directory. BASIC and
        BASICA from the DOS subdirectory are used.

c. Some applications have COMMAND.COM on the diskette. Rename COMMAND.COM in the application subdirectory and try to run your application. If it runs with the file renamed, you can delete COMMAND.COM from your application directory.

d. If your application has an AUTOEXEC.BAT file on the diskette, check to see what the file does. If the file only executes another batch file, you can erase AUTOEXEC.BAT. Copy the batch file that AUTOEXEC.BAT executes into the server BATCH subdirectory and the remote users' BATCH subdirectories.

3. You need to also create a batch file for the application for the server and a batch file for the remote user. The following instructions tell you how to create the batch files.

Creating Batch Files for Installed Applications

Batch files for the server and the remote computers allow the users to access the application and provide information to the application. The batch files include the APPEND and PATH commands.

•   APPEND locates files with extensions *other than* EXE, COM, and BAT. APPEND is used to allow applications to locate application profiles or other files in the user's PROFILES subdirectory.

•   PATH locates files with extensions of EXE, COM, and BAT. PATH is used to allow users to start an application from any disk or directory.

If you've installed an application without the Installation Aid, in the APPS subdirectory, you must create a batch file to allow the users to access the application.

You must tailor the contents of the batch files to the user's configuration. Because each user has different names for disks and directories, you must create your own PATH and APPEND commands. The following are examples of batch files.

Batch File for a Server Computer

It is assumed in the following example that the application was installed in the `C:\APPS\APP1` subdirectory and the path on the server computer is:

```
PATH=C:\BATCH;C:\APPS\APP1;C:\APPS\DOS;C:\;\
```

The following example is a batch file for a server computer accessing a program file named START.EXE:

```
ECHO OFF
CLS
APPEND > SAVEPATH.BAT
ECHO   C:\APPS\BATCH\CLEANSAV >> SAVEPATH.BAT
PATH   C:\BATCH;C:\APPS\APP1;C:\APPS\DOS;C:\;\
APPEND C:\PROFILES;C:\APPS\APP1
C:\APPS\APP1\START
SAVEPATH
```

Batch File for a Remote Computer

It is assumed in the following example that the remote computer user would always use the server's **APPS** directory as the remote computer's N disk drive. It is also assumed that the application was installed in the C:\APPS\APP1 subdirectory on the server computer and the path on the remote computer is:

```
PATH=\BATCH;N:\BATCH;N:\APP1;N:\DOS;N:\;\
```

The following example is a batch file for a remote computer accessing a program file named START.EXE:

```
ECHO OFF
CLS
APPEND > SAVEPATH.BAT
ECHO    C:\APPS\BATCH\CLEANSAV >> SAVEPATH.BAT
PATH    \BATCH;N:\BATCH;N:\APP1;N:\DOS;N:\;\
APPEND N:\PROFILES;N:\APP1
N:\APP1\START
SAVEPATH
```

Controlling Server Performance

You'll notice that your computer may seem to work more slowly because you now share your computer with other network users. In addition to you doing tasks at your computer, other network users also are doing tasks with your computer.

The tasks you do at your computer are called *foreground* tasks. The tasks that other network users do at your computer are called *background* tasks. For example, if you enter a DOS command at your computer, the command is a foreground task. Meanwhile, a remote user may send a file to your printer. The remote user's task is a background task.

The PC Network Program allocates memory and time to perform the foreground tasks and the background tasks. The speed with which the tasks are performed depends on the way that the server allocates memory and time.

You can use parameters of the NET START command when you start the network to "fine tune" the way that the server uses memory and time to perform foreground and background tasks. The default values for the NET START parameters allow equal performance of foreground and background tasks. Depending on how you plan to use your network, you may want to change some of the parameters.

Tuning and Tailoring the Server

Adjusting Time for Tasks

You can adjust the time that the server computer uses to perform foreground and background tasks with the Time Slice Intervals (/TSI:*fb*) parameter. The value for /TSI defines the time slice intervals with which the server will perform foreground (*f*) tasks for the user at the server computer and background (*b*) tasks for remote users.

Specify the time interval for the server to do foreground tasks with the *f* value.

Some of the foreground tasks are the following:

- The user at the server entering DOS commands

- The user at the server entering Network commands

- The user at the server running applications

- Printing files from the print queue

Printing files from the print queue is a foreground task. If you plan to share a printer, you should allocate a fair amount of time to *f*, even if you don't intend to use the computer to run applications.

Specify the time interval for the server to do background tasks with the *b* value.

Some of the backgrounds tasks are the following:

- Receiving messages from remote users

- Logging messages from remote users

- Remote users accessing a shared disk or directory

- Remote users sending files to a shared printer

Specifying a large time interval for background tasks means that remote users will receive good response for their tasks. However, response time to you as the server user is slower.

You should not perform some tasks at the server computer because the tasks require large amounts of time to complete. For example, a diskette FORMAT requires a large time interval and won't release DOS for the time slicing to work. Remote computers will receive errors when trying to access the server. A large DOS COPY also will cause significant performance loss to the network.

Other operations by other programs could also inhibit the time-slicing mechanism. You should experiment with new applications on the server computer in a controlled environment before using them when the network is fully active.

Values for /TSI

You can specify a number from 0 to 9 for the foreground (*f*) and background (*b*) tasks. The number you specify determines the number of timer ticks in which the task can run before the task is stopped and the other task starts. A timer tick is equal to 1/18.2 seconds or 18.175 milliseconds. If you do not enter /TSI, the default is 54 (5 foreground intervals, 4 background intervals).

Use the following table to select a /TSI value:

/TSI Value	Timer Ticks
0	1
1	2
2	3
3	5
4	7
5	11
6	15
7	21
8	28
9	36

To determine the best value for your server, you need to try different values for /TSI. If the server is a dedicated server, see "The Dedicated Server" on page 10-71 for some suggested values.

The following list gives you some values you may want to try for /TSI on a server computer that you're using as your personal computer and as a server.

00   Optimizes performance for background tasks. Foreground tasks are significantly slower when network activity is heavy.

91   Optimizes performance for foreground tasks., Background tasks are significantly slower if the server user's activity is high.

54   This is the default value. Allocates a fair amount of time to both the foreground and background tasks. Values such as /TSI:99 also equalize the time spent for foreground and background activity but the time slices are long and result in keystroke echoing being very slow.

22   Gives even response for all requests.

26   Gives good response for background tasks.

62   Gives good response for foreground tasks.

Larger numbers for f and b result in less total system time being spent to perform a task. However, large numbers cause the user at the server computer to have a less continuous response to his or her tasks.

For example, if you are using the server and try to use a network disk (a foreground task), but you've allocated a large amount of time to the background task and a background task is running, the foreground task receives no response. When the interval for the background task completes, the foreground task runs and receives good response. Since the time interval for the foreground and background tasks are long, you will perceive the response to be irregular.

If the task values (f) and (b) are 0, then execution time switching is fixed. The background task has priority. This means that when the background task has work to do, it runs; when the log task has work to do, it runs. If the foreground task has work to do *and* the background task is not running, the foreground task runs.

Adjusting Memory

Network performance can be improved by giving the
PC Network Program more memory (in the form of
buffers) in which to perform tasks. You may want to
adjust buffers for the following:

- Improve disk sharing performance

- Improve printer spooling performance

- Improve background print performance

Buffers for Disk Sharing and Print Spooling

To improve the performance of remote computers
accessing the server's fixed disk for submitting files to
be printed, adjust the following:

- The BUFFERS parameter in the CONFIG.SYS
  file

- The following parameters of the NET START
  command:

  - /SES and /CMD
  - /USN
  - /NBC and /NBS
  - /RQB and /REQ
  - /SHB, /SHR, and /SHL

CONFIG.SYS File BUFFERS Parameter

Include the BUFFERS command in your CONFIG.SYS
file to increase the number of disk buffers that DOS
can use. For each computer, this parameter controls
the size of a buffer pool which DOS uses for many of
its disk accesses. For the caching advantage of this
pool to have a significant effect, use BUFFERS=4 for
user computers and BUFFERS=10 for server
computers. You may want to experiment with larger
values, such as 20 or 30. However extremely large
values waste memory and can cause performance to be
slower.

/SES (Sessions) and /CMD (Commands)

The /SES and /CMD parameters of the NET START
command control concurrency of operations on the PC
Network Adapter. Normally, you do not need to
change /SES and /CMD. The PC Network Program
adjusts the parameters for you. You only need to
change /SES and /CMD if you are running an
application designed for the network that has specific
requirements for /SES and /CMD.

The /SES and /CMD parameters define the number of
buffers that are reserved by the NETBIOS to perform
its network functions. These parameters indirectly
effect performance because of the way memory on the
adapter is allocated. For larger values of /SES and
/CMD, there is less memory left over for network
packets. The smaller the values for /SES and /CMD,
the better the network performance will be. If you
must raise the value of the /SES and /CMD
parameters, do not use arbitrarily high values just to be
safe, because this can reduce the maximum packet size
to smaller than optimum.

You should use the lowest possible values for the /SES and /CMD parameters. See the NET START command for more information about /SES.

The default values for /SES are the following:

• Redirector or Receiver: 16

• Messenger: 16 *or* /USN + /SRV + 2 (which ever value is greater)

• Server: 16 *or* /REQ + /USN + /SRV + 2 (which ever value is greater)

The default values for /CMD are the following:

• Redirector or Receiver: 8

• Messenger: 8 *or* /USN + 3 (which ever value is greater)

• Server: 8 *or* /RDR + /USN + 4 (which ever value is greater)

   Note: If you are running an application designed to run on a network, the application can use the /SES and /CMD parameters. You should add the application's requirements to the values from the preceding table to determine the value that you should use.

MANAGING SERVER

/USN (User Names)

The /USN parameter is used to determine the number of additional names that you want to receive messages for. Each name you want to receive messages for requires approximately 600 bytes of memory. The default for /USN is 1.

Also, as shown in the /SES and /CMD parameters, the number of names specified directly affects the /SES and /CMD parameters. The value of /USN indirectly affects performance.

/NBC and /NBS (Network Buffers)

The combination of /NBC and /NBS can have dramatic effects on the network performance of certain applications. The /NBC and /NBS parameters are the most important NET START parameters to adjust if you are trying to improve network performance. The values to use are application dependent. This means that you should try different values with the set of applications you use most often to determine the fastest settings. You should consult your application manual to see if it has provided a suggested value.

Unlike all other parameters specified in this chapter, the /NBC and /NBS parameters must be set by the remote users when they start the network. Specifying this parameter on the server computer will only improve performance if you intend to use devices on other network computers.

The /NBC parameter defines the maximum number, from 1 to 64, of network buffers. The default number of buffers is 3 (2 for computers with 128K or less memory).

In general, the larger the /NBC value is the faster the network is. The /NBC value should be set to a value greater than the number of files that can be concurrently open (and accessed) over the network. This will allow the Redirector to assign a buffer to each open file. This prevents multiple transfers of file information to and from the server due to buffer reassignment to different concurrently open files.

The /NBS parameter defines the maximum size in bytes, from 512 to 32K bytes, of the network buffer. The default size of the buffer is 512 bytes. A /NBS value greater than or equal to 2K (2048) is highly recommended. The buffer requires the memory in your computer that you specify as *n*.

In general, the larger the /NBS value is the faster the network is. The /NBS parameter is most effective for applications that do sequential file access (such as word processing applications), and least effective for applications that do random access (such as data base management applications), but it is beneficial for both. For random access files it is important that the /NBS parameter be larger than the file's largest record and if possible an integer multiple of the record size.

The defaults for /NBC and /NBS were chosen to reduce the amount of memory used. The maximum settings for the /NBC and /NBS parameters is determined by the following formula:

/NBC * /NBS $\leq$ 32K bytes

/RQB (Receive Request Buffer)

The /RQB parameter specifies the maximum buffer size used for data transfer between the server and another computer and between the server's memory and disks. The /RQB parameter determines how much information can be sent to or from the server to a network user in one network send operation.

Fewer disk reads and PC Network messages are required to move large data items if the receive request buffer is large. The larger the number for /RQB, the more memory the PC Network Program uses for the data. Larger values for /RQB, improve the overall network performance at the server computer. If the server computer has memory available and if more than 4 remote devices from one server, the server should specify /RQB:16K.

If you are copying files to and from the server, you should use larger values for /RQB.

However, if most of the network requests the server does are for a small amount of data, larger values of /RQB have no effect on performance.

The default for a server is 8K bytes.

/REQ (Request Buffers)

The /REQ parameter specifies how many user computer requests can be processed at the same time. The /REQ parameter is used to determine how much memory the server can use for receiving requests from remote computers at the same time. The higher the value, the more network requests the server can receive.

The value can be 1 to 3; the default for a server is 2. If your network is very busy, experiment with /REQ:3.

Performance is greatly improved if /REQ is greater than 1. You should not reduce the /REQ parameter below the default of 2 unless the network activity is light. Values greater than 1 allow overlap of disk access for 1 user computer request and network data transfer for another. If expected network use is very heavy, you may need /REQ:3. If your network use includes many large program loads or file copies, you should experiment with larger values than the defaults.

For example, if /REQ is 2, then there will always be 2 buffers of size /RQB. These buffers could be used by 2 different sessions with active requests.

The amount of memory used for buffering network requests is the following: /REQ * /RQB. The default values of /REQ:2 and /RQB:8196 use 16K bytes of memory (2 buffers of 8K bytes each). The value of /REQ * /RQB cannot be larger than 48K bytes.

MANAGING SERVER

Buffers for Background Print

To improve performance of shared printers, adjust the following:

- /PRB

- /PRP

/PRB (Print Buffer)

The /PRB parameter is used to determine how much of a print file the server can keep in memory before the server has to go back to the disk to get more of the print file. The larger the value for /PRB, the better the overall network performance at the server computer. You should only change the value of /PRB if you are using the server's disk frequently, or if remote computers are using the server's disk frequently.

The default is 512 bytes.

/PRP (Print Priority)

The /PRP parameter is used to determine how much of the foreground task interval is used to print files while you're using the server computer for other tasks. Because printing and your use of the server computer both are foreground tasks, you must determine which has the most priority. If you want the user to get the best response, set the priority to 1 or 2. This only makes a difference when you have user activity going on at the same time that a file is printing. In the dedicated server, /PRP has little or no effect.

The default for /PRP is 3.

The Dedicated Server

You may want to use your server as a dedicated server computer if the server is the main source of data and programs for the remote computers.

If you are planning to use the server computer as a dedicated server, you should use the appropriate parameters with NET START and in your CONFIG.SYS file to maximize the server's performance.

BUFFERS in CONFIG.SYS

Include the BUFFERS command in your CONFIG.SYS file to increase the number of disk buffers that DOS can use. You should change your CONFIG.SYS file so that BUFFERS=10, at a minimum. If possible, use BUFFERS=20 on a PC XT or BUFFERS=30 on a Personal Computer AT.

/SES (Sessions) and /CMD (Commands)

Use the information shown with the NET START command in Chapter 7 to determine the values you should use for /SES and /CMD. The smaller the values, the faster the server's performance. If you choose a value that is too small, you'll receive an error message when you enter NET START.

/REQ (Number of Request Buffers)

Use the largest possible value for /REQ (from 1 to 3)
For optimum performance, use /REQ:3 and
/RQB:16K.

/RQB (Receive Request Buffer)

Use the largest possible value for /RQB (from 16 to
32K bytes). If your server has more than 320K bytes
of memory, try /RQB:16K.

/TSI (Time Slice Intervals)

If you plan to share disks and directories only, use
/TSI:00 for the best network response. If you plan to
share disks, directories, and printers, use /TSI:26 for
the least overhead with adequate time for printing
network files.

/PRP (Print Priority) and /PRB (Print Buffer)

If the server's printer is going to be used to print a lot
of files, use /PRP:3 for the optimum print priority.
You should use /PRB:8K to increase the size of the
print buffer and decrease the time spent sending
information to the buffer.

Appendixes

Contents

Appendix A. Messages

This appendix lists messages you may receive while you are on the network.

The first part of this appendix lists prompt and information messages. These messages *do not* start with NET and a number. These messages are in alphabetic order.

The second part of this appendix lists network error messages. These messages start with NET, followed by a number. These messages are in numeric order.

Messages that start with 3*xxx* are PC Network hardware messages. See the Problem Determination Procedures that you received with your PC Network Adapter for information on these messages.

Message Information Format

The **Explanation** for each message tells you what caused the message. The information in parentheses after the explanation tells you if the error is from the PC Network Program menus, the PC Network Program commands, or from another program. (You may need to know this if you call someone for help.)

The **Action** for each message tells you what you should do after you receive the message.

Some of the messages ask if you want to **Abort, Retry, or Ignore** the message or error. You should answer with one of the following responses:

A   **Abort** means that the system ends the program or command that caused the error.

R   **Retry** means that the system tries again because the error may not occur again.

I   **Ignore** means that either the system pretends that the error did not occur and continues, or that the system passes the error to the program or command and continues. All of the network errors that start with NET return the error to the program or command.

> **Note:** When using network commands, it is possible to answer 'A' for abort and still have the network command continue and possibly present another **Abort, Retry, or Ignore** request.

Prompt and Information Messages

Are you sure you want to exit the menus? (Y/N)

Explanation: (Menus) You chose to leave the menus by either pressing the Ctrl-Break key on any menu or pressing the Esc key on the Main menu.

Action: Type **Y** if you want to leave the menus or type **N** if you do not want to leave the menus.

Are you sure you wish to close the file? (Y/N)

Explanation: (Commands) You tried to close a file using the NET FILE command. Closing the file will cause errors if other people are still using the file.

Action: You should check the status of the file by entering **NET FILE**. If the file is open, check to see if the computer that has the file open is using it before you close the file.

Command completed successfully

Explanation: (Commands) The network command that you just entered executed successfully. For example, if you entered a NET SEND * command (broadcast message), the broadcast message was sent.

Action: Continue with your work.

Command cancelled

Explanation: (Commands) The network command that you just entered was not executed.

Action: Try the command again.

Disk or directory in use by computer name: xxxx

Explanation: (Commands) The disk or directory that you PERMIT'ed for use is being used by the computer name *xxxx* (the *xxxx* will be replaced by a computer name).

Action: You can't use the disk or directory until computer name *xxxx* has finished using it. You can force termination by pressing Ctrl-Break; however, computer name *xxxx* will get an error.

Do you want to start the network (Y/N)?

Explanation: (Commands) You've saved your network setup and have restarted DOS.

Action: If you enter **Y**, you'll start the network with your saved setup.

If you enter **N**, you will not start the network. If you want to start the network, you'll have to either use the menus or the commands to start the network and set up your computer on the network.

DOS device name is the current drive; are you sure (Y/N)?

Explanation: (Menus) The drive you specified is the drive on your computer that you're currently using. If you use the drive as a DOS name for a network device or directory, you won't be able to use the applications or programs that are in the drive.

Action: If possible, use another drive specifier. If you have to use the drive specifier for the current drive, be sure that you don't need to use the applications or programs that are in the drive.

Incorrect DOS Version

Explanation: The program you are trying to execute is not compatible with the version of DOS running on your system.

Action: Reset the system using DOS 3.10 or later, but less than 4.0; then restart the program.

Message sent ... and successfully received

or

Message sent and successfully received

Explanation: The message you sent was received by the computer that you sent it to.

Action: Continue with your work.

Name is forwarded; delete forwarded name (Y/N)?

Explanation: (Menus, Commands) You're trying to use a name on your computer that already is on the network and is forwarded.

Action: If you are starting the PC Network Program and you choose **Y**, the forwarded name is deleted. The name will be your name and you will receive messages for the name. If you choose **N**, the forwarded name isn't deleted and all messages for the name are forwarded. You won't receive any messages.

If you are trying to add the name to your computer so that you can receive messages for the name and you choose **Y**, the forwarded name is deleted. You will receive messages for the name. If you choose **N**, the

forwarded name isn't deleted and all messages for the
name are forwarded. You won't receive messages for
the name.

Network device or directory in use; are you sure (Y/N)?

Explanation: (Menus, Commands) You're trying to
stop sharing a disk, directory, or printer but other
computers are using the device.

Action: If you stop sharing the device, the other
computers will receive errors. Ask the other computers
to stop using the device; then stop sharing the device.

No appended directories

Explanation: No directories are currently being
searched by APPEND requests. The APPEND ;
command was the last APPEND command executed.

Action: See the APPEND command in Chapter 8 to
determine how to set the directory search list.

Permit started; Disk or directory available

Explanation: (Commands) You used the PERMIT
command to share your disk with another user on the
network. The disk is available for use by the other user.

Action: The other user should use the menus or the
NET USE command to use your disk or directory. You
won't be able to use your computer while it is permitted
for use on the network.

Press Ctrl-Alt-Del again to confirm

Explanation: (Menus, Commands) You've pressed Ctrl-Alt-Del to restart DOS. If you restart DOS and you're sharing devices on the network, the computers that are using your devices won't be able to use them anymore and will receive error messages.

Action: If you want to restart DOS, press Ctrl-Alt-Del again. If you don't want to restart DOS, press Ctrl-Break.

Sector not found error writing device LPT2 Abort, Retry, Ignore?

Explanation: (Menus, Commands) The print redirector sent a file to the server printer to be printed. An error was received when the server tried to write (spool) the print file to the fixed disk. The server gets the following error:

```
Sector not found error writing C drive.
```

Action Choose Abort (A) and see the person responsible for the server for additional information.

Specified drive contains the network programs; are you sure (Y/N)?

Explanation: (Commands) The drive you specified is the drive on your computer that contains the PC Network Program. If you use the drive as a DOS name for a network device or directory, you won't be able to do any network tasks.

Action: Use another drive specifier.

Specified drive is the current drive; are you sure (Y/N)?

Explanation: (Commands) The drive you specified is the drive on your computer that you're currently using. If you use the drive as a DOS name for a network device or directory, you won't be able to use the applications or programs that are in the drive.

Action: If possible, use another drive specifier. If you have to use the drive specifier for the current drive, be sure that you don't need to use the applications or programs that are in the drive.

System printer(s) have been deleted and reconnected

Explanation: (Menus, Commands) You tried to recover from an error on the system use of your printer or you tried to delete the system use of your printer. The entry has been deleted and then reconnected again.

Action: None. Continue with your work. This system use was created the first time that you shared your printer. It will automatically be deleted when you stop sharing your printer.

Error Messages

NET 001: Command does not exist

Explanation: (Commands) The command you used is an invalid PC Network Program command.

Action: Check your spelling and correct it if necessary. If your spelling is correct, check the PC Network Program reference card for the correct command.

This can also happen if the files NETWORK1.CMD, NETWORK2.CMD, or NETWORK3.CMD cannot be accessed.

NET 002: Command operand(s) incorrect

Explanation: (Commands) You tried to enter a command containing incorrect operands. This can occur on the NET START command if you use parameters that conflict with each other, or when specified together exceed the maximum memory, sessions, or commands that can be specified.

Action: Check your typing. If your typing is correct, you may have used an incorrect operand. Refer to the command format in "Chapter 7. PC Network Program Command Reference" on page 7-1. Correct the command, and enter it again.

> **Note:** Remember that operands are the parts of the command that do not start with a slash (/).

NET 003: Command parameter(s) incorrect

Explanation: (Commands) You tried to enter a command containing incorrect parameters. You may have specified a value with a parameter that doesn't have values, or you may have forgotten to specify a value.

Action: Check your typing. Make sure that you did not put a space between the slash (/) and the parameter.

If your typing is correct, refer to the command format in "Chapter 7. PC Network Program Command Reference" on page 7-1. Correct the command, and enter it again.

> **Note:** Remember that parameters are the parts of the command that start with a slash (/).

NET 004: Command operand(s) missing

Explanation: (Commands) You tried to enter a command and did not use a required operand.

Action: Check your typing. If your typing is correct, you may have left out an operand. Refer to the command format in "Chapter 7. PC Network Program Command Reference" on page 7-1. Correct the command, and enter it again.

> **Note:** Remember that operands are the parts of the command that do not start with a slash (/).

NET 005: Command parameter(s) missing

Explanation: (Commands) You tried to enter a command and did not use a required parameter.

Action: Check your typing to see if you mistyped a parameter. If your typing is correct, you may have left out a parameter. Refer to the command format in "Chapter 7. PC Network Program Command Reference" on page 7-1 to correct the command, and enter it again.

> **Note:** Remember that parameters are the parts of the command that start with a slash (/).

NET 006: Incorrect number of operands

Explanation: (Commands) You used too many or too few operands in the command.

Action: Refer to the command format in "Chapter 7. PC Network Program Command Reference" on page 7-1 to correct the command, and enter it again.

> **Note:** Remember that operands are the parts of the command that do not start with a slash (/).

NET 007: Incorrect number of parameters

Explanation: (Commands) You used too many or too few parameters in the command.

Action: Refer to the command format in "Chapter 7. PC Network Program Command Reference" on page 7-1 to correct the command and enter it again.

> **Note:** Remember that parameters are the parts of the command that start with a slash (/).

NET 008: Command operand specified more than once

Explanation: (Commands) You tried to enter a command and used the same operand more than one time. You can only use each operand once with this command.

Action: Remove the extra operand, and enter the command again. You may want to refer to the command format in "Chapter 7. PC Network Program Command Reference" on page 7-1 to correct the command, and enter it again.

> **Note:** Remember that operands are the parts of the command that do not start with a slash (/).

NET 009: Command parameter specified more than once

Explanation: (Commands) You tried to enter a command and used the same parameter more than one time. You can only use each parameter once.

Action: Remove the extra parameter, and enter the command again. You may want to refer to the command format in "Chapter 7. PC Network Program Command Reference" on page 7-1 to correct the command, and enter it again.

> **Note:** Remember that parameters are the parts of the command that start with a slash (/).

NET 010: Command parameter value out of range

Explanation: (Commands) You specified a value for a parameter that is too high or too low. If you were entering the NET START command, you may have used correct values, but some of the values conflicted with others.

Action: Check your typing to see if you mistyped a parameter. If your typing is correct, refer to the command format of the "NET START Command" on page 7-68 to correct the command, and enter it again.

> **Note:** Remember that parameters are the parts of the command that start with a slash (/).

NET 011: Cannot share more than three printers at one time

Explanation: (Menus, Commands) You tried to share more than three printers. You can only share three printers at one time.

Action: Check to see if you can stop sharing one of your printers.

NET 012: Cannot share a network device

Explanation: (Menus, Commands) You tried to share a device that is not attached to your computer. Or, you may have tried to share a device that is attached to your computer, but you've already used the DOS device name for a network device. For example, you may have a drive D, but have used D as the name for a network device that you're using.

Action: You can't share a device that is not attached to your computer. If the device is attached to your computer but you've used the DOS device name for a network device, you must stop using the network device first.

NET 013: DOS device name and/or pathname incorrect

Explanation: (Commands) The DOS name or the directory path name you used is incorrect.

Action: Check your spelling. If your spelling is correct, see your PC Network Program reference card for a list of DOS names for devices. See the *DOS Reference*, Version 3.10, for information about specifying directory paths.

NET 014: Cannot find name on network

Explanation: (Menus, Commands) The remote network name you specified does not exist on the network. The name was incorrect or misspelled, or the remote computer has deleted the name or has powered off.

Action: Check your spelling. If your spelling is correct and you think the name is on the network, send a message to all computers and ask for the correct name.

NET 015: Cannot use * on command line; Replace with password

Explanation: (Menus) You tried to use an asterisk (*) as a prompt for the password while entering a command using the menus.

Action: You can't use an asterisk (*) on the command line from the menus. You must type a password.

NET 017: Not enough available memory

Explanation: (Menus, Commands) Your computer does not have enough memory available to let you start the network the way that you specified. Or, your computer does not have enough available memory to let you do the task that you specified.

Action: If you get this message when you start the network, you must change the way that you started the network so that you use less memory. If you get this message when you do a task, you need to make more memory available. To make memory available, you can stop sharing some devices or directories, stop using some devices or directories, or delete some names that you've added.

NET 018: Cannot forward, remote computer paused

Explanation: (Menus, Commands) You attempted to forward a name to a computer on which the messenger was paused.

Action: Try again later, or try to forward to someone else.

NET 019: Network name limit exceeded

Explanation: (Menus, Commands) You tried to use too many network devices. Or, you tried to use devices from too many other computers.

Action: (Menus) Stop using some of the network devices and directories that you're currently using. Or, you can restart DOS and the network and choose to change the value for the number of drives you can use.

> **Note:** If you're using devices from too many other computers when you restart DOS and the network, you have to use the NET START command to increase this number.

Action: (Commands) Stop using some of the network devices and directories that you're currently using, or restart DOS and the network and change the value of the /ASG or /SRV parameters of the NET START command.

NET 020: Device is not redirected

Explanation: (Commands) You're trying to stop using a disk, directory, or printer but you never started using the network disk, directory, or printer that you specified.

Action: Check your typing and correct it if necessary. If your typing is correct, enter NET USE to see a list of devices that you're using. Find the device you want to stop using and try the task again.

NET 021: Device or directory already shared

Explanation: (Menus, Commands) You've already shared the disk, directory, or printer with the network and used the same network name and password for the device or directory.

Action: If you want to share the device again, you must use a different network name or a different password.

If you want to change the access rights, you must first stop sharing and then start sharing again using the new access rights.

NET 022: Number of devices or directories you can share exceeded

Explanation: (Menus, Commands) You've already shared as many disks, directories, and printers as you can.

Action: (Menus) If you're using menus and you need to share more devices and directories, you must restart DOS. Then, restart the network and change the defaults for starting (Answer "Y" to change defaults for starting). Change the value for the "Number of devices you can share."

Action: (Commands) If you're using commands, you must restart DOS and the network. Use the /SHR parameter of the NET START command to specify the number of devices and directories you can share.

NET 023: Network device or directory does not exist

Explanation: (Menus, Commands) You're trying to stop sharing a device or directory, but the device or directory isn't shared.

Action: Check your typing. If your typing is correct, display the list of devices that you're sharing and check the list for the device.

NET 025: Cannot forward; Name already forwarded once

Explanation: (Menus, Commands) The name you tried to forward messages for has already been forwarded by you to another computer. Or, the name has been forwarded to you by another computer. The name can only be forwarded once.

Action: (Menus) Choose "Display Names that can Receive Messages" on the message tasks menu. You'll see one of the following on the menu:

- A name in the first column with another name in the "Forwarded to Computer Name" column, meaning that you have forwarded the name to someone else.

  Stop forwarding the name. Then, start forwarding to the new name.

- A name in the first column with "FORWARDED NAME" in the "Type" column, meaning that someone else has forwarded the name to you.

  If you don't want to receive messages for the name, choose "Stop receiving messages for another name" on the Message Tasks menu and delete the name from your computer.

Action: (Commands) Enter NET NAME to display the names on your computer. You'll see one of the following on the list:

- A name in the first column with another name in the "Forwarded to Computer Name" column, meaning that you have forwarded the name to someone else.

  Enter the NET FORWARD (with the /D parameter) command to delete the forwarded name. Then enter the NET FORWARD command to forward to the new name.

- A name in the first column with "FORWARDED NAME" in the "Type" column, meaning that someone else has forwarded the name to you.

  If you don't want to receive messages for the name, enter the NET NAME (with the /D parameter) command to delete the name.

NET 026: Specified drive is shared

Explanation: (Commands) You attempted to redirect a drive that has been shared or has directories that have been shared.

Action: Choose another drive letter to redirect another drive; this one cannot be used.

NET 027: Name already exists on your computer

Explanation: (Menus, Commands) You're trying to add a name to your computer, but the name you specified already exists on your computer.

Action (Menus): Check your typing and correct it if necessary. If your spelling is correct, choose "Network status tasks" on the Main Menu and press Enter. Choose "Display names on your computer" on the Network Status Tasks menu and press Enter. A list of the names on your computer is displayed.

Action (Commands): Check your typing and correct it if necessary. If your spelling is correct, enter NET NAME at the DOS prompt to display a list of the names on your computer. Now try to add a different name to the list.

NET 028: Number of names you can add exceeded

Explanation: (Commands) You cannot receive messages for any more names.

Action: If you want to change the number of names for which you can receive messages, you must restart DOS and the network. Use the /USN parameter of the NET START command to specify the number of names that you want to add.

NET 029: Cannot delete the computer name

Explanation: (Commands) You tried to delete the name of your computer.

Action: You can't delete the name of your computer while you are on the network. The only way to delete your computer name is to stop using the network by switching off your machine or by restarting DOS (Ctrl-Alt-Del).

If you're trying to delete the name because you don't want to receive messages, you should do one of the following:

• Start saving messages in a save file
• Pause receiving messages

If you want to save your messages in a file, use the NET LOG command.

If you want to pause receiving messages, use the NET PAUSE command.

NET 030: Cannot forward messages to your own computer

Explanation: (Menus, Commands)

1.   You tried to forward a name on your computer to another name on your computer.

2.   You tried to forward a name on your computer to itself.

Action: You can't forward names to a name on your computer; you can only forward to another computer.

You can't forward a name to itself.

NET 031: Log file or device not specified

Explanation (Commands) You haven't specified a file or device in which to save your messages.

Action: Use the NET LOG command to specify a log file or device for your messages.

NET 032: Cannot redirect to a network path on your computer

Explanation: (Commands) You attempted to redirect to a network path on *your* computer. You cannot redirect to yourself.

Action: Specify the correct computer name.

NET 034: Message sent but message reception paused

Explanation: (Menus,Commands) The message you sent was not received because the person you sent it to has paused receiving messages.

Action: Try sending the message again later.

NET 035: Message sent but not received

Explanation: (Menus,Commands) The message you sent was not received by the other computer. The other computer may not have room to store the message, or the person at the other computer may be logging messages and the log file isn't available.

Action: Try sending the message again later.

NET 040: Cannot do this command, Receiver not started

Explanation: (Commands) You attempted to pause or continue the receiver, but the receiver configuration was not started.

Action: Correct the command and try again.

NET 041: Network adapter card not installed or not functioning

Explanation: (Menus, Commands) Your computer does not have a PC Network Adapter, or your PC Network Adapter card is not working correctly.

Action: Check your computer to see if you have an adapter. If your computer does have an adapter, see the "Problem Determination Procedures" for the network in your *Guide to Operations* manual.

NET 042: Unable to do requested command

Explanation: (Commands) An unexpected program error has occurred. Or, you tried to forward a name to another computer, but an error occurred at the other computer.

Action: Retry the command. If the problem continues, the command cannot be executed.

NET 043: Cannot do this command, Receiver or Messenger not started

Explanation: (Commands) You can't do the command because you aren't using the receiver, messenger, or server configuration.

Action: To start the receiver, messenger, or the server, you first must restart DOS. Then, you must restart the PC Network Program and specify the receiver, messenger, or server configuration.

NET 044: Network already started

Explanation: (Commands) You've already started the network (either by using the menus or by entering NET START).

> **Note:** Remember, if you've saved your network setup, the PC Network Program is automatically started for you.

Action: If you want to restart the network, you must restart DOS (Ctrl-Alt-Del); then start the network again.

If you've saved your network setup, cancel your saved setup. Then restart DOS and start the network.

NET 045: Cannot do this command, Redirector not started

Explanation: (Commands) You can't do the command because you probably haven't started the network.

Action: To start the network, you first must start DOS. Then, you must start the PC Network Program and specify the redirector, receiver, messenger, or server configuration.

NET 046: Cannot do this command, Server not started

Explanation: (Commands) You can't do the command because you aren't using the server configuration.

Action: To change the configuration that you're using, you first must restart DOS. Then, you must restart the PC Network Program and specify the server configuration.

NET 047: Cannot do this command, Messenger not started

Explanation: (Commands) You can't do the command because you aren't using the messenger or the server configuration.

Action: To change the configuration that you're using, you first must restart DOS. Then, you must restart the PC Network Program and specify the messenger or server configuration.

NET 048: No entries in list

Explanation: (Commands) The status list that you wanted to look at doesn't have any entries in it.

Action: None.

NET 050: Directory path too long

Explanation: (Menus, Commands) The directory path you specified is too long. The path can be up to 64 characters long.

Action: Specify a shorter path and retry your command.

NET 051: Insufficient disk space

Explanation: (Menus, Commands) Your diskette or disk doesn't have enough room to complete your network command or task.

Action: Go to the DOS prompt. List the directory and see if you can delete any of the files on the disk so that you have more room on your disk. Retry your command or task after making room.

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NET 056: Broadcast message too long

Explanation: (Menus) You tried to send a broadcast message that is longer than 128 characters. Broadcast messages can be up to 128 characters long.

Action: Shorten the message and send it again.

NET 057: Cannot find print queue file, PQ.SPL

Explanation: (Menus, Commands) The print queue file PQ.SPL is not in the directory with the PC Network Program that you installed.

Action: Copy the file PQ.SPL from the PC Network Program diskette that you received with this manual to the directory that contains your PC Network Program. (Use the DOS COPY command to copy the file.) After you've copied the file, start the network.

NET 058: Print queue not correct

Explanation: (Menus, Commands) The print queue (PQ.SPL) in the PC Network Program directory is incorrect.

Action: Go back to the DOS prompt. Enter the following command to delete the print queue files from the DOS/PC Network diskette that you installed, or from your fixed disk:

```
del pq*.spl
```

Now, copy the file named PQ.SPL from the PC Network Program diskette that you received with this manual to your DOS/PC Network diskette, or to the network directory on your fixed disk.

After you copy the file, you can use the print queue again.

NET 059: Print queue full; File not submitted

Explanation: (Menus, Commands) The print queue for the printer you are using is full so your file was not submitted to the queue.

Action: Try submitting the file again later.

NET 060: Printer not available; Files still queued to print

Explanation: (Menus, Commands) You stopped sharing your printer. Files are still in the print queue to be printed on your printer. Until the files are printed, you can't use your printer.

Action: Wait until the files in the queue are printed; then submit your file to the printer again. If you need to print the file immediately, you can pause printing, and then submit the file again. The file will be printed.

NET 062: Print device not shared

Explanation: (Menus, Commands) You attempted to pause or continue a printer that has not been shared, or you attempted to activate a separator page on a printer that has not been shared.

Action: You must first share a printer before you can pause or continue the printer or activate separator pages.

NET 064: Cannot delete; No active separator page for this printer

Explanation: (Menus, Commands) You tried to delete a separator page but you are not using a separator page on the printer.

Action: Check your typing. If you made a mistake, correct it and try again. If you didn't make a mistake, the separator page you specified has already been deleted.

NET 065: Cannot find name on your computer

Explanation: (Menus, Commands) You tried to delete or forward a name that does not exist on your computer.

Action: (Menus) Check the spelling of the name and correct it if it's wrong. If the spelling is correct, choose "Display names that can receive messages" to see if the name is on your computer.

Action: (Commands) Check the spelling of the name and correct it if it's wrong. If the spelling is correct, use the NET NAME command to display the names on your computer.

NET 066: File not open

Explanation: (Menus, Commands) You tried to display status for a file that isn't open. Or, you tried to close a file that isn't open.

Action: Check your typing. If your typing is correct, the file isn't open. Continue with your work.

NET 068: Name conflict with previous share

Explanation: (Menus) You're trying to share a device or directory, but you've already shared a device or directory and used the same name that you just specified.

Action: (Menus) Use another name.

Explanation: (Commands) You're trying to share a device, but you've already shared a device and used the same name that you just specified. If you're sharing a directory, you may have used the name as the network name for a directory, or you may have used the name as the shortname for a directory.

For example, suppose you shared a subdirectory named \ACCOUNTS (without a shortname) by entering the following command:

```
net share \accounts
```

Now, you share another subdirectory named \ORDERS\MAY\BILLS, and use a shortname of ACCOUNTS by entering the following command:

```
net share accounts=c:\orders\may\bills
```

When you try to share the second subdirectory \ORDERS\MAY\BILLS, you get the message "Name conflict with previous share" because you've already used ACCOUNTS as a name for a network device.

Action: (Commands) Delete the previous share or use another name.

NET 069: Cannot delete; Access code does not match

Explanation: (Commands) You tried to delete a share entry by using the wrong access mode like R, W, WC.

Action: Try again and use the correct access mode.

NET 070: Cannot delete; System share

Explanation: (Commands) You tried to delete a system share. This is not allowed.

Action: If you want to delete the system share, you must delete all shares to the same print device, then the system share is automatically deleted.

NET 072: Printer does not exist

Explanation: (Menus, Commands) You tried to share a printer but the printer does not exist.

Action: Check your typing and make sure that you typed the name correctly.

NET 073: Unable to pause; Files are open

Explanation: (Menus) Sharing can only be paused when no file activity is occurring. Therefore, if files are open on the computer, the computer cannot be paused. Everything other than the sharing can be paused on the computer, however.

Explanation: (Commands) The server on the server computer can only be paused when no file activity is occurring. Therefore, if files are open on the server, the server cannot be paused. Everything other than the server can be paused on the server computer, however.

Action: (Commands) Type the NET FILE command to see what users have files open. Send a message to these users asking them to stop using your network devices so that you can pause the server.

Action: (Menus) Press the F2 key in the menus, type FILE, and press Enter to see what users have files open. Send a message to these users asking them to stop using your network devices so that you can pause the server.

NET 074: Cannot start; Network adapter already started

Explanation: (Menus, Commands) You tried to start the network program, but the network adapter was already reset by either a failed start attempt or by an application.

Action: Reset (Ctrl-Alt-Del) your computer and start the network program again. Always start the PC Network Program before starting an application that uses the network.

NET 075: Cannot find forwarded name on network

Explanation: (Menus, Commands) You have attempted to delete a forwarded name. However, the forwarded name does not exist on the network. The computer you forwarded the name to could have deleted the name, or the computer is switched off.

Action: (Menus) Check your typing. If the name you typed is correct, choose "Display names that can receive messages" to see if the forwarded name still exists on the network.

Action: (Commands) Check your typing. If the name you typed is correct, use the NET NAME command to see if the forwarded name still exists on the network.

NET 077: Cannot start; Server configuration must start from a fixed disk

Explanation: (Commands) You have attempted to start the server configuration from a diskette. The server configuration must be started from a fixed disk.

Action: If you do not have a fixed disk, you cannot start the server configuration. If you have a fixed disk, follow the installation procedures in Chapter 2 to install the program on a fixed disk.

NET 078: Remote computer cannot receive messages for any more names

Explanation: (Menus, Commands) The remote computer you tried to forward your messages to cannot receive messages for any more names.

Action: (Menus) If you want to forward your messages to that computer, the user at the remote computer must restart DOS and the network, or stop receiving messages for another name. If the user decides to restart DOS and the network, he must change the value for "Number of names for messages" on the Change Defaults for Starting menu.

Action: (Commands) If you want to forward your messages to that computer, the user at the remote computer must restart DOS and the network, or delete a name on his computer before you can forward messages to that computer. If the user decides to restart DOS and the network, he should increase the /USN parameter of the NET START command.

NET 080: Unable to reconnect; All shared printers should be deleted

Explanation: (Menus, Commands) You tried to recover from an error on the system use of the printer. The entry was deleted successfully but reconnection failed.

Action: You have to delete all shared printers, then share them again later.

NET 081: Separator file cannot be on another computer

Explanation: (Commands) You attempted to specify a separator page file that was not on your computer.

Action: Try the command again, using a separator page file that is on your computer.

NET 102: Required field incorrect

Explanation: (Menus) The information you typed in the highlighted field is incorrect.

Action: Check your spelling and correct it if necessary. Press F1 if you need help for the field.

NET 104: Required field missing

Explanation: (Menus) You didn't fill in the information for a required field.

Action: You must fill in the field. Press F1 if you need help for the field.

NET 110: Number too small or too large

Explanation: (Menus) The value you used for the field is too high or too low.

Action: Check your typing. If your typing is correct, press F1 for help.

NET 120: Device is not on network

Explanation: (Menus) You're trying to stop using a network disk, directory, or printer, but you never started using the network disk, directory, or printer that you specified.

Action: Check your typing and correct it if necessary. If your typing is correct, choose "Network status tasks" on the Main Menu. Then, choose "Display devices you are using" on the Network Status Tasks Menu. You'll see a list of devices that you're using. Find the device you want to stop using and try the task again.

NET 126: DOS drive name is shared

Explanation: (Menus) The DOS drive name you specified is a physical drive on your computer and you have either shared this drive or a directory on the drive.

Action: Choose another DOS drive name. The DOS drive name you used can't be used.

NET 128: Number of names you can receive messages for exceeded

Explanation: (Menus) You cannot receive messages for any more names.

Action: (Menus) If you're using menus and you need to receive messages for more names, you must restart DOS. Then, restart the network and change the defaults for starting. On the Change Defaults for Starting menu, change the value for the "Number of names for messages."

If you do not want to restart DOS and the network, stop receiving messages for another name to allow room for the new name.

NET 129: Cannot stop receiving messages for this name

Explanation: (Menus) You tried to stop receiving messages for the name you gave your computer.

Action: You can't stop receiving messages for the name you gave your computer.

If you don't want to receive messages, you can pause receiving messages or save your messages in a file. To pause receiving messages, choose "Pause and continue tasks" on the Main Menu and follow the menus so that you pause receiving messages. To send messages to a save file, choose "Message tasks" on the Main Menu and follow the menus to start saving messages in a file.

NET 132: Cannot use; Network device exists on your computer

Explanation: (Menus) You attempted to use a network disk or directory that exists on your own computer, and you have shared the disk or directory. This cannot be done.

Action: Check to be sure you specified the correct computer name.

NET 142: Unable to do requested task

Explanation: (Menus) An unexpected program error has occurred. Or, you tried to forward a name to another computer, but an error occurred at the other computer.

Action: Retry the task. If the problem continues, the task cannot be done.

NET 149: Cannot save network setup; AUTOUSER.BAT exists

Explanation: (Menus) You tried to save your network setup but it can't be saved, because you have a file named AUTOUSER.BAT on your diskette or in the root directory of your disk.

Action: Delete or rename your AUTOUSER.BAT file (use the DOS DEL or REN command). Save your network setup after you've deleted or renamed the file.

NET 152: Unable to save setup; Directory path contains joins or substitutions

Explanation: (Menus) You tried to save your setup, but a directory path that's part of your setup contains joins or substitutes. You can't save joins and substitutes. The path that contains the joins or substitutes probably is for a directory that you've shared or a path to the file in which you're saving your messages.

Action: Delete any shares or stop saving messages to any path that contains joins or substitutes; then try to save your setup again.

NET 155: Cannot use; DOS drive name contains the PC Network Program

Explanation: (Menus) The DOS drive name for the network disk or directory you specified is a physical drive on your computer that contains the network programs. These programs are needed by the screens. You cannot use this DOS drive name.

Action: Choose another drive.

NET 163: Cannot cancel network setup; Network batch file not found

Explanation: (Menus) You can't cancel your network setup because you've never saved a setup.

Action: Choose "Save network setup" to save your setup as a new setup.

NET 167: Cannot change print size; Not a network printer

Explanation: (Menus) You tried to change the mode of a printer using the network menus, but you are not using the network printer.

Action: If the printer is attached to your computer, use the DOS MODE command to change the mode of operation of the printer. If the printer is not attached to your computer, you can't change the mode until you start using the network printer.

NET 171: Unable to save setup; Save file path has changed

Explanation: (Menus) You can't save your setup because the path for the network save file has changed. You may have used the drive specifier that used to contain the save file as a drive specifier for a network device. Or, joins and substitutes may have occurred. Or, you paused disk or print redirection.

Action: If you've used the drive specifier for the save file for a network device, stop using the network device. If you've used joins and substitutes, delete them. If you paused disk or print redirection, continue them. Try saving your setup again.

NET 177: Cannot start; Sharing devices must start from fixed disk

Explanation: (Menus) You started the PC Network Program from a diskette and attempted to share. To share devices, you must start the PC Network Program from a fixed disk.

Action: If you do not have a fixed disk, you cannot share printers, disks, or directories. If you have a fixed disk, you need to follow the installation procedures in Chapter 2 for installing on a fixed disk.

NET 179: Cannot save/cancel setup; Network program is on a redirected drive

Explanation: (Menus) You cannot save/cancel your network setup because your network program is on a redirected device.

Action: Exit the menus, and change your current drive and directory to the drive and directory that you started the network from. If you started from diskette, be sure the PC Network Program diskette is in the drive. Now, type NET and save/cancel your network setup again.

NET 181: Cannot specify a separator file that is on another computer

Explanation: (Menus) You attempted to specify a separator page file that is on someone else's computer.

Action: Try again, using a separator page file that is on your computer.

NET 182: Cannot save/cancel setup; Invalid network batch file

Explanation: (Menus) You attempted to save or cancel your network setup, but your network batch file has been invalidated. Namely, the ": ***" has been deleted from your network batch file.

Action: Return to DOS. Insert the ": ***" back into your network batch file as shown below:

```
:*** Network batch file ***
     { user area }
.***
echo off
          •
          •
          •
```

See "Saving Your Network Setup" on page 4-19 for additional information about the network batch file user area.

Try to save your setup again.

NET 183: Network setup is saved; AUTOEXEC.BAT may require changes.

Explanation: (Menus) The save network setup created a new AUTOEXEC.BAT file. If you had an AUTOEXEC.BAT file, it was renamed to AUTOUSER.BAT. The new AUTOEXEC.BAT may require modification.

Action: See "Saving Your Network Setup" on page 4-19 for information about the new AUTOEXEC.BAT file, and how you may need to modify it.

NET 201: INIT ERROR xxxx

Explanation: (Menus, Commands) You don't have the programs that you need to start the network, or your computer doesn't have enough memory to start the network the way that you specified. The following is a list of INIT ERROR codes.

Code   Explanations and Actions

0002   **Explanation:** The PC Network Program was unable to initialize the screens. This error can occur for several reasons. The most likely reason is that the file NETWORK1.SCN is not in the directory that contains the network code. This could happen because the file was accidentally deleted or renamed. Another reason is that the contents of NETWORK1.SCN, NETWORK1.CMD, or NETWORK2.CMD have been damaged. This error is also possible when there is insufficient memory to reload the screens after starting the network.

Action: Restart the computer by using Ctrl-Alt-Del and check to see if the file NETWORK1.SCN is in the network directory. If needed, copy it to the network directory from the PC Network Program diskette.

0003 **Explanation:** The PC Network Program
encountered an error when it was initializing the
network adapter card for subsequent requests.
This usually means that the adapter card is not
functioning correctly. This error can also occur
when this adapter or other adapters on other
computers have been disconnected from the
network cable and then reconnected.

Action: Restart the computer by using
Ctrl-Alt-Del and try again. If the problem
recurs, run the network adapter diagnostics.

0YXX **Explanation:** The Y of 0YXX indicates the
failing program. Use the following codes to
determine which program failed:

Code	Program
1	PSPRINT.EXE
2	REDIR.EXE
3	RECEIVER.COM
4	SHARE.EXE
5	NETBIOS.COM
6	NET.COM

The XX of 0YXX indicates the cause of the
error. The XX is a hexadecimal representation
of either a DOS error code (see the Error Return
Table in Chapter 6 of the DOS 3.10 Technical
Reference) or one of the following errors:

Code Error

| **80** | Incorrect DOS version. The PC Network Program is not compatible with this version of DOS. |
| **FF** | Not enough storage available to load program Y, or invalid parameters to program Y. |

The PC Network Program was unable to load
program Y. This error can occur for several
reasons. The most likely reason is that the file
(program Y) is not in the directory that contains

the network code. This could happen because the file was accidentally deleted or renamed. Another reason is that the contents of the file have been damaged.

Another cause for error 06XX is that the PC Network Program was unable to reload the NET.COM program. The most likely cause of this problem is that there was insufficient room to reload the NET command. Another cause is that the NET.COM file was renamed and that the new name was used to start the Network. For example:
RENAME NET.COM NETWORK.COM.
This is not allowed. If another name for NET.COM is desired, then use
COPY NET.COM NETWORK.COM.

Action: Restart the computer by using Ctrl-Alt-Del and check to see if the failing Y program file is in the network directory. If needed, copy it to the network directory from the PC Network Program diskette. Otherwise, refer to the exact error code for more information.

If you still can't start the network, you may have installed the PC Network Programs incorrectly on your disk or your diskette. Refer to "Chapter 2. Installing Your Programs" on page 2-1 and reinstall the PC Network Programs on your disk or diskette.

NET 202: Not enough storage to use menus; Please use commands

Explanation: (Menus) Your computer does not have enough memory to load the menus, but you can use the commands.

Action: If you don't want to use the commands, restart DOS. Then, restart the network. Change the way you choose to start the network so that you use less memory.

This error can also happen if the file NETWORK1.SCN is unavailable.

NET 206: Message cut short due to error

Explanation: (Menus, Log or Save file) An error occurred on your computer and you didn't get the entire message.

Action: Send a message to the person who sent you the message and ask them to send it again.

NET 212: Cannot perform function on remote files

Explanation: (Commands) You tried to obtain status information for a file that does not exist on your computer. The NET FILE command can only obtain status information for files that exist on your computer.

Action: Check your typing or see if that file is on your computer. If your typing is correct and the file is on your computer, you cannot obtain status information for that file.

NET 215: Print queue no longer correct; Queue has been updated

Explanation: (Menus) You tried to change the status of a file on the print queue screen, but the status of the print queue is no longer the same. The queue is automatically updated so you can see the most current status of the file.

Action: Look at the queue again and retry your request.

NET 216: Cannot release a printing file

Explanation: (Menus) You tried to release a file that's being printed. Releasing the file means that you're allowing it to print. You don't need to release the file because it's already printing.

Action: Check to be sure you've chosen the correct file.

NET 217: Cannot change status of file at this time

Explanation: (Menus) You're trying to change the status of a file in the print queue, but the file is in a state that can't be changed.

Action: Retry your request later.

NET 250: Required field; Cannot be left blank

Explanation: (Menus) You must fill in the information for the field.

Action: Press F1 if you need help for the field.

NET 253: Incorrect format

Explanation: (Menus) You typed an incorrect character in the command.

Action: Correct the information in the field.

NET 254: Invalid name for printer

Explanation: (Menus) The name you used is not a valid name for a printer.

Action: Check your typing and correct it if necessary. Retry your request. If you still get an error, press F1 for help with the field.

NET 255: Invalid DOS name for directory path

Explanation: (Menus) The path you used is not a valid directory path.

Action: Check your spelling and correct it if necessary. If your spelling is correct, see the command format for a directory path in the table on "PC Network Command Parameters and Operands" on page 7-6 and correct the directory path.

NET 256: Invalid number

Explanation: (Menus) The number you used is not valid for the field. You may have typed letters instead of a number, or you may have typed a mixture of numbers and letters.

Action: Type a number in the field. Press F1 if you need help.

> **Note:** If the field asks for a memory size, you can enter the letter K (for K byte) beside the number. For example, you would enter **60K** to indicate 60K bytes.

NET 259: Invalid format

Explanation: (Menus, Commands) The format you used for the command is incorrect.

Action: (Menus) Check your typing and correct it if necessary. Retry your request. If you still get an error, press F1 for help with the field.

Action: (Commands) If the command is a network command, see the *PC Network Program Reference Card* and correct the command.

NET 260: Invalid format for a DOS filename

Explanation: (Menus) You typed an incorrect DOS filename. You may have used the wrong format for the name or used an invalid character in the name.

Action: See the format for a filename in the table "PC Network Command Parameters and Operands" on page 7-6, and correct the filename.

NET 275: Message area full

Explanation: (Menus) You've typed as many characters as you can in your message.

Action: Make the message shorter, or end the message.

NET 278: Cannot access save file

Explanation: (Menus) You tried to save a message in your save file using the F7 key on the View Messages menu, but you haven't started saving messages yet.

Action: Go back to the Message Tasks menu. Choose "Start or stop saving messages" and follow the menus to start saving messages in a file.

If you want to see your messages on your screen and just want a file available so that you can put waiting messages in it, you should do the following:

1. Start saving messages in a save file. The save file you specify is ready for you to use.

2. Then, stop saving messages. Your messages will be shown on your screen, but the save file is still available for you to use.

NET 279: No more waiting messages to view

Explanation: (Menus) You've viewed all the waiting messages you had. You can't view them again.

Action: None

NET 280: Message area for broadcast message full

Explanation: (Menus) You've typed as many characters as you can in your message. Broadcast messages cannot be more than 128 characters in length.

Action: Make the message shorter, or end the message.

NET 281: No more saved messages to view

Explanation: (Menus) You've viewed all the saved messages from the file.

Action: If you want to see the messages again, press F5 to view the first message from the file. Press F6 to view the next message. Continue pressing F6 until you've seen all of the messages.

NET 282: Cannot delete message; Not viewing saved message

Explanation: You attempted to delete a saved message; however, you are not currently viewing a saved message. Only the message being viewed can be deleted.

Action: If there is a saved message you wish to delete, press F5 and F6 to view this message. Then delete it.

NET 286: Cannot access printer

Explanation: (Menus) You tried to print a message on the printer, but the printer returned an error.

Action: Check to see if the printer is on and try again.

NET 299: APPEND / ASSIGN Conflict

Explanation: (Commands) The ASSIGN command has been executed before the first APPEND command. The APPEND command must be executed once before the ASSIGN command can be executed.

Action: Reset the system (Ctrl-Alt-Del), and ensure that APPEND is executed before the first ASSIGN command is issued.

NET 310: Unable to access NETWORK?.CMD

Explanation: (Menus, Commands) The PC Network Program is unable to access NETWORK1.CMD, NETWORK2.CMD, or NETWORK3.CMD. This could be because the wrong diskette is in your drive, the file was deleted, or the diskette door is open.

Action: Check to be sure that you have the correct diskette in the drive. If the diskette is correct, then you have an error on the diskette and need to reinstall the PC Network Program. Follow the instructions in Chapter 2 to reinstall the program.

NET 311: Unable to access NETWORK1.SCN

Explanation: (Menus, Commands) The PC Network Program is unable to access the NETWORK1.SCN file. This could be because the wrong diskette is in your drive, the file was deleted, or the diskette door is open.

Action: Check to be sure that you have the correct diskette in the drive. If the diskette is correct, then you have an error on the diskette and need to reinstall the PC Network Program. Follow the instructions in Chapter 2 to reinstall the program.

NET 312: Unable to access NETWORK.MSG

Explanation: (Menus, Commands) The PC Network
Program is unable to access the NETWORK.MSG file.
This could be because the wrong diskette is in your
drive, the file was deleted, or the diskette door is open.

Action: Check to be sure that you have the correct
diskette in the drive. If the diskette is correct, then you
have an error on the diskette and need to reinstall the
PC Network Program. Follow the instructions in
Chapter 2 to reinstall the program.

NET 351: Invalid DOS function

Explanation: (Menus, Commands) The command or
task you specified issued an illegal DOS function.

Action: Refer to the *DOS Reference*, Version 3.10, to
correct the function and try again.

NET 352: File not found

Explanation: (Menus, Commands) A file named in the
command or task does not exist in the directory or the
drive that you specified.

Action: Check your typing. If your typing is correct,
check to see what drive or directory contains the file
and correct the command or field in the menu.

NET 353: Path not found

Explanation: (Menus, Commands) A drive or directory named in the command or task does not exist or is invalid.

Action: Check your spelling and make sure you used the correct syntax for the path. If your spelling and syntax is correct, you may have used the wrong path or the path may not exist any more.

NET 354: Too many open files

Explanation: (Menus, Commands) You've exceeded the number of files that DOS can have open. You can't perform your request.

Action: Retry the command or task. If you are unsuccessful, go to the DOS prompt. Change the value for FILES in your CONFIG.SYS file. Restart DOS and the PC Network Program. Retry your request.

NET 355: Access denied

Explanation: (Menus, Commands) You can't access the disk, directory, or file because you don't have the correct access right for the file.

Action: Find out what the access right for the file is. You may have to change the access right.

NET 358: Insufficient memory

Explanation: (Menus, Commands) Your system doesn't have enough memory available to do your request.

Action: If you get this message when you start the network, change the way you start the network so that you use less memory. If you get this message when you do a task, you need to make more memory available. To make memory available, you can stop sharing some devices or directories, stop using some devices or directories, or delete some names that you've added.

NET 363: Invalid data

Explanation: (Menus, Commands) The data you're using is invalid for DOS.

Action: Retry the command using valid data.

NET 364: Invalid device

Explanation: (Menus, Commands) The device you specified is not a device on your computer.

Action: Use a different device name and try your request again.

NET 365:   Attempt to remove current directory

Explanation: (Menus, Commands) You attempted to erase the directory that you're using. You can't erase the directory while you are using it.

Action: You must get out of the directory, erase its contents, and then erase the directory.

NET 367: No more files

Explanation: The command or task you attempted caused the limit of concurrently opened files to be exceeded. This limit could either be exceeded on your computer or, if the file is on a network disk, on the server computer.

> **Note:** See the FILES command in Chapter 9 for more information.

Action: If the file being accessed is on your computer, increase or add a FILES= parameter to your CONFIG.SYS file. If you are adding to an existing number, specify a number larger than 8 (the default). If the file is a network file, try executing the command or task specifying a local file. If this works, the problem exists on the server computer. Inform the user at the server computer of this problem.

NET 368: Write protected diskette

Explanation: (Menus, Commands) The diskette you are using is write-protected, so you can't write information to the diskette.

This message appears if:

- You try to write to a diskette that's already been written on as a double-sided diskette diskette in a single-sided drive

- You try to use a diskette that's been formatted at 9 sectors-per-track with a version of DOS lower than DOS Version 2.0 or Version 2.1.

Action: Check your diskette to be sure you want to write on the diskette. If the diskette has a write-protect tab, you must remove the tab to write on it.

NET 369: Bad unit

Explanation: (Menus, Commands) A device driver was passed an invalid sub-unit number.

Action: Retry your request. If you get the same message, contact the dealer that you purchased the program from.

NET 370: Drive not ready

Explanation (Menus, Commands) The drive you specified isn't ready to use.

Action: Check the drive and make sure that the door is shut. Retry your request.

NET 371: Bad command

Explanation: (Menus, Commands) A device driver issued an invalid command to a device.

Action: Retry (R) your request. If you get the same message, review your device interface specification and DOS driver implementation and make sure that everything you're trying to do is supported.

NET 372: Data error; Bad CRC

Explanation: (Menus, Commands) DOS couldn't read or write the data correctly.

Action: If you are using diskettes, this message usually means that the diskette has developed a defective spot. Try the operation again. If you get the same message again, replace the diskette that you are using.

NET 373: Bad call format

Explanation: (Menus, Commands) A device driver was passed an incorrect length request header.

Action: If you are using a purchased device driver, contact the dealer that you purchased the device driver from.

NET 374: Seek error

Explanation: (Menus, Commands) The fixed disk or diskette drive couldn't find the correct track on the disk.

Action: Make sure the diskette is properly inserted in the drive and that the drive door is shut. Retry (R) your request. If the diskette is inserted correctly and you get the same message, use a different drive and rerun the command. If you still get the message, run CHKDSK.

NET 375: Non–DOS disk

Explanation: (Menus, Commands) The file allocation table contains invalid information. The disk needs to be reformatted.

Action: Try running CHKDSK to see if any corrective action is possible. If you have to reformat the disk, you will lose the files that are on the disk.

NET 376: Sector not found

Explanation: (Menus, Commands) The sector containing the data could not be located on the disk.

Action: Retry your request. If you get the same message, retry the request with a different disk.

NET 377: Printer is out of paper

Explanation: (Menus, Commands) The indicated printer is either out of paper or is not switched on.

Action: If the printer is out of paper, put the printer offline and load more paper. If the printer is switched off, switch on the printer and make sure the printer is online. Retry your request.

NET 378: Write fault

Explanation: (Menus, Commands) DOS couldn't write the data to the device.

Action: If you are trying to print to a network printer, make sure that you "start using" that printer before printing.

If you are trying to write to a diskette, make sure your diskette is properly inserted in the drive. If the diskette is in the drive correctly, choose retry (R). If you get the same message, rerun the command with a different disk.

NET 379: Read fault

Explanation: (Menus, Commands) DOS couldn't read the data from the device.

Action: If you are using diskettes, make sure your diskette is in the drive and that the drive door is shut. Retry (R) your request. If you get the same message, retry the command with a different disk.

NET 380: General failure

Explanation: (Menus, Commands) An unexpected error has occurred.

Action: Abort (A) the request.

NET 381: Sharing violation

Explanation: (Menus, Commands) You're trying to access a file that's currently being used by someone else.

Action: Retry your request later.

NET 382: Lock violation

Explanation: (Menus, Commands) The command or task you are running attempted to lock or access part of a file that is already locked.

Action: Retry the request later.

NET 383: Invalid disk change

Explanation: (Menus, Commands) The diskette in the high capacity drive was changed while files were still open on the diskette.

Action: Reinsert the correct diskette.

NET 384: FCB unavailable

Explanation: (Menus, Commands) You tried to open more file control blocks than were specified by the FCBS command in your CONFIG.SYS file.

Note: See the FCBS command in Chapter 9 for more information.

Action: Abort (A). Then, increase the value for FCBS in your CONFIG.SYS file.

NET 408: File creation error

Explanation: (Menus, Commands) An unsuccessful attempt was made to add a new filename to the directory or to replace a file that was already there.

Action: If the file was already there, check whether the file is marked read only and cannot be replaced. Otherwise, run CHKDSK to determine if the directory is full, or if some other condition caused the error.

NET 410: Limit exceeded

Explanation: (Menus, Commands) The command or task you attempted could not be performed because a network data structure limit is exceeded. This can occur when you attempt to use more than the specified number of servers, or when you attempt to use more network paths than specified.

Action: (Menus) Stop using some of the network devices and directories that you're currently using. Or, you can restart DOS and the network and choose to change the value for the number of drives you can use.

Note: If you're using devices from too many other computers, you have to use the NET START command.

Action: (Commands) Stop using some of the network devices and directories that you're currently using, or restart DOS and the network and change the value of the /ASG or /SRV parameters of the NET START command.

NET 411: Device/Path in use

Explanation: (Menus, Commands) You tried to use a device or a path that is already in use.

This error can also be the result of a previous NET USE, SUBST, or JOIN command using the device or path specified.

Action: You must use another device or path.

If this message appeared as a result of executing a series of NET USES in a batch file for the purpose of re-executing some commands that failed, it may be appropriate to ignore this message.

NET 415: Network data fault error

Explanation: (Menus, Commands) A disk error occurred while you were writing information to a file on a network disk. The most probable cause for this error is that the network disk is full. (Other disk errors can cause this problem too).

Action: Check to see if the disk that you are writing to is full by using the DOS DIR command to list the contents of the network disk. If the disk is not full, try performing the request again.

NET 416: Sharing buffer exceeded

Explanation: (Menus, Commands) While you were trying to access a file on the server computer, the buffer area for file sharing and block locking on the server computer was exceeded.

Action: Choose **Retry**. If you receive the error again, the user at the server computer should restart the PC Network Program and increase the size of the /SHB or /SHL parameters of the NET START command.

NET 456: Network session closed

Explanation: (Menus, Commands) A problem has occurred on the network computer that you are attempting to access. This could occur if the network computer was turned off or restarted. If you are attempting to use a network disk or printer, this device may have been removed from the network.

Action: Try the command again later. If unsuccessful, try sending a message to the user of the network computer. Tell the user about the problem you are having accessing the network computer.

NET 459: Too many network names

Explanation: (Menus, Commands) You have added the maximum number of names (16) that can be added to your network adapter card. This could be caused by an application running on the computer that uses the network too.

Action: You will have to remove a name before you can add another one. Names are removed from your network adapter card when you stop receiving messages for another name using the full screen interface. This is done with the NET NAME /D command if you are a command user.

NET 460: Cannot delete name now, will automatically be deleted later

Explanation: (Menus, Commands) The name you attempted to remove cannot be deleted immediately because sessions are still established with this name. This name will be automatically deleted when the sessions are closed.

Action: None. The name will be removed from the card once all sessions are closed.

NET 466: Name already exists on the network

Explanation: (Menus, Commands) You're trying to add a name to your computer, but the name you specified already exists on another network computer.

Action: Use a different name.

NET 468: Session ended abnormally

Explanation: (Menus, Commands) The command was unable to complete successfully because the session between your computer and the network computer was terminated before the function completed. This error may occur when the network computer powers down, or when the network computer is too busy to handle your request.

Action: Retry the command. If the error continues, you cannot do the command.

NET 473: Network command completed while being cancelled

Explanation: (Menus, Commands) A network command was canceled after it had already completed.

Action: None.

NET 475: Active command cannot be cancelled

Explanation: (Menus, Commands) The command is executing and you can't cancel it.

Action: None. Let the command complete.

NET 500: Network not started

Explanation: (Commands) You tried to use a network command but you haven't started the network.

Action: Use the menus or the NET START command to start the network. See "Chapter 4. Using the PC Network Program Menus" on page 4-1 or "Chapter 7. PC Network Program Command Reference" on page 7-1 if you need instructions.

NET 501: Cannot start network; Program conflict

Explanation: (Menus, Commands) You have started a program (such as SHARE, REDIR, PRINT, PSPRINT, or ASSIGN) that conflicts with the network program. The network program automatically loads in these programs if they are needed except ASSIGN. Therefore you (or a .BAT file) should not start them.

Action: If you still want to start the network, reset (Ctrl-Alt-Del) your computer and try starting the network again. Otherwise, continue with your work.

NET 700: SYSTEM ERROR ; XXXX@YYYY:ZZZZ

Explanation: (Menus, Commands) The X's, Y's, and Z's are replaced by numbers telling you more about the error. The X's represent the error code number. The Y's and Z's represent the hexadecimal address of the error. The PC Network Program has detected either an internal program error or a hardware error.

Action: Try to end your application. Then, restart DOS (Ctrl-Alt-Del) and restart the PC Network Program. Set up your computer on the network again. If the error occurs again, see the dealer that sold you the PC Network Program and your PC Network Adapter.

NET 750: System Error; . . .

Explanation: (Menus, Commands) The . . . is replaced by error information depending on the cause of the error. Here are a few examples:

- NET 750: System error; not same device
- NET 750: System error; file already exists
- NET 750: System error; fail request chosen
- NET 750: System error; invalid parameter

You have an internal program or hardware error.

Action: Try to end your application. Then, restart DOS (Ctrl-Alt-Del) and restart the PC Network program. Set up your computer on the network again.

IMPORTANT: If the problem continues, contact your dealer or the IBM representative that sold you the PC Network program and your PC Network Adapter and report this error.

NET 801: Remote computer not listening

Explanation: (Menus, Commands) There are a number of reasons for this error. Sometimes this error is a temporary situation; other times it is an error *by the user of the command.* This error can occur when you are attempting to:

1. Use a network device being PERMIT'ed to someone other than your computername.

2. Access a computer that is busy servicing other requests (temporary).

3. Use a network device on a computer that has no sessions available to allow you to use the device.

4. Use a network device on a redirector computer.

5. Share your printer when the maximum number of remote computers are already using your computer. When you share your printer, the PC Network Program automatically allows you to use your printer as a redirector. However, the PC Network Program on your computer doesn't have enough memory available for another redirector.

Action: Retry the command. If the error occurs again, the server probably has no sessions remaining to service your requests. The server computer should restart the network specifying a larger /SES number.

If you are the server trying to share your printer, start the PC Network again and specify a larger number for the /RDR parameter of the NET START command.

NET 802: Duplicate name on network

Explanation: (Menus, Commands) Someone else on the network has the same name you've used.

Action: Use a different name.

NET 803: Network path not found

Explanation: (Menus, Commands) The network path you specified doesn't exist.

Action: Check the path and correct it.

NET 804: Network busy

Explanation: (Menus, Commands) The network is busy and can't do your request.

Action: Retry your request at another time.

NET 805: Network device no longer exists

Explanation: (Menus, Commands) The device you attempted to access is no longer available. The device is no longer available because the computer that shared the device may have reset the machine, powered off the machine, or deleted the shared device.

The error may occur if you explicitly attempt to access the device, if you start a program and the invalid drive exists in your DOS PATH statement, or when your program ends.

Action: (Menus) Abort the request. Go to the menus and choose Disk or Directory Tasks on the Main menu. Then, choose Display devices you are using on the Disk or Directory Tasks menu. You'll see a list of the devices you are using. Note which devices have a status

of ERROR. Now, go the the Start or Stop Using Network Disk or Directory menu and stop using all the devices that had a status of error.

If you want to use the device again, send a message to the person that shared the device and find out why the device is no longer available.

Check with the person responsible for the server computer about the availability of the device. The person responsible for the server computer should notify the users before stopping a device or the server itself.

When this happens, "stop using" before your next attempt to start using again.

Action: (Commands) Abort the request. Enter the NET USE command to see a list of the devices you are using. Enter the NET USE /D command for all the devices that have a status of ERROR.

If you want to use the device again, send a message to the person that shared the device and find out why the device is no longer available.

Check with the person responsible for the server computer about the availability of the device. The person responsible for the server computer should notify the users before stopping a device or the Server itself.

When this happens "stop using" before your next attempt to start using again.

NET 806: NET BIOS command limit exceeded

Explanation: (Menus, Commands) The network has too many NET BIOS requests waiting to be performed.

Action: Retry your request at another time. If the error continues, restart the network and specify a larger /CMD parameter value.

NET 807: Network adapter hardware error

Explanation: (Menus, Commands) Your network adapter has an error or the cable is not connected.

Action: Check the cable to see if it is connected to your network adapter correctly. If the cable is not a problem, see your dealer and have your adapter checked.

NET 808: Incorrect response from network

Explanation: (Menus, Commands) You attempted to do a network task with a remote computer and received an error. The remote computer can't do the task you specified.

Action: Check to see if you're specifying the correct remote computer for the command or task you are attempting. If not, specify the correct computer. If you were specifying the correct computer, check to see if an application program is running along with the IBM PC Network Program on the remote computer. The application could be returning the incorrect response.

NET 809: Network request not supported

Explanation: (Menus, Commands) You attempted to do a network task with a remote computer and received an error. The remote computer can't do the task you specified.

Action: Check to see if you're specifying the correct remote computer for the command or task you are attempting. If not, specify the correct computer. If you were specifying the correct computer, check to see if an application program is running along with the IBM PC Network Program on the remote computer. The application could be returning the incorrect response.

NET 810: Unexpected network error

Explanation: (Menus, Commands) An unexpected network error occurred.

Action: Try to end your application. Then, restart DOS by using Ctrl-Alt-Del and restart the PC Network Program. Set up your computer on the network again.

IMPORTANT: If the problem continues, contact your dealer or the IBM representative that sold you the PC Network program and your PC Network Adapter and report this error.

NET 811: Incompatible remote adapter

Explanation: (Menus, Commands) You tried to communicate with another computer and had trouble because either your network adapter or the remote network adapter is incompatible.

Action: Try to communicate with another computer. If the communication fails, make sure that the network is set up properly. If you succeed in communicating with another computer, then check the setup of the computer you had trouble with.

NET 812: Print queue full

Explanation: The printer has 99 files queued to be printed on it and your file was the 100th file. The print queue can only hold 99 files.

Action: Retry your request, or wait until one of the other jobs is done and resubmit the request again.

NET 813: Not enough space for print file

Explanation: (Menus, Commands) You tried to submit a print file to a PC Network printer, but the computer that's sharing the printer doesn't have enough disk space to keep the file until it is printed.

Action: Retry your request. If you get an error message again, abort the request and resubmit the file at another time.

NET 814: Print file was cancelled

Explanation: (Menus, Commands) The print file that you submitted for printing on a network printer was cancelled by the user at the server computer.

Action: Type **A** for abort and try again later.

NET 815: Network name was deleted

Explanation: (Menus, Commands) The device you attempted to access is no longer available. The device is no longer available because the computer that shared the device may have reset the machine, powered off the machine, or deleted the shared device.

The error may occur if you explicitly attempt to access the device, if you start a program and the invalid drive exists in your DOS PATH statement, or when your program ends.

Action: (Menus) Abort the request. Go to the menus and choose Disk or Directory Tasks on the Main menu. Then, choose Display devices you are using on the Disk or Directory Tasks menu. You'll see a list of the devices you are using. Note which devices have a status of ERROR. Now, go the the Start or Stop Using Network Disk or Directory menu and stop using all the devices that had a status of error.

If you want to use the device again, send a message to the person that shared the device and find out why the device is no longer available.

Check with the person responsible for the server computer about the availability of the device. The person responsible for the server computer should notify the users before stopping a device or the Server itself.

When this happens, "stop using" before your next attempt to start using again.

Action: (Commands) Abort the request. Enter the NET USE command to see a list of the devices you are using. Enter the NET USE /D command for all the devices that have a status of ERROR.

If you want to use the device again, send a message to the person that shared the device and find out why the device is no longer available.

Check with the person responsible for the server computer about the availability of the device. The person responsible for the server computer should notify the users before stopping a device or the Server itself.

When this happens, "stop using" before your next attempt to start using again.

NET 816: Incorrect password

Explanation: (Menus) The password you specified is not correct.

Action: Check your typing. If your typing is correct, the password may have changed.

NET 817: Network device type incorrect

Explanation: (Menus, Commands) The local device type is different from the PC Network device type. You have attempted to use a network disk or directory and have used device LPT1-3 as a DOS name, or used a network printer and have used device A-Z as a DOS device name.

Action: Retry the request with the corrected device name.

NET 818: Network name not found

Explanation: (Menus, Commands) The network name you specified is incorrect.

Action: Check the name to be sure that you've spelled it correctly. If the name is correct, the name is no longer on the network.

NET 819: Network name limit exceeded

Explanation: (Menus, Commands) You have tried to redirect too many devices.

Action: (Menus) Stop using some of the network devices and directories that you're currently using. Or, you can restart DOS and the network and choose to change the value for the number of drives you can use.

> **Note:** If you're using devices from too many other computers, you have to use the NET START command.

Action: (Commands) Stop using some of the network devices and directories that you're currently using, or restart DOS and the network and change the value of the /ASG or /SRV parameters of the NET START command.

NET 820: NET BIOS session limit exceeded

Explanation: (Menus, Commands) The Network BIOS local session table is full. You can't do your request.

Action: Retry your request at another time. If the error continues, restart the network and specify a larger /SES parameter value.

NET 821: Sharing temporarily paused

Explanation: (Menus, Commands) The server is paused and therefore is not accepting network requests.

If you are the server and are attempting to continue message reception, your server is paused.

Action: Retry the request. If you get the message again, abort (A) and retry (R) your request later.

If you are the server, you must continue sharing or you cannot continue message reception.

NET 822: Print of disk redirection is paused

Explanation: (Menus, Commands) The printer or disk redirector is paused and therefore your request cannot be performed.

Action: Use the NET CONT command to continue print or disk redirection, then try again.

NET 823: Network request not accepted

Explanation: (Menus, Commands) An error was returned by a network computer indicating that this computer does not support the network request specified. The PC Network Program verifies each network request to determine if the request is properly formatted.

Action: Check to see if you're specifying the correct remote computer for the command or task you are attempting. If not, specify the correct computer. If you were specifying the correct computer, check to see if an application program is running along with the IBM PC Network Program on the remote computer. The application could be returning the incorrect response.

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NET 825: Network data fault

Explanation: (Commands) You tried to write data to a network disk or diskette that is full.

Action: Type **A** for abort, and tell the user at the server computer that the disk or diskette is full.

Appendix B. Guidelines for Application Developers

If you are developing applications for the PC Network Program, you should use the regular DOS interfaces to ensure compatibility. In every case, you should use the highest-level interface for any given function to ensure portability and upward compatibility of applications. For example, you should use the DOS Interrupt 21H Open (3DH) and Write to a File or Device (40H) function calls instead of Interrupt 17H to print characters on LPT1. See Chapter 5, "DOS Interrupts and Function Calls" in the *DOS Technical Reference*, Version 3.10, for more information about DOS interfaces.

In addition to the DOS guidelines, the PC Network Program has special requirements. These requirements are in the following categories:

- General guidelines for the networking environment

- Multi-user considerations

- Coexistence of applications with the PC Network Program (use of resources and conflicts in using certain functions)

- Application setup and initialization

- Application-to-application communication on the network

- Error recovery and problem determination

General Guidelines for the Network Environment

In general, you should code applications on the PC Network so that they can be run alone or in a networking environment. Applications should not be coded with the assumption that the application will be the only application or program running on the computer.

Applications should be able to access their data files whether the data files are available locally or across the network. If network support is coded into the application, you should include code to prompt the user for network-specific information.

You should code applications so that, for loading the program, the application can reside on either a diskette or a device that is shared on the network.

Use of the APPEND Command

The APPEND command will direct a search for all files, regardless of the extension, in the appended directories only on the following function calls:

Code **Function Call**

0FH FCB File Open
3DH Handle File Open
23H Get File Size

Use of the Display Controller

An application should not reprogram the display controller directly. An application should establish all mode information with BIOS calls (INT 10H). Failure to do this can cause the PC Network Program's network request key (Ctrl-Alt-Break) support to improperly restore an application screen image. If you

must reprogram the display controller mode, make sure any changes are recorded in the display variables kept by the BIOS at segment 0040H.

Any changes set into this area should be tested with the PC Network Program active to verify that the changes are effective. To verify, send a message to the computer with the data area changed. View the message with the network request keys (Ctrl-Alt-Break) and exit the menus. Check for proper restoration of the display.

Physical Resource Sharing Applications

Physical resource sharing applications use a remote device, such as a disk, directory, or printer, through the redirector. Some of the messages and operating instructions of the application may not be meaningful in a network environment. For example, instructions that reference a device may not be applicable if the device is a remote device.

The PC Network programming interfaces provide information about the status of remote and local devices. The application can use these interfaces to issue messages that are meaningful to the computer, whether the computer is using a local device or redirecting to a remote device. For example, if an error occurs because data is not available, a computer that is using a local drive may receive a message telling the user to insert the correct diskette. However, this message won't be applicable to a computer that is using a remote drive. In the case of a remote drive, the computer should receive a message telling the user that the diskette that needs to be inserted is not available.

You may want to use the following interfaces in physical resource sharing applications:

- DOS, Version 3.10 Extensions

  (See the *DOS Technical Reference*, Version 3.10, for more information.)

  Get Extended Error Code
  Create Unique File
  Create New File
  Get Machine Name
  IOCTL Is Changeable

- Redirector Extensions

  (See the Interrupt 2FH function calls or the *DOS Technical Reference*, Version 3.10, for more information.)

  Get Assign List Entry
  IOCTL Is Redirected Block (Interrupt 21H)
  IOCTL Is Redirected Handle (Interrupt 21H)
  Installation Check (Interrupt 2AH)
  Installation Check (Interrupt 2FH)

- EXEC System Call

  (See "Chapter 7. PC Network Program Command Reference" on page 7-1 for more information about the following commands.)

  NET USE (PC Network Program Command)
  NET SHARE (PC Network Program Command)
  MODE (DOS Command)
  PERMIT (DOS Command)

B-4

Multi-User Considerations

Using File Control Blocks (FCBs) is not recommended because FCBs do not support any of the new sharing modes or the file locking functions. Most network applications should recognize that multiple network users of files is a common occurrence and should support this environment. To do this, applications must use the DOS sharing modes that are only available with the DOS Handle (Version 2.0 and later) type calls.

In addition, you should consider multi-user access to shared files. The DOS Open function (3DH) details the available sharing modes. The proper mode should be used. In general, shared data (such as help text and program overlays) should be accessed as read-only with deny-write sharing. Files that are changed should be opened read-write with either deny-all or deny-none access. The access mode should be determined by the way the application updates the file. If the application uses Record (Block) locks to control concurrent updates by multiple programs, then deny-none is the correct choice.

Most applications require temporary work files to run. In most cases, the temporary files are not multi-user shared files. If the application uses a fixed name for these files and is run concurrently by several users, problems can occur. To fix these problems, all work files should be created by the DOS Create Unique File function (5AH) to ensure that each occurrence of the application will get a private copy of the work file.

Many applications check to see if a file exists. If the file does not exist, the application creates the file. Creating the file can cause problems in a multi-user environment because one application checks for the file and finds that it does not exist, but before the file can be created, another application (or another occurrence of the same application) creates the file. In this case, the first application will end up destroying the data put into the file. To correct this problem, the application

should use the DOS Create New File function (5BH). This function does the check for existence and the file creation in one uninterrupted sequence. Create New File also returns an indicator if the file already exists.

Multi-Station Data Processing Applications

Applications that perform data processing usually perform data I/O on a complete data file (batch processing) or on records of a data file (interactive processing). In multi-station data processing, several network computers may be performing data I/O on the same data file. The application must ensure data integrity by using file or record locking control.

The following PC Network programming interfaces and the DOS, Version 3.10 extensions for sharing can be used to provide file and record locking control:

• DOS, Version 3.10 Extensions

(See the *DOS Technical Reference*, Version 3.10, for more information.)

Get Extended Error Code
Create Temp
Create New File
IOCTL Is Changeable

• Sharing Extensions

(See the Interrupt 21H function calls in the *DOS Technical Reference*, Version 3.10, for more information)

Open File Handle
Lock Block
Unlock Block
IOCTL Set Retry

Co-Existence of Applications With the PC Network Program

Applications should be coded to determine the presence of the PC Network Program (see "Appendix C. Programming Interfaces" on page C-1 for more information). The restrictions listed below must be observed to ensure successful coexistence of applications with the PC Network software.

Any applications coded to use the NETBIOS interface (either by the EXECNCB Interrupt 2AH or by Interrupt 5CH) must not use all of the available functions. In particular, the Reset (32H) and Receive Any to Any Name (16H or 96H to an NCB__NUM of 0FFH) should not be used. Also, applications should not use NETBIOS names added by the PC Network Program. Use of the name and name number returned by the DOS Get Machine Name (5E00H) function is allowed. Applications should not create a NETBIOS name with the 16th character position set to the values 00H–1FH. These values are reserved for names added by the PC Network Program. It is recommended that the 16th character position be a blank (20H) to ensure that name duplication with the network program can be detected.

Any application that issues NETBIOS requests must ensure that the required network resources exist. Failure to ensure that the resources exist can result in unpredictable errors in both the PC Network Program and the network application. Use the Get Network Resource Information function call (0500H INT 2AH described in Appendix C) to determine what resources are available. If the values found are not sufficient, your application should instruct the user to restart the PC Network Program and specify larger values for the /SES and /CMD parameters.

Applications should not monitor NETBIOS requests issued by the PC Network Program and under no circumstances should the requests be altered in any

way. Use of the Receive Broadcast Datagram (23H or A3H) is not allowed. The Non-Unique Name feature of the NETBIOS should be used instead to implement any needed broadcast function. Failure to follow these restrictions will probably result in PC Network or application program failures that will require the user to reset (Ctrl-Alt-Del) the computer.

Any application that replaces interrupt vectors must take special care when the PC Network Program is loaded. In particular, no interrupt should be replaced or set to some predefined value. In all cases, the old vector contents must be saved and control transferred to the saved address before leaving the interrupt service routine. This is true for hardware as well as software interrupts.

The PC Network Program makes strong use of the hardware timer (vector 08) and keyboard (vector 09) interrupts. This means that these interrupts must be passed to the PC Network Program for it to work correctly. Also, the PC Network Program assumes that each Interrupt 08 (timer) represents the passage of 1/18.2 seconds of time. If this is not true, unpredictable problems may occur. If an application intercepts a DOS INT 21H call, the application must execute all possible functions or pass control to DOS to do them. If control is passed to DOS, then interrupts should not be enabled before control is passed. Failure to do this will cause the PC Network Program to fail.

Applications running on a server configuration must not do direct disk or diskette accesses except under certain circumstances. If the applications do direct accesses to a disk or diskette, then multiple concurrent updates to the media can occur. If updates do occur, the File Allocation Table (FAT), the Directory, or the contents of a file will be destroyed. This can result in a disk or diskette in which all the information recorded on the disk is lost. The only time that direct access is allowed is when the application can determine that the drive is not currently shared (NET SHARE command) or if the

server component is paused (NET PAUSE command). See "0300H (INT 2AH) Check Shared Device" on page C-6 for more information.

Any application that does I/O over the network cannot use FCBs in the following ways:

- Construct its own open FCB

- Save an FCB in a file and use it later in a different run

- Change the FCB reserved areas

- Close the FCB and then continue to use it as if it were still open

If an application wants to ensure that data is written to the disk, the application must either close and reopen the FCB or issue a Disk Reset (DOS function 0DH) to commit the data. These methods are slower than those listed above, but are the only methods supported on the network.

When the PC Network Program is running, activity occurs in the background. This means that the computer is executing more than just the user program. As a result, the user program does not have control of the entire computer so that the user program may have inconsistent keyboard response. Often, a noticeable delay occurs from the time that a key is pressed to the time that the user program receives the keyboard input and processes it. You should plan for this to occur when you design a user interface. Also, highly interactive programs, such as arcade-like games, will not function acceptably when the PC Network Program is running on the computer.

Setting Up and Initializing Applications

On a network, applications should not require the user to do a power-on or Ctrl-Alt-Del key sequence to start the application. DOS and the PC Network Program should be the only programs started in this manner. Applications should use batch files or a prompted initialization within the application to set up the network environment that they want to run in. The environment should be undone when the application terminates.

Application-to-Application Communication

Within the restrictions stated above, applications can use the NETBIOS interface to do application-to-application communication. Applications that intend for messages to be sent to them using the functions provided by the PC Network Program (NET SEND and the Messenger) and wish to handle those messages within the application program should use the user post interface (see "Appendix C. Programming Interfaces" on page C-1 for more information).

When the PC Network programs are loaded, you should use the DOS redirection capability (NET USE and NET SHARE commands) if at all possible. If this capability is not sufficient, application programs may use the network functions provided by NETBIOS (with the restrictions mentioned above) to perform network functions. To provide for enhanced function, the PC Network Program has the Interrupt 2AH (Execute NCB or EXECNCB) interface to NETBIOS. See "Appendix C. Programming Interfaces" on page C-1 for more information about the Interrupt 2AH interface.

For future compatibility, you should code applications
to use the Interrupt 2AH interface to NETBIOS. Using
the interface requires that the application determine if
INT 2AH is installed (meaning that the PC Network
Program is started) and the application should fail to
run if INT 2AH is not installed.

The PC Network Program provides a message
presentation user interface. For the receiver
configuration, the interface presents a "beep" followed
by the display of the message on the user's screen. If
the user is in a full-screen application, the message
overlays the information on the application screen. The
interface for the messenger and server configurations is
a "beep," save the user's display image, paint a box,
and wait for a signal to display the message. The PC
Network Program provides an interface where an
application program can intercept incoming messages
before they are presented to the user. This allows the
application to provide better notification of message
reception (such as an indication in a status line). It also
allows for better presentation of the message. For
example, in a windowing system, the application could
have a special window to show messages so that the
window would not interfere with any other user
activities. See "Appendix C. Programming Interfaces"
on page C-1 for more information about using this
interface.

Transaction Processing Applications

Applications that perform transaction processing
require that messages be interchanged between two
applications and also have defined data formats and
data protocol. Transaction processing applications
normally are executed at two computers by establishing
sessions on each computer and then sending and
receiving transactions in agreed-upon formats.

Transaction processing applications can use the
following NETBIOS functions (Interrupt 2A) to
interface with the PC Network:

- Cancel Network Request

- Get Network Adapter Status

- Add Name

- Delete Name

- Call

- Listen

- Hangup

- Send

- Chained Send

- Receive

- Receive Any

- Get Session Status

- Send Datagram

- Receive Datagram

See the *PC Network Technical Reference* for more
information about NETBIOS functions.

Error Recovery and Problem Determination

Extended error support is available for DOS functions
that are redirected across the network. Applications
that use networking should be coded to check for
network-specific types of errors that may require
special action on the part of the application or the user.
For example, a network request can fail as a result of a
timeout. The user or the application may want to retry
the operation that failed again. DOS Extended Error
support provides explicit error codes for each error as
well as an error class, action, and locus information.
This information should be used in application error
recovery procedures. See the *DOS Technical Reference*,
Version 3.10, for more information.

Any application that issues NETBIOS requests must
ensure that these requests have ended when the
application terminates. Since DOS will only terminate
an application at a DOS call, this is not a problem if all
NETBIOS requests are "wait" mode. If some requests
are "nowait" mode, the requests may still be
outstanding at a DOS call. If DOS terminates the
application, the request is not terminated. This means
that the request is still running for a program that no
longer is in memory, resulting in unpredictable (and
often fatal) behavior. To prevent this problem, the
application must set up traps for Ctrl-Break, Ctrl-C,
and DOS critical errors so that the application can gain
control and issue NETBIOS Cancels for each
outstanding request NCB. See the *DOS Technical
Reference*, Version 3.10, for more information about
setting traps.

Appendix C. Programming Interfaces

Introduction

The PC Network Program with DOS Version 3.10
provides function calls that allows an application to
redirect devices, display received messages and critical
errors, and perform other network-related functions.
This appendix describes the PC Network Program
function calls. For a complete list of new DOS,
Version 3.10, function calls, see Chapter 5, "DOS
Interrupts and Function Calls," in the *DOS Technical
Reference*, Version 3.10.

Function Call Overview

The following DOS Interrupt 21H function calls can be
useful in a network environment.

Function Call	Description
Get Extended Error	Returns an extended error code
Create Temp	Creates a temporary file with a unique name
Create New	Creates a new file
IOCTL Retry	Changes sharing retry count
IOCTL Is Redirected Block	Determines if a logical device is associated with a network directory
IOCTL Is Redirected Handle	Determines if a handle is local or remote
Open	Opens a file with multi-user sharing rules enforced
Lock	Prevents access to the specified byte range in the file
Unlock	Releases a lock to a region of a file
Get Machine Name	Returns the name of the local computer
Redirect Device	Redirects a device over the network
Cancel Redirection	Cancels a previous redirection
Get Redirection List	Return non-local network assignments
Set Printer Setup	Specifies an initial string for printer files
Get Printer Setup	Gets an initial string for printer files

The following network-specific function calls are described in this appendix.

Function Call	Description
2A Installation Check	Checks to see if the 2A interface is installed
2A Check Direct I/O	Checks to see if an absolute disk access is allowed to the device
2A Execute NETBIOS	Executes a NETBIOS function call
2A Get Network Resource Information	Returns the network resource information available to an application
2F APPEND Installation Check	Checks to see if the APPEND command is installed
2F PC Network Program Installation Check	Checks to see if the network program is installed
2F Get Current Post Address	Returns the address that is posted on network events
2F Set New Post Address	Sets the address to post on network events

EXEC
System Call

Purpose: The DOS EXEC function call is used to load and execute a program.

Remarks: A program may execute any PC Network command (except NET START) by using the DOS EXEC call. To successfully execute the network command, the program must make sure that sufficient storage is available. The program should release memory to make room for the EXEC call.

The DOS Get Return Code function can be used to determine if the network command worked successfully. The return code is zero if no error occurred or greater than zero if an error occurred. A PC Network command ends in error if a message starting with NET*xxx* is displayed.

For more information about the EXEC function call, see function 4BH, Load and Execute a Program EXEC, of the Interrupt 21H Function Calls in Chapter 5, "DOS Interrupts and Function Calls" in the *DOS Technical Reference*, Version 3.10.

00H (INT 2AH)
Installation Check

Purpose: Checks to see if the interrupt 2AH interface is installed

On Entry	Register Contents
AH	0

On Return	Register Contents
AH	Installed Flag Zero ; Not installed Non-Zero ; Installed

Remarks: A program can tell if the interrupt 2AH interface is loaded by calling Interrupt 2AH Installation Check.

0300H (INT 2AH)
Check Direct I/O

Purpose: Checks to see if an absolute disk access is allowed to the device.

On Entry	Register Contents
AX	0300H
DS:SI	Pointer to ASCIIZ disk device name

On Return	Register Contents
Carry flag	Set if absolute access is denied Clear if access is allowed

Remarks: The Check Direct I/O function call provides a check to see if a direct disk access is allowed to the specified device. Direct disk access is the use of DOS interrupts 25H and 26H or BIOS interrupt 13H. Use Check Direct I/O in programs that perform direct disk access. If the device is redirected (see function call 5F02H, "Get Assign List," in the DOS *Technical Reference*), or this function returns with carry set, then the program should not perform direct disk I/O.

Use Check Direct I/O to eliminate disk data integrity problems that can result from multiple concurrent processes updating the DOS disk data structures. See Chapter 5, "DOS Disk Allocation" in the DOS *Technical Reference* for more information.

0300H (INT 2AH)
Check Direct I/O

Possible causes for not allowing direct access to a device are the following:

- Messages are logged to a file on the device.
- The print queue for the PC Network Program is on the device.
- The device or a subdirectory on the device is shared.

Direct access to devices is allowed when none of the above conditions occur or when message reception, printing, and sharing are paused. For more information, see "NET PAUSE Command" on page 7-40.

The device pointed to by DS:SI must include the colon (:). The path may be a full path or only the drive specifier.

Interrupt 2AH (Installation Check) should be done before the Check Direct I/O function call. If Interrupt 2A is not installed (AH=0), then absolute disk I/O is allowed. Programs should not use the Check Direct I/O function call frequently since it *may take some time to run*. If constant checks are needed, save the results of the first check, and check the saved result.

Note: The PC Network Program must be loaded for the function call to execute properly.

0400H (INT 2AH)
Execute NETBIOS (Error Retry)

Purpose: Executes the specified NETBIOS function call with
error retry support provided.

On Entry	Register Contents
AX	0400H
ES:BX	Pointer to the Network Control Block (NCB)

On Return	Register Contents
AH=0, AL=0	No error
AH=1, AL=X	NCB error occurred. AL contains the error code, X.

Remarks: Execute NETBIOS is reserved for use to support
additional functions by capturing the intended
function call and providing compatibility with
extended functions. To ensure hardware
independence, use the interrupt 2AH function. Do
not use the interrupt 5CH function provided by the
PC Network Adapter.

This function call provides error retry support for the
following NETBIOS errors:

      09H - No Resource Available
      12H - Session Open Rejected
      21H - Interface Busy

0400H (INT 2AH)
Execute NETBIOS (Error Retry)

The IBM PC Network Program retries the NETBIOS command that caused the error a number of times. To provide their own error recovery support, applications should invoke the Execute NETBIOS (0401H) function call.

On entry, the ES:BX register pair points to a network control block (NCB). See the *IBM PC Network Technical Reference* book for a detailed description of the NCB.

See "Appendix B. Guidelines for Application Developers" on page B-1 for more information about recommended programming interfaces for the PC Network Program.

> **Note:** The IBM PC Network Program must be loaded for the function call to execute properly.

0401H (INT 2AH)
Execute NETBIOS (No Error Retry)

Purpose: Executes the specified NETBIOS function call with *no* error retry support provided.

On Entry	Register Contents
AX	0401H
ES:BX	Pointer to the Network Control Block (NCB)

On Return	Register Contents
AH=0, AL=0	No error
AH=1, AL=X	NCB error occurred. AL contains the error code, X.

Remarks: Execute NETBIOS is reserved for supporting additional functions by capturing the intended function call and providing compatibility with extended functions. To ensure hardware independence, use the interrupt 2AH function call. Do not use the interrupt 5CH function provided by the PC Network Adapter.

This function call does not provide error retry support. (Execute NETBIOS function call 0400H provides error retry support.) Applications should provide their own error recovery if needed.

0401H (INT 2AH)
Execute NETBIOS (No Error Retry)

On entry, the ES:BX register pair points to a
network control block (NCB). See the *IBM PC
Network Technical Reference* book for a detailed
description of the NCB.

See "Appendix B. Guidelines for Application
Developers" on page B-1 for more information about
recommended programming interfaces for the IBM
PC Network Program.

> **Note:** The IBM PC Network Program must be
> loaded for the function call to execute properly.

0500H (INT 2AH)
Get Network Resource Information

Purpose: Returns the number of local network names, network
commands, and network sessions available to an
application after the IBM PC Network Program has
started.

On Entry	Register Contents
AX	0500H

On Return	Register Contents
AX	Reserved
BX	Number of network names available
CX	Number of network commands available
DX	Number of network sessions available

Remarks: The get network resource information allows an
application to determine how many local network
resources are available for use after the IBM PC
Network Program starts. The application should
invoke the function call before using any network
commands. The application should maintain its own
network resource count so that it does not exceed the
values returned from get network resource count.
Failure to comply with this requirement may cause
unpredictable results from both the IBM PC
Network Program and the network application.

0500H (INT 2AH)
Get Network Resource Information

If the application requires more resources than are available, the user should increase the /SES and /CMD parameters or decrease the /USN parameter when starting the IBM PC Network Program. See "NET START Command" on page 7-68 for more information about the parameters.

B700H (INT 2FH)
APPEND Installation Check

Purpose: Checks to see if the APPEND command is installed.

On Entry	Register Contents
AX	B700H

On Return	Register Contents
AL	Network installed flag: Zero ;APPEND not installed Non-Zero ;APPEND is installed

Assembler Usage

```
        MOV  AX,B700H        ;AX - function code
        INT  2FH             ;Call function
        CMP  AL,0            ;Is APPEND installed?
        JE   NOT_INSTALLED   ;No, APPEND is not
                             ; installed
APPEND_INSTALLED:
```

B800H (INT 2FH)
PC Network Program Installation Check

Purpose: Checks to see if the PC Network Program is installed. If the program is installed, Installation Check returns the installed network components.

On Entry	Register Contents
AX	B800H

On Return	Register Contents
AL	Network installed flag: Zero ; Network not installed Non-Zero ; Network is installed
BX	Installed component flag (bit flags): xxxxxxxx xxxx1xxx : Redirector xxxxxxxx 1xxxxxxx : Receiver xxxxxxxx xxxxx1xx : Messenger xxxxxxxx x1xxxxxx : Server

Note: The *x* represents an undefined value.

B800H (INT 2FH)
PC Network Program Installation Check

Assembler Usage

```
MOV   AX,B800H          ;AX - function code
INT   2FH               ;Call function
CMP   AL,0              ;Is network installed?
JE    NOT_INSTALLED     ;No, network not
                        ; installed
TEST  BX,SERVER_FLAG    ;Is Server installed?
JNZ   SERVER_STARTED    ;Yes, Server is
                        ; installed
TEST  BX,MESSENGER_FLAG ;Is Messenger
                        ; installed?
JNZ   MESSENGER_STARTED ;Yes, Messenger is
                        ; installed
TEST  BX,RECEIVER_FLAG  ;Is Receiver
                        ; installed?
JNZ   RECEIVER_STARTED  ;Yes, Receiver is
                        ; installed
TEST  BX,REDIRECTOR_FLAG ;Is Redirector
                        ; installed?
JNZ   REDIRECTOR_STARTED ;Yes, Redirector is
                        ; installed
```

Remarks: Use interrupt 2F (Installation Check) to determine if the PC Network Program is installed. If the program is installed, Installation Check returns the components of the program that are installed. To determine which configuration the users specified when they started the network, perform the component checks in the order specified in the preceding assembler code. This order is required because a given configuration may install more than one component.

B803H (INT 2FH)
Get Current Post Address

Purpose: Determines the address that will be posted on the next network event (used for server, messenger, or receiver configurations)

On Entry	Register Contents
AX	B803H

On Return	Register Contents
ES:BX	Current post address

Remarks: Use the Get Current Post Address, in conjunction with the Set Current Post Address, to hook into the network event post routine. Once you've determined the current post address, save the address and set the new post address to your event handler.

> **Note:** The PC Network Program must be loaded for the function call to execute properly.

B804H (INT 2FH)
Set New Post Address

Purpose: Sets the address to post on next network event (used for server, messenger, or receiver configurations).

On Entry	Register Contents
AX	B804H
ES:BX	New post address

Remarks: Set New Post Address, in conjunction with Get Current Post Address, allows a user to hook into the network event post routine. Once the user determines the current post address, the user should save the address and set the new post address to his event handler.

> **Note:** The PC Network Program must be loaded for the function call to execute properly.

Network Event Handling

Once the user program sets the post address, the post address gets control on any network event. The program should determine if it wants to process the network event. If the program does not want to process the event, the program should transfer to the address of the routine returned by Get Current Post Address.

Values of AH and AL different from those shown in the following chart are possible. Ignore any different values in AH and AL, and pass control to the saved post routine. All post routines receive control with interrupts disabled. Use an IRET instruction to exit from the post routine.

B804H (INT 2FH)
Set New Post Address

Two network events are defined:

- The message-received event

- The critical-network-error event

Message Received Event

The message-received event allows the user to intercept message blocks before the PC Network Program has a chance to process them. Intercepting the message allows you to tailor message reception to fit the specific needs of your application.

The PC Network Program can receive the following types of messages:

- Single block messages

- Multiple block messages

Single block messages can be sent in a single network transmission. The message block contains the name of the computer that sent the message, the name of the message receiver, and the entire message text.

Multiple block messages require more than one network transmission. The first message block (start-multiple-block) identifies the start of the message. The following blocks (multiple-block-text) contain the message. The last block (end-multiple-block) signifies the end of the message. All message blocks associated with the same message are tagged with the same group identifier value.

B804H (INT 2FH)
Set New Post Address

Inputs to the Message Received Event Handler

Single Block Message

On Entry	Register Contents
AH	00H
AL	00H
DS:SI	Pointer to ASCIIZ originator name
DS:DI	Pointer to ASCIIZ destination name
ES:BX	Pointer to text header

Start Multiple Block Message

On Entry	Register Contents
AH	00H
AL	01H
DS:SI	Pointer to ASCIIZ originator name
DS:DI	Pointer to ASCIIZ destination name
CX	Block group identifier

Multiple Block Text

On Entry	Register Contents
AH	00H
AL	02H
CX	Block group identifier
ES:BX	Pointer to text header

End Multiple Block Message

On Entry	Register Contents
AH	00H
AL	03H
CX	Block group identifier

Message Aborted Due to Error

On Entry	Register Contents
AH	00H
AL	04H
CX	Block group identifier

Text header format:

```
DW    LENGTH              ; Length of text
DB    LENGTH DUP(?)       ; Text of message
```

The text of the message is in ASCII except the value 14H (the line terminator code) replaces the carriage return/line feed sequence of 0DH,0AH. Values below 20H are reserved. The maximum length of a message is 512 bytes.

B804H (INT 2FH)
Set New Post Address

Outputs from the Message Received Event Handler

On Entry	Register Contents
AX	Response Code 0 ; User post routine ; processed the message -1 ; PC Network Program ; will process the message 1 ; PC Network Program ; will process the message, ; but message window ; is not displayed

IMPORTANT: For multiple block messages, the application must respond with the same AX value for all message blocks in a single message group.

Critical Network Error Event

The Server Has Received a Badly Formatted Network Request

On Entry	Register Contents
AH	01H
AL	01H

B804H (INT 2FH)
Set New Post Address

On Return	Register Contents
AX	Response code -1 ; PC Network Program ; will process the error

Unexpected Network Error

On Entry	Register Contents
AH	01H
AL	02H
ES:BX	Pointer to NCB in error

On Return	Register Contents
AX	Response code 0 ; User post routine has ; handled the error and ; corrected the problem -1 ; PC Network Program ; will process the error 1 ; Reissue the NCB

For more information about the NCB (Network Control Block), see the IBM *PC Network Technical Reference*.

B804H (INT 2FH)
Set New Post Address

Server Received DOS INT 24H Error

On Entry	Register Contents
AH	01H
AL	03H
Other Registers	Registers as described in DOS, except the contents of the AH register, will be in the BH register. The stack cannot be assumed to be the stack described in DOS.

On Return	Register Contents
AX	Response code 0 ; Retry request -1 ; PC Network Program ; will process the error

For more information about DOS INT 24H critical
errors, see the IBM *DOS Technical Reference*.

B804H (INT 2FH)
Set New Post Address

Restrictions on Network Event Handlers

The following restrictions apply to network event handlers:

- **Keyboard Input**

    Keyboard input can be confusing to the user, due to task switching. Keyboard input can randomly be sent to either the user's application or the network event handler, due to task switching on timer ticks with a user application in the foreground. Caution must be used with the following DOS INT 21H function calls:

Function Code	Description
01H	Keyboard input
06H	Direct console I/O (for input)
07H	Direct console input
0AH	Buffered keyboard input
0BH	Check input status
0CH	Clear and invoke function

    When the PC Network Program starts, it closes file handles 0000-0004 (all standard in/out files). As a result all function calls 01H-12H will not work unless these handles are restored. If your event handler must do device (including CON device) input or output, open the device using DOS call 4DH and use the returned DOS handle to do the input and output. The device should also be closed before the event handler exits.

B804H (INT 2FH)
Set New Post Address

- **Changing System State**

  Network event handlers should not change the
  state of the system for the user, due to task
  switching on timer ticks with a user application
  in the foreground. Items such as current drive
  and directory should be maintained. Caution
  must be used with the following DOS INT 21H
  function calls:

Function Code	Description
0EH	Select disk
25H	Set interrupt vector
2BH	Set date
2DH	Set time
2EH	Reset verify switch
33H	Reset Ctrl/Break setting
38H	Set country information
3BH	Change current directory

B804H (INT 2FH)
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- **FCB, Using**

  Network event handlers should not use FCBs, due to the FCB dependence on a current directory for the specified drive and the fact that the foreground application owns the current directory FCB's. Caution must be used with the following DOS INT 21H function calls:

Function Code	Description
0FH	Open FCB
10H	Close FCB
11H	Search first FCB
12H	Search next FCB
13H	Delete FCB
14H	Sequential read FCB
15H	Sequential write FCB
16H	Create FCB
17H	Rename FCB
21H	Random read FCB
22H	Random write FCB
23H	File size FCB
24H	Set relative record FCB
27H	Random block read FCB
28H	Random block write FCB

B804H (INT 2FH)
Set New Post Address

- **Memory**

  Network event handlers should not attempt to
  allocate or free memory. Normally, when an
  application program is running all available
  memory is allocated to the application. An
  attempt to allocate or free memory usually
  damages the foreground application. Caution
  must be used with the following DOS INT 21H
  function calls:

Function Code	Description
48H	Allocate memory
49H	Free memory
4AH	Modify memory
4BH	EXEC program

- Network event handlers must not invoke the
  following DOS INT 21H function calls:

Function Code	Description
00H	Program terminate
31H	Terminate and remain resident
4CH	Terminate process
4DH	Get return code (unless after an EXEC)

B804H (INT 2FH)
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- Network event handlers should not use the following DOS interrupts:

Interrupt	Description
INT 20H	Terminate program
INT 27H	Terminate and stay resident

- DOS INT 24H should not be replaced, but all DOS calls need to have any resulting critical errors processed. Use the DOS INT 24H error post (AX = 0103H) to detect critical errors.

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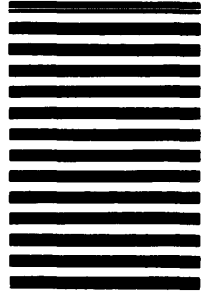authorized IBM Personal Computer dealer.
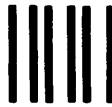
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