PCSA

digital ™   # Overview

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Preface

The Personal Computing Systems Architecture (PCSA) is an extension of DIGITAL's systems and networking architecture that merges VMS and DOS environments. The PCSA network may include VAX, MicroVAX, or VAXmate servers running VAX/VMS Services for MS-DOS or VAXmate Services for MS-DOS. It also includes the DECnet/PCSA Client software that runs on PC workstations and on VAXmate workstations. Other PCSA products include the ThinWire Ethernet products and other peripherals, such as the LN03 Plus and the LA75 Companion printers.

DIGITAL's PCSA network fully integrates all the elements of personal and corporate computing required for direct information access and sharing. Thus, it has computing and communication capabilities substantially better than those of conventional PC local area networks (LANs).

Manual Objectives

This book provides an introduction to the PCSA product. It includes:

- General concepts
- Information about the PCSA servers and the services they provide
- Information about PCSA clients and client software
- Information about planning for a PCSA network
- Information about the PCSA documentation and terminology

Intended Readers

This book is intended for PCSA workstation users, system administrators, or anyone interested in an understanding of the PCSA product.

Manual Organization

The following table can help you find information in the PCSA *Overview*.

Chapter	Contents
Chapter 1	Introduces the PCSA product and shows a simplified PCSA network.
Chapter 2	Introduces PCSA servers and the services they provide.
Chapter 3	Introduces PCSA clients and client software, and briefly explains how PCSA clients use the network.
Chapter 4	Includes sample PCSA configurations and explains the hardware needed to implement the configurations.
Chapter 5	Describes the kind of user and system analysis you can do to help plan your PCSA network.
Chapter 6	Provides an overview of the PCSA documentation.
Glossary	Defines PCSA terms.

Conventions Used

In the PCSA documentation:

- The term *workstation* refers to any personal or desktop computer used to communicate over a network and use the services available on that network.

  The term may include the VAXmate computer, the IBM Personal Computer AT, XT, PC, or compatible computers.

- In the Index, tables and figures are indicated by a "t" and "f," respectively.

Chapter 1
Introduction

When the personal computer was first introduced, it provided an opportunity for nontechnical, nonengineering business people, such as managers and administrative personnel, to automate their daily work. Word processors, spreadsheet applications, and other business applications made office and financial work easier. The personal computer made business more efficient.

The major drawback of using early personal computers was the inability to share files except in printed form. To share a spreadsheet, for example, users had two choices:

- Print a copy, walk the printed copy to the user of the second personal computer, and retype on the second personal computer all the information printed from the original spreadsheet.

- Make a copy of the spreadsheet on a diskette, walk that diskette to the user of the second personal computer and copy the data from the diskette to the second personal computer.

Each time a change was made to the spreadsheet, sharing the change could mean retyping the spreadsheet yet again.

The next phase of development for the personal computer was the introduction of a local area network, or LAN, to link PCs together. The function of the PC LAN is to make it possible for PC users to copy and share applications and data electronically over the network.

The PC LAN, however, only linked PCs to other PCs. Personal computer users were still isolated from the rest of the corporate computer users and the corporate computing resources. The PC LAN did not provide access to corporate databases or allow for the sharing of files between PC users and host computer users.

DIGITAL's Personal Computer Systems Architecture, PCSA, provides the solution to integrating PCs into the corporate computing network. With PCSA, PC workstations can connect to the VAX/VMS computers and share data and files with non-PC users on the corporate network. PCSA provides:

- Direct, system-wide access to shared application and data files,

- Direct, system-wide access to physical resources, such as disks, printers, and network gateways

- Centralized management of end-user computing with the benefits of standalone personal computing

- Ability to boot workstations over the network (for VAXmate and PC workstations with DEPCAs only)

PCSA workstation users can have direct access to corporate information and choose to use the familiar PC business applications or the powerful VAX-based departmental business applications. Most importantly, they can can share, edit, and store the same files with other PC and non-PC users throughout the corporation.

PCSA workstations can be:

- VAXmate workstations

- PC workstations with an installed Ethernet controller board

- Standalone VAXmate

Workstations connected to the network and accessing services over the network are called *clients*. Using DECnet/PCSA Client software, clients can connect to a VAX/VMS or VAXmate server over the Ethernet or using asynchronous DECnet.

The *servers* run either VAX/VMS Services for MS-DOS or VAXmate Services for MS-DOS, which provide remote resources to the clients on the network. The remote resources, or services, available to clients in a PCSA network are:

- Virtual disk services, for access to virtual system, application, and user disks (available only with VAX/VMS Services for MS-DOS in a LAN only)

- File services, for access to directories and files stored on the server (available with VAX/VMS Services for MS-DOS and VAXmate Services for MS-DOS in a LAN or WAN)

- Printer services, for network access to printers (available with VAX/VMS Services for MS-DOS and VAXmate Services for MS-DOS in a LAN or WAN)

With file services, workstation and VAX/VMS users can share data throughout the corporate computer network.

Figure 1-1 shows a simple PCSA configuration.

Introduction

Standalone Workstation

Asychronous Communications

Printer Services

File Services

file.txt
file.txt
file.txt
file.txt

Virtual Disk Services

DISK

VAX/VMS Server

Workstations (Clients)

Ethernet Backbone

SNA Gateway
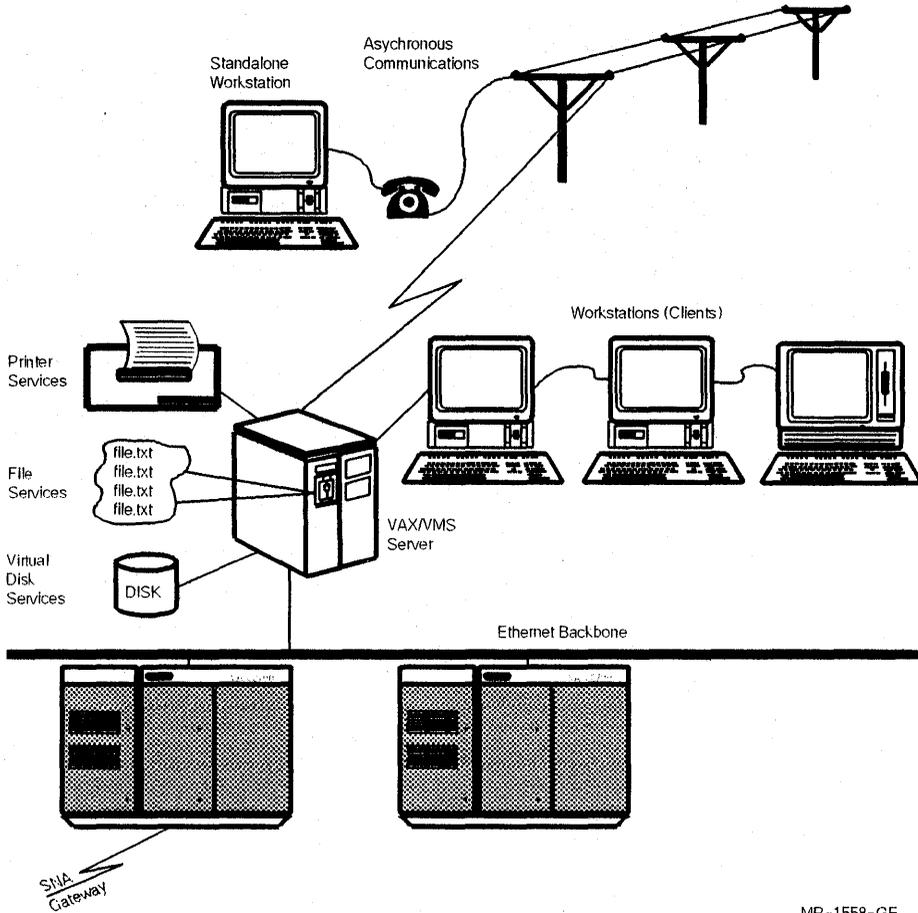
MR-1558-GE

Figure 1-1 A Simplified PCSA Network

Chapter 2
PCSA Servers and Services

The server/client relationship is central to the PCSA network. This chapter describes the different types of PCSA servers and services, how they are managed, and how they are used by workstations in the network.

A *server* is a computer (such as a VAX or a VAXmate) running software that can make the disks, printers, and other devices connected to the computer available as *services* to clients on the network. A *client* is a workstation connected over the network to a server in a PCSA network. There are two kinds of servers in a PCSA network:

- VAX/VMS servers, such as a MicroVAX II or a VAX 8600 computer

- VAXmate servers, running the DOS operating system

Services and features available with these servers include:

- Virtual disk services   Provide access to space on a VAX/VMS disk for use as a DOS-formatted remote disk. (Available only with VAX/VMS Services for MS-DOS.)

- File Services   Provide access to files stored in directories on a VAX/VMS or VAXmate server.

- Printer Services   Provide access to printers connected to a VAX/VMS or VAXmate server.

Not all services are available on each server. When services are available, you can combine them and use them together. For example, in a PCSA network with a VAX/VMS server, users can have virtual disk services, file services, and printer services from the same server. Table 2-1 lists the services and shows on which servers they are available.

Table 2-1   PCSA Servers and Services

Service	VAX/VMS Server	VAXmate Server
Virtual disk services	X[1]	
File services	X	X
Printer services	X	X

In addition to connecting workstations to servers, you can connect servers in a network. For more information on different network configurations you can create to meet the needs of your organization for sharing data and system resources, see Chapter 4.

You can connect both VAXmate and PC workstations as clients in a PCSA network. Each client in the network can use local resources, re-sources connected directly to the workstation, or the resources available as services from a server. The clients request use of a service and the server responds to, or serves, the requests. The client uses the service as if it were local.

The following sections discuss the PCSA virtual disk, file, and printer services. For more detail, see *Using Networks from Your Workstation* and the *VAX/VMS Services for MS-DOS Administration Guide*.

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[1] In a local area network (LAN) only.

Virtual Disk Service

The virtual disk service sets aside space on a VMS disk for clients to access as a DOS *virtual disk*. The virtual disk is like a DOS disk within a VMS disk, as shown in Figure 2-1.

VAXmate Workstation   MicroVAX   VMS Disk

Virtual Disk
within VMS
Disk File

MR-1549-GE
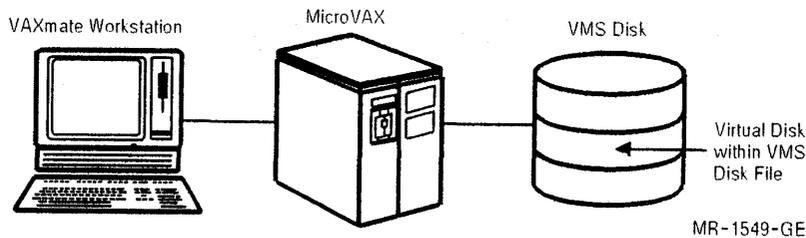
Figure 2-1   Virtual Disk on a VMS Disk

From the client, the virtual disk looks like a DOS-formatted diskette. Users can create, maintain, and delete directories on the virtual disk using DOS commands, just as they create, maintain, and delete directories on local diskettes. The files stored in the virtual disks are DOS data, system, or application files. The size of the files is limited by the size of the virtual disk, which can be up to 32 Mbytes.

Virtual disks can be set up to allow many users at a time to read files on the disk, or to allow only one user at a time to read and write to files on the virtual disk. For this reason, the virtual disk is well suited for:

- Libraries of stable files that many users access for reference, such as applications files, system utilities, and development tools

- Personal directories that are not shared among users

2-3

Many clients can access the virtual disk in the network or network cluster, so fewer users need hard disks installed on their workstations. The virtual disk can provide hard disk capabilities at less-than-hard-disk costs, without loss of speed or productivity.

The virtual disk can provide access to files and data more quickly than a file server. The virtual disk:

- Lets many users read from the disk (as a read-only disk) or lets only one user write to the disk at a time (as a read/write disk)

- Contains only DOS-formatted files that are not shared with VMS users

- Works in a local area network (LAN) configuration only, and does not require the overhead involved in maintaining the disk over a wide area network (WAN)

There are three types of virtual disk services:

- System   Containing PCSA system software, including DOS utilities; PCSA network software; and MS-Windows. This software is shared by clients on the network. A system virtual disk is created during the PCSA client installation procedure.

- Application   Containing executable files for DOS applications that users can share with the appropriate licenses. In this way, one copy of the application software can be distributed to clients over the network.

- User   Containing a user's DOS-formatted files.

Managing the Virtual Disk

The system administrator is responsible for setting up the virtual disk on the VAX or MicroVAX computer. Setting up the virtual disk includes:

- Installing the virtual disk software on the VAX/VMS system

- Setting aside blocks on the VMS disk for the virtual disk

- Registering workstations with the virtual disk server

- Setting user read/write access to the disk

- Making the virtual disk available to users

The system administrator also:

- Maintains the disk, including monitoring traffic and use, so the disk is not overloaded

- Performs backups of the data stored on the virtual disk

In the event of a failure, the data stored on the disk can be restored as a whole in the same way as VMS files.

With the system administration management utility, PCSA_MANAGER, the system administrator sets aside blocks on the VMS disk for the virtual disk. The size available to the virtual disk is variable, and can be set and changed using PCSA_MANAGER.

To DOS, the virtual disk looks like a diskette. The system administrator configures a user's workstation as a client and assigns DOS drive identification letters to the virtual disk. A workstation can be connected to a maximum of four virtual disks. The drive assignments for the virtual disk are dependent on:

- Hardware configuration (how many diskette drives and hard disk drives are available on the client)

- The number of hard disk partitions

- How RAM disks are defined

- The order in which the available device drivers are listed in the client configuration file, CONFIG.SYS.

Table 2-2 shows two examples of DOS drive identification letters assignments: one for a client with a hard disk and one for a client without a hard disk. The assignments depend on how a workstation is configured. In the examples, "unassigned" drives could be used for file services.

Table 2-2   Sample PCSA Drive Identification Assignments

Drive ID	Without Hard Disk	With Single-Partition Hard Disk
A:	Diskette drive	Diskette drive
B:	Diskette drive	Diskette drive
C:	Virtual disk drive 1	Hard disk
D:	Virtual disk drive 2	Virtual disk drive 1
E:	Virtual disk drive 3	Virtual disk drive 2
F:	Virtual disk drive 4	Virtual disk drive 3
G:	RAM disk	Virtual disk drive 4
H:	Unassigned	RAM disk
I:	Unassigned	Unassigned
J:	Unassigned	Unassigned
K:	Unassigned	Unassigned
L:	System directory	System directory
M:	Personal directory	Personal directory
N:	Common directory	Common directory
O:-Z:	Unassigned	Unassigned

Access to the virtual disk is restricted to DOS users. In addition, the system administrator can control access to the virtual disk service by:

- Assigning a password to the virtual disk, which users must provide to read files from or write files to the disk

- Limiting the number of sessions that can use the virtual disk at one time

- Assigning read-only or read/write access to clients according to the users' needs

For additional information on security and ensuring the integrity of data stored on the virtual disk, see the *VAX/VMS Services for MS-DOS Administration Guide*.

Mounting the virtual disk makes it available to users and assigns it a service name. The *service name* is the virtual disk file name. Users identify the virtual disk they want to connect to by the service name.

Using Virtual Disk Services

To access virtual disk services, a user:

1. Starts the network with the NET START RDR command.

2. Connects to the service with the NET USE command.

   NOTE
   The AUTOUSER.BAT file, which includes configuration in-
   formation for a user, can contain the NET START com-
   mands needed to access a virtual disk.

For information on using the network from a client and on using the net-
work commands, see *Using Networks From Your Workstation.*

After connecting to the virtual disk, users can change among the diskette,
hard disk, and virtual disk drives by typing to the disk drive identification
letter or, from MS-Windows, by clicking on a drive icon. They can store,
rename, copy, and delete files in the virtual disk directories and between
directories on the virtual disk, hard disk, and diskette using DOS
commands.

   NOTE
   You can access PCSA virtual disk from an workstation
   using the asynchronous DECnet-DOS NDU utility. For in-
   formation on the NDU utility, see the *DECnet-DOS User's
   Guide.*

File Services

A *file service* lets users connect to and use directories, subdirectories, and
files on a VAX/VMS or VAXmate server to clients. A file service lets
clients share VAX/VMS or VAXmate directories and subdirectories in a
LAN or WAN. The file service is like a window that lets users display and
work with the records and files stored on the server, as shown in
Figure 2-2.
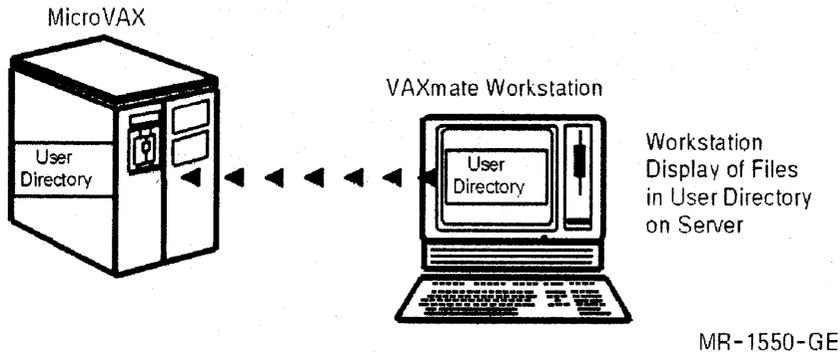
Figure 2-2   PCSA File Service

There are four types of file services that can be made available to clients:

- **System**   Containing PCSA system software, including DOS utilities; PCSA network software; and MS-Windows. This software is shared by clients on the network.

- **Common**   Containing data and text files that users can share and update.

- **Application**   Containing executable files for DOS applications that users can share, according to the licenses. In this way, one copy of the application software can be distributed to clients over the network.

- **User**   Containing users' files

To the client, file services look like local DOS drives. Users can move between VAX/VMS or VAXmate file services and workstation drives: in DOS, they use DOS commands and in MS-Windows, they click on the drive icon. In addition, users can create, maintain, and delete files in the

remote directory just as they create, maintain, and delete files in the local directory.

Because VAX/VMS file services are VMS directories and subdirectories that the DOS user can access, the directories can include both VMS-formatted files and DOS-formatted files. Users can move among the VMS subdirectories using DOS commands. When displaying the contents of a VMS directory at the client, only files whose names conform to DOS file naming conventions are recognized. All file names in the file services must conform to DOS file-naming conventions.

The file services can handle files larger than 32 Mbytes. In addition, many users can read and write to the directory at the same time. File services allow for corporate-wide access to data over a WAN or a LAN, with the data shared in a file service accessible to VAX/VMS users as well as PCSA clients. For these reasons, the file service is well suited for sharing data and text files:

- Among clients for updates and reference
- Among DOS and VAX/VMS users
- Stored in personal directories in a VAX/VMS account
- With users in an accessible WAN

The system administrator is responsible for setting up both the VAX/VMS file services and the VAXmate file services.

Setting up the VAX/VMS file server involves:

- Installing the file services software on the VAX/VMS system
- Registering workstations with the file server
- Setting up the file services, such as creating the common directory or personal directories for clients in the network
- Assigning a service name to the file service for clients accessing the directory
- Setting user read/write access to the directory
- Starting and stopping the file server, as appropriate

The system administrator or the VAX/VMS system manager maintains the file services by performing routine backups. In this way, user data and text files are protected. Users no longer have to back up data from either the local hard disk or diskettes.

For more information on managing the VMS-based file services, see the *VAX/VMS Services for MS-DOS Administration Guide.*

For the VAXmate server, setting up the DOS-based file service involves:

- Installing the file services software on the DOS system

- Setting up the file services, such as creating the common directory and personal directories for clients in the network, and assigning aliases and passwords to the directories

- Assigning a service name to the file service for clients accessing the directory

- Setting user read/write access to the directories

- Starting and stopping the file service, as appropriate

The system administrator maintains the file services by performing routine backups. In this way, the user data and text files are protected, and users no longer have to back up data from the local hard disk or diskettes.

For more information on using VAXmate file services, see the *VAXmate Services for MS-DOS Administration Guide.*

Printer Services

A *printer service* lets users connect to and use printers connected to a VAX/VMS server or VAXcluster in a LAN or WAN, or to a VAXmate server in a LAN. Users can send data or graphics from DOS, MS-Windows, or applications to the printer service, as shown in Figure 2-3.

Printer

MicroVAX
Server

VAXmate Workstation

MR-1551-GE
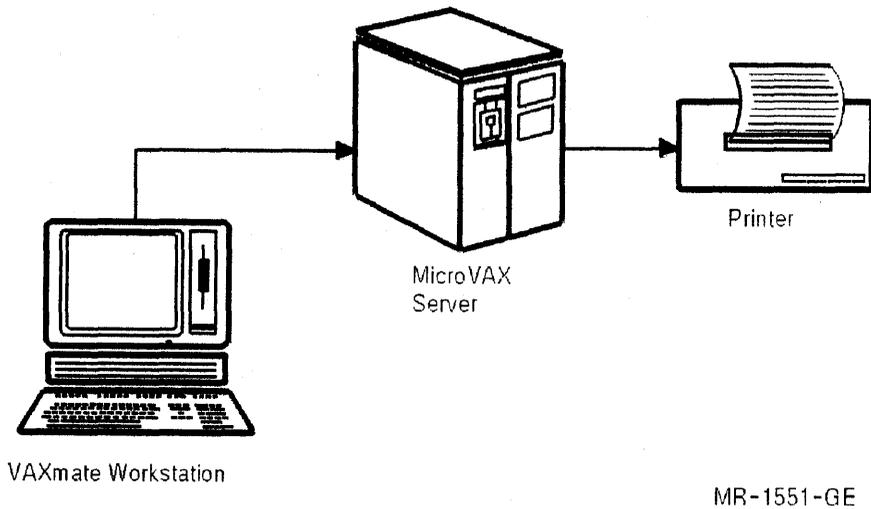
Figure 2-3   PCSA Printer Services

The system administrator is responsible for setting up remote printing for the printer services according to the operating system in use.

On a VAX/VMS server, the system administrator:

- Creates a VAX/VMS print queue

- Defines forms for the VAX/VMS print queue

- Assigns a service name to the printer services

- Defines user access to the printer services

On a VAXmate server, the system administrator:

- Sets up the printer connections using the MS-DOS MODE commands

- Assigns a service name to the printer services

- Defines user access to the printer services

Using File and Printer Services

For users, accessing the file and printer services is like using local directories and printers. To access the file and printer services, the user:

1. Starts the network with the NET START RDR command.

2. Connects to the service with the NET USE command.

For information on using the network and the NET USE commands to access and use remote directories and printers, see *Using Networks From Your Workstation* and the *Printing Guide*.

After connecting to printer services, users can send files to the remote printer from:

- DOS, using the NET PRINT command

- MS-Windows, using the MS-DOS Executive window Print command

- Applications, using the application printing commands

Chapter 3
PCSA Clients

The PCSA network supports the following kinds of workstations running PCSA client software:

- VAXmate workstations

- PC workstations with a DEPCA or other supported Ethernet controller boards installed or connected to the network using asynchronous communications

- VAXmate or PC workstations connected to the network using asynchronous DECnet.

    NOTE
    For a list of supported Ethernet controller boards, see the Software Product Description (SPD 55.07.XX).

Workstations can use local printers, files, applications, and other local resources that are available to the workstation as a standalone personal computer. More importantly, these workstations can connect to the network as clients to use printer services, file services, and virtual disk services, and to share files and applications available from servers on the network.

Users can connect to a server, copy files from the server to the workstation, and run the applications from the workstation as if it were a standalone personal computer.

This chapter describes the workstation environment, including:

- Workstation software and desktop applications
- Terminal emulation
- Configuring a workstation
- Using the network from a workstation

Workstation Software

You can use applications and run programs accessible from your workstation using either the DOS or the MS-Windows user interface. When configuring your workstation, the system administrator chooses either DOS or MS-Windows for your user interface. Then, when you start your workstation, either the DOS prompt or MS-Windows is displayed as your first screen. While you are working, you can move easily between DOS and MS-Windows.

The following sections describe the DOS and MS-Windows user interfaces. Additional information on using DOS and MS-Windows is available in the *MS-DOS Reference Manual,* the *DOS Enhancements Guide,* and the *MS-Windows User's Guide.*

The DOS Operating System

The DOS operating system provides a command-line user interface to the applications and programs that run in the DOS environment. Using DOS commands, you can perform a number of different tasks, for example:

- Start MS-Windows
- Connect to the PCSA network servers and services
- Print files on either local or remote printers
- Create, edit, copy, rename, and delete DOS files stored in directories on diskettes, hard disks, virtual disks, and file service directories on either a VAX/VMS or VAXmate server
- Run DOS-based applications located on the workstation or on a server
- Create programs to run in the DOS environment or in MS-Windows

While you can use most DOS commands from either the DOS prompt or while using MS-Windows, some commands you must use only from the DOS prompt. For more information, see the *MS-DOS Reference Manual* or the *MS-Windows User's Guide*.

MS-Windows

MS-Windows provides a window-oriented user interface to DOS, and to the applications and programs that run in DOS. With MS-Windows, you can display multiple tasks in different windows on the screen, and switch between tasks simply and easily by clicking on the mouse button or pressing keys. The drop- down menu, and the ability to switch applications by pointing to them and clicking on the mouse button, means you do not have to type many commands or memorize command formats. Figure 3-1 shows a typical MS-Windows screen displaying multiple applications.
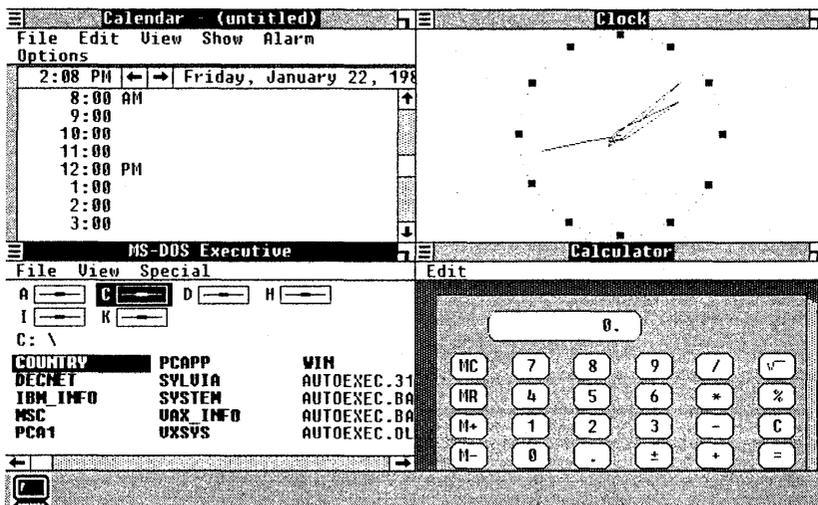

Figure 3-1   Sample MS-Windows Screen

In addition to letting you display multiple applications on the same screen, you can perform many of the same tasks as from the DOS prompt. With MS-Windows, you can also:

- Connect to the PCSA network servers and services

- Use the Configuration Aide to define PCSA network connections you often make to automate the process of connecting to services

- Print files on either local or remote printers

- Create, edit, copy, rename, and delete DOS files stored in directories on diskettes, hard disks, virtual disks, and file service directories on either a VAX/VMS or a VAXmate server

- Run applications stored on the workstation or a server

- Use the Notepad desktop application to create programs to run in the DOS environment or in MS-Windows

There are some DOS commands that you can only use at the DOS prompt. For more information, see the *MS-Windows User's Guide.*

MS-Windows comes with desktop applications that you can run. Table 3-1 lists the MS-Windows desktop applications and their functions.

In addition to the desktop applications that come with MS-Windows, you can install and use applications designed for the DOS and MS-Windows environments. You can start many of these applications from MS-Windows, exit from them, and return to MS-Windows easily. Some applications make use of the MS-Windows menu format and commands. Others you can start from MS-Windows, but they do not let you use some MS-Windows features, such as drop-down menus. For more information about how to use DOS commands and applications in MS-Windows, see your DOS user's guide and the MS-Windows *User's Guide.*

Table 3-1   MS-Windows Desktop Applications

Application	Function
Calculator	Works like a hand-held calculator with basic arithmetic and memory functions.
Calendar	Provides a desktop calendar or appointment book format that lets you enter, display, and edit appointments for each day. Lets you display the appointments listed for a selected day of a selected month.
Cardfile	Organizes information, such as names, addresses, and phone numbers into a file of alphabetical cards. Lets you create, edit, sort, and work with the cards in a file.
Clipboard	Provides a cut-and-paste buffer you can use to transfer data between applications.
Clock	Acts as a standard clock and shows the current time.
MS-Paint	Lets you create, edit, save, and print artwork using icons instead of typing commands.
Notepad	Lets you create, edit, and display text files.
Reversi	Provides a game you can play against the workstation.
VT220	Lets you work with a host computer as if you were using a VT220 terminal.

Terminal Emulation

You can use your workstation as if it were a DIGITAL terminal connected to a host computer. For example, when you use your workstation to emulates a VAX/VMS terminal, you can perform standard terminal functions, access resources connected to the VAX host computer, and use the DEC Multinational Character Set.

From DOS

At the DOS prompt, you can use the SETHOST utility to use your workstation as if it were a VAX terminal. SETHOST provides:

- VT240-style terminal emulation on a VAXmate workstation

- VT220 emulation, outside MS-Windows, on PC workstations

Each time you use the SETHOST utility to log into a VAX/VMS account, you create a network connection called a *session*. With SETHOST, you can create and maintain up to four sessions at a time. On a VAXmate workstation, SETHOST supports full ReGIS graphics capabilities.

You can create a session to communicate with a VAX/VMS host computer using a serial communications port for asynchronous communications, or directly through the Ethernet using:

- LAT   A local area transport protocol that communicates only over the Ethernet. LAT supports transparent application network session interfaces.

- CTERM   A virtual terminal protocol for a wide area network that communicates over the Ethernet and asynchronous DECnet links.

For more information on SETHOST, see the *DECnet-DOS User's Guide*.

From MS-Windows

From MS-Windows, you can use the VT220 emulator application. The MS-Windows VT220 emulator application uses the LAT protocol for local area communications over the Ethernet and asynchronous communications by way of the serial communications port. Using the VT220 emulator

application, you can display the VT220 emulator application in more than one window.

Table 3-2 lists the features and differences between the styles of terminal emulation.

Table 3-2   Terminal Emulation Functions

Function	VT220	SETHOST (VT240) on VAXmate Workstations	SETHOST(VT220) on PC Workstation
Runs within MS-Windows	Y	N	N
Multiple sessions running	N[1]	Y	Y
Scripting	Y	Y	Y
ReGIS graphics	N	Y	N

Configuring the Workstation

In a PCSA network environment, the system administrator is usually responsible for configuring workstations and creating network key disks or key diskettes. Users *boot*, or load DOS and necessary files on the workstation and start it up, with the network key disk, key diskette or hard disk.

Using the MS-Windows Configuration Aide, the system administrator creates four files that are used to boot the workstation:

- CONFIG.SYS   Workstation profile
- AUTOEXEC.BAT   Workstation profile
- AUTOUSER.BAT   User profile
- WIN.INI   User profile

By separating information that configures the workstation from information that customizes a workstation to meet a user's preference, multiple users can share a single workstation, and any one user can work on more than one workstation.

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[1] You can display more than one VT220 application in different windows. Each application is one session of the VT220 emulator.

The CONFIG.SYS contains workstation-specific information, such as the device drivers that are loaded for the workstation. The CONFIG.SYS file is automatically loaded when the user boots the workstation.

The AUTOEXEC.BAT file contains workstation-specific information for using the workstation as a PCSA client. Specifically, the AUTOEXEC.BAT file contains information about:

- The workstation node name and address

- Whether the workstation is a VAXmate or PC workstation

- Whether there is a hard disk installed on the workstation

- The location of the system directory the workstation accesses

- The kind of Ethernet controller board used by the workstation

- Whether the workstation can be used for MS-Windows

- Country-specific information, such as the country name and character set type, to set up DOS country parameters

- Any optional devices or commands to be added to the CONFIG.SYS file

- The network switches for the workstation to use

When a user boots a workstation, the AUTOEXEC.BAT file runs and configures the workstation. After the file completes processing, it either issues an AUTO-LOGIN command, to run the AUTOUSER.BAT file automatically, or prompts the user to type LOGIN at the DOS prompt, which makes a connection to the service on which the AUTOUSER.BAT file is stored and runs the file.

Autologin is useful when one user always works at the same workstation. Requiring the user to type LOGIN at the DOS prompt separates the user configuration information from the workstation configuration information, so more than one user can boot and use the same workstation.

The AUTOUSER.BAT file contains information about a user's working environment. Specifically, the AUTOUSER.BAT file contains information about:

- Connections to remote printers

- Connections to file services

- Connections to virtual disk services

- Whether the user wants to run MS-Windows

- Whether the user wants to connect to a common directory or applications directories

- Directories to add to the MS-Windows search path

- Directories to add to the MS-Windows application append path, for application-specific files

- Any optional startup commands to add to the AUTOUSER.BAT file

- Whether MS-Windows or DOS starts as the user interface

The WIN.INI file contains information about how the user works with MS-Windows. The WIN.INI file includes:

- Any application the system starts with MS-Windows

- Any application to load as icons when MS-Windows starts

- If you want to add to the file extension mapping list

The system administrator stores the CONFIG.SYS and the AUTOEXEC.BAT files on a key diskette or network key disk for each workstation. In addition, the system administrator can add the AUTOUSER.BAT and the WIN.INI files to the key diskette or network key disk. (On the key disk or diskette, the AUTOUSER.BAT file is called USER.BAT.)

A *network key disk* is a virtual disk that downline loads system files to the workstation over the network. When you use the network key disk to boot your workstation, the process is known as a *remote boot*. Your system administrator can create your network key disk so you can boot from it automatically or manually.

A key diskette is a diskette on which the system files and other startup are stored. You the key diskette to boot the workstation from the diskette drive. Your system administrator can also create the key diskette so that you can copy the information from the key diskette to your hard disk.

More information about network key disks and key diskettes is available in the *Using Networks from Your Workstation*.

Using the Network from a Workstation

Using the network from a workstation can be looked at from three perspectives:

- How clients and applications communicate in the PCSA network
- How users access services on the PCSA network

How Workstations and Applications Connect to the Network

How clients and applications use the network involves:

- How client can access the PCSA network
- How programs can make use of the PCSA network software
- Workstation hardware for accessing the network

Clients, and the applications that run on them, can connect to the PCSA network in two ways:

- Ethernet DECnet communications

  For departmental, office environments. The PCSA network implements the DIGITAL Ethernet network strategy.

- Asynchronous DECnet communications

  Connects remote workstations to a network over telephone lines, leased lines, or through a dial-up or integral modem.

Ethernet provides a high-speed communications interface for local area networks, which is unavailable in an asynchronous WAN. Some of the services offered by PCSA networks either require or are optimized for use over high-speed Ethernet. For example, virtual disk services can be accessed by the Ethernet or by using asynchronous DECnet. However, the performance of asynchronous access to virtual disk services may not be acceptable for all applications. Table 3-3 compares the PCSA services available using Ethernet and asynchronous communications.

Table 3-3   Ethernet and Asynchronous Services

Service	Ethernet	Asynchronous DECnet
Remote file services	Y	Y
Remote printer services	Y	Y
Virtual disk	Y	Y (NDU only)
Boot using network key disk	Y	N
Terminal emulation	Y (LAT and CTERM)	Y (CTERM only)

Programming with PCSA

For programmers, PCSA network software provides standard and DIGITAL proprietary interfaces underlying the network. The network applications interfaces are provided by:

- DECnet socket library

- MS-NET session interface (interrupt 2A)

- NETBIOS session interface (interrupt 5C)

- Direct access to datalink layer (interrupt 6D)

The session interfaces for applications running in a network environment make it possible to design applications that work transparently with the PCSA network software.

For more information on designing applications that use the PCSA network, see the *DECnet-DOS Programmer's Reference Guide* and the *VAXmate Technical Reference Manual.*

Hardware Considerations

VAXmate workstations include a built-in Ethernet controller that makes it possible for the workstation to communicate on a high-speed Ethernet network. For other workstations, you must install either the DEPCA Ethernet controller board from DIGITAL or one of the supported Ethernet controller boards, such as a 3Com or MICOM-INTERLAN NI 5010 Ethernet board, listed in your Software Product Description (SPD 30.50.XX).

The DEPCA provides advantages over other supported Ethernet controllers, including:

- Support for high-performance, multibuffered architecture to work with VAX/VMS servers

- Ability to boot workstations from a network key disk

The DEPCA has buffers that allow for efficient, high-speed communications from a VAX computer. Other Ethernet controllers must immediately process any data as it is received. During the processing, any additional data that is sent to the workstation can be lost and must be retransmitted by the VAX computer. This constant retransmission of data can affect the performance of both the workstation and the server. When communicating with a high-speed VAX, the DEPCA can begin to process the initial data received and buffer any additional data received. Little data is lost, so fewer retransmissions are required. In this way, the DEPCA provides increased performance over other Ethernet controllers in a DECnet.

With the DEPCA, users can boot their workstations using network key disks. Other Ethernet controllers do not provide the same capability.

How Users Access Services on the PCSA Network

The PCSA network software includes a set of network commands that let you work with and manipulate your network connections. In addition, because the PCSA network is part of the DECnet Network Architecture, you can use DECnet network commands to work with the network.

Using PCSA and DECnet network commands, you can connect to virtual disk services, file services, and printer services to create, use, delete, and print files over the network, and control your use of your PCSA network connections.

In your AUTOUSER.BAT file, you can include network commands to set up automatically connections to virtual disk, file, or printer services you use often. In addition, you can connect to other resources available to you on the PCSA network, as needed. Either way you connect to a service, it works as if it were local.

For more information on network commands, see *Using Networks from Your Workstation.* For more information on virtual disk, file, and printer services, see Chapter 2 in this overview, *Using Networks from Your Workstation,* or the *VAX/VMS Services for MS-DOS Administration Guide.*

Chapter 4
Sample PCSA Configurations

Most PCSA networks are installed as additions to an existing DIGITAL network, in either a DECconnect or non-DECconnect environment. You should find out from your network manager what kind of network system is available for your building. For an explanation of the DECconnect environment, see "PCSA Configurations with the DECconnect System" in this chapter. For an explanation of non-DECconnect environment, see "PCSA Configurations without DECconnect System" in this chapter.

Whichever environment you are installing your PCSA network in, advanced planning can help ensure a successful installation. This chapter provides some sample hardware configurations for both DECconnect and non-DECconnect environments, and some general information to help you choose the correct hardware components for your network needs.
For each environment, some sample configurations are shown, accompanied by a discussion of the features and benefits of each configuration, and the network hardware and tools you should have on hand to make your PCSA network installation successful.

The configurations included are samples only. Your configuration can differ depending on your needs and the network into which you are connecting the PCSA network.

The sample configurations use specific network hardware, which are listed and defined in Table 4-1. Your configuration can require other, similar network hardware.

Table 4-1   Network Hardware Terminology

Term	Definition
Barrel connector	A female connector for connecting two sections of Ethernet coaxial cable.
DELNI	DIGITAL Ethernet Local Network Interconnect — A device with eight ports for connecting VAX computers or terminal servers to an Ethernet network.
DEMPR	DIGITAL Ethernet Multiport Repeater — A device with eight ports for connecting coaxial cable to an Ethernet network.
DEPCA	DIGITAL Ethernet Personal Computer-Bus Adapter — An Ethernet controller board for connecting PC workstations into the PCSA Ethernet network.
DEQNA	DIGITAL Ethernet Q-bus Network Adapter— An Ethernet communications controller for connecting VAX computers based on the Q-bus hardware to the Ethernet network.
DESPR	DIGITAL Ethernet Single-Port Repeater — A device with one port for connecting coaxial cable to an Ethernet network
DESTA	DIGITAL Ethernet Station Adapter — A device that connects transceiver cable to a DECconnect faceplate or a T-connector designed for ThinWire Ethernet connections.
DHV11	A serial multiplexer to connect printers and terminals to the VAX or MicroVAX computer.
Faceplate	A wall plug that provides a single network connection point for office communication equipment in the DECconnect System.

Table 4-1   Network Hardware Terminology (cont.)

Term	Definition
H4000	A tap on the the Ethernet backbone that connects Ethernet devices, such as a DELNI, to the Ethernet network.
T-connector	A device used to join ThinWire Ethernet cable sections and a workstation or other single, addressable device on a local area network.
Terminator	A device for a T-connector with one wire connecting to the T-connector and no other wire going from it. The terminator is used to provide the 50 ohm termination resistance needed for the cable.
ThinWire Ethernet	DIGITAL IEEE 802.3 compliant coaxial cable for local area networks.

VAXmate workstations have all the necessary networking hardware built in. When you order a VAXmate workstation, your order includes the ThinWire assembly kit, licenses, and the following network hardware:

- ThinWire Ethernet cables
- ThinWire Ethernet T-connectors
- ThinWire Ethernet terminators

The PC workstation Network Integration Kit provides a DEPCA board required to connect PCs to the DIGITAL network. The DEPCA is available with either ThinWire Ethernet cable assembly or standard Ethernet cable assembly.

All necessary hardware is included in the Network Integration Kit. Each Network Integration Kit you order includes:

- DECnet/PCSA client license
- DEPCA board
- ThinWire Assembly Kit (with ThinWire Ethernet cables, T-connectors, and terminator)
- DIGITAL mouse (DEPCA-K* kit only)
- DIGITAL keyboard (DEPCA-K* kit only)

For more information on the DEPCA, see the *DEPCA Owner's Manual.*

When you are connecting a PC workstation with a supported Ethernet controller other than a DEPCA, see your Ethernet controller hardware documentation for information on configuration and switch settings.

To connect a PC workstation using asynchronous DECnet to a PCSA network, you must have an asynchronous communications controller installed on the workstation.

Before you install PCSA server software and configure your PCSA network, you should be sure that all prerequisite software is available on your servers and your network. The software required to install a PCSA network using a VAX/VMS server includes:

- VAX/VMS
- DECnet-VAX

To connect a VAX or MicroVAX as a server in the PCSA network, you need a DESTA. The VAX or MicroVAX connects to the DESTA using transceiver cable. You must have enough transceiver cable available.

To connect a VAX or MicroVAX as a server in the PCSA network and to connect to the Ethernet backbone, you must have a DEMPR or a DESPR.

In addition, to connect to an H4000 for access to an Ethernet backbone, you must have:

- A BA upgrade board installed
- AUI transceiver cable
- AUI connector/bracket assembly

PCSA Configurations with the DECconnect System

The optimal network environment to use for installing PCSA servers and clients is the DECconnect System, a comprehensive approach to network integration. DECconnect offers a simple, yet flexible, network configuration strategy.

The DECconnect faceplate provides the single connection point for workstations and other office automation equipment. ThinWire Ethernet coaxial cable, which is fully compatible with DIGITAL standard Ethernet products, can be connected directly into the DECconnect faceplate.

For more information on DECconnect and ThinWire Ethernet, see any of the following books:

- *PCSA Network Management Guide*

- *DECconnect System Planning and Configuration Guide*

- *Personal Workstation ThinWire Network Configuration Guidelines*

Sample PCSA Configurations
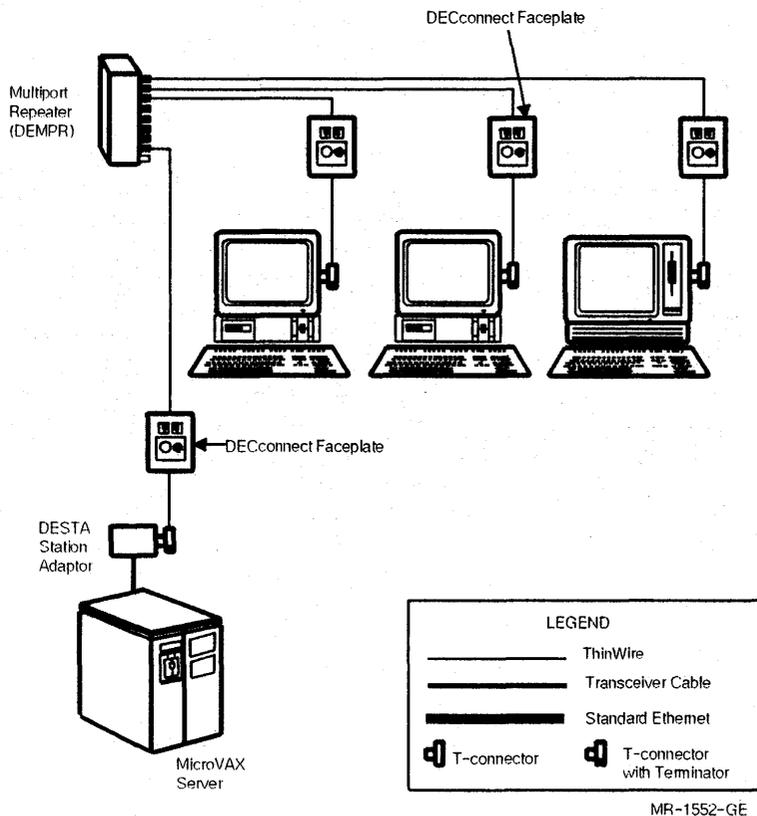
Figure 4-1   Basic DECconnect Faceplate Configuration

Basic DECconnect Faceplate Configuration

Figure 4-1 shows a simple PCSA configuration using the DECconnect System. In this installation, the PCSA network is configured for a department or workgroup. Users can access application software, databases, and files stored on a virtual disk or in file service directories.

This configuration does not allow access to the Ethernet backbone. For a DECconnect PCSA configuration providing access to the Ethernet backbone, see the section *DECconnect Faceplate with DELNI Configuration* in this chapter.

Features

A DEMPR lets you connect up to eight workstations to a single VAX/VMS server system.

The VAX/VMS server connects to the network with transceiver cable. The DESTA connects the transceiver cable to the ThinWire Ethernet cable used in the DECconnect System. In this way, you can connect the VAX or MicroVAX computer into an installed DECconnect faceplate.

A VAXmate server connects directly to an installed faceplate.

Benefits

This configuration is very easy to install. It can be installed quickly and then modified and expanded, so users can become productive quickly.

Planning

Before installing the simple PCSA workgroup configuration into a DECconnect System, be sure you have ordered:

- DEMPR — for connecting additional workstations, terminals, and printers.

- Terminators for the DESTA T-connector.

- ThinWire Ethernet cable — long enough to connect your workstations to installed DECconnect faceplates, and to connect the DESTA and the faceplate to the VAX or MicroVAX server.

- Transceiver cable — long enough to cover the distance between the VAX/VMS server and a DESTA.

Sample PCSA Configurations

DECconnect Faceplate

DEMPR

Loopback
Connector

DELNI

MicroVAX
Server

LEGEND

ThinWire
Transceiver Cable
Standard Ethernet
T-connector   T-connector
with Terminator

MR-1553-GE
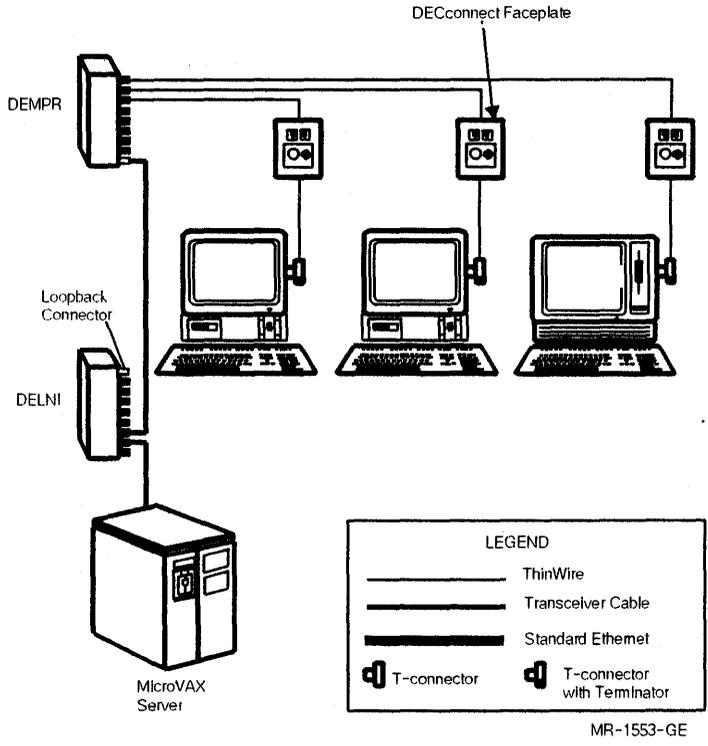
Figure 4-2   DECconnect Faceplate with DELNI Configuration

DECconnect Faceplate with DELNI Configuration

The sample configuration shown in Figure 4-2 allows access to the Ethernet backbone for access to the corporate network.

Features

A DEMPR lets you connect up to eight workstations to a single VAX/VMS server.

The DELNI connects the DEMPR and the VAX/VMS server. The DELNI has eight ports: seven male and one female. The female port is known as the *global port,* which is the port used to connect to an Ethernet backbone. In a configuration in which the DELNI does not attach to the Ethernet backbone, you must connect a loopback connector to the global port. You can use the loopback connector that comes with the DEMPR on the DELNI.

The VAX/VMS server connects to the network with transceiver cable.

Benefits

This configuration is easy to install and expand when needs increase. The major benefits of this configuration are that it connects users to the computer network and, potentially, to a world-wide network.

Planning

Before installing the PCSA workgroup configuration with DELNI and DEMPR, be sure you have ordered:

- DELNI — to connect a terminal server, VAX or MicroVAX computer, and DEMPR together in the network.

- DEMPR — to connect additional workstations, terminals, and printers to the network.

- DESTA — to connect transceiver cable and ThinWire Ethernet cable in the same network.

- H4000-BA transceiver — to connect the DELNI to the corporate Ethernet. If you have an H4000 transceiver installed, you must update it by adding a BA board.

- Loopback connector 12-22196-01 — to connect to the global port on the DELNI.

- Terminators for the DESTA T-connector.

- ThinWire Ethernet cable — long enough to connect your workstations to installed DECconnect faceplates, and to connect the DESTA and the faceplate for the VAX or MicroVAX computer.

- Transceiver cable — long enough to cover the distance between the VAX/VMS server and a DESTA.

PCSA Network Configurations Without DECconnect

PCSA networks can easily be installed in buildings that have a DECconnect System installed. Instead of the DECconnect faceplates, which includes the faceplate for a single point of connection for workstations and other office equipment, workstations connect from one to another and then to a server, or directly to a server. If a building is upgraded to the DECconnect system, DECconnect PCSA configurations and non-DECconnect PCSA can be integrated. For a sample configuration integrating DECconnect into an established non-DECconnect configuration, see Figure 4-5.

Before you order and install the PCSA network, you should:

- Decide where to install the PCSA workstations and server.

- Determine if you need any additional wiring or cable installed in your area.

- Schedule time with someone from your telecommunications group or a DIGITAL network specialist to install any additional cable.

- Order or have available all the necessary network hardware.

It is a good idea, in an older building, to do a complete network installation analysis before configuring and installing your PCSA network. Your network or telecommunications manager, or a DIGITAL networks specialist can help you with this basic planning.

Map out your office area to determine where to install the PCSA server and workstations. If you are ordering a new MicroVAX for the VAX/VMS servers, you need to plan where to place the MicroVAX. See your MicroVAX computer hardware installation documentation for any environmental specifications.

After you know where your server and workstations will be, determine the amount of cable you have to order for your installation. Having enough cable is especially important if you are installing or using a VAX/VMS server in a computer room or lab.

If you need cables installed before you can install your PCSA network, schedule the installation with your telecommunications group or with a DIGITAL Field Service Network Services specialist in advance.

You should limit your use of barrel connectors to connect pieces of coaxial cable. Each barrel connector equals one workstation in the network. Therefore, using barrel connectors can decrease the number of workstations you can connect to the network.

MicroVAX
Server

DEQNA

DESTA
Station
Adaptor

RS232 Cable

RS232 Cable

Printer

VT220/VT240

LEGEND

———————— ThinWire

———————— Transceiver Cable

———————— Standard Ethernet

T-connector   T-connector
with Terminator

MR-1554-GE
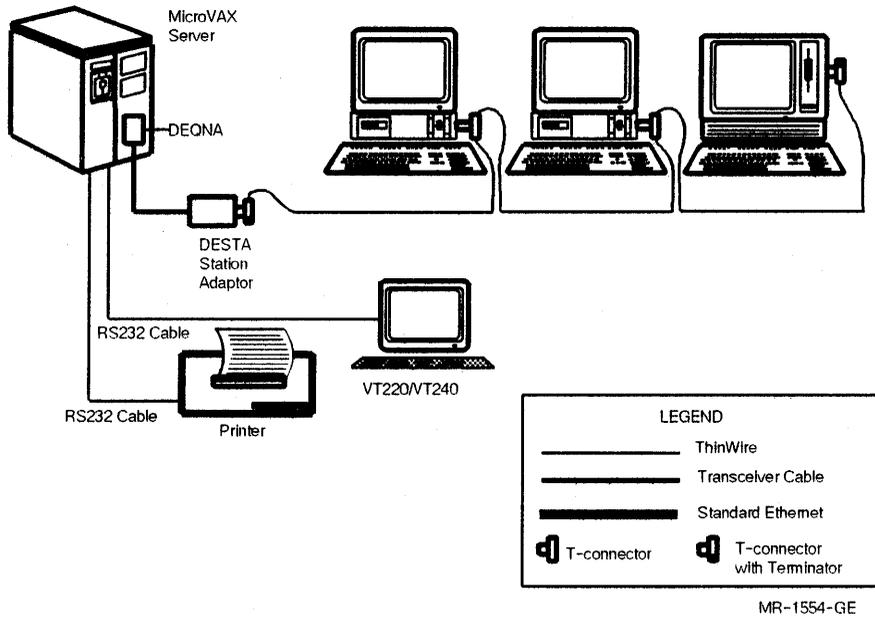
Figure 4-3   **Daisy-Chain Configuration**

Daisy-Chain Configuration

Figure 4-3 shows a PCSA network workgroup configuration in which
workstations are connected together by ThinWire and T-connectors. This
is a small departmental network without direct connection to the Ethernet
backbone for access to the corporate network.

Features

The workstations connect directly to each other by way of the ThinWire Ethernet cables connected to T-connectors on the back of each workstation creating a string, or chain, of workstations. The first workstation in the chain connects through a DESTA to the VAX or MicroVAX computer. (If you are using a VAXmate server, the workstations connect directly to the VAXmate server T-connector.) Each workstation, except the last in the chain, has an incoming ThinWire Ethernet cable and an outgoing ThinWire Ethernet cable. The last workstation in the chain has an incoming ThinWire Ethernet cable and a terminator on the T-connector.

The VAX or MicroVAX computer connects to the local network with transceiver cable. The DESTA connects the transceiver cable to the ThinWire Ethernet cable used by the workstations.

In addition to workstations, you can connect terminals and printers directly to a VAX or MicroVAX computer.

Benefits

This configuration is very easy to install and expand when needs increase.

Planning

Before installing the PCSA daisy-chain configuration, be sure you have ordered the necessary network hardware for your configuration. For example:

- Barrel connectors — for connecting segments of coaxial cable. Each barrel connector must be counted as a workstation in the network.

- DESTA — to connect the VAX or MicroVAX computer to the ThinWire daisy-chain.

- DEQNA — to provide the necessary QNA-0 circuit to connect the VAX or MicroVAX computer to the Ethernet.

- DHV11 — for printer and terminal ports, and for devices connected directly to the VAX or MicroVAX computer.

- Terminators for the DESTA T-connector.

- ThinWire Ethernet cable — long enough to connect your workstations to installed DECconnect faceplates, and to connect the DESTA and the faceplate for the VAX or MicroVAX server.

- Transceiver cable — long enough to cover the distance between the VAX/VMS server and a DESTA.

Figure 4-4 shown with labels:
- Multiport Repeater (DEMPR)
- Faceplate
- MicroVAX Server
- DEQNA
- DESTA Station Adaptor
- RS232 Cable
- VT220/VT240
- RS232 Cable
- Printer

LEGEND
- ThinWire
- Transceiver Cable
- Standard Ethernet
- T-connector
- T-connector with Terminator

MR-1555-GE
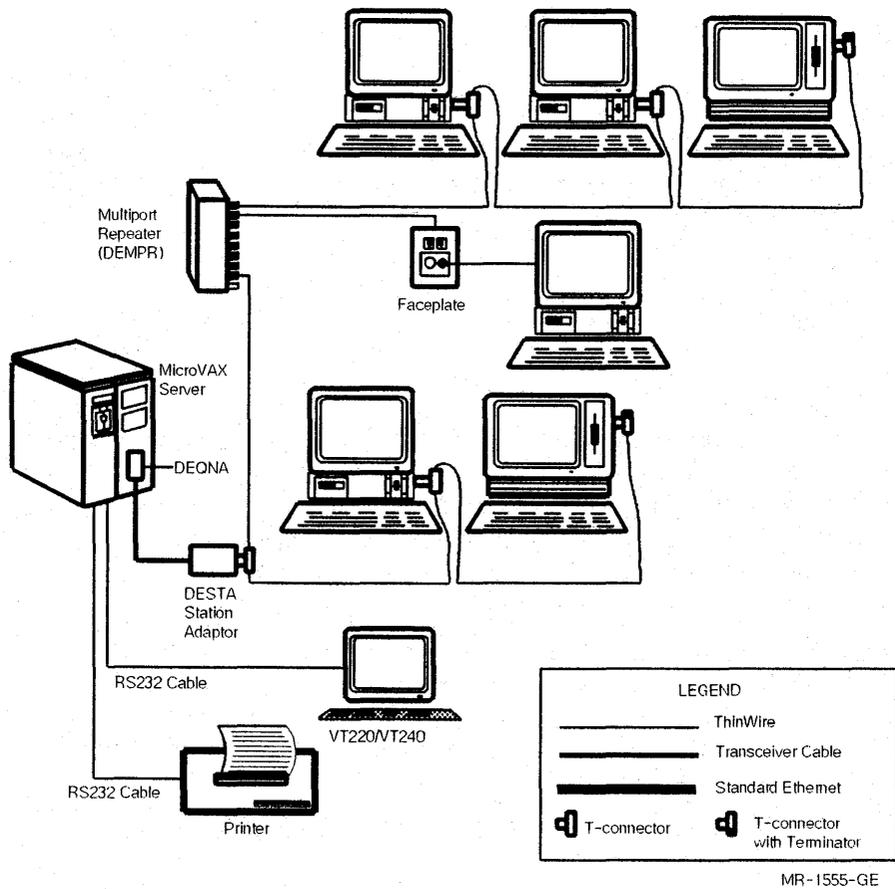
Figure 4-4   Daisy-Chain Configuration with DEMPR

Daisy-Chain Configuration with DEMPR

In configurations similar to the sample shown in Figure 4-4, the DEMPR makes it possible to connect up to 8 chains of workstations connected together by ThinWire and T-connectors, or to connect workstations connected to DECconnect faceplates, terminals, and printers. The VAX/VMS server connects to the DEMPR using a DESTA.

Features

In this configuration, the workstations connect directly to each other using ThinWire Ethernet cables connected to T-connectors on the back of each workstation, creating a string, or chain, of workstations. The first workstation in the chain connects, through a DESTA, to the VAX/VMS server. (If you are using a VAXmate for services, the workstations connect directly to the VAXmate server T-connector.) Each workstation, except the last in the chain, has an incoming ThinWire Ethernet cable and an outgoing ThinWire Ethernet cable. The last workstation in the chain has an incoming ThinWire Ethernet cable and a terminator on the T-connector.

With a DEMPR you can mix the daisy-chain and DECconnect configurations in a single network. Seven of the chains, DECconnect faceplates, terminals, or printers connect to the DEMPR. A chain of eight workstations can connect through the DESTA to the VAX/VMS server. In addition to workstations, you can connect terminals and one printer directly to a VAX/VMS server.

The VAX/VMS server connects to the network with transceiver cable. The DESTA connects the transceiver cable to the ThinWire Ethernet cable used by the workstations.

Benefits

This configuration is easy to install. For each DEMPR, you can connect up to eight times the maximum number of workstations allowed in a daisy-chain. Because you can connect faceplates to the DEMPR, this configuration provides an economical way to develop your network.

Planning

Before installing the PCSA daisy-chain configuration, be sure you have ordered the necessary network hardware for your configuration. For example:

- DEMPR — to connect additional workstations, printers, and terminals.

- DESTA — to connect transceiver and ThinWire Ethernet cable on the same daisy-chain.

- DEQNA — to provide the necessary QNA-0 circuit to connect the VAX or MicroVAX computer to the Ethernet.

- DHV11 — for printer and terminal ports, and for devices connected directly to the VAX computer.

- Terminators for T-connectors.

- ThinWire Ethernet cable — long enough to connect your workstations to each other and finally to the DESTA and the VAX or MicroVAX computer.

- Transceiver cable — long enough to cover the distance between the VAX or MicroVAX computer and a DESTA.

Sample PCSA Configurations
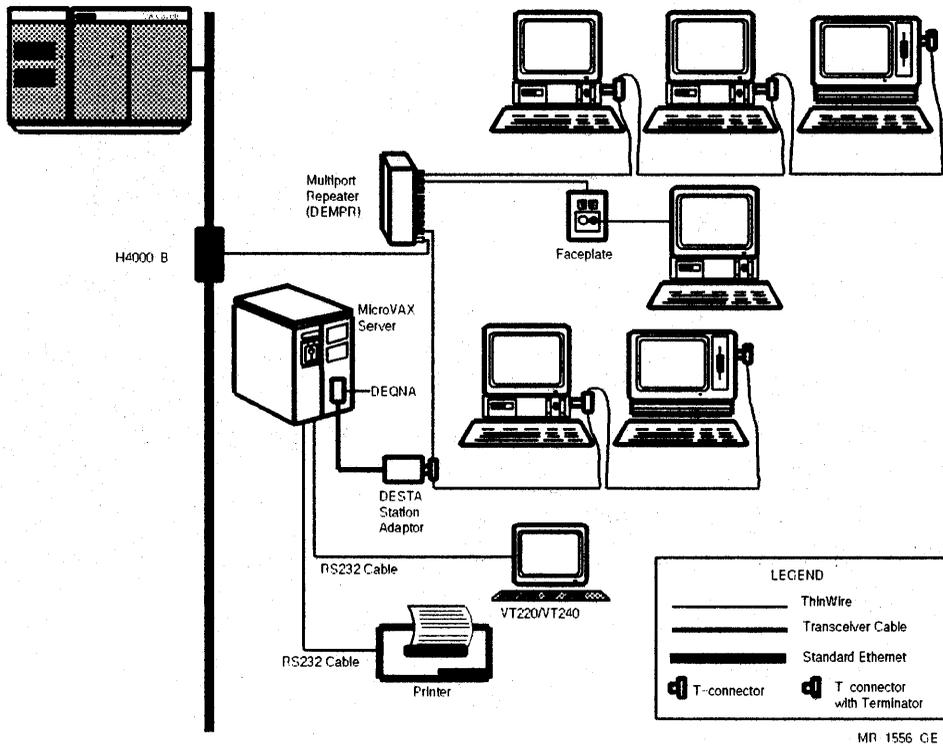
Figure 4-5   Daisy-Chain Connected to Corporate Ethernet Backbone

Daisy-Chain Configuration Connected to Corporate Ethernet Backbone

Figure 4-5 shows a PCSA daisy-chain configuration with access to the corporate network through the Ethernet backbone.

Features

The workstations connect directly to each other using the ThinWire Ethernet cables connected to T-connectors on the back of each workstation. The first workstation in the chain connects through a DESTA to the VAX or MicroVAX computer. The last workstation in the chain has an incoming ThinWire Ethernet cable and a terminator on the T-connector.

The VAX/VMS server connects to the network with transceiver cable. The DESTA connects the transceiver cable to the DEMPR and any workstations in a direct daisy-chain connection to the VAX/VMS. You can also connect a printer and terminals directly to a VAX/VMS server.

The DEMPR uses transceiver cable through an H4000-BA to the corporate Ethernet backbone. The DEMPR also lets you connect up to seven additional chains, terminals, or printers to the network.

Benefits

This configuration connects users to the corporate computer network and, potentially, to a world-wide network.

This configuration is easy to install and expand when needs increase.

Planning

Before installing the PCSA daisy-chain configuration, be sure you have ordered the necessary network hardware for your configuration. For example:

- DEMPR — to connect additional workstations, printers, and terminals.
- DESTA — to connect transceiver and ThinWire Ethernet cable on the same daisy-chain.
- DEQNA — to provide the necessary QNA-0 circuit to connect the VAX or MicroVAX computer to the Ethernet.
- DHV11 — for printer and terminal ports, and for devices connected directly to the VAX or MicroVAX computer.

- H4000-BA — to connect to the corporate Ethernet backbone.

- Terminators for T-connectors.

- ThinWire Ethernet cable — long enough to connect your worksta-
  tions to each other and finally to the DESTA and the VAX/VMS
  server.

- Transceiver cable — long enough to cover the distance between
  the VAX/VMS server and a DESTA.
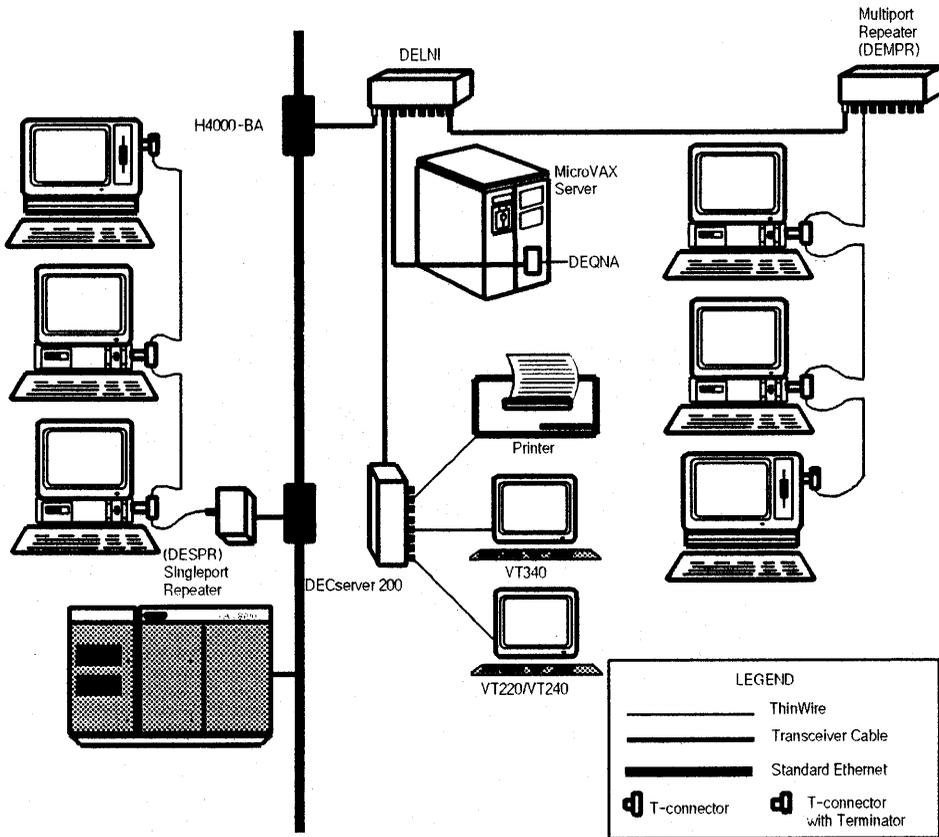
Figure 4-6 Daisy-Chain with DECserver 200 and DESPR

Daisy-Chain Connected to Ethernet Backbone with DECserver 200 and DESPR

Figure 4-6 shows a PCSA daisy-chain configuration with access to the corporate network.

Features

The workstations connect directly to each other with the ThinWire Ethernet cables connected to T-connectors on the back of each workstation. The first workstation in the chain connects to a DEMPR. The last workstation in the chain has an incoming ThinWire Ethernet cable and a terminator on the T- connector.

The DEMPR connects to the DELNI, which provides the client access to servers on the corporate network, as well as servers connected directly to the DELNI.

The DELNI connects the VAX or MicroVAX computer, the DECserver 200 terminal server, and the DEMPR with workstations to an H4000-BA transceiver. The H4000-BA transceiver connects the DELNI, and the rest of the PCSA network, to the Ethernet backbone, for access to the corporate network.

A DECserver 200 connects to the DELNI, to attach additional terminals and printers to the Ethernet network.

A DESPR connects to another H4000-BA on the Ethernet backbone to connect a string of workstations to the Ethernet and the VAX/VMS server in another part of the building network.

Benefits

This configuration connects users throughout a building across the Ethernet backbone to a server, and connects all the users to the corporate computer network with access, potentially, to a world-wide network.

Planning

Before installing the PCSA daisy-chain configuration, be sure you have ordered the necessary network hardware for your configuration. For example:

- DEMPR — to connect additional workstations, printers, and terminals.

- DESPR — to connect a single string of workstations to the network.

- DEQNA — to provide the necessary QNA-0 circuit to connect the VAX or MicroVAX computer to the Ethernet.

- H4000-BA — to connect the DELNI to the corporate Ethernet backbone. If you have an H4000 transceiver installed, you must update it by adding a BA board.

- Terminators for T-connectors.

- ThinWire Ethernet cable — long enough to connect your workstations to each other and finally to the DESTA and the VAX/VMS server.

- Transceiver cable — long enough to cover the distance between the VAX/VMS server and a DESTA.

Chapter 5
Planning a PCSA Network

Preparing for a PCSA network involves more than planning the hardware configuration, it also includes planning the software environment for users. This chapter discusses the kinds of user and system analysis you can perform before ordering or installing your PCSA network. Chapter 4 provides information about planning for the PCSA network configuration you want to install.

This chapter looks at the factors to consider when planning your PCSA network software environment, including:

- Support Personnel
- Intended uses of the system
- Number of active users
- System resource availability
- Security access and control

Support Personnel

The first plan you should make is for the support of the network when it is up and running. You should identify someone who will be your system administrator and have access to the server to manage applications, files, and use of resources. If you are using a VAX computer, with VAX/VMS Services for MS-DOS, your system administrator should have experience managing a VAX/VMS system and a DECnet network.

It is advisable to identify your system administrator as soon as possible and involve the system administrator in the rest of your planning.

Intended Uses for PCSA Network

By involving users in the planning of the system, you can ensure the user cooperation that is a key to a successful installation. To make your job easier, you can collect in a database information about your users' needs. A database of user and workstation information can help you as you tune your system, and add new users or new software to the network.

To prepare the PCSA environment to meet your users' needs, you need to collect and understand information about:

- The workstations
- The kinds of tasks your users are engaged in and the kinds of tools they are using
- Levels of user expertise

The Workstations

For each user and for each workstation, you need to know:

- DECnet node name and address
- Ethernet address
- Type of workstation
- Type of Ethernet controller
- Type of keyboard
- Preferred user interface or if the user wants to access MS-Windows

In some situations, users can choose their own DECnet node names. You should check with users for their preference before beginning to configure the network.

Users' Tasks and Tools

The kinds of tools users want can have an impact on the way you manage the PCSA system. You need to find out from users the tasks they commonly perform and the tools they need. In a questionnaire or user interview, ask users if they need:

- Terminal emulation

- MS-Windows

- Word processing

- Spreadsheets

- Databases

- Printers and other shareable resources

Traditionally, in the personal computing environment, users have been able to select and use their own applications. The result has users in different departments using different applications for the same tasks. You need to consider how to accommodate these different software packages.

For example, different spreadsheet software packages create files that are formatted differently. For users to be able to share data and maintain spreadsheets, you must resolve incompatibilities in data and output file formats.

Another example concerns word processors. Unless the word processors in use create the same file formats, users cannot share and update reports, memoranda, and other text files.

One solution to the problem of incompatible file formats is to standardize the software tools. This solution is most effective if all end-user software tools are standardized across the company, for a corporate data strategy. In this way, you can ensure that the files all users create can be used and shared.

Another solution to the problem of incompatible file formats is to provide a software program that translates incompatible files to a single, standard file format. In this way, users can keep using the tools they prefer and share the files they create by translating them to a standard format.

Some users access the same kind of data from both a VAX/VMS account and a workstation, such as a WPS-PLUS/VMS file and a WPS-PLUS/Workstation file. Collecting the applications and user files on one server, using file service directories rather than a virtual disk directory, means both VMS and DOS users can share the same files easily and efficiently.

Levels of User Expertise

Different users have the different levels of expertise using computers. In addition, not all users have had experience using all the applications that can be available to them on the network. You should consider the kinds of training users can benefit from when planning to install a PCSA network.

With information about how users work on the system, you can plan which applications to order and install, and how best to configure the PCSA software environment.

Number of Active Users

In addition to how users work, you need to know the number of users who will actively services at any one time and where the users are located. You need this information to determine how to distribute users and applications on the network.

For example, you should determine how many users need to access a database on the server, how often, and for how long. If many of your users often access databases, you provide good system performance while supporting many users by distributing the users or applications over a number of different servers.

Where users and their workstations are located can influence how you plan to distribute the users or applications to balance the load on a server. If, for example, you have a group of users doing a large amount of text processing and printing, and their workstations are grouped together, you might want to connect them to a nearby MicroVAX server with a printer. By grouping workstation users and the server, you can minimize the amount of cable you need to install.

On the other hand, if you have users at a remote site, they must connect to the PCSA network using asynchronous communications. You must be sure to have the necessary options available to connect asynchronous workstations to the network.

How you distribute user directories, shared application files and databases among servers in a network can have an effect on how quickly and efficiently servers can respond to client requests. This information can also give you better control over the software installed and used on workstations.

Resource Availability

After you have determined your users' needs, in terms of their tasks and tools, and their level of network use, you can begin to meet their needs with the resources you have available.

There are two types of computers you can use as servers in your network:

- VAX/VMS computers
- VAXmate workstations

You can use any size VAX/VMS computer as a server in a PCSA network, from a MicroVAX 2000 to a VAX 8974. VAX/VMS servers provide virtual disk services, file services, and printer services, as well as the ability to use the VAX/VMS system for VAX/VMS programs and applications.

The decision to use a small VAX or a larger VAX can depend, simply, on the size of the VAX you already have available to you. You can configure a PCSA network to use the resources currently available to you. If, on the other hand, you are adding VAX computers to your network, the size of the VAX computer you choose can depend on such factors as:

- The number of active PCSA and non-PCSA users you want to support
- The kinds of tasks users will perform
- The amount of disk space you need

VAXmate servers are well suited to small, departmental networks of workstations. They provide an inexpensive, effective way to configure an entry-level network with a growth path to a full-size DIGITAL network. VAXmate servers are dedicated computers providing file services and printer services. When a VAXmate is used as a server, it cannot be used as a workstation for other tasks, such as running MS-Windows.

For more information on the differences between services offered by VAX/VMS servers and VAXmate servers, see Chapter 2.

Security Access and Control

Many departments deal with sensitive information, such as personnel files, corporate financial data, corporate strategies, and product specifications. The ability to secure data is, for many users, a major factor in determining which PCSA server to use and how to configure the PCSA network.

VAX/VMS Services for MS-DOS lets you use the full range of VMS protections to secure the files and directories stored on VAX/VMS disks and in VAX/VMS directories.

By dedicating a MicroVAX or a VAXmate server to a department, you can limit unauthorized access to the data stored on the server. Additional security is gained by making the server and the clients connected to it a departmental network, separate from and inaccessible to a larger network.

Chapter 6
PCSA Documentation

The basic PCSA product kits fall into the following categories:

- Server kits:
  - VAX/VMS Services for MS-DOS
  - VAXmate Services for MS-DOS
- Client kits:
  - VAXmate client installed using VAX/VMS media
  - VAXmate client installed using DOS diskettes
  - PC client installed using VAX/VMS media
  - PC client using 5 1/4 inch DOS diskettes
  - PC client using 3 1/2 inch DOS diskettes
- VAXmate Standalone kit

Each server kit includes a manual with instructions for installing the server software.

Included with the client software you order is a manual with instructions for installing client software. The manual you receive depends on the type of client software you are installing for your users. The installation manuals are intended for system administrators and should be added to the system administration documentation binder.

Additional documentation for programmers and system designers is available separately from the PCSA documentation sets.

This chapter provides an overview of the documentation provided for all users. It includes a brief summary of the purpose of the books in each set and where users can go for specific types of information.

> **NOTE**
> You can order books separately from the kits. If you order
> sets of additional books, you should also order binders. The
> binders are not included when you order books separately
> from the kits.

VAX/VMS Services for MS-DOS System Administration Documentation

The documentation for the VAX/VMS server administrator provides task-oriented and reference information.

The VAX/VMS server administrator should have experience with the following software and tasks:

- VAX/VMS operating environment
- VAX/VMS system management
- DOS operating system
- DIGITAL DECnet network and network concepts
- DECnet network management and control

Table 6-1 lists information the system administrator can find in each of the manuals included in the set.

Table 6-1 VAX/VMS Services Administration Documentation Set

Title	Content
VAX/VMS Services for MS-DOS Installation Guide	Provides information about installing the VAX/VMS services, including information for upgrading VAX/VMS services software already installed on your server
VAX/VMS Services for MS-DOS Administration Guide	Provides how-to and reference information about configuring and managing the disk and file services, using the PCSA_ADMIN and PCSA_MANAGER utilities and the LAST Control Program
Network Troubleshooting Guide	Provides information about how to find and correct problems with the ThinWire Ethernet network components, installation procedures, and the DECnet/PCSA network

In addition, some guides in the client documentation kits are useful to the system administrator. These guides include:

- Client installation guides — Intended for the system administrator. Provide information on installing the VAXmate and PC client.

- *Using Networks from Your Workstation* — Provides information about using the network.

- *DECnet-DOS User's Guide* — Provides information about using the DECnet network.

- *DECnet-DOS Network Management Guide* — Provides information about managing the DECnet network.

For more information about these books, see the section "Client Documentation" in this chapter.

VAXmate Services for MS-DOS System Administration Documentation

The documentation for the VAXmate server administrator provides task-oriented and reference information.

The VAXmate server administrator should have experience with the following software and tasks:

- DOS operating system
- DIGITAL DECnet network and network concepts
- DECnet network management and control

Table 6-2 lists information the system administrator can find in each of the manuals included in the set.

Table 6-2   VAXmate Server Administration Documentation Set

Title	Content
VAXmate Services for MS-DOS Administration Guide	Provides information about installing the VAXmate server software on a dedicated VAXmate workstation, as well as information about using the VAXmate server commands and configuring the system
Network Troubleshooting Guide	Provides information about how to find and correct problems with ThinWire Ethernet network components and installation procedures, as well as the DECnet/PCSA network

In addition, some books in the client documentation kits are useful to the system administrator. These include:

- Client installation guides

  Intended for the system administrator. Provide information on installing the VAXmate and PC client.

- *Using Networks from Your Workstation*

  Provides information about using the network.

- *DECnet-DOS Network Management Guide*

  Provides information about managing the DECnet network.

For more information about these books, see the section "Client Documentation" in this chapter.

Client Documentation

The documentation for client users is organized by workstation and media. Depending on the type of workstation you are using, you receive one of the following client user documentation kits:

- VAXmate Client kit

- PC Client kit

With the client kit, you receive one of the following client installation guides:

- *Installing DECnet/PCSA VAXmate Client with VMS Media*

- *Installing DECnet/PCSA PC Client with VMS Media*

- *Installing DECnet/PCSA VAXmate Client with DOS Diskettes*

- *Installing DECnet/PCSA PC Client with 3 1/2-Inch DOS Diskettes*

- *Installing DECnet/PCSA PC Client with 5 1/4-Inch DOS Diskettes*

The installation guides are written for system administrators, and should be added to the system administrator's documentation binder.

Documentation for workstation users is designed to provide task-oriented and reference information. Users can be:

- New to computers
- New to a windowing environment
- Experienced using MS-Windows
- Experienced DOS users
- New to working in a network environment
- Experienced with networking

In addition to the documentation included in the client kits are the system handbooks:

- *VAXmate System Handbook* — packaged with your VAXmate workstation
- *Personal Workstation Handbook* — packaged with your PC client kit

Table 6-3 lists information workstation users can find in each of the manuals included in the set.

Table 6-3 Client User Documentation

Title	Content	Intended Reader
Introductory Information		
VAXmate System Handbook	Introduces the DIGITAL VAXmate workstation, and provides information on how to install, start up, and adjust the workstation. Teaches basic skills for using the VAXmate workstation, MS-Windows, and the Information System. (Packaged with the VAXmate workstation hardware kit.)	VAXmate client users who are new to computers and to desktop personal computers
Personal Workstation Handbook	Introduces you to DIGITAL's personal workstation network, accessible with the Network Installation Kit. Teaches basic skills for using the personal workstation network, MS-Windows, and the Information System.	PC client users who are new to computers and to desktop personal computers.
Overview	Introduces the PCSA network environment, including general concepts and information about the servers and the services they provide, clients and client software, configuring a PCSA network, site planning.	New users and system administrators, or anyone interested in an overview of the PCSA system.

Table 6-3   Client User Documentation (cont.)

Title	Content	Intended Reader
MS-Windows, DOS, and Printing		
MS-Windows User's Guide	Introduces you to MS-Windows and provides easy-to-access reference information. Included is information about using the mouse and the keyboard, configuring the workstation, and using applications.	New and experienced MS-Windows users.
MS-DOS Reference Manual	Covers MS-DOS commands and utilities for the VAXmate workstation. Includes information about using the MS-DOS operating system and directory structure.	Any VAXmate user.
DOS Enhancements	Covers special DOS commands and utilities modified to work in the PCSA environment.	Experienced users. This book is not a tutorial. Readers should have some introduction to DOS before using this guide.

Table 6-3   Client User Documentation (cont.)

Title	Content	Intended Reader
Printing Guide	Provides advanced information about changing workstation printing configurations for MS-Windows and DOS. Also includes information about how to print using local or remote printers from MS-Windows and DOS.	Workstation users with MS-Windows and DOS experience who want to change the printing configurations set up by their system administrators
Client On-line Information System	Provides how-to and reference information about using MS-Windows, MS-Windows applications, the DOS operating system, and network commands.	Any workstation user.

Configuring the Workstation and Using the Network

Title	Content	Intended Reader
Using Networks from Your Workstation	Provides how-to information for configuring your workstation to use the remote boot feature of a VAX/VMS server and to use the PCSA network. It also includes reference information about PCSA network user commands.	Workstations users and system administrators with MS-Windows and DOS experience. Experience using networks is not necessary.

Table 6-3   Client User Documentation (cont.)

Title	Content	Intended Reader
DECnet-DOS or DECnet/VAXmate documentation	Guides from the DECnet-DOS or DECnet/VAXmate documentation set, including the *DECnet-DOS* or *DECnet/VAXmate User's Guide*, for information on using the SETHOST utility; the *DECnet-DOS* or *DECnet/VAXmate Network Management Guide*, and the *DECnet-DOS* or *DECnet/VAXmate Programming Guide*.	Workstation users with MS-Windows and DOS experience. Users interested in information using the SETHOST feature. Experience using the DIGITAL DECnet network is helpful.
		DOS applications programmers and systems programmers.

Customizing Your Workstation to Conform with International Conventions

Title	Content	Intended Reader
International Features Guide	Provides information about how to customize the MS-DOS and MS-Windows environments to support such items as country keyboards, character sets, date and time formats.	Any user whose workstation configuration must conform to international conventions.

VAXmate Standalone Documentation

The documentation for the VAXmate standalone workstation user includes task-oriented and reference information. Table 6-4 lists information about the books included in the documentation set.

Table 6-4 VAXmate Standalone Documentation

Title	Content	Intended Reader
Installing the Workstation and Getting Started Using the Software		
VAXmate Standalone Guide	Introduces the hardware and software features of the VAXmate standalone workstation, and provides information on how to install the software, get started using the VAXmate workstation, and how to use the DECnet SETHOST utility from the VAXmate workstation to emulate a DIGITAL terminal.	Users of VAXmate standalone workstations.
VAXmate System Handbook	Introduces the DIGITAL VAXmate workstation, and provides information on how to install, start up, and adjust the workstation. Teaches basic skills for using the VAXmate workstation, MS-Windows, and the Information System. (Packaged with the VAXmate workstation hardware kit.)	VAXmate users who are new to computers and to desktop personal computers.

Table 6-4   VAXmate Standalone Documentation (cont.)

Title	Content	Intended Reader
Overview	Introduces the PCSA network environment, including general concepts and information about the servers and the services they provide, clients and client software, configuring a PCSA network, site planning.	New users or anyone interested in an overview of the PCSA system.

MS-Windows, DOS, and Printing with VAXmate

Title	Content	Intended Reader
MS-Windows User's Guide	Introduces you to MS-Windows and provides easy-to-access reference information. Included is information about using the mouse and the keyboard, configuring the workstation, and using applications.	New and experienced MS-Windows users.
MS-DOS Reference Manual	Covers MS-DOS commands and utilities for the VAXmate workstation. Includes information about using the MS-DOS operating system and directory structure.	Any VAXmate user.
Printing Guide	Provides advanced information about changing workstation printing configurations for MS-Windows and DOS. Also includes information about how to print using local or remote printers from MS-Windows and DOS.	Workstation users with MS-Windows and DOS experience who want to change the printing configurations.

Table 6-4   VAXmate Standalone Documentation (cont.)

Title	Content	Intended Reader
Client On-line Information System	Provides how-to and reference information about using MS-Windows, MS-Windows applications, the DOS operating system, and network commands.	Any workstation user.

Customizing Your Workstation to Conform with International Conventions

Title	Content	Intended Reader
International Features Guide	Provides information about how to customize the MS-DOS and MS-Windows environments to support such items as country keyboards, character sets, date and time formats.	Any user whose workstation configuration must conform to international conventions.

Glossary

access (v.)

To use a resource, such as a printer, directory, or disk drive.

access control (n.)

The mechanism for controlling the use of a resource or service, such as a printer or directory, stored on or connected to a server.

access control list (ACL) (n.)

In the VAX/VMS environment, a list that defines users' rights to use a resource or service.

active window (n.)

In MS-Windows, the window in which a user is working. Only the active window is affected by commands or other information the user enters.

application (n.)

A task, such as word processing, financial modeling, or keeping an inventory, to which a computer hardware and software solution can be applied.

application disk (n.)

A virtual or physical disk that contains DOS application software.

application package (n.)

A set of software application programs that may be used individually or shared.

application file service (n.)

A file service used to store executable files for DOS applications.

application virtual disk service (n.)

A virtual disk used to store executable files for DOS applications.

asynchronous communication (n.)

A method of data transmission in which time intervals between transmitted characters can be of unequal length. Transmission is controlled by start and stop elements at the beginning and end of each character.

automatic tiling (v.)

In MS-Windows, the process of automatically sizing windows to accommodate the number of windows displayed in a work area.

barrel connector (n.)

A female connector for connecting two sections of Ethernet coaxial cable.

boot (v.)

(Short for bootstrap.) In the PCSA environment, to load the MS-DOS operating system into workstation memory and start up the workstation. See also *remote boot.*

boot file (n.)

A file containing the boot image (the minimum set of instructions needed to run a computer, including device drivers, directory structures, and memory management).

boot image (n.)

The minimum set of instructions needed to run a computer, including device drivers, directory structures, and memory management.

canvas (n.)

In MS-Paint, the screen area available for a drawing. The size of the canvas matches the maximum printable surface area of the printer or display device.

check box (n.)

In MS-Windows, a small rectangular box displayed in a dialog box and labeled to describe the function of an option. An X is displayed in a selected check box.

client (n.)

A VAXmate or other workstation that is connected to the network and can access resources on a VAX/VMS or VAXmate server. See also *server*.

configuration (n.)

The set of hardware and hardware options installed on, and the software used by, a computer or network.

configure (v.)

To select, install, and modify hardware and software for a computer or network.

command button (.n)

In MS-Windows dialog boxes, an option users can select by clicking with the mouse button on the oval in which the option is shown.

command line (n.)

That area of the screen where commands are displayed.

common file service (n.)

A file service used to store files to which many users have write access.

control menu (n.)

In MS-Windows, the menu listing commands that let users pause, restart, or cancel a print job listed in the Spooler queue.

control menu commands (n.)

In MS-Windows, the commands listed in the control menu that let users pause, restart, or cancel a print job listed in the Spooler queue.

current directory (n.)

The directory that is displayed.

current status box (n.)

In MS-Paint, a portion of the application window that displays the icons for the tool, paint pattern, brush shape, and line width being used.

cursor blink rate (n.)

The frequency with which the cursor flashes.

datalink (n.)

The lowest level of network software, which is the interface between the workstation Ethernet controller and higher software levels. The type of datalink the workstation uses is dependent on the Ethernet controller the workstation has.

DECserver 200 (n.)

A terminal server that lets users connect multiple terminals and printers to an Ethernet network.

dedicated (adj.)

Having a single purpose. For example, a VAXmate server is a VAXmate workstation dedicated to running VAXmate Services for MS-DOS. While the workstation is functioning as a server, it cannot function as a client.

DELNI (n.)

DIGITAL Ethernet Local Network Interconnect. A local network device that provides eight transceiver cable connections. Up to eight devices can connect to the Ethernet network with a DELNI.

DEMPR (n.)

DIGITAL Ethernet Multiport Repeater. A multiport repeater that provides eight ThinWire Ethernet drops (ports for connecting coaxial cable) from a single standard Ethernet connection.

DEPCA (n.)

DIGITAL Ethernet Personal Computer Adapter. An Ethernet controller used to connect personal computers to the PCSA network as clients.

DEQNA (n.)

DIGITAL Ethernet Q-bus Network Adapter. A high-performance synchronous communications controller for computers based on Q-bus hardware. The DEQNA allows the MicroVAX computer to connect to the Ethernet network.

DESTA (n.)

DIGITAL Ethernet Station Adapter. An Ethernet IEEE 802.3 compliant transceiver that connects intelligent devices that use transceiver cable to the ThinWire Ethernet network.

destination (adj.)

In the context of drives or files, the drive or file to which the user is transferring information.

device (n.)

A hardware component that performs a specific function. A keyboard is an input device; a printer is an output device; a terminal is an input/output device. See also *logical device*.

dialog box (n.)

In MS-Windows, a temporary window subdivision that displays a form in which users either type information or select options to supply information needed by MS-Windows.

directory (n.)

A list of groups of files stored on a disk.

disk buffer (n.)

A block of memory where the MS-DOS operating system can hold data being read from or written to a disk when the amount of data is not an exact multiple of sector size.

disk server (n.)

A program that allocates space on a VAX/VMS disk where MS-DOS users can store, create, and maintain MS-DOS files. This space, actually a VAX/VMS file, is called a *virtual disk*. The disk server is made up of two

VAX/VMS device drivers (LASTDRIVER and LADDRIVER) and a
VAX/VMS process (LAD$KERNEL). The disk server is not available with
VAXmate Services for MS-DOS.

downline load (v.)

To transfer data from a host system to a client system over the network.

drawing window (n.)

In MS-Paint, the portion of the MS-Windows canvas that is displayed on
the screen.

driver (n.)

The software that lets a computer communicate, through the operating
system, with a device by controlling all input to, and/or output from, the
device.

drop-down menu (n.)

In MS-Windows, the menu that is displayed when you select a menu title
in an application menu bar. The drop-down menu includes menu com-
mands you can select and run.

echo (v.)

To return received data to the sender. For example, when the user presses
keys on the keyboard, they are echoed as characters on the screen.

end node (n.)

A network node that cannot forward packets intended for other nodes.

Ethernet backbone (n.)

Coaxial cable installed throughout a building to which Ethernet network
devices can connect.

Ethernet controller (n.)

A device that sends and receives network data on the wires on both server
and client. For example, a DEPCA is an Ethernet controller for a personal
computer that is connected to the network.

external command (n.)

The DOS files that are stored as files on a diskette, hard disk, or virtual system disk during installation and read into memory when a user types the command. External commands file names are shown in a directory listing. See also *internal command.*

faceplate (n.)

A wall receptacle that provides the single network connection point for office communication equipment. The faceplate has plug-in receptacles that provide the physical connections for data, voice, and video cable, which in turn connect to data, voice, and video networks.

file server (n.)

A DECnet network program that lets a client connect to file and printer services available on a VAX/VMS or VAXmate server. The VAX/VMS file server is the VAX/VMS process called PCFS_SERVER. The VAXmate file server is the program called SERVER.EXE.

file service (n.)

The availability of directories, subdirectories, and files on a VAX/VMS or VAXmate server. Users can make use of a file service, through a client, with network commands and then store and retrieve data. A file server makes each service accessible to clients.

filter (n.)

A command or program that reads input, acts on the input, and then transmits it, usually to a workstation or a file.

format (v.)

In the context of disks, to divide a disk into tracks and sectors, label those tracks and sectors for future reference, and create a directory structure in order to make the disk ready to accept new data and programs. The type of formatting done depends upon which operating system will use the disk. Formatting a disk destroys any data previously stored on the disk.

H4000-BA (n.)

A tap on the Ethernet backbone that connects Ethernet devices, such as DELNIs, to the backbone.

hierarchical directory structure (n.)

A directory structure in which directories can contain subdirectories.

icon (n.)

In MS-Windows, the graphical representation of applications that are running on the workstation.

icon area (n.)

In MS-Windows, the area on the screen in which application icons are displayed.

initial workstation diskette (n.)

The first key diskette created for the workstation as part of the client installation procedure. The initial key diskette should be copied before being modified to create key diskettes for other workstation.

internal command (n.)

In DOS, the commands stored in the COMMAND.COM file that are read into memory automatically when a workstation is booted. Internal commands are not shown in directory listings.

key diskette (n.)

A diskette that is used to start up the workstation and make network connections. On the key diskette are stored files containing workstation configuration information, optional user-specific information, and some MS-DOS utilities.

LAD

See *virtual disk.*

LAN (n.)

Local area network. A privately owned network that offers a high-speed, reliable communication channel. LANs span a limited distance, such as a building or cluster of buildings. but can be connected to wide area networks (WANs) with bridge devices.

LAST (n.)

Local area system transport. The network protocol used by the virtual disk server to send and receive data between two computers.

LAT (n.)

Local area transport. An Ethernet protocol, used in local area networks, that transfers data on a character-by-character basis. For example, the VT220 terminal emulator uses the LAT protocol to communicate on the Ethernet network.

line echo (n.)

A state in which whatever is displayed on the workstation screen is simultaneously sent to LPT1 for printing. The screen display is "echoed" on the printed page. Start line echo by pressing Ctrl/P and stop it by pressing Ctrl/P again. See also *echo*.

list box (n.)

In MS-Windows, a dialog box component showing choices you can select for a command.

load (v.)

To put software into memory.

local (adj.)

A characteristic of being stored on (or physically connected to) a workstation, as opposed to being used over a network. See also *remote*.

local area disk (LAD)

See *virtual disk*.

local printer (n.)

A printer physically connected to a workstation.

logical (adj.)

Nonphysical. For example, can refer to a name in the software that represents a hardware device *(logical device)*.

logical device (n.)

A software name that identifies a hardware device to an application or program.

menu (n.)

In MS-Windows, a list of commands users can select to perform specific actions in an applications. See also *drop-down menu.*

menu bar (n.)

In MS-Windows, a horizontal subdivision of a window that contains the names of drop-down menus. See also *menu title* and *drop-down menu.*

menu command (n.)

In MS-Windows, the commands users can select from a menu to perform specific actions in an application.

menu title (n.)

In MS-Windows, the names of drop-down menus users can display to select commands. The menu titles are listed in the menu bar. See also *menu bar.*

mount (v.)

To make a virtual disk available to users on a network.

mouse cursor (n.)

A symbol displayed on the workstation screen that reflects the position of the mouse. The mouse cursor shape also reflects the state of an application process; for example, when the user resizes a window, the mouse cursor shape changes to a size box.

network (n.)

In the PCSA environment, a group of servers, workstations, and devices that are connected to each other by communications lines to share information and resources.

network key disk (n.)

A virtual disk that downline loads an operating system to a workstation over the network. See also *boot file, boot image, remote boot.*

network topology (n.)

The configuration of wires, cables, and nodes in a network.

node (n.)

An individual computer or intelligent device that can communicate with other computers or intelligent devices in a network.

node address (n.)

The number that identifies a node in a DECnet network.

node name (n.)

A label (name) that identifies a DECnet node. A DECnet node name has up to six alphanumeric characters, including at least one letter.

option button (n.)

In MS-Windows, an oval labeled with a function that is displayed in a dialog or list box.

packet (n.)

A group of bits, including data and control elements, that are switched and transmitted together.

parallel (adj.)

In the context of data transmission, a method of information transfer in which all bits are transmitted simultaneously, rather than sequentially, on different lines or channels. See also *serial.*

parallel port (n.)

The workstation hardware component used to connect a parallel, or synchronous, printer to a workstation.

parallel printer (n.)

A printer that uses synchronous communication. See also *parallel port.*

partition (n.)

A section of a hard disk.

partition (v.)

To divide a hard disk into sections.

password (n.)

A word or character string that permits a user access to protected accounts, storage, files, or input/output devices.

path name (n.)

In MS-DOS, a description of the location of directories and/or files in the operating system. A path name can consist of drives, directories, and files. Each directory and file name is preceded by a backslash.

personal file service (n.)

A file service used to store a a user's personal files.

personal virtual disk service (n.)

A virtual disk used to store a user's personal files. Users have write access to this disk, and can store personal files and application data files.

PIF (n.)

Program information file. In MS-Windows, a file that contains information about how a standard application uses workstation resources. MS-Windows uses this information when the user runs the application.

print queue (n.)

A list of files waiting to print.

printer driver file (n.)

An MS-Windows file used to tailor general printing functions for a printer.

printer service (n.)

The availability of a printer, connected to either a VAX/VMS or VAXmate server. Users can access a printer service, through a client, with network commands and then print files. A file server makes a printer service available to clients.

priority menu (n.)

In MS-Windows, the priority menu lists commands that let users control the rate of data transfer from the Spooler to the printer ports.

priority menu command (n.)

In MS-Windows, the commands listed in the priority menu that let users control the rate of data transfer from the Spooler to the printer ports.

protocol (n.)

A set of rules for formatting and timing the rate of data sent over a network.

redirect (v.)

To assign a logical device name to a physical device.

remote (adj.)

A characteristic of being stored on (or physically connected to) a server or other computer and available to a client over the network only. Opposite of local. See also *local.*

remote boot (n.)

A process by which a workstation operating system is loaded and started from a network key disk.

remote printer (n.)

A printer connected to a server on the network. Opposite of local printer; the printer is not physically located with the workstation.

remote resource (n.)

A resource on a computer in a network, other than the resource you are using; for example, a printer, a disk, or a modem.

resource (n.)

A source of information or an available means to complete a task. Examples of network resources are files, disks, and printers. Resources can be either local or remote.

script (n.)

In the MS-Windows VT220 terminal emulation application, a text file containing sets of commands to perform a function automatically.

scroll bar (n.)

In MS-Windows, a horizontal bar along the right-hand side of a window or a vertical bar along the bottom of a window when there is more text that can be viewed in a window.

scroll box (n.)

In MS-Windows, a small rectangular box that moves in a scroll bar to indicate the current viewing position. As a users scrolls through a file, the scroll box moves along the scroll bar.

search path (n.)

In MS-DOS, a path name, set by the user, that the operating system uses each time the workstation is started up. In certain applications within MS-Windows, users can also set search paths for a given session.

segment (n.)

In the context of an Ethernet network, a length of coaxial cable made up of one or more cable sections connected with barrel connectors or T-connectors.

serial (adj.)

In the context of data transmission, a method of information transfer in which each bit of information is sent sequentially on a single channel. In the PCSA environment, serial transmission is always asynchronous. See also *parallel.*

serial port (n.)

The hardware component on a workstation used to connect to a serial communication device, such as a modem, terminal, or serial printer. See also *serial.*

serial printer (n.)

A printer that uses asynchronous communication. See also *serial* and *serial port.*

server (n.)

A VAX/VMS computer or VAXmate workstation running PCSA server software and offering remote services to clients. See also *client.*

service (n.)

A function available to a client on the network. See also *file service, printer service,* and *virtual disk service.*

service name (n.)

A label (name) the user or system administrator gives to file, printer, or disk services, when making any one of these services available to other users.

session (n.)

A logical connection between a workstation and a server.

size (v.)

In MS-Windows, to change the size of a window displaying the work area. Windows can be sized only when two or more windows are displaying in the work area.

source (adj.)

In the context of drives or files, the drive or file from which the user is transferring information.

Spooler application (n.)

In MS-Windows, the application that controls the queuing of files for printing.

standard application (n.)

An application that you can use with MS-Windows, even though it was not designed for this use. Many standard applications can run in a window, sharing the work area with other applications; some standard applications require the entire screen and run outside a window.

synchronous communication (n.)

A method of data transmission that allows each even to operate in relation to a timing signal. The timing signal synchronizes the transmitter and the receiver, eliminating the need for stop bits and providing efficiency in data transfer

T-connector (n.)

An Ethernet network device that connects ThinWire Ethernet cable to devices in a network.

template (n.)

In the MS-DOS operating system, the pattern of words and/or switches that made up the last command line entered in the 128-byte buffer. The buffer is reserved for the storage of command lines.

terminal emulator (n.)

A program that lets the user use the workstation as if it were a terminal connected to a host computer.

terminate and stay resident (adj.)

A kind of program that stays in memory, even after the user closes the application.

terminator (n.)

A connector used on both ends of an Ethernet network segment. This connector provides the 50-ohm termination resistance needed for the cable.

text box (n.)

In MS-Windows, a temporary window subdivision that displays into which users type information needed to carry out a command.

ThinWire (n.)

A DIGITAL Ethernet coaxial cable that is thin, flexible, IEEE 802.3 compliant, and used for local area networks.

title bar (n.)

In MS-Windows, a horizontal bar that identifies the application running in the window.

tools and shapes palette (n.)

In MS-Paint, a horizontal portion of the application window that displays the icons used to create and modify drawings.

transceiver cable (n.)

A cable used to attach a device either to a standard Ethernet segment or to a DESTA connected to a ThinWire Ethernet segment.

username (n.)

The name a user types when logging into the operating system. Users can select their own username.

VAXmate server (n.)

A VAXmate workstation dedicated to running VAXmate Services for MS-DOS, which is the VAXmate server software that offers file and printer services to clients.

VAX/VMS server (n.)

A VAX or MicroVAX computer running VAX/VMS Services for MS-DOS, which is the VAX/VMS server software that offers file, printer, and disk services to clients.

virtual (adj.)

Having the attributes of something, but not actual being it. For example, a *virtual disk* is space on a VAX/VMS disk accessed through an MS-DOS drive by workstation users. The workstation user uses the VAX/VMS disk space as if it were an MS-DOS disk.

virtual disk (n.)

Same as *local area disk*. Space the disk server program sets aside on a VAX/VMS disk that users can connect to through an MS-DOS drive and on which users can store, create, and maintain MS-DOS files.

virtual disk service (n.)

The availability of a virtual disk to clients over the network. Users can make use of a virtual disk service, through a client, with network commands, and can then store and retrieve data. A disk server makes a virtual disk service available to clients.

volume name (n.)

The identifier for the contents of a disk.

window (n.)

In MS-Windows, the area in which an application runs.

work area (n.)

In MS-Windows, the screen space taken up by windows.

workstation (n.)

A personal computer used to communicate over a network and use the services available on that network. May include the VAXmate computer, the IBM Personal Computer AT, XT, and PC, or compatible computers. (DECnet-DOS documentation describes the VAXmate as a personal computer.)

zoom (v.)

To enlarge a window to fill the entire work area.

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