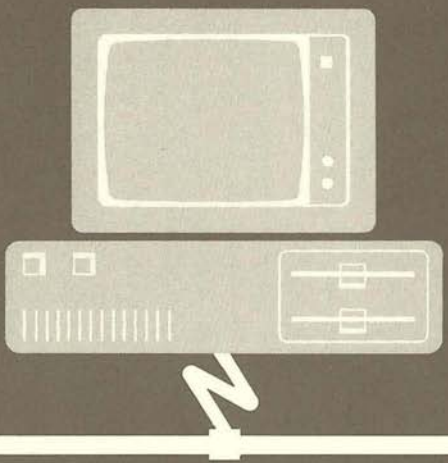
TOPS®

DOS Version



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Chapter

1

Introduction

Welcome to TOPS/DOS! We feel confident you've made a wise decision in choosing TOPS as your local area network. TOPS offers an elegant and unique approach for connecting a number of PCs together or even building a network using a mix of Macintoshes, PCs, and UNIX computers.

TOPS/DOS allows up to 32 computers to be connected on a network, using AppleTalk as the physical link. Both the Apple LaserWriter and the Apple ImageWriter II can be shared on the network as well. And TOPS Networks can even be bridged, or connected, to many other PC, Macintosh, and UNIX networks, allowing multiple networks of any supported computer hardware mix.

Most local area networks are notorious for complicating a computer user's life. We hope you will find TOPS to be an exception. TOPS was designed to be easy to install, easy to learn, and — above all — easy to use. If you use PCs and Macintoshes together, you'll soon wonder how you managed without TOPS. Of course, to make the most of TOPS in the shortest possible time, we urge you to read this manual.

How to Use This Manual

This manual describes version 2 of TOPS/DOS. If there are users on your network who are using version 1 of TOPS/DOS (which was called TOPS for the PC version 1), you will not be able to communicate with them, although they will continue to be able to communicate with other version 1 users.

This manual is intended for many possible network configurations, from an office with a few PCs to one with a mix of PCs, Macintoshes, UNIX machines, miscellaneous hard disks, and shared printers. It describes the TOPS system, commands, and options in a modular fashion so that you can acquire networking skills quickly. It is organized as follows:

Chapter 1 — Introduction
The introductory section first gives instructions for experienced users to quickly getting TOPS up and running. Then it presents an overview of Local Area Networks and a technical explanation of the TOPS system. Finally, TOPS terminology is explained, along with the most common ways of using TOPS.

Chapter 2 — Installation Guide
Getting Started describes the system requirements, elements of the TOPS system and the steps necessary to install the TOPS system files.

Chapters 3 & 4 — Tutorials
Chapter 3, *Using TOPSMENU*, describes how to use the menu-driven interface, TOPSMENU, to access other machines on the network and make your files available to other users. The next chapter, *Using TOPS from the DOS Command Line*, details how to use TOPS from the DOS prompt as an alternative to using TOPSMENU.

Chapter 5 — Printing with TOPS
TOPS lets you print to printers on the network, and also lets you print to other users local printers. This chapter shows you how to mount other printers and to publish your printer on the network.

Chapter 6 — Getting Organized
The final chapter contains suggestions on organizing and naming your files for easier network use and maintenance.

Appendices A-E
The appendices contain a variety of reference materials covering special installation procedures, trouble-shooting, and how to use the TOPS System Utilities.

For Those Who Hate to Read Manuals

We've done our best to create an easy-to-read manual for TOPS. However, since research shows that most people hate technical manuals regardless of how readable they are, we've included a quick-start section right up front. If you have some experience running local-area networks, you'll be able to get up and running in about a half hour by following the steps listed below.

Quick-start Installation

Step 1. Turn off the power to your computer and install your AppleTalk board (such as TOPS FlashCard) in an expansion slot.

Step 2. Connect your AppleTalk or AppleTalk-compatible cables (such as TOPS TeleConnectors) to the connector on the

back of the AppleTalk card. Install the board's software driver as described in the board's documentation.

Step 3. Reboot your computer. Then put your TOPS Disk 1 in drive A. Change to drive A and type:

```
A>INSTALL ↵
```

(The ↵ sign means to press the ENTER key)

Step 4. Answer the questions as they are displayed on the screen. Change to TOPS Disk 2 when prompted.

Step 5. Reboot your system so that the AppleTalk card can be initialized.

Step 6. At the DOS prompt, type

```
A>LOADTOPS ↵
```

```
A>TOPSMENU ↵
```

Step 7. You will be asked to give your computer a station name. For example, you could call it Jill.

Now the *Main Menu* Window will appear with a list of TOPS commands on the right. Select an item by using the up and down arrow keys, the space bar, or pressing the first letter of the command you want. On the left side of the screen you will see a description of what each choice does.

That concludes the installation procedure. The following series of steps run you through the publishing, mounting, and unmounting of volumes so that you can share data with others on the network.

Quick-start Publishing a Volume

To make your files available to others on the network, you have to *publish* the DOS directory or subdirectory containing the files. These directories are published as *volumes* which network users can then *mount*. (More about mounting in a moment.) Here are the steps for publishing a volume:

Step 1. Choose *Server Utilities* from the list of commands on the right side of your screen. This list is called the Main Menu. The window will change to a new menu, called a *sub-menu*. The heading in the upper right corner of the screen indicates the name of the menu you are in.

Step 2. From the sub-menu choose *Publish a Volume*.

Step 3. TOPSMENU asks you to select the DOS directory or sub-directory you want to publish. Follow the instructions on your screen. You can type in the pathname or press <F1> to see available directories and select from a list. All subordinate directories of the published directory are also published.

Step 4. Next you're prompted for an optional password to limit access to the volume you are publishing. Enter a password or press ↵ for no password.

You've just published your first volume and your computer is now a *server* on the network, meaning that other users can now access your files.

Incidentally in case you wanted to reverse this process and thus remove your published volume from the network, you would perform the following two steps:

Step 1. From the *Main* menu choose *Server Utilities*.

Step 2. Choose *Volumes Published*. Select the volume you want to unpublish and press the <DEL> key. If anyone else is using the volume, a warning message will appear. You can see a list of the users (called clients) who have mounted your volumes by selecting a volume name by pressing ↵.

That's all there is to publishing a volume.

Quick-start Mounting a Remote Volume

In order to gain access to other user's files and DOS directories, you first have to mount them. Mounting is the process of assigning one of your computer's drive names (D: E:, F:, etc.) to another computer's directory so you can use it as your own. Here are the steps for mounting a volume:

Step 1. Choose *Client Utilities* from the Main Menu.

Step 2. Next, see who else is on the network and has made their data "public" or available for your use. These stations are called *file servers*. To see the list of servers, choose *File Servers*. A list will be displayed on the left of the screen. (If there are no servers on the network yet, follow the instructions in the previous section to publish a volume from another computer on the network. Then press the <HOME> key.)

Step 3. Select one of the listed servers and press ↵ to see the *volumes* that it has made made public (has published).

Step 4. From the list, choose a volume that you want to use as your own and press ↵ .

Step 5. Now answer the questions TOPS asks about the drive name you want to assign the volume to, the access mode and the password (if the volume is password protected).

You have just *mounted* your first TOPS Volume. That means you've set up a connection between the files on the server's remote volume and a drive (for example, drive E:) of your computer. When you quit TOPSMENU, the volume will act like any other drive, just as if it were physically attached to your computer. To unmount a volume, press <ESC> a couple of times until you get back to the *Client Utilities* window, then choose *Volumes Mounted.* All of the volumes you have mounted will be listed. You can unmount any of them by selecting the volume name and pressing <DEL>.

That's about it for sharing disk drives and files on the TOPS Network. Of course there are numerous details not covered in this section. You should read the rest of the manual (at least Chapter 3), to become proficient with TOPS' other capabilities such as printer sharing and networking with Apple Macintoshes and UNIX computers.

A Little Network History

Before microcomputers were developed, most computing was done using large mainframe computers connected to remote terminals via cables or telephone lines. These terminals were essentially "dumb" in the sense that they had no facility to process or store data by themselves. All processing and storage was handled by the remote computer. In this way, many people could share the same information stored in the large central computer. They could also share the resources attached to that computer such as printers and tape drives. This way of connecting terminals to large mainframe computers is known as "timesharing."

Today, the miniaturization of processing components and the development of compact data storage units allow people to have entire working computers of their own. These self-contained computers are the microcomputers millions of people use today. They have the advantages of low cost and local storage, but they have one enormous disadvantage: generally, they cannot share data unless a floppy disk is physically carried from one computer to another.

In most offices, many different workers need access to the same information. Companies with microcomputers keep duplicate sets of information in many different computers. Making sure that duplicate sets of information remain identical is an enormous task. To solve this problem, Local Area Networks (LANs) for microcomputers were developed. LANs

physically wire computers together so that each computer can access shared disk storage.

Some of the goals of a LAN are to provide communication between machines and to share data among many users. LANs also provide other important services. They allow users to share expensive hardware such as laser printers and mass storage devices like hard disks and CD ROMS. There are many excellent schemes which allow one or more of these goals to be realized.

The different kinds of file sharing networking systems currently available fall into two main categories: disk servers and file servers.

Disk Servers vs. File Servers

Disk servers offer shared hard disk storage to many users on a network. In such a system, all users share a central hard disk which may be either a dedicated piece of hardware or the disk inside one of the computers on the network. Each user on the network is allocated a "volume", or partition, on the hard disk of the disk server. Typically, these volumes can be used by only one user at a time. When a volume is in use, it may not be accessed by others.

Disk servers simply provide a way to share a hard disk or disks. Most of them are not data sharing systems in the true sense.

File servers are a more sophisticated form of networking. File servers provide all users on the network access to stored data. "Network-smart" applications (such as certain data base program) allow several users to update the same file concurrently without compromising data integrity. They do so by employing file and record locking mechanisms.

Dedicated vs. Distributed Servers

There is another important distinction between networks: dedicated versus distributed file service. Some networks require a single, central device which acts as the repository of data. This single system provides network capabilities for all users.

A dedicated file server is usually a large hard disk with an intelligent controller. This device may be a regular computer running network software or a highly specialized dedicated server which is not a computer. In either case, the cost of the server is significant in a small network. Further, failure in this device causes failure of the entire network.

In a distributed network, any computer on the net may act both as a server and a client simultaneously. The task of file service is distributed among all the servers on the net. This reduces the cost of the network and increases

reliability. If one of the servers on the net fails, the rest of the stations on the network can continue normal operations without disruption.

Inter-operating System Compatibility

Until recently, computers of different types could not effortlessly share data on a local area network. The operating system controlling one type of computer was usually unable to communicate with the operating system of another type of computer. This meant that it was virtually impossible to connect different kinds of computers and expect to share files without some sort of complicated and time–consuming translation application.

Existing networks provided good communications between compatible computers such as IBM PCs and PC-compatibles. But there was no simple method for linking PCs, Macintoshes, and UNIX computers.

The TOPS Solution

TOPS has solved the problem of incompatible systems by developing a network operating system that translates information between different computer operating systems. And like a simultaneous foreign–language translator, this translation occurs automatically and invisibly as you use the network.

Additionally, TOPS turns any computer on the network into a true file server. TOPS is a distributed server environment and allows a computer on the network to be either a simple workstation, a file server, or both at the same time. Each station on the network can offer its resources to the network as a server and, at the same time, use the resources of another station as a client.

If you're using an IBM PC or compatible with PC-DOS or MS-DOS, both you and your PC applications can access data stored on other PC drives and even on Macintosh or UNIX system disk drives. The fact that one station is using the disk drive of another is transparent to both the computer user and the application programs. This makes it easy to access any resource that has been published through TOPS. For example, you can refer to a Mac's hard drive or floppy drive just as you would a floppy or hard disk drive inside your PC. You can even store your PC applications programs on a Macintosh's disk drives.

The actual communication between computers is achieved via the *AppleTalk* transport layer (developed by Apple Computers). AppleTalk transmits information between computers at 230 thousand bits per second, which is approximately 200 times faster than a 1200 baud modem. Loading an application program over the network from a remote file server with a hard disk thus works at about the same speed as loading the same application locally from a floppy disk.

PC–Only Networks

An all-PC network using only floppy drives will work with TOPS, but we suggest that you have at least one hard disk on the network. This hard disk will be the repository of data for your net, acting as the server. A PC/AT or compatible makes a fine server for a small network, while providing duty as a workstation as well. If you have more than one PC with a hard disk, each of these may act as a server.

TOPS also offers compatibility with DOS 3.1, the networking version of DOS. This means that multi-user applications which use the features of DOS 3.1 will work over TOPS.

Vanilla PCs, PC/XTs, and PC/ATs as well as compatibles are all supported by TOPS, and can be mixed and matched on a TOPS Network. You need only an AppleTalk board, software and AppleTalk connectors and cables. AppleTalk connectors that use standard modular telephone wiring between computers are available as a separate product from TOPS.

Macintoshes and UNIX-based computers can also be added to an all-PC network at any time, but these computers require their own TOPS software and/or hardware packages.

Networks with Both Macs and PCs

A TOPS Network that combines Macs and PCs allows files created on a Mac to be stored on a PC's hard disk — or vice versa. It also allows you to access any published file from any computer on the network, regardless of the types of computers involved.

To a PC on the network, a remote volume (group of files) that has been Published through TOPS is used as a PC drive (e.g., drive E:). That means that even when a PC accesses a volume that is stored on a Mac, it looks and acts just like a local PC drive.

To the Mac user, a file created on a PC looks like a generic *document* icon: that is, an icon of a piece of paper with no design. Files created by a Mac and stored on a PC appear to the Mac as regular Mac icons filled in with a representative design. Your Mac applications can access data stored on other Mac drives or on disks in PC drives. PC Volumes will appear on your Mac screen as disk icons, just as if they were on the internal floppy drive of your Mac.

Since TOPS works in the background and presents network resources in the same form as its host operating system (whether the host is a PC or a Mac) you can begin using TOPS right away without having to become familiar with a new operating environment. You just use the same DOS or application commands you are used to.

If you are reading files from a Mac using the older Macintosh File System (MFS), that Mac's files and applications will appear in one directory. This is because MFS is a flat filing system, not a hierarchical one like DOS. While the Mac's Finder can "see" folders and use them for organizing work, TOPS can't.

Most Macs use the newer Hierarchical File System (HFS). If you mount an HFS disk with TOPS/DOS, all folders appear in DOS subdirectories.

File Translation

While TOPS communicates between different operating systems, it does not automatically translate your data files between applications that normally are not compatible. For example, just because you can connect a Macintosh to a PC does not mean that a MacWrite document can be edited in WordStar on the PC. That task is left for the application program you are using or to special translation utilities such as the TOPS Translators application supplied with TOPS for the Macintosh. On the other hand, some applications are smart enough to recognize a remote file's data structure and translate it as it is read from the data files. An example of such a smart application is Microsoft's Excel™ for the Macintosh which can read and write to several IBM data structures including Lotus 1-2-3™. That means that you can actually open a Lotus 1-2-3 worksheet file stored on a remote IBM PC while using a Mac running Excel.

Likewise, some word processing documents can be easily shared between operating systems. Microsoft provides a conversion utility so that a WORD document created on a PC can retain its original format under Microsoft WORD on a Mac. File conversion between a variety of other PC and Macintosh applications is greatly simplified by a new product from TOPS called TOPS Translators. This application is supplied with TOPS for the Macintosh.

TOPS Terminology

The following terms have special meanings within TOPS, and are used throughout this manual. Take time now to become familiar with them and understand their meaning.

Station	Each computer on the network is called a station. Each station is given a name by its user when he or she signs onto the network. A station name can be no longer than 15 characters on the PC. (Macs are limited to 31 characters.)
Server	A server is any station that has made its printer or files on its disk drive available to other users on the network.

Thus, there are two types of servers, *file servers* and *printer servers.*

Client — A client is the opposite of a server. That is, it's a user rather than a provider of resources. A client uses the files or printers that a server has offered for use on the network.

Publish — When a station makes files or a printer available to others on the network, this is called "publishing" them.

Volume — A volume is any directory that has been published by a server. When a directory is published, all subdirectories and files contained within that directory are published as well.

Alias — When a volume or printer is published, it is given an alias or name. For example, if you were to publish a directory "C:\LOTUS\WKSFILES" you might name it "Worksheets". Other stations on the network can then access this volume by specifying its alias. An alias can be no longer than 16 characters.

Mount — Before a client can use a published volume or printer, he or she has to tell TOPS to make a connection to it. This is called "mounting" the volume or printer. Though a rather archaic term dating back to the days when large reels of tape had to be physically mounted onto computer tape drives before they could be used, this term is still in wide usage today in the context of Local Area Networks and UNIX systems. Once a volume or printer has been mounted, TOPS makes it act just as if it were a local disk drive or printer.

Local — Local is an adjective used in this documentation to describe any printer or volume that is accessible by your computer without using TOPS. For example, a "local printer" would be connected to your computer, and a "local volume" would be a directory on your computer's drive.

Remote — Remote is an adjective that refers to the resources of someone else's computer. For example, you can use TOPS to mount a remote volume.

Filename — A filename refers to the full name of a file. With DOS, filenames are up to 8 characters long with an optional 3 character extension. Macintosh files can have longer filenames.

Zone — TOPS Networks can be divided into groups of stations called zones. Dividing large networks into zones makes it easier to choose which volumes and printers you want to use since it narrows down your choices. This is particularly useful for people in the same department or physical area in an office building. Division of a network into zones requires the installation of additional units called *bridges* that connect the zones together into a larger network.

Working on a LAN

Using your PC on a LAN requires only a little adjustment in how you use your computer. Listed below are the three main ways that you can use TOPS. These examples of network use are not mutually exclusive. You are able to use TOPS in each of these ways simultaneously and without disrupting the activities of other network users.

As an Individual Workstation
You can install TOPS on your personal computer but continue to use it as if you weren't part of the network. Although it's physically wired to other computers on the network, your computer isn't connected with other computers until you sign on the network.

As a Server
After installing TOPS and signing on to the network, you can decide what printer and/or what directories on your local disk drives you want to publish on the network. You can also stipulate the degree of access others may have to these resources. Once these resources are published, other computer stations on the network may use them.

As a Client
After installing TOPS and signing onto the network, you can use any volumes or printers that other computer stations have published.

The TOPS system is very straightforward and easy to learn. Nevertheless, when your computer functions as a server on the network, you may want to make some changes in the way you organize and name your files — especially if your LAN combines Macs with PCs. Chapter 6 contains a detailed discussion of these issues.

If you have not installed your TOPS Network yet, please move now to Chapter 2 where you will find detailed instructions for getting started.

Chapter

2

Getting Started

Before you can start using TOPS, you'll have to install your AppleTalk connection hardware and software (such as TOPS FlashCard) in your PC, install the TOPS files on your hard disk or floppy disks, and set up your operating system so that it knows about TOPS. This chapter describes all of these steps as well as the procedures for activating the TOPS software. The major sections are organized as described below:

What's in this Chapter

This chapter is divided into five sections. Please read each section and follow the installation instructions closely before moving ahead to the next chapter.

Requirements for TOPS
This section lists the required hardware and software you need to run TOPS/DOS.

Elements of the TOPS System
This section briefly describes the major components of the TOPS system, both hardware and software.

Installing TOPS Software on Your PC
TOPS provides an Installer program to handle most of the software installation details for you automatically. This section describes the use of the Installer, and explains how it works.

Loading TOPS Software
This section explains how to activate the TOPS software once it's been installed.

Ways to Operate the TOPS System
This section gives a brief overview of the ways you control the TOPS Network software.

Requirements for TOPS

The following lists the hardware and software you need before you run TOPS/DOS.

Memory Requirements

For best results, we recommend that TOPS be run on a PC which has at least 512K of memory. TOPS is a memory resident program that occupies about 120K. Thus, depending on the resident memory requirements of DOS and other applications you may need more than 256K to run TOPS. Many users running PC spreadsheet or database applications find they need 640K. The amount of memory used by TOPS can be adjusted by adjusting values in the TOPSKRNL.DAT file, as explained in Appendix B.

DOS Requirements

You need to be running MS-DOS or PC-DOS version 2.1 or higher in order to run TOPS. We recommend, however, that you use DOS 3.1 or higher in order to get the most networking capabilities.

Hardware Requirements

To run TOPS/DOS, you need to have an AppleTalk card and its driver software in your computer. We recommend the TOPS FlashCard due to its faster communications, although any AppleTalk card will do.

TOPS can work with many different hardware setups. The standard TOPS configuration is a PC with one or two floppy drives and a hard disk. If your configuration is different than this (such as if you have a RAM disk), you may need to change the file called TOPSKRNL.DAT after you install TOPS. This procedure is described in Appendix B.

Elements of the TOPS System

A TOPS/DOS station consists of the following elements:

AppleTalk Board and Driver Software
Once this board is installed in your PC, it allows the PC to connect to the AppleTalk network. We recommend the TOPS FlashCard, but TOPS/DOS will work with other AppleTalk network cards.

TOPS Networking Software
This software provides the basic networking capability of TOPS. It consists of three modules: TOPSTALK, TOPSKRNL and TOPSPRTR. These are loaded like any other program, but remain in memory as an extension of DOS. The TOPSTALK program is the first to load when you use TOPS. Then TOPSKRNL is loaded. TOPSPRTR is optional, and used only when publishing printers.

TOPS Command Interpreter Software
You can use a program called TOPS.EXE from the DOS command line to send commands to TOPS.

TOPS Menu Interface
As a user-friendly alternative to entering commands on the command line, a program called TOPSMENU. lets you send commands to TOPS by making choices from a menu on your screen.

TOPS Utilities
There are several utilities that come with TOPS to help maintain the data integrity of your files and disks. These utilities, described in Appendix D, *TOPS System Utilities*, are: TDEL, TDIR, XDIR, XDEL, and XSYNC.

AppleTalk Connectors
Computers on a TOPS Network are interconnected using Apple's AppleTalk wiring standard. We recommend the TOPS TeleConnectors, although other brands will also work. TOPS TeleConnectors use standard low-cost telephone wiring for the network cabling.These connectors and cables can be purchased from your local Apple dealer, from TOPS, or from companies that supply AppleTalk–compatible alternatives.

Installing TOPS Software on Your PC

The TOPS distribution disks contain an installation program which will perform all the steps necessary to install the TOPS software on your hard disk. This section describes the Installer program and the additional steps required for installing TOPS on floppy disks.

Making Backup Copies of the Master Disks

Regardless of whether you're using a hard disk or floppy disks, you should make a backup copy of your original TOPS disks before going further. To do this, follow these steps:

Step 1. Place your DOS system disk in drive A:

Step 2. Type in

```
A: ↵
```

Step 3. Place a blank disk (formatted or unformatted) in drive B:

Step 4. Type

```
DISKCOPY A: B:  ↵
```

Step 5. When DOS asks you to insert the source diskette in drive A:, remove your DOS disk and insert your TOPS master disk 1 in drive A:. Then press any key.

Step 6. When DOS asks you to insert the destination diskette in drive B:, just press any key since you've already done that in step 3.

Step 7. When DOS reports that the copy is complete, it will ask:

```
Copy another disk (Y/N)?
```

Type **Y** for yes since we want to repeat the process for disk 2, the second TOPS master disk.

Step 8. Remove the diskettes from both drives.

Step 9. Place another blank disk in drive B: and the TOPS master disk 2 in drive A:.

Step 10. Press ↵ to commence the copying process again.

Step 11. When the copying is through, remove both disks.

Step 12. Mark your new TOPS disks TOPS Disk 1 Backup and TOPS Disk 2 Backup. Write the serial number from the master disks on them. Keep them out for use in the installation procedure.

Step 13. Put the TOPS master disks into storage for safekeeping. If your backup disks fail, use the TOPS master disks to make a new copy following the steps above.

Running the TOPS Installer

The TOPS Installer program automatically copies all TOPS files to their proper locations on hard or floppy disks. The program will ask you some questions and will guide you through the installation process. You will be told what is happening and given the option to skip certain parts of the

installation. You will also have a chance to confirm the information you enter at each step of the installation procedure.

If for some reason you want to stop the installation procedure before it is complete, simply press the ESCAPE key. This will abort the installation at any time except during the automated process of copying the files from the TOPS distribution disk.

Note: If you do not let the Installer complete all of the installation procedures, you may not be able to run TOPS.

Technical details of the Installer

For the technically minded, here is a synopsis of what the Installer does. You may skip this section and move ahead to installation if you like.

The TOPS Installer does the following:

- Creates a TOPS subdirectory, if necessary, on the drive you specify to hold TOPS files.
- Copies the files from TOPS Disk 1 to the TOPS subdirectory.
- Asks you to insert Disk 2.
- Copies files from TOPS Disk 2 to the TOPS subdirectory.
- Creates or modifies the CONFIG.SYS file on your boot disk to include:

```
Files = 20
Buffers = 20
```

- Creates or modifies the AUTOEXEC.BAT file to include the TOPS subdirectory in your DOS search path.
- Asks you to reinsert TOPS Disk 1.

The following pages explain in detail what is happening during each phase of the installation and what the options mean. We suggest that you follow this installation guide step-by-step as you answer the questions asked by the TOPS Installer program.

Installing TOPS on a Hard Disk

This section describes the installation from the TOPS distribution disks in drive A: to a hard disk designated as drive C:. If you usually boot from the

hard disk but would like to create a separate TOPS boot disk, or if you boot from a floppy but would like to install TOPS on your fixed disk, read Appendix A.

Note: If your PC has an IBM color/graphics board and a monochrome monitor, you must use the DOS command MODE BW80 before using the Installer. Otherwise you may find the screen instructions difficult to read.

Step 1. Place the backup copy of the original TOPS distribution disk 1 in drive A:

Step 2. Type in

```
A: ↵
```

Step 3. Type

```
INSTALL ↵
```

The following messages will appear on the screen and need to be answered.

```
Install TOPS in directory C:\TOPS?
[Y/N]?
```

Enter **Y** if you want to store TOPS program files in a subdirectory called TOPS in the root directory of the drive shown in the prompt. If necessary, the TOPS subdirectory will be created by the Installer.

Enter **N** if you want to specify a different drive or subdirectory in which to store the TOPS files. The Installer program will ask you to enter a drive and full directory path. If you aren't sure how to specify a full path, please refer to your DOS manual before proceeding. The program will again display the prompt above to verify the information you have entered.

Step 4. Next, the messages below are displayed to confirm the copy process. The number "n" is updated as each file is copied. There are many files to copy, so this may take several minutes.

```
Installing from A: to C:\TOPS . . .

Copying A:\filename to C:\TOPS\filename . .


n files copied to C:\TOPS
```

Step 5. After all files are copied from disk 1, you will be asked to remove disk 1 and insert disk 2. More files will then be copied. Then the following prompt appears:

```
Is your boot (start up) disk: drive C?
[Y/N]?
```

When you first turn on your computer, DOS looks in the root directory of the startup or "boot" drive for two files named AUTOEXEC.BAT and CONFIG.SYS. These files are used by DOS to alter certain aspects of the DOS "environment" and to execute start-up programs or DOS commands of your choice.

Enter **Y** to indicate that you use C: as your boot disk. Enter **N** to indicate that this is not a boot disk.

Step 6. The next message reads:

```
Do you want the necessary changes made to
your CONFIG.SYS file?
[Y/N]?
```

```
Your CONFIG.SYS file will be changed to
include TOPS specifications:
Files = 20
Buffers = 20
Your old CONFIG.SYS file will be stored in
       CONFIG.BAK
```

The CONFIG.SYS file contains commands that configure the DOS environment. The number of files and buffers shown above is recommended for the average network station. Your needs may vary. If your CONFIG.SYS file already has values of 20 or greater for these commands, they will not be changed. See Appendix B for more information on these two settings and how to change them.

Enter **Y** to modify the CONFIG.SYS file. If it doesn't exist, the installer will create it. If the file exists, it will be renamed CONFIG.BAK before the modified file is created. Nothing in your CONFIG.SYS file will be changed except as noted above.

Enter **N** if you do not want the CONFIG.SYS file created or modified. Note that if this file doesn't exist, DOS will assign default values to the files and buffers settings.

These may not be sufficient to operate TOPS efficiently. You cannot run TOPS without your CONFIG.SYS file properly configured.

Step 7. The Installer now asks:

```
Do you want the necessary changes made to
your path in your AUTOEXEC.BAT file?
[Y/N]?

Your path will be changed to include
C:\TOPS

Your old AUTOEXEC.BAT file will be stored
in
AUTOEXEC.BAK
```

Type **Y** if you want the TOPS directory to be added to the DOS search path in your AUTOEXEC.BAT file. We advise doing this because it will make using TOPS commands easier, eliminating the step of switching to the TOPS directory first. Note that if you already have an existing AUTOEXEC.BAT file, the Installer will save a backup copy of it for you under the name AUTOEXEC.BAK before the modifications are made. If the file doesn't exist in the root directory of the disk in the boot drive, the Installer will create it. Also, only the path will be changed.

Type **N** if you do not want the Installer to create or modify your AUTOEXEC.BAT file to add the TOPS directory to your search path.

Step 8. The Installer now asks you to reinsert disk 1 and press any key.

Step 9. Now you're finished. The Installer reports:

```
All done! Quit?
[Y/N]?
```

Enter **Y** unless you want to repeat the installation process for another disk. Normally you will not need to repeat the process.

Now that TOPS is installed on your hard disk, you can skip the following section (*Installing TOPS on a Floppy Disk*) and move to *Loading TOPS Software*.

Installing TOPS on Floppy Disks

The rest of this section describes the additional installation steps to place the TOPS system files on floppy disks which you will boot from. For information on other floppy disk installation configurations, please refer to Appendix A, *Special Installation Procedures.*

To install TOPS on floppy disks with a dual floppy machine, boot from drive A and perform the following steps:

Step 1. Insert your DOS system disk in drive B and a blank disk in drive A.

Step 2. Type B: ↵ to get to drive B.

Step 3. Format a blank disk by typing:

```
FORMAT A:  ↵
```

Step 4. After the disk is formatted, type **N** when DOS asks about formatting another disk. Then remove the disk from drive A and replace it with another blank disk.

Step 5. To format a system disk from drive B type:

```
FORMAT A: /S  ↵
```

Step 6. After the disk is formatted, type **N** when DOS asks about formatting another disk. Then remove the disk from drive B.

Step 7. Insert your backup copy of TOPS disk 1 in drive B, leaving your newly formatted system disk in drive A.

Step 8. Type:

```
INSTALL  ↵
```

The following message appears on the screen:

```
Install TOPS in directory C:\TOPS?
(Y/N)?
```

Step 9. Type **N.**

Step 10. The Installer prompts you for the target drive and directory. Type

```
A ↵
```

Step 11. The Installer replies:

```
Install TOPS in directory: A:\ ?
[Y/N]
```

Type **Y**. The Installer will proceed to copy the TOPS files onto your floppy. The messages below are displayed to confirm the process. The number *n* is updated as each file is copied. There are many files to copy, so this may take several minutes.

```
Installing from B: to A:\ . . .
Copying B:\filename to A:\filename . . .
n files copied to A:\
```

Step 12. After all the files for Disk 1 are copied, you will be asked to remove Disk 1 (which will be the TOPS boot disk) and insert Disk 2 (which will be the TOPS working diskette), the newly-formatted diskette from step 3, in drive A. Some more files will then be copied.

Step 13. After all the files are copied, the following prompt appears:

```
Is your boot (start up) disk: drive C?
(Y/N)?
```

Type **N**.

Step 14. Next you are asked:

```
Is your boot disk currently in your
machine?
[Y/N]
```

Type **N**. The Installer will ask you to insert your TOPS boot disk. You insert your target Disk 1 in drive A.

Step 15. Now you see the message:

```
Type the correct drive and press return.
```

Type A ↵.

The Installer will then proceed as described in the previous section on hard disk installation. Start with step 5 in that section to complete your floppy-disk installation. When finished, the first disk will be your TOPS boot disk, and the second disk will be your TOPS working disk.

finished, the first disk will be your TOPS boot disk, and the second disk will be your TOPS working disk.

Note: If you installed TOPS onto floppy disks, we suggest that you make a backup copy of your new TOPS disks using the DISKCOPY command. See the beginning of this chapter for instructions on how to use this command. Remember to write the serial number from the original TOPS distribution disks on the copy.

Loading TOPS Software

Once your TOPS software has been properly installed on your hard or floppy disks, the next step is to activate the software by loading it into your computer's memory. Note that your AppleTalk card and its driver software must be installed before you start this procedure.

Step 1. First reboot your computer to load the files that the Installer program modified. For floppy disk users, remove the TOPS distribution disk from Drive B: and insert your newly created TOPS boot disk in Drive A. Then hold down the <CTRL> and <ALT> keys and press the <DEL> key to reboot the system. For hard disk machines, simply remove any floppy from Drive A: and reboot in the same way.

In the process of rebooting, you will see a message on the screen indicating that the TOPS AppleTalk driver has been installed.

Step 2. Type:

```
LOADTOPS ↵
```

This step runs a batch file called LOADTOPS.BAT that was copied onto your startup disk by the Installer. LOADTOPS loads two programs, TOPSTALK.EXE, and TOPSKRNL.EXE.

Step 3. If you want to share your printer, type:

```
TOPSPRTR ↵
```

Step 4. If you are using a machine with no hard disk, now remove your boot disk and insert your working disk (that is, Disk 2).

About TOPSTALK, TOPSKRNL and TOPSEXEC

TOPSKRNL.EXE (for TOPS Kernel — the basis of TOPS) is the program which activates TOPS so that you can use the network. Before TOPSKRNL can be loaded, however, TOPSTALK (sometimes called "SoftTalk") must be loaded. Once both programs have been run, they stay in your computer's memory, managing communication between computers on the network.

Although you just loaded these programs via a batch file, they could also be loaded from the DOS command line, by typing the lines

```
TOPSTALK ↵

TOPSKRNL ↵
```

The approach you use for loading TOPS is up to you, though a stand-alone batch file or two lines in your AUTOEXEC.BAT file is easiest. The TOPSMENU program (explained in detail in the next chapter) can also be run from the DOS command line as well as from a batch file.

When TOPSKRNL is loaded, it initializes the AppleTalk board installed in your PC and displays the TOPS version number and serial number. TOPSTALK and TOPSKRNL are the only programs you have to load to use TOPS. TOPSKRNL will look in the current drive and directory for two other files: TOPSKRNL.DAT and TOPSEXEC.COM.

TOPSKRNL.DAT contains configuration data about your TOPS system, telling TOPS such things as how many disk drives your system has, the name of your station and 13 other parameters. Included on your distribution disks is a sample TOPSKRNL.DAT file. The configuration parameters provided in this file are the same as the default configurations that take effect if no TOPSKRNL.DAT file is found by TOPSKRNL.

You may have to modify this file (using a text editor) to properly configure TOPS for your system. Please see Appendix B for more information on this procedure.

The second file, TOPSEXEC.COM, is used by TOPS to run applications that are stored on a remote computer. If you only intend to store data files (rather than application files) on remote disk drives, this file needn't be accessed. However, it must be present if you plan to run applications stored remotely.

About TOPS and Other Memory-Resident Software

TOPS is compatible with a great majority of the increasingly popular "RAM-resident" software available today. However TOPSKRNL, being a RAM-resident program itself, can conflict with other RAM-resident

programs if these programs are loaded in the wrong order with respect to TOPSKRNL. In general, TOPSKRNL should be loaded BEFORE other RAM-resident software. The only exceptions are programs like RAM disks, disk caching software, keyboard buffers, PC-LAN software, or clock devices that extend the basic services of DOS or the BIOS. These should be loaded before TOPSTALK and TOPSKRNL.

A good rule of thumb is to determine if the memory resident program uses data files stored on disk. If it does, then it should be loaded after TOPSTALK and TOPSKRNL. If a program does not use DOS, you can probably load it safely before TOPSKRNL. If in doubt, try it both ways and see which way works.

Here is a list of popular programs and when they should be loaded:

Program	When to load
Sidekick	after TOPSTALK and TOPSKRNL
ProKey	after TOPSTALK and TOPSKRNL
Superkey	after TOPSTALK and TOPSKRNL
SmartKey	after TOPSTALK and TOPSKRNL
Turbo Lightning	after TOPSTALK and TOPSKRNL
Microsoft Windows	after TOPSTALK and TOPSKRNL
Software Carousel	after TOPSTALK and TOPSKRNL
Note-It	after TOPSTALK and TOPSKRNL
SmartNotes	after TOPSTALK and TOPSKRNL
DesqView	after TOPSTALK and TOPSKRNL (Only use DesqView as a client, not as a server.)

Non-Standard Configurations

Many TOPS users have a hardware configuration other than the TOPS default configuration of one or two floppy drives and one hard drive. For example: if you have no hard drive, a multiple partition hard drive, an external floppy drive, a Bernoulli backup unit, etc.

In these cases the TOPSKRNL.DAT file must be edited to reflect your non-default configuration. The TOPSKRNL.DAT file is located in your TOPS subdirectory, or wherever your TOPS files reside. Please refer to Appendix B. In particular, pay attention to the TOPSEXEC.COM path (line 10), which is required to run remote applications, and the drive map (lines 13 & 14), which is required for TOPS to recognize drives D, E, F, etc.

Ways to Operate the TOPS System

TOPS provides two ways for you to control its various capabilities — using TOPSMENU or by typing in commands on the DOS command line (covered in Chapter 4).

The TOPSMENU approach gives you access to the TOPS commands via simple and easy-to-use menus from which you make choices. The details of TOPSMENU are covered in depth in the next chapter, *Using TOPSMENU*. If you are unfamiliar with DOS and/or network operation, we suggest that you start using TOPS via the menu program. Once you become familiar with the TOPS environment and how it works, you may want to issue TOPS commands directly from the DOS command line.

Chapter

3

Using TOPSMENU

The TOPSMENU program provides an easy way to interact with and control the TOPS Network through a set of on-screen menus. Choices that you make from these menus tell TOPS how you want to manage your networking activities. This chapter covers in detail the organization and use of the this program.

What's in this Chapter

The three major subsections are organized as follows:

TOPSMENU Basics
This section introduces you to the organization and terminology of the menu system used by TOPS. It will help you become familiar with finding instructions on the screen and moving between different menus.

Client Utilities
This section describes the menu commands you use as a client on a TOPS Network.

Server Utilities
This section details the menu commands you use as server on a TOPS Network.

TOPSMENU Basics

This section describes the organization and conventions of TOPSMENU. It covers the information needed to run TOPSMENU, its terminology, and its keyboard conventions.

Loading TOPSMENU

Load TOPSMENU using the command:

```
TOPSMENU ↵
```

from your TOPS subdirectory. We suggest that you load TOPSMENU now and follow the examples which explore TOPSMENU and the network.

Note: If you use an IBM color/graphics board with a monochrome monitor, issue the DOS command MODE BW 80 before running TOPSMENU. Otherwise the menus may be difficult to read. Also note that TOPSMENU uses a file called TWINDOVL.EXE.

TOPSMENU Terminology

There are a few special terms which are used in this chapter to describe the use of TOPSMENU. Please take time now to become familiar with them.

Menu

A menu is a list of choices available to you. Sometimes you will find menus within menus.

Sub-menu

A sub-menu is a menu inside a menu. A sub-menu is reached by selecting an option from a previous menu.

Window

The screen is divided into rectangular areas called windows. Several windows can be visible on the screen at one time, each showing information about a specific kind of activity on the network.

Active Window

The active window shows the current focus of your activity in TOPSMENU. Only one window is active at a time, although there may be several displayed on the screen. There are two ways to identify the active window. The active window is the window where the screen cursor is visible, unless there is a visible window bordered by double lines. A window bordered by double lines is always the active window.

Selecting

There are three ways to select an item from a menu. Either (1) press the up or down arrow keys, (2) press the space bar (to move down one item), or (3) enter the first letter of the item's name. The item which is currently selected will be highlighted by the cursor on your screen.

Special Keys Used in TOPSMENU

The keys listed below are used throughout TOPSMENU. In addition, some keys become active in sub-menus and when certain windows are active. The Menu Instructions window in the lower third of the screen always lists the currently usable keys.

CTRL-Q
Exits TOPSMENU from anywhere in the program.

Escape
Returns you immediately to the preceding menu.

Return or Enter or ↵
Activates the selected sub-menu or carries out the action (described in the Menu Instructions window) on the selected item.

F1
Displays the contents of a selected volume or subdirectory or displays the print queue of the selected printer.

MORE
If MORE appears in the bottom right-hand corner of a window, there are more items than can fit in that window. The bottom line of the Menu Instructions window will tell you how to get access to the rest of the items. It will display one of the following:

PGUP
Page Up. Scrolls the active window up to see the rest of a listing which does not fit in the window.

PGDN
Page Down. Scrolls the active window down to see the rest of a listing that does not fit in the window.

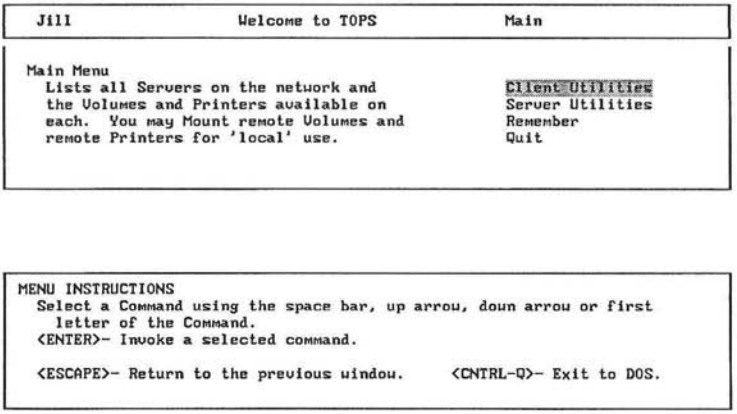
CTRL-PGUP and CTRL-PGDN
There are some screens in TOPSMENU that allow viewing only. When there are more items than can be displayed in the window of one of these screens you can use <CTRL PGUP> and <CTRL PGDN> to scroll the list. Hold down the <CTRL> key, then press the appropriate key to scroll the list up or down.

The Main Menu

The first screen that you see upon loading TOPSMENU tells you the version of TOPSMENU you're using and reminds you that the menu instructions appear in the lower window of each screen. If you have not

signed on to the network with a station name you will be asked to enter your station name.

If you already have a station name, press any key and the Main Menu appears. The choices you'll see on this menu are: *Client Utilities*, *Server Utilities*, *Remember*, and *Quit*.



To choose an option:

Step 1. Select an item by pressing its first letter, pressing the space bar or using the up and down arrow keys.

Step 2. Press ↵.

How the Menus Are Organized

The following chart shows how TOPSMENU is organized. The indentation between different menu options illustrates the "hierarchy" of the TOPSMENU system. For example, by selecting *Client Utilities* on the Main Menu, you gain access to a sub-menu. Similarly, if you select *File Servers* from the Client Utilities Menu, you will reach a sub-menu of Client Utilities.

Menu Options	**Menu Activities**
Client Utilities	
File Servers	
	List file server
	List volumes on a server
	List volume contents
	Display long names

Mount a volume
Choose access mode
Volumes Mounted
Unmount a volume
Printer Servers
List printer servers
List printers on a server
See print queue of a remote printer
Mount a remote printer
Printers Mounted
See printers you have mounted
Unmount a printer
See the queue of a mounted printer
Change Zone

Server Utilities

Publish a volume
List directories on a drive
Publish a selected directory
Volumes Published
List clients using a volume
Unpublish a volume
Change the volume password
Change the volume alias
Change the access mode
File Clients
List volumes used by client
Logout a crashed client
Show/Hide Name
Publish a printer
List published printers
See print queue of a published printer
My printer clients
List clients using a printer

Remember
Quit

TOPSMENU Client Utilities

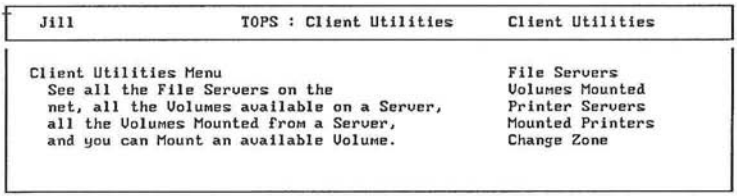
As explained in Chapter 1, a *client* is any computer on the network that is using another computer's resources, such as disk files or printers. The computer whose resources are available to be used by others is called a server. You can be both a *server* and a client at the same time, or just one of these. Essentially all TOPS commands, either from the DOS command line or via TOPSMENU, break down into two categories: those that control

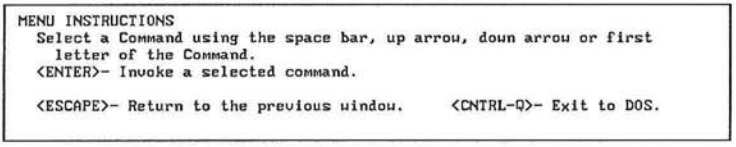
your client status and those that control your server status. Selecting *Client Utilities* from the Main Menu lets you control the former. From the Client Utilities Menu you can:

- See all the file servers available to you on the network.
- See what published volumes are available from a given server.
- List the contents of a volume (its files and subdirectories).
- Display the full names of remote files and subdirectories.
- "Mount" a volume for your use.
- List all the volumes you have mounted.
- Unmount a volume.
- See what printer servers are available to you on the network.
- See what published printer is available from a given server.
- Mount or unmount a remote printer.
- See the print queue of an available printer.
- See servers from a different "zone".

The following pages will explain how to use all the client commands. Please follow along on your PC.

Step 1. Select *Client Utilities*. This brings up the Client Utilities Menu as you see in the following figure:





File Servers

This command lets you see a list of all the file servers on the network whose resources you can share.

Step 1. Select *File Servers*.

Step 2. Press ↵

All currently active file servers are listed on the left side of the screen. As you select each server's name in turn, the window in the lower right will report any volumes on that server which you have "mounted".

If you think that some other servers have logged on to the network since you selected *File Servers*, you can also refresh the list of file servers by pressing the <HOME> key.

List Volumes on a Server

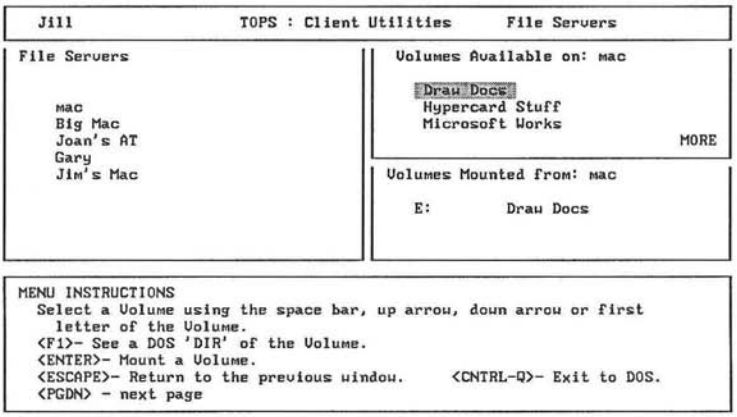
This command lists the volumes that each server has published and are available for your use should you wish to mount one or more of them.

Step 1. From the Main Menu, select *Client Utilities* and press ↵.

Step 2. From the Client Utilities Menu select *File Servers* and press ↵.

Follow the directions in the Menu Instructions window to select one of the server names listed in the upper window of the menu. Then press ↵. A display similar to the one below will appear.

Notice that only the server name you select is highlighted. This reminds you which server's volumes you are listing. The server name is shown in the Volumes Available and Volumes Mounted windows as well.



Also, in the Menu Instructions window you can obtain a directory listing of the files available in a particular volume. The section below tells you how to do this.

List Volume Contents

This command lists the files stored on a remote volume.

Step 1. From the Main Menu, choose *Client Utilities* and press ↵.

Step 2. From the Client Utilities Menu, choose *File Servers* and press ↵.

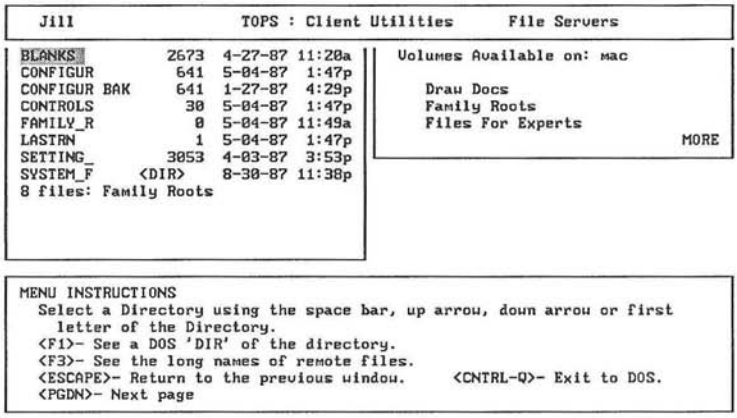
Step 3. Select a server and press ↵.

Step 4. Use one of the methods described in the Menu Instructions window to select a volume.

Step 5. Press <F1> to list the files and subdirectories contained in that volume.

Note: If the volume is password-protected, you will be asked to supply the password. If you don't know the password, you will not be able to list the contents of the volume. A password may contain a mix of uppercase and lowercase and it must be typed in exactly as it was entered when the volume was published. For example, "SeCreT" is a different password than "secret".

A screen similar to the one below will appear:



Displaying Long Names

Once you have reached this viewing level, you'll notice that the Menu Instructions window gives you a command for viewing "long names of remote files". Apple Macintosh computers and UNIX machines allow files to have longer names than do PCs. Macintosh names can be up to 31 characters long, whereas the PC only allows 11. UNIX file name length varies between versions of UNIX. Normally, remote file names will be shortened into the DOS format within TOPSMENU, but this command lets you display the entire file names.

Simply press the <F3> key when a directory listing is displayed. Press <F3> again to redisplay the DOS information.

Note: If the remote volume is on a Macintosh, the Macintosh must have the TOPS program "Interbase" installed.

Notice that the DOS-style names remain on the screen, with the longer names displayed to the right of the DOS names. This allows you to see which DOS name corresponds to a file that has a long name.

A <D> appears next to the items that are directories rather than files.

If the files you want to use are located in this volume, you can mount the volume on your station so that its contents are available to you.

Press the <ESC> key to move upward in the menu system until the Volumes Available window is active. Now follow the instructions to mount a volume.

Mount a Volume

To mount a remote volume so that you may use it as you would one of your own disk drives:

Step 1. From the Main Menu, choose *Client Utilities* and press ↵.

Step 2. From the Client Utilities Menu, choose *File Servers* and press ↵.

Step 3. Follow instructions to select a server and a volume.

Whenever the Volumes Available window is active, you can mount one of the listed volumes. You'll know you're at the right place in the menu because the Menu Instructions window will give you the option to mount a selected volume.

Step 4. To mount the selected volume, press ↵.

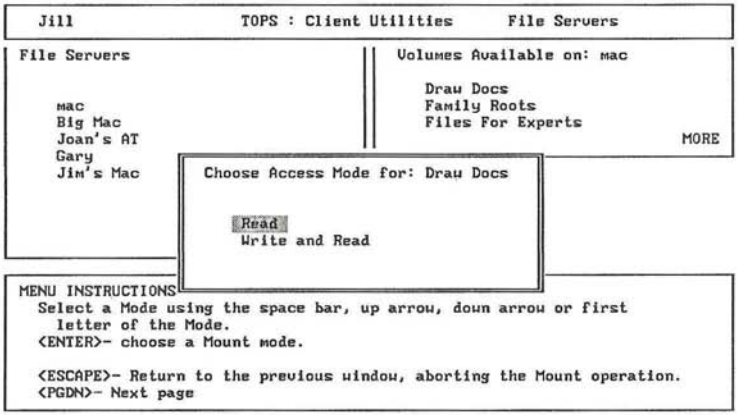
Once you have mounted the volume, it will act just as though it were a local drive inside your machine. Therefore, a drive letter must be assigned to the volume you are mounting. You will be asked to choose its drive letter by pressing the desired letter key. By pressing a key other than A through Z, TOPSMENU will automatically assign the next available drive.

Caution: This command will allow you to reassign your own floppy or hard disks too. For example, if you wanted to, you could reassign drive C to a remote volume. Be careful not to reassign the drive that has TOPSMENU, TOPS utilities, your system, or any published volumes on it. For an explanation of instances that would require reassignment of a local drive, see *Using Single-User Software* in Chapter 6.

You will also be asked to choose the type of access you want. This is covered in the next section.

Choose Access Mode

Once you select a volume to mount and assign it a drive letter, you have to choose the access mode. The access mode determines what you'll be allowed to do with the files stored in the volume. Your screen now looks something like that below. There are two types of access you can request:



Read Only You will only be able to Read files in the volume. No alterations to the file will be permitted.

Write & Read You will be able to Read the files and Write changes to the files as well. For example, you could edit a letter stored on the volume and then save the edited version on the volume.

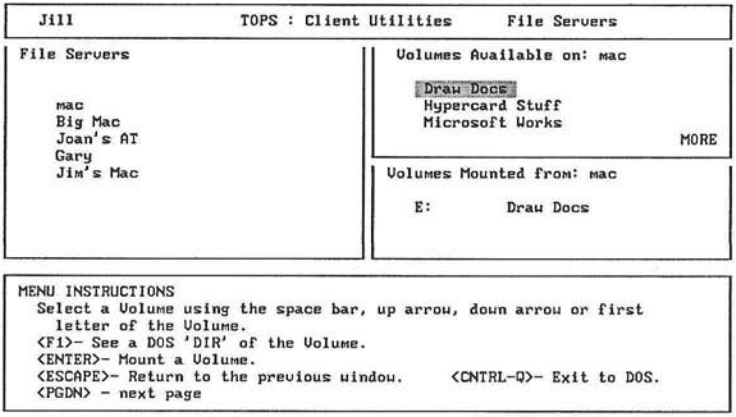
The types of access you can choose from can be limited by the server who published the volume. For example, if the volume were published *Read Only*, you would not be able to mount it *Write and Read.*

Step 1. After choosing the access mode, press ↵.

If the volume you are mounting is password-protected, you'll be asked to supply the password. Without the proper password, you cannot mount the volume. As you enter the password, asterisks (*) will appear instead of the actual characters you type. This keeps the password secret. After entering the password, press ↵.

Note: A password may contain both uppercase and lowercase and it must be typed in just as it was entered when the volume was published.

Notice that the volume you mounted now appears in the Volumes Mounted window on your screen. This volume will be available to you until you unmount it. Your screen will look like the one below.

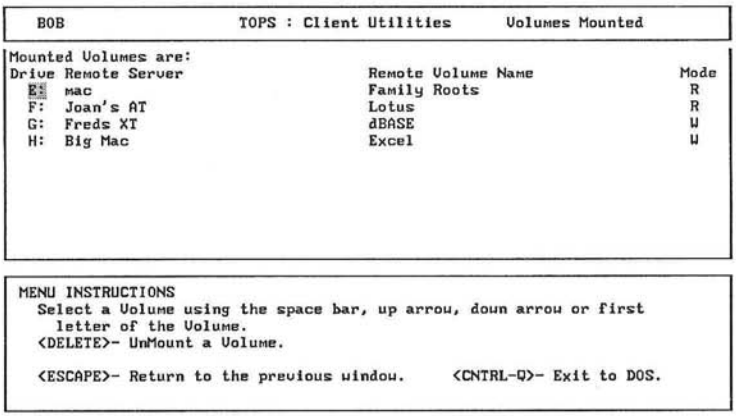


Volumes Mounted

This command lets you see a listing of all the volumes you've mounted thus far, what servers they reside in, and what the access mode is for each.

Step 1. From the Main Menu, select *Client Utilities* and press ↵.

Step 2. From the Client Utilities Menu, select *Volumes Mounted* and press ↵. A listing of the volumes you've mounted appears as shown below:



Unmount a Volume

While viewing the list of mounted volumes with the *Volumes Mounted* command, you have the option of *unmounting* any of them.

To unmount one of the volumes you've mounted:

Step 1. Select the volume as described in the Menu Instructions window.

Step 2. Press the <DEL> (delete) key.

If you try to unmount the volume you are currently logged onto (e.g. you're on Drive E: and trying to unmount it) TOPS won't let you. This is because you'd be left logged onto a non-existent drive after unmounting it. You must change to a different drive first, from the DOS command line and then unmount it.

Printer Servers

This command lets you see the printer servers available on the network. From the list of servers you can then see specific printers available for your use, choosing one if you like.

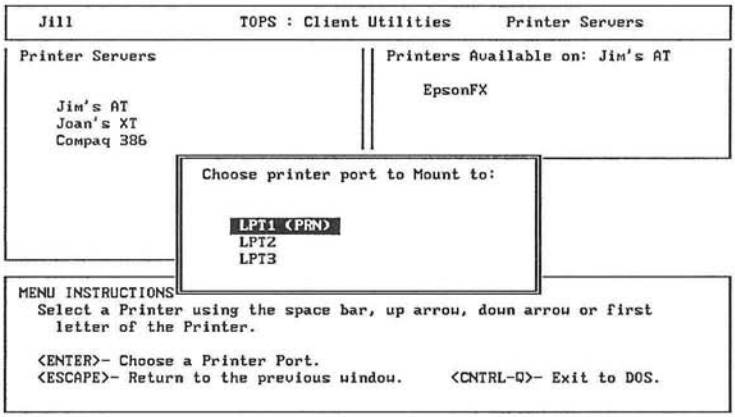
Step 1. Select *Printers Servers* from the Client Utilities Menu.

Step 2. The screen appears as shown below. A list of printer servers attached to the network is displayed in the left-hand window.

Step 3. Select the server whose printer you are interested in using and press ↵. The server's published printer will appear in the box to the right.

Step 4. To see the the print queue of a specific printer, select the printer and press <F1>. To delete one of your print jobs from the queue, select it and press <DEL>. You can only delete jobs that you initiated.

Step 5. To mount a printer for your use select its name and press ↵. You will then be asked to decide which printer port you want to assign the printer to. Normally this will be LPT1.

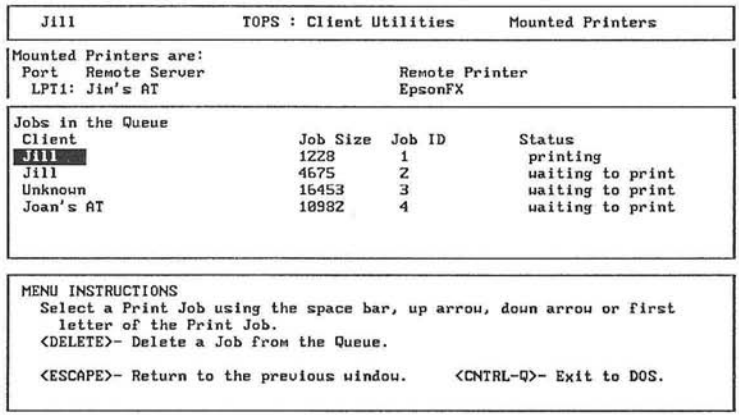


Mounted Printers

This command lists the printers you currently have mounted and can be used to see the print queue of a given printer, or to unmount a given printer.

Step 1. Select *Mounted Printers* from the Client Utilities Menu. The Mounted Printers screen appears, as you see below, listing the printers you have mounted.

Step 2. At this point, you can unmount a printer by pressing <DEL>, or see the print queue for the selected printer by pressing ←┘.



Change Zones

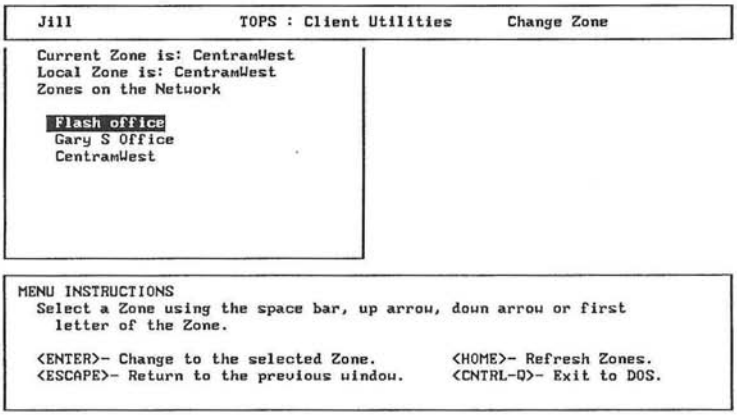
This menu choice only appears if your local network is bridged to another network. A zone is a grouping of networks on the same internetwork bridge. A zone may include more than one network.

This command from the Client Utilities menu is used to select a different *zone* from which to see servers and mount printers and volumes. A zone is another network that is connected to your network (the *local* network) through a bridge. Normally, when using any of the Client Utilities, only servers on your local zone will be displayed on the menus. However, in large networks consisting of multiple zones, you may want to mount volumes and printers from another zone instead. Only the servers, volumes, and printers in the selected zone will appear on your TOPSMENU screens. Also, only one zone can be selected at a time.

To change zones, do the following:

Step 1. Select Change Zone from the Client Utilities menu. Your screen changes to one similar to that shown below.

Step 2. Select the zone to which you want to switch and press ↵.



TOPSMENU Server Utilities

Now let's take a look at the options available to you as a network server. They are:

- Publish a directory as a volume

- Publish your printer
- List the directories on a local drive
- List your published volumes
- List your published printers
- See the print queue of your published printer
- List the clients using your volumes and printer
- Change the alias, password or access mode of a published volume
- Unpublish a volume
- Unpublish a printer
- List your volume clients
- List your printer clients
- List which of your volumes a given client is using
- Logout a crashed client
- Make your station name visible or invisible to the network

Server activities fall into two areas — publishing volumes (being a file server) and publishing printers (being a printer server). File server commands will be covered first, followed by those for printer servers.

File Server Commands

Publish a Volume

Publishing one of your directories as a volume makes it available to all other stations connected to the network. Two built-in features allow you to restrict access to your published volumes. *Passwords* limit access to those who know your password. *Access modes* specify the type of access (Read Only or Read/Write) that clients may have to your volumes.

TOPS calls each of your published directories a *volume*, and makes them available to other network users. Any subdirectories contained within the published directory will be published as well. You can stipulate that only certain drives or specific subdirectories be made public. This way you can safeguard sensitive or private files. See *Organizing Your Disk* in Chapter 6

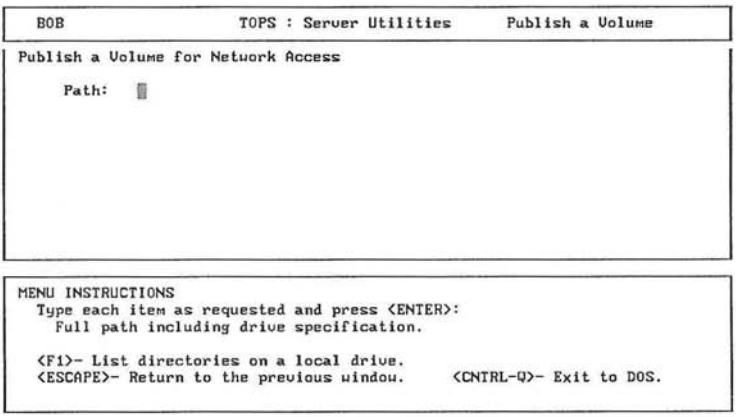
for suggestions on how to organize directories on your disk for both personal and network use.

To publish a volume:

Step 1. From the Main Menu, choose *Server Utilities* and press ←┘.

Step 2. From the Server Utilities Menu, choose *Publish a Volume* and press ←┘.

The following screen will be displayed.



You will be prompted to enter all necessary information when publishing a volume on the network.

Step 3. The first prompt will ask you to enter the path of the directory. If you know the drive and pathname of the directory you wish to publish, you may enter it in this window. (If you do not know the drive and pathname of the directory you wish to publish, see *Listing Directories on a Local Drive*.) You should enter the full pathname of the directory. For example,

```
C:\123\SHEETS
```

Step 4. When you have entered the full pathname, press ←┘.

Step 5. Now you have to choose an alias for the volume you want to publish. Recall from the glossary that an alias is

the name that your volume will have when it appears to other users of the network. So, for example instead of C:\123\SHEETS, you might name the directory HOT WORKSHEETS. The alias can be up to 16 spaces long. TOPS will supply a default alias based on the directory name you are publishing (e.g., SHEETS). You may change this by erasing it with backspace and entering a name of your choice. In any case, after the alias is entered, press ↵.

Step 6. The next item that TOPSMENU will prompt you for is an optional password. If you don't want to password-protect the contents of the volume, simply press ↵. If you do want to assign a password, carefully type it in at the prompt.

Note: A password may contain a mix of uppercase and lowercase. Keep this in mind when you type one in. The password "BiFF" is not the same as "biFf".

Step 7. The final prompt from TOPSMENU is for the access mode — Read Only or Read/Write. The default mode is Read Only. To change this to Read/Write, simply type in **W** or **w**.

Step 8. Pressing the final ↵ publishes the directory, and TOPSMENU reports the word "Working..." on the right side of the screen. This process may take a few seconds to complete.

After a volume is published, you will be prompted to publish another volume. When you have finished publishing volumes press the <ESC> key.

The entries described above are subject to the following limits:

Path	Maximum 64 characters.
Volume Name (Alias)	Maximum 16 characters.
Password	Maximum 16 characters, uppercase and lowercase.
Mode	R or RW only.

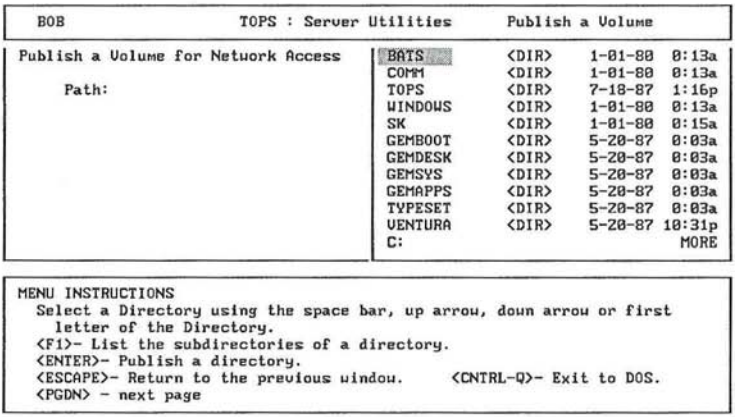
Listing Directories on a Local Drive

If you have just entered *Publish a Volume* and you do not know the path or the name of the directory you want to publish, TOPSMENU will let you choose the directory from a list.

Step 1. Press <F1> to see a list of the directories on the current drive.

Step 2. To get a listing of another local drive, type its drive letter, such as "A" (TOPSMENU automatically adds the ":\") at the *path*: prompt. Then press <F1>.

Step 3. Once the directories appear, your screen should look similar to that below:



Step 4. Now you can either choose a directory to publish by selecting it and pressing ↵, or you can move down a level to see what subdirectories there may be under the selected directory by pressing <F1>. You may continue to move down the hierarchy by repeating this procedure. If you get to a place where there are no more subdirectories, you will get the message: "This directory has no subdirectories". Press <ESC> to return to the list. At any point in the process, you can move back up the hierarchy one level by pressing <ESC>.

Step 5. Once you find the directory you want to publish, select it and press ↵. You will be back in the *Publish* window and you will notice that TOPSMENU has filled in the "path:" field for you.

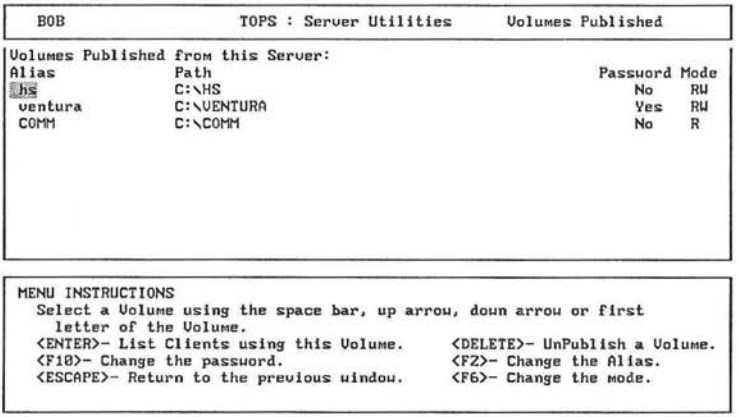
Step 6. If you want to publish a volume, now follow steps 4 through 8 in the previous section.

Volumes Published

You may want to see a list of the volumes you've published. Follow these steps to do so.

Step 1. From the Main Menu, select *Server Utilities* and press ↵.

Step 2. From the Server Utilities Menu, select *Volumes Published* and press ↵.



Note that your password is not displayed, although you will see a message indicating whether or not each volume is password-protected.

Also, once you've selected a volume you can conveniently perform the following operations by pressing the following keys:

↵: List Clients using a Volume

This option will display which clients have mounted the volume you select. Select a volume and press ↵.The clients will be listed in the lower right portion of the main window.

<DEL>: Unpublish a Volume

This option removes a volume from the network. It will no longer be available for clients to mount.

Note: To avoid possible damage to files in the published volume, you are prevented from unpublishing a volume which someone else on the network has mounted. When your volumes are in use, one or more of the files in

each volume will be open. Open files are either being written to or read from. If you unpublish a volume while files are open, the data in those files can be irreparably damaged. It is therefore necessary to have all clients unmount your volumes before you unpublish them.

<F10>: Change the Volume Password

This option allows you to change and/or assign a password to a volume you've published earlier. You may do this only if the volume has no active clients. After you press <F10>, a window bordered by double lines will appear in which you can enter a new password. Press ↵ to change your password or <ESC> to default back to the old one.

<F2>: Change the Volume Alias

This option allows you to change the alias or name of a volume you've published earlier. You may do this only if the volume has no active clients. After you press <F2>, you can enter a new alias. Press ↵ to change your alias or <ESC> to default back to the old one.

<F6>: Change the Volume Access Mode

This option allows you to change the access mode of a volume you've published earlier. You may do this only if the volume has no active clients. After you press <F6>, you can enter a new mode. Press ↵ to change your mode or <ESC> to default back to the old one.

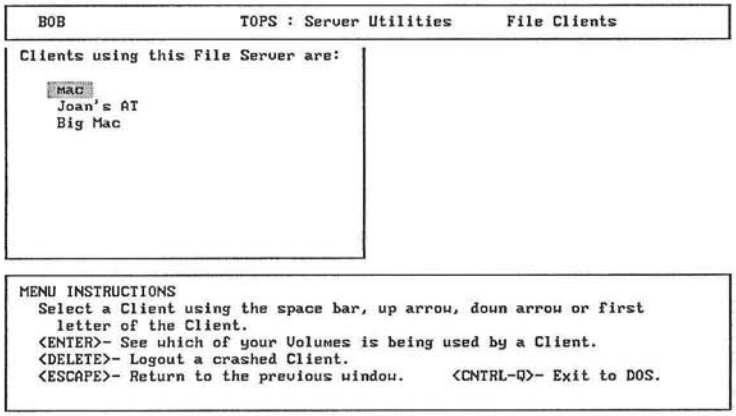
File Clients

As you know from the first part of this chapter, publishing volumes allows other stations to become your clients by mounting your volumes. Sometimes you may want to see a listing of all clients who have mounted volumes you've published. This is what the *File Clients* command from the Server Utilities Menu is for.

Step 1. From the Main Menu, choose *Server Utilities* and press ↵.

Step 2. From the Server Utilities Menu, choose *File Clients* and press ↵.

A screen similar to the following will be displayed.



Notice in the Menu Instruction window that once you've selected a client, you can do several things by pressing the following keys:

←┘: List Volumes used by a Client

This option will show which of your volumes have been mounted by the client you select.

<DEL>: Logout a Crashed Client

Occasionally a computer station on the network may "crash." This is a computer buzz-word that means the station's computer has malfunctioned due to some software or hardware problem. The problem may or may not have anything to do with TOPS. In any case, a crashed station won't respond to instructions, and thus cannot "log-off", or disconnect, from your published volumes. This can cause problems when you want to shut down your system, since TOPS will think a client is still using your volumes. Also, if the crashed station was using any of your published volumes at the time the crash occurred, some of the files in the volumes may still be "open" — a situation that can cause additional problems.

TOPS regularly checks the network to see if any clients have crashed and will automatically logout such clients after a few minutes. However, if you know that a client has crashed you may choose to logout the client manually. This procedure closes the open files and removes the client from your active list.

Note: The logout option should be used ONLY when a station has crashed while using one of your volumes, NOT as a way to disconnect an active user.

Commands Common to File and Printer Servers

Show/Hide Name

The next command pertains to both file-sharing and printer-sharing. Called the Show/Hide Name command, this is a selection from the Server Utilities Menu. Each time you invoke this command, its name on the menu changes from "Show Name" to "Hide Name", indicating whether or not your station's name is currently visible to clients as a server on the network. Here's how it works:

Hide Name
This allows you to make yourself invisible even though you are a server on the network. This is useful if you want to limit access to your volumes or printer. For example, if you know you are going to shut down your machine soon, hiding your name would keep new clients from mounting your published volumes or printer. Also, if you want to run a program which requires many files to be open and you want to reserve open file space for yourself, hiding your name will keep new clients from mounting your published volumes and therefore from using up your reserve of open files.

Step 1. Select *Server Utilities* from the Main Menu.

Step 2. Select *Hide Name* and press ↵ .

Show Name
If you have not published any volumes or a printer, or you have hidden your name, *Show Name* will make you visible as a server on the network.

Step 1. Select *Server Utilities* from the Main Menu.

Step 2. Select *Show Name* and press ↵ .

Printer Server Commands

The following commands will only appear if you have TOPSPRTR loaded.

Using three commands on the Server Utilities Menu, you can let other stations on the network print documents on your printer even though it is physically still connected to your computer and not directly connected to the network. From that menu, you can do the following:

- Publish a printer for use by others

- List the printer you have published
- See the print queue of the printer you have published
- See a list of your printer's clients

The remainder of this section details the use of the printer server commands available from this menu.

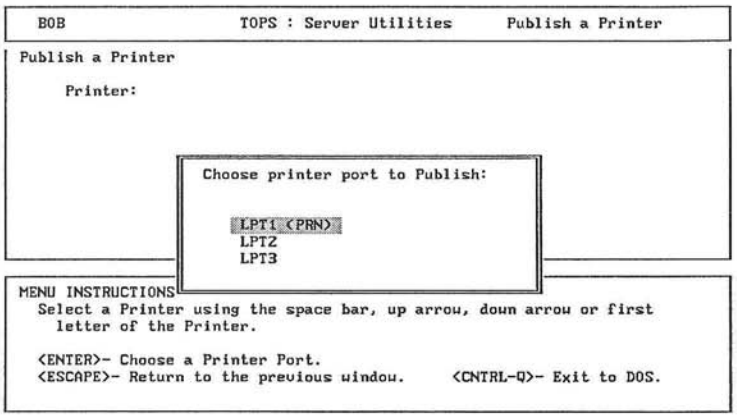
Publish a Printer

You use this command to allow other stations use of your printer. You'll be asked to provide information about the printer port, a name or alias for your printer, an optional password, and a directory pathname. The directory you specify is used as a temporary storage area (called a "spooler") to hold the data destined for your printer. You can publish only one printer at a time.

A spooler is necessary because several people may try to print documents on your printer at the same time. This isn't possible since a printer can't print two documents at once. Without a spooler, each station would have to wait until the printer is available before printing its document, which could be a real nuisance. With the spooler, clients can print when it is convenient and the spooler stores the files until the printer is ready. As files are received from clients for printing, they are put in a queue and printed sequentially.

Note: In order to be a printer server, you must run TOPSPRTR from the DOS command line. (This is a memory resident program that TOPS uses to manage printer redirection.)

To publish a printer follow these steps:



Step 1. From the Main Menu select *Server Utilities* and press ↵ .

Step 2. From the Server Utilities Menu select *Publish a Printer* and press ↵. The screen will look similar to the previous one.

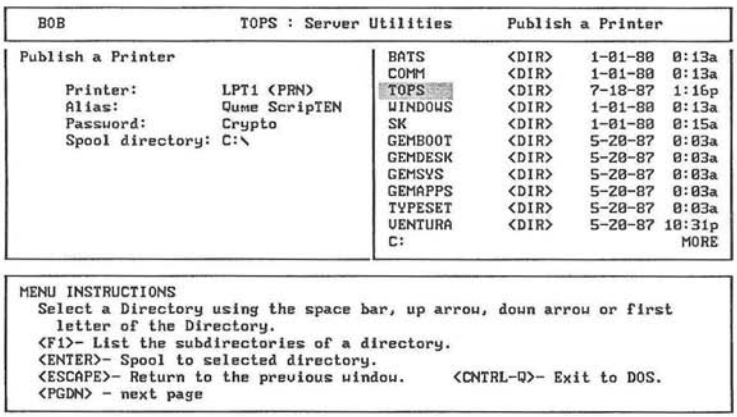
Step 3. Select the port to which your printer is connected. It will most likely be LPT1 (PRN). Check your system manuals and your DOS manual if you are in doubt.

Step 4. Now select an alias for your printer. We suggest that you use the type of printer you have as your printer name (e.g., ProPrinter).

Step 5. After choosing the alias you have to fill in the password and spooler directory:

Step 6. The full pathname including the drive letter must be entered. If you don't know the name of the directory you want to use, press <F1>. A list of directories will appear, similar to that shown in the following figure below. Select the one you want and then press ↵.

Step 7. When everything is correct, press ↵ and the printer is published.



List Published Printer

This command is used to see what printer you have published, and to see the state of the printer's queue. It's often useful to know how many files are queued up for printing so you can advise others who may want to use your

printer. You'll also want to check the queue before unpublishing your printer or turning off the power to your computer or printer since other clients may be waiting for print-outs from your printer. To examine this information, do the following:

Step 1. Select *List Published* Printer from the Server Utilities menu.

Step 2. Relevant information about your published printer will appear on the screen. The password (if you used one) will not show, though the words "Yes" or "No" under Password will indicate whether the printer is password protected or not.

Step 3. Press ↵ to see which clients, if any, are using your printer.

Step 4. Press <F1> to see the state of the queue for your printer. You can remove a job from the queue by selecting it and pressing <DEL>.

You can unpublish your printer by selecting it and pressing <DEL>.

My Printer Clients

This command shows you a list of stations that have mounted your printer for their use.

Step 1. Select *My Printer Clients* from the Server Utilities Menu and press ↵.

Step 2. A screen similar to the File Clients screen will appear.

You can logout a crashed client at this point by selecting the client's name and pressing <DEL>.

Commands Common to Clients and Servers

The last two commands apply regardless of whether you are a client or a server.

Remember

When you've worked on the network for some time, you'll find that you're publishing and mounting the same volumes and printers consistently. The Remember command from the Main Menu lets you save your server and

client settings so that they go into effect when you run TOPS from a batch file called TOPSTART.BAT. All settings will be saved as they were when you selected the Remember command. TOPS stores the settings in a batch file called TOPSTART.BAT which it creates in your root directory.

Sample TOPSTART.BAT file:

```
topstalk
topskrnl
topsprtr
tops /q station jill
tops /q publish c:\test as test /r /pe AnxPLc
tops /q publish c:\util as util /r
tops /q mount d: to atron "test 1" /rw
tops /q mount e: to "AT Klone" lotus /r
tops /q mount lpt2: to "steve's xt" printer
```

You may invoke the Remember option anytime. A new TOPSTART.BAT file will be created in your root directory that will overwrite an existing TOPSTART.BAT file there. If you want separate setups for use in different networking situations, you will have to store them under different names or keep them in separate subdirectories.

If you do not have a hard disk, TOPS will not include TOPSTALK, TOPSKRNL, or TOPSPRTR in your TOPSTART.BAT file. You must first load the TOPS software from your boot disk, then insert your working disk and run TOPSTART.BAT.

Quit

This command on the Main Menu quits the TOPSMENU system and returns you to DOS. Remember that you can also leave TOPSMENU at any time by typing <CTRL-Q>.

Chapter

4

Using TOPS from the DOS Command Line

For advanced DOS users and for the easy construction of batch files, TOPS lets you execute TOPS commands from the DOS prompt without having to run the TOPSMENU program and move through the various screens. This chapter describes the form and use of all the commands that you can execute from the DOS command line.

What's in this Chapter

Rules and Conventions
This section describes the basics of entering TOPS commands, as well as the various typographic and format conventions used in the command descriptions.

Basic Commands
This section also covers some of the basic commands, such as identifying your station, getting help information on other commands, and shutting down your station.

Client Commands
This section includes the TOPS commands which allow you to obtain information about the Servers,volumes, and printers available on the network and how to gain access to the volumes you wish to use.

Server Commands
This section describes how you publish volumes and printers to become an active server and how you obtain status information regarding the volumes and/or printer you have published.

TOPS Commands for Advanced Users
This final section describes some shortcuts for entering TOPS commands on the command line and discusses the TOPS Utilities.

Rules and Conventions

Entering TOPS commands

Every TOPS command you issue must begin with the word TOPS in either uppercase or lowercase and is always terminated by pressing the ↵ key. This activates the command interpreter program, TOPS.EXE, which acts upon the commands and parameters you enter after the word TOPS. Almost all commands require additional parameters, which are described in the following pages.

Typographic conventions

The following typographic standards have been used to present commands in this manual and in the on-line help screens.

UPPERCASE
All text in UPPERCASE letters are TOPS commands. The text of these commands must always be entered on the command line exactly as shown (in uppercase or lowercase).

lowercase
All text shown in lowercase letters indicates the type of information necessary to complete the command. For example, if you see "volume," you're expected to enter a volume alias (name), not the word volume.

[brackets]
Text contained within these brackets [ ] indicates that the information is optional. Text not contained within these brackets is required to complete the command. Options within options are shown as brackets within brackets [option [option]]. For example, [/U] indicates that the /U parameter is optional, but if you do use it, it must be typed as shown. [/C[name]] indicates that you can either enter "/C" or "/C name" where name is the name of a Client. Do not type the [ ] brackets.

"|" character
If several choices are listed and are separated by "|" , that means that you may enter any one of the choices. You can think of the "|" as "or". This applies to both optional and required parameters.

Command description conventions

Many of the commands described in this chapter have several possible forms, depending on the desired action and the parameters used. To simplify these descriptions, they are ordered as follows:

- First, the most general form of the command is presented. Don't be discouraged if it seems complex, since you won't need to specify all of the possible parameters very often.
- Second, each commonly used form of the command is given, and its effects described.
- Finally, some examples are given to help you use the TOPS command line interpreter and construct batch files.

Note: When entering commands using the following examples, take extra care to note any special characters used in the command as well as the placement and use of quotation marks and blank spaces. If the command isn't entered correctly, TOPS won't understand your command. If TOPS or DOS gives you an error message, here are some things to check:

- Is your spelling correct?
- Did you include blank spaces where required?
- If you entered a station name or volume alias that has blank spaces, did you enclose it in double quote marks?
- Did you enter single quote marks (such as ' or `) instead of double quote marks (") ?
- Did you enter a backward slash \ when you should have entered a forward slash / (or vice-versa) ?

Basic Commands

TOPS VER

Entering this command displays the current version of the TOPS command line interpreter (TOPS.EXE) and TOPSKRNL running on your computer. This can be useful information, since various computers on the network may be running different versions of TOPS software. Later versions may have additional commands not found on earlier versions, and there may be incompatibilities between certain versions.

TOPS HELP [command]

The HELP command provides on-line help for all of the various TOPS commands and options.

TOPS HELP

Entering this command without the optional parameter displays a screen similar to this:

```
                                TOPS COMMANDS

TOPSMENU          loads menu-driven TOPS command program
TOPSPRTR          loads background TOPS Printer Server
TOPS  HELP        [command | /A]
TOPS  STATION     [/PR] [name | OFF | ON]
TOPS  ZONE        [zone | * | ?]
TOPS  DIR         [/PR] [/Z zone] [server]
TOPS  MOUNT       d:  TO  server  volume  [/Z zone] [/R | /RW] [/P [password]]
TOPS  MOUNT       lpt#:  TO  server  printer  [/Z zone] [/P [password]]
TOPS  UNMOUNT     [d: | lpt#: | /A]
TOPS  RPRINT      lpt#: [/Q] [/S] [/PS setupfile]  [printfile ...]
TOPS  PUBLISH     d:path  AS  volume  [/R | /RW]  [/P [password]]  [/X]
TOPS  PUBLISH     lpt#: AS  printer  USING  d:path  [/E]  [/P [password]]
TOPS  UNPUBLISH [volume | printer | /A]

  /R = Read     /RW = Read & Write  /P = Password  /A = All       /Z  = Zone
  /C = Client   /D  = Directories   /U = Volumes   /F = Files     /PR = Printer
  /X = NoXsync /PS = Print Setup    /S = Status    /Q = Queue     /E  = Erase

 Hit any key to continue, or type <ESCAPE> to quit...
```

Once you identify a particular command, you can get additional help by using the TOPS HELP command. This command displays a help screen about the command you enter. For example, if you type

```
C> tops help station
```

this screen would be displayed:

```
TOPS HELP for STATION

TOPS  STATION   [/PR] [name | OFF | ON]

Argument        Meaning

 STATION        Displays, sets, or changes the status of the Station's Network
                visible name.  If no arguments are specified, the current name
                and its status are displayed.
 /PR            If the "/PR" option is specified, the status of the Printer
                Server's name is reported or turned OFF or ON.
 name           If "name" is specified, your network identity is set if it is
                unique on the network.  You can include spaces by enclosing the
                entire name in double quotes: ".
 OFF            Deactivates your Station name so that other clients will not be
                able to see this Station while perusing the network.
 ON             Reactivates the Station name.

                NOTE:  You can't set the Printer Server's name.  It always has
                the same name as your Station.

C:\HS
```

Identifying Yourself on the Network

TOPS STATION [/PR] [name | OFF | ON]

The AppleTalk connectors physically connect all the computers together on the network. You are not "listed" on the network, however, until you run the TOPSKRNL program and have entered the name of your station on the network and published a volume on the network. After TOPSKRNL is loaded, the STATION command is used to check and assign your station

name, place it on the network, and temporarily turn your station's visibility off or on.

If you use the /PR option with OFF or ON, TOPS will take you off or put you on the network as a printer server. Otherwise, it will report your station's name.

TOPS STATION

The STATION command entered with no arguments displays your station name. For example:

```
C> tops station Shipping
```

tells TOPS that your station name will be Shipping. You may enter any name you like up to 15 characters. If the name contains any internal blanks, the entire name must be enclosed in a set of double quotes (for example, "Sales Dept"). Since both TOPS and DOS use spaces to separate command parameters, the quotation marks tell DOS and TOPS to treat the text as one word and to ignore the internal blank spaces.

Note: You must supply a Station name before using most of the other TOPS commands.

TOPS STATION name

With an argument other than OFF or ON, TOPS will verify that no other station on the net is currently using the specified name. If not, your station will be assigned the specified name. Otherwise you will have to enter another name with the STATION command. You can also use this form of the command to give yourself a new station name. However, if you have active clients you will not be able to change your name until they stop using your volumes.

TOPS STATION OFF

This command tells TOPS to temporarily take your station off the network. This can be useful if you want to shut down your station and don't want any other stations to begin using your published volumes. It's also useful if you want to run a program which requires many files to be open and you want to reserve open file space for yourself.

TOPS STATION ON

This command places your Station back on the network so other stations can again access your volumes.

Shutting Down Your Station

TOPS SHUTDOWN

We recommend that network users follow a few simple practices, including the unmounting of all remote volumes and the unpublishing of all local volumes before turning off their computer. The TOPS SHUTDOWN will perform, in order, the following three TOPS commands:

```
TOPS UNPUBLISH /A
TOPS UNMOUNT /A
```

If you still have active clients, the SHUTDOWN command will inform you and you must ask those stations to log off your machine.

Client Commands

Listing Available Servers and Volumes

TOPS DIR [/PR] [/Z zone] [server]

The DIR command displays a list of stations and volumes available on the network. The information displayed depends on the parameters supplied with the command.

/PR	Displays print servers or printers instead of volume servers and volumes.
/Z zone	Displays only servers in a specific zone. If no zone is named, the default zone is used.
server	If a server name is specified, DIR displays a list of the volumes or printers published by that server.

TOPS DIR

This command displays all stations which have identified themselves to the network and have published volumes.

TOPS DIR server

When you specify the name of a server in the DIR command, all volumes that the specified server has published will be displayed.

If you were to type in only the DIR command, you might see a display like this:

```
C> tops dir
```

```
Looking for TopsServers on the network...
Listing of TopsServers on the Network

Accounting
Sales Dept
Shipping
Personnel

 4 TopsServers found
```

To display the volumes published by any one of these servers, issue the DIR command with that server's name:

```
C> tops dir "Sales Dept"
```

and a screen like this would be displayed:

```
Listing of available Volumes
on TopsServer Sales Dept

BACK ORDERS
JAN ORDERS
FEB ORDERS
MAR ORDERS
```

Mounting Remote Volumes

TOPS MOUNT d: TO server volume [/Z zone] [/R | /RW] [/P [password]]

After using the TOPS DIR command to see what volumes are available, use the MOUNT command to assign the volume you want to a drive letter. Once assigned to a drive letter, the volume will behave just like a physical drive attached to your Station.

The parameters to the MOUNT command have the following meanings:

d:	This is the drive letter to which the volume will be assigned.
server	This is the name of the server that published the volume.
volume	This is the alias of the volume on that server that you want to access as drive *d:*.

The other parameters to MOUNT are optional and allow you to specify an access mode and a password if required. These parameters are explained below.

TOPS MOUNT d: TO server volume

This command will set up a mapping between the logical drive specified by *d:* and the TOPS volume *volume* on the server *name*. Since none of the optional parameters are specified, TOPS will attempt to give you Read and Write access to the volume.

Note: The drive letter you specify can be any letter from A to Z. However, the letter should not already be assigned to your physical drives. For example, if you have two floppy drives and a hard disk, the letters usually assigned to these drives are A, B, and C. Don't mount any volumes to these letters. An exception to this may be if you do not want to have access to the local drive, or if an application program requires the presence of data files in a particular drive. Be careful when reassigning local drives. This is a powerful option and can get you into trouble if your physical drive has DOS files, TOPS files, or other needed information.

Mount Access Modes, Password Protection & Zones

TOPS MOUNT d: TO name volume [/Z zone]

You can specify the zone for the server look up using the /Z option. Enclose the desired zone in quotes if there are blank spaces in the name. The default zone is used if no zone is declared.

TOPS MOUNT d: TO name volume [/R | /RW]

The letters in [ ] are optional parameters which specify the type of access you want to the volume:

/R	You just want to Read or execute files in the volume.
/RW	You want to create or update files in the volume as well as Read them.

Note: If you do not specify a type of access, TOPS will attempt to give you Read/Write Access.

As described in later sections, the PUBLISH command allows a server to restrict the access allowed to a volume. If you request a type of access not permitted by the publisher, you'll receive a message like this:

```
TOPS: Volume can't be mounted Read/Write,
try Read Only? (Y/N)
```

The access rules are:

Volume Published as:	You may Mount with:
/R	/R
/RW	/R or /RW

In addition, a volume may be published with a password, so that clients on the net will have to supply the password when they wish to mount the volume. If the publisher of the volume requires a password, it must be entered at the end of the command as shown below.

TOPS MOUNT d: TO server volume [/P [password]]
If the "/P" is entered without a password following, TOPS will prompt you for the password. To maintain secrecy, TOPS displays only asterisks as you type in a password.

Note: Passwords are case sensitive and they must be typed in exactly as when the volume was published.

If the password you enter is wrong, or if you don't supply a password and one is required, TOPS will prompt you for one. In fact, TOPS will give you a couple of tries in case you mistype the password.

Following are examples of MOUNT commands:

- This command will let you to use files in the BACKORDERS volume of the Sales Dept Server just as if they were on your Drive F:.

```
C>tops mount f: to "Sales Dept" BACKORDERS
```

- With this command you will be able to Read or copy the files in the Tools volume of Jim's XT.

```
C>tops mount g: to "Jim's XT" Tools /R
```

- The following command causes TOPS to prompt you for the password of the Sales Dept's NEWORDERS volume.

```
C>tops mount f: to "Sales Dept" NEWORDERS /P

This Volume is password protected, try password?
(Y/N) y
Please enter password: ********
```

If you happened to make a mistake typing it in, the following would be displayed:

```
Password incorrect, try again.
Please enter password: *********
```

After your second failed attempt at entering a password, TOPS will abort the current command. However, you can issue the TOPS command again with the same arguments for more tries.

How to Mount a Printer

TOPS MOUNT device: TO server printer [/Z zone] [/P [password]]

This mount command is used to set up the mapping between a local printer port and a remote TOPS printer. After the printer has been mounted, output to that port is redirected to the remote printer. The arguments for this command work identically to those for volume mounting, with the following exceptions:

device	Indicates the LPT port (1-3) to be assigned to the remote printer (you will usually want to use LPT1:)
server	Specifies the printer server name
printer	Specifies the printer from that server to use for redirection

How to Unmount a Volume or Printer

TOPS UNMOUNT d: | device | /A

The UNMOUNT command closes the volume or printer previously assigned. This frees the drive letter or port for other uses.

TOPS UNMOUNT d:

This form of the command will terminate the connection between the remote TOPS volume and the specified drive.

TOPS UNMOUNT device

This form unmounts the device (usually an LPT port) that had been reassigned by the mount command.

TOPS UNMOUNT /A

Given the "/A" parameter, TOPS will close the connections with all of the volumes which you currently have mounted. This is particularly useful at the end of a session, so that you don't have to specify each drive. Here is an example of UNMOUNT command:

```
C> tops unmount f:
```

unmounts the volume previously assigned to drive F: and frees F: to be assigned to a new volume.

Note: You cannot unmount the drive you are currenly logged to.

Checking the Status of Volumes You're Using

TOPS CSTAT [d: | device]

The CSTAT command displays your status as a client on the network. The command CSTAT stands for client status. It will display your station name and other information depending upon the optional parameters.

TOPS CSTAT

This command displays the server and volume/printer information about logical drives and LPT ports. If no arguments are specified, information about all the redirected logical drives and LPT ports is displayed. If no remote volumes/printers are currently mounted, CSTAT will display an appropriate message.

TOPS CSTAT d:

If you specify a particular drive letter, the Server and volume name assigned to that drive letter are displayed.

Below is an example of the CSTAT command and output:

```
C> tops cstat

Your Station Name: ACCOUNTING

Publisher      Volume          Drive    Access
Sales Dept     BACKORDERS      F:       RW
Jim's XT       Tools           G:       R
```

TOPS CSTAT device

If you specify a particular printer port the server and printer name assigned to that port are displayed.

```
C>tops cstat lpt1:
```

or

```
C>tops cstat prn:
```

Using Remote Printers

TOPS RPRINT device /Q \/S | /PS setupfile \/printfile...

This command lets you send print files to a remote printer and to look at the queue of files waiting to be printed on remote printers. This is the recommended way of printing files from the DOS command line.

device	Indicates the LPT port (1-3) to be used. PRN: can be used instead of LPT1:.

/Q	Displays the queue of jobs for the printer mounted as LPT#:
/S	Displays the status of the printer mounted as LPT#:
/PS setupfile	This option can be used to specify a file containing printer setup information. This file will then be sent at the start of every print job to this printer.
printfile...	This option specifies the name of a print file (or files) to be sent to the remote printer. Separate the file names with spaces.

This command is discussed in further detail in Chapter 5.

Changing the Zone

TOPS ZONE [zonename | * | ?]

This command allows a client to see the names of the local and other network zones, and to set the zone for doing DIR and MOUNT. If no parameters are specified, the default zone and local zone are displayed.

The parameters to the ZONE command have the following meanings:

zonename	Changes your default zone to zonename. Server lookups will occur in that zone until you change it.
*	Sets the default zone to the local zone. (The local zone is the zone in which the station normally resides and is physically connected.)
?	Displays a list of network zones

Server Commands

How to Publish Volumes

TOPS PUBLISH d:\path AS volume [/X] [/R | /RW] [/P[password]]

This is the complete form of the publish command. The three following command descriptions clarify the various parameters you can use with it.

TOPS PUBLISH d:\path AS volume [/X]

The parameters to the PUBLISH command have the following meanings:

d:	This is the drive location of the directory you want to publish. If omitted, TOPS will assume the directory is on the currently logged drive.
path	This is the complete path of the directory to publish. If omitted, TOPS will assume you're publishing the current directory.
volume	This is the alias of the directory you are publishing.
/X	This optional parameter tells TOPS not to run the XSYNC utility to synchronize the contents of the directory to be published. This should only be done if there has been no file activity in the directory since it was last published.

The other optional parameters control the type of access that Clients will have to the volume you publish. These parameters are explained below.

Note: TOPS does not allow you to publish the subdirectory of a directory which is already published. Similarly, if one of the subdirectories of the directory you wish to publish has already been published, TOPS will not let you publish it.

How to Publish Printers

TOPS PUBLISH device AS printer USING d:path [/P [password] [/E]

This lets you publish a local printer on the network for other people to use.

device	The device name of your printer (such as "LPT1" or "PRN").
printer	The name you want to give to the printer.
d:path	The directory where spool files for print jobs sent to this printer will be kept.
/P [password]	If you want to require other people to give a password when they use the printer, you can specify a password here. If you give the /P option but no password, TOPS will prompt you for the password.
/E	This causes the printer's spool to be emptied as you publish it.

Publish Access Modes

TOPS PUBLISH d:\path AS volume [/R | /RW]

The letters in [ ] are optional parameters which specify the type of access you want to allow for the volume:

/R	Publish the volume as Read only. Clients can only Read files in the volume. They will not be able to change the file data.
/RW	Publish the volume as Read and Write. Clients will be able to Read files and Write changes to them.

Note: If you do not specify a type of access, TOPS will allow Clients Read/Write access.

Publish Password Protection

TOPS PUBLISH d:\path AS volume [/P[password]]

If you use the "/P" parameter, TOPS will publish the volume with a password associated with it. This means that other clients on the network will have to provide the password if they wish to gain access to the volume. If the "/P" is entered on the command line with no argument, TOPS will prompt you for the password.

Note: Passwords are case sensitive; please keep this in mind when assigning them to volumes.

Following are some examples of the PUBLISH command:

- This one publishes the SALES directory on drive C: and gives it the alias "Sales Reports".

```
C>tops publish c:\sales as "Sales Reports"
```

- The following command publishes the current directory on drive A: with the alias "Inventory" and Read Only access.

```
C>tops publish a: as Inventory /R
```

- This command publishes the MAIL directory on drive D: with the Alias "Mailing List" but does not xsync it since absolutely NO activity has occured in the directory since it was last published.

```
C>tops publish d:\MAIL as "Mailing List" /X
```

- The next example illustrates how a password may be attached to a published volume. The current directory on the currently logged drive will be published as "Payroll" with the password xyzzy.

```
C> tops publish as Payroll /P xyzzy
```

- If the final parameter (xyzzy) had been omitted, TOPS would have prompted you for the correct password to attach to the volume:

```
C> tops publish as Payroll /P

Please enter password: *****
```

  Assuming that "xyzzy" was properly typed, this sequence would have the same effect as the previous example.

Taking a Published Volume Off the Network

TOPS UNPUBLISH volume | printer | /A

The UNPUBLISH command takes previously published volumes off the network, and prevents any new stations from mounting them. This command will return an error if clients are currently using the volume you wish to UNPUBLISH. They should unmount the volume before you UNPUBLISH it to avoid possible corruption of the files they are using. To see what clients are using this volume, issue a PSTAT command (discussed later in this chapter).

TOPS UNPUBLISH alias

This command takes the named volume you specify off the network.

TOPS UNPUBLISH printer

This command takes the printer off the network. Use the printer's alias in place of the word "printer".

TOPS UNPUBLISH /A

The /A parameter causes all the volumes and any printer you've published to be taken off the network.

Caution: Be sure to unpublish all your volumes before turning your machine off. This ensures that any changes made to the contents of those directories will be properly recorded.

Checking the Status of Published Volumes and Printers

TOPS PSTAT [/C [name]] [/D] \ [/F] \ [/V [volume]] [/PR [printer]]

The PSTAT command displays the status of volumes and any printer that you've published for use by clients on the network. The information displayed depends on what parameters you include with the command. The command PSTAT stands for publisher status. It shows your status as a publisher on the network.

TOPS PSTAT

This command gives an overview of your status as a publisher. It displays your station name, all currently published volumes and any printer, shows which clients are active, and what volumes and any printer are currently being used.

TOPS PSTAT /V

If you supply the "/V" parameter alone, TOPS will list all the volumes which you have published.

TOPS PSTAT /V volume

The "/V" parameter followed by a volume alias will cause TOPS to display a list of the clients which are currently using the specified volume.

TOPS PSTAT /C

The "/C" parameter stands for "clients". If entered TOPS displays a list of the clients currently using any volumes or printer on your computer.

TOPS PSTAT /C name

If the "/C" parameter is followed by a client name, TOPS displays the volumes or printers which are being used by the specified client.

TOPS PSTAT /PR

If "/PR" parameter is used, TOPS displays the name of the printer that have been published. Adding the name of a specific printer's alias after the "/PR" causes the status of that printer to be displayed.

TOPS PSTAT /D

If the PSTAT command is followed by the "/D" parameter, TOPS displays all your directories currently being used.

TOPS PSTAT /F

The "/F" parameter causes TOPS to display a list of the Files which are currently open. Following are some examples of the various forms of the PSTAT command and the displays from these commands:

Note: The examples below will not correspond to what you see when trying these commands.

```
C> tops pstat /v

Your Station name is: Sales Dept
Volumes currently Published:

Alias            Mode     Path              Password
Sales Reports    RW       C:\SALES          Yes
Inventory        RW       A:\               No
Mailing List     R        C:\MAIL           No

C> tops pstat /v Inventory

Your Station name is: Sales Dept
Local Path of 'Inventory' is:          A:\
Publish Mode of 'Inventory' is:        RW

Clients currently using Volume 'Inventory':

Client                 Access
Will George            RW
Nat G.                 R

C> tops pstat /c

Your Station name is: Sales Dept
Clients currently Active:

Will George
Nat G.
Valerie

C> tops pstat /c "Nat G."

Your Station name is: Sales Dept
Volumes currently being used by 'Nat G.' are:

Volume                 Access
Inventory              R
Sales Reports          RW
```

TOPS QUEUE printer [/E jobid]

This command lets you display the queue of files waiting to be printed on your published printer.

The /E option is used to terminate a print job, and remove the job from the print queue. For example:

```
C> tops queue laser2 /E 2
```

Logging Out a Crashed Client

TOPS LOGOUT name

Sometimes, for a variety of reasons, a client's station will crash. On these occasions, the crashed station will not be able to properly close any files open at the time of the crashed. The publisher of the volume being used will have to close these files from the server using the LOGOUT command. IT SHOULD BE USED ONLY FOR THIS PURPOSE.

The name in the command is the name of the client that has crashed. All open files that the Station was using at the time of the crash will be properly closed.

Note: The TOPS system includes a mechanism (known as "tickles") which enables Servers to detect when one of their Clients has become inactive or crashed. Usually after a delay of approximately two minutes the Server will automatically close the broken connection. Consequently, the LOGOUT command will not need to be used very often.

TOPS Commands for Advanced Users

TOPS PAUSE

Certain DOS commands, such as CHKDSK, may not operate correctly while TOPS is active in memory. In addition, some applications' copy-protection schemes may be confused if TOPS is active. The PAUSE command allows you to temporarily suspend the operation of TOPS while you run such a command or application.

Caution: There should be no active users of your volumes when issuing this command. In addition, any published volumes should be Unpublished before doing a PAUSE. Since PAUSE suspends network activity, you will not be able to access any remote volumes which you have mounted until the RESUME command is issued.

TOPS RESUME

This command will RESUME the operation of TOPS in memory. You will not have to reissue a TOPS STATION command; you will automatically be reconnected to the network just as you were before issuing the PAUSE command.

TOPS REMEMBER [/F batchfile]

This command will write the current TOPS system configuration including all mounted and published volumes and printers into a batch file. The batch file will be created in the root directory, and the file's name will be TOPSTART.BAT unless you indicate otherwise with the /F option.

TOPS UNLOAD KRNL | PRTR | TALK | /A

This command will remove the memory resident modules of TOPS from memory. This disables the use of TOPS, although you may reload TOPS if you desire.

KRNL	Unloads TOPSKRNL
PTR	Unloads TOPSPRTR
TALK	Unloads TOPSTALK
/A	Unloads All modules

Abbreviating TOPS Commands

All of the commands to the TOPS command line interpreter may be abbreviated. In most cases, the abbreviated form is simply the first two letters of the full command name. The only exceptions are "UNMOUNT", "UNLOAD", and "UNPUBLISH", which are shortened to "UM", "UL", and "UP," respectively. The table below includes all the commands and their abbreviated forms.

Command	Abbreviation
CSTAT	CS
DIR	DI
HELP	HE
LOGOUT	LO
MOUNT	MO
PSTAT	PS
PAUSE	PA
PUBLISH	PU
QUEUE	QU
REMEMBER	RM
RESUME	RE
RPRINT	RP
SHUTDOWN	SH
STATION	ST
UNPUBLISH	UP
UNLOAD	UL
UNMOUNT	UM
VER	VE
ZONE	ZO

These abbreviations may be used on the TOPS command line any time the command name is required.

Chapter

5

Printing with TOPS

TOPS/DOS includes a print utility called TPRINT that lets you print your documents on your own printer, on network printers, and on remote printers. The flexibility built into TPRINT lets PC users share the advantages of Appletalk compatible printers, particularly laser printers such as the Apple LaserWriter and compatibles. In addition, Apple ImageWriter printers can also be used by PC's over the TOPS Network. Of course you can still use the printer attached to your local computer and the software you are accustomed to, with no change in normal printing procedures, if you prefer.

Although there may be certain limitations on the degree to which your PC programs can utilize these printers' assets (particularly their graphics capabilities), this chapter describes how most programs can be set up to use networked printers to increase your productivity and the quality of your printed documents.

Note: Because TPRINT is a utility program that is run from the DOS command line (i.e. the A>, B>, or C> prompt), this chapter uses conventions similar to those of the previous chapter. If you have not read the section "Typographic Conventions" of Chapter 4, please do so before reading this chapter.

What's in this Chapter

This chapter is divided into three sections:

Printing to a Network Printer
This section includes the TPRINT options which allow you to send files to a LaserWriter or ImageWriter II on your network. It also contains procedures to help you print PostScript files created by word processors and graphics programs.

Printing to a Published Printer
If you are using TOPS to redirect your printer output to a remote printer, this section describes how you would use TOPS or TPRINT to send files to that printer. Printing takes place in the background while you use your computer for other tasks.

Printing to Your Local Printer
TOPS provides a replacement for the DOS PRINT command, which also allows you to have print files sent to your local printer in the background. This section describes the steps necessary to set up this background printing.

This section also explains how to set up the TOPS printing utilities to work with a printer that is not assigned to the standard IBM "print device" ports, LPT1: or PRN:.

Printing to a Network Printer

To send a document to a network printer, use the TPRINT utility from the DOS command line using the syntax explained below. Examples of typical TPRINT command lines are shown and explained afterwards.

Note: Since TPRINT is intended as a replacement for the PRINT command supplied with DOS, you may want to replace your PRINT.COM file with the TPRINT.EXE supplied with TOPS. This will prevent you from accidentally using the DOS PRINT program when you intended to use TPRINT.

```
TPRINT [device type/Y] [device name/N] [zone name/Z]
       [filename/e] [/V] [/S]
```

The parameters in brackets have the following meanings:

device type	LASERWRITER, IMAGEWRITER, or other network device. You must include the characters "/Y" after the device type.
device name	The actual name you've assigned to the network device. You must include the characters "/N" after the device name.
zone name	The name of the network zone you are trying to access. You must include the characters "/Z" after the zone name.
filename	The name of the file you wish to print, including the full path if the file is not in the current directory. You may include a series of filenames, separated by spaces.

e — The emulation mode: either /L or /X. (Note: There is no space between the filename and /L or /X, as described below.)

- /L — The file just preceding this argument and any following filenames will be sent to a LaserWriter for printing in Diablo 630 emulation mode.
- /X — The file just preceding this argument and any following filenames will be sent to a LaserWriter for printing in PostScript mode, or to an ImageWriter II for printing as an ImageWriter text or TTY print file. In all cases, the print file must be formatted properly for the emulation mode selected.

/V — Lists the names of all the network devices of the current type.

/S — Gives the status of the current network device.

The default TPRINT settings are as follows:

device type — LASERWRITER

device name — First available device. If there is only one device, then that device, when it becomes available. If there are more than one, then the next available device of that type.

zone name — Your local zone.

filename — No default setting. You must specify a filename each time you use TPRINT.

emulation mode — No default setting. You must specify an emulation mode each time you use TPRINT unless you are queueing to a local printer.

You can change these default settings by creating a file to store your own defaults. See the section *Saving your TPRINT Settings*, in this chapter.

Some TPRINT examples

Here are some examples of typical TPRINT command line statements:

```
TPRINT  LASERWRITER/Y  MAINLASER/N  A:\FILE1.TXT/L
```

Sends a file named FILE1.TXT in drive A to a LaserWriter named "MAINLASER" for printing in Diablo 630 mode.

```
TPRINT  IMAGEWRITER/Y  C:\DATA\FILE2.TXT/X
```

Sends a file named FILE2.TXT in the DATA subdirectory of drive C to the first available ImageWriter on the network.

```
TPRINT  LASER2/N  C:\WORD\FILE3.PS/X
```

Sends a file named FILE3.PS in the WORD subdirectory of drive C to the LaserWriter named "LASER2" for printing in Postscript mode.

```
TPRINT  FILE4.PS/X
```

Sends a file named FILE4.PS in the current directory to the first available LaserWriter for printing in PostScript mode.

```
TPRINT  IMAGEWRITER/Y  /V
```

Reports the names of all ImageWriters on the network.

Saving Your TPRINT Settings

If you wish, you can set up predefined settings for TPRINT so that you don't have to remember all the rules and syntax we've listed above each time you want to print a file. By creating a file on your disk called TPRINT.DAT and putting TPRINT commands in it, you instruct TPRINT to use those settings. Each time you run TPRINT, it looks for this file. If it doesn't find it, the default settings are used.

You must make your file using a EDLIN, word processor, text editor, or utility that creates ASCII files, and doesn't imbed control characters in its file. For example, WordStar in its non-document mode will do fine, as will Sidekick or PC-Write in their normal modes.

As a sample TPRINT.DAT file, consider the following. If your TPRINT.DAT contains this line:

```
LASERWRITER/Y  MAINLASER/N  /L
```

and you type at the command line:

```
TPRINT  A:LETTER.TXT
```

then TPRINT will send a file named LETTER.TXT in drive A to a LaserWriter named "MAINLASER" to print in Diablo 630 mode. By

comparing this to the first example, you can see how a TPRINT.DAT file can simplify your use of TPRINT.

The file TPRINT.DAT must be located in the subdirectory from which you print. Therefore, if you commonly print from multiple subdirectories, each subdirectory should have its own TPRINT.DAT file. Of course, each TPRINT.DAT file may have different settings.

Printing in Diablo 630 mode

The Apple LaserWriter includes a built-in Diablo 630 mode, which may be used over the AppleTalk Network. This mode lets the LaserWriter print as though it were a Diablo 630 daisy-wheel printer. To take full advantage of this capability, the following steps are recommended:

1. Configure your word processing program for a Diablo 630 printer. Most popular word processors allow you to do this with a setup program or installation routine.

2. When preparing to print the file you wish to send to the LaserWriter, save the output in a disk file instead of printing it directly. This is a common option with most popular word processors.

3. After the word processor has finished creating the print file, exit the word processor and use TPRINT with the "/L" option to have the file printed on the LaserWriter.

It isn't mandatory that your word processor support the Diablo 630, since print files created for similar printers or even "generic printers" will often work with the LaserWriter in its 630 mode, and still produce high quality printouts. Common "generic printers" descriptions that you might encounter when choosing a printer from your word processing program's installation or setup routine include: TTY, Plain, Standard Printer, or DOS Text Printer. Using a generic setup usually means that certain special printing effects are not available to you, however. This includes such effects as double-strike, bold, superscript, and subscript. You may want to experiment with several printer choices to see which one works best.

Incidentally, you can also send any standard ASCII file to the LaserWriter using the Diablo 630 option. So, if your word processor, spreadsheet, or other program doesn't let you divert printing to a disk file, try saving your document as an ASCII file on disk. Then use TPRINT to print the resulting ASCII file.

Printing in PostScript Mode

PostScript is the computer language developed by Adobe Systems and used by the Apple LaserWriter to describe the images on the pages it prints. PostScript allows you to print graphics and text on the same page, and to display letters in various styles and sizes. For example, this manual was written on a PC, sent over TOPS to a Macintosh where it was designed, and then finally printed on a Linotronic typesetter that uses PostScript.

The Macintosh has supported use of the LaserWriter's PostScript mode for many years, and many PC word processors and graphics programs support both the Apple LaserWriter and other PostScript printers and typrsetting machines for their output, too.

However, each PC application that has a PostScript "driver" (the software that translates your documents into the PostScript language) also has its own conventions for using the language. This can cause problems if not handled correctly. The following section shows how to deal with printing from Microsoft Word. If you are having difficulty using PostScript over your TOPS Network, please call TOPS Technical Support.

Note: For applications which do not have PostScript drivers you may still print to a LaserWriter from within those applications by using TOPS NetPrint, a separate product from TOPS. TOPS NetPrint performs the conversion to PostScript for any application which can be configured to print to an Epson FX-80. TOPS NetPrint can also be used to print from within an application, without having to return to the DOS command line. TOPS NetPrint also acts as a print spooler.

LaserWriter Printing with Microsoft Word and TPRINT

Microsoft Word 2.0 and all later versions provide printer support for the Apple LaserWriter by generating PostScript code. However, this support was designed for a configuration where the LaserWriter is connected by a serial cable to your PC. Consequently, to use Microsoft Word with TOPS you must make changes to some of the initialization files included with your Microsoft Word diskette. The following paragraphs describe the changes you must make to the files, and the steps to print successfully.

To print Microsoft Word PostScript files on the LaserWriter you must first send an initialization file. This file is sent to the LaserWriter from the DOS command line before invoking Microsoft Word. This file defines a PostScript "Dictionary" which is used by Word to make the PostScript code. The LaserWriter must be initialized each time it is turned on.

For this Dictionary to work in a network environment, two changes must be made to the PostScript code in the initialization file. For versions of Word prior to 3.0, the initialization file is named MSSETUP.PS. For Word 3.0 and later, there are two different files, APPLASER.INI and APPLAND.INI. APPLASER.INI prints in portrait mode; APPLAND.INI prints in landscape mode.

We recommend the following procedures for modifying and using these files with TPRINT. (The filename APPLASER.INI is used in describing the procedures. For versions of Microsoft Word earlier than 3.0 simply substitute MSSETUP.PS for APPLASER.INI.)

1. From your WORD or MSTOOLS directory, copy the initialization file to a new file named APPLASER.TPS with the following command:

   ```
   C>COPY  APPLASER.INI  APPLASER.TPS
   ```

   This creates the file which you will now modify.

2. Rename the original file, since some versions of Word will automatically search for and send the initialization file when you generate your print file.

   ```
   C>RENAME  APPLASER.INI  APPLASER.OLD
   ```

3. Using EDLIN, a text editor, or a word processor (in text or non-document mode), edit the file APPLASER.TPS. Located in the file are the words:

   ```
   currentfile  closefile
   ```

   You should delete these two words, or overwrite them with blanks. You will find these words (with some other things) between two brackets flanked by "/PSe" and "def" (no quotes in the file). That is, a line like this:

   ```
   /PSe  {  ...  currentfile  closefile...}  def
   ```

4. At the end of the file are a few things to be deleted, varying with which version of Word you have. In all files, the last character is a Control-D (hex 4), which often is displayed as a small diamond. Delete this character.

   (If you have a version earlier than Word 3.0, there is probably an ending paragraph to the file which looks like this:

```
save
/Times-Roman findfont 30 scalefont setfont
100 500 moveto
(Ready for Microsoft Word output) show
showpage
restore
```

Delete this paragraph, too.)

5. Now save this version of the APPLASER.TPS file and exit to DOS. APPLASER.TPS is now network compatible.

6. To initialize the LaserWriter for Microsoft Word, you should send this file once to the LaserWriter with TPRINT using the /X option:

   ```
   C>TPRINT APPLASER.TPS/X
   ```

   This will send APPLASER.TPS to the first available LaserWriter. You may wish to specify the name of a specific printer by using the /N option. Also note that if the LaserWriter is turned off during the course of the day, you will need to resend the file.

7. To print a file on the LaserWriter, you must first name and generate a print file (e.g., PSOUTPUT) from within Word. Make sure that Word is configured for the LaserWriter driver (APPLASER) before doing so. Consult your Microsoft Word manual for details on how to generate a print file.

8. Using TPRINT with the /X option, you send the file created in step 7 to the LaserWriter. You can also use TPRINT from within Word by using the Library/Run options and using the same command line:

   ```
   C>TPRINT PSOUTPUT/X
   ```

Printing to a Remote Published Printer

You can use the TPRINT command to print to a remote published printer. First, though, you must mount the remote printer using either TOPSMENU or a TOPS command from the DOS command line. (See the relevant sections in Chapter 3 and Chapter 4 for details on mounting remote printers.)

The TPRINT syntax for printing to a remote published printer is:

```
TPRINT [lpt#:] /R [filename] [/Q] [/S]
```

If you do not include an LPT#:, TPRINT uses the printer you have assigned to LPT1.

The /R is what tells TPRINT that you are printing to a remote printer. /Q prints out the queue on that remote device, and /S displays the status of the printer.

Printing from Within Applications

This is the easiest technique for printing to a mounted printer. All you have to do is set up your application program for the correct type of printer. Then simply print in the normal way from within your application. The print job is sent off to the computer with the remote printer where it is queued until the printer is free. There may be a slight delay before actual printing begins because TOPS waits for approximately 30 seconds before printing.

Using <Shift-PrtScr>

If you want to generate a print-screen on a remote printer, you can do it, using the normal <Shift-PrtScr>key on your PC's keyboard. The screen will print on the printer to which you have redirected your LPT1: port.

Printing to Your Local Printer

Using TOPS, you can queue up files to be printed locally while you're working on other tasks. A program included on your TOPS disk, called INITPRIN.EXE, allows you to do this. If you will be using TPRINT to print to your local printer, you must first load INITPRIN.EXE. It should be loaded after you install TOPS (by loading TOPSKRNL), but before you run TPRINT.EXE.

Note: If you have already published a printer and have the TOPSPRTR module loaded, you don't need to load INITPRIN.

To load the program, just type:

```
INITPRIN ↵
```

at the DOS prompt. It will verify that there is an active device LPT1. If there is a printer on-line, INITPRIN will print the following message on the screen:

```
Name of Print device: LPT1.
```

Unless you specify otherwise, INITPRIN assumes you want to print to the LPT1 port. You may optionally stipulate one of the following ports as part of the INITPRIN command:

```
INITPRIN LPT2: ↵

INITPRIN LPT3: ↵
```

Once INITPRIN has been loaded successfully, you may use TPRINT to queue up a file or list of files for printing and for managing the queue, as described below.

Note: If you use another device (such as COM1:) as your default printer, please refer to *Special Procedures for Printing to a Serial Port* for information on setting up that device as your standard print device.

Now, to print your files you simply use TPRINT, which is a replacement for the DOS PRINT command. Its syntax and parameters are similar to the PRINT command supplied with DOS versions 3.0 and greater. Once INITPRIN is loaded, you should use TPRINT in place of the DOS PRINT command.

Like the PRINT command, TPRINT accepts several options which can affect the state of the queue and/or the operations on the filenames entered on the command line. This section describes the options which are similar to those provided by DOS PRINT.

The syntax of the TPRINT command for local printing is:

```
TPRINT [filename...][/C][/P][/T]
```

The options in brackets have the following meanings:

/C	Sets cancel mode. The file just preceding this argument and any following filenames (until a /P) are canceled from the print queue.
/P	Sets print mode. The file just preceding this argument and any following filenames (until a /C) are added to the local print queue.
/T	Sets terminate mode. All files are cancelled from the print queue. Any other arguments on the command line are ignored.
/U	Unload INITPRIN. This removes INITPRIN from your computer's memory.

The /C and /P are used by appending them to the name of the file you want to print. There should be no space between the filename and option. For example, the /C option on the file named "datafile" is specified by "datafile/C".

Note: For further information on the syntax of TPRINT, please refer to your DOS Reference Manual under the PRINT command.

A TPRINT example

The basic form of the TPRINT command is just the word "TPRINT" followed by a filename or a list of filenames. This command example:

```
C>TPRINT LETTER.TXT REPORT.TXT
```

would cause the two specified files to be entered into the TPRINT queue. In addition, the current state of the queue will be displayed:

```
#1: C:\letter.txt is at the top of the queue
#2: C:\report.txt is in the queue
```

If you don't enter any filenames after "TPRINT", just the state of the queue is displayed. For example,

```
C>TPRINT ↵
Version 1.0
Copyright 1987 TOPS, Inc.

The Print Queue:

#1: C:\letter.txt is at the top of the queue
#2: C:\report.txt is in the queue
```

Special Procedures for Printing to a Serial Port

The TOPS print utility TPRINT and the background print queue manager INITPRIN are designed to use the standard DOS print device, PRN: or LPT1:. If you have a serial printer, you can still use these print utilities. However, you must use the DOS MODE command to set up your serial port as the printer port.

The following two MODE commands will configure your serial port to work properly as the standard print device:

```
C>MODE COM1:1200,N,8,1,P

C>MODE LPT1:=COM1:
```

The first command initializes the serial port for 1200 baud, no parity, 8 databits, and 1 stopbit. The "P" tells DOS that you will be using the serial port as the standard printer. You may need to vary these parameters depending on the settings of your serial printer and which serial port you are using, but the above example is the general form of the command required. Check your printer's manual for more information.

The second command tells DOS to redirect output destined for the standard print device (LPT1:) to the first serial port (COM1:).

These mode commands will need to be repeated each time the PC is rebooted. If you usually print to the serial port, these commands can be included in your AUTOEXEC.BAT file for convenience.

Chapter

6

Getting Organized

Working on a Local Area Network provides many new features to most PC users. The TOPS system is designed to allow novice network users to operate easily in this new environment. However, it is helpful for each user to have some understanding of slight changes in habits that can make the network an even more effective tool. These "network habits" involve how people organize their directories, name their files, and use old, single-user software. This chapter discusses each of these issues related to working on a LAN. The sections are organized as follows:

What's in this Chapter

Organizing Your Disks and Directories
This section offers some advice in making the most of the hierarchical file system provided by DOS to facilitate the sharing of your hard disk with other network users.

File Naming Conventions
TOPS allows machines of different operating systems to transparently share files. This section describes the restrictions on file and directory names for the different operating systems.

Using Single-User Software
Since personal computers have been around for much longer than LANs, many existing applications make assumptions about the operating environment (DOS) which are not always true in a network environment. This section discusses some of the things to look out for when using "single-user" software in a "multi-user" network environment.

Organizing Your Disk and Directories

If your hard disk is properly organized, it is very easy to publish only the appropriate directories. The time you spend organizing your hard disk to take advantage of the TOPS system will pay off over and over.

As mentioned earlier, published volumes represent directories on your DOS disk. When you publish a directory, all files and subdirectories listed under the specified directory are published as well. It's wise to plan the organization of your directories with this in mind.

The directories on your disk will fall into three main categories according to the information they contain. These three types are those which:

- Never get published
- Sometimes get published
- Always get published

In addition, some of the directories that get published may have passwords as a form of access control.

Suppose your disk contains the following directories:

Directories	Directory Contents:	Gets Published
TOPS	TOPS programs	Never
LETTERS	Personal letters	Never
ACCOUNTS	Accounting programs	Never
REPORTS	Accounting reports	Always
ACCTDATA	Accounting data	Sometimes
CREDIT	Customer credit status	Always
CUSTOMER	Customer mailing list	Always
NEW	Potential customers	Always

Naturally, you don't want to mix directories that always get published with those that never do or only sometimes do. Remember that publishing a directory also publishes any subdirectories of that directory. Also recall that stations on the network only have access to the directories that you publish. They cannot access any unpublished directories or files on your disks. So an effective technique to ease the management of your hard disk for network use is to rearrange your directory structure and file placement.

For example, here's how you might rearrange the directories in the above example to more easily control what is and isn't published:

Directories	Directory Contents:	Gets Published
ROOT		Never

├—TOPS	TOPS programs	Never
├—LETTERS	Personal letters	Never
├—ACCOUNTS	Accounting programs	Never
├—ACCTDATA	Accounting data	Sometimes
├—NETWORK		Always with no password
│ ├—REPORTS	Accounting reports	Always
│ ├—MAILLIST	Mailing list	Always
│ ├—CREDIT	Customer credit status	Always
│ ├—CUSTOMER	Existing customers	Always
│ ├—NEW	Potential customers	Always
├—NETWORK2		Always with a password
│ ├—LETTERS	Boilerplates	Always " "
│ ├—PERSONEL	Employee Files	Always " "

With this arrangement, you can more easily publish specific sets of directories at the same time. You can even apply certain restrictions (such as password protection) to groups of directories more easily by arranging them as directories off of the same branch of the directory tree.

If You Publish:	These Directories Are Also Published:
ACCTDATA	ACCTDATA
NETWORK	REPORTS, MAILLIST, CUSTOMER, NEW
REPORTS	REPORTS
MAILLIST	MAILLIST
CUSTOMER	CUSTOMER, NEW
NEW	NEW
NETWORK2	LETTERS, PERSONEL (with password)

File Naming Conventions

The restrictions and guidelines for file names vary considerably from one operating system to another. If all computers on your network use the same operating system, file naming conventions will not be an issue. However, if more than one operating system is involved, it is helpful if you use file names that will work with both operating systems.

In either of the following cases, keep in mind that a file or directory name that makes perfect sense to you may cause other people on the network to scratch their heads in wonder and frustration.

A PC-Mac Network

File and directory (folder) names for the PC and Macintosh operating systems are totally different. The following chart shows the differences between the naming conventions in the operating systems.

DOS Names:

File and Directory	Application	Volume
•Up to 8 characters •Optional 3 character extension •No blank spaces	•Up to 8 characters •Extension of .COM or .EXE •No blank spaces	•Up to 11 characters •No extension •Blanks OK

Macintosh Names:

File and Folder	Application	Volume
•Up to 31 characters •Blank spaces OK	•Up to 31 characters •Blank spaces OK	•Up to 27 characters •Blanks OK

Unix Names:

File and Directory	Application	Volume
•Up to 256 characters •Blank spaces OK •Can't use "/"	•Up to 256 characters •Blank spaces OK •Can't use "/"	•Up to 32 characters •Can use "/" •Blanks OK

As you can see, when dissimilar computers are involved some thought must be given to creating file, directory, folder, program, and volume names.

Generally, any DOS name is acceptable to the Mac. Mac names longer than 8 characters, or with embedded spaces, are not acceptable to DOS. However, TOPS automatically translates Mac names to be acceptable to DOS.

TOPS has been designed to modify Mac names so DOS can display them for you in directory listings. Here's how names generated by the Macintosh would appear on the PC display:

Item	Mac Finder	Mac Accessory	PC display
files	Reports for '86	Reports for 86	REPORTSF
programs	Latest Version	Latest Version	LATEST_V
volumes	Current Project	Current Project	CURRENT0

Notice that only the first 13 (or so) characters of the names appear in a Mac accessory window and that names are truncated (shortened) to conform to the DOS naming restrictions. Spaces within file, folder, and application names are removed in the DOS names.

Some Mac names won't make sense when viewed on the PC screen because of the truncation of the names.

Here's how names generated by the PC would appear on the Macintosh display:

Item	PC Display	Mac Finder	Mac Accessory
files	REPORTS.JAN	REPORTS.JAN	REPORTS.JAN
programs	WORD.COM	WORD.COM	WORD.COM
volumes	JAN REPORTS	JAN REPORTS	JAN REPORTS

Notice that the names appear the same in both environments. TOPS limits the names of published volumes to 16 characters for both the Mac and the PC.

Using Single-User Software

This section discusses several issues related to using older software in a new environment — a LAN. These include such things as built-in restrictions on the number of drives a program will acknowledge, as well as more general issues.

One of the major changes brought with the installation of a LAN is the movement from a single-user to a multi-user environment. In simple terms, this means that there may be more than one person trying to use an application or access files at the same time. This behavior is fine in environments which are designed for this kind of contention, such as multi-user mainframe computer systems.

Unfortunately, versions of DOS prior to 3.1 and most existing software programs for PC's were not designed for a multi-user operating environment. Consequently, there are instances where applications may do things which will cause problems for another user. With some understanding of why and when these things happen, their occurrence may be minimized or even avoided.

Fixed Number of Drives

There is a class of applications which have a view of the world which is restricted to drives A:, B:, and (sometimes) C:. Most of these applications were written before internal fixed disks and external storage devices became as popular as they are today. Nonetheless, they provide a small obstacle by refusing to recognize remote volumes mounted to drive D:. DOS has attempted to get around this by developing the ASSIGN command (see your DOS 3.xx manual for details).

TOPS, however, allows you to overcome the limitation by mounting a remote volume as drive A: or B: (or any other local drive). There are some areas of caution in reassigning local drives, but as long as the guidelines below are followed it can be done safely.

Guidelines for Reassigning Local Drives

Never reassign your boot (start up) drive unless there is a COMMAND.COM with the same DOS version in the root directory of the volume you're mounting.

Make sure that the TOPS utilities necessary to make the drive local again will be available to you after you've made the reassignment, otherwise you may not be able to return to your normal assignments without rebooting your computer. Thus, you'll need either TWINDOVL.EXE and TOPSMENU.EXE (if you use the menu approach) or just TOPS.EXE (if you use the command line) stored either locally or on another remote volume that you can access them.

If you are using DOS 2.11 or greater, don't reassign the local drive with the TOPS system file TOPSEXEC.COM on it. If you do, you won't be able to run any programs stored on a remote volume.

Never reassign a drive which has published volumes on it. Your clients will lose their work if you do.

Problems with Scratch Files

Some applications will create a file to use as a "scratch" files for temporary storage of data which won't fit in RAM memory. For example, some word-processors will use this technique to store "cut" text until you "paste" it elsewhere. Unfortunately, these applications often expect to be able to use the same file name over and over. If two clients happen to be using the same program on the same volume simultaneously, the single scratch file will be up for grabs at any given time, and data may be lost or at least confused.

If this seems to be happening to you, try mounting the volume which has the application on it with Read Only access. This creates a situation for the application which is very similar to trying to run it from a write-protected disk. If the application is smart enough to create its scratch file on another drive (e.g., a drive local to you), the problem has been solved. In fact, it is generally a good idea to publish volumes with these kinds of applications with Read Only access.

There will be programs, however, which will refuse to work unless they can create their scratch file in the same drive and directory as the program files.

In this case, try copying the data file you are working with to another volume or a local drive, where no other users will be editing files with the program in question. Whether it's a spreadsheet, word-processing document, database or other type of file, it's likely that your program will create the scratch file on the volume your data file is on, not the volume your program is on. If you use this technique, everyone can share one copy of the program, but they must store their data files in private volumes, at least while running the program.

If that doesn't solve the problem, then you'll have to make multiple copies of the program (assuming your license agreement for the program allows it), keeping a copy in each volume that you intend to edit files from. Then you will have to ensure that each volume is used by only a single user at any given time.

Problems with Temporary Data Files

The same problem that can occur with scratch files can crop up with data files too. That is, there can be contention between two user's identically named files on the same volume.

As an example, assume you are working on a WordStar document called MYFILE.DOC. Though most users are not aware of it, WordStar creates a new file called MYFILE.$$$ to hold the changes you make during your session, only renaming it when you finish.

As you can see, if another person is trying to edit MYFILE.DOC at the same time, you will be clobbering each other's new version. The MYFILE.$$$ created by one user will overwrite the MYFILE.$$$ of another user. When you both finally finish editing, the one who saved the file last will have their version accurately recorded. The other person's version of MYFILE.DOC will be lost, though, since it will have been overwritten during the last save.

If this may be happening, try copying the file you want to edit to a local drive (you can still run the application from the remote volume). When you are done, copy the finished document back to the remote volume. Please note that you might still clobber someone else's work, but not on a continuing basis. If more than one person will be working on documents or data files, you will need to coordinate your activity.

Note: There are network versions of many popular word processors and other types of programs now available. These versions are designed to resolve these types of conflicts. You may want to contact your software supplier for more information.

Appendix

A

Special Installation Procedures

What's in this Appendix

There are three sections in this appendix covering non-standard installations. The sections are:

Installing TOPS on a Hard Disk When You Boot from a Floppy
This section explains how to install TOPS onto a hard disk, yet make the changes to your operating system on your floppy. This lets you boot up TOPS only when you insert the boot-up floppy in Drive A:.

Installing TOPS on a Floppy Disk with a Single Floppy Machine with a Hard Disk
This section explains the technique for using TOPS from a floppy disk machine that has only one floppy drive and a hard disk.

Installing TOPS on a Floppy Disk for a Single-drive Machine with No Hard Disk
This section explains the technique for using TOPS from a floppy disk machine that has only one floppy drive and no hard disk.

Installing TOPS on a Hard Disk When You Boot from a Floppy

This procedure is very similar to the installation steps provided in Chapter 2. However, if you boot from a floppy, the necessary changes to your CONFIG.SYS and AUTOEXEC.BAT files must be made on your boot floppy.

Step 1. Create a new DOS system disk by using the DOS FORMAT command with the /S option. (You may use an existing boot disk instead.)

Step 2. Place the backup copy of the original TOPS Disk 1 in drive A:.

Step 3. Type

```
A ↵
```

Step 4. Type

```
INSTALL ↵
```

Step 5. When you get to the question "Is your boot (start up) disk: drive C?", you should answer **N**.

Step 6. Next you will be asked if your boot disk is currently in the machine (e.g., in drive B:). If it is not, you will be asked to insert it. If you have only one floppy drive you must remove the TOPS distribution disk and put your target boot disk in drive A:.

The installation program will then proceed as described in the Installation section. When you complete the installation procedure you will be asked to replace the TOPS distribution disk if you have removed it.

Installing TOPS on Floppy Disks Using a Single Floppy Machine with a Hard Disk

This section describes how to place the TOPS system files on a floppy disk when using machines that have one floppy drive and a hard disk.

This procedure is similar to that of installing TOPS on floppys with a dual floppy machine. However, you must copy the contents of the TOPS distribution disks onto the hard disk prior to installation. To install TOPS onto floppy disks on a single floppy machine with a hard disk:

Step 1. Create a new DOS system disk by using the DOS FORMAT command with the /S option. The /S option installs the operating system (DOS) onto the formatted disk.

Step 2. Create another blank, formatted disk without the operating system on it (i.e., omit the /S option).

Step 3. Make the hard disk your current drive by typing:

```
C: ↵
```

Step 4. Create a temporary directory on the hard disk to contain the TOPS files by typing:

```
MKDIR \TMP ↵
```

Step 5. Change your current directory to the temporary directory.

```
CD \TMP ↵
```

Step 6. Place your copy of the TOPS Disk 1 in drive A.

Step 7. Copy the entire TOPS Disk 1 to the temporary directory on your hard disk.

```
COPY A:*.* /V ↵
```

Step 8. When the DOS prompt reappears, insert the TOPS Disk 2 in Drive A and repeat step 7.

Step 9. Remove the TOPS Disk 2 from drive A and place your new DOS system disk in drive A. (The disk you created in step 1.)

Step 10. Type:

```
INSTALL ↵
```

Step 11. When you are shown the first Installer screen and asked the question "Install TOPS in directory C:\TOPS?" you should type **N**. When the Installer prompts you for the target drive and directory, enter the information (i.e. A: or A:\TOPS). The Installer will prompt you again so that you can verify your target directory. After you verify the target drive and directory, the Installer will proceed with copying the TOPS files onto the floppy.

Step 12. When you get to the question "Is your boot (start up) disk: drive C?", you should type N. Then you will be asked if your boot disk is currently in the machine. You should type **N**.

Step 13. You will next be asked to insert your boot disk and type the drive letter of your boot disk (A:). The Installer will then proceed as described in Chapter 2.

After the installation procedure has finished, you must return to this section and complete the following steps:

Step 14. Delete all the TOPS files you copied into the temporary directory.

```
CD \TMP ↵

DEL *.* ↵
```

Step 15. After installation, change your current directory back to the root directory by typing:

```
CD \ ↵
```

Step 16. Remove the temporary directory.

```
RD TMP ↵
```

Installing TOPS on Floppy Disks for a Single-Floppy Machine with No Hard Disk

You must have another machine with a hard disk or two floppy drives to perform this installation. Use that machine and follow the instructions for either:

- Installing TOPS on floppy disks as described in Chapter 2
- Installing TOPS on floppy disks using a single-floppy machine with a hard disk as described in this chapter.

Appendix

B

Configuring Your Software Environment

What's in this Appendix

This Appendix describes both the DOS requirements for maximizing the performance of TOPS and the steps necessary to configure your TOPS software environment to best suit your needs. The sections break down as follows:

Altering the DOS Configuration
This section details the modifications you can make to your CONFIG.SYS and AUTOEXEC.BAT files.

Altering the TOPS Configuration
This section details the modifications you can make to your TOPSKRNL.DAT file to customize the TOPS default settings.

Altering the DOS Configuration

There are several places where you can modify your DOS configuration, the two most common being the CONFIG.SYS file and the AUTOEXEC.BAT file. We recommend that you modify some of the default DOS system settings when you use TOPS. Although these modifications will be made by the TOPS Installer program, this section explains the changes in more detail.

Changing the CONFIG.SYS File

For your station to operate successfully as a server (publisher of information), we recommend that you increase the maximum number of open files and the number of internal DOS buffers. A file that's being used

by a station on the network is open during the entire time the file is being used. Since several stations (including your own) may be using files on your computer at the same time, many files may be open simultaneously.

DOS lets you specify the maximum number of files that can be open at one time and the number of internal buffer areas allocated to holding data awaiting processing. The file containing this information is the CONFIG.SYS file. Whenever you boot your computer DOS looks for a CONFIG.SYS file in the root directory of the boot drive. If your station will be publishing volumes for use on the network, TOPS Install will have changed your CONFIG.SYS file to have the following:

```
FILES=20
BUFFERS=20
```

Please see the Release Notes for updated information regarding the recommended values for the FILES and BUFFERS commands.

Changing the AUTOEXEC.BAT File

Another file which is read by DOS at boot time is the AUTOEXEC.BAT file. This file can contain any commands which can be entered on the DOS command line, including those commands which set the system prompt and DOS environment variables as the PATH. The DOS command processor, COMMAND.COM, uses the PATH variable to search for applications and utilities which you execute from the command line.

The Installer program copies the TOPS system files and utilities into a directory (e.g., C:\TOPS) of your hard disk or floppy. By setting the PATH environment variable to include this directory, COMMAND.COM will be able to locate these utilities. We suggest that your PATH include the TOPS directory. For example:

```
PATH = C:\TOPS
```

File Sharing

If you are running DOS versions 3.x and wish to take advantage of the file sharing features, you may need to load the DOS SHARE program before loading TOPS. Please see the documentation of the application you are using, and the DOS documentation, concerning the SHARE command.

Altering the TOPS Configuration

Adjusting the configuration to meet your specific needs leads to more efficient memory use and increased performance. This section discusses the

way in which your TOPS environment may be configured to match your needs. It also describes the steps necessary to change the default TOPS configuration.

Configuration Considerations

There are two major areas to consider when deciding how to configure TOPS. One is your projected role as a server on the network, and the other is your role as a client.

If you are NEVER going to be publishing volumes for others to use, you will want to devote as few resources as possible to being a TOPS server. If you will sometimes be publishing volumes, you may want to devote a little to being a server. On the other extreme, if you are setting up a machine which will be used heavily by others (effectively, a "dedicated" server), increasing the server resources and minimizing the client resources may be called for.

On the client side, a similar judgment regarding the utilization of resources can be made. If, for example, you are using a floppy-only system and will rely heavily on remote volumes to access applications and data files, you will want to allow enough memory for several remote volumes. On the other hand, if you have a local hard disk and will only occasionally be mounting volumes, your need for additional drive space will be less.

It is recommended that you use the default configurations for a while, until you become familiar with your usage of the network. Once you have determined your needs, you can use the information in the following two sections to customize your TOPS environment.

TOPSKRNL.DAT Configuration File

Included on your TOPS distribution diskettes is a file called TOPSKRNL.DAT. This file, if present in the current drive and directory or in the root level TOPS directory on your current drive when TOPSKRNL.EXE is loaded, will be read to find the settings for a number of internal TOPS parameters. Below is a sample TOPSKRNL.DAT file. Each line is discussed following the sample file.

```
TOPSKRNL Version 2.0
Station Name (15 chars): Jill
Server
No. Clients (0 - 10): 10
No. Published Volumes (0 - 10): 5
No. Files (0 - 60):30
No. Directories (0 - 30):20
Buffer Size, K Bytes (8 - 20): 16
Client
TOPSEXEC.COM Path (66 chars): C:\TOPS
No. Remote Volumes (0 - 10): 6
Last Logical Drive (C - Z): J
Drive Map (F=floppy, H=hard disk, U=unused)::
FFHUUUUUUU
```

The general form of the lines of the TOPSKRNL.DAT file is as follows. The first part of the line is a description of the parameter (e.g., "Station Name"), which indicates what you are setting. Following this is some information in parentheses, which indicates a range of legal values or a maximum length for names or pathnames. The colon character (":") indicates that the following information is to be interpreted as the parameter. The sample file above has values filled in after the colons which correspond to the defaults used by TOPSKRNL.

There are two kinds of special cases. One concerns the lines which have no colons. These are there for descriptive purposes only, and are ignored by TOPSKRNL. The other special case is the "Drive Map" line, which has two colons. This indicates that the data for that (those) setting(s) has been placed on the next line.

Line 1 — Version Number

The first line of TOPSKRNL.DAT is a version number. This line should NOT be modified by you, since different versions of TOPSKRNL may be expecting different information in the configuration file.

Line 2 — Station Name

The second line is used to set your station's name. This can also be done with the TOPS command line interpreter. However, if it is provided in TOPSKRNL.DAT, initialization will take place automatically when TOPSKRNL is loaded. The limit on the length of the name is 15 characters. Any blanks after the colon but preceding the name will be ignored, but blanks imbedded in the name will be treated as part of the name.

Line 3 — Server

This line indicates that the next few lines of the file are Server-related parameters. You may not change this line.

Line 4 — Number of Clients
The fourth line indicates the number of clients who may be accessing you as a server at the same time. The allowed range is indicated in the parentheses. If you enter 0, no clients will be able to use your volumes. In addition, if you enter 0, the rest of the parameters you enter (up to the client line) will be ignored. Since they pertain to your server resources and you cannot act as a server, they will be set to the lowest allowed value.

Line 5 — Number of Published Volumes
This line specifies how many volumes you can publish at one time. Please keep in mind that volumes are actually directories, so that one volume can include any number of remotely accessible subdirectories. If your disk is organized according to which directories are regularly published, you still won't require many published volumes to make those directories available.

Line 6 — Number of Open Files
The sixth line specifies how many files which are in published volumes can be open at the same time. This includes files being used by both you and by your clients.

Line 7 — Number of Active Directories
The seventh line specifies how many directories which are in published volumes can be active at the same time. When a directory is active, either its contents are being listed or files which it contains are being accessed by your or one of your Clients.

Line 8 — Buffer Size
The next line of TOPSKRNL.DAT specifies the size of a buffer which is used by the server to fulfill requests from remote clients.

Line 9 — Client
This line indicates that the next few lines of the file are client-related parameters. You may not change this line.

Line 10 — TOPSEXEC.COM Path
The tenth line indicates where the TOPS system file, TOPSEXEC.COM, is located (TOPSKRNL will also look in the same directory as the TOPSKRNL.DAT file was found). This file is needed by TOPSKRNL when you try to execute applications from remote drives. If the file TOPSEXEC.COM is not there, you may not be able to run applications from a remote volume.

Line 11 — Number of Remote Volumes
This line of TOPSKRNL.DAT specifies the number of remote volumes you want to be able to mount at the same time.

Line 12 — Last Logical Drive
This line tells TOPSKRNL which drive should be considered the last logical drive. This choice is usually determined by adding the number of local drives with the number of volumes you wish to be able to mount. However, if you have a local drive which happens to be assigned to a different drive letter (e.g., a RAM disk as drive M:), you must determine this choice differently. In the case of a RAM disk as drive M:, you could specify "M" as your last logical drive, since you could use some of the unused drive letters between B and M to assign to remote volumes. Regardless of which drives are actually local, the drive you specify on this line will be the last drive letter you may access or mount a remote volume to while TOPS is installed.

Lines 13 & 14 — Drive Map
The thirteenth line is a simple "map" which tells which drive letters correspond to local drives, and which are available to map to remote volumes. In most cases, even if you have only one floppy drive you will want to reserve the places for drive A and drive B as local floppies. In addition, RAM disks should be counted as local hard disk drives. The letters "F", "H" and "U" are used to indicate how a drive is to be treated, as explained in the next section.

Modifying your TOPSKRNL.DAT File

You may modify your TOPSKRNL.DAT file with any text editor or word processor which can handle unformatted ASCII files. To change most of the settings, simply change the number or letter at the end of the line (following the ":"). It is important to keep within the range specified by the parentheses prior to the colon. For example, the range on the allowed number of clients is from 0 to 10.

In the case of the drive map, on the line following the words "Drive Map" you should place one letter for each drive up to the "Last Logical Drive". This letter is used to tell TOPSKRNL whether that drive is a local floppy drive or local hard disk, or if it will be used for mapping to remote volumes. The first letter on that line corresponds to drive A:, the second letter to drive B:, and so on. The letter should be "F" if you want the drive treated as a local floppy (i.e., physical or "logical" floppy drives or other removable media). If the drive is a hard disk or a RAM disk, the letter "H" should be used. If the drive is not to be treated as a local drive, a "U" should be entered in its place.

After you have made the desired changes to the configuration file, you must copy it into the directory from which TOPSKRNL.EXE is loaded or into the root level directory TOPS on the drive from which you load TOPSKRNL.EXE. The new configuration will not take effect until the next time you load TOPSKRNL.

Note: Later releases of PC-TOPS may have different or additional configuration parameters in the TOPSKRNL.DAT file. Please see the *Release Notes* for information regarding such changes.

Appendix

C

TOPS System Utilities

Included with PC-TOPS are some utilities to aid in the maintenance and viewing of the special TOPS extended directory files. These are XSYNC.EXE, XDIR.EXE, XDEL.EXE, TDIR.EXE and TDEL.EXE. Their usage is described in this Appendix.

XSYNC

When you publish a volume, TOPS creates a file on that volume called the "TOPS Extended Directory" (TED). The TED is a DOS hidden file stored in every published directory that contains information such as the Macintosh icon types and the longer names of Macintosh files. In other words, it's an adjunct to the normal DOS directory information, and necessary for the functioning of TOPS.

Regardless of whether you publish the volume using TOPSMENU or via the Publish command from the DOS command line, TOPS inspects the DOS directory and creates the extended directory from it if necessary. Then for as long as the volume is actively published and on the network, TOPS ensures that the TED is kept up-to-date, reflecting changes that you or other users make to files.

However, having TOPS create the TED each time a volume is published can take time, and you may want to turn off this feature if you know for sure that problems won't be created by doing so. If you decide to do this, XSYNC is the utility program you can use later to update the TED to reflect the current state of your volume's directory.

The two situations that could call for disabling the automatic XSYNCing built into TOPS are:

- When the volume in question is always published. That is, whenever you boot up the station, TOPS is loaded and the volume gets published. Thus, any changes made to directories occur while

TOPS is overseeing the TED, keeping it up-to-date. Therefore, XSYNCing at the time of publishing is not necessary and you can save some time by disabling it (see below for details).

- The other case is when a volume is published as Read Only and it is known that no changes will ever be made to the files on the directory. That includes adding new files, even by the station operator. This could be the case for a volume used only to store application programs that other users download to their stations, or to run in a Read Only mode from the server.

You can disable XSYNCing in two ways:

- From TOPSMENU, you can use the <ALT-X> option to disable XSYNC during the publishing process. Hold down the <ALT> key and press X at any time while you are in the Publish a Volume window. The message "NO XSYNC" will appear in the top right corner of the window. To reenable XSYNC for Publishing other volumes just press <ALT-X> again and the "NO XSYNC" message will disappear. If "NO XSYNC" is not displayed, TOPSMENU will run XSYNC before it publishes a volume.

- From the DOS command line, use the /X option with the PUBLISH command.

For most users and typical networks, disabling XSYNC is not necessary and not recommended. However, if you decide to do it, running the XSYNC utility manually from the DOS command line will synchronize the DOS directory and the TOPS TED so that clients using the volume will see an up-to-date directory.

It is only necessary to run this utility in directories which are to be published, and it is best to do so immediately before they are published (particularly if there has been any local, non-TOPS activity). However, you cannot run this utility on a published directory.

XSYNC has several options, and the general form is:

```
XSYNC [?] [/d] [/s] [/y] [[pathspec] ...]
```

If no pathspec is given, then XSYNC will start in the current drive and directory. The options shown above have the following effects on XSYNC's behavior:

? A screen of information regarding the use of the command is displayed.

/s — XSYNC works recursively on all subdirectories of the specified (or current) drive and directory.

/y — Overrides the confirmation for each directory brought up to date. Normally, XSYNC prompts the user for confirmation before XSYNCing each directory.

/d — Deletes the Macintosh "Desktop" files in each directory XSYNCed. This may be necessary if the PC server or a Macintosh client had crashed in the middle of a session.

XDIR

This utility allows you to view the actual contents of the Tops Extended Directory (TED) that TOPS maintains (see the above discussion under XSYNC). In addition, if used on a remote volume, XDIR will display the Macintosh-style names as well as the DOS file names in a directory. Like XSYNC, this utility may be run while the background portion of TOPS is installed, although it will display slightly different information in directories that are currently published or in remote volumes.

Typically this command is used to display the long names of Macintosh files on the PC screen.

The general form of the XDIR command is:

```
XDIR [?] [/a] [[pathspec] ...]
```

where the pathspec, if included, gives the name of the directories to be examined. If no pathspec is provided, XDIR displays the contents of the extended directory in the current physical drive and directory.

The options have the following effect:

? — A screen of information regarding the use of the command is displayed.

/a — XDIR displays all the information maintained in the extended directory. The default is to show only the short names, the long names, and the type of each entry.

XDEL

This utility allows the server workstation to easily erase all of the TOPS hidden files created by TOPS. This is useful for cleaning up directories that had been used as published volumes in the past.

Don't use this command unless you think you need to clean up your volume, since all Macintosh "resource forks" stored on the volume will also be erased. Thus, some Macintosh files will not work from the volume after running XDEL. (A "resource fork" is a file used by the Mac operating system to store information that doesn't make sense to most PC programs.)

You cannot run this utility on a published volume.

This utility has several options, and the general form is:

```
XDEL [?] [/s] [/y] [[pathspec] ...]
```

If no pathspec is given, then XSYNC will start in the current drive and directory. The options shown above have the following effects on XDEL's behavior:

?	A screen of information regarding the use of the command is displayed.
/s	Causes XDEL to work recursively on all subdirectories of the specified (or current) drive and directory.
/y	Overrides the confirmation for each directory brought up to date. Normally, XDEL prompts the user for confirmation for each directory.

TDIR

The TDIR utility displays the contents of the specified directory (or the current directory) in DOS DIR format. In addition, it displays DOS hidden and system files. This utility may be run while the background portion of TOPS is installed. The general form of the command is:

```
tdir [pathspec]
```

where the pathspec, if included, gives the directory to be examined. If no pathspec is provided, TDIR displays the contents of the current physical drive and directory.

TDEL

This utility allows the user to delete hidden and system files. XDEL erases all the hidden files in one step whereas TDEL can be used selectively. This utility may be run while the background portion of TOPS is installed. The general form of the command is:

```
tdel [filespec]
```

where the filespec, if included, gives the file to be deleted.

Appendix

D

Troubleshooting

If you have persistent problems with TOPS that are not solved by any of the following tips, your TOPS dealer should be able to provide you with the best support. You may contact TOPS Technical Support at (415) 549-8737 (549-USER) or the TOPS Talk Bulletin Board Service (BBS) at (415) 549-5955 (300/1200/2400 baud, 8 data bits, 1 stop bit, no parity). TOPS technical questions can also be answered over AppleLink (D0098) or in the TOPS user conference on the BIX network.

You may occasionally have difficulty while installing or running TOPS. This appendix offers some advice regarding how to avoid common problems before they arise (the wisest approach), as well as offering specific solutions for dealing with them after-the-fact. However, before delving into these areas, some general advice about troubleshooting is in order.

A high percentage of apparent problems are not due to malfunctions but are rather caused by operator error. Many hours of testing and troubleshooting at TOPS have ironed out most of the bugs in TOPS so please be sure you have read the documentation thoroughly before resorting to this section for help.

What's in this Appendix

This appendix is divided into three sections:

Things to Look Out For
The first part of this Appendix lists and describes the general causes of many apparent problems.

Specific Problems and Fixes
The second section is a troubleshooting guide to help track down the cause of specific problems. You should also see the *Release Notes* for the version of TOPS that you have (the notes should have been included in your package) for a list of currently known compatibility problems.

Questions and Answers About TOPS
Answers to the most commonly asked questions about TOPS.

Things to Look Out For

This section covers some of the more common circumstances which can lead to problems.

Configured Applications

With TOPS it is possible to run PC programs that are stored on someone else's hard disk. One problem that appears occasionally when users do this concerns the way in which the programs are configured with hardware-specific information.

As an example, suppose a user at a station called "Wendy" has installed a program called "SpreadSheet" on its hard disk. As part of the spreadsheet installation procedure, a configuration program was run that prompted the user for certain information (e.g., presence of 8087 coprocessor, use of color/graphics interface and display, etc.), which the user supplied.

Later a user at station "Bob" wishes to run "SpreadSheet" directly from "Wendy's" hard disk. It is possible that the configuration settings encoded in the program will not work correctly on machine "Bob." The results of this attempted execution are unpredictable, but often machine "Bob" will "hang;" that is, get stuck and have to be re-booted.

It's up to you to ensure that programs intended to be run over the network by other stations are configured correctly for all stations that may want to use them. This may entail having several copies of the program, each with its own name.

Memory Resident Software

TOPS is compatible with many of the existing "RAM-resident" programs. However, some problems may come up if TOPS and other resident programs are loaded in the wrong order. Specifically, TOPS should be loaded before most other memory resident software. The only exceptions are programs which DO NOT use DOS to access files. An example of programs like these are RAM disks or the DOS MODE command. A general rule of thumb: if the RAM-resident program can either read in data from disk or save data to disk, the program should be loaded after TOPS has been installed.

Programs That Manage the Keyboard Directly

There are some programs that manage the keyboard in a way which interferes with the operation of TOPS. Briefly, these programs will read the keyboard directly, rather than using the DOS or BIOS calls to continuously check for keyboard input. If a program behaves in this way and doesn't make any other DOS calls while in "wait loops", it may cause the PC on which it is running to operate badly as a server. In most cases, however, these programs do not interfere with the use of the client side of TOPS.

Copy-Protected Software

There are a number of strategies employed by copy-protected software to try to verify that you are not using an illegal copy. For example, many programs require a "key disk" on startup, regardless of where the programs are stored. Other programs will allow only a single installation of the software on to a hard disk, and will somehow "stamp" the hard disk and/or the floppies to prevent further copying or installation. Many programs in this class will use low-level commands to read from and write to the disk, bypassing the DOS file system. Those programs which use copy protection schemes which bypass DOS may not work properly if executed from a remote volume.

Copy-Protection Breakers

Despite the efforts of program developers to prevent the copying (legal or otherwise) of software, many available programs defeat these schemes. Since these programs are designed to prevent the DOS or BIOS from being called, they may conflict with TOPS.

Publishing Floppies

TOPS allows PCs to publish directories on floppy disks as well as those on hard disks. When publishing floppies, however, there are some issues to be aware of. First, TOPS does not support the publishing of write-protected floppies. Also, when a directory is published, TOPS creates a data file which contains some extra status information for the files in that directory. This means that there must be room available on the floppy for creation of these files. The amount of space required depends on the number of files and directories on the floppy. It is very important that floppies NOT be removed from their drives while they are published. Doing so will cause errors for the clients who are using the contents of the floppy. Last, you will notice that local operations will slow down dramatically while clients are accessing your floppies. This is due to the slow access speed of floppy disks.

Publishing Volumes Read Only

In most cases, there are no problems with publishing volumes "Read Only". However, there is one case where doing so will prevent Macintosh clients from using the published volume. This is when a volume is accessed for the first time by a Macintosh. The Macintosh's equivalent of COMMAND.COM, the Finder, creates and manages a file called "Desktop" on each volume. If that file doesn't exist on a volume, the Finder tries to create it. If that fails, the Finder can't mount the volume, and in some cases Mac users will be unable to use your published volume. This problem can be alleviated by publishing the volume once with Read and Write access, and letting the Finder create the Desktop file. From then on, the volume can be published Read Only and the Finder will be able to properly access the volume.

Temporary Files Created by Programs

Many DOS programs create temporary (scratch) files while they are running. Some of these, especially older "single-user" programs, use a fixed name for this scratch file. Consequently, if two people are running the program from the same volume at the same time, they may clobber each other's scratch files. This can often be avoided by running the program from different directories.

Publishing Directories without Running XSYNC

TOPS creates a file in each published directory that keeps track of some information about the directory. This includes file status information and the long file names allowed by other operating systems such as that of the Macintosh and UNIX.

If there is file activity in a directory while TOPS isn't installed or while TOPS is installed and the directory isn't published, there may be inconsistencies between the the TOPS extended directory file and the actual contents of the directory. This may cause two kinds of problems when the directory is published. Clients using the volume will not be able to see some files or they may see files which don't really exist. In addition, if you are also using files in that directory locally, you may not be able to access some of the files that you see. The TOPS utility "XSYNC" is provided to make sure that everything is consistent in directories published as volumes, and should be run especially if there has been some file activity in a directory to be published. XSYNC is run automatically when TOPSMENU is used to publish a volume.

Specific Problems and Fixes

Problems Getting Started

Though getting started with TOPS is relatively straightforward, there are a few common problems encountered by users. These are presented here along with suggested resolution.

Problem:
When booting up your PC, the TOPS banner with configuration parameters is displayed and then a message saying your AppleTalk board cannot be found.
Solution:
Your AppleTalk board is either not seated properly, seated in a non-functioning slot, set at an I/O address different from that specified in the CONFIG.SYS file, or is defective.

Problem:
When you load TOPS (or the LOADTOPS batch file) the TOPS version and serial numbers are listed and then the cursor hangs, requiring you to reboot you machine.
Solution:
This is indicative of a hardware conflict between your AppleTalk card and your IBM-compatible machine or some extension or interface card. The most common conflict is with the AppleTalk board interrupt (IRQ line). See your board's documentation for information on how to alleviate this problem.

Problem:
TOPS is loaded successfully on PCs and/or Macs and volumes have been published by each, but none or only some of them show up on the network as servers.
Solution:
Normally this is a communication problem due to one of the following:

- Bad cabling. Replace with functioning cables.
- Improperly connected cables Make sure that AppleTalk is plugged into the printer port on the Mac. Use the Control Panel desk accessory to verify that AppleTalk is connected.
- Improperly terminated cabling. Add terminating resistors.
- An overloaded network. Decrease use on the network or consider using TOPS REPEATER to reduce electrical degradation of the system.

See the manual for your AppleTalk hardware (such as FlashCard) for more suggestions. If the problem persists after checking all of the above, you may have a DMA conflict or a malfunctioning chip on the AppleTalk card.

Problem:
After loading TOPS (or the LOADTOPS batch file) any drives other than A, B, or C (for example, a RAM disk or second partition on the hard disk) disappear.
Solution:
The drive map in the TOPSKRNL.DAT file must be modified. See Appendix B. In particular, pay attention to the drive map (lines 13 & 14), which is required for TOPS to recognize drives D, E, F, etc.

Problem:
When loading a remote program mounted on a floppy-drive-only PC, you get a "TOPSEXEC failure" message.
Solution:
The path for the TOPSEXEC.COM file (line 10) in the TOPSKRNL.DAT file must be modified.

Miscellaneous Problems

Problem:
Applications "hang" while loading.
Solution:
This is often due to the configuration of a particular program. Please see the section above on Configured Applications for a discussion of these issues.

If you plan to execute programs from remote servers, we recommend that only machines with similar configurations be used. In addition, some programs (especially Network Versions) allow the use of different, localized "configuration files", which may provide another solution.

Problem:
Can't see all the files on a remote volume.
Solution:
If the server on which the volume resides is a PC, see the section *Publishing Directories without Running XSYNC*. If the server is a Mac, you may not be able to see the files which don't have legal DOS-style names. For you to be able to access all the files on a Mac regardless of the file's native Mac name, the Mac server must have the "InterBase" program installed. Please see TOPS/ Macintosh documentation for more information.

Problem:
Clients see you listed as a server, but can't access your volumes.

Solution:
Sometimes, even when you are visible as a server to others on the network (through "TOPS DIR", TOPSMENU, or the Mac's TOPS Desk Accessory), clients may not be able to list the volumes you have published. This happens when there is a program running on your machine which manages the keyboard directly (see the section above for more about these programs). To verify that this is the problem, try actively using the program (e.g., using the arrow keys to move in a menu, entering text, listing files). If the problem is related to keyboard management, the clients should be able to access you while there is this foreground activity. However, these programs should be avoided while you act as a server to other machines on the network.

Problem:
Can't see remote volumes within programs.
Solution:
Some programs have built-in restrictions on how many logical drives they can see. For example, older programs may only use drives A:, B:, and C:. You can usually access remote volumes from these programs by reassigning a usually local drive (such as drive B:) to a remote volume. Be careful in reassigning local drives. You must be able to access some local DOS files and TOPS utilities to use the network and run some programs. Make sure that these needed resources are on a local drive that has not been reassigned.

Problem:
You see files with funny names and/or zero length.
Solution:
File naming conventions are very different in DOS and the Macintosh operating system. Since Mac files with long names are stored on PCs, these names are shortened to fit within the 8.3 DOS standard. Thus, you may see some "funny" names (e.g., CLIPBOA0 for the Mac's "Clipboard File") which are actually the DOS representation of Mac file names.

In addition to funny names, some Macintosh-created files may appear to have zero length. Again, this is due to some of the differences between the Mac OS and DOS. Briefly, each Mac file is represented on the PC by two DOS files. One of these (called the "Resource Fork") is used by the Mac operating system to store information which doesn't make sense to most PC programs. Therefore, this is made into a DOS hidden file, so that DOS users won't accidentally try to use this information.

The other part of the Mac files (known as the "Data Fork") stores data such as text or spreadsheet information. Many DOS programs can use these files just as DOS data files. However, Mac users may want to store Mac programs (like MacWrite) which have nothing in their Data Fork on your PC. These apparent "zero length" files should not be deleted unless you are sure no harm will be done.

Problem:
Macs can't mount your volume.
Solution:
If the volume was published Read Only, please see the section above on that subject. If Macs are using your PC as a server, one of the files which will appear to have zero length is the Mac Finder's "Desktop" file. This file is used by the Mac Finder to manage the visual display of the Mac. If the DOS hidden portion of this file (usually named R-DESKT0) in one of your published volumes gets damaged, the Mac Finder will not be able to mount your volume. The Finder will usually present the message "Unable to create Desktop. Unlock the Disk". If this happens (and the volume is published Read/Write), you may need to use the TOPS Utility XSYNC with the /d option to clean up the corrupted Desktop file. Note that you'll have to unpublish the volume, run XSYNC on the suspected directory, and then publish the volume again.

Problem:
When using TPRINT to print to a network print device, you get a message saying: "PAP open failed. Network error. File not sent."
Solution:
This indicates that your PC is not seeing the network print device, due to bad cabling, a poor connection, an improperly terminated network or because the device is not turned on or not set to AppleTalk mode.

Questions and Answers about TOPS

Question:
Can I use TOPS to run PC programs on my Macintosh?
Answer:
No. TOPS allows any station on the network access to any other station's files, but will not allow programs designed for DOS to run on a Mac (and visa versa). However, some Mac programs can use data files produced by corresponding PC programs (and visa versa), and others can use data files converted by special software products (like TOPS Translators).

Question:
How can I print to a LaserWriter from a PC using TOPS?
Answer:
To send files to the LaserWriter from the PC, use the TOPS TPRINT command. If you are sending an ASCII file, use TPRINT followed by the filename and a /L appended to it. If you are sending a PostScript file, use TPRINT followed by the filename and a /X appended to it. TOPS also has a program called TOPS PRINT which allows you to print directly to the LaserWriter from within a PC program, whether or not it directly supports PostScript.

Question:
I've loaded TOPS successfully on my PCs and Macs and published volumes, but none (or only some) of them show up on the network as servers. What's wrong?
Answer:
There is a communication problem due to bad cabling, improperly terminated cables, improperly connected cables, a DMA conflict or other such phenomena.

Question:
What is the difference between TPRINT and TOPS PRINT?
Answer:
The TPRINT command of TOPS allows you to send ASCII or PostScript files to the LaserWriter. However, to do this you must save your document file to disk, exit your PC program and use TPRINT from the DOS command line. To maximize your LaserWriter capability, you want PostScript files, but most PC programs do not produce them.

TOPS PRINT software solves all these problems by enabling you to print to a LaserWriter directly from within most any PC program. Merely set your program to print to an Epson FX-80 printer on LPT1, and print as normal. TOPS PRINT will intercept the character stream, translate it to PostScript, and send it off to the LaserWriter instead of LPT1. If your PC program includes a PostScript driver, TOPS PRINT can send it to the LaserWriter without translation.

Question:
I'm trying to use a software program on my local machine after having loaded TOPS, and it won't work. What's the problem?
Answer:
The most common problem is that you need more RAM memory (DOS takes up 80K, TOPS takes up 120K, TOPS PRINT uses 80K,and using the TOPSMENU gobbles up about 60K). However, there are a few software products which need to be loaded before TOPS and a few which at present are incompatible with TOPS.

Question:
I'm trying to use TOPS on a PC which does not have the standard configuration (one or two floppies and a hard drive). Why am I having trouble?
Answer:
If you use TOPS with other than the standard configuration (for example, with no hard drive, with a partitioned hard drive, with a RAM disk or with a Bernoulli drive), you must inform TOPS of the new configuration. This is done by copying the TOPSKRNL.DAT file from your TOPS diskette to your TOPS subdirectory, and editing it to reflect your actual hardware configuration (see Appendix B).

Question:
Can I use TOPS to hook my Macintosh machines into an already-existing PC Local Area Network (LAN)?
Answer:
Yes, TOPS supports a link-up with most PC LAN software and hardware. This is done by installing TOPS in a station on the PC LAN and using that station as a bridge (or gateway) to the LAN server. Contact TOPS technical support for the relevant copy of TOPS's "tech notes."

Question:
Can I use TOPS to link my Macintosh machines to a mainframe computer?
Answer:
Using the proper configuration, TOPS can be used to link Macs to a System 36 or System 38. Install TOPS on a PC station which also has a terminal emulation board. A 5250 terminal emulator card and software package works best. This enables you to define space on the mainframe as a virtual drive on the PC. The space can then be published and made available to the TOPS Network. 3270 emulation cards and software packages are more problematic in that TOPS cannot be run while concurrently using the PC in terminal emulation mode.

You can also use TOPS to connect your Mac to UNIX (through NFS).

Appendix

E

TOPS Error Messages

What's in this Appendix

This appendix lists the error messages you may encounter while using TOPSMENU.EXE or TOPS.EXE. After each message is an explanation of where that error may occur and what can or should be done to eliminate it.

TOPSMENU Error Messages

This server is either not there or not servicing requests.
The server whose volumes or printers you were trying to list or whose volume or printer you were trying to mount is overloaded and not currently servicing your requests. Try refreshing the server's on the Network window with the <HOME> key to verify that the server is still active (you may want to try it a second time if you don't see it the first) or again in a few minutes.

Cannot find server: <name>.
The named server is not found on the Network. Try refreshing the server's on the Network window with the <HOME> key to verify that the server is still active (you may want to try it a second time if you don't see it the first). If you see the server's name, try the offending command again (twice if necessary). If you still can't complete the command you should make sure that there isn't a bad network connection.

Cannot find volume: <name>.
The volume name you selected is no longer in the list of available volumes. Check the volumes available window for the given server for a list of available volumes.

Cannot find printer: <name>.
The printer name you selected is no longer in the list of available printers. Check the printers available window for the given server for a list of available printers.

Another volume is already mounted on this drive.
The drive letter you specified during the mount operation has already been used to map to a remote volume. You should choose another drive letter or unmount the other volume.

Bad Path, cannot find: <name>.
The pathname specifying which directory should be published is invalid. Verify that you typed in the correct drive specifier and name and that the directory actually exists.

You cannot unmount your current drive.
You have attempted to unmount the drive which is your current drive. You must change your current drive before you can unmount this volume.

You cannot reassign your current drive.
You have attempted to mount a volume on the drive which is your current drive. You must change your current drive before you can reassign this drive.

No more volumes may be published.
You have reached the limit of remote volumes you can publish. Try unpublishing some or increasing the relevant values in the TOPSKRNL.DAT file.

TOPS memory error type: <number>.
TOPSKRNL couldn't allocate memory for a temporary buffer. Try the command again. If it returns the same error you may want to increase the Buffer Size in the TOPSKRNL.DAT file.

TOPS Network error type: <number>.
This is a general network error. If it happens frequently (i.e., with many servers) there may be a bad network connection somewhere on the net. Otherwise, the server you are trying to list the volumes from or connect to may be stuck in an error condition.

Cannot find directory: <name>.
The directory you are trying to publish or use as a spool directory does not exist.

Directory: <name> or a sub-directory is already published.
A subdirectory or a "parent directory" of the directory you are trying to publish has already been published. Try the volumes published window to see which volumes are already published.

Name conflict, choose another Server name.
The name you have chosen has already been used by someone on the network. You must choose another name (or come to work earlier).

Volume: <name> is in use — cannot be unpublished.
The volume you wish to unpublish has active Clients. You should either ask them to disconnect or use the LOGOUT command in the FILE CLIENTS window to close them out from your server.

Printer: <name> is in use — cannot be unpublished.
The printer you wish to unpublish has active Clients. You should either ask them to disconnect or use the LOGOUT command in the PRINTER CLIENTS window to close them out from your printer.

You have reached the limit of volumes you can publish or mount.
You have reached the limit of remote volumes you can publish or mount. Try unmounting or unpublishing some volumes or increasing the relevant values in the TOPSKRNL.DAT file.

This server is overloaded and cannot serve you at this time.
The server whose volumes or printer you were trying to list or whose volume or printer you were trying to mount is being used by its limit of Clients. Try another server.

Unable to XSYNC <name>: <number>.
TOPS was unable to run the TOPS utility XSYNC on the directory you are trying to publish. This could happen if the utility XSYNC.EXE is not in one of the directories specified by the PATH environment variable, or there is not enough memory to run XSYNC from within TOPSMENU. Try running XSYNC directly from the DOS command line, with the following syntax:

```
C> XSYNC /s /y <path>
```

If the error was due to a shortage of memory, this command should complete successfully. You should then attempt to publish the volume without running XSYNC by using the <ALT-X> option.

Unable to write to remember file.
There has been some error in writing the file TOPSTART.BAT. See if your disk is full on your current drive.

This operation cannot be completed while a Client is using this volume.
This volume has active Clients while you are trying to change the Alias, Password or Mode. You must wait until there are no active Clients to make these changes.

Drive does not exist or no disk in drive.
The drive specified to publish or mount was not a legal drive specifier. For publishing it could be a non-local drive. For mount it may be out of the legal range. If it is a legal specifier of a floppy drive, make sure the disk is properly in the drive.

Path: <name> does not refer to a local physical drive.
The drive specifier in the pathname specifying which directory should be published is not a local drive. Verify that you typed in the correct drive specifier.

There is another Station already logged in with this Serial Number.
The Serial Number of the TOPSKRNL you are using is the same as someone else on the network. Make sure you are not using someone else's TOPS disk.

There are incompatible versions of TOPS on this network.
The server you wish to access has an incompatible version of TOPS. Please check the Release Notes for compatibility questions.

Unknown error type <number> on call <number>.
There may be some error conditions which are not caught by TOPSMENU. If you come across one, please note the circumstances, the error type number and the call number and contact TOPS Technical Support.

TOPS General Errors

TOPS: TOPSKRNL not installed, aborting.

- TOPS
- You tried using TOPS without having the background software (TOPSKRNL.EXE) installed. Please see the documentation about how to load the TOPS software.

TOPS: no arguments specified. Type 'TOPS HELP' for more info.

- TOPS
- There were no arguments or commands entered after TOPS on the command line.

TOPS: illegal option (<option>), ignored

- TOPS <option> <command>
- There was an option entered before a TOPS command was specified. The only option recognized in that way is the "/q" option which prevents the copyright message from being displayed.

TOPS: Command (<command>) not found. Type TOPS HELP for a list.

- TOPS <command>

- The command you entered wasn't recognized as a TOPS command. Make sure there wasn't an error entering the command and try "TOPS HELP" to get a list of the valid TOPS commands.

TOPS HELP command (<command>) not found

- TOPS HELP <command>

- The command you entered wasn't recognized as a TOPS command. Try "TOPS HELP" to get a list of the valid TOPS commands.

Name conflict

- TOPS STATION <name>

- The name you have chosen has already been used by someone on the network. You must choose another name (or come to work earlier).

Serial number conflict

- TOPS STATION <name>

- The Serial Number of the TOPSKRNL you are using is the same as someone else on the network. Make sure you are not using someone else's TOPS disk.

Server has incompatible version

- TOPS DIR <server> or TOPS MOUNT

- The server you wish to access has an incompatible version of TOPS. Please check the Release Notes for compatibility questions.

Station name already initialized

- TOPS STATION <name>

- Your Station name has already been initialized and is ON. If you want to change your Station name, turn the name OFF using the TOPS STATION OFF command first.

Server has active clients

- TOPS STATION <name>

- Your server has active Clients while you are trying to set a new Station name. You must wait until there are no active Clients to change your Station name.

Station name not initialized

- TOPS PUBLISH or TOPS DIR or TOPS MOUNT
- You are trying to use the network without providing a network name for your Station. Use the TOPS STATION command to set your Station name.

Name too long

- TOPS STATION or TOPS PUBLISH
- The station name or volume name or printer name you specified is too long. The limit on PC's Station names is 15 characters. The limit on PCs' volume or printer names is 16 characters.

Invalid mode argument

- TOPS PUBLISH or TOPS MOUNT
- The argument which was passed as the mode was not one of the legal options. Check the format of the command using TOPS HELP.

Memory error (not enough)

- TOPS DIR
- TOPSKRNL couldn't allocate memory for a temporary buffer. Try the command again. If it returns the same error you may want to increase the Buffer Size in the TOPSKRNL.DAT file.

Unknown error condition

- TOPS
- There may be some error conditions which are not caught by TOPS. If you come across one, please note the circumstances and the error number and contact TOPS Technical Support.

TOPS Client Errors

Server not found

- TOPS DIR <server> or TOPS MOUNT
- The named server is not found on the Network. Try the TOPS DIR command to verify that the server is still active (you may want to try it a second time if you don't see it the first). If you see the server's name, try the offending command again (twice if necessary). If you still can't complete the command you should make sure that there isn't a bad network connection.

Server too busy to accept connection

- TOPS DIR <server> or TOPS MOUNT
- The server whose volumes or printer you were trying to list or whose volume or printer you were trying to mount is being used by its limit of Clients. Try another server.

Too many volumes mounted

- TOPS MOUNT
- You have reached the limit of remote volumes you can mount. Try unmounting some or increasing the relevant values in the TOPSKRNL.DAT file.

Drive already assigned to remote volume

- TOPS MOUNT
- The drive letter you specified to the MOUNT command has already been used to map to a remote volume. You should choose another drive letter or unmount the other volume.

Invalid password

- TOPS MOUNT
- The password entered on the command line or at the prompt was not correct. Try the command again and be careful typing the password.

Network error

- TOPS DIR <server> or TOPS MOUNT
- This is a general network error. If it happens frequently (i.e., with many servers) there may be a bad network connection somewhere on the net. Otherwise, the server you are trying to list the volumes or printer from or connect to may be stuck in an error condition.

Can't unmount your current drive: <drive>

- TOPS UNMOUNT
- If you specified a drive, the drive you specified is your current drive. If you used the /A option, the current drive is one of the drives mounted to a remote volume. You must change your current drive. Try unmounting from a local drive.

Drive not valid

- TOPS UNMOUNT <drive> or CSTAT <drive>

- The drive you specified is not valid. Try the TOPS CSTAT command to verify that the drive you entered is local or mounted to a remote volume.

TOPS Server Errors

Bad path specifier

- TOPS PUBLISH

- The pathname specifying which directory should be published is invalid. Verify that you typed in the correct drive specifier and name and that the directory actually exists.

Invalid directory

- TOPS PUBLISH

- The directory you are trying to publish does not exist.

Directory already published

- TOPS PUBLISH

- A subdirectory or a "parent directory" of the directory you are trying to publish has already been published. Try the TOPS PSTAT /V command to see which volumes are already published.

Unrecognized argument to PUBLISH: <arg>

- TOPS PUBLISH

- One of the parameters you entered for the PUBLISH command was not valid. Check "TOPS HELP PUBLISH" for the syntax of that command.

Error <number> returned trying to XSYNC <path>.

- TOPS PUBLISH

- TOPS was unable to run the TOPS utility XSYNC on the directory you are trying to publish. This could happen if the path specified is invalid, the utility XSYNC.EXE is not in one of the directories specified by the PATH environment variable, or there is not enough memory to run XSYNC from within TOPS. Try running XSYNC directly from the DOS command line, with the following syntax:

```
C> XSYNC /s /y <path>
```

If the error was due to a shortage of memory, this command should complete successfully. You should then attempt the PUBLISH command with the "/X" option.

Volume not found

- TOPS UNPUBLISH
- The volume name you entered was not in the list of currently published volumes. Check TOPS PSTAT /V for a list of published volumes.

Volume in use

- TOPS UNPUBLISH
- The volume you wish to unpublish has active Clients. You should either ask them to disconnect or use the TOPS LOGOUT command to close them out from your server.

No volume specified to UNPUBLISH

- TOPS UNPUBLISH
- You did not specify which volume is to be unpublished or use the "/A" option. You must enter the name of the volume you wish to unpublish or the "/A" option to unpublish all your volumes.

Invalid parameter (<param>) to PSTAT

- TOPS PSTAT
- One of the parameters you entered for the PSTAT command was not valid. Check "TOPS HELP PSTAT" for the syntax of the PSTAT command.

Client '<client>' not found.

- TOPS LOGOUT
- The specified Client was not found in your list of active Clients. Check "TOPS PSTAT /C" to verify that they are still using your volumes or printer.

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TOPS (Formerly Centram Systems West)
A Sun Microsystems Company
P.O. Box 8030
Berkeley, CA 94707-8030
(415) 549-5995

I.D. NUMBER, Please reference this number with check payment and for all inquiries.

2013379

Print Name and Address:

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To insure the price of this upgrade, order forms must be postmarked by May 15, 1988.

TODAY'S DATE_____

Type of Product	List Serial Numbers	Quantity	Cost	Total
TOPS/Mac with serial # less than: M100033826 Part # A2002107			$29.00 Each node	
TOPS/Mac with serial # greater than: M100033825 Part # A2003107			FREE	
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TOPS/PC purchased AFTER Sept.30, 1987 Part # A1002107	Date of purchase verification is required for FREE PC upgrades		FREE	
TOPS/Print Part # A1101107			FREE	
			Sub Total	
			*California residents add local sales tax	
			TOTAL	

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TOPS use only.
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Date Out_____
Comments_____
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Please detach, complete and return this form to TOPS, A Sun Microsystems Company, ("TOPS") in order to receive customer support services.

Software Serial # _____ D200067221

Name _____

Company/Title _____

Street _____

City, State, Zip _____ Country _____

Phone ( ) _____

How many employees at your location? (circle) 1-50, 50-100, 100-200, 200-300, 400-500, 500-600, 600-700, 700-800, 900-1,000, over 1,000.

What is the major use of TOPS in your workgroup?
☐ Multi-user Applications ☐ Network Backup ☐ Peripheral Sharing

Why did you choose TOPS?
☐ Macintosh to PC Connectivity ☐ Low Cost ☐ Other _____
☐ No dedicated server required ☐ Ease of use _____

What is your primary mode of file sharing?
☐ PC to Macintosh ☐ Macintosh to Macintosh
☐ PC to Sun Workstation ☐ Macintosh to Sun Workstation
☐ PC to PC ☐ Other

How many of the following are at your location? (specify quantity)
Sun Workstations _____ Pyramids _____ VAX's _____
IBM Mainframes _____ IBM 9370 _____

How many of the following are in your workgroup? (specify quantity)
Macintosh _____ of those, how many are on TOPS? _____
PC or compatible _____ of those, how many are on TOPS? _____
Laser Printer _____ PS/2 _____

Is your workgroup connected to another workgroup at your location? ☐ Yes ☐ No
If so, How? _____

Are you the person who recommended Networking products for your workgroup? ☐ Yes ☐ No

Do you use LAN's other than TOPS at your location? ☐ Yes ☐ No
If yes, which ones?
☐ AppleShare ☐ MacServe ☐ Ungermann Bass
☐ Banyan (Vines) ☐ Novell ☐ Other (specify) _____
☐ IBM PC-LAN ☐ 3 Com _____

How many nodes in your Local Area network (specify quantity)
Macintosh _____ PC _____

How did you hear about TOPS? (check all that apply)
☐ Dealer ☐ ComputerWorld ☐ Info World ☐ Macintosh Today
☐ MacUser ☐ MacWeek ☐ MacWorld ☐ PC Magazine
☐ PC Publishing ☐ PC Tech Journal ☐ PCWeek ☐ PC World
☐ Publish ☐ Trade Show ☐ User Group ☐ Colleagues
☐ Other _____

Please list the computer publications you read most frequently: _____

What other products would you like to see from TOPS? _____

Please make your selection below:
I would like a TOPS Utilties Disk* for: (circle one)
PC — 5¼" ☐ or 3½" ☐ MAC ☐

Thank you for purchasing TOPS

*Allow 4 to 6 weeks for TOPS Utilities Disk delivery.

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A Sun Microsystems Co.

2560 NINTH STREET, SUITE 220
BERKELEY, CA 94710

P.O. Box 8030
Berkeley, CA 94707-8030
(415) 549-5995

TOPS
A Sun Microsystems Co

Dear TOPS User:

Thank you for purchasing TOPS version 2.0, the beginning of a new generation of TOPS networking products.

TOPS 2.0 boasts a number of exciting new features. TOPS/DOS version 2.0 allows you to share printers formerly available to only one user. TOPS/DOS also includes FlashTalk, the PC-to-PC communications architecture that operates at three times AppleTalk speed while maintaining full AppleTalk compatibility. TOPS/Macintosh version 2.0 introduces a "Remember" function that permits automatic publishing and mounting of volumes, and is fully AFP compatible. Both TOPS/DOS and TOPS/Macintosh now support AppleTalk zones.

TOPS/DOS, previously bundled with the TOPS FlashCard, is now sold separately. TOPS/DOS version 2.0 runs with the TOPS FlashCard or with AppleTalk-PC cards from Apple and other manufacturers. However, only the TOPS FlashCard and cards previously shipped by TOPS (Centram) support high-speed FlashTalk communications. TOPS/DOS 2.0 also supports AppleTalk PC applications such as Think Technologies' PC InBox.

In order to achieve full compatibility with Apple's networking standards, it was necessary to make changes at the lower levels of TOPS. Therefore users should be aware that Versions 1.0 and 2.0 are incompatible. This means that new TOPS 2.0 nodes will not be able to "see" old TOPS nodes and vice versa. Since earlier versions of TOPS will no longer be available, users must upgrade in order to expand their network.

Please encourage your friends and colleagues to upgrade to TOPS 2.0 using the enclosed upgrade order form.

Once again, thanks for being on TOPS. We look forward to your feedback.

Sincerely,

Nat Goldhaber
President and CEO
TOPS, A Sun Microsystems Company

K8040127

On TOPS®

Vol. 2 #2 4/88

Developers See Bright Future for TOPS-Compatible Products

Recognizing the fact that TOPS is quickly becoming a standard in the networking industry, software publishers have begun to design software packages with TOPS compatibility in mind.

Many of these TOPS compatible products are already on the market, while others are just being conceived. Developers who design software specifically for network use are eager to work with TOPS engineers in order to ensure that their "network smart" packages will run efficiently over TOPS. News about the likely merge of TOPS and NFS, Sun Microsystems' network file system, has further fueled the interest in TOPS-compatible software development.

To make things easier for outside developers, TOPS offers a TOPS Developer Program, which takes developers a step beyond widely accepted cooperative testing arrangements. For a nominal fee, developers can receive a variety of software and hardware specifications that will allow engineers and software designers to match their products with the TOPS Network system.

TOPS runs on most DOS and Macintosh systems, many UNIX and VMS systems, and is expected to run on most upcoming desktop computer systems. Software developers who work with TOPS substantially widen the range of compatibility for their software products. Since TOPS is the leader in intersystem connectivity for desktop computers, TOPS-compatible software will continue to have the edge in the growing market of heterogeneous office computer systems.

The architects of TOPS, Gary Stroud, Gary Fitts, and Michael "Flash" Pflaumer, withTOPS' 1987 Eddy Award for Best New Networking Software.

Symantec's InBox and MORE

Symantec Corporation, one of the first software publishers to address cross-operating system applications, produces popular software packages such as *InBox* and *MORE*. All Symantec products that run on IBM PCs and Apple Macintoshes are compatible with TOPS.

One example of the network potential offered by Symantec products is the interchangeability of data between *MORE*, a business productivity package for the Macintosh, and *ThinkTank*, Symantec's business productivity package for the PC. TOPS users can create presentation outlines with *ThinkTank* on a PC, then send the resulting files over TOPS to the Mac and turn them into graphic images with *MORE*.

"Symantec is heavily committed to TOPS and to the benefits of networking," says Rod Turner, executive vice president of Symantec. "New versions of our software will offer still more networking capabilities."

Interleaf Software

For the past four years, Sun Workstation users have relied on *Interleaf Technical Publishing Software* (TPS) to perform sophisticated electronic publishing. Today, TOPS enables TPS users to share files with users of the Macintosh-based *Interleaf Publishing*, a new package

Continued on page 2

TOPS Tech Support

TOPS Tech Support has a new phone number! Registered TOPS users are welcome to call TOPS Tech Support for information and advice. The Tech Support number is:

(415) 769-8711

TOPS offers priority service for 90 days after the receipt of each TOPS warranty card. TOPS Tech Support also provides software updates for minor revisions

Continued on page 4

INSIDE

TOPS Developers (from page 1)

that is fully compatible with the original product and nearly identical in function.

Interleaf capitalizes on *TOPS/Sun Workstation*, TOPS software that allows a Sun Workstation to act as a TOPS network file server.

"TOPS is the only networking software that links the Sun and the Macintosh," says Roch Skelton, Interleaf's manager of product support. "Once users have mounted a file, they can't tell whether the file came from a Mac's local disk or from a Sun machine all the way across the network."

Skelton stresses the benefits of TOPS' distributed file server architecture and broad connectivity potential. TOPS allows the simultaneous editing of different portions of large documents, and facilitates assembly of revised sections at the end of the editing process. "The best networks are those that can be ignored during document preparation," says Skelton. "For this purpose, Interleaf and TOPS are a perfect match."

Olduvai's FontShare

Before the development of Olduvai's software package *FontShare*, networked Macintosh users could share computer files and programs, but couldn't share the PostScript files necessary for printing in non-resident fonts.

FontShare allows computer users to store PostScript font files at any file server. The product's user interface is simple to use and virtually transparent.

"We plan to stress the TOPS compatibility angle," says David Schargel, Olduvai's vice president of marketing. "TOPS is a recognized leader in the networking field—in fact, we use it ourselves. The alignment will help boost our product credibilty and sales."

PS Publishing's PS Collage

PS Collage is the first drawing application to provide multisystem capabilities that include both the Apple Macintosh and IBM PCs running under Windows. Intended for users on a TOPS Network, *Collage* offers a broad range of curve-drawing and line-drawing tools and layout aids With TOPS, *Collage* works transparently across operating systems, so that Mac and PC users on TOPS can access and use *Collage* files interchangeably.

At the recent Macworld "On Line with TOPS" forum in San Francisco, PS Publishing president Robert Simon pointed out that TOPS' distributed file server architecture is ideal for electronic publishing, because it permits universal access to disks and peripherals located all over the network. Simon also emphasized TOPS' simplicity, connectivity potential, and elegance of design.

"We see the TOPS Network as the foundation upon which new multisystems applications such as *PS Collage* will rest," said Simon. "TOPS facilitates the new generation of workgroup computing. That's why we like it."

See Page 5 for news about the first TOPS developers meeting, held at the January, 1988 Macworld Expo.

WOS Detente Reports

WOS Data Systems, Inc. develops networking applications that, according to a company motto, "support a peaceful coexistence between PCs and Apple Macintoshes." One of WOS' newest network software packages is *Detente Reports*, a sophisticated custom report generator that lets *TOPS/Macintosh* users import data directly from PC-based applications without data conversion or file transfer. *Detente Reports* can accept files from a variety of widely used applications, including dBase software, Clipper, and WOS' own accounting software package, *WOS Fund Accounting*.

Developer List Growing

Other software and hardware developed or marketed in cooperation with TOPS include:

- *NetSerial* (Shiva Corporation), software that allows TOPS users to share a broad range of computer peripherals;
- *Network Card Plus* (Hercules Computer Technology), a multifunction card for PCs that combines an AppleTalk port providing TOPS' *FlashTalk* capabilities with Hercules' high-resolution graphics, including Hercules' *RamFont*;
- *McMax* and *Clipper* (Nantucket Corporation), a dBase-like program for the Mac and a dBase compiler;
- *123LASER* (Carl Carlson), printing software that allows Lotus 1-2-3 and Symphony users to print to PostScript-compatible devices;
- *Personics Jukebox System* (The Personics Corporation), a music storage and high-speed cassette recording system permitting customers in retail music stores to create and purchase customized music tapes.▼

TOPS Awards

TOPS Wins Numerous Industry Awards

The TOPS Network has received a number of awards during the past year and a half recognizing TOPS achievement and technical excellence. TOPS awards include:

- Best of '86 (*PC Magazine*)
- Top 100 of 1986 (*MacBuyers' Guide*)
- Best Network Server, 1987 (Macworld World Class Awards)
- Golden Icon Award: Best Networking Product 1987 (MacExpo, Paris)
- Best LAN product of 1987—with Novell SFT NetWare 2.1 (*LAN Magazine*)
- Eddy Award for Best New Networking Software, 1987 (*MacUser*)

TOPS also placed among the top three connectivity products in *PC Magazine's* Awards for Technical Excellence (1987), along with 3Com's 10MB Twisted Pair.

Nat Goldhaber, founder of TOPS, said he was very pleased about TOPS' showing in recent industry lists and awards.

"About a year ago, I said that my goal was to hear TOPS mentioned in the same breath with Novell and 3Com. Now it's happened," he said. "TOPS is right on track."▼

TOPS Solutions

by Al Weinrub

Q. Can I back up my PC hard drive to another machine on the network?

A. Yes. We've designed a utility called TCOPY that is included on your *TOPS/DOS* disk #2. Example: To back up your PC hard drive to a remote Macintosh hard drive, publish an empty Macintosh folder, mount it on your local PC as drive D. Then type:

```
TCOPY \*.* D: /s /c
```

It doesn't matter whether your files are DOS or Macintosh files—you can back up either type to any disk on the network.

Q. How can I print screen dumps from my PC without getting strange characters instead of boxes and outlines?

A. The new TOPS NetPrint can do this for you very easily. After loading *TOPS NetPrint*, load the new TOPS ProPrinter translation module, PROPS. Next, download the PCScreen font that comes with your *TOPS NetPrint* software by typing:

```
PRINT PCSCREEN.FS/X
```

That's all there is to it. You'll end up with a printout that looks just like your screen.

Q: Are there any quick ways to free up some of the 200K RAM used by TOPS/DOS?

A: Yes. For one thing, if you don't plan to publish a local printer to the network, you don't need to load the TOPSPRTR module, which will save you about 40K of RAM.

Also, when you load the TOPSTALK module, you can reduce the amount of memory required by about 12K. Load TOPSTALK with the following line option:

```
TOPSTALK /M=8000
```

In addition, you can reduce the TOPS configuration parameters in the TOPSKRNL.DAT file to the minimum necessary for your particular TOPS environment. For example, if your machine will be used only as a client on the network, and not as a server, you can save about 20K. ▼

Upgrade Note

The TOPS Upgrade Program has been extended to May 15, 1988. For more information on upgrading to TOPS version 2.0, call the TOPS Upgrade Line: 415-769-8808. For specifics about the TOPS Upgrade Program, see "How to Upgrade" in **On TOPS**, Volume 1, #2; Nov., 1987.

TOPS Has Moved!

In March, 1988, TOPS moved to larger facilities in a modern business community within a few miles of its former headquarters. TOPS is now located at the following address and phone number:

TOPS, A Sun Microsystems Company
950 Marina Village Parkway
Alameda, California
94501

(415) 769-9669

Who's On TOPS?

The Personics Corporation Menlo Park, California

In January, 1988, the popular television show *Entertainment Tonight* broadcast a story about a revolutionary concept in retail music cassette sales introduced by *The Personics Corporation* of Menlo Park, California. One fact not mentioned by the ET story, however, is that TOPS has been playing a large role in Personics' development process.

Visitors to the *Wherehouse* outlet in Mountain View, California can now browse through 15-second "snippets" of stored songs on a Personics Listening Post, and then order a custom cassette tape of various songs, recorded on a Personics Tapemaker. Personics expects to place these "jukebox" installations in many U.S. and Canadian stores in the next few years.

The process of seeking and purchasing rights to music owned by thousands of individuals and recording companies takes up most of the staff time at Personics. Staff members work independently during the day, making phone calls and keeping track of their progress on a variety of desktop computers. In order to coordinate the overwhelming mass of data that results from these efforts, Personics relies on a company-wide TOPS network.

According to Personics founder David Bowman, Personics developers tried many other networks, but to no avail. "We wanted universal connectivity, and couldn't get it elsewhere," says Bowman. "Keeping costs down was important also, which meant that using twisted pair cabling was absolutely essential. TOPS really became the only choice."

TOPS' connection with Sun has confirmed Personics' faith in TOPS as a secure, long-range networking solution. "We've adhered to Sun's [open networking] philosophy from the beginning," says Bowman. "If you believe that Sun is the major player in the UNIX workstation market, then Sun/NFS compatibility becomes your primary goal."

Personics staff members use TOPS to link royalty information, lyrics, actual music, and related text between a number of 1 Gb servers (customized DOS-based machines). The servers transcribe music as it arrives, produce jukebox "snippets" and store complete songs for later publication.

Personics' publication process involves producing optical disks for retail stores on a weekly basis, allowing stores to update and expand their jukebox offerings. "We work just like a magazine," says Bowman, "except that our product is a CD, not a printed periodical." The CDs themselves are pressed by outside companies.

In order to publish the necessary 660 Mb a week, Personics designed what may be the most advanced optical publishing system in existence. "Three years of research and development yielded the largest CD ROM system in the world," says Bow-

Continued on page 5

Tech Support (from page 1)

and bug fixes. Please note that upgrades with significant new features may require an upgrade fee.

Tech support services are available from 8:00 a.m. to 5:00 p.m. Pacific Standard Time. The tech support number takes Voice Mail messages during other hours.

When you call for tech support, stay near your computer, and have the following information on hand:

- The version of TOPS installed on your network
- The types and number of computers
- The version of system software (System/Finder or DOS) used on each computer
- The type of network connectors used on your network
- Your network topology

TOPS Tech Support can also be reached electronically over Applelink (address D0098), BIX (TOPS Vendor Support Conference), CompuServe (subtopic TOPS within the AppleVendor Forum), and **TOPS Talk**, the TOPS bulletin board service (415-769-9666; 300/1200/2400 baud, 8 data bits, 1 stop bit, no parity).

Future plans include a TOPS subtopic in the PC Vendor Forum at CompuServe, and extended Tech Support services for registered users.▼

Reminder

Most TOPS products are sold through retail outlets. However, some TOPS products are sold directly by TOPS. Direct sales currently cover *TOPS Terminal* and *TOPS/Sun Workstation*. Check ads and promotions or call the TOPS sales line for purchasing information: (415)769-8700. Interested users can also call TOPS' toll-free sales number, available in both the U.S. and Canada:

1-800-445-TOPS

TOPS Interview

Jim Persky
TOPS Product Manager for UNIX Systems

Jim Persky is the product manager in charge of TOPS software for UNIX and VMS systems. Persky came to TOPS from UniSoft in Berkeley, where he managed a full line of connectivity products. Persky was previously a UNIX systems engineer at Valid Logic Systems in San Jose.

On TOPS interviewed Persky at the beginning of February, 1988.

Q. What role do you play in the development of TOPS products for UNIX and VMS systems?

A. As a product manager, I'm responsible for coordinating the work of all the departments that have any input into TOPS products for these sytems. Product managers pinpoint the need in the marketplace for a particular product and propose manufacturing and marketing plans. Essentially, I monitor TOPS products for UNIX and VMS systems through their life cycles, from conception to termination.

Product managers also work with the sales department to make sure that the sales team understands the products and can successfully communicate product benefits to the public.

Q. How do you determine what's needed in the marketplace?

A. I look at the installed base of target machines, say UNIX systems, and examine the machine's computing environment. In the case of UNIX and VMS, a very high percentage of sites support a large number of desktop PCs and Macs as well. It's obvious that UNIX and VMS installations would benefit from connectivity between all these systems. In fact, many UNIX and VMS systems managers have become very aggressive in looking for connectivity solutions. TOPS can answer the networking needs of a wide range of UNIX and VMS sites.

Q. Why did TOPS choose to target UNIX and VMS?

A. We wanted to concentrate our internal development efforts on the most widely used machines in the industry. Some UNIX and VMS systems are handled directly and others are supported through our licensing arrangements with Mt Xinu. Whenever a particular manufacturer requests a TOPS port, we direct them to Mt Xinu, who works out a development contract. For example, Mt Xinu currently markets a TOPS connection to Berkeley UNIX.

Q: What are the benefits of TOPS for users of UNIX and VMS systems?

A: TOPS allows UNIX and VMS sites to hook desktop networks into their higher end systems. Operations that typically function in desktop environments, such as desktop publishing, tracking of supplies, accounting, and so on, can use TOPS to access a central server for computing power, storage, and backup. Hookups like this make more efficient use of both high-power and desktop systems. Work is faster and more secure, but computer users keep their familiar interfaces. No one has to learn UNIX. You can have a Macintosh front end supported by the heavy number-crunching power and disk space of a Sun or VAX workstation.

Q: What directions will TOPS be taking in the future with its UNIX products?

A: TOPS and Sun Microsystems have been talking for a long time about combining TOPS and NFS [Sun Microsystems' Network File System, an industry-wide networking standard]. We expect this kind of merger to take place sometime soon, say, within twelve to eighteen months. The result will be an extremeley flexible, easy-to-use, and transparent networking solution that will work on a wide range of sytems. We're all very excited about the potential of a TOPS-NFS merge.

Q: What is the general goal of TOPS for its UNIX and VMS products?

A: TOPS is committed to a total connectivity solution that is transparent across heterogenous platforms. We want to have TOPS on as many platforms as possible.

Products supporting UNIX systems are especially important right now. Industry observers have been anticipating huge markets for UNIX, and now those large figures are finally taking shape. UNIX is everywhere.

My personal vision of TOPS and TOPS/NFS is to develop a UNIX solution that is accessible to everyone. People should be able to make use of the power and resources of UNIX without having to learn a complex interface. I think TOPS and NFS will be able to achieve that kind of efficient computer environment.▼

Who's On TOPS? (from page 3)

man. "There isn't anything on the market that can come close to what we need."

Bowman praises TOPS for being able to answer Personics' special needs with notable efficiency. Round-the-clock reliability, ease of use, and broad connectivity capabilities have been vital to the success of networking at Personics. "The advantages of TOPS were clear early on," says Bowman. "And we fully expect our joint success to continue."

Bowman summed up his appreciation of TOPS at the January TOPS developers forum, ending his presentation with, "TOPS, we couldn't have done it without you."▼

New Product Watch

TOPS TeleConnectors

Michael Grant, Product Manager for TOPS TeleConnectors

A new addition to the TOPS hardware line, *TOPS TeleConnectors* are small hardware devices that attach desktop computers and other peripherals to low-cost AppleTalk networks.

TOPS TeleConnectors support FlashTalk, TOPS' standard for AppleTalk communications. FlashTalk allows PCs on an AppleTalk network to communicate at over three times AppleTalk speed. FlashTalk simultaneously supports PC-to-Macintosh communications at the standard AppleTalk rate of 230 kbps. *TOPS TeleConnectors* are fully compatible with AppleTalk (LocalTalk) networks and Farallon's PhoneNet® Plus.

TOPS currently offers two types of TeleConnectors, one designated DB-9, and one designated DIN-8. PCs and older Macintosh models typically require DB-9 connectors, while newer Macintosh models require a DIN-8 connector. Users can check their computer and printer documentation to verify which connector is appropriate for each of their machines.

Network cables attach to the *TOPS TeleConnector* via a standard RJ11 modular phone plug. Each *TOPS TeleConnector* package includes one cable and RJ11 plug.

TOPS TeleConnectors are available through authorized TOPS dealers. The suggested retail price is $59.▼

TOPS Developers

Developers Meet at Macworld

The TOPS Developer Program took a large step forward in January, 1988 at the San Francisco Macworld Expo. In conjunction with top execs from numerous software and hardware development companies, TOPS introduced the first "On Line With TOPS," a broad-based meeting designed to encourage developers to create products with TOPS in mind. The forum was presented to an enthusiastic audience in a Macworld conference room while being simultaneously broadcast to passing trade show attendees via TV monitor.

> *"The power of computing belongs to the end user."*

The TOPS Developers Program permits software and hardware developers to license TOPS technology and receive early access to new versions of TOPS products. The program also includes comprehensive cooperative testing arrangements. Knowledge about TOPS Network specifications enables companies to develop products that work effectively over TOPS. Since TOPS is quickly becoming an industry standard for cross-system connectivity, TOPS compatibility ensures widespread use and tremendous sales potential.

Starting up the meeting, TOPS founder Nat Goldhaber reviewed the direction and philosophy of TOPS, stressing that "We are all co-conspirators in a revolution which states unambiguously that the power of computing belongs to the people; not to the technocrats, not to the establishment, but to the end user." Goldhaber reinforced the idea that TOPS is helping to create computing environments that "work the way people work," but also may "yield a different style of working among individuals than has ever been done before."

Goldhaber also emphasized the fact that TOPS' acquisition by Sun and the planned merger of TOPS and NFS (Sun's industry standard network file system) would open up new opportunities for developers. By staying in close touch with the growth of TOPS and NFS, software developers will have the chance to participate in the creation of a computing environment that will offer optimum flexibility, accessibility, and system efficiency, without requiring the loss of current investments in various computer technologies.

Scott McNealy, president of Sun Microsystems, told the group that "TOPS was a natural" for integration into the Sun world. As a company that was "taking off like a rocket in the Macintosh area," TOPS filled the Macintosh gap in Sun's ambitious and successful connectivity plans for both low-end and high-end systems. Furthermore, Sun approved of TOPS goals regarding network transparency, ease-of-use, and cost efficiency. "From a design standpoint," said McNealy, "TOPS has done an outstanding job in understanding that we need to serve the needs of all users. We want the network to be so invisible that the user doesn't even know it's there."

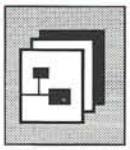
McNealy indicated that, as part of Sun, TOPS is now in the right place at the right time to lead the industry in networking developments. In particular, TOPS will benefit from AT&T backing that has given Sun "the financial strength to make developments happen, to bring the revolutionary products that we've been talking about to the marketplace."

Executives from a variety of computer software and hardware companies made short presentations to the group during the second half of the forum. Each related his company's experience in working with TOPS during product development and marketing. All participants emphasized the benefits of TOPS compatibility for their products, and many cited intercompany cooperation as an efficient, enjoyable, and lucrative process.

TOPS plans to make "On Line with TOPS" an annual event, and hopes to stimulate increasing interest in cooperative product development. Questions about the TOPS Developer Program should be directed to TOPS, TDP Services, 950 Marina Village Parkway, Alameda, CA 94501; (415) 769-9669.▼

On TOPS is published by TOPS, 950 Marina Village Parkway, Alameda, California 94501, (415) 769-9669.

TOPS News



TOPS to Sell Kinetics Networking Products

In January, 1988, TOPS and Kinetics, Inc. of Walnut Creek, California signed an OEM agreement allowing TOPS to market Kinetics' networking hardware and software as part of the *TOPS/Sun Workstation* networking package.

TOPS/Sun Workstation permits Sun workstations to act as file servers to the TOPS Network and allows internetworking between Sun's NFS and TOPS. The connection between Sun Workstations, running over Ethernet, and the TOPS Network, running over AppleTalk, requires either a network bridge, such as Kinetics' FastPath, or an AppleTalk-Ethernet card, such as Kinetics' EtherSC, EtherPort SE or EtherPort II. The Kinetics hardware is being sold at a discount through TOPS to *TOPS/Sun Workstation* customers.

The agreement makes it possible for customers to purchase complete Macintosh-PC-UNIX internetworking solutions through TOPS. Formerly, users were forced to buy connectivity hardware from separate vendors. "TOPS can now offer a single, integrated solution to network users," says TOPS founder Nat Goldhaber, "and we're enthusiastic about Kinetics' high quality products."

Kinetics is also happy with the arrangements. "TOPS has a clear understanding of the need for transparent software and hardware connections in networking," says Tim McCreery, president of Kinetics. "We have always had a complementary relationship in our mutual products for the Macintosh and UNIX environments."

TOPS/Sun Workstation is sold directly through TOPS. Interested users should contact the TOPS sales office. ▼

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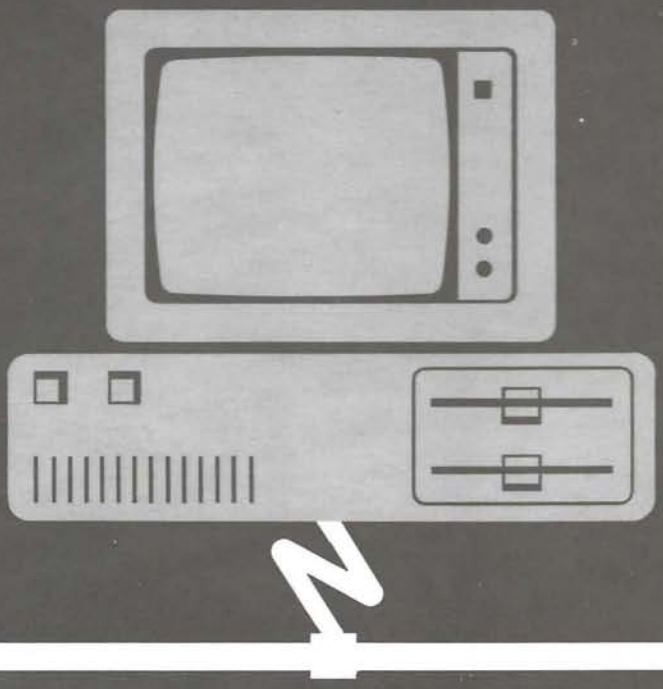
TOPS®

DOS Version



TOPS
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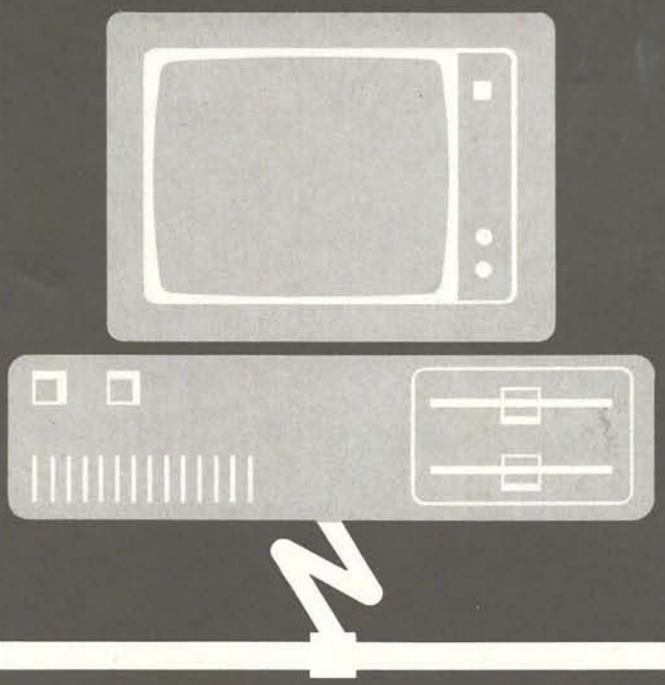
DOS Version

TOPS

TOPS®

All software required to transform an IBM or compatible personal computer into a TOPS Network station.

DOS Version



TOPS
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DOS Version

TOPS®

TOPS

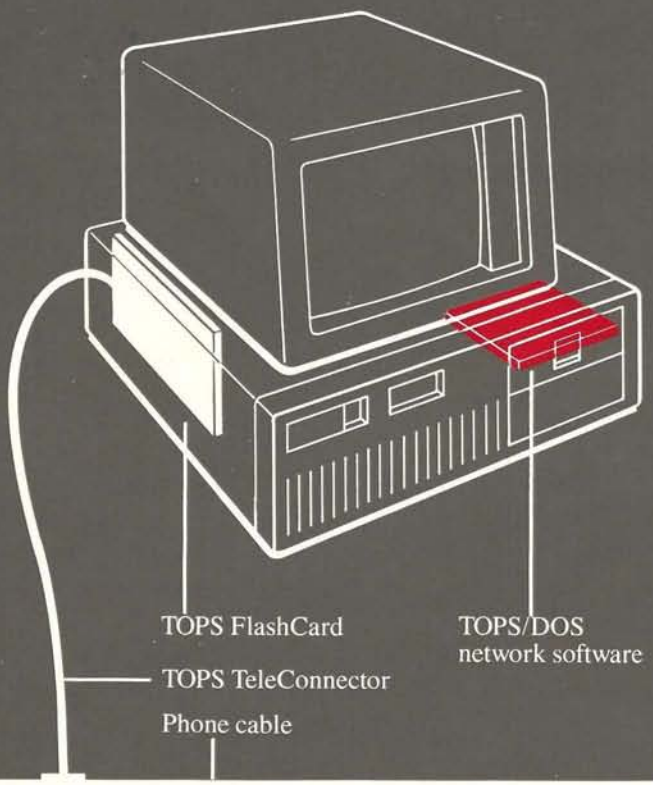
TOPS®

TOPS

TOPS®

Transforms an IBM PC, XT, AT, PS/2 Model 30* or compatible personal computer into a TOPS Network station, enabling it to both publish and use network volumes over the TOPS Network.

Components of a complete TOPS Network station on a PC.



Connect to Other Computers

TOPS on your PC or compatible opens up a whole new world of possibilities. You can begin to share files not only with other DOS network stations, but with Macintoshes, Sun Workstations, and other computers connected to the TOPS Network.

Share Network Resources

TOPS enables each station on the TOPS Network to share its resources with every other station. Files accessed from a remote network station will look and behave just as if they were stored locally — even if the file is stored on a different kind of computer than the one you're using.

Get Started Fast

Install a TOPS TeleConnector, a TOPS FlashCard, and in as little as five minutes you can begin to enjoy the benefits of working on a TOPS Network. All TOPS commands are available from an easy-to-use menu. You can also access all TOPS commands from the DOS command line with TOPS built-in high level network command language.

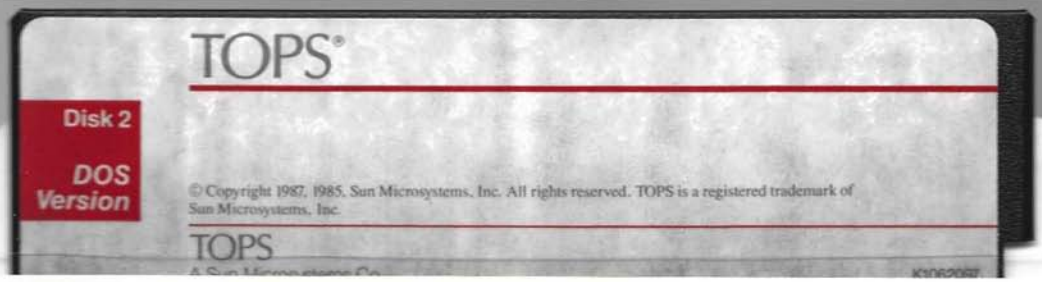
*3.5" diskette for PS/2 Model 30 available as exchange.

Requirements

Computers	IBM PC, XT, AT, PS/2 Model 30 or compatible.
System	DOS 2.1 or higher.
RAM	120 K
Hardware	One TOPS FlashCard or compatible AppleTalk/PC network card One TOPS TeleConnector or other AppleTalk compatible DB-9 connector.
Compatibility	Any network card (like TOPS FlashCard) supporting the TOPS FlashTalk transmission standard of 768Kbps. Any AppleTalk/PC card supporting the AppleTalk transmission standard of 230 Kbps.

K1052107

TOPS
A Sun Microsystems Co.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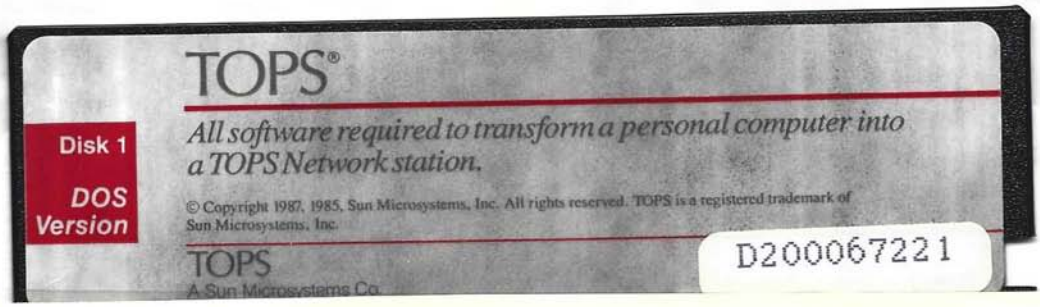
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Disk 1
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No
Non
Nein
注意

10°C—52°C
50°F—125°F

Insert Carefully
Insertar
Inserer avec soin
Sorgfaltig Einsetzen
挿入注意

Never
Nunca
Jamais
Nie
絶対禁止

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