PLAN 4000™

File Server
Apple II DOS User's Guide

NESTAR

SC40-0502

NESTAR SYSTEMS, INCORPORATED

PLAN 4000 (TM)

FILE SERVER

APPLE // DOS
USER'S GUIDE

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How to Use This Guide

This guide provides a description of those PLAN 4000 functions that are specific to the Apple // DOS environment.

When familiarizing yourself with PLAN 4000, read first the General Information Manual.

For information pertaining to your network's file servers, which allow you to share hard disk memory with other network users, read the File Server User's Manual. A bibliography of PLAN 4000 system manuals and guides appears at the end of this guide.

The material in this document applies to Version 2.0 of the File Server software.

We welcome criticisms and suggestions. Forms for reporting program errors, documentation errors, and inadequacies are provided at the back of this manual.

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Chapter 1

Starting Up

1.0 Introduction

This guide, together with the File Server User's Manual, describes how to use network facilities from the Apple // DOS environment. Read this guide to learn how to start up (BOOT) your workstation, and how to send commands (described in the File Server User's Manual) over the network. The guide assumes that you are familiar with the Apple // microcomputer and with Apple DOS 3.3.

SOMETHING TO REMEMBER: The Apple // DOS environment includes commands to manage the files on your DOS diskettes, while the network environment includes commands to create and manage the files on shared network hard disks. Remember that network files will be "virtual" DOS volumes: portions of hard disk formatted to look like real DOS diskettes. Thus, network commands manipulate the volumes, and DOS commands manipulate the files within the volumes.

DOS 3.3 can run on user station Apple // microcomputers supported by a file server. Files from 13-sector diskettes can be transferred from real floppies to virtual volumes for use with DOS 3.3 using the Apple supplied MUFFIN program. If there is no language card in a given Apple, either Integer BASIC or Applesoft BASIC can run, whichever is in the Apple ROM. If there is a language card, the Nestar BOOT program loads the type of BASIC not in ROM into the language card, so that both are available at all times. (Enter FP for floating point

Applesoft or INT for Integer BASIC.) The BOOT program is described in Appendix B.

1.1 Starting Up: Booting Virtual Volumes

At power on, your station will display the Nestar logo and prompt

"VOLUME TO BOOT?"

The network hard disks that you share with other network users are divided into "virtual volumes" or "virtual diskettes". DOS virtual volumes are formatted to look like real DOS diskettes and come in a variety of sizes. To use these diskettes, you must issue network commands that will "mount" them on "virtual" drives (just as real diskettes must be inserted into real drives). Once your network commands have created and mounted virtual volumes, the volumes are used by DOS in the same way that real diskettes are used. Network commands can be issued from the DOS environment in a number of ways, described in Chapter 2.

To the "VOLUME TO BOOT?" prompt, enter the pathname of a virtual DOS volume and press return. The BOOT program will recognize that a DOS disk is to be booted, and will mount the volume for Read/Write Update use on drive 1. (Virtual volumes are discussed in Chapter 2 of the File Server User's Manual. Volume usage and access are discussed in Chapter 3 of that Manual. DOS and file server drives are discussed in Section 2.1 of this guide)

Most networks use a shared library volume, which contains programs and data useful to all network users. This volume is usually called /MAIN/LIB/APPLE2/DOS. If it exists, it can be

mounted automatically at startup by your DOS boot volume's hello program, for read-only use on any drive higher than d1 (usually d2).

Use the network SETPROFILE utility program (Chapter 4) to set the defaults that will autostart your volume, if desired.

Chapter 2

Using the Network

The PLAN 4000 system allows you to share hard disk space with other users. Hard disks are divided into files called virtual volumes. Your virtual volumes are formatted to resemble real DOS diskettes (of many different sizes). A "file server" station on the network mediates between your workstation and the hard disk.

Use the CREATE program available on your network to create virtual volumes. Use the network commands described in the File Server User's Manual to access, list, rename, and otherwise manipulate your virtual volumes. Use DOS commands to manipulate the files inside these volumes.

Network Commands:

BLOAD	OFF	SHOW LOCKS
BRUN	PROTECT	SHOW MOUNTS
BSAVE	RENAME	SHOW PROTECTION
CREATE	SET DIR	SHOW STATION
DELETE	SET [PW]	SHOW TIME
HELP	SHOW DATE	SHOW TYPES
LIST	SHOW DIR	SHOW VOLS
LOCK	SHOW ID	TIMESTAMP
MOUNT	SHOW LOCK	UNLOCK
		UNMOUNT

2.1 Issuing Network Commands from Immediate Mode

Before interactively entering file server commands, you must issue a command that will send all output to the slot containing the network interface card:

PR#n

If the slot number is 6, as it usually is, the command is:

PR#6

Now you can enter file server commands and have them executed immediately. The procedure is:

1. Type an @ sign immediately followed by the file server command you wish executed. Press return. (Commands typed without an @ sign are directed to DOS or BASIC just as they would have been without the network.)

2. If the file server can execute the command, it does so, and responds

   0,OK.

   If the file server cannot execute the command, it returns an error code number and message. For example:

   1,ILLEGAL COMMAND
   30,DRIVE REQUIRED

3. The BASIC prompt again appears on the screen.

The numbers that precede the messages are there to be used, for example, when INPUT to applications programs. (Programming is discussed in Chapter 3.)

To issue a series of network commands without typing @ before each one, run the NET program.

2.1.1 The NET Program

The immediate mode method of issuing FS commands has its limitations. There is no way to change the file server receiving your commands from the server from which you booted. This means that if there are multiple file servers (or a gateway server) on your network, they will be inaccessible to you under DOS. Also, if your station has multiple Network Interface Cards, all but the one from which you booted are inaccessible from the immediate mode format. The NET program allows multiple network commands to be entered from the keyboard and allows all file servers and gateways to be accessed.

In addition, it is often desirable to create a file of file server commands for later execution. The immediate mode method of doing so is rather cumbersome. The DOS NET package includes three utilities for creating and editing text files to be used as files for the NET program (Section 2.7).

The NET program is a DOS program generally made available on the shared library volume. If NET is not found there, the system manager will know where it is installed. NET and NETHELP (which provides information on using NET) can also be placed on your DOS virtual volume. In addition, to create and use text files that contain multiple network commands, the files GENERATOR, EDITOR, and RETRIEVER should be available.

File server commands issued by the NET program, or by immediate execution as described above, are discussed in the File Server User's Manual.

To use the NET program, type "RUN NET" from the immediate mode, specifying slot and drive number

if necessary. The prompt ":" will appear. There is no need to type "PR#6". Issue commands as you would in immediate mode, but without the "@". To terminate the program, type Q <RETURN>.

The NET program sends each network command, as entered, to the file server (except for the "local" commands described in Section 2.6 below). The file server executes the command. If there is an error, a numeric error code and an error message will be displayed. A complete list of error messages is found in Appendix A.

NET then redisplays on the user station screen its prompt (:) for another file server command to be entered. The cycle repeats until "Q" <return> or <esc><return> is entered; then control returns to the DOS prompt.

2.2 Creating Virtual Diskettes

The @ sign and NET program are used to issue commands to the network file server. One available command is CREATE, which allows you to create 16 sector virtual diskettes for use on the network. However, the network also provides a CREATE program, which will create DOS virtual diskettes of variable size, INITing them at the time of creation. To create DOS virtual volumes, you should RUN CREATE.

CREATE allows DOS users to create virtual DOS volumes from 72 sectors (18 Kbytes) to 1600 sectors (400 Kbytes) in size (K=1024 bytes).

The CREATE program gives you a menu of eight parameters that can be varied within programmed limits. These parameters define total size of the volume, volume number, tracks per volume, sectors per track, catalog entry capacity, and

boot capability - all of which affect the usable number of sectors after INIT, the ninth displayed menu parameter. CREATE allows the user to leave the DOS code off the newly created volume if it is not needed, saving approximately 37 sectors for other use.

Operation:

- BOOT MAIN/LIB/APPLE2/DOS,RO on an Apple // workstation (with at least 64K of RAM).

- RUN CREATE

- Use the spacebar key to select one of the top eight menu items. VOLUME: is the network pathname for the volume to create; other prompts are self-explanatory.

- Change the selected parameter by typing in letters or numbers. CREATE will adjust when necessary other parameters in the menu and perform bounds checking.

- Press the ? key to display and enter parameters' default.

- Press <ESC> when parameter specification is complete.

CREATE will then:

- attempt to CREATE (using the network command), MOUNT and INIT the user named volume using the parameter specifications.

- trap any file server or DOS 3.3 errors that will prevent program execution.

- cause a user specified, nonbootable volume to print, "NO DOS TO BOOT" when a boot is

attempted.

- save a dummy HELLO program on the CREATE created volume.

Parameter Limits:

	Min	Max
Volume number	1	254
Total sectors on volume	72	1600
Sectors per track	4	32
Tracks per volume	18	50
Catalog entries	7	217

Use <escape><escape> to abort CREATE while in the menu.

CREATE is written in Applesoft and 6502 machine code. CREATE does not support real disks (5.25 inch floppies).

NOTE: Once CREATE has been run, the DOS INIT command is disabled until the user reboots.

2.3 Size and Number of Sectors

When the CREATE command is used (by typing @ CREATE...or by running the NET program and typing CREATE ...), the created volume contains 16 sectors/track and 560 sectors, total. For volumes created using the CREATE program, sectors/track and total sector values can vary, as shown in the table below. It is recommended that you use the CREATE program to create new volumes, since the program gives flexibility in specifying the size of the volume, and INITs it upon creation.

UTILITY	Sectors per Track	Tracks per Vol	Total Sectors*
CREATE Command	16	35	560
CREATE Program	4-32	18-50	72-1600

* plus one sector of file descriptor information

Volumes can be created up to 32766 sectors in size. However, Network DOS supports only up to 1600 sectors, extending the VTOC space (i.e., DOS managed space) to a maximum of 1600 sectors.

The space from 1600 to 32766 sectors is available for use through the Apple documented RWTS machine language interface. A data base package (for example) might take advantage of this extra available space.

2.4 Initializing a Virtual Disk in DOS

As explained in the "Apple // DOS Manual", a diskette must be initialized before it can be used to store BASIC programs and data. This is also true for virtual diskettes used in the network.

NOTE: Virtual DOS volumes created with the CREATE utility program are initialized automatically as part of the creation process. If you use the CREATE command from the NET program to create a DOS virtual volume, explicit initilization is necessary.

To initialize a virtual volume called /MAIN/EXAMPLE, first MOUNT the volume:

```
@MOUNT /MAIN/EXAMPLE,RW,D3
```

Here drive 3 is used. Any drive from 1 to 255 can be used, although you may wish to keep your boot volume and any shared library volume mounted.

```
NEW
10 REM GREETING PROGRAM
20 PRINT "VIRTUAL DISKETTE EXAMPLE"
30 PRINT "CREATED today's date BY your name"
40 END
```

Initialize the virtual diskette by entering:

```
INIT HELLO,V1,S6,D3
```

This DOS command formats the virtual diskette and saves the greeting program under the name HELLO so that it will be run whenever the virtual diskette is booted.

To boot this volume, return to the BOOT program by typing

```
@OFF
```

and respond to the "volume to boot" prompt with the new pathname:

```
/MAIN/EXAMPLE
```

This time your new volume will be mounted on drive 1 and the screen will display:

```
VIRTUAL DISKETTE EXAMPLE
CREATED today's date BY your name
```

2.5 Drives

On a standalone Apple, DOS allows only drives 1 and 2 to be specified, but the network allows any drive number from 1 to 255. To enable this capability, the Nestar BOOT program POKES the number $FF (255) into the DOS byte containing the maximum drive number.

If an Apple user station has no standard Apple disk controller card, using drive numbers greater than 2 will cause no problem; but if there is a standard Apple disk control card and a user erroneously gives a drive number greater than 2 in a command to a real minidisk, DOS will not catch the error and results are unpredictable.

2.6 Local File Server Commands

In addition to the commands that it sends to the file server, the NET program responds to a number of local commands that it executes itself. These commands are concerned with displaying and setting the drive status (real or virtual) and network interface card slot number associated with each drive.

These commands are described in the following sections. Brackets [] around a parameter indicate that the parameter is optional.

2.6.1 SHOW FS

This command displays the default "virtual channel" (consisting of a network card slot number and file server station number) to which file server commands are currently being sent.

2.6.2 SET FS [SLOT n] [STN $nn]

Sets the default "virtual channel" for file server commands issued by NET or by subsequently run programs to the values specified. The initial default file server channel is the slot booted from (usually slot 6) and station $FE.

2.6.3 SHOW SLOTS

Displays the location and function of all Network Interface Cards in your Apple //. For example:

```
: SHOW SLOTS
SLOT TYPE                 USAGE
  2  PLAN 4000 ($06)      NONE
  6  CLUSTER 1 ($39)      FS
```

Here, the station has two Network Interface Cards: a Plan 4000 card in slot 2 with address $06, and a Cluster One (PLAN 1000) card in slot 6 with address $39. The FS command channel is through slot 6.

2.6.4 HELP NET

Displays information on the local commands outlined above.

2.6.5 OFF

The OFF command initializes your user station: unmounts all MOUNTED files, unlocks all locks, resets any default directory and private or group passwords. OFF BRUNS the BOOT program.

In order to increase overall system efficiency, the OFF command should be given whenever a user is through using his or her Apple. This frees the memory and other resources assigned to the user station.

Giving this file server command is equivalent to turning power off and on at the workstation. Note that when the power is turned off at a user station, all file server virtual volumes that are mounted remain mounted. Locks remain held and default directory, if any, remains set. If files are mounted EXC RW, for example, they will not be available to other users. It is the OFF command (which is automatically issued by the NIC Rom) that unmounts all volumes. Thus, in order to free memory space and leave volumes available to other stations, it is necessary to use the OFF command, or to turn the machine off and on again to unmount volumes.

2.6.6 Other NET Inputs

The NET program also accepts the following inputs:

* [repetition and concatenation of commands]

The asterisk ("*") causes the previous command to be repeated. If the asterisk is followed by more characters, they are concatenated to the previous command. The full command appears on the next line when the command is issued. For example (lower case entered by user):

```
: list /main
/MAIN,T=Y
USERS,T=Y
: */users
->LIST /MAIN/USERS
/MAIN/USERS,T=Y
ALFRED,T=D
BARTHOLEMEW,T=D
CASTOR,T=P
```

; [commenting]

A semicolon (";") at the beginning of a command indicates a comment. The line is ignored by NET.

% [text-file "script" processing]

The command "%filename" will cause the DOS text file "filename" to be read into NET, and the commands therein to be executed. Please refer to the following section regarding setting up text files.

2.7 Text Utilities

In order to create and edit text files for the "%" feature, three utilities are provided. GENERATOR creates a new text file, EDITOR edits an existing text file, and RETRIEVER displays an existing text file.

GENERATOR

From the immediate mode, type "RUN GENERATOR". You will be instructed to enter NET commands. GENERATOR will number the lines for you.

Terminate your input with a simple RETURN. You will then be asked what name to give the new file. At this point, you may exit without creating a new file by simply pressing RETURN. Otherwise, a text file will be created.

NOTE: GENERATOR will not notify you if you are about to overwrite an existing file. Before selecting a new filename, make sure that it is not in use or that the contents of that file are expendable.

EDITOR

From immediate mode, type "RUN EDITOR". You will be asked for the name of a text file to edit. EDITOR will then display the contents of that file line by line. You have four options with each line:

--RETURN	accepts the line as is.
--D	deletes the line from the file.
--I	inserts a new line immediately after the one being displayed.
--ANYTHING ELSE	allows you to retype the line being displayed.

At the end of the file, EDITOR gives you the option of adding more lines. If you want to do so, respond "Y" to the prompt "MORE (Y/N)?". EDITOR then asks whether you want to save this file with the same filename as before. If so, EDITOR will update your file. Otherwise, you may give a new filename, or you may terminate without writing. If you terminate without writing, all of the changes just made will be lost.

RETRIEVER

From immediate mode, type "RUN RETRIVER". You will be asked for the name of a text file. RETRIEVER will display the contents of that file.

2.8 Copying Files From a Library to a Virtual Volume

If a real diskette containing DOS is copied to a virtual volume, the DOS on that volume remains unchanged. However, if the virtual volume is used to boot the user station, the network BOOT program will make a five-byte patch to DOS in RAM so that it is compatible with the file server network.

2.8.1 Copying Files From a Library

If you already have a library of programs and data files for your Apple, either on cassette tapes or diskettes, you can copy them onto your virtual diskette just as you would with a standalone Apple.

2.8.2 Copying From a Cassette Tape

1. CREATE and MOUNT the virtual diskette to which you wish to copy files. (We assume the disk will be mounted with read/write access on drive 1 and the network interface card is in slot 6.) For example:

   ```
   @MOUNT /MAIN/EXAMPLE,D1,RW
   ```

2. Connect the tape cassette to the special plug at the rear right of the Apple.

3. Give the DOS commands:

   LOAD

   SAVE filename

(See the DOS manual for more details on loading programs from a cassette.) Repeat the two DOS commands in step 3 until all your files are copied.

2.8.3 Copying from a Diskette

NOTE: Chapter 4 describes the DISK COPY program, which copies whole disks (including data files). The following procedure is to be used when only selected files are to be copied. Files must be BASIC program files, listed as "A" in the disk catalog list.

1. CREATE and MOUNT the virtual diskette to which you wish to copy files. Be sure the number of sectors per track is the same for the real and virtual diskettes - i.e., they MUST both have been initialized under DOS 3.3 (16 sectors per track). We assume that the network card is in slot 6 and that the virtual diskette is mounted with read/write access on drive 1.

2. Insert the diskette into either drive of a disk control card inserted in any available slot. Here we use slot 5, drive 1.

3. Give the two DOS commands:

   LOAD filename,S5,D1 (from real diskette)

   SAVE filename,S6,D1 (to virtual diskette)

Repeat the DOS commands in step 3 until all the files are copied.

The FID program (with the number of drives available increased to 255 using FIDMORE, described in Chapter 4) can also accomplish this transfer.

2.9 Binary Network Commands

Apple // DOS users have available a number of "binary" network commands.

These commands allow the Apple // DOS user to save, load, and run virtual volumes that contain programs stored in binary or machine language form. Descriptions of the BSAVE, BLOAD, and BRUN commands follow. It is recommended that the user not mount binary volumes.

BSAVE pathname,FROM=number, size,
[,LOAD=number] [,REPLACE]

- saves a memory image of the specified size starting at the FROM address in memory, to the specified binary virtual disk.

BLOAD pathname [,LOAD=number]

- loads binary virtual disk previously saved by BSAVE, loads at the LOAD memory address in BLOAD, if given; if not, loads at the LOAD address in the corresponding BSAVE, if given; otherwise, loads at the FROM address in corresponding BSAVE.

BRUN pathname [,LOAD=number]

- BLOADS a binary virtual disk, then executes it starting at the first address loaded.

Parameters and defaults:

pathname: Enter a network virtual volume pathname

[LOAD=number]

number: if decimal: between -32768 and 32767, inclusive; if hex: between $0 and $FFFF, inclusive; The address at which memory image is to be loaded

LOAD address used for BLOAD and BRUN, in order of priority:

LOAD address given by BLOAD or BRUN
LOAD address given by corresponding BSAVE
FROM address given by corresponding BSAVE

FROM=number

FROM is the starting address of memory image being saved

SIZE=number [.size-unit]

For BSAVE the amount of memory to be saved must be specified with a SIZE parameter. The size given must be less than or equal to the size that was given in the CREATE of the binary file.

Size may be given in units of bytes

(characters), sectors (256 bytes each), blocks (512 bytes each), or K bytes (1024 bytes each). The default unit for size is blocks. The size parameter has the form: SIZE=number[.unit]. Unit may be 'C' for characters, 'S' for sectors (256 bytes), 'B' for blocks (512 bytes), or 'K' for K (1024 bytes). The '.' is optional except where it is needed to resolve ambiguity in the specification of hexadecimal numbers. It is suggested that the '.' be used for readability.

[,REPLACE]

If a memory image has previously been BSAVEd using the same pathname, it will not be destroyed and the present BSAVE will not be executed unless the REPLACE parameter is present. (REP is also recognized.)

Error Messages

```
50,CURRENTLY MOUNTED
51,NOT BINARY
52,NOT PREVIOUSLY SAVED
53,FROM PARAMETER REQUIRED
54,SIZE PARAMETER REQUIRED
55,FILE WAS THERE REP NOT SPECIFIED
```

Access Rights Required

R (READ) for each directory pathname
W (WRITE) for file being BSAVEd

Discussion

These three file server commands (BLOAD, BRUN, and BSAVE) allow machine language programs to

run independently of DOS. They are especially useful when customizing a BOOT program (which runs before DOS) or for running programs without making assumptions about the currently loaded operating system, if any.

It is also possible, just as with a stand-alone Apple, to run machine language programs under DOS using the commands already in those language systems.

Before a BSAVE is issued, a binary type virtual disk of sufficient size must be CREATEd. Then a BSAVE is issued which stores a memory image on the virtual disk. The user specifies the starting address (FROM=number) of the memory image and the size of the binary Network file to be saved. An optional parameter, [,LOAD=number], allows the user to save a memory image from one part of memory and load it (with a BLOAD or BRUN) into a different part.

BLOAD and BRUN load a memory image previously saved by the BSAVE command. The first address loaded is the LOAD address of the BLOAD or BRUN command, if specified. Otherwise, it is the LOAD address of the BSAVE command, if specified, or the FROM address of the BSAVE, if neither LOAD address is specified.

BRUN does a BLOAD, then executes the loaded program starting at the first address loaded.

Note that it is not necessary to MOUNT a binary virtual disk before issuing the BSAVE, BLOAD or BRUN command.

NOTE: The file server "B" commands differ from the DOS commands of the same name in that (1) DOS need not be present in the machine when the commands are used; (2) the file being loaded,

saved, or run is not one of several files within a DOS virtual disk. It is a virtual disk itself, identified only by its network pathname.

Examples

1. Data Collection

Suppose a meteorologist uses his Apple to measure cloud patterns on satellite weather pictures. He or she inputs data from a picture reading device with a machine language program. To do this, he or she:

a. creates a binary virtual disk of the correct size

```
SET DIR/MAIN/USERS/WEATHER

CREATE READIMAGE,T=B,SIZE=20.S
```

b. enters and debugs his machine language code

c. BSAVEs the code on the previously created virtual disk (typing on one line)

```
BSAVE READIMAGE,FROM=$800,SIZE=4096.C
```

d. executes the program with a BRUN

```
BRUN READIMAGE
```

2. Editing in different part of memory

If the meteorologist wishes to edit his machine language program, it is sometimes convenient to read it into a part of memory different from where it will reside when executed. In the above example, he might:

a. read the program into a different part of memory

```
BLOAD READIMAGE,LOAD=$2800
```

b. make desired changes in the program

c. again save the program on disk (typing on one line)

```
BSAVE READIMAGE,FROM=$2800,
SIZE=4096.C,LOAD=$800
```

d. again run the program

```
BRUN READIMAGE
```

or, alternatively:

c. BSAVE READIMAGE,
FROM=$2800,SIZE=4096.C

d. BRUN READIMAGE,LOAD=$800

Chapter 3

Programming

3.0 Using File Server Commands within a BASIC Program

Different BASIC commands are used to communicate with the file server, depending on whether Integer or Applesoft BASIC is being used. The differences are due to the fact that CHR$ is not available in Integer BASIC and the INPUT command behaves somewhat differently in the two languages.

3.1 Applesoft BASIC

The following Applesoft program segment sends a file server command to the file server and reads the code and message it sends back. It is assumed that DOS is present and operational and that the network interface card is in slot 6.

```
10 CD$="any Network Command"
```

Sets the string variable CD$ equal to a string consisting of a file server command

```
20 PRINT CHR$(4);"PR#6"
```

CHR$(4) is a ctrl-D. It signifies that the next field is a DOS command. "PR#6" enables the network card to look at all subsequent print statements to see whether they contain a Network command to ship to the file server.

```
30 PRINT CHR$(14),CD$
```

CHR$(14) is a ctrl-N. It signifies that the

next field is a file server command.

```
40 PRINT CHR$(4); "IN#6"
```

CHR$(4) again signifies a DOS command. "IN#6" tells the following INPUT command to take its input from slot 6 rather than from the keyboard.

```
50 INPUT NN,NN$
```

The disk server sends its return code (NN) and message (NN$) to the network card in slot 6. After reading the last character from slot 6, the INPUT command resets the input slot so the next input will come from the keyboard.

Note: The "PR#6" and "IN#6" assume the network card is in slot 6. If the card were actually in slot 7, the commands would be "PR#7" and "IN#7". The exact slot must be specified.

A simple greeting program that uses file server commands with Applesoft BASIC:

```
NEW
10 REM GREETING PROGRAM USING NETWORK COMMAND
20 HOME: VTAB3
30 PRINT CHR$(4);"PR#6"
```

CHR$(4) is a CTRL-D. It signifies that the next field is a DOS command. "PR#6" enables the network card to look at all subsequent print statements to see whether they contain file server commands.

```
40 PRINT "VIRTUAL DISK EXAMPLE"
50 PRINT "CREATED today's date BY your name"
60 PRINT CHR$(14) "SHOW DATE"
```

CHR$(14) is a CTRL-N. It signifies that the next

that the next field is a file server command. Note that the CTRL-N takes the place of the @ preceding a file server command when it occurs within a program.

```
70 GOSUB 500
```

500 contains a subroutine to input and display the return code and message

```
80 PRINT CHR$(4); "CATALOG"
90 END

500 REM INPUT AND DISPLAY RETURN CODE AND MESSAGE
510 PRINT CHR$(4); "IN#6"
```

CHR$(4) again signifies INPUT command to take input from slot 6 rather than from the keyboard.

```
520  INPUT NN, NN$
```

The file server sends a return code (NN) and mesage (NN$) to the network card in slot 6. These are read by the INPUT statement. After reading the last character from slot 6, the INPUT command resets the input slot so the next input will come from the keyboard.

```
530 PRINT NN;",";NN$
540 RETURN
```

3.2 Integer BASIC

The Applesoft program at the beginning of the previous section is written differently in Integer Basic. Unlike the Applesoft program, this program below prints an error message if the file server command cannot be executed. It is assumed that DOS is present and operational.

```
10 DIM RET$(50), CD$(120)

20 N$="":REM THERE IS AN INVISIBLE CTRL-N
        BETWEEN THE QUOTES

30 D$="":REM THERE IS AN INVISIBLE CTRL-D
        BETWEEN THE QUOTES

40 CD$="Any file server command"

50 PRINT D$;"PR#6"
```

D$ is a ctrl-D; it signifies that the next field is a DOS command. PR#6 enables the network card to look at all subsequent print statements to see whether they contain file server commands.

```
60 PRINT N$;CD$
```

N$ is a ctrl-N; it tells the network card that the following field is a file server command to be sent to the disk server.

```
70 PRINT D$;"IN#6"
```

D$ again signifies a DOS command. "IN#6" tells the following INPUT command to take its input from slot 6 rather than from the keyboard.

```
80 INPUT RET$
```

The file server sends its return code number and message (separated by a comma) to the network card in slot 6. After reading the last character from slot 6, the INPUT command resets the input slot so next input will come from the keyboard.

```
90 IF RET$#"0,OK" THEN PRINT "ERROR ";RET$
```

This command prints any return code and message

except "0,OK"

3.3 Reading a Station Number From a Program

It may be useful to read the station number (1 to 255) from within a program.

By issuing the command "SHOW STATION" to the fileserver and processing the corresponding response, a program can determine the station address of the microcomputer you are using. The syntax of the response is

```
STATION IS $nn
```

Follow the instructions from the previous sections to issue file server commands from within programs.

Chapter 4

Additional Utilities

SETPROFILE is used by the system manager to create a file of autoboot defaults for an individual station. Once this file has been created, the defaults will be used by the file server BOOT program every time the station is powered on. The user can specify to the System Manager which volume is to be mounted automatically and booted from at power on, and the access rights to be assigned to that volume. Any HELLO program on the volume will then run.

DISK COPY allows the user to copy the contents of an entire real or virtual disk to another real or virtual disk, using any combination of Apple drives and network virtual drives. (Such virtual disks must be exactly 128K in size).

FIDMORE allows a user to load and modify a copy of Apple DOS 3.3 FID (a file transfer utility) to accept drive numbers from 1 to 9 instead of just 1 and 2. FIDMORE is a binary (machine language) program.

The three utilities GENERATOR, EDITOR, and RETRIEVER, used to create text files containing network commands, are discussed in Section 2.7.

4.1 SETPROFILE

The BOOT program supports station dependent profiles (virtual volumes containing boot defaults for your station). Each station can have its own autoboot defaults, which are invoked when the station is powered on. If a profile record is not present for a particular station, a systemwide default profile is used. The system manager sets these defaults using SETPROFILE.

The profile records are file server binary (T=B) files, each 2 blocks long (size=2.B). The record /MAIN/SYSTEM/PROFILE/$nn is used when station $nn is powered on. If a station's profile is not present in /MAIN/SYSTEM/PROFILE, the profile for a default (/MAIN/SYSTEM/PROFILE/$00) is used by BOOT. Therefore, /MAIN/SYSTEM/PROFILE/$00 must be present. The default ($00) profile distributed with the system can also be changed using SETPROFILE.

4.1.1 How To Use SETPROFILE

To use SETPROFILE, boot the virtual volume /MAIN/SYSTEM/SETPROFILE. The program will be executed automatically.

SETPROFILE will display the number of the station being used and will ask for the number of the station for which a profile is to be set.

When modifying a profile, a password may be specified for the profile by entering a colon (:) and the password after the $nn station number.

The program then prompts for each allowed

default:

```
Boot volume: /MAIN/?
Boot automatically: NO?
Pascal access rights: RW,UPD?
DOS access rights: RW,UPD?
Library volume: /MAIN/LIB/APPLE2/UCSD/PASCAL?
Station name: Virginia?
```

If no profile has already been set for the indicated station, the prompts display the defaults set in the system $00 profile (shown in the example above), which is used if no individual station profile exists. Otherwise, the prompts list those defaults currently set in the station.

When configuring a station's profile for a DOS boot volume, ignore the lines labeled:

```
Pascal access rights
Library volume
```

Supplying a station name is optional. Such information is very useful if the station for which the profile record is being configured is a server station (i.e., file server or print server).

When the defaults have been entered, the program displays a summary and asks

```
OK to update profile (Y/N)?
```

Enter Y to accept the defaults, or N to re-enter the defaults.

When you choose to exit the SETPROFILE utility program, the network logo will appear on the screen. Power your machine off and back on to get the "Volume to Boot?" prompt.

4.2 DISK COPY

DISK COPY allows the user to copy the contents of an entire real or virtual disk to another real or virtual disk, using any combination of Apple drives and Network virtual volumes. DISK COPY cannot be used to copy CREATEd disks. DISK COPY relies on Read/Write Track Sector (RWTS), the Disk Operating System's routine responsible for reading and writing individual sectors and for formating all 35 tracks of a new disk.

DISK COPY is a 6502 machine code program.

4.2.1 How to Run DISK COPY

Ask the system manager for the name of a volume on which DISK COPY resides. Boot the volume or, if some other DOS volume has been booted, mount the volume on an available virtual drive.

Do not attempt to copy between disks of different sizes.

If you intend to use a single Apple drive it is suggested that you next type:

```
MAXFILES 1
```

in order to increase available RAM and speed of execution.

If you are going to use any Nestar virtual disks in the copy procedure (including the disk on which DISK COPY resides), ensure that they are currently mounted on the desired drives.

Note that the file server supports virtual drive numbers 1 through 255, so that you may have more

than just drives 1 and 2 available for multiple disk copies.

Also, be sure that virtual volumes are mounted RW if you want to copy to them.

You can now enter

```
BRUN DISK COPY [,Sn,Dd]
```

After the welcome banner, the program prompts for the slot and drive numbers of the real or virtual original and copy volumes.

```
DISK COPY X.X    DOS/16
<-- DOS (vtoc) or Pascal (no vtoc)

ORIGINAL              COPY
(REAL)              (VIRTUAL)
<-- REAL=Apple, VIRTUAL=NFS

SLOT=4                SLOT=6
<-- numbers entered by user

DRIVE=1               DRIVE=99
VOLUME=1              VOLUME=123

READING

<-- reading or writing

TRACK=11  SECTOR=0F
<-- track and sector currently
    being copied (in hex)

PRESS RETURN TO CONTINUE
<-- waiting for user to insert
    original or copy disk
```

4.3 FIDMORE

FIDMORE allows a user to load and modify a copy of Apple DOS 3.3 FID (a file transfer utility) to accept drive numbers from 1 to 9 instead of just 1 and 2. FIDMORE is a binary (machine language) program.

4.3.1 How to Run FIDMORE

Ask the system manager for the name of a DOS volume upon which FIDMORE resides (probably the shared libray volume /MAIN/LIB/APPLE2/DOS). Boot the volume and enter PR#6 to enable the network card in slot 6. Mount a volume containing FID (which is not a Nestar distributed program) and BRUN FIDMORE.

After a welcome banner, the prompt will appear:

```
INPUT DRIVE NUMBER OF MOUNTED VOLUME CONTAINING
FID VERSION M:
```

Enter the drive number of the mounted volume containing FID. The message

```
LOADING FID
```

will appear, followed by

```
FID WILL NOW ACCEPT DRIVE NUMBERS 1 to 255
```

After a brief pause, FID will come up. The version now in RAM will have been modified to accept drives 1 through 9. FID on the mounted disk remains unchanged.

Appendix A

Error and Information Messages

When the file server receives a file server command from a user station, it executes the command, if possible, and, in any case, returns two variables:

- return code - an integer between 0 and 200
- return message, such as OK, ILLEGAL COMMAND, or TYPE=APPLE // DOS

Messages are of several types:

- information, such as OK, IN USE, TYPE=BINARY
- user errors such as syntax errors or attempting to access a virtual volume without the necessary access rights
- system errors such as memory full or disk full; these should be reported to the system manager.

In this list, messages are classified as:

general syntax

pertaining to a specific command

system errors

file system errors.

General Syntax (0-19)

0,OK

(Not an error.) The command was syntactically correct and was executed without error.

1,ILLEGAL COMMAND

The command verb cannot be recognized, or cannot be executed from this user station operating system environment. The command verb is the first word of the command, and must be separated from the rest of the command with one or more blanks.

2,NAME PARAMETER REQUIRED

The first parameter of the command must be a non-null pathname.

3,UNRECOGNIZED PARAMETER

A keyword parameter was not recognized. Check the spelling carefully, and make sure that it is properly separated from the previous and following items with commas.

4,ILLEGAL DRIVE NUMBER

A drive number must be specified with "D" followed by an integer in the range 1 to 255. Example: "D4".

5,ILLEGAL STATION NUMBER

A station number must be specified as a two-digit hexadecimal number preceeded with $, in the range $1 to $FE. Example: "$2D".

7,PARAMETER APPEARS TWICE

A keyword parameter appears more than once in a single command. There can only be one occurence of a keyword parameter, even if multiple occurences have the same value.

8,ILLEGAL TYPE PARAMETER

The "T=" value is not one of the legal volume types. It must be one of the following:

P (Apple // Pascal)	B (binary)
D (Apple // DOS),	S (system)
C (Apple // CP/M)	Y (directory)
3 (Apple /// SOS)	T (text)
U (IBM PC p-SYSTEM PASCAL)	I (IBM PC DOS)

Example: T=P

9,COMMAND TOO LONG

A file server command must be no longer than 80 characters. In unusual cases where this is a problem, long commands can often be shortened by using a default directory, or by assigning access rights in a subsequent PROTECT command.

10,PARAMETER TOO LONG

The new name given as the second parameter of the RENAME command must be no more than 15 characters long. Remember that RENAME changes only the last name in the sequence of names which constitute a pathname. If you wish to change the name of a directory, give the pathname of the directory itself as the first parameter of RENAME.

11,ILLEGAL PROTECTION PARAMETER

The value of the PUBACC, GRPACC, or PRVACC protection item is incorrect. The value must be some combination of the letters RWECD (read, write, erase, create, and delete), or may be null. For example, "GRPACC=RW" or "PUBACC=".

12,NO STATION CMD; USE $NN PREFIX

The "station" command has been removed. Use "$nn <command>" where nn is the station number on whose behalf you wish to issue the command (file server console only).

13,ILLEGAL NUMBER (NEGATIVE OR TOO BIG)

The number was less than 0 or bigger than 32767. Number may be specified in decimal, or in hexadecimal preceeded by $. Examples: "42", "$1A3".

19,HELP FILE NOT FOUND

There is no HELP file for the word used as an operand of the HELP command. Use the HELP command with any parameters to see what the possible HELP parameters are. (The system manager has the option of removing all HELP files to save space.)

Create (20-25)

20,TYPE PARAMETER REQUIRED (T=)

The type parameter was missing. Example: "T=D".

21,SIZE OUT OF RANGE (<0B OR >32752B)

The value of the SIZE parameter was negative or greater than 32752 blocks. Each block is 512 bytes. Other units that can be specified are C (characters), S (256-byte sectors), and K (1024 bytes). If the units are omitted, B (512-byte blocks) is assumed. Examples: "SIZE=280", "SIZE=2000S".

23,SIZE PARAMETER REQUIRED WITH T=B, =T

The SIZE parameter must be specified to create a binary volume. The size may be an overestimate of the size of the data to be BSAVEd into the volume, but it must not be less.

24,SIZE OUT OF RANGE (<1C OR >48K)

The limits on the size of a binary (T=B) file are between 1C (one byte) and 48K (49152 bytes) regardless of the units used in the specification.

Delete (25-29)

29,CURRENTLY MOUNTED OR DEFAULT DIR

You cannot delete a volume which is currently mounted by any station, or which is the default directory (see the SET DIR command) of any station.

Mount (30-34)

30,DRIVE REQUIRED

You must specify what drive the volume is to be mounted on. Example: "D4".

31,IN USE

The volume you asked to mount is in use by another station. You are therefore denied exclusive use of that volume.

32,IN EXC USE

The volume you asked to mount is in exclusive use by another station. You are therefore denied any use of the volume.

34,RW NOT ALLOWED ON DIRECTORIES

You are not allowed to mount a directory (T=Y) volume for write access.

Unmount (35-39)

35,DRIVE OR "ALL" REQUIRED

You must specify a drive number or "ALL" on the UNMOUNT command. Examples: "UNMOUNT D1", "UNMOUNT ALL".

36,NOT CURRENTLY MOUNTED

The drive number specified in the UNMOUNT command does not have any virtual volume mounted on it by the file server.

Lock (40-44)

40,ILLEGAL LOCK NAME

A lock name must be 1 to 15 characters long.

41,IN USE

The lock name specified is in use by another station. You are therefore denied exclusive use of the lock.

42,IN EXC USE

The lock name specified is in exclusive use by another station. You are therefore denied any use of the lock.

Unlock (45-49)

45,NOT HELD

The lock name specified is not currently held by your station.

BSAVE, BRUN, BLOAD (50-55)

50,CMD NOT ALLOWED FROM THIS STATION

The BSAVE/BLOAD/BRUN commands may only be executed from an Apple // user station.

51,NOT BINARY

The pathname indentifies a volume which is not binary (T=B). Only binary volumes can be used for BSAVE, BLOAD, or BRUN commands.

52,NOT PREVIOUSLY SAVED

The binary volume was created but has never had any data written into it using the BSAVE command. It can not not be used with BLOAD or BRUN until it has been BSAVEd into.

53,FROM PARAMETER REQUIRED

For BSAVE, the FROM parameter, which specifies the memory area from which data is to be taken, must be provided. Example: "FROM=$1000".

54,SIZE PARAMETER REQUIRED

For BSAVE, you must provide the SIZE parameter on the BSAVE command to indicate how much data is to be saved. This value must be less than or equal to the size of the volume specified on the original CREATE command. Example: "SIZE=256.C".

55,FILE WAS THERE; REP NOT SPECIFIED

Data has already been saved in the binary volume. To replace that data, you must specify "REPLACE" as a parameter in the BSAVE command.

Set/List (56-58)

57,FILE IS NOT A DIRECTORY

The pathname given in a SET DIR command identifies a volume which is not a directory (T=Y).

58,USE: SET TIME [YYMMDD][,HH[MM]]

If the date parameter was supplied, it was incomplete or contained invalid fields. If the time of day parameter was supplied, it contained invalid fields.

Show (59-69)

59,TYPE=SYSTEM

(Not an error.) The volume mounted on the drive for which you did a "SHOW TYPE" is a system volume (T=S).

60,SHOW OPTION NOT RECOGNIZED

The operand of a "SHOW" command was not recognized. Check the spelling and make sure there are no extraneous items in the command.

61,DRIVE REQUIRED

For the "SHOW TYPE" command you must specify the drive number on which the volume is mounted. Example: "SHOW TYPE D12".

62,NOT CURRENTLY MOUNTED

The drive number specified has no volume mounted on it by the file server.

63,TYPE=APPLE // CP/M

(Not an error.) The volume mounted on the drive for which you did a "SHOW TYPE" is an Apple // CP/M volume. (T=C).

64,NO DEFAULT DIRECTORY SET

(Not necessarily an error.) This response to the "SHOW DIR" command indicates that there is no default directory established for this station by the file server.

65,TYPE=APPLE // PASCAL

(Not an error.) The volume mounted on the drive for which you did a "SHOW TYPE" is an Apple // Pascal volume (T=P).

66,TYPE=APPLE // DOS

(Not an error.) The volume mounted on the drive for which you did a "SHOW TYPE" is an Apple // DOS volume (T=D).

67,TYPE=BINARY

(Not an error.) The volume mounted on the drive for which you did a "SHOW TYPE" is a binary volume (T=B).

68,TYPE=DIRECTORY

(Not an error.) The volume mounted on the drive for which you did a "SHOW TYPE" is a directory (T=Y).

69,UNKNOWN TYPE

The volume mounted on the drive for which you did a "SHOW TYPE" is not a standard volume type.

70,yymmddhhmmssw

(Not an error.) Returns date and time information in encoded form. For example, the FS command TIMESTAMP returns the current year, month, day, hour, minute, second, and day of the week in the form 70,8104301859381 (that is, 6:59 P.M., Sunday, April 30, 1981).

71,--t--tt--t-t----

(Not an error.) Returns types of virtual disks currently mounted on drives 1-16 (Y,P,D,B,C,3,U,I,T). The system responds to the FS command SHOW TYPES using this format.

72,TODAY IS DD-MON-YYYY HH:MM:SS

(Not an error.) This is the response to the SHOW TIME command.

73,TYPE=TEXT

(Not an error.) The volume mounted on the drive for which you did the SHOW TYPE is a text volume (T=T).

74,TYPE=Apple /// SOS

(Not an error.) The volume mounted on the drive for which you did the SHOW TYPE is an Apple /// SOS volume (T=3).

75,TYPE=IBM PC DOS

(Not an error.) The volume mounted on the drive for which you did the SHOW TYPE is an IBM PC DOS volume (T=I).

76,TYPE=IBM PC P-SYSTEM PASCAL

(Not an error.) The volume mounted on the drive for which you did a "SHOW TYPE" is an IBM PC p-SYSTEM Pascal volume (T=U).

System Errors (94-99)

94,NOT CONNECTED

This is a network error that indicates that the connection to another station has been terminated prematurely.

96,NO NETWORK CARD IN SLOT

The slot number specified does not have a Nestar network interface card installed, or the card is defective.

97,FILE SERVER MEMORY FULL

The file server has no space left for tables needed to complete your request. This does NOT refer to memory space in the user station.

99,ABORTED

The network abort key <CTRL><SHIFT>-N was pressed while a network transaction was queued up or in progress. The transaction was aborted.

File System Errors (100-140)

101,END OF FILE OR RECORD OUT OF RANGE

An attempt was made to read a block or sector of a volume which is outside the legal range for that volume.

102,FILE NOT FOUND

The volume specified by the pathname was not found, or one of the directories in the pathname was not found. Check the spelling of each filename in the pathname. If the name does not begin with a slash, check that the current default directory is the correct one.

103,BAD DELIMITER IN PATHNAME

A delimiter other than "/" or ":" was found in a pathname. Make sure that you have not omitted a comma separating the pathname from other operands in the command.

104,FILE NAME OR PASSWORD TOO BIG

A single filename (the part between slashes in a pathname), or password (the part after a colon in a pathname) is longer than the maximum of 15 characters.

105,NO ACCESS FOR READ TO DIRECTORY

You have been denied read access to a directory which is part of the specified pathname.

106,NON DIRECTORY FOUND IN PATHNAME

One of the names in the pathname (other than the last name) identifies a volume which is not a directory (T=Y). Only the last thing in a pathname can be other than a directory.

107,END OF PATHNAME IS A DIRECTORY

The pathname specifies a directory (T=Y) in a context where a non-directory volume is required.

109,ROOT DIR NOT SPECIFIED NO DEFAULT

The specified pathname does not begin with a slash, and there is no default directory recorded for this station by the file server. If you wish to completely specify the pathname, begin with a slash and the name or number of the disk unit. If you wish to use the current default directory, do not begin the pathname with a slash. You may use the "SHOW DIR" command to find out the current default directory, and the "SET DIR" command to establish one.

110,NO ACCESS FOR READ

You have been denied read access to the volume specified by the pathname, or to a directory along the path.

111,NO ACCESS FOR WRITE

You have been denied write access to the volume specified by the pathname.

112,NO ACCESS FOR APPEND (not yet implemented)

You have been denied append access to the volume specified by the pathname.

113,NO ACCESS FOR ERASE

You have been denied erase access to the volume specified by the pathname. Erase access is necessary to delete the file.

114,NO ACCESS FOR CREATE

You have been denied access to create or rename an entry in one of the directories specified in the pathname.

115,NO ACCESS FOR DELETE

You have been denied access to delete or rename an entry in one of the directories specified in the pathname.

116,CANT DELETE NON-EMPTY DIRECTORY

The pathname specified in a DELETE command identifies a directory, and that directory is not empty, that is, it still points to other volumes. Only empty directories can be deleted by a single file server DELETE command.

117,FILE SERVER MEMORY FULL

The file server has no space left for tables needed to complete your request. This does NOT refer to memory space in the user station.

118,DISK FULL

There is not enough contiguous space left on the disk unit to create the volume. The LIST command

when used to display the root directory will give information about the space available on a disk unit. Example: "LIST /MAIN".

119,DIRECTORY FULL

There is not enough space left to create more entries in the directory, and the directory cannot be expanded. Directories are automatically expanded as necesary to accomodate new entries.

120,INTERNAL ERROR

An internal error has been detected by the file server. Additional information is written on the console of the file server. That information and the circumstances surrounding the error should be transmitted to your support organization for diagnosis. The file server should be restarted as soon as practical.

121,UNINITIALIZED DISK

The disk unit has not been initialized. All disks must be formatted and initialized using the file server FORMAT Disk utility; see the File Server Installation and Operation Manual.

122,WRONG SOFTWARE VERSION

The disk format is not compatible with version of the file server currently running. (This error cannot occur with any file servers so far released.)

123,FILE ALREADY EXISTS

The file you have asked to create, or the new name used in a RENAME command, already exists in the directory.

124,DISK I/O ERROR, SUBCODES x,y

A hardware I/O error was detected. The details of the error are described in the subcodes; for more information see the table of I/O errors in Appendix A of the File Server Installation and Operation Manual.

125,VERIFY FAILED (BAD MEMORY)

All disk write operations are verified by reading back the recorded data and comparing it to the data stored in memory. This error indicates that the disk data did not compare correctly. It sometimes indicates a memory error in the file server, and not a disk error.

128,BAD UNIT NUMBER IN PATHNAME

The first item after the initial slash in a pathname is a number, but it is non in the legal range for unit numbers (1 to 4).

130,NEED PRIVATE PASSWORD FOR PROTECT

In order to execute the PROTECT command for any volume, the private password must be specified in the pathname or as a default private password. The password must be specified whenvever the volume has a non-null private password, regardless of the access rights

currently assigned to the volume.

131,UNIT NAME NOT FOUND

The name after the initial slash of a pathname is not the name of a disk unit currently recognized by the file server. You can also use the unit number in place of a name, if you wish.

133,DISK NOT READY

The disk unit specified is not ready. The one minute warmup period after initial power up may not have elapsed. It may also indicate a controller or disk drive failure.

Appendix B

The BOOT Program

B.1 Description

The BOOT program is a standard part of the file server, and provides a means for users to load DOS 3.3. It is automatically loaded and run when an Apple with the autostart ROM and a Nestar network interface card is powered up. If an Apple disk controller is in a higher slot than the network card, however, the Apple will boot from the local disk.

The BOOT program is a machine language program that executes in the memory area $800 to $3FFF. It has been provided as a BSAVEd virtual network file under the subtree /MAIN/BOOTS. This section describes the action of BOOT as distributed by Nestar. You should consult your System Manager to see if any local modifications have been made to the version on your file server.

BOOT is brought into a user station's memory and executed whenever the Apple Autostart ROM (present on Apple // Plus, Apple // e, Apple // with Language Card or Integer machines that have upgraded by installing the ROM) recognizes a power on condition. On machines which do not have the Autostart ROM, you must explicitly enter

CnOOG (n is the slot in which a Nestar network interface card is installed)

in response to the Apple // Monitor prompt ("*"). Entering PR#6 or 6<CTRL>P will NOT cause the BOOT program to be run. The Network interface card differs from Apple Disk //

controllers in this respect; an Apple disk controller will boot whenever any character is printed to the slot they are plugged into.

When a user station is powered up, BOOT will automatically unmount all disks in use by that station, free any locks held, and reset any default directory or passwords. This also happens when the OFF file server command is issued. It is strongly recommended that this be done by every user who is finished using an Apple // on the system. This gives a clear indication to others that the station is not in use, and also frees up resources other stations may need.

B.2 Operation of BOOT

BOOT will display on the Apple screen the Nestar logo, followed by:

```
PLAN 4000 BOOT X.X
STATION ADDRESS $NN
SLOT N   SERVER $TT

VOLUME TO BOOT: /MAIN/
```

where NN is your station address (in hex, from 00 to FE), and N and $TT are the SLOT and Server numbers that communications are directed to. You should place a sticker with the station number on each user station, and you should observe that the number shown on the screen agrees. If not, please consult your System Manager.

NOTE: The boot program recognizes a large collection of Apple compatible serial or communications cards installed in slot 3, and directs its I/O to them automatically. Whenever I/O is being directed to the slot 3 device, the

message

(I/O BEING DIRECTED TO SLOT 3 DEVICE)

is displayed on the standard Apple video output as an indication to the user.

A user may disable the automatic recognition of a slot 3 terminal like card by pressing the space bar down between the time that the BOOT program is downloading and begins running. If this is done, the standard Apple video output and keyboard input will be used regardless of a card in slot 3.

The user may now enter the volume name of a virtual DOS volume he wishes to load his system from. This name may be up to 40 characters long, including the prefix. A default prefix is displayed on the screen (shown above as /MAIN). The user may backspace and edit this prefix exactly as if he had typed it himself, or type <CTRL>-X to delete the entire line.

You should note that use of the file server does not in any way modify the minimum features necessary to load and execute Pascal. Any errors you would get from these standard systems will still be reflected in the system. For example, you cannot boot a Pascal system into a machine which does not have 64K RAM.

After you have entered the name of the volume you wish to boot, the BOOT program attempts to locate that volume, and issues a MOUNT command for drive 1. If successful, the type of the disk is checked. The volume is mounted read/write, update unless the individual station profile or system default profile files have been changed for different access and usage (discussed below in Section B.2.3).

B.2.1 Booting DOS Virtual Diskettes

For a DOS disk, the system begins the bootstrap process in a fashion parallel to the action of booting a physical minidisk. The DOS is loaded, relocated if a master disk, and then started. The HELLO program, if any, will be run as is standard.

As a convenience to the DOS user, BOOT checks to see if a Language Card is present, and makes an attempt to load the Language Card with whichever version of BASIC is not present in ROM. This is done by loading the contents of either

/MAIN/BOOTS/APPLE2/FPBAS

or

/MAIN/BOOTS/APPLE2/INTBAS.

B.2.2 Autobooting at the Individual Station

The BOOT program can be tailored to the needs of individual stations. Using the utility SETPROFILE, the System Manager can install a profile for any station. The profile will specify which volume is to be booted for the station, whether the boot is to be automatic, and the access rights. Individual users can install station profiles themselves using SETPROFILE if they have the access rights necessary to do so.

If no profile has been set for a station , BOOT will use the defaults set by the system manager in the system $00 profile.

If <esc> is pressed on the Apple keyboard while the BOOT program is downloading, the station dependent profile is ignored and the default profile is used. This is useful if a station is set up to autoboot a particular volume but you wish to interrupt the autoboot process and boot a different volume.

Appendix C

Quick Reference List - File Server Commands

BLOAD pathname [,LOAD=number]

- loads binary virtual disk previously saved with BSAVE
- loads at LOAD address in BLOAD, if present; if not, loads at LOAD address in corresponding BSAVE, if present; otherwise, loads at FROM address in BSAVE

BRUN pathname [,LOAD=number]

- BLOADS a binary virtual disk, then executes it starting at first address loaded

BSAVE pathname,FROM=number,size [,LOAD=number] [,REPLACE]

- saves core image on disk of specified size, starting at FROM address

CREATE pathname,type [,size][,sectors] [,protection][,drive][,usage]

- creates and optionally mounts a new virtual disk

DELETE pathname

- deletes a virtual disk from system

HELP [command name] or ? [command name]

- displays list of commands or syntax of specified command

LIST [pathname] [,VERBOSE] [,NESTED]

- lists entries in default or specified directory

LOCK lockname [,usage]

- locks "lockname" for exclusive (EXC) or shared (SHR) use
- Default: EXC

MOUNT pathname, drive [,usage]

- establishes correspondence between a virtual disk and drive number

OFF

- initializes user station and downloads BOOT software

PROTECT [pathname] [protection]

- modifies passwords or access rights for a virtual disk or directory

RENAME oldpathname, newname

- renames specified FS file

SET DIR pathname

- sets default directory

SET [GRPPW=password] [PRVPW=password]

- sets default group or private password

SHOW DATE

- displays date as MM/DD/YY

SHOW INFO

- displays information about a virtual volume or directory

SHOW DIR

- displays name of current default directory

SHOW LOCK [lockname]

- lists all stations using specified lockname

SHOW [ALL] LOCKS

- displays all locks set at own station or held in file server

SHOW [ALL] MOUNTS [pathname]

- gives information on virtual disks mounted on the file server

SHOW PROTECTION [pathname]

- displays group, private and public access rights for virtual disk or directory addressed by pathname

SHOW STATION

- displays own station number

SHOW TIME

- returns current date and time

SHOW TYPE Dd

- displays type of virtual disk mounted on drive d

SHOW TYPES

- displays types of virtual disks mounted on drives 1-16

SHOW VOLS

- displays names of system disk units currently operational

TIMESTAMP

- returns encoded form of the current date and time

UNLOCK lockname or UNLOCK ALL

- releases locked usage on a lockname or on all locknames currently held

UNMOUNT Dd or UNMOUNT ALL

- cancels previous mount(s)

Parameters

access rights: set of letters from RWECD (read, write, erase, create, and delete)

drive: Dd, where d=number between 1 and 255

filepath: name[:password] [/filepath]

lockname: name of lock (same restrictions as name)

name: name of disk unit, directory, or virtual disk. (1-15 characters; no commas, control characters, slashes, colons, returns or unprintable characters; imbedded blanks ok; first character any ok character)

number: if decimal: between -32768 and 32767, inclusive if hex: between $0 and $FFFF, inclusive

password: a secret word used to gain access to protected volumes. Same restrictions as name, except control characters allowed.

pathname: /unitname/filepath or filepath (80 characters max.) An initial slash indicates first field is a unit name; no initial slash indicates current default directory is to be prefixed to pathname.

protection: protect item [,protection]

protect item:

```
,GRPPW=password
,PRVPW=password
,PUBACC=access rights  (Default: R)
,GRPACC=access rights  (Default: PUBACC)
,PRVACC=access rights  (Default: varies)
```

size: SIZE=number [.size-unit]

```
size-unit:
   C:  character----(1 byte)
   S:  sector-----(256 bytes)
   B:  block------(512 bytes)
   blank: block--(512 bytes)
   K:  ----------(1024 bytes)

type:
   T=B (binary)          T=P (Apple // Pascal)
   T=C (Apple // CP/M)   T=S (system)
   T=D (Apple // DOS)    T=T (text)
   T=I (IBM PC DOS)      T=3 (Apple /// SOS)
   T=Y (directory)
   T=U (IBM PC p-System Pascal)

unitname: 1, 2, 3 or 4 [:password] or name
   [:password]

usage: EXC(exclusive), SHR(shared), or
   UPD(update) RO(Read/Only) or RW(Read/Write)
```

Local NET Commands

```
SHOW FS
SET FS [SLOT n] [STN $nn]
```

Other NET Inputs

```
drive: 1-255
slot: default virtual slot
```

A

B

C

D

I

L

M

N

O

P

R

S

T

U

V

Other

Appendix D

Using the Print Server Subsystem in the Apple /// SOS Environment

D.0 Introduction

This appendix contains special instructions for operation of the Print Server Subsystem in the Apple /// Pascal environment. It contains instructions and information about the following:

1. Section D.1 explains how to invoke the print request form from the Apple /// SOS environment.

2. Section D.2 explains how to provide the proper syntax for file names.

3. Section D.3 explains how to preset defaults for the print request form.

4. Section D.4 explains how to use the server request menu command.

5. Section D.5 explains how to print BUSINESS BASIC files.

6. Section D.6 explains how to print files from a local printer.

These instructions are specific to Apple /// Pascal and are meant to be read in conjunction with the more general instructions provided in Chapters 1 and 2 of this manual.

D.1 Invoking the Print Request Form

To invoke the print request form, type "X" to select the "Execute" option from the main Pascal command line. Then specify that /LIB/REQUEST is to be executed.

The following menu will appear:

```
Server Request Menu Version ---

   Server Commands . . . .
   P - PRINT server request
   F - FILE server request
   S - Display STATUS of previous requests
   D - Display STATUS of print queue
   K - KILL a previous print request
   Q - QUIT (exit this program)
   H - HELP (display tutorial)
   ? - HELP (display tutorial)
```

As you can see, there are a number of options in this menu, one of which is PRINT. In D.4 we discuss the other commands listed in this menu in more detail. In fact, since you know that you want to invoke the print request form whenever you want to print a file, you can specify that you want to execute /LIB/PRINT instead of "REQUEST". If you do so, the system will bypass this menu and take you straight to the print request form. Try this now.

Type Q to quit the Server Command Menu.

Now type "X" to select the execute function from the main pascal command line.

Now type /LIB/PRINT

Now you should have successfully invoked the print request form. Turn to Chapter 2 for

detailed instructions on filling out this form and initiating print requests. Also read D.3 below to learn how to preset defaults for the printing options in this form.

If the PRINT program is not on your shared library volume, you should contact your system manager as your print system software has not been installed.

D.2 Proper Syntax for File Names

When you enter file names into the request form you can enter "XYZ.TEXT" or "XYZ".

Either name will work because PASCAL will search for XYZ with or without the extension. Do not try to print any file other than a text file.

D.3 Presetting Defaults for the Print Request Form

Chapter 2 of this manual shows the print request form. You will note that when you invoke your form that there are several blanks for you to use to specify printing options. You may decide that many of the option specifications need not change from printing to printing. For instance, everything you print may be from a certain volume, or you may always use a certain printer and setup combination, or you may always want two copies of everything.

If you would prefer not to specify each of the options every time you print a file, you can preset defaults for those options which you do not want or need to respecify very frequently.

There are two files called Defaults.Text; one is

configured by the system manager and is located on the shared library volume, and the other is configured by you and is to be located on your boot volume.

The Defaults.Text file on your boot volume can be used by you to specify defaults for the printing options. The defaults you specify in this file will be read into the print request form each time it is invoked.

When the PRINT program is executed, either directly from the command line or from the server command menu, the option specifications from the Defaults.Text file on the user's boot volume are read into the appropriate request form option blanks. If the Defaults.Text file does not contain specifications for all possible option blanks, the Defaults.Text file on the shared library volume will be read in to fill in blanks that are not specified by the user. The users Defaults.Text file takes precedence over the shared library Defaults.Text file. This means that if both files specify an option default for the same option, the user's specification prevails (is the one that appears in the Request Form when it is invoked.)

Having the default values placed in the form automatically, saves time. However, if one or more of these preset defaults are not right for a particular job, you can change it in the print request form. Just use the <Return> key to move from line to line. To change the contents of a particular line in the form, move the cursor to that line and start typing your new value. The previous contents of that line disappear as soon as you enter the first character. When you have finished filling in or approving all of the option specifications, follow the instructions at the bottom of the form for exiting the form.

You will then be prompted to issue your request.

In order to preset defaults for print request options, use the Pascal editor to create a text file called Defaults.Text.

The following shows the possible options for which you can set defaults and the proper syntax to use for doing so. If you do not wish to set a default value for an option, leave it out of your Defaults.Text file. The system manager's Default.Text file can contain a value for that default, or you can fill in its value each time you initiate a print request.

To Set	Enter in Defaults.Text
User	User: User ID
Name	Name: User Name
Network Pathname	Print: Pathname <Pathname>
File Server	Print: FS <Station name or address>
Page Title	Print: Title <"Title">
Identification	Print: Identification <"Identification">
Print Server	Print: Server <stn name or address>
Print Model	Print: Printer <printer name>
Eject Value	Print: Eject <value>
Setup	Print: Setup <name>
Priority	Print: Priority <Priority Value>
Copies	Print: Copies <number>

Below is an extended explanation of each of the parameters in the above list. You can learn the purpose of each parameter and decide what your default, if any, should be:

1. "User" and "Name" are file server global system parameters and are not restricted to the print request program. They must be entered by beginning lines with "User:" and "Name:". The print request program will ignore any lines in Defaults.Text that do not begin with "Print:", "User:", or "Name:", since in the PLAN 4000 system, other products may also use the Defaults.Text file to preset defaults.

   "User" may be printed out as a logo on the header page of your job (if the system manager formats the header pages to do so), and is usually a short ID, such as your initials. "Name" may also be printed out on the header page and is usually a longer identification, such as your full name.

2. Full Network pathname or, if a default directory is set, a partial pathname. For example, if /MAIN/USERS is set as the default directory

   ```
   SMITH/A
   ```

   can be specified in Defaults.Text and the request program will understand that /MAIN/USERS/SMITH/A is meant.

3. File server: station address in decimal, or in hexadecimal preceded by "$". Ask system manager if a file server name has been assigned.

4. Page Title and Identification options must be enclosed in quotes. For no title, include in Defaults.Text:

   ```
   Print: Title""
   ```

5. Copies must be between 1 and 999.

6. Print server: station address in decimal, or in hexadecimal preceded by "$". Ask system manager for print server name if one has been assigned.

7. Eject (page length) must be between 0 and 999.

8. Priority must be L, S, H, or O (Low, Standard, High, or Overnight).

Multiple commands can be entered on the same line.

Below is a sample Defaults.Text file such as you might create:

```
User: Smith
Name: John Smith's Fiscal Account
Print: Pathname /MAIN/USERS/SMITH/TEXT
Print: FS $FD
Print: Copies 3 Eject 55
Print: Server FISCAL
Print: Printer Lineprinter Priority Low
Print: Setup Ledger
Print: Title "Smith's Accounts"
```

If a Defaults.Text file like the sample above were placed on your boot volume, its contents would be read by the request program when it is invoked and the following form with defaults specified would appear:

```
 Print Request   Version X.X

-->   File(s) to print?

          FS Pathname: /MAIN/USERS/SMITH/TEXT

          File server: $FD

           Page title: Smith's Accounts

         Identification:

       Number of Copies: 3
          Print Server: FISCAL
         Printer Model: LINEPRINTER
       Eject (0=none): 55
                Setup: LEDGER
    Priority (L/S/H/O: LOW
```

As we explained above, the request program will also read the Defaults.Text that is located on the shared library volume. This file contains the defaults that have been set by your system manager. Any defaults set in your own Defaults.Text, however, will take precedence over the shared Defaults.Text file. Any default values missing from your file will be supplied, if present, from the shared file.

When your job is printed, a "header" page is printed in front of it, listing information specified by the system manager. This information may include a logo representing your "user" value, the name of the file printed, its FS pathname, and other such information.

D.4 Using the Server Request Menu Commands

This section describes the server request menu in detail. Remember that this is the menu which appears when the REQUEST program is executed.

```
Server Request Menu Version X.X
Server Commands. . .
P - PRINT server request
F - FILE server request
S - Display STATUS of previous requests
D - Display STATUS of print queue
K - KILL a previous print request
Q - QUIT (exit this program)
H - HELP (display tutorial)
? - HELP (display tutorial)
```

As we have seen, entering "P" takes us to a list of printing options and allows us to create and queue print requests. The command letters "K", "D", "S", "F", "Q", "H" and "?" will now be discussed.

"D" - Display STATUS of print queue

Typing "D" when the server command menu is displayed will cause the program to display current information about the print server system and print request queue. First, all print server stations are listed:

```
Active Print Servers
($D0) print FISCAL (busy) Printing #24 for SMITH:
                          Page 7 line 38
($D1) print  2NDFLOOR     Currently idle
($D2) print  R&D          Currently idle
```

Print server station addresses (in hexadecimal), names and status are displayed. If a printer is printing a job via a print server station,

information on the progress of the job is also displayed.

Next, print requests that have not yet been processed by the print servers are listed:

```
New Requests (not yet entered in queue):
  12/01   14:33   PRINT
```

If servers are printing other jobs when new requests are queued, the new requests must wait to be read. They are soon read by active servers, however, and moved to the active queue, which is displayed:

```
Date  Time Qnum User Status  Identification
12/01 11:30  28 DOE  Waiting File LIST on
                             /MAIN/USERS/DOE/B
          Note: Needs THERMAL setup RED

12/01 14:10  30 SMITH Active  File EXAMPLE on
                             /MAIN/USERS/SMITH/A

12/01 12:16  29 JONES Completed File TEST on
                             /MAIN/USERS/JONES/A
```

As shown in this example, date and time of the request's creation are displayed, together with the queue number assigned to the job, and the user's name. If passwords have been set on FS pathnames, they are not displayed. However, their existence is indicated by the presence of a colon following the directory or volume name with the password set.

The display will list as many of the currently queued print requests (active, waiting, and completed) as will fit on the screen. However, waiting requests will be shown at the top of the list, oldest first.

"Active" requests are being printed; "completed" requests have been printed or killed; "waiting" requests have print parameters specified that do not match those currently set by the system manager (such as SETUP type). Such jobs will be held, waiting, until the system manager changes the system parameters to match the request or until the request is killed. (The Kill command ("K") is described below.)

When multiple print servers are present, a job may temporarily be listed as "waiting" because its parameters do not match those set for the first print server that reads it. When the intended server reads it, it will become "active".

For waiting requests, the display will list one of the print parameters that do not match those currently set for the print system, after the word "needs":

Note: Needs THERMAL setup RED

In the sample display above, for example, request number 28 specifies that the job for user "DOE" be printed on a printer named "THERMAL" using the "RED" setup. The current configuration of this print server does not include a printer named "THERMAL" with the "RED" setup. Request 28 must wait until the system manager reconfigures the system, or until another print server with the proper setup reads the queue. If a number of skipped requests have accumulated, recently queued requests may not fit on the screen. If this is the case, use the "D" command described below to check the status of your job.

To freeze a display, hold down the <Ctrl> key and type S. The message

==>suspended<==

will appear at the bottom of the screen. Type <Ctrl>-7 to have the updating resume. (After one hour of updating the display on your screen, the program will automatically enter this suspended mode.)

Note: If your network has multiple file servers that are serviced by one print server station, you should be aware that requests from users with a different default file server than yours will not appear in your queue display. Therefore, your display may show that your request is next in line when, actually, another request from a different file server precedes yours. However, the queue display will show a request from any file server while it is in the act of printing.

"S" - Display STATUS of previous requests

To learn more about specific queued requests than is possible with the "D" command, type "S" when the Server command menu is displayed. A number of options will be displayed

L(ist) D(isplay) H(elp) Q(uit)?

Typing "L" or "D" will cause the prompt

Enter queue number or id?

Entering the queue number for your request will cause the "L" command to display date and time of the request, queue number, user identification, and request status.

Given the user id or queue number of a request, "S" will list:

Your station name or station address
Parameter change needed
Queue date and time
User ID and station address
Job status
Priority
Print Server requested
Print Servers that have skipped the request

Instead of queue number, you may enter:

1. "ALL"
2. "Identification" value
3. Your user name

The "L" and "D" commands will then display information for:

1. All currently queued requests (and as many of the completed requests as your system serves - usually 200), or

2. All requests queued that have the "Identification" you specify somewhere in their "Identification" field.

3. All requests queued under your user name.

Note that the first time you use the "L" and "D" commands to check the status of a request, you will not know the queue number of the request. However, you will know its identification and your user name and can specify the message by using one or the other.

If you have queued more than one print request recently, but are interested in the status of only one, it will be to your advantage to use unique identification (such as the name of the file to be printed) for each job.

"K" - KILL a previous print request

To remove a print request from the print queue before it has been printed, simply press "K" when the Server Command Menu is displayed. You will be asked to provide the queue number of your request, your user name, or other print request information for your job.

The queue number of your job is obtained by using the "L" option that is part of the Kill menu. "L" functions as described in the previous section.

Providing your queue number will cause the print request program to remove that specific request from the request queue. If instead of specifying a single queue number, you tell the request program which user you are, the program will display one at a time the print requests that you currently have queued. Select the one you want removed, and the request program will kill it.

The Kill command creates a kill request. Typically, the print server station will read the request to kill a job while the job is waiting to be done, and the server will remove the original request from the queue.

Requests can be killed only at the user station from which they were made. Requests currently being printed can only be aborted at the print server console by the system manager.

"F" - FILE server request

Connects you to the FS NET command program. Enter FS commands as needed. The commands will be executed and the prompt repeated. Type Q to exit.

"Q" - QUIT (exit program)

Typing "Q" returns you to the Pascal command level.

"?" and "H" - HELP (display tutorial)

Typing "?" or "H" causes the question

Help on what subject?

to be displayed. Enter "STATUS", "DISPLAY", "PRINT", "KILL", "FS", "HELP" or "?" and information on how to use that particular Print Server command will be displayed. Typing "ALL" will cause all the help information to be displayed.

D.5 Printing BASIC Files

In order to have the Print Server print a Business Basic program, you must save the BASIC program as an ASCII text file, and then you must issue a print request for this text file. The process for saving BASIC programs as text files is:

1. Load or type the BASIC program into memory.

2. Type 'EXEC CAPTURE', prepending CAPTURE with the proper pathname if it is not on your prefix volume (e.g., 'EXEC /LIB/CAPTURE' if

it is on the shared libaray volume).

3. If you want to save your whole program and the last line number is less than 32767, go to step 4. Otherwise, type ´2 LIST nn,mm´ where nn is the first line number you want to capture to a disk file and mm is the final line you want to save. All lines between nn and mm will be captured on the disk file.

4. Type ´RUN´. The system will prompt for a SOS file name to save the file under. Follow the usual rules entering the name. The system will then save the file.

A few cautions:

1. Do not ´SAVE´ your program after capturing it. The EXEC adds lines to your program. If you must save it, type ´DEL 1,3´ before saving.

2. You cannot capture line numbers lower than 5 (0 thru 4). These are used by the EXEC. If you have used these numbers you MUST renumber your program if you want those lines printed.

The CAPTURE program is available from the shared SOS library volume (/MAIN/LIB/APPLE3/SOS).

D.6 Printing Files on a Local Printer

To print files on a local printer, make sure the appropriate printer interface is connected to the rear of your Apple ///. The printer driver must be in the SOS.DRIVER file on the boot diskette. If the driver name is .PRINTER, then you can use the Filer to transfer text files to .PRINTER.

Appendix E

Using the Print Server Subsystem in the IBM PC UCSD p-System Environment

E.0 Introduction

This appendix contains special instructions for operation of the Print Server Subsystem in the IBM Personal Computer UCSD p-System environment. It contains instructions and information about the following:

Section E.1 explains how to invoke the print request form from the IBM UCSD p-System environment.

Section E.2 explains how to provide the proper syntax for file names.

Section E.3 explains how to preset defaults for the print request form.

These instructions are specific to the UCSD p-System and are meant to be read in conjunction with the more general instructions provided in Chapters 1 and 2 of this manual.

E.1 Invoking the Print Request Form

To print a file from the UCSD p-System environment, execute PRINT, which should be located on the shared library volume called /MAIN/LIB/IBMPC/UCSD/PASCAL.

If the PRINT program is not on the shared library volume, you should contact your system manager, as your print system software has not been installed.

E.2 Proper Syntax for File Names

When you enter file names into the request form enter them as they appear in the directory for that virtual volume.

E.3 Presetting Defaults for the Print Request Form

Chapter 2 of this manual shows the print request form. You will note that when you invoke your form that there are several blanks for you to use to specify printing options. You may decide that many of the option specifications need not change from printing to printing. For instance, everything you print may be from a certain volume, or you may always use a certain printer and setup combination, or you may always want two copies of everything.

If you would prefer not to specify each of the options every time you print a file, you can preset defaults for those options which you do not want or need to respecify very frequently.

There are two files called Defaults.Text; one is configured by the system manager and is located on the shared library volume, and the other is configured by you and is to be located on the current prefix volume. This will be your "work" volume if you have specified that a virtual work volume be mounted (using SETPROFILE). Otherwise, it will be the floppy disk from which you booted.

The Defaults.Text file on your boot volume can be used by you to specify defaults for the printing options. The defaults you specify in

this file will be read into the print request form each time it is invoked.

When the PRINT program is executed, the option specifications from the Defaults.Text file on the user's work or boot volume are read into the appropriate option blanks. If the Defaults.Text file does not contain specifications for all possible option blanks, the Defaults.Text file on the shared library volume will be read in to fill in blanks not filled by the user's defaults.

The Defaults.Text file on the shared library volume is used by the system manager to set default specifications which are expected to be true for most users most of the time. The user's Defaults.Text file takes precedence over the shared library Defaults.Text file. This means that if both files specify a default for the same option, the user's specifications prevail (is the one which appears in the Request Form when it is invoked).

Having the default values automatically placed in the form saves time. However, if one or more of these preset defaults is not right for a particular job, you can change it in the Print Request form. Just use the <Return> key to move from line to line. To change the contents of a particular line in the form, move the cursor to that line and start typing your new value. The previous contents disappear as soon as you enter the first character. When you have finished filling in or approving all of the option specifications, follow the instructions at the bottom of the form for exiting the form. You will then be prompted to issue your request.

In order to preset defaults for print request options, use the Pascal editor to create a text

file called Defaults.Text.

The following shows the possible options for which you can set defaults and the proper syntax to use for doing so. If you do not wish to set a value, the system manager's Defaults.Text file can contain a value for that default, or you can fill in its value each time you initiate a print request.

To Set	Enter in Defaults.Text
User	User: User ID
Name	Name: User Name
Network Pathname	Print: Pathname <Pathname>
File Server	Print: FS <Station name or address>
Page Title	Print: Title <"Title">
Identification	Print: Identification <"Identification">
Print Server	Print: Server <stn name or address>
Print Model	Print: Printer <stn name>
Eject Value	Print: Eject <value>
Setup	Print: Setup <name>
Priority	Print: Priority <Priority Value>
Copies	Print: Copies <number>

Below is an extended explanation of each of the parameters in the above list. You can learn the purpose of each parameter and decide what your default, if any, should be:

1. "User" and "Name" are FS global system parameters and are not restricted to the print request program. They must be entered by beginning lines with "User:" and "Name:". The print request program will ignore any lines in Defaults.Text that do not begin with "Print:", "User:", or "Name:", since in the

PLAN 4000 (TM) system, other products also use Defaults.Text to preset defaults (e.g., The Messenger (TM) electronic mail package). "User may be printed out as a logo on the header page of your job (if the system manager formats the header pages to do so), and is usually a short ID, such as your initials. "Name" may also be printed out on the header page and is usually a longer identification, such as your full name.

2. Full Network pathname or, if a default directory is set, a partial pathname. For example, if /MAIN/USERS is set as the default directory.

   SMITH/A

   can be specified in Defaults.Text and the Request program will understand that /MAIN/USERS/SMITH/A is meant.

3. File server: station address in decimal, or in hexadecimal preceded by "$". Ask your system manager for the print server name if one has been assigned.

4. Page Title and Identification options must be enclosed in quotes. For no title, include in Defaults.Text:

   Print: Title""

5. Copies must be between 1 and 999.

6. Print server: station address in decimal, or in hexadecimal preceded by "$". Ask system manager for print server name if one has been assigned.

7. Eject (page length) must be between 0 and

999.

8. Priority must be L, S, H, or O (Low, Standard, High, or Overnight).

Multiple commands can be entered on the same line.

Below is a sample Defaults.Text file such as you might create:

```
User: Smith
Name: John Smith's Fiscal Account
Print: Pathname /MAIN/USERS/SMITH/TEXT
Print: FS $FD
Print: Copies 3 Eject 55
Print: Server FISCAL
Print: Printer Lineprinter Priority Low
Print: Forms Ledger
Print: Title "Smith's Accounts"
```

If a Defaults.Text file like the sample above were placed on your work or boot volume, its contents would be read by the request program when it is invoked and the following form with defaults specified would appear:

```
   Print Request   Version X.X

-->       File(s) to print?

             FS Pathname: /MAIN/USERS/SMITH/TEXT

              File server: $FD

               Page title: Smith's Accounts

            Identification:

          Number of Copies: 3
              Print Server: FISCAL
             Printer Model: LINEPRINTER
           Eject (0=none): 55
                    Setup: LEDGER
        Priority (L/S/H/O: LOW
```

As we explained above, The request program will also read the Defaults.Text that is located on the shared library volume. This file contains the defaults that have been set by your system manager. Any defaults set in your own Defaults.Text, however, will take precedence over the shared Defaults.Text file. Any default values missing from your file will be supplied, if present, from the shared file.

When your job is printed, a "header" page is printed in front of it, listing information specified by the system manager. This information may include a logo representing your "user" value, the name of the file printed, its FS pathname, and other such information.

E.4 Printing Pascal Files on a Local Printer

To print files on a local printer, be sure the appropriate printer interface card is inserted in any slot of your IBM PC before booting.

Select the Filer option from the main Pascal command line.

Select the Transfer option.

The prompt will be:

    Which file?

Your response will be the name of the file to be printed.

The prompt will be:

    To where?

Your response will be:

    Printer:

Appendix F

Using the Print Server Subsystem in the IBM PC DOS Environment

F.0 Introduction

This appendix contains special instructions for operation of the network print software in the IBM Personal Computer DOS environment. It contains instructions and information about the following:

1. Invoking the print request form from the DOS environment.

2. Proper syntax for file names.

3. Pre-setting defaults for the print request form.

4. Printing files from a local printer.

These instructions are specific to the DOS and are meant to be read in conjunction with the more general instructions provided in Chapters 1 and 2 of this manual.

F.1 Invoking the Print Request Form

To print a file from the DOS environment, you need to execute PRINT which should be located on the shared library volume called /MAIN/LIB/IBMPC/DOS.

If the PRINT program is not on the shared library volume, you should contact your system manager as your print system software has not been installed.

F.2 Proper Syntax for File Names

When you enter file names into the request form enter them as they appear in the directory for that virtual volume.

F.3 Presetting Defaults for the Print Request Form

Chapter 2 of this manual shows the print request form. You will note that when you invoke your form that there are several blanks for you to use to specify printing options. You may decide that many of the option specifications need not change from printing to printing. For instance, everything you print may be from a certain volume, or you may always use a certain printer and setup combination, or you may always want two copies of everything.

If you would prefer not to specify each of the options every time you print a file, you can preset defaults for those options which you do not want or need to respecify very frequently.

There are two files called Defaults.Txt; one is configured by the system manager and is located on the shared library volume, and the other is configured by you and is to be located on the current default drive.

The Defaults.Txt file on your work or boot volume can be used by you to specify defaults for the printing options. The defaults you specify in this file will be read into the print request form each time it is invoked.

When the PRINT program is executed, the option

specifications from the Defaults.Txt file on the user's work or boot volume are read into the appropriate option blanks. If the Defaults.Txt file does not contain specifications for all possible option blanks, the Defaults.Txt file on the shared library volume will be read in to fill in blanks not filled by the user's defaults. The Defaults.Txt file on the shared library volume is used by the system manager to set default specifications which are expected to be true for most users most of the time. The user's Defaults.Txt file takes precedence over the shared library Defaults.Txt file. This means that if both files specify a default for the same option, the user's specifications prevail (is the one which appears in the Request Form when it is invoked).

Having the default values automatically placed in the form saves time. However, if one or more of these preset defaults is not right for a particular job, you can change it in the Print Request form. Just use the <Return> key to move from line to line. To change the contents of a particular line in the form, move the cursor to that line and start typing your new value. The previous contents disappear as soon as you enter the first character. When you have finished filling in or approving all of the option specifications, follow the instructions at the bottom of the form for exiting the form. You will then be prompted to issue your request.

In order to preset defaults for print request options, use an editor to create a text file called Defaults.Txt.

The following shows the possible options for which you can set defaults and the proper syntax to use for doing so. If you do not wish to set a value, the system manager's Defaults.Txt file

can contain a value for that default, or you can fill in its value each time you initiate a print request.

To Set	Enter in Defaults.Txt
User	User: User ID
Name	Name: User Name
Network Pathname	Print: Pathname <Pathname>
File Server	Print: FS <Station name or address>
Page Title	Print: Title <"Title">
Identification	Print: Identification <"Identification">
Print Server	Print: Server <stn name or address>
Print Model	Print: Printer <stn name>
Eject Value	Print: Eject <value>
Setup	Print: Setup <name>
Priority	Print: Priority <Priority Value>
Copies	Print: Copies <number>

Below is an extended explanation of each of the parameters in the above list. You can learn the purpose of each parameter and decide what your default, if any, should be:

1. "User" and "Name" are FS global system parameters and are not restricted to the print request program. They must be entered by beginning lines with "User:" and "Name:". The print request program will ignore any lines in Defaults.Txt that do not begin with "Print:", "User:", or "Name:", since in the PLAN 4000 system, other products also use Defaults.Txt to preset defaults. "User" may be printed out as a logo on the header page of your job (if the system manager formats the header pages to do so), and is usually a short ID, such as your initials. "Name" may

also be printed out on the header page and is usually a longer identification, such as your full name.

2. Full Network pathname or, if a default directory is set, a partial pathname. For example, if /MAIN/USERS is set as the default directory.

   SMITH/A

   can be specified in Defaults.Txt and the Request program will understand that /MAIN/USERS/SMITH/A is meant.

3. File server: station address in decimal, or in hexadecimal preceded by "$". Ask your system manager for print server name if one has been assigned.

4. Page Title and Identification options must be enclosed in quotes. For no title, include in Defaults.Txt:

   Print: Title""

5. Copies must be between 1 and 999.

6. Print server: station address in decimal, or in hexadecimal preceded by "$". Ask system manager for print server name if one has been assigned.

7. Eject (page length) must be between 0 and 999.

8. Priority must be L, S, H, or O (Low, Standard, High, or Overnight).

Multiple commands can be entered on the same line.

Below is a sample Defaults.Txt file such as you might create:

```
User: Smith
Name: John Smith's Fiscal Account
Print: Pathname /MAIN/USERS/SMITH/TEXT
Print: FS $FD
Print: Copies 3 Eject 55
Print: Server FISCAL
Print: Printer Lineprinter Priority Low
Print: Forms Ledger
Print: Title "Smith's Accounts"
```

If a Defaults.Txt file like the sample above were placed on your work or boot volume, its contents would be read by the request program when it is invoked and the following form with defaults specified would appear:

```
      Print Request   Version X.X

   -->    File(s) to print?

            FS Pathname: /MAIN/USERS/SMITH/TEXT

            File server: $FD

            Page title: Smith's Accounts

         Identification:

       Number of Copies: 3
           Print Server: FISCAL
         Printer Model: LINEPRINTER
       Eject (0=none): 55
                Setup: LEDGER
     Priority (L/S/H/O: LOW
```

As we explained above, The request program will also read the Defaults.Txt that is located on

the shared library volume. This file contains the defaults that have been set by your system manager. Any defaults set in your own Defaults.Txt, however, will take precedence over the shared Defaults.Txt file. Any default values missing from your file will be supplied, if present, from the shared file.

When your job is printed, a "header" page is printed in front of it, listing information specified by the system manager. This information may include a logo representing your "user" value, the name of the file printed, its FS pathname, and other such information.

F.4 Printing DOS Files on a Local Printer

To print files from a local printer, be sure that the proper printer interface card is installed in you IBM PC computer. The appropriate printer driver code must be installed on your boot diskette.

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PLAN 4000 PUBLICATIONS

General Information Manual	GA40-0100
PLAN 4000 Physical Planning and Installation Manual	GA40-0101
File Server User's Manual	SC40-0200
File Server Apple // Pascal User's Guide	SC40-0501
File Server Apple // DOS User's Guide	SC40-0502
File Server Apple // CP/M User's Guide	SC40-0503
File Server Apple /// SOS User's Guide	SC40-0504
File Server IBM PC DOS User's Guide	SC40-0505
File Server IBM PC UCSD p-System User's Guide	SC40-0506
File Server Installation and Operation Manual	SC40-0300
PLAN 4000 System Service Manual	LA40-0401
Print Server User's Manual	SC40-0201
Print Server Installation and Operation Manual	SC40-0301
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Reader Comment Form

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