

ViaNet^(R)

INTERMEDIATE USER'S REFERENCE

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Foreword

The ViaNet Local Area Network provides a powerful, convenient, and easy to use method for sharing resources with other computers in your organization. The procedures you follow to access and use this network can be automated to make the network appear totally transparent to the user.

Your network administrator has probably already designed a degree of automation into your network, so you may not have to use many of the functions that are discussed in this manual.

The same software tools your network administrator uses for automating network processes are also available to you as a user. You can personally automate the ways you access the network to fit your own particular requirements and modes of operation.

Regardless of the degree of automation in your own specific installation, your ability to manipulate the network depends on your level of understanding about how it works.

This User's Reference describes what ViaNet does, how it does it, what you have to do to use it, and how you can streamline its operation. The manual assumes that you have at least a basic understanding of the DOS operating system (version 2.0 or later). Chapter Two of this manual provides a detailed discussion of the DOS directory structure. This knowledge will allow you to readily understand the ViaNet structure.

If you are not familiar with DOS 2.0 commands and functions, refer to the MS-DOS 2.0 manual or PC-DOS 2.0 manual for more information. For more technical information about ViaNet, refer to the ViaNet Network

Administrator's Reference and ViaNet Application Designer's Reference. The ViaNet Network Administrator's Reference provides instructions for planning, setting up, and managing the network. The Application Designer's Reference provides technical information for writing applications to incorporate ViaNet's file sharing and protection facilities.

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INTRODUCTION

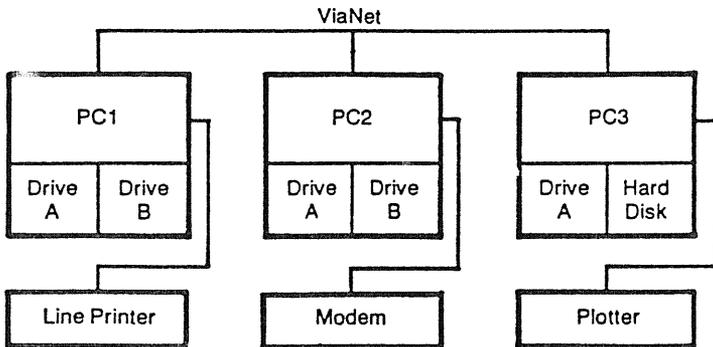
Overview

ViaNet is a software system that links your personal computer with other computers in a distributed local area network. A cabled adapter card inserted in your computer's expansion slot provides the hardware link to other members of the network, and ViaNet provides the software required for operating this network.

The local area network allows you to share resources (programs, data files, and hardware devices) with computers in your network. You can also operate as a single, stand-alone computer, just as you did before you were linked into a network.

Your network configuration might be similar to the sample network below. There are three computers included in this example. Each computer can theoretically access any file in any floppy drive or hard disk in any computer in the network, and can also access the printers, plotter, and modem that are shown in this example.

We say "theoretically" here because all files and devices may not be available to all users. ViaNet allows you to control access to specific files and devices within your own computer, and allows other users to control access to files and devices in their computers. The network administrator controls overall access within the network.



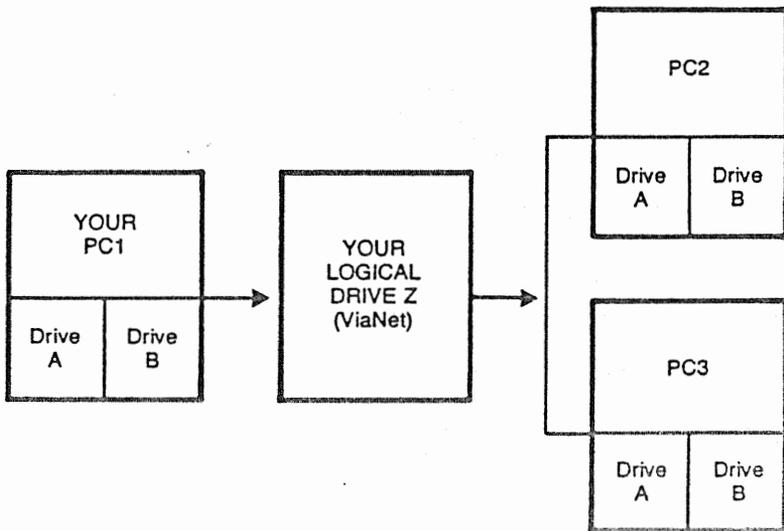
A Sample Network Configuration

What ViaNet Does

ViaNet appears as Drive Z in your computer. Obviously, there is no Drive Z physically attached to your computer, but the DOS operating system is not aware of this.

You reference Drive Z the same as you might reference your own Drive B. Where DIR B: lists the files in your Drive B, DIR Z: lists the computers connected to the network.

When you refer to "Z:" in a command, DOS goes to what it thinks is your Drive Z. This is actually the network, which sees all drives and directories as members of its own hierarchical file system. Like a drive, Drive Z contains a file directory, but its "files" are actually other devices in the network.



ViaNet's Logical Drive Z

DOS uses Drive Z's file directory system to find and access files and devices located in other computers throughout the network. Drive Z is your vehicle to these other computers.

For example, in the network illustrated above:

DIR Z:\ lists PC1, PC2, and PC3 as "subdirectories" in the Drive Z root directory.

DIR Z:\PC2 lists Drive A and Drive B of PC2 as "subdirectories" in the Drive Z subdirectory PC2.

DIR Z:\PC2\A lists all files in the root directory of Drive A of PC2, the same as if DIR A: were issued locally from PC2.

ViaNet Functions

Besides creating the logical Drive Z in your computer, ViaNet software serves as the network traffic manager and security guard to provide system management, file protection, and record locking for the network.

ViaNet functions are as follows:

System Management Coordinates file systems and network devices for efficient sharing of resources.

File Security Guards files and devices in the network against unauthorized access.

Data Protection Prevents conflicts between multiple users attempting to access the same record or the same file at the same time.

These ViaNet functions create a networking environment that is efficient, secure, and easily customized to meet your particular requirements.

How ViaNet Works

Rather than use one computer in the network as a dedicated system supervisor, ViaNet acts as a global system supervisor that is physically resident in each computer or "node" in the network.

Since ViaNet is resident in each node, messages are passed internally from node to node during operation. These messages describe which users are currently logged on to the network and which resources are currently available to other users.

The network's internal transmissions, though invisible to you and the other members of your network, provide the necessary "heartbeat" that keeps each node aware of the network's current configuration.

You access files and devices at other computers in the network by using the operating system's hierarchical file structure, just as you would to access a file or device on your own computer. ViaNet simply extends the scope of the operating system's file structure to include other computers and devices that are included in the network.

How You Use the Network

The ViaNet user commands described in this manual are used to enter and leave the network, protect files and devices, and create simple commands that save keystrokes.

Operating system commands work precisely the same under ViaNet as they do when you are in a stand-alone environment. Most commands that you issue in the network will still be your familiar operating system and application program commands.

When you are signed on to the network, devices you access on other computers appear the same on your display screen as if they were part of your own computer.

For example, where you normally access files in your own Drive B with a command like DIR B:, ViaNet allows you to access someone else's Drive B with a similar command. You just precede the drive reference with the network Drive Z: and the name of the computer. This will be covered in more detail later.

If the requested device, drive and file are available, you continue processing just as if that drive and file were part of your own computer. If they are not available, a message is issued (such as "Device Not Available" or "File Not Found").

What You Must Know

Since ViaNet functions as a superset of the DOS 2.0 operating system's file directory structure, you should understand how to create, use, and manipulate directories and subdirectories in the DOS hierarchical file directory structure.

Understanding the role of the search path in this directory is especially useful. Paths are literally roads through the network to the devices and files that you want to access.

If you are not familiar with the DOS file structure, refer to the next section in this manual for an overview of how DOS keeps track of your files. You should also refer to the DOS 2.0 user's manual for more detailed information about directories, directory commands, and directory search paths.

If you are already familiar with the DOS file structure, skip the next chapter and go to Chapter Three for an introduction to the ways ViaNet uses the DOS directory structure in your network.



DOS DIRECTORIES

Overview

Beginning with version 2.0, DOS provides a hierarchical "tree-structured" file directory system. This structure is the key to operating the ViaNet system.

This chapter reviews the DOS file directory structure and shows how ViaNet uses this structure to create and manage your local area network. If you are already familiar with the DOS directory structure, skip ahead to the next chapter, which describes how ViaNet uses this file system to create and manage your network.

The DOS File Directory System

To understand the DOS tree-structured file directory, consider first the single directory system that was available in earlier versions of DOS. Prior to DOS 2.0, your directory was limited to 112 files. This was usually adequate for a diskette. Generally, you ran out of disk space before you ran out of available directory entries.

If you were to connect a hard disk to this kind of system, you would have two immediate problems. First, you have disk space for literally thousands of files, but DOS 1.1 was limited to 112. Second, with each file you create, your directory listing becomes longer and less organized. It gets worse if more than one person stores files on the same disk. Compounding these problems, your computer's disk access time increases proportionally because the operating system has to look

at each file sequentially in its directory until it finds your requested file.

The DOS 2.0 Hierarchical Directory

DOS version 2.0 addresses the problems described above with a hierarchical directory system. This system provides the following general solutions to the problems:

- o Files may be stored in separate directories on the same disk.
- o Each directory is actually a file that contains other files and directories.
- o The storage capacity of your disk is the only limitation on how many files and directories you can create.

This "directory within a directory" structure makes your disk easy to manage and also reduces disk access time. The operating system does not have to search through all files on the disk to find a file that you request. Instead, it searches only those files in the directory that you specify in your "search path" that's included in your operating system commands.

The DOS "Tree" Directory

Why is this file directory structure called a tree? A single directory is created when you format a disk. When you create additional directories, they appear as branches from the main directory. Your files appear as leaves on the branches. As suggested by the name, this structure looks somewhat like a tree.

The main directory, also called the root directory, is the base of the tree. Other directories, called subdirectories, branch out from the main directory. These subdirectories are actually files.

Subdirectory names follow the same naming conventions used for filenames. A subdirectory may contain program files, data files, and also other subdirectories.

The Current Directory

The "current" directory is similar in concept to the logged disk drive. It is the directory from which you are currently working, just as the logged drive is the drive from which you are currently working. Just as you can access other drives without logging on to them, you may access other directories without making them the current directory.

DOS Directory Commands

DOS 2.0 contains several commands that are used for creating directories and for moving easily from one directory to another.

These directory commands include:

- o MD Makes a Directory.
- o RD Removes a directory.
- o CD Changes a directory.
- o PATH Extends the search path to additional directories.

- o TREE Lists the directory path of subdirectories and files.

For example:

MD C:\WP creates a subdirectory named WP on the root directory for drive C. The backslash (\) tells DOS to make WP a subdirectory of the root directory. If (\) is not used, DOS would create WP as a subdirectory of the current directory.

RD C:\WP deletes subdirectory WP on the root of Drive C. Note: All files in the subdirectory WP must have been deleted from the subdirectory before the subdirectory can be deleted.

CD C:\WP changes the current directory of Drive C to the subdirectory WP.

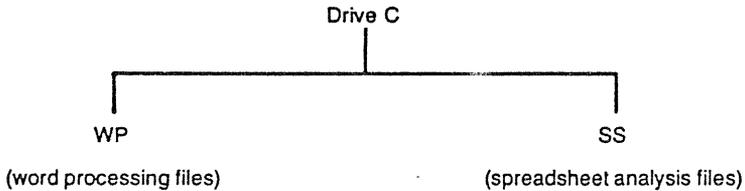
PATH C:\WP extends the DOS search path to search the subdirectory WP on Drive C when a command or batch file is not found in the current directory.

TREE lists the files and directories in the current directory.

Directory commands are described in detail in the DOS 2.0 manual.

Using Tree-Structured Directories

Assume that you typically use your computer for two applications, word processing and spreadsheet analysis. Rather than keeping all of your programs and files scrambled in a single directory on your hard disk, you could store the files in two separate directories. Your tree would look like this:



You have now a directory that contains only word processing files and a second directory that contains only spreadsheet financial files. This is similar to the way you might use your diskettes in a floppy-drive system.

With this simple two-directory structure, you can operate within either directory without being aware of the other's presence, and you can also access files from the other directory without leaving the directory you are in.

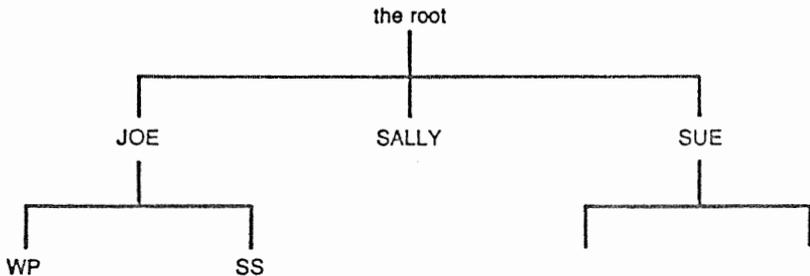
For example, if you are logged on to Drive A, you can access Drive C in the following ways:

- C: changes the logged drive to Drive C.

- C:WP activates the word processing program file WP from Drive C without changing the logged drive or current directory.

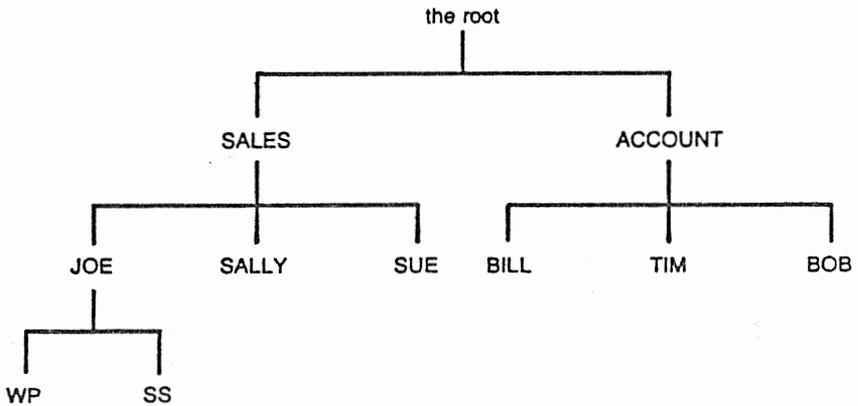
CD C:\WP changes the current directory of Drive C to the subdirectory WP in Drive C without changing the logged drive or the logged directory.

Taking this example another step, assume that you are but one of three people who use the computer and store files on the hard disk. The tree-structured directory now provides a convenient mechanism for separating your files from those of the other users, and also provides security by hiding your files in your private directory. Your tree now looks like this:



You still have your original subdirectories, but they are now subdirectories of another subdirectory named JOE.

Taking this example yet another step, assume that the three of you are one department in a small business and are sharing the computer with another department. Now your tree looks like this:



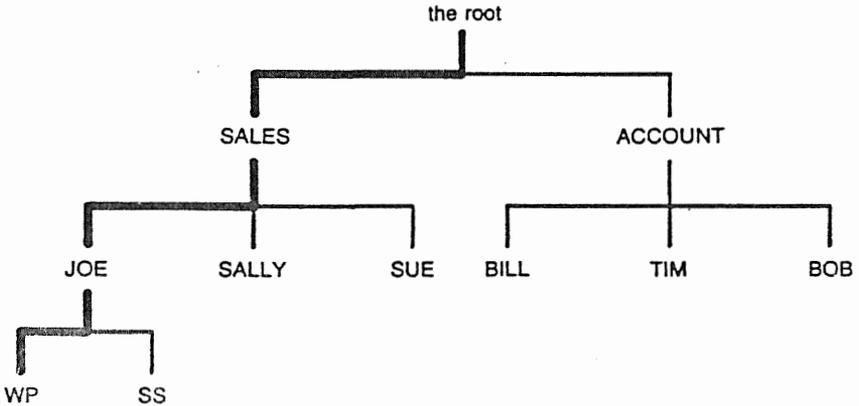
Again, you still have your original subdirectories, and they are still subdirectories of a directory named JOE. However, the JOE directory is now a subdirectory of a directory named SALES. This new "parent" directory provides logical organization for you file directory structure.

The Directory Search Path

To access a file in a subdirectory, you specify the directory search path along with the drive reference and filename. In the previous example, this path might have been `\SALES\JOE\WP`, as illustrated below.

The exact path you specify will depend on which directory is your current directory and also on where in the directory structure you want to start the search path.

The directory search path in the previous example is the route you would specify from the root to your word processing subdirectory. This path is \SALES\JOE\WP, as illustrated below:



The backslash is also the "name" of the root directory. Use the backslash to refer to the root directory in a command, such as "CD \" to change to the root directory from a subdirectory. DOS also refers to the root as "\" in its screen prompts.

Using DOS Subdirectories

Working with subdirectories is similar to working with different disk drives. With drives, you can log on to the drive with a command to the operating system (such as B:). You can also access files on the drive without logging on to it by following the command with a drive reference (such as DIR B:).

With subdirectories, you can log on to the directory with a command to the operating system (such as CD \SALES\JOE). DOS starts at the root directory and searches the SALES directory to find the JOE directory. This is now your current directory.

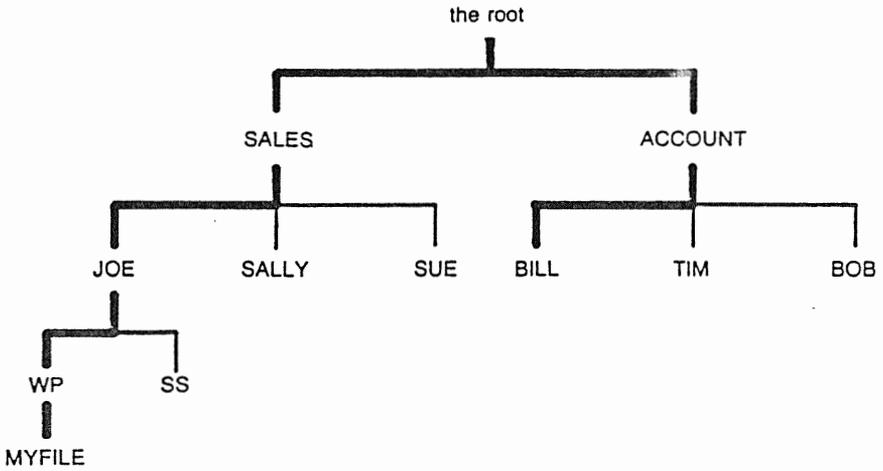
You can also access files in other directories without leaving your current directory, just as you can access a disk drive without logging on to it.

For example, if your current directory is SALES\JOE\WP, you could use the DOS Copy command to copy the file MYFILE to the directory ACCOUNT\BILL.

This is accomplished with the command:

```
COPY MYFILE \ACCOUNT\BILL.
```

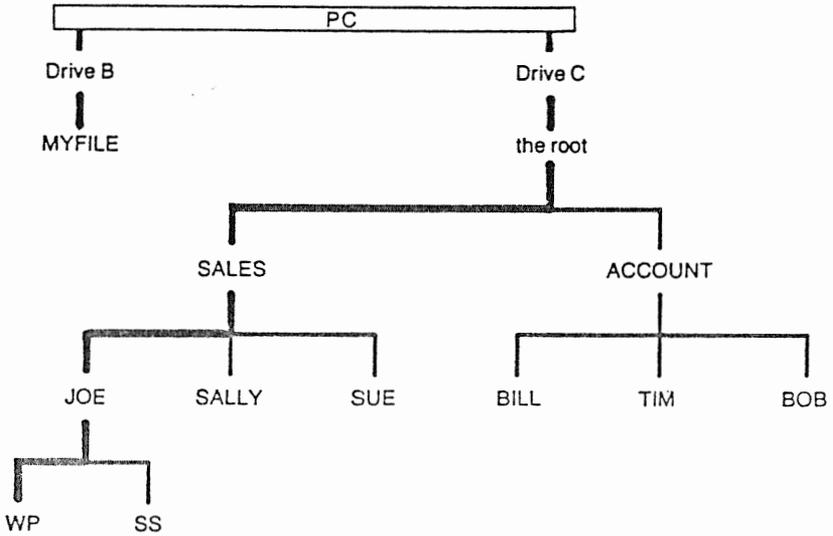
The path for this command is as follows:



You could also copy the file MYFILE from your current directory in Drive B to a directory on a different drive with the command:

```
COPY MYFILE C:\SALES\JOE\WP
```

The command COPY MYFILE C:\SALES\JOE\WP copies the file MYFILE from Drive B into the WP subdirectory of Drive C. The path for this command is as follows:



Setting a Search Path

When you issue a command or execute a batch file, DOS searches a pre-defined path for that command or batch file. Unless you extend the search path, DOS will search only the current directory. If the command or batch file is not in the current directory, the message "Bad command or file name" is displayed.

The PATH command is used for extending search paths.

For example:

PATH=A:\ causes DOS to search the root directory of Drive A for the requested command or batch file if it is not found in the current directory.

PATH=\SALES\JOE\WP causes DOS to look in the subdirectory WP of subdirectory JOE in directory SALES if the requested command or batch file is not found in the current directory.

A series of search paths can also be established with the PATH command. For example,

PATH=\SALES\JOE\WP;\SALES\JOE\SS;B\

causes DOS to look first in the current directory, then in subdirectory WP, then in subdirectory SS, and finally in the root directory of Drive B when a command or batch file is requested.

Search paths can be specified manually from the keyboard or can be set up automatically in a batch file.

Creating Subdirectories

The MD command is used for creating new subdirectories. The subdirectory is created in the

current directory unless a path specification is included in the command.

For example:

MD MYDIR creates a subdirectory MYDIR
in your current directory.

MD \JOE\MYDIR creates a subdirectory MYDIR
in directory JOE of your
current logged drive.

MD B:\MYDIR creates a subdirectory MYDIR
in the root directory of
Drive B.

Removing Subdirectories

The RD command is used for removing subdirectories. The subdirectory must be empty before it can be removed. That is, if the subdirectory contains files or other subdirectories, you must delete them before you can remove the subdirectory.

The subdirectory you are removing must also not be the current directory.

Command syntax for RD is similar to that for MD.

For example:

RD MYDIR removes subdirectory MYDIR
from your current directory.

RD \JOE\MYDIR removes subdirectory MYDIR
from directory JOE of your
currently logged drive.

RD B:\MYDIR removes subdirectory MYDIR
from the root directory of
Drive B.

Changing the Current Directory

The CD command is used for displaying and changing the current directory in a specified drive.

For example:

CD	displays the current directory.
CD \	changes the current directory to the root directory of the logged drive.
CD B:\	changes the current directory of Drive B to the root of Drive B.
CD \JOE\MYDIR	changes the current directory to MYDIR in directory JOE.
CD B:\MYDIR	changes the current directory of Drive B to MYDIR.

The Switch Character in a Search Path

DOS uses a switch character to select command options, and a path separator character to separate directories in a path statement.

The DOS switch character at your node is specified in your system's CONFIG.SYS file. If the forward slash (/)

is defined as the switch character, the backslash (\) becomes your path separator.

If you specify the hyphen (-) as the switch character, either the forward slash or backslash may be used as the path separator.

For examples listed in this manual, the backslash (\) is used to separate directories and files in a search path and (/) is used to select command options.

If the backslash precedes the first directory listed, the search begins with the root directory. Conversely, if the backslash does not precede the first directory listed in the path, the search begins with the current directory.



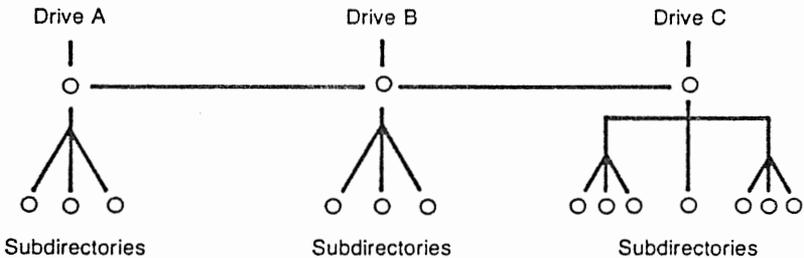
NETWORK DIRECTORIES

Overview

Most of the commands presented in this section can be automated by using a special ViaNet facility called macro assignment (MACASGN). However, you will need to understand the concepts in this section before proceeding to Chapter 5 "Automating the Network".

As you will learn on the following pages, ViaNet uses the DOS file directory structure to access files and drives that are not locally attached to your computer.

In the DOS 2.0 tree-structured file directory system, the drive serves as the basic organizational unit. File organization is not possible at a level higher than the drive. Each drive has its own hierarchical file system underneath. A single computer running DOS with two floppy drives and a hard disk can be viewed logically as follows:

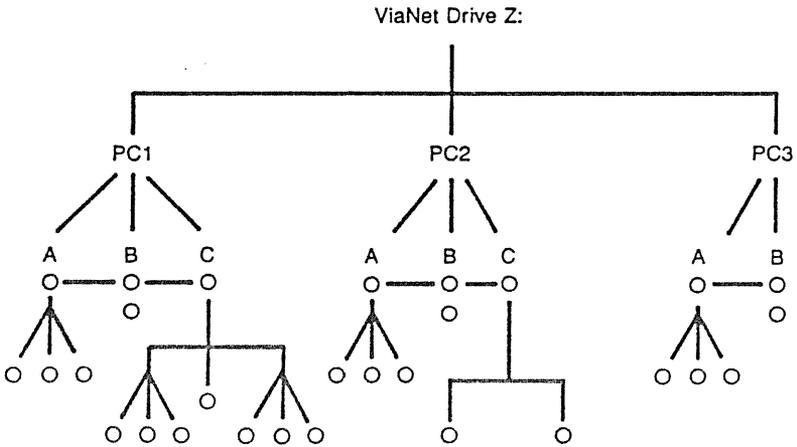


ViaNet appears as an extension of this structure, treating attached computers and their drives as subdirectories in the larger tree of the network. ViaNet accomplishes this by making the network a file system for logical Drive Z.

The logical Drive Z appears to be a root directory, with all of the computers, drives, and other devices that make up the network acting as subdirectories in its tree.

Note: Except for the network Drive Z: reference, the colon that is normally included with a drive references (Such as B:) is omitted for drive references in a network search path. This is because the drive is seen by the network as a subdirectory file in the Drive Z directory. When you are logged on to the network and reference Drive Z:, you are starting from the root of the network directory.

This network file directory can be viewed as follows:



Example: DIR B: is used to list a directory of Drive B in your own computer. The colon is required for the command. On the network, DIR Z:\PC2\B\WP lists files in the directory WP in Drive B of PC2. The colon is included for the network Drive Z in this example, but excluded for the Drive B reference. The network sees Drive B in this search path as a subdirectory of the subdirectory PC2 on Drive Z.

Extending a Network Search Path

The PATH command is used for extending network search paths. If the requested command or batch file cannot be found in the current directory, the extended search path is searched. For example:

`PATH=Z:\PC1\C` causes DOS to search the root directory of Drive C in PC1 for the requested command or batch file if the file is not found in the current directory.

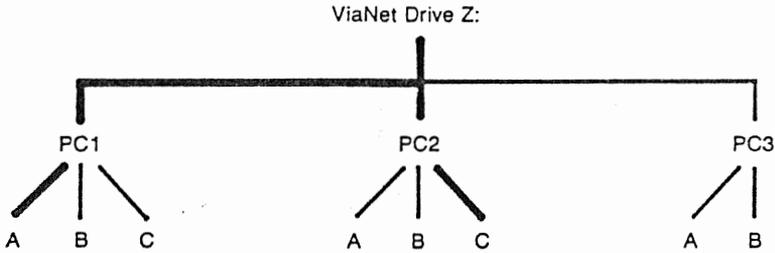
Logging on to a Remote Drive

To log on to Drive C on PC2 when you are PC1, you first log on to Drive Z and then use the DOS CD command to change directories to your desired network device. For example:

`Z:` changes the logged drive to Drive Z.

`CD \PC2\C` changes the current directory of PC1 to the root of Drive C on PC2.

This tells the network to log on to Drive Z, which is the root, and then to follow a path to PC2 and its Drive C. When this command has been executed, your current directory is the root directory of Drive C in PC2. The network uses the following directory search path to access the requested PC2 Drive C from PC1:



Accessing a Remote Directory or File

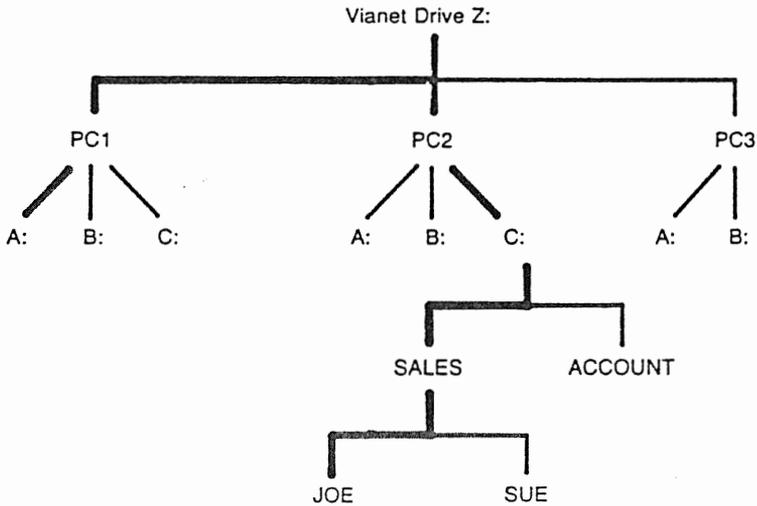
To access a subdirectory JOE of directory SALES in Drive C of PC2 when you are in Drive A of PC1, you specify the following:

Z: logs on to Drive Z.

CD \PC2\C\SALES\JOE changes the current directory.

This tells the network to log on to Drive Z, which is the network root, and then to follow a path to PC2, its Drive C, the directory SALES, and the subdirectory JOE. You are in the subdirectory JOE when this command has executed.

The network uses the following directory search path to access the requested directories in Drive C of PC2 from PC1:



Using DOS MD, RD, and CD Commands in the Network

DOS commands for creating, removing, and changing directories are the same in the network as in a stand-alone system. The only difference is that you include the network drive reference (Z:) and node name in the search path.

For example:

MD Z:\PC1\C\MYDIR creates a subdirectory MYDIR in Drive C of PC1.

RD Z:\PC1\C\MYDIR removes subdirectory MYDIR from Drive C of PC1.

CD Z:\PC1\C\MYDIR changes the current directory of the network drive to MYDIR in Drive C of PC1. **Note:** This does not change "your" current directory.



USING THE NETWORK

Overview

As a member of a ViaNet network, you can access files and devices in other computers on the network in the same way that you access files and devices in your own computer.

This chapter provides detailed instructions for starting the network and using basic network commands. In subsequent chapters you will be introduced to techniques for protecting your files and automating your network commands and search paths.

What is Assumed Here

This chapter assumes that you have a working knowledge of DOS 2.0 commands and functions. Refer to an MS-DOS or PC-DOS 2.0 manual for instructions on using DOS commands, and to the introductory chapters in this manual for a review of the DOS file directory structure and how ViaNet uses this structure in your network.

For all commands discussed in this chapter, it is assumed that your cursor is at the DOS prompt `A>` when you issue the command. It is also assumed that your keyboard has an ENTER key. On some keyboards, this key may appear as an arrow or as RETURN.

Before You Start

Your network administrator has provided you with a ViaNet User's disk containing the DOS operating system and the ViaNet software programs you will need to function as a member of the network.

This disk may also contain DOS command files and application program files that you use in your routine operation.

The first thing you want to do is make a backup copy of the ViaNet User's disk. Use the DOS DISKCOPY command to backup the disk, and then store the original disk in a safe place.

Use the duplicate disk you created here as your master for everyday use. Do not put a write-protect tab on this disk. The network must be able to write information on this disk.

Node Status

Any node that is physically attached to the network (via cable and adapter board) can operate in any of the following three modes:

Stand-alone node A node whose network software is not loaded. No resources from this node are available to the network (even though the physical connection is complete) and this node cannot access resources on other nodes of the network.

Local node/user A node whose network software is loaded but has no user logged in. All resources of this node (which have been identified as being

available to the network) are available to all nodes on the network. Any files created by a local node will have the default protection of that node, but will not "belong" to a real user name and group name.

Network node/user A node whose network software is loaded and has a user logged in.

ViaNet Commands

There are only twelve new commands you'll need to know to use ViaNet because the network works internally with your operating system and is usually invisible to you during its operation.

These ViaNet commands are easy to learn and use, and all DOS commands work just as they did without the network.

ViaNet Commands are as follows:

ACCESS	asks for your password and identifies you to the network.
LOGOFF	lets you sign off and makes your node a local node.
MACASGN	creates your own "shorthand" path specifications.
NET	displays network information for your node.

NONET	detaches your computer and its resources from the network.
PASSWORD	allows you to change your password.
PROTECT	allows you to set or change file security status for files you own.
SETPRT	allows you to set options and automatically print from within an application program.
VIANET	activates the network.
VIAPRINT	sends a file to be printed.
VIASPOOL	initializes the print spooler.
XDIR	displays a directory, including the ownership and protection status.

ViaNet commands are introduced as appropriate in the next several chapters of this manual. A complete description of each command and its functions may be found in the ViaNet Commands chapter.

Loading the Network Programs

Even though your computer is physically attached to other computers on the network, it doesn't become a logical member until the ViaNet programs are loaded into memory.

To activate the network at your node, insert the ViaNet User's disk in Drive A and power up your computer.

When the DOS prompt A> appears, type VIANET and press ENTER.

Note: This process can be automated in a AUTOEXEC.BAT file.

When ViaNet has been executed, network programs will be loaded at your computer and the DOS prompt will reappear. Your computer is now part of the network.

Access Protection

At this point, your computer is part of the network, but you are considered to be a LOCAL USER. As a local user, you can only use the devices and files that are not protected by a password.

Password protection allows you to restrict network access to files that you create. Files and directories that you create as a local user are not identified as being owned by you and may be accessed by anyone, including other local users.

Consider for a moment how the network treats nodes and users. Each node is identified to the network's hardware with a NODE ADDRESS and to the network's software with a NODE NAME. A node can be used by any user.

Each user is identified to the network with a USER NAME and PASSWORD. Each user is also associated with a GROUP NAME, which is a subset of the network, such as a department.

For each file you create, protection can be specified for the owner (you), the owner's group (user names with the same group name as yours), or the entire network (including local users).

A node can be used in the network by any user. Only users who submit a valid user name and password receive the network's password protection.

Identifying Yourself to the Network

To gain password protection for your own files and devices, and to gain access to resources that are available to you as an owner or member of a group but not to local users, you must identify yourself to the network with the ACCESS command and submit your user name and password.

The ACCESS command identifies "you" as a user, not your computer. You may use the ACCESS command and your password from any node, and once you are signed in you have access to all network nodes.

To log on the network, type

ACCESS xxxxxxxx (where "xxxxxxx" is your username)

and press ENTER.

Your user name is established by the network administrator. You must type this name exactly as it was defined by the network administrator, including upper and lower case letters.

When the network has accepted your keyed user name, you will be prompted for entry of a password by ENTER PASSWORD. Type your password as prompted and then press ENTER.

As a security measure, what you type here does not appear on the screen as you type it. If you typed a valid user name/password combination, you will be

allowed to access the network and the DOS prompt will appear on the screen. If you type an incorrect user name or password, the ACCESS command is terminated and the message "LOGIN FAILED" appears.

When network access has been granted, your computer has your user name and group name associated with it and you are granted file protection privileges. The extent of these privileges is dependent on the file protection of the individual files.

Note: When you are logged on to the network, you may have access to restricted information that is available to only you or your group and not the entire network. Since this information is available to you only after entering your password, it is advisable that you use the LOGOFF command to log off from the network when your computer is unattended.

Verifying Sign-on

The ACCESS command can also be used to verify that you are signed on to the network as a user. If you type ACCESS and press ENTER without entering a user name, the current user status (local user or current user name) is displayed.

To display your network user status, type ACCESS and then press ENTER.

Displaying your Network Status

The NET command is used to display the network software status information. This report lists your node name, node number, passholder status, maximum message size, and whether the network software is currently loaded or not.

To display your network software status, type NET and then press ENTER.

Changing Your Password

You can change your password at any time while you are logged on to the network. This is done with the PASSWORD command.

To change your password, type PASSWORD and then press ENTER. The network will prompt ENTER OLD PASSWORD. Type your old password as prompted and then press ENTER. When your old password has been typed, the network prompts ENTER NEW PASSWORD. Type in your new password as prompted and then press ENTER.

When you have typed the new password, ViaNet records it in its ACCESS user name/password file and returns the system to DOS. You now have a new password.

Displaying the Network Directory

A directory of the network's devices and resources can be displayed on your terminal. The network directory is displayed with the XDIR command.

The network directory looks similar to the normal DOS file directory, which displays the name, size and creation date and time for each file included in the display. The network directory also displays the file's owner and owner's group, read/write password protection, and sharable R/O or R/W status.

A number of different directory listings are available, just as with the DOS DIR command. The following is a list of possible directory displays that you might request from your own Drive A.

XDIR	displays the current directory of your logged drive.
XDIR\	displays the root directory of your logged drive.
XDIR B:\	displays the root directory of your Drive B.
XDIR Z:\	displays the network directory, such as PC1, PC2, and PC3.
XDIR Z:\PC1	displays a directory of devices at PC1, such as Drives A, B, C.
XDIR Z:\PC1\C	displays the root directory in Drive C at PC1.

Accessing Files in the Network

As discussed in the previous chapters, the network sees itself as the root directory of a logical "Drive Z". Each network node, drive, device, and file is viewed as a subdirectory of the network drive.

File access is performed the same in the network as it is when you are operating a stand-alone computer. Your commands are the same as they were before, except that you now add the network drive extension (Z:) and node name in the path for the network to

follow in finding or directing the command outside of your own computer. For example:

- o Where you typed `DIR B:` to list files in your own Drive B, you type `DIR Z:PC2\B` to list files in someone else's Drive B.
- o Where you typed `COPY MYFILE B:` to copy a file from your Drive A to your Drive B, you type `COPY MYFILE Z:\PC2\B` to copy a file from your Drive A to someone else's Drive B.
- o Where you typed `B:WP` to access a word processing file in your own Drive B, you type `CD Z:\PC2\B, RETURN`, then `Z:WP` to access a word processing program in someone else's Drive B.

If you frequently use the same commands and search paths, you can automate the process using `MACASGN` so that you actually key less information than you would as a stand-alone computer.

Note: For details on accessing network files, refer to the chapters "Network Directories" and "Automating the Network".

Directing Program Commands to the Network

Commands that you use to activate applications (such as word processing or spreadsheet analysis) are the same under the network as on a stand-alone system. The only difference is in the path specification, which may include `Z:\node\drive` to direct the search path to specific resources in the network.

For example, the command of activating a word processing program that resides in a device at a different node is the same as if you are activating it from a drive in your own computer.

In this example, Z: directs your search to the network's root directory and PC2 identifies the node to access. From there, the command is the same as if you were activating the program from your own Drive B.

To activate the program (WP) from a subdirectory MYDIR in your Drive B when you are at Drive A, you type

```
CD B:\MYDIR, RETURN, then B:WP
```

To activate the same program from a subdirectory MYDIR in a Drive B of a different node, you type

```
CD Z:\PC2\B\MYDIR, RETURN, then Z:WP
```

Note: Some programs that were written prior to DOS 2.0 do not understand the hierarchical directory. Attempts to access these programs across the network typically return error messages because overlay files cannot be found when the program is running outside of the directory where it resides.

These programs can be used with the network, but may require some background assistance from PATH and MACASGN commands to utilize the directory structure properly.

Accessing Devices in the Network

Printers and other devices in the network are accessed in much the same way that files are accessed, allowing

you to share expensive equipment throughout the network.

To print a file, you can use the DOS COPY command to copy the file to the printer. You must also specify a network path and the device's name (such as PRN). For example, to print the file MYFILE on the line printer at PC3 whose address is PRN, you type

```
COPY MYFILE Z:\PC3\PRN
```

Note: Before a device on another node in the network can be accessed, it must be defined as being available to the network in that node's NETCNF.SYS file.

How the Network Processes Your Commands

In processing your command, the network follows its search path to determine if the requested device or file exists and if network nodes are allowed to access the device or file.

In the example CD Z:\PC2\B\MYDIR, RETURN, then Z:WP, the network's software would ask itself the following questions:

- o Are you currently signed on to the network?
- o Is PC2 currently a member of the network?
- o Is PC2's Drive B defined as a network resource?
- o Is there a subdirectory named MYDIR in PC2's Drive B?
- o Are you allowed access to that directory?

- o Is there a file or directory named WP in that directory?
- o Are you allowed access to that file or directory?
- o Is the directory or file currently available for access?

If the answer is yes to all of the above, your request will be processed and the requested program will be activated just as if it had been accessed locally in one of your own drives. If the answer is no to any of these questions, you will receive a message telling you that the requested file was not found.

Signing Off of the Network

For security purposes, it is important that you sign off at the end of your session so that unauthorized persons cannot access your data or restricted network resources through your node.

When you sign off, your node reverts to "local user status". The network is still active at the node, and other users have access to the same files and devices that were available to them while you were logged on.

To sign off of the network at the end of your session, use the LOGOFF command. This informs the rest of the network that you are no longer an active user.

To sign off of the network, type LOGOFF and then press ENTER.

Dismounting the Network

The NONET command "dismounts" the network, removing its software from memory, and returning internal control to the DOS operating system.

You should not use this command except when requested by your network administrator. NONET immediately terminates the network at your node. Programs that are accessing network resources at your node (such as printer or hard disk) from a different node will be terminated when NONET is run.

To dismount the network type

NONET

and then press ENTER.

Operating as a Stand-Alone Computer

Operating as a stand-alone computer means bypassing the network completely. Logging off (or not logging on) after you run VIANET does not make you the operator of a stand-alone computer, it makes you a local user in the network.

To operate as a stand-alone computer, you must deactivate ViaNet. There are several methods for doing this. The most obvious is to boot the DOS system and not run the ViaNet program. Another method is to deactivate your node by running the NONET command.

Warning: If you reboot your operating system or run the NONET /X command while other network computers are accessing your files and devices, those computers will be abnormally terminated. For best results,

make sure no one is using your resources before you reboot the operating system at your node.

Files and directories created in the non-network environment do not receive the network's file protection. If these files are stored in devices that may be accessed by other members of the network, they will be accessible to those members when you later join the network.

Network Etiquette

Participating in a network requires that you be considerate of other users who may be accessing resources in your computer. Turning your computer off while someone is saving a lengthy document on your hard disk is one example of not being courteous. Remember the golden rule and do unto others as you would have them do unto you.

Rules for correct network etiquette:

1. Do not run NONET /X.
2. Do not turn off your computer.
3. Do not format disks in other nodes.
4. Use LOGOFF when leaving your computer.
5. Do use descriptive file names and extensions for files to be shared in the network.



AUTOMATING THE NETWORK

Overview

ViaNet and DOS 2.0 provide a number of convenient software tools for automating network processes. To automate the network is to eliminate its redundant processes, including the typing and retyping of long directory search paths.

This chapter discusses network automation and techniques that can streamline your network interface.

The MACASGN Command

The MACASGN command is used to define a shorthand method of specifying pathnames. This command plays two important roles in the network.

First, typing long repetitive directory pathnames with each command to the network is tedious, time-consuming, and confusing. MACASGN lets you take shortcuts through the network by substituting simple paths for complex ones.

Second, since pre-DOS 2.0 programs do not understand pathnames and hierarchical directory structures, MACASGN provides a convenient method for letting these applications operate within the network.

Each network user may define a unique set of MACASGN macros. These macros describe a path from your node to other network locations. When a directory search path precedes a file or program name in a

command or internal system call, the network checks each element (including drive references) of the path for a match against the currently defined macros.

For example, when you issue a command, the network checks what you typed against its currently defined macros. If a match is found, the macro definition is inserted in place of the matching element in the command string.

The MACASGN command is used to create, display, and delete macro substitutions for directory search paths. Each of these functions are described in this chapter.

Currently Defined Macros

Command macros must be created and loaded into memory before you can use them. Up to twenty macro assignments can be active at any given time. Once loaded, a macro stays resident until (1) you delete it, (2) you dismount the network by running NONET, (3) you reboot your operating system or (4) turn off your computer. When you activate the network again, you must create and load command macros again.

DOS batch files can be used for automating this process. A batch file could contain your MACASGN macros. When you execute the batch file, your macros will become currently active. For additional automation, a DOS AUTOEXEC.BAT file can be used to automatically load both the network software and your current macros when you boot the operating system.

How MACASGN Works

Macro substitutions are defined with the MACASGN command and two "arguments". The first argument is

the "macname" that you are creating, and the second is the "macstring" to be substituted.

The command syntax for MACASGN is

MACASGN macname macstring

- o MACASGN is the command name
- o macname is the name you will use to refer to the macro (such as a drive letter, device name, or file name)
- o macstring is the string that will be substituted for the macname. This string can include the network drive, node names, drive and device names, and directory and file names.

Here's an example of how MACASGN works. Suppose you are in a small network where you share a hard disk with two other users. You have a directory MYDIR on the hard disk that is connected to PC2. This directory contains your data files. Each time you access your files, you have to log on to your MYDIR directory with a search path of Z:\PC2\C\MYDIR. With MACASGN, you could say "Drive E is Z:\PC2\C\MYDIR" with the command

MACASGN E: Z:\PC2\C\MYDIR

The network would then interpret all references to Drive E as Z: \PC2\C\MYDIR. You have created a "logical" drive that is the path to your network destination.

To access your files, you could then log on to Drive E by typing E: or include the new drive reference in

your command. For example, the command COPY MYFILE E: is seen by the network as COPY MYFILE Z:\PC2\C\MYDIR and the file MYFILE is copied from your current directory to the directory MYDIR in Drive C of PC2.

MACASGN names can be drives, devices, or files. For example:

MACASGN E: Z:\PC2\C\MYDIR
translates Drive E references at your computer to PC2's Drive C directory MYDIR.

MACASGN PRN Z:\PC2\PRN
translates PRN references at your computer to a printer named PRN at PC2.

MACASGN WSMSG.S.OVR \OVERLAY\WSMSG.S.OVR
translates requests for the WordStar program WSMSG.S.OVR to the subdirectory \OVERLAY, causing WordStar to find its overlay files in a single subdirectory regardless of the current directory.

MACASGNed statements may be called from other MACASGNed statements (i.e., MACASGNed statements may be nested). For example, if the following MACASGNs exist,

MACASGN E: Z:\NODE1\DIR1
MACASGN HK FILENAME

and "HK" is a file in the directory "DIR1," you may call HK from an E: prompt.

Displaying Currently Defined Macros

To display a listing of all currently assigned macros for your node, type

```
MACASGN
```

and press ENTER.

Revising a Currently Defined Macro

To revise a current macro, type MACASGN and the macname of the macro to revise, followed by the new macstring. Then press ENTER.

For example, to revise Drive F from PC2\C to PC3\B, type

```
MACASGN F: Z:\PC3\B
```

Deleting Currently Defined Macros

To delete a MACASGN macro, type MACASGN and the macname of the macro to delete. For example, to delete the previous F: MACRO, type

```
MACASGN F:
```

To delete all currently defined macros, type

```
MACASGN /D
```

and then press ENTER.

If you attempt to delete a MACASGN that is not

currently defined at the node you are using, the following message is displayed:

Macro 'x' Not Found In Substitution List!

Defining Macros for Pre-DOS 2.0 Programs

Besides reducing your keystrokes for directory search paths, MACASGN can provide a recognizable search path for pre-DOS 2.0 programs that do not recognize the hierarchical directory.

If you were to instruct a pre-DOS 2.0 program to access a file in the subdirectory MYFILE in your own computer, you would get an error. The result would be the same if you requested file access from a drive in a different computer in the network. The program does not recognize subdirectories, and your network is really a series of subdirectories.

MACASGN provides a convenient method for routing pre-DOS 2.0 programs through the network. For example, in the command `MACASGN F: Z:\PC3\C\MYDIR` Drive F appears to be the directory MYDIR in Drive C of PC3. Now your pre-DOS 2.0 program can access files in the network. The program knows how to access a file in Drive F, just as it knows how to access a file in Drive B.

The fact that "Drive F" is actually a directory in a drive in a different computer is invisible to the program. When you reference Drive F in your command, the program accesses what it thinks is Drive F. The network substitutes the actual search path, which is `Z:\PC3\C\MYDIR`.

Another method for networking pre-DOS 2.0 program files is to define a macname as the name of the

program file, and then issue a macstring that includes the actual search path. This is convenient for accessing overlay files that are located in a different directory.

For example, if you want a program to always find its overlay files in a specific subdirectory in Drive D regardless of your current directory, the command

```
MACASGN OVRLAY.OVR Z:\PC2\C\OVERLAY\OVR-  
LAY.OVR
```

redirects system requests for the program files to files located in the directory OVERLAY. That is, OVRLAY.OVR is loaded from the directory C:\OVERLAY, in PC2 regardless of your current directory.

Note: Once you have created a MACASGN, all references to the macname are automatically replaced. Any attempt to reference a file by the same name in any directory will be overridden by the MACASGN.

Using MACASGN to Share a Network Printer

MACASGN can be used to establish a printer in the network as the default printer, and all network print requests can be automatically directed to that printer.

For example, the command MACASGN PRN Z:\PC2\PRN redirects references to PRN to the printer defined as PRN attached to PC2 in the network.

Printing without ViaSpool/ViaPrint

Though it is not recommended, in some network configurations, a small office environment for example, you may design the network to send files directly to a

printer with the MACASGN PRN facility and not use ViaSpool to control the printer. You must use **extreme caution** when using this method in order to avoid printer output problems. The following will help you should you choose this option:

1. The following statement must exist in the NETCNF.SYS file on the node to which the printer is attached:

```
DEVICE = PRN
```

2. The node the printer is attached to may address PRN no matter who has it opened or MACASGNed. To prevent possible problems, this node should MACASGN PRN using the network path for that node. For example, assume the node to which the printer is attached is called NODE01. The MACASGN statement would be as follows:

```
MACASGN PRN Z:\NODE01\PRN
```

3. To prevent the possibility of two nodes simultaneously sending files to be printed and having the printer output interleaved, ViaNet allows only one node to redirect printer output to another node's printer at any one time. The following command form, therefore, may be active on only one node at any one time:

```
MACASGN PRN Z:\NODE\PRN
```

4. If the possibility of interleaving output can be avoided manually, the /S switch may be used to allow you and others to redirect printer output to a remote node's printer using the MACASGN PRN facility. In this

way, many nodes may share the printer and bypass the use of ViaSpool/ViaPrint. The syntax for this is as follows:

```
MACASGN PRN Z:\NODE\PRN /S
```

5. The MACASGN PRN facility is only effective when used with application programs. For example, the DOS commands PRINT and COPY CON PRN will not work. COPY *filename* PRN will work, however.

Note: If VIASPOOL will be used at a node with a printer, the DEVICE = PRN statement should be removed from the NETCNF.SYS file.

Defining Macros from a Batch File

MACASGN may accept input from a batch file rather than from the keyboard. This is convenient for loading a set of macros.

For example, the command

```
MACASGN @\MYDIR\BATC1.BAT
```

accesses the batch file BATC1.BAT in the directory MYDIR and accepts its macnames and macstrings from that file. The character "@" indicates the character string that follows is a file containing input for the MACASGN command.

The format of the batch file input is one MACASGN definition per record.

For example, the file BATCH1.BAT might contain the following:

```
C: Z:\PCS\C
D: Z:\PCW\D
E: Z:\PC2\C\MYDIR
F: Z:\PC3\C
```

The effect here is the same as if you had executed a batch file that contained a series of MACASGN commands.

Defining Macros from an AUTOEXEC.BAT file

Since you must load your macros each time you load the network, it is most convenient to use a batch file, and even more convenient to include the ViaNet command and default PATH commands in that batch file. These can also be incorporated in an AUTOEXEC.BAT file for automatic execution when you boot the operating system.

For example, the file AUTOEXEC.BAT might contain the following string of commands:

```
DATE
TIME
CD\NETSYS
VIANET
CD\
PATH Z:\PC2\C;Z:\PC2\D;Z:\PC3\C
MACASGN @\MYDIR\BATCH1.BAT
ACCESS Username
```

In the above example, the following sequence of events will occur automatically when you boot the operating system:

1. You are prompted for entry of the system date.
2. You are prompted for entry of the system time.
3. The ViaNet software is loaded into memory.
4. A default directory search is established. If a command or batch file that you request is not found in the current directory, DOS always checks the root of Drive C in PC2, the root of Drive D in PC2, and the root of Drive C in PC3 before reporting "File Not Found."
5. Macro substitutions are activated so that references to Drive C are routed to Z:\PC2\C, Drive D to Z:\PC2\D, Drive E to Z:\PC2\C\MYDIR, and Drive F: to Z:\PC3\C.
6. The network ACCESS command is activated with your user name, and you are prompted for entry of your password.



FILE SECURITY

Overview

File protection is the individual responsibility of each user. ViaNet allows you to specify which of your files and directories can be accessed by which other members of the network, and also whether "access" means read (look but don't touch) or write (allowed to make changes).

This read/write protection facility allows you to restrict access to your personal information by allowing the network to quickly determine which users can access your files and directories and to what extent access is allowed.

In a larger network, this facility allows your organization to restrict confidential information to only those departments that require access, and also to specify whether this access is for updating the information or merely viewing it. An example is a network where the accounting department can view the sales department's projections but cannot change them.

A default read/write value that you control can be assigned to each file or directory automatically, and you can also override this default with the PROTECT command. The network administrator is the only other person who can change the read/write status of your files and directories.

File Protection Options

Each file or directory that you can create contains your owner number, group number, and file protection status. This status lets you specify no access, read only, or read/write for yourself your group, and the entire network.

The owner of a file or directory is the user who created it, while the owner's group is a subset of the network. The owner's group is established by the network administrator, and is usually determined by departmental organization or physical proximity.

For a file, if read or write access is granted to all, then any user can access it. If read or write access is granted to the owner's group but not to all, then just users with a matching group number can access the file. If access is granted to the owner but not the group, then only the owner can access the file.

For a directory, the write protection setting determines which users can create, rename, update, and delete files in that directory. The read protection setting determines which users can read the contents of the directory, reference it with a Change Directory (CD) command, or open files recorded in it to run programs.

Using the PROTECT Commands

The default read/write status is initially set for each node by the system administrator, but can be changed at any time using the PROTECT command.

The PROTECT command is used for setting or changing your default read/write protect status, and for changing a file or directory's protect status.

In all formats of the command and status displays, protect status is specified and displayed as six characters enclosed in square brackets. Each of the six characters enables a specific access for a specific type of user, as illustrated below:

[w r w r w r]

Each of the six characters enables or disables a specific type of file access (write or read). Each pair of characters is associated with one of three possible subsets of network users: the first pair of characters identifies the type of access allowed for ALL members of the network; the second pair of characters identifies the type of access allowed for members of the file owner's GROUP; and the third pair of characters identifies the type of access allowed for the file OWNER.

In all cases, you must use the [] brackets or protect status is ignored. Inside the brackets, "w" means Write access and "r" means Read access. A hyphen "-" in the same position indicates access denied.

The protect status is always read from left to right by the network. If you specify [wr----] it is the same as [wrwrwr] because you (the owner) and your group are also members of ALL.

Similarly, [-r----] is the same as [-r-r-r] and [--wr--] is the same as [--wrwr]. Specifying a status such as [w-w-w-] or [--w-w-] will not work because you must be able to READ a file to WRITE on it.

Protecting Files From Accidental Deletion

When you allow someone to WRITE to a file, you are also allowing that someone to modify that file. When

you allow someone to WRITE to a directory, you are also allowing that someone to create files in that directory, to modify, rename, and DELETE files in that directory, and also to DELETE the directory.

For important files and directories that you want to protect from accidental modification or deletion, use the PROTECT command to change the file protect status to read only for yourself and no access for the rest of the network [----r]. If you must share the file with the network, set it to read only for the entire network [-r----].

Protecting Files

ViaNet's file protect status allows you to specify for each file who can look and who can make changes. The following examples show ways you can use the PROTECT command:

```
PROTECT B:MYFILE [wrwrwr]
      READ/WRITE access to ALL.
```

```
PROTECT B:MYFILE [-rwrwr]
      READ/WRITE access to the OWNER and
      the owner's GROUP, READ ONLY to
      ALL others.
```

```
PROTECT B:MYFILE [--wrwr]
      READ/WRITE access to the OWNER and
      the owner's GROUP, NO ACCESS to
      ALL others.
```

```
PROTECT B:MYFILE [---rwr]
      READ/WRITE access to the OWNER,
      READ ONLY to the owner's GROUP,
      NO ACCESS to ALL others.
```

PROTECT B:MYFILE [-r--wr]
READ/WRITE access to the OWNER,
READ ONLY to ALL others (including
the owner's GROUP since it is a part
of ALL in the network).

PROTECT B:MYFILE [----wr]
READ/WRITE access to the OWNER, NO
ACCESS to ALL others.

PROTECT B:MYFILE [-----r]
READ access to the OWNER, NO
ACCESS to all others. This is
convenient for protecting important
files that you want to save against
accidental erasure or modification by
you.

The PROTECT command can also include directory
search paths and network directory search paths. For
example:

PROTECT B:\MYDIR\MYFILE [----wr] or

PROTECT Z:\PC2\B\MYDIR\MYFILE [----wr].

However, you cannot change the protect status for a
file in another node unless you are that file's owner
and are allowed access to that directory.

Protecting Directories

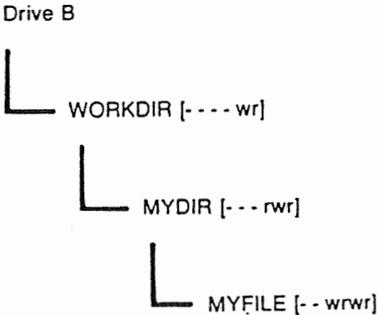
Establishing protection for directories with the
PROTECT command is the same as for program and
data files. However, even though directories are
technically files, the intent and result of using
PROTECT for directories is slightly different than for
regular files.

With files, you are specifying who can look at the file and who can make changes in the file. With directories, you are specifying who can look at files in that directory, who can change files in that directory, and also who can create additional files and subdirectories in that directory.

For directories, lack of read privileges means that a user cannot find or open a file in that directory. Lack of write privileges means that the user cannot create a new file, or update existing files, in that directory.

This file protection scheme is not top-down in its approach. Because of the time involved in checking the protect status of each level in a search path, only the requested file and associated directory are checked before access is granted. Additionally, once access is granted, the read/write status of the file overrides the read/write status of its parent directory.

For example, assume that you are PC2 and have set protect status in the Drive B subdirectory WORKDIR as [---wr], the WORKDIR subdirectory MYDIR as [---rwr], and the file MYFILE in that subdirectory as [---wrwr].



Now assume that a member of your group sets a search path of Z:\PC2\B\WORKDIR\MYDIR\MYFILE. Since the network only checks the last two items in the search for protect status, access will be granted even though you had restricted members of the group from the subdirectory WORKDIR.

As you can see, setting a restrictive protect status for a directory or subdirectory does not guarantee an equally restrictive protect status for subdirectories and files contained in that directory.

If this is an undesirable result, make sure that each file's protect status is at least as restrictive as that of its subdirectory, and that the subdirectory's protect status is at least as restrictive as that of its parent directory.

Errors Caused by Protected Files

If you attempt to access a file or directory that is read or write protected against access by you, a error message is displayed. The exact message and what happens next often depends on the application program that is attempting to access the restricted file or directory.

For example:

- o If you attempt to load a read-protected file under BASICA using LOAD (F3), BASIC returns "Path/File Access Error" and stays resident. If you attempt to run a read-protect file by typing BASICA Filename, BASIC returns the same message and returns to DOS.

- o If you attempt to save a BASIC program to a write-protected directory using SAVE (F4), BASIC returns "Too Many Files" and stays resident. If you attempt to write to a write-protected file, the message is the same.
- o If you attempt to CD to a read-protected directory, DOS returns "File Not Found". Similarly, if you attempt to open a read-protected file, DOS returns "File Not Found".
- o If you attempt to open a write-protected file under WordStar, it will open a new file of the same name. If you save that file, it is saved as NAME.\$\$\$ but contains your data.
- o If you attempt to delete a file in a write-protected directory under Multiplan, it returns "Disk Error". If you attempt to save a file in a write-protected directory under Multiplan, it returns "Cannot Write File".
- o If you attempt to read a read-protected file under Multiplan, it asks if you want to retry access to the file but it will not load it.

Viewing the Protect Status

The PROTECT command with no parameters displays the default file protect status for the node. This default is also displayed when the ACCESS command is issued with no parameters. You can view the protect status of a file or directory with the XDIR command.

Changing Your Default Protect Status

Your default protect status is set (or modified) with the PROTECT command's /D parameter. To set or change your default protect status, type PROTECT /D [xxxxxx] (where "xxxxxx" is your new default protect status) and then press ENTER.

For example, the command PROTECT /d [---wr] sets your default protect status to READ/WRITE for you (the owner) and no access for all others.

All files and directories you create (or copy) will then be assigned the [---wr] protect status. You may then use PROTECT to change the status of specific files and directories to something other than [---wr].



PROGRAM AND DATA FILE SHARING

Overview

Besides sharing devices and disk space in the network, you can also share program and data files with other users. Sharing in this case means two or more users reading or writing in the same file or record at the same time.

ViaNet provides the capability for sharing files throughout the network for simultaneous read operations or for simultaneous read and write operations.

ViaNet provides default and explicit file locking and range-specific record locking mechanisms that provide proper data integrity for file sharing applications. These locking mechanisms are invisible to the user but are used by applications developers to provide proper data integrity in the shared access environment.

Network Security for File Sharing

File locking and record locking are essential for a network in the DOS operating system environment, especially if file sharing is supported. DOS provides few tools for file security and multiple user access, so the network uses its own security devices. These processes occur internally and are transparent to the user.

File Locking

File locking allows a program to lock a file from access by other programs until the first program is finished with it, or, depending upon software, allows the other program to use it simultaneously. File locking is used in the network to allow or disallow multiple access to a file. It is also used to help pre-DOS 2.0 programs use the network's sharable read-only file protection feature efficiently.

File locking may be either default or explicit, depending upon the program that is accessing the file. Default file locking always locks the file during access, while explicit file locking allows the program to specify whether it will lock or share.

Default file locking allows pre-DOS 2.0 application programs to run without modification in the network. These programs do not recognize hierarchical directories and the concept of multiple users, so they only assume that a file is theirs until they are finished with it. Default file locking allows this to occur without incident in the network.

ViaNet supports explicit file locking for those newer programs that recognize and support multiple users. This locking mechanism allows programs to specify whether or not they desire an exclusive lock on a file while they are using it. Explicit file locking allows more than one user to read the same file.

The problem that remains is with pre-DOS 2.0 programs that only need to read a file but lock it anyway. For example, programs that use overlays frequently lock the overlay file when they begin execution and release it at program termination. Default file locking would preclude other users from accessing the file.

The PROTECT command's /R and /W switches solve this problem by making files automatically sharable for programs. When the /R or /W switch is set, the network intercepts the program's intended file lock and leaves the file open for other users to access.

Record Locking

ViaNet's record locking facilities allow an application program to lock a range of records in a file during write operations. This allows multiple access to the same data file and precludes the possibility of two programs accessing the same record in a file that is marked as sharable read/write.

Record locking is achieved with system calls from the application program to the network software. This is the responsibility of the programmer and is completely invisible to the user. Record locking is discussed in detail in the ViaNet Application Designer's Reference.

Sharing Files in the Network

File sharing is convenient for program files containing DOS external commands or application program commands. More than one user can access the program files from a central location, saving network disk space and reducing software distribution and support requirements.

File sharing is also convenient for data files in applications where more than one user must access a single data base. With appropriate network record locking in place, it is possible for two or more nodes to simultaneously create, modify, list, and delete records in a single file.

Sharing files with simultaneous write access can be unpredictable if proper network file and record locking mechanisms are not in place. Imagine how your paycheck might look if one person entered your overtime while another person entered your new raise. You might get paid the right rate for the wrong time, the wrong rate for the right time, or you might not get paid at all.

Individual files are set for automatic sharing with the PROTECT command's /R and /W switch parameters.

PROTECT /R FILENAME

sets the file as sharable for read-only access and

PROTECT /W FILENAME

sets the file as sharable for both read and write access. The command PROTECT /S FILENAME clears the file's /R or /W switch and re-establishes the file's existing read/write protect status.

Shared Read-Only Files

Rather than have multiple copies of program files occupying disk space at locations throughout the network, multiple users can access a program file at a single network location.

For example, if a word processing program resides on a hard disk and is marked shared read-only for the entire network, all users requiring word processing can use the same program files.

These files are shared for read operations only. The users do not have to actually write data on the files. Read-only shared files must be marked with the

PROTECT command's /R switch. If /R is not specified, a file cannot be shared. Files with the /R switch appear as RO on the network directory.

For example, the command PROTECT /R C:\WP*. * sets the protect status for all files in Drive C's subdirectory WP as RO. This makes the files available for sharing by users throughout the network. These users can read the file but cannot write to it.

Note that this read only sharable status is different from the PROTECT command's [-r-r-r] setting [-r-r-r] allows the entire network to read the file, but this does not make the file sharable. Only the /R switch makes the file sharable for read operations.

Shared Read/Write Files

Some applications require that more than one user access the same file at the same time for both reading and writing. The PROTECT command's /W switch is used for setting a file as shared for both read and write operations throughout the network. Multiple users may then simultaneously open and read or write to these files.

Only files set with the /W switch are automatically sharable for both read and write operations. Files with the /W switch appear as RW on the network directory.

For example, the command PROTECT /W C:\DB*. * sets the status for all files in Drive C's subdirectory \DB as RW. This makes the files available for sharing by multiple users for both reading and writing. Sharable read/write is convenient for large volume data entry, but requires additional record locking protection in application programs to prevent two programs from updating the same record.

Note that this read/write sharable status is slightly different from the PROTECT command's [wrwrwr] setting. [wrwrwr] allows the entire network to read and write the file, but this does not make the file sharable. Only the /W switch makes the file sharable for both read and write operations.

Clearing Shared File Switches

Files that were set to shared read-only with the /R switch or shared read/write with the /W switch can be reset to the node's default values with the PROTECT command's /S switch.

For example, the command PROTECT /S \WP*. * clears the read only status for all files in the subdirectory WP. These files are no longer sharable, and the existing read/write protect status for each file determines who may access it and how.

File Sharing Examples

To better understand how files are shared, consider a small network where PC1 and PC2 both share a hard disk in PC2. Each node owns a subdirectory on the hard disk for data files.

Both users require word processing, spreadsheet analysis, database management, and DOS external command files. Rather than clutter the disk with two copies of each required program file, a single copy of each program is established on the disk and set as shared read-only for the entire network. Both users can then use the same program files and store their data files in separate directories on the disk.

For example, if word processing (WP) programs are marked as read- only sharable or read/write sharable with the PROTECT command and stored in a subdirectory PROGRAMS on Drive C of PC2, a PATH command of PATH Z:\PC2\C\PROGRAMS will allow typing WP at either node to activate the word processing programs.

If both users require information from common data files but do not need to update those files, these files can be set as shared read-only. The users can view the contents but not make changes.

If the data files are set as shared for both read and write, then both users can update the same file at the same time. This can be unpredictable, since both users could theoretically be attempting to update the same record at the same time. Record locking must be instituted in the application program in order for this to work properly.

NOTE:

It is important to note that /R and /W sharable file protection commands are subordinate to the read/write [wrwrwr] file protection status set for any file.

For example, you might set your file MYFILE.COM as sharable read only.

PROTECT /R MYFILE.COM

At the same time, your default read/write file protection might be [- - w r w r]. So even though you have set the file as sharable read only, only those people in your group will be able to access and share, MYFILE.COM. You must be sure to check the read/write status of any file you wish to share with the network.



VIANET COMMANDS

Overview

Since ViaNet functions as a subset of the DOS operating system, your interface with the network is largely through the operating system's commands. ViaNet commands are only used to activate and deactivate the network at your node, log on and off the network, protect your files, create macro substitutions, and display network directory information.

All other commands you use in the network are your normal DOS commands and application program commands. As discussed previously, the only difference with the network is that you may include the network's drive reference (Z:) and the requested node name in your directory search path.

ViaNet commands and their available options appear alphabetically on the following pages. Note that the /V switch is available with each command but is not documented here with each command. /V causes the command to print a version number and exit without performing a function.

Command Summary

ViaNet commands are as follows:

ACCESS	logs on to the network.
LOGOFF	logs off of the network.

MACASGN	creates macro substitutions.
NET	displays network information.
NONET	deactivates the network.
PASSWORD	changes your password.
PROTECT	sets or changes file protection.
SETPRT	sets options for automatic printing from within a program.
VIANET	activates the network.
VIAPRINT	sends a file to be printed.
VIASPOOL	initializes the print spooler.
XDIR	displays a network directory.

Command Formats and Syntax Notation

The following syntax notation is used here in descriptions of ViaNet command and statement syntax:

- \ Backslash separates directories in a search path and is also the "name" of the root directory.
- / Slash precedes options in command lines.
- [] Square brackets indicate that the enclosed entry is optional.

- <> Angle brackets indicate data you must enter. When the angle brackets enclose text, type in an entry defined by the text (for example, <filename>).
- ... Ellipses indicate that an entry may be repeated as many times as needed or desired.
- CAPS Capital letters indicate portions of statements or commands that must be entered exactly as shown.

All other punctuation, such as commas, colons, and equal signs must be entered exactly as shown.

Command Options

ViaNet commands are formatted as `COMMAND [options...]`, similar to standard DOS commands, where the options may include:

- `Z:` is the network's root drive.
- `nodename` is the name of the node to access, such as PC1.
- `d` is a drive reference, such as B.
- `filename` is an unambiguous file or directory name, such as MYFILE.
- `.ext` is an optional filename extension, such as myfile.TXT.
- `filespec` is an unambiguous file name that may include nodename, drive reference, directory search path,

filename, and file extension (including wildcard characters) in the format [d:][path]<filename>[.ext].

- pathname is a directory search path with directories separated in the path by a backslash; the standard format is [\\]<directory>[\\directory...]-[\\filename].
- switches are command parameters preceded by a slash (or hyphen, depending upon the CONFIG.SYS setting).

ACCESS - Log On to the Network

Purpose ACCESS is used to log on to the network. This command must be used to gain full use of the network (as opposed to restricted access as a local user).

Syntax ACCESS [username]

Remarks Network access can be requested for a specific user. If the username is not specified in the command, all current access information is displayed.

If a username is specified, the user is prompted for entry of a password. If the keyed password is valid, the user is logged on to the network.

Example ACCESS JOE__SMITH

Attempts to log user JOE__SMITH onto the network.

Note You must enter both the user name and password precisely as it was defined by the network administrator, including capitalized and lowercase letters. Otherwise, a LOGIN FAILED error message will occur after entering the password.

LOGOFF - Log Off of the Network

Purpose LOGOFF is used to inform the network that you are no longer using the network as a privileged user from your node. Your computer remains on the network as a logical member and you become a local user.

Syntax LOGOFF

Remarks LOGOFF is used to cancel network access privileges for the user. When LOGOFF has run, any person using the node is treated as a local user until ACCESS is granted again. Logging off at the end of your network session is vital to the security of your (and your group's) private files.

Warning: If you do not use LOGOFF at the end of your session, another person using your node will be accorded your network access privileges. This is because file access privileges are dependent solely on your owner number and group number. These numbers are validated by the network when you submit your username and password during ACCESS. You must sign off to remove your personal "security clearance" status from your node.

Example LOGOFF

Cancels network access for the node and resets the user number and group number to [-1,-1].

MACASGN - Define Macro Substitutions

Purpose MACASGN is used to define macro substitutions for use in pathnames. This allows you to take shortcuts through the network by predefining your directory search paths, and also provides a mechanism for using pre-DOS 2.0 programs in the network.

Syntax MACASGN [/D]
MACASGN [macname] [macstring]
MACASGN @[pathname]filename

Remarks When a macro you have created appears in a command's search path, the network converts it internally to the actual search path it represents, saving you time and keystrokes.

Up to twenty macro assignments can be active at any given time.

In a MACASGN command, the macname is your shorthand and the macstring is the complete pathname that is substituted for the macname.

There are several forms of MACASGN.

- o With two arguments, the command causes the first argument to be replaced by the second.
- o With one argument, the command deletes the macro associated with that macname.

- o With the /D switch, the command deletes all currently defined macros.
- o With no arguments, the command lists current macro assignments.
- o With @[pathname]filename, the command executes the contents of a selected batch file to set default macros. If a file is not specified, as in MACASGN @, it executes MACASGNs found in the file MACASGN.SYS in the NETSYS directory of the current logged disk.

MACASGN checks the legality of macro substitutions as they are keyed. For example, if a drive letter is being assigned as a macname, then the replacement string must include a drive letter, too.

When a directory search path precedes a file or program name in a command or system call, each element in the path (including drive references) is checked against currently defined macros. When a match is found, the macstring is substituted for the matching element.

Options Create a Macro

The command "MACASGN macname macstring" creates a new macro, where "macname" is the name being defined and "macstring" is the path being assigned to the macro.

Delete a Macro

The command 'MACASGN macname' is used to delete the macro identified in "macname".

Delete All Macros

The command "MACASGN /D" deletes all currently defined macros.

List current Macro Assignments

The command "MACASGN" with no arguments lists all currently defined macros.

Set Default Macro Assignments

The command "MACASGN @[pathname]filename" allows you to set up default macro assignments with DOS batch files.

Note

A complete substitution is performed by MACASGN. That is, the macstring is substituted for the macname and the rest of the input string remains intact.

For example, if MACASGN E: MYDIR\MYFILE is active the DOS command COPY E: B:\WORKDIR is substituted as COPY MYDIR\MYFILE B:\WORKDIR.

There are two exceptions to this rule. These occur when the macstring begins with a drive reference and colon (i.e. d:) or with a path separator backslash (i.e. \filespec):

(1) When a macstring begins with a drive reference and colon, it becomes the beginning of the final destination string.

Previous characters in the input string are discarded.

For example, if you want your printed output to be redirected to another node in the network, you issue the following command:

```
MACASGN PRN Z:\nodename\PRN
```

When an open for the printer by file name

C:\CURRENT.DIR\PRN is requested, it is converted to Z:\NODExx\PRN thereby allowing it to be used across the network at NODExx.

Normally, this command would be substituted as C:\Z:\NODExx\PRN. Since the string that is substituted in by MACASGN begins with a drive letter (and colon), the substitute string becomes the beginning of the final destination string. Previous characters (such as C:) in the input string are discarded.

(2) When a macstring begins with a path separator, it becomes the beginning of the final destination string after the destination drive. Subdirectory information in the input string is discarded.

For example, if you want the program WORDSTAR to find its overlay files in one subdirectory regardless of your current directory, you issue the following command:

```
MACASGN WSMMSG.S.OVR \OVERLAY\WS-  
MSG.S.OVR
```

When an open for the file C:\WSMSG.S.OVR is received by ViaNet, it is converted to C:\OVERLAY\WSMSG.S.OVR. System requests for the file WSMSG.S.OVR are then handled regardless of the current directory.

In a request to open C:\SUBDIR\WSMSG.S.OVR, the string \OVERLAY\WSMSG.S.OVR becomes the final destination string instead of C:\SUBDIR\OVERLAY\WSMSG.S.OVR. Any previous characters in the input string (such as C:\SUBDIR\) are discarded.

These two exceptions to the complete substitution rule make it possible to network pre-DOS 2.0 programs and to share printers and devices among nodes.

Examples MACASGN

displays all currently defined macros for the node.

MACASGN F:

deletes F: from currently defined macros.

MACASGN /D

deletes all currently defined macros.

MACASGN F: Z:\PC2\C

defines the macro F: to be Drive C at PC2 in the network. Command, path, and system call references to Drive F are interpreted by the network as Z:\PC2\C.

MACASGN @\MYDIR\MAC1.BAT

defines an entire set of default macros by executing the MACASGN command on filespecs contained in the MAC1.BAT batch file in the MYDIR directory.

MACASGN WSMSG.S.OVR \OVERLAY\WS-MSG.S.OVR

redirects references to WSMSG.S.OVR to the file by that name in the directory OVERLAY.

MACASGN PRN Z:\PC2\PRN

redirects references to PRN to the printer at PC2 in the network, allowing that printer to be used by other nodes throughout the network.

NET - Display Network Information

Purpose NET displays network software status information.

Syntax NET [/2|3|3V|/V]

Remarks The NET command is used to determine the status of network software at the node from which the command is called.

The displayed report includes the following types of information:

1. Whether the network software is loaded or not.
2. Node name and node number.
3. Maximum message size for the node.
4. Passholder status for the node.
5. Downloader status for the node.
6. DOS 3.0 emulation status for the node.

Options /2 Turns off DOS 3.x emulation. If DOS 3.x emulation is on, this command should be used before running any DOS 2.x programs.

/3 Turns on DOS 3.x emulation. This option will allow you to run DOS 3.x applications even though your node is actually running DOS 2.x.

`/3V` Turns on DOS 3.x emulation, and tells ViaNet to provide a DOS 3.1 response to an application request for the DOS version number, even though the system is running DOS 2.x. This allows DOS 2.x nodes to run applications written for DOS 3.x.

As noted above, the `/3` switch turns DOS 3.x emulation on. The "V" parameter does not change this emulation. However, if an application program requests the DOS 3.1 version number when it is first started, the `NET /3V` command should be used. You will know that the program requested the DOS 3.1 version number if the program will not start and an error message regarding the DOS version is displayed on your screen.

If you are actually running DOS 2.x, the use of the `Net /3V` command should not be used to run DOS 3.x system utilities, for this may cause unpredictable effects. ViaNet DOS 3.x emulation is to be used to run DOS 3.x applications only. Refer to the DOS Command Compatibility Summary in this addendum.

Note: If DOS 3.x is running on the network, the `NET /3` and `/2` switches are overridden; ViaNet assumes 3.x.

`/V` Displays the ViaNet version number and exits without performing a function.

Example NET

NONET - Deactivate the Network

Purpose NONET "dismounts" the node from the network, removes the network software from memory, and returns internal control to the DOS operating system.

Syntax NONET [/X]

Remarks You should not use this command except when requested by your network administrator. NONET /X immediately terminates the network at your node. Programs that are accessing network resources at your node (such as a printer or hard disk) from a different node will be terminated when NONET /X is run.

If a node is unable to unload the network software due to open files when a NONET only is issued at this node, the following is displayed:

Unable to Unload the Network Software.
There are files being accessed on your node
from the network.
To force the network software to be unloaded,
enter NONET with the X switch.

<u>Network Node</u>	<u>Name of Open File</u>
nodename (##)	d:\path\filename
...	...

Where:

nodename = the name of the node with the open file(s)

= the node number of the node with the open file(s)

d:\path\filename = the filespec of the open file(s)

Options /X Forces ViaNet to unload even if others on the network are using files at that node.

Warning: If the NONET command is used with the /X switch, those who have files open on this node may lose any data, and applications with open files may be abnormally effected.

Example NONET

PASSWORD - Change User Password

Purpose PASSWORD is used to change your access password and can be executed at any time when you are logged on to the network.

Syntax PASSWORD

Remarks When PASSWORD is executed, the system prompts first for entry of the old password as a security measure and then prompts for the new password.

If you specify the correct old password, the new password entered here will be your password the next time you run ACCESS to sign on to the network.

You must enter your old password precisely as it was defined by the system administrator. Your password may contain any valid DOS character but must not exceed 10 characters in length.

Example

You type:	PASSWORD
ViaNet Responds:	Enter Old Password
You type:	abc
ViaNet Responds:	Enter New Password
You Type:	xyz
ViaNet Responds:	Re-Enter New Password
You type:	xyz
ViaNet Responds:	ok

This would change your access password from "abc" to "xyz" if "abc" was your previous password.

PROTECT - Access File Protect Status

Purpose PROTECT is used to change the protection of files you own, to change the default read/write protection for your node, and also to display the protection for files you can access.

Syntax PROTECT [/D|/R|/S|/W|/L|/V] [filespec]
[protection]
PROTECT [filespec] CHOWN

Note: The [] brackets are not optional for the protect status. If the status is typed as wrwrwr instead of [wrwrwr], protection is not changed.

Remarks The PROTECT command allows you to set or modify the read/write protection for each file and directory you create while logged on to the network. Only the file's owner or the network administrator can change a file's read/write protection.

The file protection is in the form of a six-character status setting that is appended to each file's directory entry.

Each character denotes read or write privileges for the entire network, the owner's group, and the owner.

1-2	3-4	5-6
ALL	GROUP	OWNER
[wr	wr	wr]

In this scheme, [wrwrwr] indicates that anyone in the network can read or write to

the file, while [-rwrwr] indicates that anyone can read the file but only you and the members of your group can write to it.

No matter how the protection is entered (e.g., using trailing dashes), when this protection is displayed, the actual status will be displayed with the "w" and/or "r" for All, Group, Owner. For example, if you enter the protection [-rw---] for a given file, when you request an extended directory of this file, the protection will be displayed as [-rwrwr].

The "w" and "r" must appear in a valid position or else protection will not be changed. In each category, All, Group, Owner, the "w" must precede the "r". For example, [--rwwr] will not be implemented because the "r" and "w" for "Group" should be reversed to read [--wrwr].

It is possible to set the protection of a file to "write only" or "read only." The owner, however, will be able to change the status when desired.

File protection is determined logically from left to right. That is, a file protected as [wr----] could be accessed for both read and write by anyone since ALL is allowed and you and your group are part of ALL.

Depending upon how the PROTECT command is formatted, it can be used to set, view, or modify a file's protection, and also to set, view, or modify the default file protection that is assigned to files and directories that you create while in the network.

Note

The PROTECT command can also be used to set or clear the shared read only or shared read/write protection for specified files. These options allow you to make files automatically available for access by multiple users at the same time.

Sharing read only files is a convenient method for allowing more than one user access to the same program. Password protection is unaffected by the sharing option.

Sharing read/write files is convenient for large volume data entry, but requires additional record locking protection in the application program to avoid simultaneous updates of the same record.

Options

There are several options associated with the PROTECT command that perform a number of related file protect functions.

These functions are described here and illustrated in the examples that follow:

`/D [wrwrwr]` Changes your default protection status from the time it is implemented through the duration of your logged-on session only. Protection is set for whatever [wrwrwr] protection you have specified within the brackets.

`/R` This switch sets the specified files to shared read only, allowing multiple access for reading while

prohibiting access for writing. This is convenient for setting program files for shared access by multiple users with separate data files. Files set with the /R switch appear with "RO" in directory listings.

/S This switch clears the shared read only and shared read/write protection set by /R and /W for specified files.

/W This switch sets the specified files to shared read/write. Multiple users may then simultaneously open and read or write to these files. Additional steps should be taken to insure adequate record locking in applications programs when this switch is used. Files set with the /W switch appear as "RW" for protection in directory listings.

Note: This switch should not be used to set the Read/Write shareability status for data files when ViaNet DOS 3.x emulation is activated.

If the PROTECT /W command is used to set the shareability status for data files while ViaNet DOS 3.x emulation is activated, undesirable effects may occur to these files.

`/L [wrwrwr]` Changes your default protection status permanently. Protection is set for whatever [wrwrwr] protection you have specified within the brackets.

`/V` Displays the ViaNet version number and exits without performing a function.

`PROTECT [filespec] CHOWN`

Specifies a change of ownership for a directory or a file specified as "filespec". The CHOWN parameter is particularly useful during installation of the network to define ownership of files.

Note: Chown is only effective on files designated with local user (-1,-1) or super user (0,0) ownership. Also, you must be accessed to the network as a privileged user or super user and have read/write permissions to the file to claim it.

`PROTECT` with no options displays the node's default protect status.

Examples `PROTECT MYFILE [---rwr]`

Changes the protection of the file MYFILE to no access for ALL, read only for the OWNER'S GROUP, and read/write for the OWNER.

PROTECT Z:\PC3\C\MYDIR [--wrwr]

Changes the directory MYDIR in Drive C of PC3 to no access for ALL and read/write access for the OWNER'S GROUP and the OWNER.

PROTECT

Displays the node's current default protection.

PROTECT /D [---rwr]

Changes the default protection to no access for ALL, read only for the OWNER'S GROUP, and read/write for the OWNER.

PROTECT /R MYDIR

Changes the protection of the directory MYDIR to shared read only for the entire network.

PROTECT /W MYFILE

Changes the protection of the file MYFILE to shared read/write for the entire network.

PROTECT /S MYDIR

Clears the shared read /R or shared read/write /W status switch for the directory MYDIR.

SETPRT - Setup Automatic Printing

Purpose This feature allows you to set the options listed below and send print output from an application program, such as a word processing program, directly to a network print spooler without exiting the program. It does this by automatically intercepting your application's printer output that is sent to PRN or LPT1 and redirecting this to a network printer.

Syntax SETPRT [/?/D/E/F/M/N/P/T]

Remarks To use the automatic print feature you must first load the following file into your computer's memory:

```
REDIRPRT.COM
```

To do this, you need only have a copy of this file on either a floppy disk or your hard disk. If it is on a floppy disk, insert the floppy into your computer's A drive and at the A prompt, type the following and press <enter>:

```
REDIRPRT
```

If the file is on your hard disk drive, change your working directory to that in which REDIRPRT.COM is found. At the prompt, type the following and press <enter>:

```
REDIRPRT
```

After pressing <enter>, a message will be displayed on your screen telling you that the resident part of Redirprt is installed.

If REDIRPRT is already installed and you try to install it again by following the steps above, a message will be displayed on your screen telling you that the resident part of Redirprt is already installed.

To unload or deactivate REDIRPRT, you need only type the following at the DOS prompt:

```
REDIRPRT /U
```

Note: Deactivating REDIRPRT will cause other ViaNet terminate and stay resident programs (i.e., ViaSpool, ICF) that were loaded after REDIRPRT to be deactivated. Also, deactivating the network, either by a NONET or turning off your computer will deactivate REDIRPRT.

Important: ViaSpool must be active at a node in order to use the automatic print feature. Also, If you wish to use both ViaSpool and the automatic print feature at the same node, ViaSpool must be loaded before REDIRPRT is loaded into the node.

Once you have activated REDIRPRT, you may use SETPRT to select the print options you wish to use when printing your files on a network printer. See **Options and Examples** below.

To display the current settings, you need only type the following at the prompt and press <enter>:

SETPRT

Information regarding whether or not the automatic print feature is on, priority, forms, format, number of copies, printer name, and the printer node name will be displayed. (Printer node name will be displayed once the automatic print feature is turned on.)

Options The following options may be set at any time prior to loading your application program. Once set, they will remain active until you change them or deactivate either REDIRPRT or the network software.

/? Displays the following SETPRT help information:

Available Setprt switches are:

- ?... Displays this list.
- D... Disable print redirection.
- E... Enable print redirection.
- F... Specify format.
- M... Specify forms.
- N... Specify number of copies.
- P... Specify priority.
- T... Specify printer.
- V... Give version number.

/D Disables or turns the automatic print feature off.

/E Enables or turns the automatic print feature on.

Note: SETPRT is initially off; therefore, you must turn it on with the /E option the first time you wish to use the automatic print feature.

Note: SETPRT /E will turn on the automatic print feature only if a valid printer name is found. If no valid printer name is found, then the automatic print feature will remain off. Refer to the ViaSpool command for how to set a printer name.

Note: If you turn on the automatic print feature (SETPRT /E) and then set MACASGN PRN to a file or device, the automatic print feature will be turned off, as if the SETPRT /D command had been given. Conversely, if MACASGN PRN is set to a file or device and then SETPRT is turned on, the automatic print feature will override the MACASGN PRN setting.

If MACASGN PRN was set, then REDIRPRT was loaded, and SETPRT was turned on, when REDIRPRT is unloaded or when SETPRT is turned off, MACASGN PRN will assume its original setting.

/F Specifies the print format selection. The format type must be specified as a four-character name. This may be used to define a page format characteristic such as a special font to be used when

printing a file. "Format" is different from "form" in that no physical change is required (e.g., "form" is usually used when a change of paper, print ball, etc. is required). The contents of the specified format initialization file are sent to the printer prior to printing the specified file. When the file has finished printing, the contents of the format termination file are sent to the printer. The initial default format type is DFLT.

- /M Specifies the forms selection. The forms type must be specified as a four-character name. This allows you to queue a number of files with different forms requirements, like size of paper, or print ball type. When all of one type of file have been printed, the printer will pause until the correct forms type (e.g., sheet feed/continuous paper, print ball type, etc.) associated with the remaining queued files is serviced by the print spooler. The queued files will not be printed until the operator has changed the paper, print ball, etc. and set VIASPOOL to the same forms type. The initial default forms type is STND.
- /N Select the number of copies. The number of copies may be a single digit from one to nine. The initial default number of copies is one (1).
- /P Sets the priority of the queued file 0-9, where 0 is low priority and 9 is high priority. Files with a higher priority

are printed before files with lower priorities. The initial default priority is five (5).

/T Selects the printer to which the print file will be sent. When VIASPOOL is installed at a node, a name, 1-8 characters long, is assigned to the printer for that node. SETPRT and REDIRPRT allow you to direct files to any printer defined to VIASPOOL. If you select a printer that is not defined to the network, a message will be displayed stating that the selected printer is not available for use. The initial default printer name is PRINTER.

Auto- matic Printing

After activating REDIRPRT and setting the print options with SETPRT, you may have the application's print output automatically printed by a designated network printer by either exiting the application or by simultaneously pressing the CTRL-ALT-PRTS keys. The steps listed below outline the procedure you should follow when using the automatic print feature.

1. Make sure that REDIRPRT is loaded and that the SETPRT options are correctly set before loading an application program.
2. Load an application program and open a file.
3. When you are ready to print your file, save it, and use the application program's own print command to print

that file. (This formats the file so that the printer will print it properly.)

IMPORTANT: It is important that the application's printing process is completely finished before proceeding to the next step. If it is not finished, only part of the file may be printed.

4. At this point, your file will be printed by the network printer if you next do one of the following two steps:
 - a) Exit the application program.
 - or
 - b) Simultaneously press the CTRL-ALT-PRTS keys.

If you wish to remain in the application program and press the CTRL-ALT-PRTS keys, a single beep will sound to indicate that the three keys were correctly pressed and that the file was sent to the print spooler for printing.

If for some reason an error occurs at this point, three beeps will sound to indicate there is a problem.

Note: No beeps will sound when the CTRL-ALT-PRTS keys are pressed if any of the following conditions are true: 1) REDIRPRT is not loaded; 2) the automatic print feature is not turned on; 3) your application's print command is not first used to print the file; or 4) your application's printing process fails.

Possible problems may be that the print spooler was taken off of the network after you selected the printer attached to that print spooler node, or that the print spooler is full. If the print spooler was taken off of the network, you will need to exit the application and select a different printer using the SETPRT /T *printername* setting. After selecting a new printer, follow steps 1-4 listed above.

To determine if the print spooler is full, list the files in the print spooler directory using the DIR command. (You may list the files in the spooler by performing a DIR of z:*nodename*\c\via-spool. The *nodename* is the name of the node to which the selected printer is attached. This name is displayed when SETPRT is entered on the command line.) At the bottom of the list of files will be a number indicating how many bytes are free. If there are few or no bytes free, you may wish to select another printer or wait until the printer has printed some of the files in the queue and cleared enough room for your print file.

You may determine if a printer is active on the network and view that printer node's queued files by using the ViaPrint command. To do so, you will need to exit the application and at the prompt, type VIAPRINT /T*printername* and press <enter>. For more information on this feature, see the section on VIAPRINT in this chapter.

Examples SETPRT /E

Turns on the automatic print feature. The print options will assume the default settings. Format will be set to DFLT; forms will be STND; the number of copies will be one; the priority will be five; and the printer name will be PRINTER. (The printer name, PRINTER, must be a valid name.)

```
SETPRT /E /Tlquality /P8 /N2
```

Turns on the automatic print feature and will send all print jobs to the printer named "lquality." Priority is set to 8 and two copies of all print jobs will be printed.

```
SETPRT /Tmatrix
```

Sets the automatic print feature so that all print jobs will now be sent to the printer named "matrix." If the printer, "matrix," is not currently defined to the network, you will be told that the selected printer is not available for use.

```
SETPRT /D
```

Turns off (i.e., disables) the automatic print feature.

Note If you use your application's print command to print two or more files without either

exiting the application or pressing the CTRL-ALT-PRTS keys between each use of the application's print command, when you do exit the application or press CTRL-ALT-PRTS after the application's printing of the last file, all the separate files will be appended to each other and printed on the network printer as if they were one file.

Note If you list the files in the print spooler directory using the DIR command, you will see a list of files in the following form:

XYYZZZZ.NNA

where:

X = priority number

YY = your node number

ZZZZ = form designation

.NNA = unique file name extension

Note There are some "pop-up" type programs, like *SideKick*, that use the CTRL-ALT keys to activate the program. If you are using one of these programs that uses these specific keys and the automatic print feature, you will need to re-define the activating keys of the pop-up program. Otherwise, unpredictable results may occur. Please refer to your particular program's operating manual for instructions on how to change the activating keys.

VIANET - Load the ViaNet Network

Purpose VIANET loads the ViaNet software system at your node and must be executed each time you boot the DOS system and want to access the network. This process can be automated by placing this command in the DOS AUTOEXEC.BAT file.

Syntax VIANET [/C*filespec*]
VIANET [/S*d*]
VIANET [/V]

Remarks The VIANET command causes commands in the VIANET.BAT file to be executed. These commands cause the VIANET.EXE program to be loaded into the memory of your computer.

VIANET.EXE is a terminate and stay resident program that filters all requests to DOS and redirects them to other nodes on the network as appropriate.

Options /C*filespec* Tells ViaNet to search for the NETCNF.SYS file under the name and path designated by *filespec*.

/S*d* Tells ViaNet to search for the NETCNF.SYS and ACCESS.SYS in the NETSYS directory on the drive designated by *d*. If this option is used with /C, the /C option will determine where ViaNet searches for NETCNF.SYS. However, /S will determine where ViaNet searches for the ACCESS.SYS and other files in the NETSYS directory.

`/V` Displays the ViaNet version number and exits without performing a function.

Note: To check the version number of VIANET with the `/V` switch, you must be in the NETSYS directory or else VIANET will attempt to reload. (You will execute the VIANET.BAT file.)

VIAPRINT - Send a File to be Printed

Purpose VIAPRINT allows you to send one or more files to a ViaNet print queue. There are two ways to use this facility: 1) the full screen menu, in which case you need only enter the command VIAPRINT and you will be given a menu of the available options, or 2) selecting the options on the command line.

Syntax VIAPRINT [/D/F/M/N/P/T] [filespec]
VIAPRINT [/?|/V]

Remarks Before VIAPRINT may be issued at a node, the following requirements must be met at the node:

1. The VIAPRINT.EXE file must be accessible to the node where VIAPRINT is invoked.
2. ANSISYS must be loaded as the keyboard/screen driver in the CONFIG.SYS file for that node. The statement "device = ANSISYS" must be included in the CONFIG.SYS file prior to the "device = NETDRV.RSYS" statement. An ANSISYS file must reside on the root directory of the boot drive.

Menu

```
-----  
ViaNet (R) Print Spooler/Queue Manager (c) 1985 ViaNetix (R), Inc.  
ViaPrint 01.20.05 09/16/85 Boulder, Colorado USA  
  
          DEVICE CONTROLS                FILE CONTROLS  
T ... Select Printer                    R ... Route file to printer  
                                         X ... Delete file  
  
FILE  OWNER  NODE  DATE  TIME  #  SIZE  PTY  FORM  FRMT  STAT  
aaaaaaa <u,g> aaaaaa mm-dd-yy hh:mm n  nnnK  n  MMMM FFFF 1111  
aaaaaaa <u,g> aaaaaa mm-dd-yy hh:mm n  nnnB  n  MMMM FFFF 1111  
...     ...     ...     ...     ...     ...     ...     ...     ...     ...  
-----  
ENTER OPTION  ESC to exit  F7 Up  F8 Down  F9 Top  F10 Bottom  
Error and information messages  
Error and information messages  
-----
```

Menu Options

When you enter a menu selection you will be prompted for the information required by the selection on a separate screen. The backspace key may be used to correct errors you may make before it is entered. The ESCape key cancels the current prompt sequence and returns the original menu.

R Routes a file or group of files to the specified print spooler. You are prompted for:

- filespec
- number of copies (1-9)
- priority (0-9)
- forms
- format

A filespec followed by just a semicolon (;) selects the default values for the remainder of the prompts. The defaults may be the initial defaults described below, or the entries made previously during this VIAPRINT session.

Each time VIAPRINT is invoked, the defaults are re-established. The number of copies defaults to one, the priority to five, and the forms to STND. If you change any of these defaults, the changes remain in effect until the VIAPRINT session ends, or more changes are made.

The filename portion of filespec may include the asterisk (*) and question mark (?) as used in standard DOS filename specifications.

T Specifies the name of the printer that VIAPRINT is to send files to, delete files from, and display the file queue. The default printer name is "PRINTER."

X Causes the specified file to be removed from the print queue. You are prompted for the file to delete. The file name may include the asterisk (*) and question mark (?) as used in standard DOS file name specifications. You must enter the filename that was used to place the file in the queue. No path or drive specifications may be entered for the filename to be deleted.

VIAPRINT does not allow you to delete a file that is currently printing. Also, you may only delete files which you sent to the

spooler queue, or files sent by a local user. The super user may delete any file from the spool queue.

Menu The commands used to scroll up and
Remarks down through the list of files on a printer
queue are only displayed if there are files
on the queue. If there are no files on the
queue, only ESC to exit is displayed in
reverse video on the primary display.

Use the scroll options to move up and down
in the print queue display. For most PCs,
PAGE UP, PAGE DOWN, and HOME provide
the same functions as F7, F8, and F9.

Heading Description

FILE The queued print filename. Up to
eleven characters will be displayed
(aaaaaaaaaaa).

OWNER The user/group number of the file
owner (<u,g>).

NODE The nodename from where the file
was sent (aaaaaaa).

DATE The date the file was last updated
(mm-dd-yy).

TIME The time the file was last updated
(hh:mm).

#	The number of copies (from 1-9) to be printed (n). If status is PRNT, then the number of copies represents the number of copies that remains to be printed after the current copy completes.
SIZE	The size of the print file (one copy) in 1024-byte increments (nnnK) or bytes (nnnB).
PTY	The priority of the print file (n), where 0 is low and 9 is high.
FORM	The form to be used when printing the print file (mmmm). The default form is STND. Other forms may be defined as needed. Forms identification must be four characters long.
FRMT	The format to be used when printing the print file (ffff). The default format is DFLT. Other formats may be defined by including the appropriate xxxxINIT.STR and xxxxFINL.STR files in the /VIASPOOL/FORMAT directory at the spooler node. Format identification must be four characters long.

STAT Explains the status of the file (ssss). One of the following messages will appear beneath this heading:

PRNT The file is being printed, or will be printed when VIASPOOL is next started.

INTP The file has been interrupted. Refer to the /S switch on VIASPOOL for information on re-starting the printer.

WAIT The file is waiting to be printed.

Options The VIAPRINT switch /? is informational and is entered on the command line. It will display, "Available ViaPrint switches".

All other switches except /V cause the VIAPRINT menu to come up if "filespec" is not included on the DOS command line. Any print options specified on the command line are accepted, and need not be specified again from the menu.

VIAPRINT may be used to send a file to the spooler directly from the command line by including "filespec" as an option. The filename portion of the filespec may include the asterisk (*) or question mark (?) as used in standard DOS filename specifications. If VIAPRINT is used to send files directly to the spooler without using the menu, any

print options not selected on the command line cause the default value for that option to be used.

The following parameters may be specified in any order and spaces preceding or following the switch character are optional.

/? Displays the following help listing for the VIAPRINT switches:

Available ViaPrint switches are:

D...Turn off menu spool queue display, or
Sppress display when menu not invoked.

F...Specify format.

M...Specify forms.

N...Specify number of copies.

P...Specify priority.

T...Specify printer.

V...Give version number.

/V Displays the ViaNet version number and exits without performing a function.

/D The queue display is not displayed on the screen when the VIAPRINT menu is invoked. The /D switch is also used to suppress the display when sending files to the printer directly from the command line. This allows you to use VIAPRINT to send a file to a VIASPOOL queue without first clearing your screen.

Note: Error messages are displayed even if the /D switch is used.

/F Specifies the print format selection. The format type must be specified as a four-character name. This may be used to define a page format characteristic such as a special font to be used when printing a file. "Format" is different from "form" in that no physical change is required (e.g., "form" is usually used when a change of paper, print ball, etc. is required). VIASPOOL sends the contents of the specified format initialization file to the printer prior to printing the specified file. When the file has finished printing, VIASPOOL sends the contents of the format termination file to the printer. The default format type is DFLT.

/M Specifies the forms selection. The forms type must be specified as a four-character name. This allows you to queue a number of files with different forms requirements, like size of paper, or print ball type. When all of one type of file have been printed, the printer will pause until the correct forms type (e.g., sheet feed/continuous paper, print ball type, etc.) associated with the remaining queued files is serviced by VIASPOOL. The queued files will not be printed until the operator has changed the paper, print ball, etc. and set VIASPOOL to the same forms type. The default forms type is STND.

- /N Select the number of copies. The number of copies may be a single digit from one to nine. The default number of copies is one (1).
- /P Sets the priority of the queued file 0-9, where 0 is low priority and 9 is high priority. Files with a higher priority are printed before files with lower priorities. The default priority is five (5).
- /T Selects the printer to which the print file will be sent. When VIASPOOL is installed at a node, a name, 1-8 characters long, is assigned to the printer for that node. VIAPRINT allows you to direct files to any printer defined to VIASPOOL. If you select a printer that is not defined to the network, a message will be displayed stating that the selected printer is not available for use. The default printer name is PRINTER.

Examples VIAPRINT /M labl spsheet.gph

Causes the file "spsheet.gph" to be printed when the form type is changed to "labl" at the spooler node. The default values are used for printer, format, copies, and priority.

VIAPRINT /N 3 wkmemo.doc

Causes three copies of the file "wkmemo.doc" to be printed. The default values are used for printer, form, format, and priority.

VIAPRINT /P 4 remanual.doc

Sets the print priority for the file "remanual.doc" to four (4). The default values are used for printer, form, format, and copies.

VIAPRINT /M test /N 5 *.asm

Causes all files in the current directory with the extension ".asm" to be printed on the printer named PRINTER. The form type associated with these files is "test," five copies of each file are requested, and the priority of the print file is set to the default of five (5).

VIAPRINT /T lquality label.out /M labl /P 8

Causes the file "label.out" in the current directory to be printed on the printer named "lquality." The form type is set to "labl," one copy of the file is requested, and the priority of the print file is set to eight (8).

VIAPRINT /T lquality /M labl /P 8

The form type is set to "labl," one copy of the file is requested, the "lquality" printer is selected, and the priority of the print file is set to eight. The VIAPRINT FULL SCREEN MENU appears, and the print options are set as described above.

When VIAPRINT is entered without "filespec" or /D, the queue is displayed in a 13-line

window within the menu display. The print queue displayed is for the printer set using option T from the menu or the /T switch on the DOS command line. If neither of these options is used to select a printer, the queue is displayed for the default printer "PRINTER."

VIASPOOL - Initialization of Print Spooler

Purpose VIASPOOL is used to initialize or remove the resident portion of the ViaNet print spooler function at a node which functions as a print server. VIASPOOL is also used to control print functions at the "spooler" node.

Syntax VIASPOOL [/?/V/J/L/M/P/Q/T/W/X]
VIASPOOL [/C|D|E|G|I|S|U]

Remarks Before VIASPOOL may be issued at a node, the following requirements must be met at the node:

1. The device=PRN or device=LPT1 statement in NETCNF.SYS must be deleted to avoid interleaved printer output.
2. The file VIASPOOL.COM must be in the VIANET directory used by this node.
3. A printer must be attached to the node.
4. A local drive C with a VIASPOOL directory on the root must be available to the network. A DRIVE=C statement must be in the NETCNF.SYS file for the node.
5. The Format directory must exist as a subdirectory of VIASPOOL. This directory must contain the two format files: DFLTINIT.STR and DFLTFINI.STR as supplied on the ViaNet distribution diskettes or their user supplied equivalents.

The first time VIASPOOL is issued, the resident portion of the spooler is loaded. If VIASPOOL is issued without switches, the printer name defaults to PRINTER, the forms specification defaults to STND, and the printer interface defaults to the parallel interface.

After VIASPOOL initializes the spooler, any subsequent use of the command without switches will produce the following message:

VIASPOOL is awaiting data

Options VIASPOOL provides various options for setup, information, and printer control.

The following switches may be used to setup VIASPOOL at initialization or to change the setup after VIASPOOL has been initialized. The status of VIASPOOL is also displayed when some of these switches are used.

Note: All switches except /?, /Q, and /V must be entered at the spooler node.

/? Displays the following help listing for the VIASPOOL switches:

```
Available ViaSpool switches are
--Anytime--
B...Specify polarity of printer busy status
E...Specify printing of banner page
M...Specify print forms selection
P...Specify serial/parallel interface type
Q...Display current environment
T...Specify PRINTER name
V...Display version information
W...Specify character bit width
X...Specify tab expansion
--When installing print spooler--
J...Specify additional print buffer space
L...Specify list device driver
N...Specify use of timer event
--After print spooler is installed--
C...Cancel printing of current file
D...Drain current print file & stop print spooler
G...Specify backspace of print file
I...Interrupt print spooler
S...Restart print spooler
U...Unload print spooler
```

- /V Displays the ViaNet version number and exits without performing a function.
- /B This switch is for compatibility issues only. It sets the internal polarity of the printer busy status indicator to be compatible with specific hardware systems. The network administrator will have appropriately set this at the time ViaSpool was installed.
- /Jn Increases the buffer size used by VIASPOOL for reading files, where n is the increment number 1 through 9. The size is increased by 1024 bytes for each increment. By increasing the buffer size in VIASPOOL, you may reduce the amount of time it needs to access the disk while printing a file, hence, decrease the amount of time the system requires to print a queued file. Increasing the buffer size, however, decreases the printer node's available RAM memory.
- /L Selects the printer device driver. This is useful for those who may have special printer drivers to process their files before they are printed. For example, you may have a special printer driver which will allow you to print special fonts which otherwise would not be supported. When you spool a file that you would like printed with the special fonts, you would use this switch at the printer node. A "device name" up to eight characters may be specified after the /L switch. If a device name

is specified, the device driver named "device name" is used instead of the PRN device driver.

/M Sets the type of forms to be printed. Forms types are defined with four-character names. Any four-character name may be chosen; however, forms type standardization within an organization is recommended. The default forms type is STND.

For example, standard 8 1/2 x 11 paper may be chosen as the default, STND. A forms type of LABL may be used to specify a forms type for labels.

The /M switch also allows you to set a "wild card" form. This "wild card" option causes VIASPOOL to ignore any forms type specified when a file is sent to the print spool using VIAPRINT. The "wild card" character is the question mark (?) and the command may take the form: /M ?

When the "wild card" is in effect, ALL files in the print spool are printed, regardless of the form specified when they were placed into the print spool. (Format is not affected by this option.)

/N This switch is for compatibility issues only. It sets the internal timer event interrupt call to be compatible with specific hardware systems. The network administrator will have appropriately set this at the time ViaSpool was installed.

/P Set printer interface selection under MS-DOS^(tm). The printer interface is assumed to be a parallel interface when VIASPOOL is initialized. The /P switch without a parameter changes this to the serial interface.

Note: A printer configuration utility is required to configure a serial port for the printer under MS-DOS^(tm). (Depending on your hardware, it may be the MODE or CONFIGUR DOS utilities. Refer to your system's reference manual for the appropriate utility.) The /P switch redirects VIASPOOL parallel printer output to the serial port defined by this configuration program.

If you use PC-DOS^(tm), the MODE command may be used to configure a serial port for the printer and to redirect parallel printer output to the serial port.

Example:

```
MODE COM1:12,N,8,1,P
MODE LPT1:=COM1
```

Refer to the PC-DOS^(tm) Reference Manual.

/Q Display spooler information. When VIASPOOL /Q is entered, the following is displayed:

Current environment for ViaSpool is as follows:

Printer name.....cccccccc

ViaSpool subdirectory drive.....d:

Forms selection.....cccc

Printer interface.....Parallel (Serial or Dev Dvr)

Busy active level.....Up (or Down)

Device driver name.....cccccccc

Banner processing.....Yes (or No)

Character bit width.....7 (or 8)

Additional print buffer space...(space in bytes or none)

"c" represents any valid filename character, and "d" is a drive letter. "n/a" is displayed if a field is not applicable.

Note: VIASPOOL /Q may be issued when VIASPOOL is not loaded, and this will not initialize VIASPOOL at this node.

/T Defines the printer name. The printer name may be up to 8 characters in length. The default printer name is PRINTER.

Note: Only one printer per node is usable with VIASPOOL. For this reason, only one printer name may be specified. If a printer name other than the one originally defined is specified, the first printer name is removed. Whenever VIASPOOL is re-initialized, the default name of PRINTER is used

unless the /T switch is used to specify a different name.

/W Changes the character width to 8 bits when specified alone. The default character width when VIASPOOL is initialized is 7. Seven or 8 may be specified with this switch to explicitly change the character width to 7 or 8.

The default of 7 was chosen because many programs such as WordStar^(R) require this to print properly. Some graphics programs may require the 8-bit character width. Refer to the specific products' documentation to obtain details on choosing this setting.

/Xc Sets tab expansion on or off, where "c" is either "n" for no tab expansion or "y" for tab expansion. When tab expansion is on, each tab is sent to the printer unaltered. When tab expansion is off, each tab is interpreted as zero spaces. The default if VIASPOOL /X is issued without "n" or "y" is to turn tab expansion off.

Note: When VIASPOOL is initialized, the default is to expand all tab characters.

Examples VIASPOOL /L

Selects the default device driver PRN for the printer.

VIASPOOL /L HERMAN

Selects the device driver HERMAN for the printer.

VIASPOOL /M LABL

This command will set the forms type to LABL for the printer on this node.

VIASPOOL /M ?

A single question mark (?) is used to specify the "wild card" forms selection parameter.

VIASPOOL /P

Changes the printer selection to serial interface on this node regardless of the previous setting.

VIASPOOL /P P

Changes the printer selection back to parallel interface.

Remember, when VIASPOOL is first initialized, the printer selection defaults to the parallel interface.

VIASPOOL /T WRITER

Defines the printer named WRITER for this node.

VIASPOOL /W

Sets the character width to 8 bits.

VIASPOOL /W 7

Sets the character width to 7 bits.

Print and Queue Control Options

The following switches provide printer and queue control. These switches must be entered at the node with the VIASPOOL directory and printer.

The following switches may not be combined and entered with any other switch at any one time.

/C Printing of the current file is discontinued, the file is deleted from the queue, and printing resumes with the next file in the queue.

/D Drain the printer. After the file currently being printed has finished printing, VIASPOOL stops sending print files to the printer.

The /S switch causes VIASPOOL to resume processing of queued files.

/E Turns print file banner separator on. When printing multiple files, a full page will be inserted between the files being

printed. This banner separator includes the filename of the file to be printed next. When VIASPOOL is initialized, the default for the banner is OFF. The additional parameters Y (yes) and N (no) may be specified with the /E switch.

/G Backspace the printer. When /G is specified without options, the printer backspaces to the beginning of the page currently printing. The options P and F backspace to the beginning of the current page and the current file respectively.

Note: The /G switch is only valid when printing has already been interrupted by the /I switch.

/I Interrupt printing immediately. The printer stops printing and VIASPOOL waits for directions to continue. Refer to descriptions of the /G and /S switches for more information.

/S Resume printing. Printing resumes with the next record if /I was used to stop printing and with the next file in the queue if /D was used.

/Uu Causes the resident portion of VIASPOOL to be removed. If a file was printing when /U was issued, the file is returned to the VIASPOOL directory and will print in its entirety when VIASPOOL is re-initialized.

The optional parameter "u" causes the printer to be unlinked at this node. VIAPRINT will be unable to locate the node's printer after /Uu is issued. This frees the printer name for use at a different node.

If VIASPOOL is unloaded without using the "u" parameter, VIAPRINT is still able to send print jobs to the VIASPOOL directory at the node where VIASPOOL was unloaded.

Examples VIASPOOL /E Y

Turns on the banner separator.

VIASPOOL /I

Interrupt (i.e., stops) the printer.

VIASPOOL /G F

Backspace printer to beginning of the current file.

Remarks Printer Format Control Setup

The format command allows VIASPOOL to send print job initialization and termination files containing printer control sequences to a printer before and after the file being printed. This initialization and termination allows you to choose printer control sequences by specifying a format for the file to be printed.

Note: Some printers require that a line feed or carriage return precede and follow the initial and ending printer control or escape sequences. Consult your printer's manual for the specific requirements.

Each format type is identified by a four-character name. The format name DFLT is reserved for the default format type. A format type of DFLT is sent to VIASPOOL when VIAPRINT is used without specifying a format type.

Initialization and Termination Files

The initialization and termination files for each format type must exist in the directory C:\VIASPOOL\FORMAT at the spooler node. These files are:

xxxxINIT.STR

xxxxFINI.STR

where: xxxx is the four-character format type.

If a file is sent to the printer specifying a format for which there are no xxxxINIT.STR and xxxxFINI.STR files for that format, an error message is printed instead of the file.

xxxxINIT.STR

This file contains the appropriate printer escape sequences to set up the desired format. For example, a format of LAND for a laser printer would contain the escape sequences necessary for the laser printer to print in landscape format.

xxxxFINI.STR

This file contains the appropriate printer escape sequences to reset the printer. This reset may be to an agreed upon default, or to the default printer setup when the printer is first powered on.

Example:

If you have a laser printer which is capable of printing in a "landscape" (sideways) mode, then the escape sequences to place the printer in "landscape" mode can be placed in the file LANDINIT.STR, and the escape sequences to place the printer back to the normal or "portrait" mode can be placed in the file, LANDFINI.STR. To request landscape printing of a file, you would specify the following:

```
VIAPRINT /T[printername] [filename]  
/FLAND
```

XDIR - Display Network Directory

Purpose XDIR displays network directories the same as the DOS DIR command, but also includes read/write protection information and individual/group ownership of each file and directory that is displayed.

Syntax XDIR [pathname][filespec][/D /H /P /N /S]

Remarks The XDIR command provides a display of each file on the specified path whose name matches the specified filespec. The display includes the file name, size, creation, date, OWNER'S user number and group number, and the current protection.

Options

- /D This switch causes only files that are directory entries to be included in the directory display.
- /H This switch causes hidden files and system files to be included in the directory display.
- /P This switch causes file protection to NOT be included in the directory display.
- /N When looking at a directory of network nodes on the root of drive Z, the XDIR /N command causes the physical address of a node to appear after the node-name. This only works with a directory listing that includes NODES as subdirectories (i.e., XDIR Z:\ /N).
- /S Causes the XDIR display to pause when the display screen is full. Pressing any

key allows the next screen to be displayed.

Examples XDIR Z:

Displays a directory of all nodes that are active in the network.

XDIR /D

Displays <DIR> files only.

XDIR Z:\PC3\C\MYDIR

Displays a directory of all files in the directory MYDIR in Drive C of PC3.



ERROR MESSAGES

Overview

Since ViaNet operates as a subset of the DOS operating system, the network's error message facilities are limited to messages that are already generated by DOS.

This means that you must interpret error messages to determine if they are from standard DOS operation in your computer or if they are caused by the network.

The following pages describe error messages that are produced by ViaNet during network operation. Probable solutions for each error are also discussed here.

FILE NOT FOUND

FILE DOESN'T EXIST

DIRECTORY NOT FOUND

These messages and other similar message types usually indicate that the requested file does not exist in the specified path.

These messages may be caused by several different circumstances:

- o the protect status of a directory in the search path or of the file itself may restrict access to the file.

- o a network user may be using the file with an exclusive access file lock on the file.
- o a network user may have left an exclusive access file lock on the file by resetting his node while accessing the file.
- o the file may not exist or you may have mistyped the filename.
- o the file may not exist in the specified path or you may have mistyped the path.
- o the diskette containing the requested file may not be in the drive indicated in the directory search path.
- o the device containing the requested file may not be in the drive indicated in the directory search path.
- o the device containing the requested file or directory may not have been identified in the owning node's NETCNF.SYS configuration file.

FILE NOT FOUND messages can also be caused by incorrect entry of the directory search path. The XDIR command can be used to help determine the cause of the problem. Type XDIR and your specific filespec, such as XDIR Z:\PC2\C\MYDIR\MYFILE.

If the message recurs, suspect that the file does not exist, does not exist in the path, has protection which precludes your access to it, or is not currently available to the network.

If XDIR finds the file, check its protection status to see if it prevents you from accessing the file.

CAN'T FIND OVERLAY FILE

This message usually occurs when older (pre-DOS 2.0) application programs are being used in the network. These programs may not close files after opening them until you exit from the application. This problem can be eliminated with the PROTECT command to make the file automatically sharable.

WRITE FAULT ERROR ON DRIVE Z ABORT, RETRY, IGNORE

Indicates a failure in redirecting printer output. This may occur if the remote printer is shut off while you are printing. Check the printer and, if appropriate, select the retry option.

I/O ERROR ON DRIVE Z:

DRIVE Z: NOT READY

SEND WHO-HOLD FAILED

These messages and other similar message types usually indicate that a hardware problem exists or that the resource being requested is on a computer that does not have ViaNet currently operating.

These messages may be caused by several different circumstances:

- o the requested node may not be currently in the network.
- o a long-running DOS command at the other node may prevent ViaNet from responding to your request.

- o the message may reflect a legitimate I/O error on a drive at the other node.
- o a path specification may be using an invalid network address.
- o a network adaptor board may have an incorrect address, incorrect cable connection, or may be defective.
- o a network shared server may be down or off.

To determine the reason for these types of errors, start with the logical. Is the requested node active in the network? Is the requested device available? Is a DOS command (such as DISKCOPY) at the requested node holding up your request?

If the request should logically transmit, suspect hardware:

- o Does the requested drive at the other node work properly in its local environment?
- o Are your cables and the cables at the other node properly attached?
- o Are the nodes properly addressed in the network?
- o Can other nodes communicate with either of the nodes in question?

NOT READY ERROR READING DRIVE Z ABORT, RETRY, IGNORE

This message usually indicates that a drive door is open, a drive is in use, or the node you are trying to access has been turned off. Always type R to retry. If that doesn't work, go to the node you are attempting to access to determine the problem.

This message can also indicate that the network is busy and not currently available for your requested task. This message can occur when a long-running DOS command (such as DIR or COPY) is executing. If this occurs, select the option to retry. Do not select the option to ignore.

LOGIN FAILED.

Indicates the keyed user name or password is not valid. Retry the operation with a valid user's name and password. This error will occur if you do not enter the user name and password precisely as defined by the network administrator, including capitalized and lowercase letters.

VIANET INTERNAL ERROR

ViaNet contains a number of internal integrity tests that are constantly monitoring network processes. These tests insure that the network is receiving and processing legitimate requests for data.

ViaNet internal errors occur when internal inconsistencies are detected by the network software. When an internal error occurs, the message VIANET INTERNAL ERROR is displayed with a specific message and then the message NETWORK DISMOUNTED.

Rather than continue operation in an uncertain environment, the network is automatically disabled.

If a VIANET INTERNAL ERROR occurs, write down the specific error message and the circumstances under which it occurred. Then contact your network administrator. Always reboot your system before attempting to continue after a VIANET INTERNAL ERROR.

VIANET INTERNAL ERROR is caused by three situations: (1) a faulty coaxial cable connection causes a timing error or phony message collision that looks like a software error to ViaNet, (2) an application program has interfered with ViaNet's programs, or (3) you have discovered a "bug". VIANET INTERNAL ERRORS should be reported to the manufacturer.

DOS Command Compatibility Summary

Overview

Most DOS commands are compatible with ViaNet and will work both locally and across the network. For example, while running ViaNet, the COPY command may be used to copy files from one disk to another at your own computer. This is an example of a DOS command that works locally. While still running ViaNet, the COPY command may similarly be used to copy files from another PC's drive to your own PC's drive. The COPY command, therefore, not only works locally, but also across the network. Some commands, such as TIME and VERSION, however, are not needed across the network and are used only locally.

DOS Emulation

With ViaNet running, you may use DOS 2.x as your operating system, but emulate DOS version 3.x by using the NET /3 command. What this means is that even though your operating system is DOS 2.x, you will be able to run most programs which otherwise require DOS 3.x.

This is a useful feature for two reasons: 1) it allows you to use both DOS 2.x and 3.x computers on the same network, and 2) it allows you to use DOS 3.x programs loaded from across the network on your DOS 3.x system even though one or more computers are actually running DOS version 2.x. Note: If a system is running DOS 3.x, ViaNet will automatically override the emulation facility and use the DOS 3.x facilities directly.

Additional Information

When to Use DOS Emulation

If your computer is running DOS 2.x, you should use ViaNet DOS 3.x emulation when you wish to use an application specifically designed to run on DOS 3.x. To activate ViaNet DOS 3.x emulation, use the NET /3 command.

Some 3.x applications make requests for the DOS version number. If ViaNet DOS 3.x emulation is activated, but you receive an error message regarding the DOS version currently running when trying to use an application, then the NET /3V command should be used to allow you to run this application. The V parameter enables ViaNet to return the DOS 3.1 version number in response to a "Get DOS version number" call made by an application.

Note: It is important that only DOS 2.x system utilities be used when you are actually running DOS 2.x, and that the DOS 3.x system utilities be used only when you are actually running DOS 3.x. If you are actually running DOS 2.x with ViaNet 3.x emulation and the V option activated, unpredictable results may occur when using DOS 2.x or 3.x system utilities. It is therefore important that you use the V parameter only when it is necessary to run 3.x applications.

DOS Command Compatibility Tables

TABLE 1

Below is a list of DOS commands and whether or not these commands work locally (with the network running) and/or across the ViaNet network. The given environment is that the network software is loaded, the actual DOS level is 2.x, and there is no ViaNet DOS emulation active.

COMMAND	WORKS LOCALLY WITH NETWORK	WORKS ACROSS NETWORK	COMMENTS
ASSIGN	YES	N/A	
BACKUP	YES	NO	
CHDIR	YES	YES	
CHKDSK	YES	NO	
CLS	YES	N/A	
COMP	YES	YES	
COPY	YES	YES	
CTTY	NO	NO	
DATE	YES	N/A	
DELETE	YES	YES	
DIR	YES	YES	
DISKCOMP	YES	NO	Does not accept drive Z, or MACA- SGNed drives.
DISKCOPY	YES	NO	
EDLIN	YES	YES	
ERASE	YES	YES	
FIND	YES	YES	

Table 1 continued from previous page.

COMMAND	WORKS LOCALLY WITH NETWORK	WORKS ACROSS NETWORK	COMMENTS
FORMAT	YES	NO	/S does not work.
GRAPHICS	YES	YES	
MKDIR	YES	YES	
MODE	YES	N/A	
MORE	YES	N/A	
PATH	YES	YES	
PRINT	NO	NO	Use ViaPrint & ViaSpool.
PROMPT	YES	N/A	
RENAME	YES	YES	
RMDIR	YES	YES	
SET	YES	N/A	
SORT	YES	YES	
SYS	YES	NO	
TIME	YES	N/A	
TREE	YES	NO	
TYPE	YES	YES	
VER	YES	N/A	
VOL	YES	NO	

N/A -- Not Applicable; these commands have meaning only in terms of local use.

TABLE 2

Below is a list of DOS commands and whether or not these commands work locally (with the network running) and/or across the ViaNet network. The given environment is that the network software is loaded and the actual DOS level is 3.x.

COMMAND	WORKS LOCALLY WITH NETWORK	WORKS ACROSS NETWORK	COMMENTS
ASSIGN	YES	YES	
ATTRIB	YES	YES	
BACKUP	YES	YES	
CHDIR	YES	YES	
CHKDSK	YES	NO	
CLS	YES	N/A	
COMP	YES	YES	
COPY	YES	YES	
CTTY	NO	NO	
DATE	YES	N/A	
DELETE	YES	YES	
DIR	YES	YES	
DISKCOMP	YES	NO	
DISKCOPY	YES	NO	
EDLIN	YES	YES	
ERASE	YES	YES	
FDISK	YES	NO	
FIND	YES	YES	
FORMAT	YES	NO	/S does not work
JOIN	YES	NO	
LABEL	YES	N/A	
MKDIR	YES	YES	

Table 2 continued from previous page.

COMMAND	WORKS LOCALLY WITH NETWORK	WORKS ACROSS NETWORK	COMMENTS
MODE	YES	N/A	
MORE	YES	N/A	
PATH	YES	N/A	
PRINT	NO	NO	Use ViaPrint & ViaSpool.
PROMPT	YES	N/A	
RECOVER	YES	YES	
RENAME	YES	YES	
RESTORE	YES	YES	
RMDIR	YES	YES	
SELECT	NO	NO	
SET	YES	N/A	
SHARE	NO	NO	
SORT	YES	YES	
SUBST	YES	NO	
SYS	YES	N/A	
TIME	YES	N/A	
TREE	YES	N/A	
TYPE	YES	YES	
VDISK	YES	N/A	
VER	YES	N/A	
VERIFY	YES	NO	
VOL	YES	YES	

N/A -- Not Applicable; these commands have meaning only in terms of local use.

Glossary

Address	The physical address of each network node (set on the network card).
ALL	The entire network. This term is typically used in reference to a file's read/write protection status, which can be set variably for the file's owner, owner's group, or ALL.
Application Program	A program or set of programs (system) that performs a specific task (such as work processing), as opposed to an operating system (such as DOS).
AUTOEXEC.BAT	A DOS file containing commands that are automatically executed when DOS is booted.
Backup	The process of copying the contents of a disk or diskette to another disk or diskette for use in the event of lost or damaged media.
Batch File	A file containing a series of commands that are executed when you type the filename.
Batch Processing	The execution of a series of commands that are contained in a batch file.

Boot	To load the operating system into your computer's memory. Also known as load, bootstrap, IPL (initial program load), and reboot.
CD	The DOS CHANGE DIRECTORY command, which is used to display your current directory and also to change your current directory to a different directory.
Current Directory	The directory that you are currently logged onto. This is the root directory of your boot disk until you specify otherwise.
DOS 2.0	Version 2 of the Disk Operating System, which is the first version of that operating system to incorporate a tree-like hierarchical file directory structure.
Filespec	An ambiguous filename that may include the network drive and nodename, drive reference, search path, filename, and filename extension.
Group	A subset of the network established by the network administrator, usually based on departmental organization, or physical proximity in the network. ViaNet's file

protection facilities allow read/write restrictions for files and directories for groups, users and the entire network.

Hierarchical
File System

A file directory system supporting more than a single file directory in a "tree-like" system.

Local User

A person who is using the network but has not logged on with the ACCESS command. Local users do not receive full network privileges.

Log Off

To sign off the network using the LOGOFF command.

Log On

To sign on to the network using the ACCESS command.

Macro

A command statement that calls for additional instructions, such as a directory search path.

Macro Substitution

Technique used by ViaNet software to provide a "shorthand" directory path specification in commands to the network. The MACASGN command is used to create command macro strings for internal substitution in network search paths.

Macname

The name assigned to a MACASGN macro.

Glossary

Y-3

Macstring	The character string being substituted for the macname in a MACASGN macro.
MD	The DOS MAKE DIRECTORY command, which is used to create a subdirectory.
MS-DOS	The Microsoft Disk Operating System.
Node	A computer or other device that is a member of the network.
Node Name	The logical name of the node defined in the node's NETCNF.SYS file.
Network	A group of computers and devices that are physically and logically linked together to share resources and devices.
Network Administrator	The person who is charged with organizing, designing, installing, supervising, and servicing the network operation. Also called the "super-user".
Operating System	The set of programs that run on the computer hardware and interpret software commands.
Owner	The person who "owns" a file. You are the owner of the files that you create.

Path	The directory search path in MS-DOS, which is the route from one directory to another.
PC-DOS	The version of MS-DOS used with the IBM-PC.
R/O (or RO)	Read/Only. Files marked as read only can be viewed but new information may not be written in them. For directories, read only prohibits creation of new files or modification of existing files in that directory.
R/W (or RW)	Read/Write. Files marked as read/write can be viewed and modified. For directories, read/write allows creation of new files and modification of existing files within the directory.
RD	The DOS REMOVE DIRECTORY command, which is used to delete a directory.
Root Directory	The directory that is created automatically during formatting. All subdirectories in the hierarchical directory tree "branch" from this root. The root is indicated by \.
Switch	An optional parameter in a DOS command coded as / and a letter, such as /V to verify.

Username

The name of the user that is typed along with the ACCESS command to log on to the network.

Z:

The network root in ViaNet, a logical drive Z that contains the network hierarchical file directory