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CHAPTER 1 PC/NOS OVERVIEW

1.1 INTRODUCTION

PC/NOS is a software product that allows network users to share resources. It acts as an operating system for the network in the same way MS-DOS or CP/M acts as an operating system for a single personal computer. And like most operating systems, many PC/NOS functions are performed automatically--invisibly--without user intervention.

This manual covers those PC/NOS functions that do require user interaction: connecting one network resource to another, using the Print Spooler, and determining user privileges. The network you are connected to has been supplied with the PC/NOS NETVIEW program (the PC/NOS window interface) and the PC/NOS commands so everyone in your organization can explore and use the different resources--files, programs, and devices like printers and modems--of each personal computer in the network. Your system can also operate as a single, stand-alone computer, just as it did before it was linked to a network. PC/NOS also allows you to control access to your own personal computer files and devices. PC/NOS is designed to be used with any computer that runs either the CP/M 2.2 , CP/M 86, or MS-DOS 2.xx operating system, and has a cursor-addressable, 80-column by 24-line terminal.

1.2 WHAT YOU NEED TO KNOW

This user's guide is written for the average network user; it

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assumes little technical understanding of computers. However, it does assume you have a basic working knowledge of your own operating system and personal computer. You don't need to know about anyone else's computer, other than which of its resources you'd like to use. If you need information about CP/M and MS-DOS, refer to the manuals supplied with your computer.

PC/NOS is an extremely flexible program; it lets the people who use it decide exactly how their network should be organized. Some networks are hierarchical in design: one user is assigned system administrator status, and is responsible for everything from assigning passwords to organizing other users in the network. Usually, this system administrator has read and write access to everyone else's files. Although PC/NOS can easily fit into this network design, there is no inherent need for one system administrator in the PC/NOS scheme. As you will see, any and all users can (have) system administrator, depending on their access and update privileges.

1.3 MANUAL CONVENTIONS AND COMMAND SYNTAX

There are several examples of PC/NOS and NETVIEW commands used throughout this manual. Command syntax conventions and their meanings are as follows:

    o PC/NOS commands and programs are printed in all capital
      letters; in practice, however, PC/NOS accepts commands in

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any combination of capital and lowercase letters.

o Some sample commands contain material in angular brackets (< and >) . Material enclosed within these brackets is either optional, or is to be replaced by one of several possible numbers or characters that are specified inside the brackets.

1.4 MANUAL ORGANIZATION

Chapter 2 familiarizes you with how NETVIEW organizes users (the people who have access to the network) and resources (everything from your personal computer to someone else's printer) into a network. This chapter presents some of the theory of NETVIEW operation and defines the terms that will be used in the rest of the manual.

Chapter 3 describes NETVIEW in practice; it tells you how to enter the NETVIEW window interface from your own operating system shell, how NETVIEW displays network resources and allows you to connect plug resources to sockets, and how you can use some computer resource that you may need but don't have at your workstation.

Chapter 4 tells you how to use the Print Spooler function provided by NETVIEW.

Chapter 5 is a tutorial. Once you've gotten a basic idea of how

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NETVIEW works, you can turn to this chapter for a complete example of how to go from your operating system into NETVIEW to open windows, browse through the resources available to you, connect resources, set access privileges, and return to your own operating system.

Chapter 6 is a brief overview of the file and record locking provided by PC/NOS.

Chapter 7 looks at some common errors in using NETVIEW, provides a list of error messages and the likely solutions to problems.

Finally, a glossary of terms and an index round out this user's guide.

1.5 ADDITIONAL INFORMATION

More technical information about NETVIEW and the PC/NOS system can be found in the PC/NOS System Administrator's Guide and the PC/NOS Programmer's Guide. The System Administrator's Guide tells you how to set up, manage, and maintain a PC/NOS network, while the Programmer's Guide provides more in-depth information about the PC/NOS structure, and tells programmers how to write application programs that take advantage of the PC/NOS design.

Happy Networking!

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CHAPTER 2. NETWORK ORGANIZATION

2.1 INTRODUCTION

PC/NOS deals with two fundamental network ingredients: users and resources. This chapter describes how resources and users are defined in the PC/NOS NETVIEW environment, and how access and update privileges are determined. The concepts introduced in this chapter are put to practical use in Chapters 3, 4, and 5.

2.2 RESOURCES

In a network, resources are any and all of the services, devices, programs, and data that can be used and manipulated. Resources include both logical and physical computer entities. Logical resources are used to label or refer to a physical resource, and can be changed by the user as needed, while physical resources are defined and limited by their actual, physical design. For example, a logical unit is labeled by the CP/M or MS-DOS operating system with a letter, for instance, "C". "C" is a logical unit that refers to some physical disk volume. The physical disk volume is a stable, literal location that never changes, while the logical unit "C" can change its point of reference whenever the user--via NETVIEW--reassigns "C" to another physical location.

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A typical network may include some or all of the following physical resources:

- o Terminals
- o User workstations
- o File servers
- o Letter quality and dot matrix printers
- o Floppy and hard disk volumes
- o Modems

Logical resources available in a network may include

- o Operating system disk drive references (A:, B:, C:, etc.)
- o Operating system or word processing references for printers, modems, or any of the physical resources above
- o Print Spoolers

Figure 2-1 shows a typical network configuration containing many of these logical and physical resources.

2.2.1 Plugs and Sockets

Many of the resources available in your network can be connected to each other via PC/NOS.* Some resources are already linked to each other by their local operating system; for example, your own monitor is likely to be linked to your personal printer and floppy disk drives. In the NETVIEW environment, this combination of resources that make up a personal computer is called a node. Other resources, such as your personal printer and someone else's keyboard, are not linked to each other. Connecting these two resources is PC/NOS's job, and it does this by defining some resources as ~~having~~ plugs and others as ~~having~~ sockets.

When a personal computer functions as a stand-alone system, its

* PC/NOS does not currently allow sharing of floppy disk volumes.

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local operating system controls the logical and physical resources resident at that computer. When several computers are networked, PC/NOS allows network users to gain access to each other's personal computer resources by defining plugs as logical resources and sockets as physical resources. An example list of abbreviations for plugs and sockets, as it might appear on the NETVIEW screen, is shown below.

Socket Resources   Plug Resources

A: B: C: CON   A: B: C: D:
CON   AUX   PRN   CLOCK$ E: F: G: CON
LPT1   LPT2   LPT3   CON   AUX   PRN   CLOCK$

Under "Plug Resources", letters A: - G: represent the possible logical units or disk drive locations defined by your operating system (MS-DOS allows up to 63 logical units, while CP/M allows only 16.) CON stands for console, PRN for the print function, AUX for some function that directs another physical device such as a modem, and CLOCK$ for a logical "time of day" clock that directs a physical clock board.

Under "Socket Resources", the letters A: - C: refer to disk volumes, LPT1, LPT2 , and LPT3 to three different printers, AUX to some physical device such as a modem, and CLOCK$ to the physical clock board.

Since every network contains different resources, plugs and sockets in your network will probably not be exactly the same as represented here. It is important, however, that you recognize

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which resources are defined as plugs and which as sockets in your own network, and how they are abbreviated on your screen. Details on viewing and connecting plugs and sockets can be found in the next chapter.

Just as you would put your stereo phonograph plug into the socket in the back of your amplifier or receiver, PC/NOS allows you to connect plug resources to socket resources. For example, one of your logical disk drive locations, accessed with a letter prompt--"A", for example--can be connected to a physical disk volume "A" so that you can access that disk location with your operating system prompt ")A". Thus, when you tell your operating system to select the default "A" disk drive , you will be connected to a disk volume labeled "A".

People know that the "physical disk drive A is Drive A! This paragraph winds up saying nothing

An important difference between plugs and sockets is that a transaction always originates at a plug. A socket cannot initiate a transaction, but can respond and return data or information. For instance, a printer cannot send a message or perform any function, unless it has first received a message to print from a logical device--a PRN plug.

If you don't use NETVIEW to connect your plugs to sockets, the plugs aren't networked; they will refer to the volumes and devices defined by your operating system, whether PC/NOS is loaded into your system or not. Any shared device or file should ALWAYS be connected to the network via NETVIEW; otherwise, changes that are made by PC/NOS will not be recognized by the

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local operating system, and vice versa. Even though your local

"A:" plug may be automatically connected to your local "A:"

socket by your operating system, you MUST specify that connection

using NETVIEW if the disk volume is to be shared.

Plugs can only be connected to sockets and vice versa; just as

you can't plug your phonograph plug into another plug, you must

connect your network plugs to network sockets. Thus, it isn't

possible to connect your disk drive to some other disk drive, or

your PRN plug to someone else's PRN plug. It is also not possible

to connect unrelated plugs and sockets. For instance, you can't

connect a logical disk drive such as "A" into a physical PRN

socket; these are mismatched plugs and sockets.

2.2.2 The Resource Hierarchy

In the PC/NOS environment, network resources are organized as a

static hierarchy, while dynamic connections are made at the plug

and socket level. At the top of this hierarchy is the ~~local area~~

Network Cable

~~network (LAN)~~, followed by nodes, or personal computer system. *workstations*

Below the nodes are several modules, which are simply collections

of plug and socket resources available at each node. Plugs and

sockets are in turn broken down into such network resources as

disk volumes, printers, and modems. These resources branch

further in some cases. For instance, a disk volume breaks down

into file directories and subdirectories, which break down

further into individual files. Figure 2-2 illustrates the PC/NOS

resource hierarchy.

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The branching path between connected resources is called the connection path. [PC/NOS describes this path using a string of resource names, separated by slashes, to indicate the pathname and the direction the message travels in.] When connections exist or are made between plugs and sockets, NETVIEW displays this pathname on your monitor next to the plug resource. More details about pathnames and connecting plugs and sockets can be found in Section 3.6.5.

2.3 USERS AND PROFILES

A network driven by PC/NOS is used by any number of people who have access to the network's resources. One or more users usually are involved in setting up the network initially and establishing user privileges; these people often have the greatest ability to access and manipulate network resources. For the purposes of the following discussion, these users are referred to as system administrators.

As a NETVIEW user, you are usually the owner of the console, keyboard, printer, modem, and whatever other resources are available at your workstation (although some users may not own any resources). There is one, and only one, owner for each resource in the network, and that owner decides whether and how other users can use that resource by editing the Resource Profile, described in Section 2.3.4. System administrators can also define the system itself as the owner of some resource. The

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following subsections define some concepts needed to understand the Resource Profile.

2.3.1 User Privileges

There are three possible privilege statuses a user may ~~have with~~ allow ~~regard to network resources~~: access, update, and no access or update. Users who have access rights to a resource can read, ~~view, or otherwise use~~ the resource, without altering it. Update privileges allow users to somehow change the resource. by For writing to it. For instance, a user who has both access and update rights to a disk volume can both look at the contents of that volume and add ~~new~~ edit files. list files to the volume. If only access privileges are allowed, the user can view the contents of the volume and run executable programs but cannot add or ~~update~~ edit files. In addition, a user's access and update privileges may vary from file to file within the volume.

2.3.2 User Groups

Every user can belong to a user group. User groups are determined by system administrators and are usually made up of people with common needs or interests. Users can be divided into user groups as needed; users can also belong to more than one group, and group members can be shifted from one group to another when it is necessary or convenient. See the System Administrator's Guide for details on setting up and rearranging user groups.

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2.3.3 The User Profile

Each user is described by a <u>User Profile,</u> a record of his or her identity and access and update rights. This profile is defined by system administrators when the user is first given access to the network. The User Profile provides information to NETVIEW about your rights to use network resources. User Profiles are resources like any other; each User Profile is owned by one user--usually a system administrator. In most cases, you are only allowed to edit your password; only system administrators or users with the highest access privileges can edit other fields in User Profiles. More information on editing User Profiles can be found in Section 3.7.3.

An example User Profile is shown below.

User Profile/Jim

Name: Jim
User Number: 30
Access/Update level: 130
Group: Market
Group Number: 123

Password:

In the example User Profile above, your user name is the name the PC/NOS system recognizes, up to eight characters long;it may or may not be your actual given name. Your user number is a unique integer between 1 and 65,535; this number is an identification

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number and is also used by the PC/NOS file and record locking scheme. (See Chapter 6 for more on file and record locking.) The password is any word you choose, up to eight characters long. When you first begin to use NETVIEW, you are assigned a null password; you change this to your own secret password when you edit your User Profile. For security, the password is not echoed on the screen. Your ~~user~~ group name is another eight-character word, and the group number is a unique integer between 1 and 255; the group number is simply an identification number. NETVIEW looks at your access/update level number, and whether you are the owner of the resource or a member of the owners' user group, to determine your rights to use a resource. The higher the access/update level, the greater the privileges possessed by the user. When you attempt to access some resource, NETVIEW checks your User Profile against the Resource Profile, as described next.

I understand, this, but I am familiar w/ Unix, which is similar, but simpler. Access/Update level means Trouble!

2.3.4 The Resource Profile

Just like users, all resources have profiles associated with them that identify the resource and define who can and can't use it. An example Resource Profile is shown below.

Profile/ibm_1/msdos/prn1

```
Name:  prn1
Type:  7 7 0
Local: No      Private:  No
Owner:              Number    Access    Update
                      1        Yes       Yes
Group:               255       Yes       Yes
```

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In the example Resource Profile above, the resource is identified *oh yeah! I sure couldn't tell!* as a printer, prn1, on the ibm_1 node--a socket resource. The "Type" field consists of three numbers that identify what type of device the resource is. The "Type" field is defined according to the following table.

? ? ?

(1-255)   (1-255)   (1-65,000)
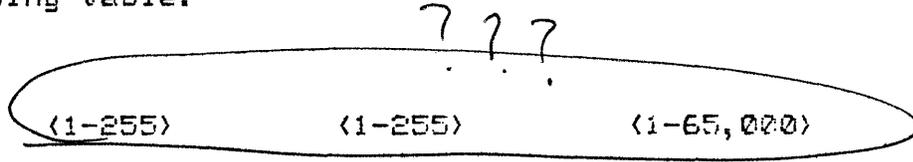
Node   3
Module   4
User Directory   10
Device Plug   5
Device Socket   7   *Printer   7*
Volume Plug   8
Volume Socket   9
Files   17
Subdirectory   15

The first column in the type field contains a number between 1 and 255 that defines the general resource type; in the example Resource Profile, the resource is a printer--a device socket--so the first column contains the number 7. The second column defines the resource more specifically--whether the device is a printer, a modem, etc. The third column defines the resource even more specifically--for example, exactly what type of printer the resource is. THIS NEEDS FURTHER DEFINING--THE TABLE IS NOT COMPLETE. *No kidding.*

The "Local" field specifies whether the resource can only be used at the node where it resides (Yes), or anywhere on the net (No); the default is "Yes." In this case, since "No" is displayed, the printer PRN1 can be used anywhere on the net. The "Private" field

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determines whether the resource can be used only by its owner (Yes), or by any qualified user (No); default is "Yes." In this example, the printer be used by any user with the proper privileges. The "Owner" field breaks down into three categories: Number--the owner's user number; Access--whether or not the owner is allowed to access the resource; and Update--whether or not the owner is allowed to update the resource. In this instance, the owner can both access and update the printer. The "Group" field also breaks down into the same three categories, indicating the owner's group number and whether or not members of the user's group can access and/or update the resource. In this instance, members of the owner's group are allowed both access and update privileges to the printer. Finally, the "Access/Update Level" field indicates the lowest access/update level a user must have in order to access or update the resource. In this instance, the Access level is designated as 200, and the Update level as 240. This means that a user's "Access/Update Level" field, in his or her User Profile, must be 200 or higher for the user to access the printer, and 240 or higher for the user to update the volume. Note, however, that both the owner and the owner's user group are allowed to access and update the resource, regardless of their individual access/update levels, since both "Access" and "Update" fields in the profile are filled with "Yes" in this profile.

Sections 3.6.7 and 3.7.3 tell you how to view and change the User and Resource Profiles that you are privileged to access and/or update.

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3.1 INTRODUCTION

This chapter tells you what you need to know about working with NETVIEW, from entering the NETVIEW program to exiting it. You communicate with NETVIEW through various windows that you control with keystrokes. This chapter explains how to move within and between the windows; how to view, connect, and disconnect resources within the windows; and how to edit User and Resource Profiles.

— What this paragraph doesn't tell me is why I would invoke NETVIEW: to change things. The rest of this page implies that NETVIEW is used everytime the Network is used. By Section 3.8 you discover this isn't so. Wrong, used to login (why does PCNOS do this ??)

3.2 INVOKING NETVIEW

NETVIEW is the first PC/NOS module that is loaded into your system when the PC/NOS program is in effect. In most cases, system administrators will have programmed your computer so the PC/NOS master program auto-loads into your system when you first turn it on; if not, type

        PCNOS   *PCLDR currently*

after your operating system prompt to load the PC/NOS program. Your operating system will return its prompt when the program is in effect. Next, type

        NETVIEW

to bring the NETVIEW Login Window to your screen.

3.3 LOGIN WINDOW

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If you have not already logged on at your node, NETVIEW presents you with a Login Window, along with a one-line Message Window, displayed as follows:

NETVIEW

Window to PC/NOS resources

To open enter your PC/NOS

User Name _____

Password _____

The cursor will appear after "User Name". Type your PC/NOS user name (see Section 2.3) followed by a RETURN. The cursor will jump to the "Password" field. Enter your password (up to eight ASCII characters long), followed by a RETURN. For your security, the password does not appear on the screen. If you accidently type your name or password incorrectly, this error message appears in the Message Window,

   No user with that name and password--try again

and the cursor is repositioned after "User Name". You have three chances to correctly type your name and password; after the third incorrect try,

   Access to network is denied; local use only

appears in the Message Window, and NETVIEW aborts. This shut-down feature protects the network from unauthorized users who may be

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guessing at passwords to gain access to the system.

Once you have typed the correct name and password, the NETVIEW top-level window display appears on the screen.

3.4 THE WINDOW INTERFACE

When you have correctly logged on to NETVIEW, you will see the window interface screen display shown in Figure 3-1. The Message Window displays explanations, error messages, and messages from other users. The Function Window displays the functions available for the window on which the cursor is positioned. The rest of the screen displays the four top-level windows: Local Network, Active Users, User Messages, and Exit. These windows allow you to view the network's resources to see what is available, manipulate resources, locate users on the net, send and receive messages, and exit to the host operating system. Each of these windows and their associated functions are described in detail throughout this chapter.

How about explanation of function keys: how they are activated or redesigned.

3.4.1 Function Window

When you first enter NETVIEW, there are only three functions available to you: opening a window, and moving back and forward between the four top-level windows. These three functions are displayed in the Function Window when you first enter NETVIEW, as shown in Figure 3-1. As you open subsequent windows, the different functions available to you are displayed in the

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Message Window

LOCAL NETWORK   Active Users   MAIL   EXIT

Function Window

OPEN ,   ,   ,   , BACK ,FORWRD, STACK ,   ,   ,
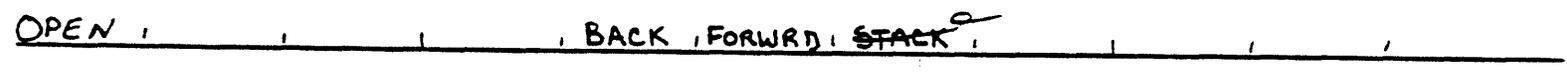
Figure 3-1

Window Interface Screen (top-level windows)

Function Window; these functions are treated in detail throughout this chapter. Each function in the Function Window corresponds to one of the programmable function keys, F1 - F7, on your keyboard. You select a function by pressing the appropriate function key. If you have no function keys on your keyboard, use the CTRL key in combination with the number keys 1 - 7. The full set of functions and their corresponding function keys are as follows:

?? Does this work? (handwritten annotation)

OPEN--opens the window indicated by the cursor

CLOSE--closes the window indicated by the cursor

PROFILE--displays the profile for the user or resource
      indicated by the cursor

CONNECT--connects the plug(s) and socket indicated
      by the cursor

DISCONNECT--disconnects the plug and socket indicated
      by the cursor

BACK--moves the cursor between top-level windows, or
      to the window that was previously opened

FORWARD--moves the cursor between top-level windows, or
      forward through open windows in the order they were opened

STACK--puts the window that is on the top of the stack on
      the bottom of the stack

EDWORD--activates the editing keys for editing a User or
      Resource Profile, or for sending a message

EXECUTE--commits editing changes to memory, or sends
      a user message

CANCEL--cancels editing changes just performed

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3.4.2 Opening and Closing Windows

The first thing you must do to view resources is open a window. Use the BACK and FORWARD keys to move the cursor to the desired window and press the OPEN key. The selected window expands to show the resources available for the window. In Figure 3-2, the Local Network Window has been opened to show the nodes available on the net. Once a window has been opened, it can be removed from the screen by pressing the CLOSE key. The OPEN function is available to you when the cursor is on a window field that can be opened, while the CLOSE function is availablae anytime the cursor is on the top line of and open window.

3.4.3 Window Fields

Most windows contain fields (names of other resources) within them that can also be opened. When the cursor is on a resource name you want to open, press the OPEN key to expand the field into a new window. For example, if you open the osm_1 field within the Nodes Window in Figure 3-1, the window expands as shown in Figure 3-3. The modules available at the osm-1 node are now displayed in the Modules Window. Note that the previous window (Nodes) is still displayed on-screen; windows remain open and displayed until closed.

If you want to look at the plugs and sockets available in the

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Message Window

_____

Nodes

fuji-1 Ibm-1

Osm-1 fuji-2

| Loc | | Active Users | | Mail | | Exit |
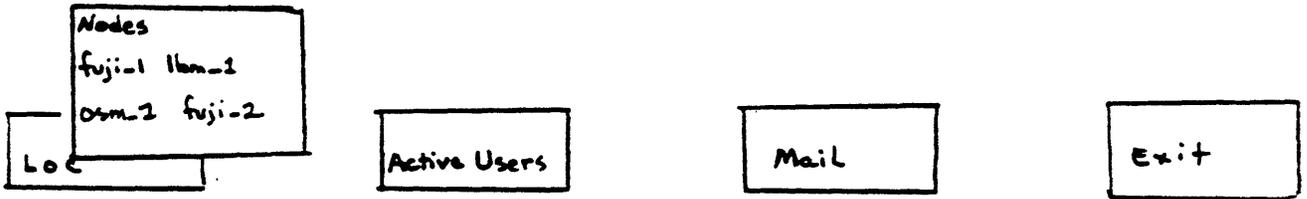
Function Window

CLOSE | PROFILE | | | BACK | FORWRD | STACK | | |

Figure 3-2

Opening the Local Network Window

Message Window
_____

_____

```
Modules /osm-1
msdos    Spooler
user dir
```

```
Nodes
fuji-1   ibm-1
osm-1   fuji-2
```
```
Lo[
```

```
Active Users
```

```
Mail
```

```
Exit
```
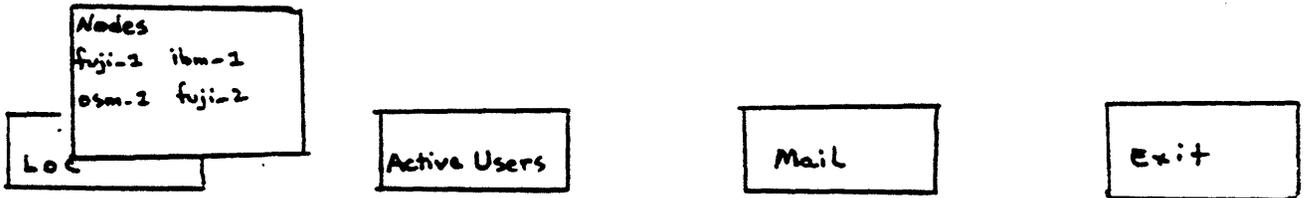
Function Window
_____

CLOSE | | | | BACK |FORWRD| STACK | | | |

Figure 3-3.

Opening a Node

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Message Window

Socket Resources /osm-2/7 msdos
A: B: C: PRN1
CON   AUY1   AUX2   PRN2
Clock $

Plug Resources /osm-2/c msdos
A: B: C: D:
E: F: G: AUX2
CON   .   PRN1   PRN2   AUX2

Modules /osm-2
msdos   spooler
user dir

Nodes
fuji-2   ibm-2
osm-2   fuji-2

Loc

Active Users

Mail

Exit

Function Window

CLOSE | PROFILE | | | BACK | FORWRD | STACK | | |

Figure 3-4

Opening a Module

osm_1 node's MS-DOS module, you can open the MS-DOS Module

Window, again by pressing the OPEN key. See Figure 3-4. Note that

the name of the window and the path to the resources in the

window is displayed at the top of each window. (The connection

path concept was introduced in Section 2.2.2).

If you wish to look at the plugs and sockets available at another

node, for example, the fuji_1 node shown in Figure 3-3, use the

arrow keys to place the cursor on fuji_1 and press the OPEN key

to open the fuji_1 Node Window. The fuji_1 Modules Window will

stack on top of the osm_1 Modules Window as shown in Figure 3-5.

Opening the MS-DOS Window will then stack the fuji_1 Plug and

Socket Windows on top of the osm_1 Plugs and Sockets Windows.

As long as windows have not been closed, any number of them will

be stacked on top of each other; the most recently opened window

is always displayed on the top of the stack, and the windows

lower in the stack are not clearly visible. If you open a third

Node Window, for example, ibm_1, and then open the the ibm_1

Modules Window, all ibm_1 windows will appear on the top of the

stacks. Only windows of the same type are stacked together. For

instance, Plug Windows stack on Plug Windows, Socket Windows on

Socket Windows, Module Windows on Module Windows, and so on.

*These examples cannot be followed, because they are based
on non-existant Resource Profiles. Idea: provide boilerplate
Resource (+ User) Profiles that must be edited before*

3.5 Moving Within and Between Windows *using: Pick a likely Network
configuration for Resources: 1 file server, 10 nodes,
each with Local printers*

This section tells you how to move within and between on-screen

Message Window

Socket Resources /fuji-2 />msdos
A: B: C: D:
E: F: G: H:
I: J: K: L:
M: AUX1   AUX2   AUX3
PRN   CON

Plug Resources /fuji-2 /< msdos
A: B: C: D:
E: F.   G.   H:
I: J: K: L:
M: N: O: P:
Q: AUX1   AUX2   AUX3
PRN   CON

Modules / fuji-2
msdos   user dir

Nodes
fuji-2   ibm-2
osm-2   fuji-2

LoC

Active Users

Mail

Exit

Function Window

CLOSE   PROFILE   BACK   FORWRD   STACK

Figure   3-5

Stacked   Windows

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windows; it does not explain the functions of the windows that are used as examples. Window functions are explained starting with Section 3.6 and continuing to the end of the chapter.

There are three ways to move about on the NETVIEW screen:

May not rework with PILOT!! (May crash stack!!)

o Within a window

o Between windows

o By rearranging window stacks

3.5.1 Moving Within a Window

When a window is opened, the cursor is positioned on the first field (resource name) in the window. You can move in any of the four directions using the arrow keys.

If a window is too small to display all its fields at once, move the cursor to the bottom line shown in the window and use the UP and DOWN arrow keys to scroll up or down a line at a time.

3.5.2 Moving Between Windows

To move between windows, use the FORWARD and BACK function keys. In the example in Figure 3-5, the FORWARD and BACK keys would move you between windows from the fuji_1 node--those windows that are on the top of the stacks.

3.5.3 Rearranging Stacked Windows

Since BACK and FORWARD only move you between windows that are on

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the top of the on-screen stacks, NETVIEW allows you to rearrange
the order of the stacked windows. Press the STACK key to remove
the top window from a stack and place it on the bottom of the
stack.

Each stack can be rearranged so you can view any windows you wish
simultaneously. For instance, again using the example in Figure
3-5, suppose you want to look at the plugs at the osm_1 node and
the sockets at the fuji_1 node. When you open the Modules
Window, you receive a display of both the plugs and sockets at
the osm_1 node. Now, if you open the fuji_1 Modules Window, both
the Plug and Socket Windows for that node will overlay the
display of the previous Plug and Socket Windows. To look at the
plugs from osm_1 and the sockets from fuji_1, place the cursor on
the fuji_1 Plug Window and press the STACK key; the osm_1 Plug
Window is now displayed on the top of the stack, as shown in
Figure 3-6. You can now move between the fuji_1 Socket Window and
the osm_1 Plug Window using the FORWARD and BACK keys. You can
stack and restack windows to view any combination of plugs and
sockets.

3.6 RESOURCES: THE LOCAL NETWORK

Once you open the Local Network Window and its window fields, you
can

    o Make and break connections between plugs and sockets

    o Open disk volumes to view directories and subdirectories

B

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Socket Resources / fuji-1/>msdos
A: B: C: D:
E: F: G: H:
I: J: K: L:
M: AUY2   AUY2   AUY3
PRN   CON

Plug Resources / osm-1/<msdos
A: B: C: D:
E: F: G: AUY1
CON   PRN2   PRN2   AUY2

Modules / fuji-1
msdos   user dir

Nodes
fuji-1   ibm-1
osm-1   fuji-2

Loc

Active Users

Mail

Exit
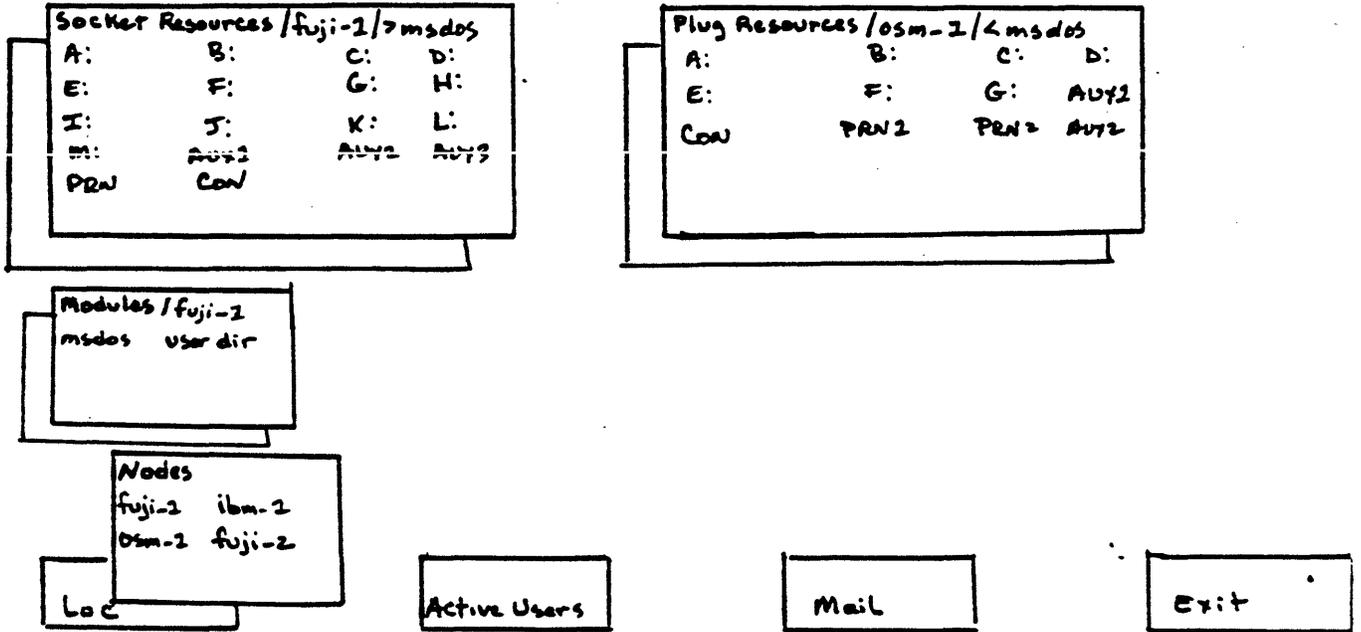
Function Window

CLOSE   , PROFILE ,   ,   , BACK   , FORWRD , STACK ,   ,   ,

Figure 3-6.

Rearranging Stacked Windows With The STACK Key

o View and change Resource Profiles

o View and change User Profiles

The windows that derive from the Local Network Window are described next.

3.6.1 Nodes

you open the Local Network Window, a display of the nodes available on the net, similar to that in Figure 3-2, appears on the screen. Network nodes are simply the personal computer systems connected to the network. In this example, four nodes are available on the net: osm_1, fuji_1, fuji_2, and ibm_1.

Too bad you don't call them that!!

3.6.2 Modules

Each node can be opened to display the modules available at each. Move the cursor to the desired node and press the OPEN key. Now the screen will display the modules available at that node. Modules available at network nodes are of three types:

o Operating system modules (either CP/M/ or MS-DOS). These modules contain the plugs and sockets available at each node that are accessible via the node's operating system.

o Print Spooler modules. These modules contain the Print Spooler plugs. Print Spoolers are described in detail in Chapter 4.

plugs must be connected to OS sockets before the print spooler will work.

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o   User Directories. These modules contain User Profiles for
    all users on the node. User Directories and User Profiles
    are described in Section 3.7.

3.6.3 Plugs and Sockets

When a module is opened, as shown in Figure 3-4, all the plugs
and/or sockets available on the module are displayed, with a
Socket Window on the left and a Plug Window on the right. (Plugs
and sockets are defined in Section 2.2.1).

As described in Section 3.5, you can move back and forth between
these windows to view and connect the resources available. As the
windows stack, use the FORWARD, BACK, and STACK keys to browse
through the resources available in the network.

3.6.4 Subdirectories and Files

{ does this work? I think not)or effect on the file server "node" window.

Once inside a Socket Window you can open the disk volumes shown
in the window. These volumes open into windows that display
files and subdirectories. Using the arrow keys, you can move the
cursor from volume to volume; when the cursor is on a volume that
can be opened, that is, a volume that contains accessible
subdirectories and/or files, the OPEN function is displayed in
the Function Window. Note that only volumes can be opened; non-
disk resources, such as printers, modems, etc., cannot be opened.
In Figure 3-7, the "A" volume has been opened to display files
and subdirectories available in the volume. If there are more

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Message Window
_____

Socket Resources /osm-2/> msdos
A: B: C: PRN1
CON   AUY2   AUY2   PRN2
CLOCK$

Plug Resources /osm-2/&msdos
A: B: C: D:
E: F: G: AOY2
CON   PRN3   PRN2   AUY2

Modules /osm-2
msdos   Spooler
user dir

Volume /osm-2/msdos/A:
PIP.Com   CHAPT2.DOC   NW.Com
manual.doc   CHAPT2.DOC   SETUP
CHAPT2.DOC   NW.INSTAL   CHAPT4.DOC

Nodes
fuji-2   ibm.2
osm-2   fuji-2

LOC

Active Users

Mail

Exit

Function Window
_____

CLOSE |PROFILE| | |BACK |FORWRD | STACK | | |

Figure 3-7

Opening a Disk Volume

files and subdirectories in the disk volume than will fit in the window, use the UP and DOWN arrow keys to scroll up or down a line of resource names. If you wish, you can now press the PROFILE key to view and, if you have update privileges, edit the Resource Profile. Details on editing Resource Profiles are given in Section 3.6.7.

3.6.5 Connecting Plugs and Sockets

Any device or file that is to be shared in the network MUST be connected to the network via NETVIEW. Even though your local operating system may assume your local "A" plug is connected to your local "A" socket, it is necessary to make the explicit connection between them using NETVIEW if the disk volume is to be shared. If you don't make these connections, any changes made to shared devices or files with PC/NOS will not be carried over to your local operating system, and you will have two versions of the same file. ????? Sure, if no connection, where does there exist ANY copy?? And, as stated previously, two sockets canNOT be attached a plug.

If you want to connect plugs and sockets from different modules, you must bring both sets of Plug and Socket Windows to the screen and use the STACK key to rearrange the windows so that the desired plugs and sockets are displayed side by side. See Section 3.5.4.

To connect a plug to a socket, first open the modules that contain the desired plugs and sockets and move the cursor to the plug. As shown in Figure 3-8, the Function Window displays the

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Message Window

Socket Resources /osm-1 /> msdos
A: B: C: PRN1
CON   AUX1   AUX2 PRN2
CLOCK$

Plug Resources /osm-1 /< msdos
A: B: C: D:
E: F: G: AUX1
CON   PRN1   PRN2 AUX2

Modules /osm-1
msdos   Spooler
userdir

Nodes
fuji-7   ibm-1
osm-1   fuji-2

Loc

Active Users

Mail

Exit

Function Window

CLOSE , PROFILE , CONNECT ,   , BACK , FORWRD , STACK ,   ,   ,

Figure 3-8

Selecting a Plug for Connection

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CONNECT function. The plugs from the osm_1 node are displayed on the right, and the sockets from fuji_1 on the left. If you wish to connect, for example, the "C:" logical disk drive plug from osm_1 to the physical disk volume "D:" socket on fuji_1, use the arrow keys to move the cursor to "C:" in the Plug Window, and press the CONNECT key. The "C:" plug resource display will flash, as well as change colors on color monitors. Using the BACK key, move the cursor to the Socket Window and then on to the "D:" socket, and again press CONNECT. If the connection is possible, the connection path for the two resources is displayed in the Plug Window beside the plug name that has been connected, as shown in Figure 3-9. The equals (=) sign represents the connection made between the two resources.

[handwritten: Good luck; impossible without Install or MD]

You can connect multiple plugs to one socket if you wish, but not multiple sockets to one plug. In the example above, you could connect several of the osm_1 logical disk drive locations to the same fuji_1 disk volume. For each logical unit, position the cursor over a logical unit name, press CONNECT, move the cursor to the socket, and press CONNECT again. In each instance, the connection path is displayed beside the plug names. as shown in Figure 3-10.

[handwritten: see previous page's comment]

If you change your mind about which plug you want to connect after you have moved the cursor to a plug and pressed the CONNECT key, just press CONNECT again, while the cursor is still on the plug. This will "deselect" the plug. Or, you can move the cursor to another plug and press CONNECT; this will also "deselect" the first plug.

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You cannot connect resources for which you have no access rights (see Section 2.3.1 for information on access rights). If you attempt such a connection, NETVIEW displays this message in the Message Window:

You are not validated for the use of this resource

There are other reasons why you may not be able to connect a given plug or socket. You may have access rights to the resource, but it may be currently connected somewhere else. This is the case for simplex resources like printers, which can only be connected to one plug at a time. In that case, NETVIEW displays this message:

Resource is not currently available

In another case, the plug and socket may not be of the same type: they don't "fit". (Resource types are defined in the Resource Profile description in Section 2.3.4.) If you attempt to connect two such mismatched resources, NETVIEW displays the message

The plug and socket do not fit (mismatched attributes)

3.6.6 Disconnecting Plugs and Sockets

When a plug is connected to a socket, the Function Window displays the DISCONNECT function when the cursor is on the connected plug. To disconnect the plug and socket, move the cursor to the plug and press DISCONNECT. Once disconnected, the

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Message Window

Socket Resources /osm-2/>msdos
   A: B: C: PRN1
   CON   AUX1   AUX2   PRN2
   Clock$

Plug Resources /osm-2 /< msdos
   A: = <Local> /msdos /C:
   B: C: D:
   E: F: G:
   AUX1   CON   PRN1
   PRN2   AUX2

Modules /osm-2
msdos   Spooler
Userdir

Nodes
fuji-2   ibm-2
osm-2   fuji-2

Loc

Active Users

Mail

Exit

Function Window

CLOSE , PROFILE , DISCONNECT1   , BACK , FORWRD , STACK ,   ,   ,

Figure 3-9

Connection Established Between Plug "A:" and Socket "C:"

Socket Resources /osm-2 /> msdos

A: B: C: PRN2
CON   AUY1   AUY2   PRN2
CLOCK $

Plug Resources /osm-2 /< msdos

A: =<Local> /msdos /C:
B: =<Local> /msdos /C:
C: = <Local> /msdos /C:
D: E: F: G:
AUY1   CON   PRN1   PRN2

AUY2

Modules /osm-2

msdos   Spooler
user dir

Nodes

fuji-1   ibm-2
osm-2   fuji-2

Loc

Active Users

Mail

Exit

Function Window

CLOSE   , PROFILE , DISCONNECT ,   , BACK   , FORWRD , STACK ,   ,   ,

Figure 3-10

Connecting Multiple Plugs to One Socket

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DOCUMENTATION

connection path displayed next to the plug disappears.

3.6.7 Viewing and Editing Resource Profiles

Section 2.3 introduced the concept of Resource Profiles. This section tells you how to view and edit profiles.

If you are the owner of a resource, you can edit its Resource Profile. You can also edit a Resource Profile for a given resource if you have update privileges to the resource that precedes it in the resource hierarchy. For instance, you can edit the Resource Profile for a disk volume if you have update privileges to the module that contains the volume. You could edit a Resource Profile for a file if you have update privileges to the volume that contains the file.

Even if you can't edit a Resource Profile, you can look at it to determine exactly what kind of resource it is, and who has access/update privileges to the resource.

To view the Resource Profile for any resource, first bring the desired resource to the screen by opening the window that contains it; then move the cursor to the resource name. Any time the cursor is on a resource name, the PROFILE function is active and displayed in the Function Window. Press the PROFILE key, and a profile such as the one in Figure 3-11 will be displayed.

If you open subsequent profiles, all the profiles will stack on top of each other; use the STACK key to move between the

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Message Window

Socket Resources / fuji-2 / 7 msdos
A: ·B: C: D:
E: F: G: H:
I: J: K:
M: Aux1   Aux2
Prev   Con

Plug Resources / fuji-2 / c msdos
A: B: C: D:
E: F: G: H:
          J: K: L:
          N: O: P:
          Aux1   Aux2   Aux3
          Con

Profile / fuji-2 / msdos / 6:

Name: B:
Type: 7   7   0
Local: No   Private: NO
Owner: Number Access Update
           35   yes   yes
Group: 70   yes   yes
Access/Update Level: 200

Modules / fuji-2
msdos   user dir

Nodes
fuji-2   ibm-1
osm-1   fuji-2

Loc   Active Users   Mail   Exit

Function Window

CANCEL   UPDATE   BACK   FORWRD   STACK   EDWORD   DONE

Figure 3-11

Resource Profile

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profiles in the way described in Section 3.5.3.

To edit a profile, press the EDWORD key, which becomes active as soon as the profile appears on the screen. As shown in Figure 3-11, the Function Window now contains the EXECUTE and CANCEL functions.

Although you can edit a Resource Profile in any way you wish, there are a few general considerations to keep in mind while you are editing:

o You probably want your plugs to be set to local access only, so that you can maintain control over where they are connected. *Resource profiles for plugs, too. Huh. I guess this is where the matchings set up.*

o For files and subdirectories, you will usually want the Update Level to be higher than the Access Level so that sensitive files or programs will be protected.

o You will usually allow members of your user group to have access to the resources you own, since members of the same group will often need to use many of the same resources.

Suppose you are the owner of the resource in Figure 3-11, a disk volume "B: " on the fuji_1 node. As the owner of the volume, you can change all fields except "Name" and the last two numbers in the "Type" field; you could even change ownership of the resource

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from yourself to someone else. (The "Name" field can only be edited in node Resource Profiles.) For this example, let's say you want to prevent ~~certain~~ people from updating the disk volume. You also only want users who are using the fuji_1 node to have access to the volume.

When you enter the profile, the cursor will go to the first field you can edit in the profile. Fields you are not allowed to edit will be skipped. In addition to the special functions displayed in the Function Window, the EDWORD key brings the following standard keyboard editing keys into effect:

Arrow keys--move up, down, right, or left

DEL--backspace and delete last character

CTRL G--delete character the cursor is on

INS--toggles between Insert and Replace mode

RETURN--jump to next field in profile

The first field that can be edited is the first number in the "Type" field. In this case, you don't need to change this number, so you press RETURN to move to the "Local" field. "Local" is a YES/NO field; you can press any key to toggle (change) the field between YES and NO. Since you do want to change the resource to local access only, press any key to change the contents of this field to YES. Next, press RETURN to move to the next field you want to edit. In this case, it would be the "Access/Update Level" field. The current Access/Update level is 200. To change this, say, to 250, type in the new number on top of the old.

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If you enter a number that is out of the acceptable range for a field, an error message appears in the Message Window:

Number too large-- maximum is (upper limit)

You must then enter a new number that is within the range for the field. ~~If you enter too many characters in a text field, the following error message appears:~~

Refer to Chapter 7 for a complete list of error messages.

If, after editing the profile, you see you have made a mistake, press the CANCEL key; the Resource Profile will revert to its status before you began editing. *m screen?!* When you have edited the profile correctly, press the EXECUTE key. Then press the CLOSE key to remove the Resource Profile from the screen. In the example we have been using, only users who are operating from the fuji_1 node, with an Access/Update level (in their User Profiles) of 250 or above can update the disk volume "B"--unless they are members of your User Group; these users can access or update the volume regardless of their Access/Update levels.

3.7 USERS: ACTIVE AND INACTIVE

There are two ways to find out about network users: through the Active Users Window or the User Directory Module. You can communicate with other active users via the User Messages Window.

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3.7.1 Active Users Window

When the Active Users Window is opened, it expands to display all the users currently active (logged on) on the network, as shown in Figure 3-12. Each user name can be profiled to display a User Profile.

[handwritten annotation: ?? IMP signals when it is powered up.]

3.7.2 User Directory Module

Sometimes you may be interested in knowing about users who are not currently logged on to the network. A complete directory of all legitimate network users exists at certain nodes (those nodes so designated by system administrators) in the form of User Directory modules. A User Directory appears as a field in the Modules Window, along with the other modules described in Section 3.6.2. Unlike other modules, however, the User Directory modules contain User Profiles instead of plugs and sockets.

A User Directory serves as a repository for User Profiles. You can view, and possibly update, these profiles in the same way you view and update profiles using the Active Users Window; the only difference is in how you get to the profiles.

3.7.3 Editing User Profiles

To view a User Profile, place the cursor on the user name you are interested in and press the PROFILE key. A User Profile like the one in Figure 3-13 will appear in the middle of the NETVIEW

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Message Window
_____

_____

```
┌──────────────────┐
│ Active Users     │
│ Bill   Beth      │
│ Elaine   John    │
│                  │
│                  │
│                  │
└──────────────────┘
```

```
┌──────────────┐   ┌──────────────┐   ┌──────────────┐   ┌──────────────┐
│ LOCAL NETWORK│   │ Active Users │   │    MAIL      │   │    EXIT      │
└──────────────┘   └──────────────┘   └──────────────┘   └──────────────┘
```

Function Window
_____

CLOSE ׀PROFILE ׀   ׀   ׀ BACK ׀FORWRD ׀ STACK ׀   ׀   ׀   ׀

Figure 3-12

The Active Users Window

Message Window
_____

User Directory / ibm-2
Jane   bill   louis
Sue   mark   sally
Kevin

Modules / ibm-2
msdos   Spooler
userdir

Profile / jane

Name: Jane
User Number: 37
Access / Update Level: 202
Group: write
Group Number: 2

Password:

Nodes
fuji-1 ibm-2
osm-1   fuji-2

| LOCAL NETWORK | | Active Users | | MAIL | | EXIT |

Function Window
_____

ICANCEL IUPDATE , BACK ,FORWRD, STACK ,EDWORD, DONE ,

Figure 3-13

User Profile

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screen.

Usually, only system administrators or users with the highest access privileges can edit most fields of a User Profile; however, other users can view User Profiles to see what access and update privileges users possess. You can also edit the password field of your own User Profile (see Section 2.3.3 for an introduction to User Profiles.)

Editing your User Profile is similar to editing Resource Profiles; the same editing functions apply. For this reason, the description for editing the User Profile is not as detailed as that for editing Resource Profiles; refer to Section 3.6.7 if you have problems.

To edit your password, open either the Active Users Window or the User Directory module, then move the cursor to your own name and press the PROFILE key. Your own User Profile will appear on the screen similar to the one in Figure 3-13. As shown, the EDWORD key is now active; press the key to bring editing keys into effect. As with the Resource Profile, the RETURN key moves you from field to field in the profile. *If you edit one, is the other changed?*

Move the cursor to the "Password" field and type in your new password (up to eight ASCII characters long), followed by RETURN. Press the EXECUTE key, followed by CLOSE to store the change and remove the profile from the screen; or, if you've made a mistake, press CANCEL. You must then press EDWORD again to re-enter editing mode.

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As with Resource Profiles, any number of User Profiles can be stacked together on-screen. User Profiles form their own stack on the screen. Use the STACK key as described in Section 3.5.3 to move between the profiles.

3.7.4 User Messages Window

The User Messages Window allows you to send messages to and receive them from other active users. User messages are shown in the Message Window at the top of the screen.

To send a message to another user, open the User Messages Window. The display shown in Figure 3-14 will appear on the screen, and the EDWORD, EXECUTE, and CANCEL keys will become active.

Type a user's name in the "User Name" field; if you type no name, your message will be sent to all active users. If you type the name of a user who either doesn't exist on the network, or isn't currently logged on, this message

No active user with that name

will appear in the Message Window. Once you have correctly typed the name of an active user, you can type your one-line message. If you decide to change the message, press RETURN; the cursor will return to the beginning of the message. Press EXECUTE to send your message. If you decide you don't want to send the message after all, press CANCEL. Once you've sent your message, the User Messages Window will close automatically.

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Message Window
_____

_____

Send a message to an active
User

Name: Sue

How about a cup of tea after work?

| LOCAL NETWORK | | Active Users | | MAIL | | EXIT |

Function Window
_____

CLOSE | | CANCEL | | BACK | FORWRD | STACK | | | |

Figure 3-14

Sending a Message to a User

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When a user sends you a message, it will appear in your Message Window similar to the message below:

From Beth: How about a cup of tea after work?

3.8 THE EXIT WINDOW: LEAVING NETVIEW AND SAVING CONNECTIONS

When you open the Exit Window, the following display appears:

```
Exit from Netview to (MS-DOS or CP/M)

Save all current connections YES
Disconnect the node from the network YES  ← is Yes here in next
Log the current user off the network YES      question relevant?
```

The cursor will prompt you after the first line in the window. Type any alphanumeric key to toggle between YES and NO. If you want to save the connections you just made in NETVIEW, make sure the field says "YES"; if not, it should say "NO." If you made no new connections while you were in NETVIEW, the first field will be blank and you won't be able to edit it.

If you want to disconnect the node from the network, the second field in the window should say "YES." The node will now operate as a stand-alone system only, with no network access. If you want to log off the network, the third field should say "YES." You will be returned to your local operating system, but the node will still be active: it wasn't disconnected from the network.

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When you've finished editing the fields, press EXECUTE to leave NETVIEW, or CANCEL to stay in NETVIEW.

If you return to NETVIEW, you needn't log on again, *if you didn't log off* but simply type the NETVIEW command.

You can also make and save connections without being in the NETVIEW shell by editing the USER.CON file contained in your *WordStar, presumably* local directory. This non-document file contains a list of any PC/NOS connections currently existing between your node plugs and any other sockets. An example USER.CON file is shown below:

Uh-huh.

You can use your local word processing program to edit the USER.CON file as you would any other non-document file. To store the connections to PC/NOS, simply enter the NETVIEW shell, then exit again; the new connections will be automatically stored.

USER.CON   Connections in ASCII form

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4.1 INTRODUCTION

The PC/NOS Print Spooler is a special program that allows users to share network printers in an orderly fashion. You can send files you want printed to the spooler, which will print them in the order and on the printer you specify. Once you have sent your files to the spooler, your personal computer is freed from dealing with printing tasks; you can go on to other computing functions at the same time your files are printing.

This chapter assumes you know how to work with the NETVIEW window interface described in Chapter 3. Refer to that chapter if you have problems understanding how to use the window interface to manipulate the Print Spooler.

4.2 CONNECTING THE PRINT SPOOLER

As far as NETVIEW is concerned, Print Spoolers are simply modules resident at certain network nodes that contain printers. As shown in Figure 4-1, a Print Spooler is displayed in the Modules Window along with other modules such as operating systems and user directories. Unlike some modules, the Print Spooler contains only plugs; Print Spoolers are logical devices (plugs) used to connect to the sockets of physical printers and disk volumes.

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Message Window
_____

_____

```
┌─────────────────────┐
│ Modules/ibm-2       │
│ msdos    spooler    │
│ userdir             │
│                     │
│   ┌─────────────────┴───┐
│   │ Nodes               │
│   │ fuji-1   ibm-1      │
│   │ osm-2    fuji-2     │
┌───┴──┐             │
│ Loc  │             │
└──┬───┴─────────────┘
```

┌──────────────┐   ┌──────────────┐   ┌──────────────┐
│ Active Users │   │   Mail   │   │   Exit   │
└──────────────┘   └──────────────┘   └──────────────┘

Function Window
_____

OPEN   ᵢPROFILEᵢ   ᵢ   ᵢ BACK ᵢFORWRDᵢ STACK ᵢ   ᵢ   ᵢ   ᵢ
_____
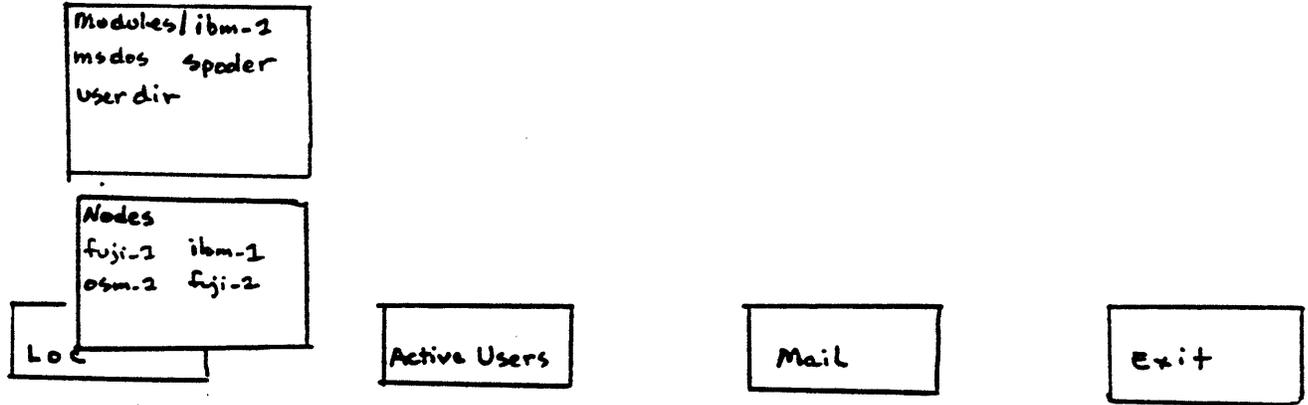
Figure 4-2

Modules Window

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DOCUMENTATION

When you open the spooler module, a set of plugs is displayed, as shown in Figure 4-2. The plugs are shown as four sets of two plugs. Each set contains a back end (PSPBE) plug and a logical printer (PSP) plug. To use the Print Spooler, you must connect both plugs as a pair; the PSPBE plug must be connected to a physical disk volume socket (for example, B:), and the PSP plug to a printer socket.

Suppose you want to connect the Print Spooler to a printer on the fuji_1 node. The first thing you must do is open the spooler module, in this case contained on an ibm_1 node in the example in Figure 4-1. Next, open the fuji_1 node, then the ms_dos module to display the available plugs and sockets on the fuji_1 node. Rearrange the Plug Windows with the STACK key so that the spooler plugs are displayed next to the fuji_1 sockets as shown in Figure 4-3. Press the CONNECT key to connect the spooler PSP1BE plug to the fuji_1 "B:" disk volume socket, and the spooler PSP1 plug to the fuji_1 PRN2 socket. Once connected, the connection path will be displayed in the spooler Plugs Window as shown in Figure 4-4.

You can connect Print Spooler plugs to any available printer and any available disk volume on the network; there are no restrictions. However, although all the spooler BE plugs could be connected to the same disk volume, each spooler PSP plug must be connected to a different PRN socket. This is because printers are simplex devices--they can handle input from only one logical device at a time.

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DOCUMENTATION

Message Window

Socket Resources

Plug Resources / ibm-2 / Spooler

PSP1   PSP2BE   PSP2   PSP2BE
PSP3   PSP3BE   PSP4   PSP4BE

Modules / ibm-2
msdos   Spooler
user dir

Nodes
fuji-1   ibm-2
osm-1   fuji-2

Loc   Active Users   Mail   Exit

Function Window

CLOSE |PROFILE| | BACK |FORWRD | STACK | | |

Figure 4-2

Print Spooler Plugs

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Message Window
_____

Socket Resources / fuji-2 / msdos

A: B: C: D:

PRN1   AUX   PRN2

Plug Resources / ibm-2 / Spooler

PSP1   PSP2BE   PSP2   PSP2BE

PSP3   PSP3BE   PSP4   PSP4BE

Modules / fuji-2

msdos   Userdir

Nodes

fuji-2   ibm-2

osm-2   fuji-2

Loc   Active Users   Mail   Exit

Function Window
_____

CLOSE , PROFILE , CONNECT,   , BACK , FORWRD , STACK ,   ,   ,

Figure 4-3

Plugs and Sockets for Connecting Print Spooler

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Message Window
_____

Socket Resources /fuji-2/> msdos

A: B: C: D:
PRN2   AUX   PRN2

Plug Resources / ibm-2 /spooler

PSP1=<fuji-57/msdos/PRN2
PSP1BE=<fuji-57/msdos/B:
PSP2   PSP2BE   PSP3   PSP3BE
PSP4   PSP4BE

Modules /fuji-2
msdos User dir

Nodes
fuji-2   ibm-2
osm-7   fuji-2

Loc

Active Users

Mail

Exit

Function Window
_____

'LOSE , PROFILE , DISCONNECT| , BACK   , FORWRD , STACK ,   ,   ,

Figure 4-4

Connected Print Spooler

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You can go on and connect any or all of the spooler plugs to sockets as desired; then you will be ready to spool files you want printed.

4.3 SPOOLING FILES

Once the necessary connections have been made between the Print Spooler and the appropriate physical devices, there are two ways to send your files to a printer: using your CP/M PIP or MS-DOS COPY command, or using the special PC/NOS SPOOL command. The advantages to each method will become clear shortly.

Suppose you want to use the Print Spooler resident on the ibm_1 node to print a file contained in the logical "B:" directory at the fuji_1 node. Suppose, also, that the spooler PSP1BE and PSP1 are connected according to the example in Figure 4-3. You must connect the "B:" fuji_1 plug to the "B:" fuji_1 socket with the CONNECT key. This is because the disk drive must be explicitly connected to the network for the Print Spooler to recognize the file you want printed. *Seems like a step was left out, then. After connecting PSP1 + PSP1BE, connect B: = B:*

4.3.1 SPOOL Command

To send your files to a Print Spooler, you must leave the NETVIEW program and return to your operating system by opening the Exit Window. Then, you can type the PC/NOS SPOOL command according to the following format:

    SPOOL filename (disk volume) prn(1 - 4) (0 - 9)

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where "filename" is the name of the file to be spooled, "disk volume" is the location of the file, prn(1 - 4) is one of the four possible Print Spooler plugs, and (0 - 9) is the priority of the file, with 0 being lowest and 9 highest. In the example we have been using, the command would appear as follows:

SPOOL file.doc b:prn1 1

This command would send "file.doc" to the Print Spooler psp1 plug, where it would be assigned a priority of 1. Again, the connection must have first been established, using NETVIEW, between the "B:" plug and "B" socket.

If no priority is specified in the SPOOL command, the Print Spooler will assume a default priority of 0, and the following message will appear on your screen:

No priority specified, so 0 priority assumed

The SPOOL command is the fastest and simplest way to spool files, because it creates a temporary file that is erased immediately after printing. The COPY and PIP commands, described next, create a copy of the original file.

4.3.2 COPY and PIP Commands

These commands allows you to use your MS-DOS or CP/M command language to print files. If your operating system is MS-DOS, you

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would tell the Print Spooler to print your file (file.doc in our example) by typing

        COPY b:file.doc=b:file.n1(0 - 9)

If you are using a CP/M operating system module, substitute PIP for COPY, and reverse the order of the source and destination. The command would appear as

        PIP b:file.n1(any number 0 - 9)=b:file.doc

Either of these commands creates a printable file, and tells the Print Spooler the order in which to print the file. "B:" is the disk volume that contains the file and is connected to the Print Spooler PSP1BE plug. The priority number you give the file--any number between 0 through 9 inclusive--determines the order your file will be printed in, with 0 being lowest priority and 9 being highest. If no file priority is specified, the default priority is 0.

If file.doc is the first and only file you want to print, you would probably give it a priority number of 0--file.n10. If you have a number of files that you need to print, you would repeat the COPY command, giving each file a different priority number according to how quickly you need each file printed. The Print Spooler recognizes the .n1(0 - 9) suffix, and orders the files accordingly. After each file has been printed, the Print Spooler automatically deletes the special .n1(0 _ 9) version of the file you created. If you need to print the file more than once, you must recreate a filename.n1(0 - 9) and use the COPY command for

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each copy of the file.

It is possible for several users to send files to the same Print Spooler, and to assign some of the same priority numbers to their files.   In this case, the Print Spooler will print the files according to who gave the PIP, COPY, or SPOOL command first.

4.3.3 Changing File Priority with the REN Command

Perhaps you need to change the order of priority of the files you have sent to the Print Spooler. You can again use your MS-DOS or CP/M standard commands to reorder the files. If you want to change a file's printing priority from 1 to 9, type

        REN b:file.n11 b:file.n19

and the Print Spooler will rearrange the files accordingly.   Note that you must specify the disk volume that contains the file,   in this case, "B:, with the RENAME command.

4.3.4 Removing a File with the DEL or ERA Command

You can also remove a file from the Print Spooler if you decide you no long want it printed. If you are using an MS-DOS operating system, type

        DEL b:file.n19

to remove the file. If you are using a CP/M operating system, substitute ERA for DEL.

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You should refrain from deleting a file that is currently being printed; if a file is printing at the same time a command is received to delete it, the printer will print "garbage", and will not finish printing the file.

4.3.5 Sending Files to Multiple Printers

You can take advantage of the various printers in the network and send your files to more than one printer if you like. However, each spooler PSP plug must be connected to a different PRN socket in order for you to send files to more than one printer at a time. You can use the same priority numbers for files that are to be sent to different printers. For instance, you could assign two of your files a priority of 0 if they are to be printed by different printers.

4.4 Disconnecting the Print Spooler

Use NETVIEW to disconnect the Print Spooler plugs from the sockets as you would in any other case by placing the cursor on the appropriate plugs and sockets and pressing the DISCONNECT key.

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5.1 INTRODUCTION

This chapter takes you through an example session with NETVIEW.
It is assumed that you have read through and understood the
previous four chapters, since this tutorial makes use of the
concepts introduced earlier in the manual.

The tutorial covers the following NETVIEW functions:

- o Logging on
- o Changing your password
- o Connecting logical and physical disk resources
- o Connecting Print Spoolers and printers
- o Editing Resource Profiles
- o Sending and receiving messages
- o Exiting NETVIEW and saving connnections

For this tutorial, "you" are a user named "Jill", the owner of an
IBM personal computer located at a node called "ibm_1". You are
an editor who works at a publishing company. Other writers and
editors have different personal computers that are linked in a
network via PC/NOS and NETVIEW.

When you come in this morning, you decide you need to do some
work that will involve the PC/NOS NETVIEW program. First, you
invoke NETVIEW by typing

    NETVIEW

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which brings the Login Window to your screen as shown below.

NETVIEW

Window to PC/NOS Resources

To open, enter your PC/NOS

User Name:

Password:

You type your user name, Jill, in the "Name" field, and your password, Casper, in the "Password" field. You make a mistake, though, and this message appears in the Message Window

No user with that name and password

You retype your name and password--correctly this time--and the Login Window disappears and is replaced by the window interface screen.

You always seem to type the wrong password, so you decide to change it to something simpler and shorter--"asia." To change your password, you need to get to your User Profile. Press the FORWARD key to place the cursor in the Active Users Window, move the cursor to your own name and press PROFILE. Your User Profile overlays the center of the screen display, shown in Figure 5-1.

Like most users who don't have super user or system administrator status, you are only allowed to edit your password, so once you are inside the profile, the cursor jumps to the "Password" field. Press the EDWORD key to begin editing, and type "asia" in the
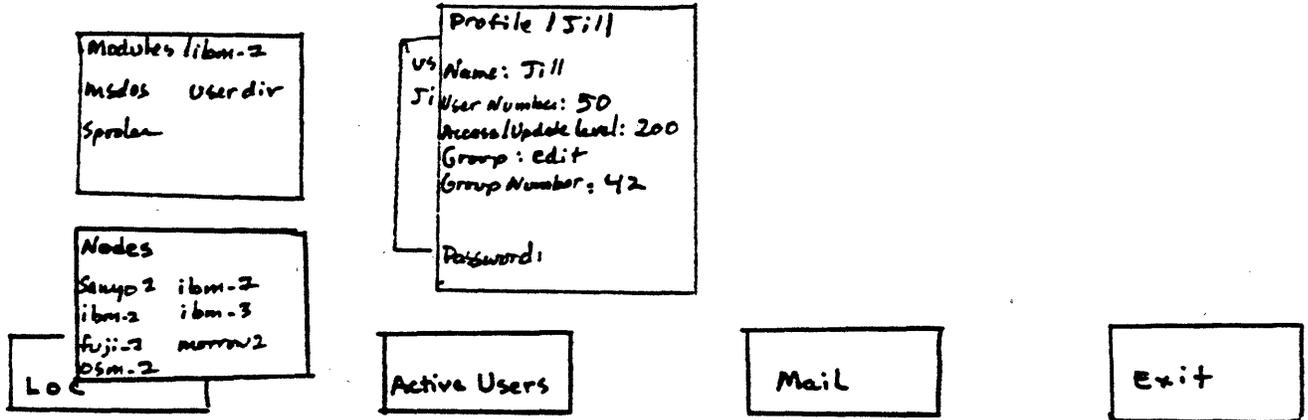
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Message Window
_____

Modules ibm-2
msdos   Userdir
Spooler

Nodes
Sanyo2   ibm-2
ibm-2   ibm-3
fuji-2   morrow2
osm-2
Lo...

Profile / Jill
Name: Jill
User Number: 50
Access/Update Level: 200
Group : edit
Group Number: 42

Password:

| Active Users | Mail | Exit |

Function Window
_____

... , CANCEL, UPDATE, BACK , FORURD , STACK , EDWORD ,

Figure 5-1
Jill's User Profile

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field.   Since the word is not echoed on the screen, you aren't
certain you typed it right; so you press the CANCEL key to start
over. Type it again, then press the EXECUTE key. Your password is
now "asia." Press CLOSE to remove the profile from the screen.

Now you're ready to get down to business. There's a document
that Bill wrote you want to edit; up to now, you've only seen it
in hard copy form, but you know it's in a disk volume , "A", on
the osm_1 node. To get to it, you decide to connect your "G"
logical disk drive plug to the disk volume "A" socket on osm_1.
Using the BACK key, move back through the windows you've opened,
using the CLOSE key to close them as you go, until you reach the
Nodes window.   Press the OPEN key to open the osm_1 node; when
that window expands to show the available modules, again press
OPEN to open the MS-DOS module that contains the "A" disk volume
socket you want.

Now, you need to bring your own plugs to the screen for
connection. Use the BACK key to move back to the nodes window,
open the ibm_1 node and its accompanying MS-DOS module, and then
the plugs and sockets contained in the module. Your plugs and
sockets are now overlaying the osm_1 plugs and sockets, so move
to the ibm_1 Socket Window and press the STACK key.   Now, the
ibm_1 plugs and osm_1 sockets are displayed side by side, as
shown in Figure 5-2. Connect the ibm_1 "G" plug to the osm_1 "A"
socket by pressing the CONNECT key.

You've also got some files you want to print using the Print
Spooler on your node, so you close the Active Users Window, open

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Message Window

```
┌─────────────────────────────┐         ┌─────────────────────────────┐
│ Socket Resources /osm.2/?msdos│        │ Plug Resources / ibm.2 / & msdos│
│  A:        B:        C:       │         │  A:       B:       C:    D:   │
│  D:        E:        F:       │         │  E:       F:       G:         │
│  G:        H:        I:       │         │  PRN2     PRN2                │
│  PRN      AUX      CLOCK$     │         │                               │
└─────────────────────────────┘         └─────────────────────────────┘

┌─────────────────────┐
│ Modules /ibm.2       │
│ msdos    user dir    │
│ Spooler              │
└─────────────────────┘
        ┌──────────────────────┐
        │ Nodes                 │
        │ Sanyo2    ibm.2       │
        │ ibm.2     ibm.3       │
        │ fuji.2    morrow1     │
┌───────┤ osm.2                 │    ┌─────────────┐    ┌─────────────┐    ┌─────────────┐
│  Log  │                       │    │ Active Users│    │   Mail      │    │   Exit      │
└───────┴──────────────────────┘    └─────────────┘    └─────────────┘    └─────────────┘
```

Function Window

CLOSE ,PROFILE, CONNECT,   , BACK ,FORWRD , STACK ,   ,   ,

Figure 5-2
Plugs and Sockets for Connection

the Local Network Window, then the Nodes Window, the ibm_1 Node Window, and finally the spooler window to display the plugs for the Print Spooler. The new screen display is shown in Figure 5-3.

You are interested in sending some files located on a floppy disk volume "B" at your node to a dot-matrix printer located on the fuji_1 node, so you need to bring the sockets for fuji_1 to the screen. Moving back through the windows, you open the fuji_1 node, its MS-DOS module, and the plugs and sockets in the module, then use the STACK key to rearrange the windows so that the fuji_1 sockets are displayed side by side with the plugs from the ibm_1 Print Spooler, as shown in Figure 5-4. Press CONNECT to connect first the pspooler BE1 to a disk volume--in this case, "B"--then the pspooler PRN1 to the printer on fuji_1, PRN2.

Now that the connections are made, you close all the windows and are just about to leave NETVIEW so you can edit Bill's files and print the other files, when a message appears in the Message Window on your screen:

From Jane: Hey, Jill, can I use your printer?

Obviously, Jane doesn't have the necessary Access/Update Level to use your printer, but it's ok with you for her to use it right now. You open the User Messages Window, which then expands to show the display below:

Send a message to an active user

User Name:

Message Window

Socket Resources

Plug Resources /ibm-2/ Spooler

PSP7   PSP2BE   PSP2   PSP2BE

PSP3   PSP3BE   PSP4   PSP4BE

Modules /ibm-2
ms dos   user dir
Spooler

Nodes
Sanyo 2   ibm.2
ibm.2   ibm.3
fuji.2   morrow 2
osm.2

Log

Active Users

Mail

Exit

Function Window

BACK   FORWRD   STACK

Figure 5-3

Print Spooler Plugs

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Type "Jane" in the "User Name" field. The screen clears, and you type the following one-line message:

Sure. Give me a minute to change the profile.

followed by a RETURN. Close the User Messages Window.

Now, you're not sure just what Jane's Access/Update level is, so you open the Active Users Window to find out. When you look at Jane's User Profile, you see that her Access/Update level is 110. You're aware that you've set an Access/Update level of 250 for the printer on your node, so you open the plugs and sockets for your node, then profile the PRN1 socket. For now, you change the Access/Update level to match Jane's--110--knowing that you will probably change the Access/Update level back to its original number later.

Now you're ready to leave NETVIEW. Open the Exit Window, which is replaced on the screen with this message:

Do you want to save connections?

You type "Yes", the message disappears, and you are presented with your MS-DOS operating system prompt. To send your files to the Print Spooler, type

SPOOL\story.old @psp1 0

This will send the file, "story.old" to the Print Spooler and from there to the dot matrix printer it's connected to on fuji_1. You have two more files to send, book.old, and news.new; Again

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using the MS-DOS COPY command, you send these files to the
spooler

```
SPOOL book.old b:psp1 1
SPOOL news.new b:psp1 2
```

Since the Print Spooler is handling the printing function, you
can now go on to other computing functions.

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6.1 INTRODUCTION

When users share files in a network, there is always the possibility that more than one user will try to access or update a given file simultaneously. PC/NOS includes both an explicit and implicit file and record locking program to allow users to share files, but at the same time be assured that the file they are currently working on will be protected from other users if necessary. The file and record locking scheme acts as a temporary "traffic cop" for data and files flowing through the net. It does not override the Access/Update privileges contained in User and Resource Profiles.

This chapter provides a basic introduction to a sophisticated subject. For most users, the information given here is sufficient; if you want more technical details, refer to the PC/NOS System Administrator's Guide.

6.2 IMPLICIT FILE AND RECORD LOCKING

Every PC/NOS software package comes equipped with a certain amount of implicit--default--protection for user files. This implicit locking function handles the basic tasks involved in making sure data flows in and out of network files in an orderly way. Default lock status is multiaccess; as soon as a user opens a file, the default status changes to multiaccess, single update.

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6.3 EXPLICIT FILE AND RECORD LOCKING

More sophisticated protection for shared files and records is handled by an explicit record and file locking scheme. Depending on the file, the explicit file and record locking scheme allows users to change the lock status of a file to one of the following:

Private--owner only may access/update file

Exclusive--only one user at a time can access/update file

Multiaccess--all privileged users can access file

Multiupdate--all privileged users can update file

Multiaccess/Multiupdate--all privileged users can both access and update file

6.4 ERROR MESSAGES

If you attempt to access or update a file that another user is also working with, you may receive an error message telling you the lock status of the file. The exact message you receive depends upon the explicit file and record locking programmed into your network. For example, you may see something like this on your screen when you attempt to access some file:

PC/NOS File Lock Conflict

Exclusive File

In this instance, the file has "exclusive" status: only one user at a time is allowed to access the file. Another message you

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    PC/NOS File Lock Conflict

    Private File

This means that the file in question is "private": it is locked so that only one user, usually the owner, can use it at this time.

Depending on the error message you receive, you'll have to either wait and come back to the file later (if the file has "exclusive" status), or you may not be able to get to the file at all. A complete list of lock status error messages can be found in Chapter 7.

Once you have updated a file, there is nothing to prevent another user from undoing the changes you have written to the file. However, a personal backup file is created each time you update a file; this backup file saves the changes you made and puts the file in your home directory. If you wish, you can also copy the file to a new name and place the file in your home directory.

6.5 THE LOCKSTAT HELP COMMAND

The LOCKSTAT Help command gives you information about LOCKSTAT options. To get help with LOCKSTAT, type

    LOCKSTAT ?

and the following display appears on your screen:

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Lockstat options are as follows:

To get the lock status of a file enter

        LOCKSTAT x:file

To set a file to a new lock status enter

        LOCKSTAT x:file OPTION

where OPTION is one of the following:

        ma--set the file to multiaccess status

        excl--set the file to exclusive status

        priv--set the file to private status

        masu--set the file to multiaccess, single update status

        mamu--set the file to multiaccess, multiupdate status

6.6 VIEWING AND CHANGING LOCK STATUS

As indicated under the LOCKSTAT ? command above, PC/NOS provides a LOCKSTAT command that allows you to check a file's current lock status to see whether you can access or update it at a given time. For instance, if you want to check the status of a file in your logical "F:" directory, type

        LOCKSTAT f: <filename>

PC/NOS will return a message telling you the lock status of the file. For instance,

        Lock Status--multiaccess, single update

tells you that the file can be accessed by several users at once, but updated by only one user at time.

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If you are the owner of a resource, you can also change its lock

status with a variation of the LOCKSTAT command. For instance,

        LOCKSTAT (filename) excl

changes the current lock status to "exclusive" status.

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access privilege: The right to view, read, or use a network resource.

Access/Update Level: The number in a user's User Profile, from 1 to 255, that determines the user's rights to access or update network resources.

active user: A network user who is logged on to the network via NETVIEW.

Active Users Window: NETVIEW window that can be opened to display active users and their User Profiles.

BACK key: NETVIEW key used to move the cursor backwards through the NETVIEW windows displayed on-screen.

CANCEL key: NETVIEW editing key used to cancel the editing changes or message that was just entered.

CLOSE key: NETVIEW key used to close an open window.

CONNECT key: NETVIEW key used to connect a plug to a socket.

connection path: The way resources are connected to each other, in descending order from network to node to module to plug or socket.

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COPY command: In the PC/NOS interface, the MS-DOS command used to send files to a Print Spooler.

DEL command: In the PC/NOS interface, an MS-DOS command used to delete a file from the Print Spooler queue.

directory: A list of subdirectories and/or files that are resident on a disk volume.

disk volume: A floppy disk, or portion of a hard disk labeled by operating systems with an alphabetic character followed by a colon (e.g., A:)

EDWORD key: NETVIEW key used to invoke the editing mode for editing profiles and sending user messages.

ERA command: In the PC/NOS interface, a CP/M command used to delete a file from the Print Spooler queue.

exclusive status: A temporary file and record locking status in which only one user at a time may access a given file.

EXECUTE key: NETVIEW editing key used to store changes made to a profile, or send a message to a user.

Exit Window: NETVIEW window that can be opened to save

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connections and/or exit from NETVIEW to the local operating system.

explicit locking: File and record locking that is dynamically controlled by network users with the LOCKSTAT command.

file and record locking: A PC/NOS scheme for temporarily protecting shared files.

FORWARD key: NETVIEW key used to move the cursor forward through the windows on-screen.

function keys: The seven programmable keys, F1 – F7, (on most keyboards) that are assigned special functions by PC/NOS.

Function Window: NETVIEW window that displays the PC/NOS functions available at a given time, along with the function keys assigned to each function.

implicit file and record locking: Default file and record locking programmed into the PC/NOS-driven network.

inactive user: A network user who is validated for use of the network, but is not currently logged on via NETVIEW.

local: The resources and operating system located at the personal computer node where a user is working with NETVIEW or PC/NOS.

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Local Network Window: NETVIEW window that can be opened to display the resources available in the network.

LOCKSTAT command: PC/NOS command used to examine or change the file and record locking status for a given file.

logical resource: A computer entity that is used to label or refer to an actual physical resource.

Login Window: PC/NOS window in which the user enters his or her user name and password in order to enter the NETVIEW interface.

Message Window: The one-line NETVIEW window in which explanations, error messages, and user messages are displayed.

mismatched resources: Resources that cannot be connected because their data transfer methods are incompatible, e.g., a logical disk drive and a printer.

module: An operating system, print spooler, or user directory contained at a network node.

Modules Window: NETVIEW window that can be opened to display the modules available at a given node.

multiaccess: A temporary file and record locking status in which several users can access a file simultaneously.

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multiupdate: A temporary file and record locking status in which several users can update a file simultaneously.

NETVIEW: The PC/NOS user interface program, consisting of on-screen windows that are manipulated with the function keys.

NETVIEW command: The PC/NOS command used to invoke the NETVIEW program.

node: A personal computer system linked to a network.

Nodes Window: NETVIEW window that can be opened to display all the nodes linked to the network.

NOSDIR program: PC/NOS setup program that creates a directory (PCNOS.DIR) of blank Resource Profiles for network resources.

NOSVOL.DIR: A directory of Resource Profiles for files and subdirectories existing at each node.

OPEN key: NETVIEW key used to create a window display from a given window field.

owner: A status assigned to a user (in a Resource Profile) that establishes that user as the "owner" of the resource. Resource owners automatically have highest access and update privileges to the resource, and can control how others use the resource.

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password: In the PC/NOS scheme, the eight-character secret word
chosen by a user and used to verify legal network users.

PC/NOS: A set of software programs that controls network
operations and allows users to share resources.

PC/NOS command: Command used to load the PC/NOS programs into a
node.

PCNOS.DIR: A directory of Resource Profiles for all network
resources.

physical resource: An actual volume, file, or device that is
usually labeled or referred to by a logical resource.

PIP command: In the PC/NOS interface, a CP/M command used to send
files to a Print Spooler.   `

plug: A computer resource that can be connected to a socket
resource by PC/NOS. Logical resources usually have plugs, while
physical resources have sockets.

Plug Window: A NETVIEW window that can be opened to display the
plug resources available in a given module.

Print Spooler: A set of two plugs that can be connected to

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network printers and volumes so that users can share printers and prioritize their files for printing.

private: A temporary file and record locking status in which only the owner of a file may access or update that file.

privileges: The rights to access and/or update a network resource, determined by a user's User Profile and a resource's Resource Profile.

profile: See Resource Profile and User Profile.

PROFILE key: NETVIEW key used to view a Resource or User Profile.

REN command: In the PC/NOS interface, an MS-DOS or CP/M command used to re-prioritize files in the Print Spooler queue.

resources: All of the logical and physical computer entities that exist in the network.

resource hierarchy: The way in which network resources are organized. In descending order, the resource hierarchy consists of the Local Area Network; network nodes; modules; plugs and sockets; and physical devices such as volumes, files, printers, and modems.

Resource Profile: A record that describes a resource and determines who may access and/or update the resource. Every

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network resource has a Resource Profile associated with it that can be accessed with the PROFILE key.

server: A disk volume that contains the essential files and programs needed to operate and control the network.

simplex device: A device, such as a printer, that can handle data from only one direction at a time.

single update: A temporary file and record locking status in which only one user at a time can update a given file.

socket: A computer resource that can be connected by PC/NOS to plug resource. Physical resources usually have sockets, while logical resources have plugs.

Socket Window: NETVIEW window that can be opened to display the socket resources available at a given node.

SPOOL command: PC/NOS command that sends files to a Print Spooler and establishes their priority for printing.

STACK key: NETVIEW key that rearranges the order of on-screen windows that are stacked on top of each other.

subdirectory: In the MS-DOS operating system module, a directory of files within the main directory.

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system administrator: A PC/NOS user who has the highest access and update privileges, and who is involved in setting up, managing, and maintaining the network.

top-level windows: Four windows--Local Network, Active Users, User Messages, and Exit--that are always displayed by NETVIEW and that can be opened to display network resources and perform PC/NOS functions.

type field: Three numbers contained in a Resource Profile that define the resource.

update privilege: The right to alter or make additions to a network resource, as determined by User and Resource Profiles.

user: Any person who uses the network.

USER.CON: A non-document file resident in each node's local directory that contains a listing of all NETVIEW connections currently existing between the node's plugs and local or remote sockets. This file can be edited by local word processing programs.

USERDIR program: The PC/NOS setup program used to create a directory (USER.DIR) of blank Resource Profiles.

USER.DIR: A directory of User Profiles for all network users.

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User Directory module: A directory of User Profiles resident at a given node.

user group: A group of users who have common needs or interests. A users's user group is specified in his or her User Profile.

User Messages Window: NETVIEW window that can be opened to send messages to active network users.

user name: The eight-character name that a user types in the Login Window when entering NETVIEW.

User Profile: A record of a user's identity and access/update rights. User Profiles can be accessed through User Directory modules or through the Active Users Window by pressing the PROFILE key.

volume: See disk volume.

window: A NETVIEW display area that contains resources or functions that can be manipulated by PC/NOS.

window fields: Resource names displayed inside windows that can be opened to create other windows.