Networks • Communications

DECnet–DOS

Getting Started

AA–EV70B–TV

Getting Started

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DECnet–DOS

Getting Started

Order No. AA–EV70B–TV

April 1986

This manual provides an overview of basic tasks that can be performed over the DECnet network. It introduces frequently used DECnet–DOS commands.

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Preface

DECnet–DOS is the collective product name for the set of software communications products that enable individual personal computer systems to communicate with one another, and with other computer systems, in a **network**.

The term DECnet–DOS refers to the following products:

- **DECnet–DOS, Version 1.1** for the IBM PC, IBM PC/XT, and IBM Personal Computer AT personal computers running the IBM PC–DOS Version 2.10 or Version 3.10 operating system.
- **DECnet–Rainbow, Version 1.1** for the Rainbow 100 computers running the Rainbow MS–DOS Version 2.11 operating system.

The term DOS refers to the following operating systems:

- **MS–DOS** running on the Rainbow personal computer.
- **PC–DOS** running on the IBM PC, IBM PC/XT, and IBM PC AT personal computers.

Manual Objectives

DECnet–DOS Getting Started describes the DECnet–DOS software; introduces DECnet–DOS terms, concepts, capabilities, and utilities; and directs the reader to the appropriate manual for more information. This guide does not describe the hardware and software installation procedures. To install DECnet–DOS, refer to the *DECnet–DOS Installation Guide* or the *DECnet–Rainbow Installation Guide*.

The guide assumes that you are familiar with the use of the Rainbow or IBM personal computers, and the MS–DOS or PC–DOS operating system. Throughout this document, the term computer refers to both the Rainbow personal computer and the IBM PC, IBM PC/XT, and IBM PC AT personal computers.

Intended Audience

This manual is intended for users who want to expand the capabilities of their Rainbow and/or IBM personal computers in order to share data and resources with other DECnet systems.

Structure of this Manual

This manual consists of 4 chapters:

- **Chapter 1** introduces the capabilities of DECnet–DOS. It also defines some basic concepts within a DECnet environment.
- **Chapter 2** describes how to set up your personal computer as a node in a DECnet network. It also explains how to create a list of names and addresses for other nodes in the network.
- **Chapter 3** describes how to copy, delete, display and append files on other nodes in the network.
- **Chapter 4** describes how to connect to another node in the network so you can access the resources of that node.

Graphic Conventions Used in This Manual

The following graphic conventions are used in this manual:

Convention	Meaning
`Monospaced type`	Monospaced type indicates examples of system output or user input. System output is in black; user input is in red.
UPPER CASE	Represents acceptable abbreviations, for example **DEL**ETE. The abbreviations are printed as bold characters.
UPPERCASE	Uppercase in commands and examples indicates that you should enter the characters as shown (enter either uppercase or lowercase).
italics	Italics in commands and examples indicate that either the system supplies or you should supply a value.
KEY	Indicates that you should press the specified key. CTRL/*x* indicates that you should hold down the CTRL key while you press the *x* key, where *x* is a letter. Note that unless otherwise specified, you should end every command line by pressing the RET key. On the Rainbow personal computer, this key is labeled **Return**. On the IBM PC and IBM PC/XT this key is labeled ←┘. On the IBM PC AT this key is labeled ←┘ and **Enter**.
. . .	Ellipses in commands indicate that you can repeat the preceding item one or more times.

Associated Documents

You should have the following documents available for reference if you are using a Rainbow personal computer.

- *DECnet–Rainbow Installation Guide*
- *DECnet–DOS Getting Started*, which you are reading
- *DECnet–DOS User's Guide*
- *DECnet–DOS Mini–Reference Guide*
- *DECnet–DOS Programmer's Reference Manual*
- *DECnet–Rainbow Release Notes*
- Any introductory manuals for your computer.

You should have the following documents available for reference if you are using an IBM personal computer.

- *DECnet–DOS Installation Guide*
- *DECnet–DOS Getting Started*, which you are reading
- *DECnet–DOS User's Guide*
- *DECnet–DOS Mini–Reference Guide*
- *DECnet–DOS Programmer's Reference Manual*
- *DECnet–DOS Release Notes*
- Any introductory manuals for your computer.

1
Introducing DECnet–DOS

This chapter introduces DECnet–DOS terms and concepts, and introduces the Network capabilities provided by DECnet–DOS.

1.1 DECnet Terms and Concepts

Digital's DECnet products connect individual computer systems, such as your personal computer, together in flexible configurations called **networks**. Individual systems in a network, called **nodes**, share resources and exchange information, files, and programs.

A different DECnet product exists for each Digital operating system. For example:

- DECnet–VAX for VAX computers running the VAX/VMS operating system.
- PRO/DECnet for Professional computers running the P/OS operating system.
- DECnet–Rainbow for Rainbow personal computers running the MS–DOS operating system.
- DECnet–DOS for IBM personal computers running the PC–DOS operating system.

NOTE

In this guide, the term DECnet–DOS refers to the software on both the Rainbow and the IBM personal computers.

With DECnet–DOS, the user can either connect directly to the Ethernet local area network or to an adjacent routing node. Figure 1–1 illustrates a sample DECnet network.

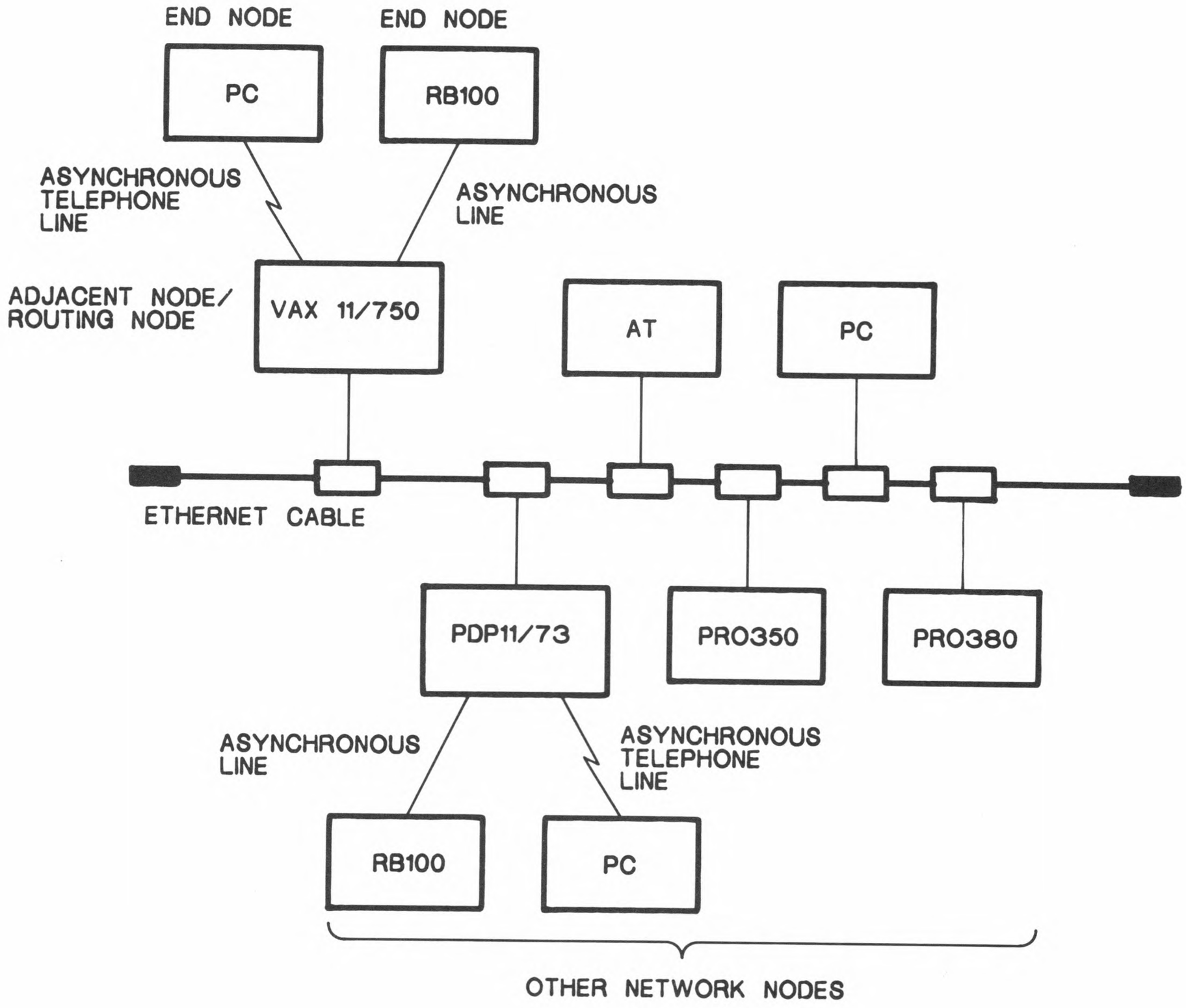

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Figure 1–1: A Sample DECnet Network

Figure 1–1 introduces three terms that define computers in the context of a DECnet network:

- Your personal computer is an **end node**. An end node is connected to another node by a single line.

  The end node may be physically connected to the **adjacent routing node** or directly to the Ethernet local area network.

- A **routing node** is a DECnet node that can receive and forward information from one node to another. A routing node is not limited to routing; it may perform other functions as well.

- All other network nodes, that is, any node including the adjacent node that is not the local node, are called **remote nodes**.

1.2 DECnet–DOS Capabilities

As part of a DECnet network, a DECnet–DOS node can perform the following functions (remember that the term DECnet–DOS refers to both the DECnet–DOS and the DECnet–Rainbow software):

- Exchange information with other nodes in the network.
- Access files (for example, copy, delete and display) on other nodes.
- Obtain information about the network.
- Share resources with another node in the network.

The *DECnet–DOS User's Guide* describes the complete range of DECnet–DOS functions and the utilities provided to perform them.

1.3 What to do Next

The following chapters describe how to perform some of the basic network operations.

2
Preparing to Use the Network

The Network Control Program (NCP) is a DECnet management utility you can use to manage your node's network components and to obtain network information. This chapter introduces the NCP utility. It describes how to:

- start NCP
- correct typing errors
- get help
- give your personal computer a node name
- give names to other nodes that you frequently communicate with
- exit from NCP

You should refer to the *DECnet–DOS User's Guide* for detailed information about NCP. The *DECnet–DOS User's Guide* provides instructions, a summary of NCP commands, and lists of error messages that you may receive while using NCP.

It is recommended that someone be available at your facility to provide information and assistance during installation and network operation. For example, this person could:

- assign node names and addresses at installation
- maintain a list of node names and addresses
- provide help when occasional problems occur during network operation

2.1 Running the Network Control Program

NCP allows you or the person responsible for your network to complete the following network management tasks:

- identify your node to the network
- define other nodes
- monitor the status and activity of nodes
- monitor line and circuit activity

To run NCP from the MS–DOS operating system, type:

```
E>NCP(RET)
```

To run NCP from the PC–DOS operating system, type:

```
C>NCP (ENTER)
```

NCP responds with its own prompt:

```
NCP>
```

You are now ready to use NCP.

2.2 Correcting Spelling and Typing Mistakes

If you make a mistake while entering an NCP command before you press the (RET) key, you can correct it by pressing the delete character key. This key erases one character at a time.

On the Rainbow computer, the delete character key is located above the (RET) key and is marked with an ''X''.

On the IBM computer, the delete character key is located on the top row of keys. It is marked with a left arrow, (←).

If you mistype an NCP command and then press the (RET) key, the DECnet software returns an error message and re-displays the NCP prompt (NCP>). You can retype the command at the NCP prompt.

NOTE

If you find a message difficult to understand, refer to the list of error messages in Appendix A of the *DECnet–DOS User's Guide*. Make sure you type each command according to its specific command format.

2.3 Getting Help

NCP provides a HELP facility that contains information about each NCP command. You can obtain help with a command or operation at any time by typing:

```
NCP>HELP(RET)
```

The system responds with:

```
The HELP command displays information about NCP commands on your screen.

HELP is available for the following commands:

:       @       CLEAR     COPY      DEFINE     EXIT      MONITOR
QUIT    READ    SET       SHOW      ZERO
```

You can also type the name of the specific command you want help with. For example:

```
NCP>HELP CLEAR(RET)
```

The system responds with:

```
HELP is available for the following commands:

CLEAR ACCESS     CLEAR KNOWN     CLEAR EXECUTOR     CLEAR NODE
```

If you want more detailed help on a specific CLEAR command, type:

```
NCP>HELP CLEAR EXECUTOR(RET)
```

The system responds with:

```
Removes specified executor node parameters from the local node's
database. (DDCMP only.)

    RECEIVE PASSWORD      Password the executor node must receive
                          from the adjacent node in order to exchange
                          messages.

    TRANSMIT PASSWORD     Password the executor node must transmit
                          to the adjacent node in order to exchange
                          messages.
```

2.4 Defining Node Names and Addresses

At installation time, the DECnet–DOS Installation Procedure (DIP) directs you to provide node information to identify your node and other nodes in the network. You must use NCP if you need to modify node information or if you need to add new nodes to your network after the DECnet–DOS software is installed.

2.4.1 Defining Your Local Node

You obtain your node address, and in most cases your node name, from the person responsible for coordinating your network activities. This person must keep a list of all node names and addresses to ensure there is no duplication. Each node must have a unique name and address as follows:

- A **node name** is from one to six alphanumeric characters, including at least one alphabetic character. For example:

  ```
  PARIS3
  ```

- A **node address** is a string of numeric characters and must be unique for each node. The node's address includes an area number and a node number. The area number specifies the area in which the node is located, and is in the range of 1 to 63. The node number identifies the specific node within the area, and is in the range of 1 to 1023. The node number is separated from the area number by a period. For example:

  ```
  2.975
  ```

  where 2 is the area number and 975 is the node number.

To enter your node address and name, use the NCP command DEFINE EXECUTOR. For example:

```
NCP>DEFINE EXECUTOR ADDRESS 2.975 NAME RAINBO(RET)
NCP>
```

Figure 2–1 shows what this means for your personal computer.

Three computer terms used in the context of networks are described here:

- **end node** — Your personal computer is an end node.
- **executor node** — The executor node is the node that is running (executing) NCP commands.
- **local node** — The local node is the node you are working on when you enter commands at the keyboard. From now on, this guide refers to either the local node or the executor node. Remember that this reference is to your personal computer.

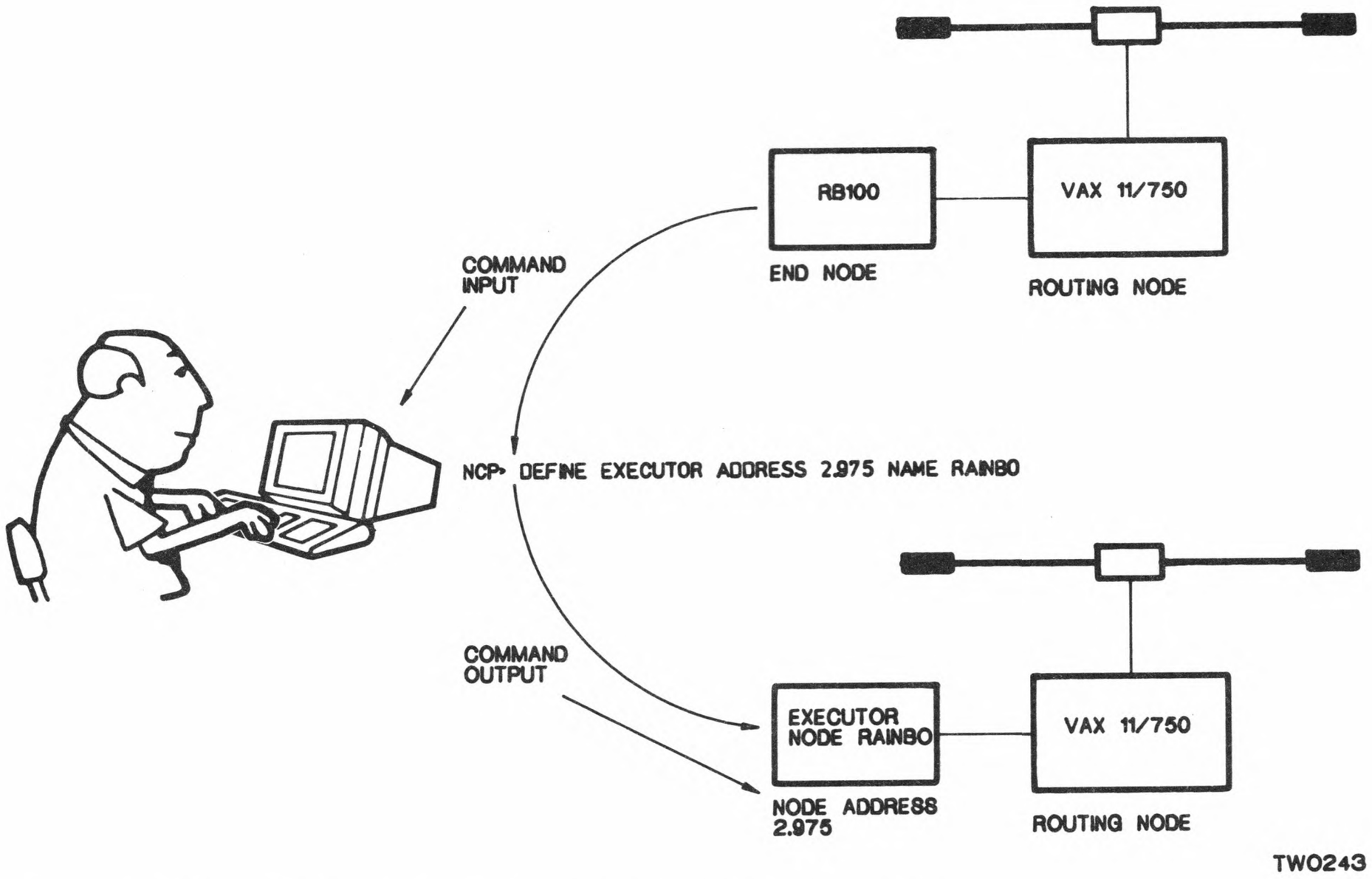

Figure 2–1: Defining Your Node Name and Address

2.4.2 Defining Remote Nodes

Use NCP commands to modify the remote node information you entered during the installation or to add other remote nodes to your network. At the local node, you create a list of the remote nodes that you want to access by name with the privileges of a specific user on that node. This list includes **access control information** that allows you to access a specific node.

When you create a list of remote node names, the following information is required:

- **Node address**

  A numeric string including the area number in the range of 1 to 63, and the node number in the range of 1 to 1023.

- **Node name**

  A character string consisting of 1 to 6 alphanumeric characters including at least 1 alphabetic character.

Access control information allows you to access a specified remote node with the privileges of a specified user. This information includes:

- **User name**

  A character string consisting of 1 to 39 alphanumeric characters that identifies the user at the remote node.

- **Password**

  A character string consisting of 1 to 39 alphanumeric characters.

- **Account**

  A character string consisting of 1 to 39 alphanumeric characters.

Use the SET NODE command to specify remote node information as follows:

```
NCP>SET NODE 2.375 NAME LONDON USER SMITH PASSWORD OPEN(RET)
```

This command assigns the node name LONDON to the node at address 2.375. It also specifies the user name as SMITH and the password as OPEN.

Figure 2–2 illustrates a sample DECnet network. Each node has a specific node name.

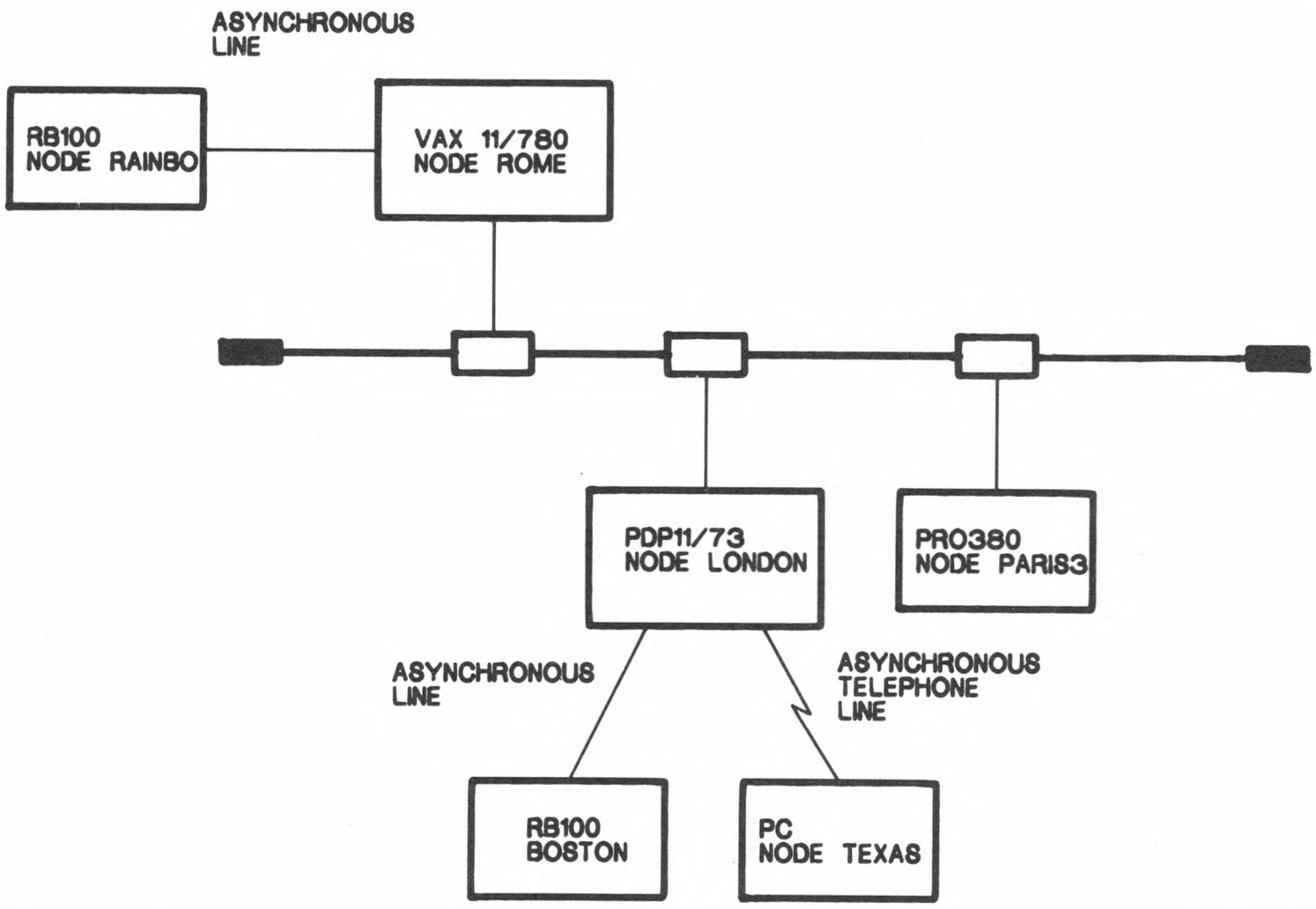

Figure 2–2: Remote Node Names

See the *DECnet–DOS User's Guide* for more information, including, how to display a list of remote nodes as well as adding to or deleting from the list.

2.5 Exiting from NCP

To return to the DOS operating system, type:

```
NCP>EXIT(RET)
```

or press (CTRL/Z) and (RET) at the NCP prompt:

```
NCP>(CTRL/Z) (RET)
```

Both command lines produce the same results.

2.6 What to do Next

Once you define the local and remote node names and addresses, you can run other DECnet–DOS utilities. One of these utilities is called the Network File Transfer (NFT) utility. Chapter 3 briefly describes how you can use the Network File Transfer utility to access files on remote nodes.

3
Accessing Files

The Network File Transfer (NFT) utility allows you to access files located on remote nodes. This chapter describes how you can use NFT to:

- Copy files between the local and remote nodes.
- Delete remote files.
- Display the names of files from remote directories.
- Append files to an existing local or remote file.

This chapter introduces the NFT utility. You should refer to the *DECnet–DOS User's Guide* for a detailed discussion of NFT, a summary of NFT commands, and a list of error messages you may receive when using NFT.

3.1 Using the Network File Transfer Utility

To start the NFT utility from MS–DOS, type the following command at the DOS system prompt:

```
E>NFT(RET)
```

To start the NFT utility from PC–DOS, type the following command at the DOS system prompt:

```
C>NFT(ENTER)
```

The program responds with its own prompt:

```
NFT>
```

You are now ready to use NFT.

3.2 Naming Files

Before you can access any file on another node, you must know how to identify which file you want to work with. A complete file name is a **file specification**.

Networks include nodes that run different operating systems. Each operating system has its own set of rules for naming, or specifying files.

When you copy one of your files (a local file) to a remote node, you must follow the standard DOS operating system format for the local file specification. This format includes:

- A drive name. (This is optional if you are using the default drive name.)
- A path name. (This is optional.)
- A file name of up to eight alphanumeric characters.
- A file type of up to three alphabetic characters, separated from the file name by a period. (This is optional.)

For example:

```
A:\USERS\SUE\SURVEY.CRD
```

3.3 Copying Files

You use the NFT command called COPY to copy files between your node and a remote node.

3.3.1 Copying a File from a Remote Node

To copy a file from a remote node, you must use the correct file specification for that node.

The following example copies a remote file named NEWS.DOC;10 from a VAX node named LONDON to your local node. The remote file is in the directory SMITH on a device named WRIT. The file is given the new name FLASH.DOC when it is copied to the local node.

```
NFT>COPY LONDON"SMITH OPEN"::WRIT:[SMITH]NEWS.DOC;10 FLASH.DOC(RET)
```

You can also let NFT prompt you for the required information. For example:

```
NFT>COPY(RET)
File(s)? LONDON"SMITH OPEN"::WRIT:[SMITH]NEWS.DOC;10(RET)

NFT>
```

You can also copy a file from a remote node to a local node without specifying a local file name. For example:

```
NFT>COPY LONDON"SMITH OPEN"::WRIT:[SMITH]NEWS.DOC;10(RET)
```

By default, the local file is named NEWS.DOC, the same as the original file.

3.3.2 Copying a File to a Remote Node

To copy a file from your local node to a remote node, you must specify the local file name and remote node name. You can also specify the remote file name in a format supported by the remote operating system.

Example 3–1 shows how to copy a local DOS file called SURVEY.CRD to a remote VAX node named BATH.

```
NFT>COPY A:SURVEY.CRD BATH"IRON BOATS"::SCRB:[IRON]WATER.CRD(RET)
```

Local DOS file specification	Node name with access control information	Remote VAX file specification

Example 3–1: Copying to a Remote Node

3.4 Deleting Files

The DELETE command allows you to delete a file.

The following example deletes a file named TEST1.TST;2 from a remote VAX node named GENEVA.

```
NFT>DELETE GENEVA::TEST1.TST;2(RET)
```

3.5 Displaying Directory Information

You use the DIRECTORY command to display a list of files stored in a remote directory. The names are displayed in the format used by MS–DOS.

For example, to list the names of files located on the remote VAX node LONDON, type:

```
NFT>DIRECTORY/BRIEF LONDON::(RET)
```

The system displays:

```
Directory of: LONDON"SMITH password"::SYS$SYSROOT:[SMITH]

APNDXA.DOC;3      CHAP1.DOC;2       CHAP2.DOC;13      DATA.DAT;9
NEWS.DOC;10       MEMO.TXT;1        TEST2.TST;6       TEST3.TST;2
TEXT.DOC;8
```

3.6 Appending Files

To copy one or more local or remote files to the end of an existing local or remote file, use the APPEND command.

For example, to append the remote file FILB.TXT;3, located on the VAX node LONDON, to the local file FILA.TXT, type:

```
NFT>APPEND LONDON"SMITH OPEN"::WRIT:[SMITH]FILB.TXT;3 FILA.TXT(RET)
```

You can also let NFT prompt you for the required information. For example:

```
NFT>APPEND(RET)
File(s)? LONDON"SMITH OPEN"::WRIT:[SMITH]FILB.TXT;3(RET)
To? FILA.TXT(RET)
NFT>
```

The two files are now:

- The local file, FILA.TXT, which includes the contents of FILA.TXT and FILB.TXT;3.
- The remote file, FILB.TXT;3, which is the original copy of FILB.TXT;3 on node LONDON.

When you append more than one file to the end of another file, separate the file specifications with a comma. For example:

```
NFT>APPEND LONDON"SMITH OPEN"::WRIT:[SMITH]FILB.TXT;3,FILC.TXT;2 (LF)
FILA.TXT(RET)
```

When you continue a command line onto a second line, press the (LF) key (on Rainbow computers) or (CTRL/J) (on IBM computers) at the end of the first line.

3.7 Exiting from NFT

To exit from NFT and return to the DOS operating system, type:

```
NFT>EXIT(RET)
```

OR press (CTRL/Z) and (RET) at the NFT prompt:

```
NFT>(CTRL/Z) (RET)
```

3.8 What to do Next

Proceed to Chapter 4 to learn how to log on to a remote node.

4
Logging On to a Remote Node

DECnet–DOS provides a utility that allows you to connect your personal computer to another system called a **host**. The SETHOST utility allows your system to act like (emulate) a VT102 class terminal connected to the host node. This chapter introduces the SETHOST utility. You should refer to the *DECnet–DOS User's Guide* for more information about how to use your personal computer as a VT102 class terminal.

When your personal computer emulates a host terminal, you can perform many standard terminal functions of that host and gain access to the host's resources as if your personal computer were connected directly to the host node.

The host node must support terminal emulation from remote nodes and run Phase IV of the DECnet software on one of the following operating systems:

- VAX/VMS, Version 4.0 or later
- RSX–11M–PLUS, Version 3.0 or later
- RSX–11M, Version 4.2 or later
- Micro–RSX, Version 3.0 or later
- TOPS–10, Version 7.03 or later
- TOPS–20, Version 6.1 or later
- ULTRIX–32, Version 1.1 or later

4.1 Connecting to a Remote Host

To start the SETHOST utility, type:

E>SETHOST *node-name*(RET)

The remote operating system prompts you to enter the necessary information for logging on to the host system. This information usually includes a user name and a password. Refer to the appropriate user's guide for each system to determine the necessary log-on information.

For example, to log on to the VAX node LONDON, type:

E>SETHOST LONDON(RET)

The host system responds with its own prompts for user name and password:

```
Username: Smith(RET)
Password:      (RET)
```

After you enter your name and password (which is not displayed on the screen), the VAX/VMS operating system displays its system prompt:

```
$
```

The host node is ready to execute commands you enter from your personal computer until you disconnect.

4.2 Disconnecting from a Remote Node

You can use one of the following methods to disconnect your personal computer from the host:

- Log off using the standard log-off procedure established for that operating system. This procedure also exits you from the SETHOST utility. For example, to log off the VAX host, type:

  $LOGOUT(RET)

- While holding down the (CTRL) key, press the backslash (\) key, then press the Return (RET) or the Enter(↵) key. This displays the SETHOST menu and allows you to select from the options listed there.

4.3 What to do Next

Proceed to the *DECnet–DOS User's Guide* for an overview of DECnet–DOS capabilities, a glossary of DECnet–DOS terms, and more information about:

- The Network Control Program (NCP) – Setting up your personal computer as a node in a DECnet network, and creating a list of names and addresses for other nodes in the network.
- The Network File Transfer (NFT) utility – Accessing files on other nodes in the network.
- The SETHOST utility – Connecting to another network node in order to access its resources.
- The Network Device Utility (NDU) – Setting up disk drives (Network Virtual Disk Utility) and printing files (Network Virtual Printer) on remote nodes.
- The Network Test Utility (NTU) – Testing network hardware and software.
- The MAIL Utility – Sending messages and text files to other nodes in a network from your local node.
- The File Access Listener – Providing file access, for other users in the network, to the files local to your personal computer.
- Error messages you may encounter when performing DECnet–DOS operations.

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