

PCSA

Server Administration with Commands

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About This Manual

Manual Objectives

The purpose of this guide is to help the system administrator maintain the VMS server. This guide assumes that the hardware portion of the network (servers, workstations, printers, cables, and other hardware) is installed, connected, and fully operational.

Intended Reader

This guide is intended for the person who administers VMS Services for PCs. The system administrator should be an experienced user of the MS-DOS operating system and be familiar with:

- Using the Digital Command Language (DCL)
- Configuring and monitoring the VAX computer's performance
- Analyzing problems that might occur with a VAX computer

The system administrator should also be familiar with the hardware and software configuration of the network and the specific software needs of the users.

The system administrator should have read *VMS Services for PCs Release Notes*.

Associated Documents

For more information on topics mentioned in this manual, see:

Topic	Reference
Backing up the VMS server	<i>VMS Backup Utility Manual</i>
Backing up the PCLAN/Server System	<i>Server Management with the Menu</i>

Topic	Reference
Configuring workstations for remote boot and for local boot	<i>Installation and Configuration Guide: DECnet PCSA Client for DOS (VMS Media)</i>
Configuring or using PC DECwindows	<i>PC DECwindows User's Guide</i>
Setting up group codes	<i>Network Commands Reference Manual</i>
Adding common or application services	<i>Server Management with the Menu</i>
VMS command qualifiers	<i>VMS General User's Manual</i>
Running the Netsetup utility	<i>Installation and Configuration Guide: DECnet PCSA Client for DOS (VMS Media)</i>
Setting up interactive logins	<i>Server Management with the Menu</i>
NCP commands	<i>DECnet-DOS Network Management Guide</i>
Performing batch and print operations; managing printer queues	<i>VMS System Manager's Manual</i>
SET TERM, SET DEVICE, and INITIALIZE/QUEUE commands	<i>VMS System Manager's Manual</i>
LIBRARY and DEFINE/FORM commands	<i>VMS System Manager's Manual</i>
Using the PCSA Manager Menu	<i>Server Management with the Menu</i>

Manual Organization

This manual consists of eleven chapters, four appendixes, and an index. The following table can help you find information in this manual.

Chapter 1	Contains an introduction to VMS Services for PCs.
Chapter 2	Describes how to register workstations with VMS Services for PCs.
Chapter 3	Describes the disk server portion of VMS Services for PCs.
Chapter 4	Describes the file server portion of VMS Services for PCs.
Chapter 5	Describes how to tune performance on the file server.
Chapter 6	Describes the printer service portion of VMS Services for PCs.

Chapter 7	Describes how to manage Version 2.2 DECnet/PCSA Clients on a PCSA Version 3.0 server.
Chapter 8	Describes how to use the PCDISK utility, and contains a reference section for PCDISK utility commands.
Chapter 9	Describes how to use PCSA MANAGER, and contains a reference section for PCSA Manager commands.
Chapter 10	Describes how to use the LAST Control Program utility.
Chapter 11	Lists the messages that VMS Services for PCs can display.
Appendix A	Lists the PCFS_STARTUP.COM file.
Appendix B	Lists the LAD_STARTUP.COM file.
Appendix C	Describes the VMS server environment created at installation.
Appendix D	Describes how to install an unsupported printer.
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Conventions Used

Follow these conventions while using this manual:

Convention	Meaning
Ctrl/C	While you hold down the Ctrl key, press the C key.
Ctrl/Alt/Del	While you hold down the Ctrl and Alt keys, press the Del key.
Esc X	Press the Esc key and release it. Then press the next key indicated, and release it.
/	A forward slash (/) indicates that a command qualifier follows.
[]	Square brackets in a command line indicate the optional command qualifiers. Do not type the brackets when entering information enclosed in the brackets.
vertical list of options	A vertical list of options without square brackets ([]) indicates that you can specify any number of options or in some cases, none, if the defaults apply.
Ctrl/C	While you hold down the Ctrl key, press the C key.
Ctrl/Alt/Del	While you hold down the Ctrl and Alt keys, press the Del key.
Esc X	Press the Esc key and release it. Then press the next key indicated, and release it.

Convention	Meaning
	A vertical bar () in a command line indicates that you have a choice between two or more entries. You must select one entry unless the entries are optional.
...	An ellipsis following an entry in a command line indicates that the entry can be repeated any number of times. An ellipsis following a file name indicates that additional parameters, values, or information can be entered.
.	A vertical ellipsis means that not all the data is shown that the system would display in response to the command, or that not all the data is shown that a user would enter.
black type	In examples of dialog between you and the PC workstation, what the workstation displays on the screen is printed in black.
red type	In examples of dialog between you and the PC workstation, red type indicates information that you must enter from the keyboard. For online versions, user input is shown in bold.
case	You can enter commands and parameters in uppercase or lowercase letters, or in a combination of both.
enter	Enter all letters, spaces, and punctuation marks exactly as they are printed. Then press the Return or Enter key, as appropriate.
key labels	On the Digital LK250 keyboard, the keys on the two keypads on the right of the keyboard are referred to by their blue labels.
numbers	All numbers shown in this manual are in decimal form, unless otherwise noted.
two-line commands	Some commands are continued on a second line. In VMS, a continued command may be indicated by a hyphen (-) at the end of the first line. Enter the hyphen, and press Return. The system displays the _\$ prompt. Continue entering the text that follows the _\$ prompt in your manual.
NOTE	Contains information of special importance.
CAUTION	Contains information to prevent damage to equipment or software.
WARNING	Contains information essential to the safety of personnel.

Concepts

**Insert tabbed divider here.
Then discard this sheet.**

1

Introduction

This chapter describes the Digital PCSA (Personal Computing Systems Architecture) disk and file servers. The last two sections of this chapter discuss:

- System security
- Information needed for implementing PC DECwindows

The Digital PCSA system includes two servers that run on the VMS operating system:

- A disk server that provides virtual disk services for workstations.
- A file server that provides file services for workstations.

From the user's perspective, there is little difference between accessing a disk service or a file service. Disk services and file services are treated like DOS drives with removable media. Disk services are assigned drive letters that are specified by the the device driver, LADDRV.SYS. The specific drive letters depend on the workstation configuration. File services can be assigned to any drive letter that is not already in use. (Drive letters assigned to physical drives, device drivers, and used by the SUBST command are considered in use.)

In most cases, the disk server provides faster access to DOS files than the file server does. Table 1-1 lists other differences between the file server and the disk server.

Table 1-1 Differences Between File Servers and Disk Servers

Attribute	File Server	Disk Server
Shared read/write access	Yes	No
Files accessible from DOS and VMS	Yes	No
Wide area network access	Yes	No
Remote boot available for workstations	No	Yes

Table 1-2 helps you determine when to use each server.

Table 1-2 Using the File Server or the Disk Server

Use the...	For files that users access...
Disk server	Read-only. Simultaneous users have fast access to read-only disks. For example, if you store an application with the disk server, multiple users can access the application quickly.
File server	With DOS and VMS, because files stored with the file server are visible to RMS as VMS files. For example, if you share your WPS-PLUS files between DOS and VMS, you must store them in a file server directory so WPS-PLUS/VMS will recognize them.
File server	Read and write, simultaneously.
Disk server	Read and write, one user at a time.

The performance and functionality of DOS workstations can be optimized through the use of both servers. For example, place application software on one or more application virtual disks. Users should access private data files through the file server using a personal account and shared data files through the file server using a common file service.

Disk Server

The *disk server* is a program that allows a workstation to access from four to eight virtual disks on a VMS computer. The DOS LAD driver gives these virtual disks the appearance of local disks. The virtual disks are configured in standard DOS disk sizes, from 360 Kbytes to 32 Mbytes per disk.

The disk server is implemented as two VMS device drivers and a VMS process:

- **LASTDRIVER** is an interface between the **LADDRIVER** and the VMS Ethernet driver that provides network transport between the workstation and the VAX computer.
- **LADDRIVER** is an interface between **LASTDRIVER** and the VMS disk driver that provides the disk server functions.
- **LAD\$KERNEL** is a VMS process that controls user access to the virtual disks.

The following sections discuss in detail:

- Virtual disks
- Virtual disk security
- Disk server service database

Virtual Disks

A *virtual disk* is a VMS sequential file with 512-byte, fixed-length records. Within this file, each 512-byte record corresponds to a DOS logical disk sector. The device driver, LADDRIVER, translates DOS head, track, and sector locations to the correct record within the VMS file. The VMS file is called a *container file*. From VMS, you can view the DOS files within a virtual disk by using the PCDISK utility.

A virtual disk is offered to the network by *mounting* the disk. A mounted virtual disk is known as a *virtual disk service*. To the workstation, a virtual disk service is like any other DOS disk and is assigned a drive letter like other DOS disks.

There are four types of virtual disks:

- System virtual disks
- Application virtual disks
- Personal virtual disks
- Network key disks

NOTE

Network key disks are available only for DOS clients.

There are four types of virtual disks. Although there is no functional difference among the four types, they each are stored in different locations.

System Virtual Disks

A *system virtual disk* stores DOS system software, which includes:

- DOS operating system and utilities
- PCSA network software

- DECnet-DOS software
- DECwindows software

The system logical, LAD\$SYSTEM_DISKS, points to the directory typically used to store the system virtual disk files. You should create the virtual disk files for system virtual disks from the system manager account.

Application Virtual Disks

An *application virtual disk* is used to store DOS application software. In a network environment, you can copy application software to a virtual disk and offer it as a read-only service to multiple workstations.

If an application requires read-write access to the disk on which it is stored, only one user at a time can access the virtual disk. For applications that require read-write access by more than one user simultaneously, use a file server.

The size of an application virtual disk is dependent on how many software applications are installed on it.

Personal Virtual Disks

A *personal virtual disk* is used to store user-specific data. Normally, you mount these disks with a password and read-write access. For example, if your private virtual disk is drive F and drive G is connected to an application virtual disk, you can run the application and write your data files to drive F.

To share data from your personal disk with a VMS application, you can copy files to a VMS directory using the file server. For example, if your private virtual disk is drive F and drive M is connected to a writable file service, you can copy your data file from drive F to drive M. Then log into the VAX computer and use the data with a VMS application.

Network Key Disks

A *network key disk* is a virtual disk that contains the DOS operating system and other files necessary to remote boot a workstation. Each workstation that is remote booted must have a network key disk. (*Remote boot* is the process by which the workstation's operating system is loaded over the network.)

Virtual Disk Security

Virtual disk security is provided by:

- Password protection
- Read/write access

These controls are assigned when the virtual disk is mounted. A system administrator can assign read or write access with the MOUNT command. A system administrator can further control access to a disk service by limiting the number of connections to that service.

Security is controlled on a service basis. When a security breach exists, security can be restored by dismounting the service and then remounting the virtual disk with a new service name and/or password.

When a service is protected by a password, the user must specify the password at connection time.

Disk Server Service Database

The disk server maintains a service database containing registrations of all services offered by the network. This database:

- Resolves conflicts when a virtual disk is offered on multiple nodes in a VAXcluster.
- Provides a registry for virtual disks that the disk server automatically mounts each time the VAX computer is rebooted. The registry includes the location of the virtual disk file and how it should be mounted (READ-ONLY or READ-WRITE).
- Tracks the number of simultaneous connections to a service. If a service reaches its limit, no further connections to the service are allowed until a user disconnects. By tracking the number of connections, the service database enforces limits from license agreements and other restrictions.

To locate the service database, use the system logical LAD\$SERVICE_DATABASE. If the logical does not exist, the default file specification is SYS\$COMMON:[PCSA]LAD\$SERVICE_DATABASE.DAT.

File Server

The *file server*, a DECnet network application, allows workstations to access existing VMS directories.

The following sections discuss:

- File services
- Printer services
- File service security
- File server service data base

A *file service* is the directory, subdirectories, and files on a VAX computer that a workstation can access. The workstation accesses the directory, its subdirectories, and files as if they were local directories and files. Table 1-3 describes the types of file services.

Table 1-3 File Services

Service Type	Purpose
Application Directory	Stores DOS applications.
Common Directory	Stores data files shared among workstations.
Personal Directory	Stores DOS files specific for a user.

A personal service is a file service that the user can access providing that the user has access (user name and password) to an account on the VMS server. Through a personal service, the file server allows DOS users to connect to that account. Thus, users can share data files between DOS and VMS.

If the user does not specify a user name or password, the user can connect to a service (both disk and file) using the default VMS account for the file server PCFS\$ACCOUNT. Some services are set up to allow access from a default account; other services allow access only when the user specifies a user name and password.

Printer Services

A *printer service* is the print queue on a VAX computer that a workstation can access.

Workstation users can send a DOS file to a VMS printer queue. The file server directs the file to a spool file, and queues the spool file to a VMS print queue.

For more information on printer services see Chapter 6, *Printer Services on the Server* in this guide.

File Service Security

Access to file services is controlled by the VMS User Authorization File (UAF). Thus, the directories, subdirectories, and files offered by the file server have the same security as the directories, subdirectories, and files within any VMS user account.

File Server Service Database

The file server maintains a database that:

- Contains information about the location of the file services and the access granted to specific users.
- Tracks the number of simultaneous connections to a service. If a service reaches its limit, no further connections to the service are allowed until a user disconnects. By tracking the number of connections, the service database enforces limits from license agreements and other restrictions.

To locate the service database, use the system logical PCFS\$SERVICE_DATABASE. If the logical does not exist, the file server attempts to open the file SYS\$COMMON:[PCSA]PCFS\$SERVICE_DATABASE.DAT.

System Security

At your discretion, as System Manager, you may set up break-in evasion measures for all users of the system.

Controlling Break-in Evasion

You are able to control how many failed login attempts are allowed and how long the account will be disconnected from the server. The default number of allowed failed login attempts is 5 and you may use another number if you wish. Or, you can also use switches to disallow access to all VMS user accounts when a break-in is detected. You can define the time interval yourself, or use the default interval of 5 minutes. Typically the time interval ranges from 5 to 8 minutes. Once break-in evasion tactics are triggered, the user is unable to connect to the server for the duration of the defined interval.

Encourage users on your system to inform you whenever there are failed logins that cannot be accounted for.

An additional option is to disable the account when break-in evasion is triggered. You re-enable the accounts by using **AUTHORIZE** and the **/FLAGS=NODISUSER** qualifier.

For more information on this feature see the "Guide to VMS System Security", the *VMS System Manager's Manual* and the *VMS System Generation Utility Manual* (look at the LGI_... SYSGEN parameters).

PC DECwindows

If you are using DECnet/PCSA Client Version 2.2 or greater, on a DOS client, PC DECwindows is available on your system. The following sections describe:

- Installing PC DECwindows on remote systems
- Setting up user accounts necessary for PC DECwindows

Installing PC DECwindows Programs on Remote Systems

For PC workstation users to use DECwindows applications on systems that are not running VMS Services for PCs, you must first install the Remote Application Startup program on the host system. This program starts applications that the user specifies with the PC Session Manager. If the new system is a VMS system, you should install the PC DECwindows Window Manager.

Table 1-4 shows the configurations to which you can install the necessary PC DECwindows software components. The users need to have user accounts on the system that is running VMS or ULTRIX DECwindows.

Table 1-4 Installing PC DECwindows Software Components

From a system with ...	Copy files ...	To system ...
VMS Services for PCs or PCLAN/Server	PCX\$SERVER.COM, PCX\$WINMGR.EXE	VMS system with DECwindows and no VMS Services for PCs
PC DECwindows	PCX_DECS.ULT	DECstation 2100 or 3100 system with ULTRIX DECwindows
PC DECwindows	PCX_VAX.ULT	VAX system with ULTRIX DECwindows

The following sections explain how to install these files.

NOTE

To do the tasks described in these sections, you need system privileges.

Installing Programs on a VMS System

The PCX\$SERVER.COM file must be copied from your VAX system (with VMS Services for PCs installed) to the remote system that does not have VMS Services for PCs software installed.

Use the following procedure for VMS systems:

1. Using your system privileges, log in to the target VMS system.
2. Enter:

```
$ COPY nodename::SYS$COMMON:[SYSEXE]PCX$SERVER.COM -
_ $SYS$COMMON:[SYSEXE]PCX$SERVER.COM
```

Where:

nodename Is the nodename of the installed system from which you are copying the file.

3. Define the new DECnet object in the permanent database on the remote system by entering:

```
$MCR NCP DEFINE OBJECT PCX$SERVER NUMBER 0 FILE -
_ $SYS$COMMON:[SYSEXE]PCX$SERVER.COM
```

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4. Define the object in the volatile database on the remote system by entering:

```
$MCR NCP SET OBJECT PCX$SERVER NUMBER 0 FILE -  
_SYSS$COMMON:[SYSEXE]PCX$SERVER.COM
```

5. Make the program executable by entering:

```
$ SET PROTECTION=(W:RE) SYSS$COMMON:[SYSEXE]PCX$SERVER.COM
```

To copy the PC DECwindows Window Manager file to the target VMS system:

```
$ COPY nodename::SYSS$COMMON:[SYSEXE]PCX$WINMGR.EXE -  
_SYSS$COMMON:[SYSEXE]PCX$WINMGR.EXE
```

Where:

nodename Is the nodename of the installed system from which you are copying the file.

Then enter:

```
$ SET PROTECTION=(W:RE) SYSS$COMMON:[SYSEXE]PCX$WINMGR.EXE
```

Installing Programs on ULTRIX Systems

To access DECwindows and X Window System applications from a VAX/ULTRIX or DECstation/ULTRIX system, you must install the Remote Application Startup Program.

To install the program:

1. Use the Network File Transfer (NFT) utility to copy the program from the PCSA system device to the remote system.

To copy the program to a VAX/ULTRIX system, enter the following from your PC workstation:

```
C:\> NFT COPY/IMAGE d:\XSERVER  
\REMOTE\PCX_VAX.ULT nodename  
"username password"::/usr/bin/pcx_server
```

To copy the program to a DECstation/ULTRIX system, enter the following from your PC workstation:

```
C:\> NFT COPY/IMAGE d:\XSERVER/  
\REMOTE\PCX_DECS.ULT nodename  
"username password"::/usr/bin/pcx_server
```

Where:

- d:** Is the PCSA system device.
- nodename** Is the name for the remote ULTRIX system.
- username** Is the user name associated with the remote node.
- password** Is the password associated with the remote node.

NOTE

ULTRIX commands are case sensitive.

2. Log in to the ULTRIX system as root.
3. At the ULTRIX prompt (#), define the new DECnet object in the permanent database:

```
# ncp define object 'PCX$SERVER' number 0 \
file /user/bin/pcx_server
```

4. Define the object in the volatile database:

```
# ncp set object 'PCX$SERVER' number 0 \
file /usr/bin/pcx_server
```

5. Make the program executable using:

```
# chmod 755 /usr/bin/pcx_server
```

Setting Up User Accounts for PC DECwindows

PC DECwindows users need a VMS user account to start up DECwindows applications. If you have PC DECwindows users on your system, they can use the accounts created by PCSA, but keep in mind the following:

- These are not necessarily interactive accounts.
- These accounts have default values set for all qualifiers.

For information on setting up interactive logins, see the **ADD USER** command in Chapter 9, PCSA Manager.

The default values on the PCSA accounts may need to be adjusted if users plan to access frequently applications and use them extensively. The values required for PC DECwindows applications can vary from application to application. For information about setting up these values, see the release notes for the application and the VMS Release Notes.

To configure clients for PC DECwindows, see *PC DECwindows User's Guide*.

2

Registering Workstations

This chapter describes how to register nodes in the DECnet database.

By default, the PCSA file server accepts connections for unregistered nodes. Use the information in this chapter if you:

- Change the default for the server to recognize registered nodes only
- Want to communicate with other nodes using DECnet

If the server recognizes only registered nodes, you must register workstations that boot locally. Workstations that remote boot are automatically registered in the DECnet database by the Netsetup utility.

The DECnet database `SYS$SYSTEM:NETNODE_REMOTE.DAT` contains registrations for nodes in the network. Registering a workstation lets the VMS server recognize the workstation as a valid node on the network.

Registering Workstations for Local Boot

The process of booting a workstation from a hard disk or a key diskette is called *local boot*. With local boot, you store the configuration files for the workstation on the hard disk or key diskette.

Registering a workstation for local boot allows the workstation to communicate with a VMS server and connect to services.

There are two ways of registering a workstation for local boot:

- Using NCP commands
- Using the `ADD NODE` command of the PCSA Manager

Use these commands also to register remote nodes to which you want to reach using DECnet.

Using NCP Commands to Register a Node

To register a workstation or node using the NCP commands, you need to know the workstation's DECnet node name and address. To add the workstation to the VMS server DECnet database (register the workstation), enter the following NCP commands at the VMS prompt:

```
$ MCR NCP SET NODE number NAME name  
$ MCR NCP DEFINE NODE number NAME name
```

Where:

number Is the workstation's DECnet node address.
name Is the workstation's DECnet node name.

Using the ADD NODE Command to Register a Node

To use the ADD NODE command of the PCSA Manager to register a workstation for local boot, use the following format:

```
PCSA_MANAGER> ADD NODE name number
```

Where:

name Is the workstation's DECnet node name
number Is the workstation's DECnet node address

The ADD NODE command registers a workstation on all nodes in a cluster. For example, to register a workstation with the node name BRONTE and node address 8.765, enter:

```
PCSA_MANAGER> ADD NODE BRONTE 8.765
```

3

Managing the Disk Server

This chapter describes how to manage the disk server, including the following management tasks:

- Starting and stopping the disk server
- Controlling the following disk server features:
 - Virtual disks
 - Service database
 - Security
 - Multiple Ethernet controllers
 - Disk services in extended local area networks
 - Disk services in a VAXcluster
 - Performance
- File management using the PCDISK utility

The PCDISK utility lets you access a virtual disk from VMS. In the VMS environment, the virtual disk is a VMS file called a *container file*.

Starting the Disk Server

Before creating or using PCSA disk services, the disk server must be started. This section describes how to:

- Start the disk server
- Edit the disk server startup file and restart the disk server

Starting the Disk Server

To start the disk server for the first time, be sure that DECnet is started by running the `SYS$MANAGER:STARTNET.COM` file.

To start the disk server, log into a privileged account and enter:

```
$ SET PROCESS /PRIVILEGES=ALL
$ @SYS$STARTUP:LAD_STARTUP
```

When the disk server starts, the following message is displayed:

```
%RUN-I-PROC_ID, identification of created process is xxxxxxxx
```

Where:

```
xxxxxxx      Is the process identification VMS gives to LAD$KERNEL.
```

This procedure:

- Loads the VMS device drivers, `LADDRIVER` and `LASTDRIVER`
- Starts the disk server
- Mounts any permanently mounted disks
- Sets the disk server cache size

Appendix B in this book contains a listing of the default `LAD_STARTUP.COM` file.

Changing the Disk Server Parameters in the Startup File

You may want to change some of the parameters for the disk server. To change the disk server parameters, edit the VMS command file `SYS$STARTUP:LAD_STARTUP.COM` that starts the disk service.

The following list describes the parameters and changes you can make to the `LAD_STARTUP.COM` file. Use an editor to make these changes:

- To run a command each time you start the disk server, put the command you want to run in the `LAD_STARTUP.COM` file.
- To change the maximum number of disk services available:
 1. Find this line in the `LAD_STARTUP.COM` file:

```
LAD$MAXIMUM_SERVICES = 50 ! DEFAULT MAX SERVICES
```
 2. Change the value 50 to the new maximum number of services.

- To change the maximum number of workstations that can connect to the disk server at one time:
 1. Find the following line in the LAD_STARTUP.COM file:


```
$ LASTCP START TRANSPORT /CIRCUIT_MAXIMUM=80
```
 2. Change the value 80 to the maximum number of workstations that you want to connect at one time.

Stopping the Disk Server

Use the STOP DISK_SERVER CONNECTIONS command to:

- Stop all connections to the disk server
- Dismount virtual disks that are mounted
- Stop the disk server

The format of the STOP DISK_SERVER CONNECTIONS command is:

```
$ ADMIN/PC STOP DISK_SERVER CONNECTIONS
```

To restart the disk server, invoke the LAD_STARTUP.COM file described earlier in this chapter.

To stop users from connecting to a virtual disk service, you can dismount the service. For more information about dismounting a service, see the DISMOUNT DISK command in Chapter 9 in this book.

Controlling Disk Server Features

This section describes how to manage particular aspects of the disk server.

Virtual Disks

Before a workstation can connect to a virtual disk, you must use the CREATE DISK command to:

- Create the VMS container file
- Format the file as a DOS disk

For more information on the CREATE DISK command, refer to Chapter 9 in this book.

Allocating Virtual Disks

You can create a virtual disk in a range of sizes, just as local disks are available in a range of sizes. When you create a disk on which users can write, be sure to create a virtual disk file that is large enough for its type and purpose. Then allocate the entire disk for use.

Once you create a virtual disk file, you cannot change its size. However, if you do not allocate the virtual disk to its full size when you create it, you can dismount the disk and allocate more blocks with the `PCSA MODIFY DISK /EXTENSION` command.

If a workstation tries to write beyond the allocated number of blocks, the disk server returns a write failure message. For more information on the `MODIFY DISK` command, see Chapter 9 in this book.

Virtual Disk Services

When you mount a virtual disk, it becomes a virtual disk service and is available to the network users.

You mount virtual disks with either read-only or read-write access:

- `READ-ONLY` permits multiple users access to the virtual disk.
- `READ-WRITE` permits one user at a time access to the virtual disk.

You can mount a virtual disk to be:

- `Permanent`, when you want it remounted automatically each time the disk server is restarted.
- `Temporary`, when you do not want it to be automatically remounted each time the computer is restarted.

You can specify a directory in which to create the virtual disk. Otherwise, the disk server creates the virtual disk in a default directory associated with the type of disk. The default file extension for a virtual disk is `.DSK`. For example, if you specify `APPLICATION` as the type of virtual disk and enter "MYAPP" for the file name, the disk server creates the VMS container file `LAD$APPLICATION_DISKS:MYAPP.DSK`.

Appendix C in this book describes the default directories for each type of virtual disk.

When you mount a virtual disk, you assign it a service name. Users must specify the service name to connect to the virtual disk.

The default service name is the virtual disk file name. For example, if you mount the virtual disk file VOXSAYS.DSK, the disk server assigns the default service name VOXSAYS. At a workstation, a user can connect to the service by entering:

```
USE E: VOXSAYS /V
```

On a single node, you can mount a virtual disk only once. Once mounted, you cannot remount the virtual disk with another service name.

You can mount a virtual disk on multiple nodes in a VAXcluster.

You can associate the same service name with different virtual disks as long as the virtual disks are located on different servers. It is useful to have a common service name when that service contains standard software, such as third-party applications, to be used on different nodes.

To delete a virtual disk, dismount it first and then delete it.

See Chapter 9 in this book for a description of these related commands:

- MOUNT DISK
- DISMOUNT DISK
- DELETE DISK

The Disk Service Database

The disk server maintains a service database that contains registrations for all virtual disk files offered on the network. This database:

- Resolves conflicts when a virtual disk is offered on multiple nodes in a VAXcluster.
- Provides a registry for virtual disks that the disk server automatically mounts each time the disk server is restarted.

You can find the database using the system logical LAD\$SERVICE_DATABASE. If this logical does not exist, use the file SYS\$COMMON:[PCSA]LAD\$SERVICE_DATABASE.DAT. Only one copy of this file should exist in a VAXcluster, and it must be stored on a disk that is accessible to all nodes that are running the disk server in the VAXcluster.

Virtual Disk Security

Protect each virtual disk with a password. You can mount a virtual disk so that the disk server associates a unique password with each virtual disk service. A workstation user must specify the password to gain access to the service.

The disk server stores the password in the disk server's service database. Each time the VAX computer is restarted, the disk server remounts the virtual disk with the same password.

To change the password of a mounted virtual disk, use the `SET DISK_SERVER SERVICE /PASSWORD` command.

Multiple Ethernet Controllers

You can use the disk server with multiple concurrent Ethernet controllers. The advantages of using multiple controllers are:

- Throughput can increase because two controllers provide twice the bandwidth of one controller. Increased bandwidth can help performance when throughput is limited by the bandwidth of the interconnect.
- Single-point-of-failure problems can be solved for a node with multiple controllers. If one controller fails, all traffic is routed over the functioning controller.

The Local Area System Transport (LAST) client software can detect multiple controllers on the disk server and can use these controllers when sending messages. On the VAX computer, the LAST software is `LASTDRIVER.EXE` and on the client workstation, the LAST software is `LAST.EXE`.

For more information about starting `LASTDRIVER` with multiple Ethernet controllers, see the `LASTCP START TRANSPORT` command in Chapter 10 in this book.

Disk Services in Extended Local Area Networks

A local area network (LAN) is an *extended LAN* when two or more LANs are connected through the use of repeaters and/or bridges. An extended LAN can have a large number of disk servers, resulting in multiple disk services with the same name offered by different disk servers.

Group codes are codes you give a logical group of services so that they can be seen only by certain users. By using group codes, you can logically partition the services on the network to restrict the visibility of these services to the workstations that are part of a logical grouping.

Workstations communicate with virtual disk services through the LAST.

When you use group codes, ensure that the workstations in each group are configured to use the correct group code. Set group codes for workstations by editing the user's STARTNET.BAT file on the user's boot media. The STARTNET.BAT file contains either of the following two commands in which the /G:-1 qualifier sets the group code:

```
\DECNET\LAST /G:-1
```

Or:

```
EMSLOAD LAST /G:-1
```

To change the group code, use a number other than -1 to specify the group code.

NOTE

Network key disks always have the group code 0. Do not use another group code for network key disks.

LAST Group Codes

Set LAST group codes by running the LASTCP START TRANSPORT command with the /GROUP qualifier. You should modify the LAD_STARTUP.COM file in SYS\$STARTUP to add the /GROUP qualifier to the LASTCP START TRANSPORT command. For more information about this command, see Chapter 10 in this book.

Disk Services in a VAXcluster

You can run the disk server on a VAXcluster, but to ensure data integrity and reasonable server performance, consider the following:

- Only one disk server in a VAXcluster can offer a disk for write access at one time. If a second disk server in the VAXcluster subsequently mounts the disk with write access, it is mounted as pending. The second request to mount the disk is not completed until the first disk server dismounts the disk.
- To distribute service connections between the nodes, offer a disk with read access on multiple nodes in the VAXcluster.

- The disk server's service database resolves conflicts when a disk is offered on multiple nodes in a VAXcluster. Only one copy of the database file should exist in a VAXcluster, and it must be stored on a disk that is accessible to all nodes in the VAXcluster that are executing the disk server.
- In a local area VAXcluster (LAVC), if the disk server is not running on the boot node, you should redefine all the disk server logicals except the service database logical. The logicals should point to a local disk on the node running the disk server.

Tuning the disk server

Disk server performance depends on cache size and VMS SYSGEN parameters. This section describes how to tune:

- Disk cache
- VMS lookaside lists

Tuning Cache

You can increase the disk server performance by increasing the disk server cache size, depending on the applications being used. In general, increasing cache size improves the performance of read operations. Conversely, write operation performance does not improve unless the volume of writes exceeds the write capacity of the current cache size.

Because the PCSA disk server is a VMS device driver, the service cache is created from system dynamic memory. Changes to the disk server cache size may require changes to the SYSGEN parameter NPAGEDYN, as described later in this section.

To tune the cache, do the following steps periodically (daily) until you reach an adequate cache hit rate. If increases in cache size do not increase the cache hit rate, then no further performance gains can be achieved with cache modifications.

1. To show the current cache hit rate, run the command `SHOW DISK_SERVER COUNTER/CACHE` command. If the rate is less than 80%, increase the cache size in 256 page increments (such as 768, 1024, etc.) and continue with step 2.
2. Before changing the cache size, disconnect all users from the disk server.

3. Increase the cache size by a 256 page increment. For example, if the current cache size is 512, increase it to 768 by entering:

```
$ START DISK_SERVER CONNECTIONS /CACHE= 768
```

When increasing the disk server cache size, you may not have sufficient non-paged pool (NPAGEDYN). The following list describes how to calculate the amount of NPAGEDYN needed by the disk server:

- Disk cache size times 525
- 30,000 bytes for the driver images
- 250 bytes for each server and client node in the network
- 100 bytes for each mounted virtual disk service on the VMS server
- 100 bytes for each node connection
- 350 bytes for each service connection

4. Once you find a cache size that works, use that cache size each time you start the disk server. To change the disk server cache size, find the following line in the LAD_STARTUP.COM file:

```
$ START DISK_SERVER CONNECTIONS /CACHE= 512
```

Change the disk size from 512 to the size that you find works better.

Tuning VMS Lookaside Lists

The IRP and the LRP lookaside lists are fixed-size packets of memory that are important for networked applications. Lookaside lists are managed by monitoring their current and the maximum size. When the current size equals the maximum size, you should increase the size of the lists. To change the size of the IRP and LRP lists, change the IRPCOUNT and LRPCOUNTs, respectively.

To tune the lookaside list, do the following steps periodically (daily):

1. Run the SHOW MEMORY /FULL /ALL command to display the number of IRPCOUNT and LRPCOUNT.
2. If the IRPCOUNT needs to be increased, increase it by increments of 100. If the LRPCOUNT needs to be increased, increase it by increments of 10.

3. To change the LRPCOUNT and IRPCOUNT counts, edit the `SYS$SYSTEM:MODPARAMS.DAT` file. Add one or more of the following lines when needed:

```
ADD_IRPCOUNT 100
      ADD_LRPCOUNT 10
```

4. Invoke the AUTOGEN procedure to modify the counts and reboot the system. For more information on the AUTOGEN procedure, see the *VMS System Generation Utility Manual*.

The PCDISK Utility

PCDISK is a file management utility that provides a set of related general purpose functions, such as file copy, file transfer, and directory listing for a VMS container file. The PCDISK utility uses a command interface that resembles the DOS command line. With PCDISK, you can copy files between DOS devices and the VMS file system using the IMPORT and EXPORT commands. In addition to electronically copying files using the above commands, you can also physically copy files between VMS and DOS using RX23 and RX33 diskettes. PCDISK also supports VMS command line editing, and both VMS and DOS wildcards.

See Chapter 8 in this book for more detail on PCDISK.

4

Managing the File Server

This chapter describes how to manage the file server. It includes information on:

- Starting the file server
- Stopping the file server
- File services
- The service database
- File server security
- Using the file server with asynchronous DECnet
- Backing up the file server
- The file server log file
- VMS input/output channels
- File services on a VAXcluster

Starting the File Server

The installation procedure starts the file server. The file server continues to run as long as the VAX computer runs or until it is stopped by the `STOP FILE_SERVER` command.

4-2 Managing the File Server

Among the many command files in the directory, `SY$STARTUP`, are two important command files, because they start the file server:

- `SYSTARTUP_V5.COM`

During the network startup process, `SYSTARTUP_V5.COM` calls `PCFS_STARTUP.COM`.

- `PCFS_STARTUP.COM`:

- Determines whether or not the file server is already running.

If the file server is already running, the command procedure disconnects all current connections and stops the server process.

- Defines some VMS `RUN PCFS_SERVER` command qualifiers that affect VMS limits and quotas, which are discussed in the Chapter 5.

- Starts the file server, which runs as a privileged process on the VAX computer.

- Executes any additional commands that should be executed each time the file server is started. You can edit `PCFS_STARTUP.COM` and add new commands to the end of the file.

- Starts the `NETBIOS` process.

To run `PCFS_STARTUP.COM`, log into the `SYSTEM MANAGER` account and enter:

```
$ SET PROCESS /PRIVILEGE=ALL
$ @SY$STARTUP:PCFS_STARTUP
```

When the file server starts, the following message is displayed, in addition to messages showing the starting of the `NETBIOS` interface:

```
%RUN-S-PROC_ID, identification of created process is xxxxxxxx
```

Where:

`xxxxxxx` Is the VMS process identification.

Appendix A contains a listing of the `PCFS_STARTUP.COM` file.

Stopping the File Server

You can stop the file server and stop users from connecting to the file server. The following list shows the commands you use to stop the file server or connections to the file server.

- To stop an existing session to the server and disconnects a specified user, use the PCSA STOP FILE_SERVER SESSION command. Enter:

```
$ ADMIN/PC STOP FILE_SERVER SESSION nodename
```

- To stop an existing connection to the server and disconnects a specified connection, use the PCSA STOP FILE_SERVER CONNECTIONS/ID command. Enter:

```
$ ADMIN/PC STOP FILE_SERVER CONNECTION/ID=connect-id
```

Determine the connect-id by using the SHOW FILE_SERVER CONNECTIONS command.

- To stop the server process and disconnect all current users from the server, use the PCSA STOP FILE_SERVER CONNECTIONS /ALL_SERVICES command. Enter:

```
$ ADMIN/PC STOP FILE_SERVER CONNECTIONS/ALL_SERVICES
```

To restart the server and allow users to reconnect to the server, run the PCFS_STARTUP.COM file, which is described earlier in this chapter.

NOTE

Before disconnecting a file service or stopping the file server, use the PCSA_MANAGER BROADCAST command to send a message to affected users. See Chapter 9 in this book.

File Services

The types of file services are:

- *Application file services*, which contain executable files for DOS applications that users access remotely. Use the `PCSA_MANAGER ADD SERVICE/DIRECTORY` command to create an application service. Then, from a workstation, connect to the service and install the application according to the instructions provided with the application.
- *Common file services*, which contain files to which users have write access. A common service is useful when several users need read and write access to files at the same time.

To add common and application services, you can use the PCSA Manager Menu or `PCSA_MANAGER` commands.

The Service Database

The file server maintains a service database, `PCFS$SERVICE_DATABASE.DAT`, that contains information about:

- The location of services. This information is stored in:
 - File service records, which point to the service's root directory and store additional information, such as connection limits.
 - Printer service records, which point to the printer's spool directory and specify the print queue and the form to be used.
- The service access allowed to specific users. This information is stored in access control records. When a user connects to a service, the file server checks the access control record for the type of service granted to the user.

The logical `PCFS$SERVICE_DATABASE` points to the service database, which by default is `SYS$COMMON:[PCSA]PCFS$SERVICE_DATABASE.DAT`.

In a VAXcluster, use one service database for all nodes, unless some services are restricted to specific nodes. In this case, use a service database for each node in the VAXcluster. For example, to make the service database specific for the node LETTER, do the following:

1. Edit the `SYS$COMMON:[SYS$STARTUP]PCFS_LOGICALS.COM` file.
2. Make sure the `PCFS$SERVICE_DATABASE` logical name points to `SYS$SPECIFIC:[PCSA]`.
3. Restart the file server for the new database to take effect.

File Server Security

The file server provides two levels of security access:

- Access to services, which the file server implements according to the access you grant to a user.
- Access to files within services, which the file server implements using service access in addition to the normal VMS file security features.

This two-level security access allows workstations to connect to the same service with differing access rights. The following sections describe access to services.

Service Access

The file server determines whether a user can access a service in two ways:

- By using Access Control Entries (ACEs) in an Access Control List (ACL)
- By using RMS protection that checks a user's identification code (UIC) and a file's ACL in the User Authorization File (UAF)

The file server adds ACEs to `SYSTEM` and `APPLICATION` services. The ACEs use two identifiers to allow access to these services:

- `PCFS$READ`, which allows read-only access to a service
- `PCFS$UPDATE`, which allows read, write, and create access to a service

The system administrator can use the GRANT command to control access to SYSTEM and APPLICATION services. The GRANT command controls whether a user is allowed read-only access or read, write and create access to a particular file service.

The file server uses RMS protection to determine a user's access to all file services. ACEs (or the GRANT command) are not used for COMMON and PERSONAL services. Instead, the file server determines whether a user has access to COMMON and PERSONAL services based on:

- The user's UIC, or UIC of the default account, PCFS\$ACCOUNT
- Any ACLs that might exist for a particular file in that service

The file server checks the same access rights that VMS uses when a user logs in to a VMS server from a terminal.

The following sections show examples of access set by using:

- The GRANT command
- RMS protection

The GRANT Command

The file server determines a user's access to a service by the privileges granted to that user. You can grant service access to an individual user or to all users for SYSTEM and APPLICATION services. For each user, the file server maintains a list of services to which the user can connect. The file server also maintains a list of services to which all users can connect.

The file server maintains these lists with the service database, PCFS\$SERVICE_DATABASE.DAT. When a client connects to a service, the file server checks the service database and grants the user the appropriate access.

You can grant privileges when you add a service using the PCSA Manager Menu or with the GRANT command. For example, you can grant users SMITH and JONES access to the service LOTUS123 by entering:

```
$ ADD SERVICE/DIRECTORY/TYPE=APP LOTUS123
$ ADMIN/PC GRANT PUBLIC LOTUS123/ACCESS=READ
$ ADMIN/PC GRANT JONES LOTUS123/ACCESS=(WRITE, READ)
```

All users can connect to the service, but only user JONES has read and write access.

For example, when a user connects to the service with no user name, the user has read-only access to the service. The user has access rights of the default account PCFS\$ACCOUNT, since the user did not specify a user name:

```
M:\> USE X: \\LETTER\LOTUS123
```

When a user connects and specifies the user name JONES, the user has read and create access to the service:

```
M:\> USE X: \\LETTER\LOTUS123%JONES *
Password:
```

RMS Protection

RMS protection defines access to PERSONAL and COMMON file services. The examples in this section show the access a user is allowed when connecting to these services. A user can connect to an account listed in the UAF if the user knows the password for that account. For example, a user can connect to the user SARRO's personal account if the user knows SARRO's password:

```
M:\> USE M: \\LETTER\SARRO *
Password:
```

Another user can access the service SARRO if that user has VMS access to the directory SARRO. For example, user SMITH can access the service SARRO on node LETTER by entering:

```
USE H: \\LETTER\SARRO%SMITH *
Password:
```

In this example, user SMITH is granted access to the account SARRO according to the RMS protection of the account SARRO. In VMS, this procedure is equivalent to setting the default directory to another user's directory.

When a user does not specify a VMS user name in the USE command, the file server only allows connections to services for public access. For example, to connect to a public service PCCOMMON on node BRONTE, the user enters:

```
M:\> USE H: \\BRONTE\PCCOMMON
```

In this example, the user connects to the service PCCOMMON using the access rights from the default account, PCFS\$ACCOUNT.

For a user to write to a file, the user must have write access to both the service and to a file. If a user has read access to the service MONTH and has write access to the file REPORT.TXT, the user can only read the file. If a user has write access to the service MONTH and has read access to the file REPORT.TXT, then the user can only read the file.

Using the File Server with Asynchronous DECnet

If a workstation has no access to Ethernet, it can connect to the file server using asynchronous DECnet. If the workstation is in a remote office or at home, access through asynchronous DECnet allows the user to connect to the file server as usual.

To set up your VAX computer to accept connections from workstations through asynchronous DECnet, use one of the following methods:

- Use a DECnet Router Server connected to the same Ethernet to which the workstation that is running asynchronous DECnet is connected. This method is recommended because it reduces the overhead incurred by the VAX computer in servicing the asynchronous lines. Also, this method requires only a DECnet end-node license.
- Connect the workstations directly to the VAX computer through serial lines. The VAX computer must be configured as a routing node, which requires that you have a full-function DECnet-VAX license. The serial lines can be either:
 - Dedicated DECnet lines
 - Dynamically switched terminal lines to DECnet (use the DYN SWITCH program)

NOTE

The use of a terminal switch or terminal server running LAT for asynchronous DECnet connections is not supported.

The following sections describe using a DECnet Router Server, a dedicated serial line, and a switched DDCMP line for asynchronous connections.

Using a DECnet Router Server

When using a DECnet Router Server for asynchronous connections, use NCP to set:

- The circuit to be full duplex
- The line speed the same as that on the workstation

For example, for a direct connection on a DECrouter 200, enter:

```
NCP>SET LINE line-id LINE SPEED 9600 DUPLEX FULL MODEM NO
```

Where:

line-id Is the identifier for the DECnet line, for example ASYNC-1.

On a modem connection, enter:

```
NCP>SET LINE line-id LINE SPEED 9600 DUPLEX FULL MODEM YES
```

The hello timer in the NCP SET CIRCUIT command is the frequency of routing hello messages to the next node in the circuit. The circuit cost and hello timer values can be set to any reasonable values. The state should be set to ON. For information on setting up your router, see your router documentation.

Using a Dedicated DECnet Line on the VAX Computer

If you connect workstations directly to dedicated serial lines on the VAX computer, you must establish a specific terminal line as a dedicated DDCMP (DECnet) line.

Use the following commands as a guideline for establishing the terminal line.

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```
$ !
$ ! Load the DDCMP device driver, this must be done after every
$ ! system boot.
$ !
$ RUN SYS$SYSTEM:SYSGEN
CONNECT NOAO:/NOADAPTER
EXIT
$ !
$ ! Tell VMS which lines are dedicated to DDCMP. This must be done
$ ! after every system boot. This example uses terminal line TTB4:
$ !
$ SET TERMINAL /PROTOCOL=DDCMP/SPEED=9600/NOTYPEAHEAD/PERM TTB4:
$ !
$ ! Use NCP to properly configure the lines and circuits. Remember
$ ! that SET changes the volatile database and DEFINE changes the
$ ! permanent database.
$ !
$ RUN SYS$SYSTEM:NCP
DEFINE LINE TT-1-4 STATE ON RECEIVE BUFFERS 4
DEFINE CIRCUIT TT-1-4 STATE ON
EXIT
```

Using a Switched DDCMP Line on the VAX Computer

When the workstation uses a terminal emulator to log into the VAX computer, VMS can dynamically switch the terminal line to a DDCMP (DECnet) line. Use the following commands as a guideline to set up the VAX computer.

```

$ !
$ ! The asynchronous DDCMP driver, NODRIVER must be loaded.
$ !
$ RUN SYS$SYSTEM:SYSGEN
CONNECT NOAO:/NOADAPTER
EXIT
$ !
$ ! The DYN SWITCH image that controls the switching of the line,
$ ! must be installed as a shared image.
$ INSTALL :== $SYS$SYSTEM:INSTALL/COMMAND
$ INSTALL
CREATE SYS$LIBRARY:DYN SWITCH/SHARE/PROTECT/HEADER/OPEN
EXIT
$ !
$ ! A virtual terminal must be created in order for the physical
$ ! terminal connection to be broken without losing the logical
$ ! connection between the two systems.
$ !
$ RUN SYS$SYSTEM:SYSGEN
CONNECT VTA0:/NOADAPTER/DRIVER=TTDRIVER
EXIT
$ !
$ ! Set the terminal lines which will support the asynchronous DECnet.
$ !
$ ! For a hardwired connection, the terminal line must be set to 8 bit
$ ! characters with no parity and have DISCONNECT, PERM, and NOAUTOBAUD
$ ! attributes.
$ ! This example is for TTB4:
$ !
$ ! SET TERMINAL /EIGHT/DISCONNECT/PERM/NOAUTOBAUD TTB4:
$ !
$ ! For a dial-up connection, the terminal line must be set to 8 bit
$ ! characters with no parity and have DISCONNECT, PERM, NOAUTOBAUD,
$ ! MODEM, DIALUP, and SPEED attributes.
$ ! This example is for TTB4:
$ !
$ SET TERMINAL /EIGHT/DISCONNECT/PERM/MODEM/NOAUTOBAUD/DIALUP-
/SPEED=(transmit speed, receive speed) TTB4:
$ !
$ ! In the node database, the INBOUND and RECEIVE PASSWORD parameters
$ ! should be set for each node that will be switching the asynchronous
$ ! connection. Note that for PC workstations the INBOUND parameter
$ ! should be set to ENDNODE and the receive password should match
$ ! the remote node's EXECUTOR TRANSMIT PASSWORD. Enter the password
$ ! in uppercase.
$ RUN SYS$SYSTEM:NCP
SET NODE node-id INBOUND ENDNODE RECEIVE PASSWORD password
EXIT

```

Backing Up the File Server

You should back up file services as part of your regular backup process and at other times, depending on the specific component of the server. For example, back up your server before you install a new version of the file server software, system software, or a DOS application.

You should back up PCSA common and personal directories daily, because users frequently change the files in these directories.

NOTE

If you use the file server to modify a file, do not back up the file using the **BACKUP** command with the **/MODIFIED** qualifier.

The File Server Log File

The file server produces a log file, which by default, is **PCFS\$LOG_FILES:PCFS_SERVER.LOG**. The *log file* is a standard text file that contains messages describing network events on the file server. Typical messages describe unsuccessful attempts to connect to a file service.

In a VAXcluster, store the log file in the **SYS\$SPECIFIC** area to ensure that each node has its own copy of the log file in the node-specific area.

NOTE

Sometimes a log file contains a number of "link aborted" messages. For more information on how to correct the "link aborted" messages, see Chapter 11 in this book.

The file server updates the log file once every 60 seconds. After an event occurs, the event is logged within the next minute.

To display the name of the current log file, enter:

```
$ ADMIN/PCSA SHOW FILE_SERVER STATUS
```

For information on this command, see Chapter 9 in this book.

To display the messages in the log file, enter:

```
$ TYPE PCFS$LOG_FILES:PCFS_SERVER.LOG
```

For an explanation of the messages in the log file, see Chapter 11 in this book.

You cannot use the editor on a log file that is currently open. To close the log file and create a new one, enter:

```
$ ADMIN/PCSA START FILE_SERVER LOGGING
```

You also cannot use the **VMS COPY** command to copy a log file that is opened by the server. Therefore, run the **PCSA START FILE_SERVER LOGGING** command before you copy the file.

NOTE

Each time you start the server, it automatically creates a new log file named PCFS\$LOG_FILES:PCFS_SERVER.LOG.

You can control which events the file server logs with the PCSA START FILE_SERVER LOGGING and STOP FILE_SERVER LOGGING commands. For information on these commands, see Chapter 9 in this book.

VMS Input/Output Channels

The VMS operating system imposes a limit on the number of input/output channels that a process can open at one time. The default value is 127 channels.

You can change this limit by modifying the CHANNELCNT parameter using SYSGEN. You can have up to 2047 channels.

The file server requires 18 channels without any active clients, plus channels for your workstation configurations.

To determine the number of channels that your file server needs to open, multiply the number of open files plus one, times the number of workstations, then add 18:

$$((Open\ Files + 1) * Number\ of\ Workstations) + 18$$

For example, if 50 workstations can connect to the file server, and you want to allow each workstation to open four files, the number of channels is as follows:

$$((4 + 1) * 50) + 18 = 268$$

File Services in a VAXcluster

You can run the file server in a VAXcluster, but to ensure data integrity and reasonable server performance, consider the following:

- When a workstation opens a file (for read or write), the file server puts a private lock on the file. If a second file server in the cluster attempts to access the file with an incompatible access mode, then the second file server routes workstation requests through a DECnet link to the file server that owns the lock. This file server is responsible for arbitrating access to the file for all workstations.

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- In a VAXcluster, the file server supports MS-DOS byte range locking. When you offer a service on multiple nodes in a VAXcluster, each file server ensures that access to the file is coordinated through a single file server in the cluster.
- VMS Services for MS-DOS implements a cluster-wide locking mechanism. Thus, cluster file sharing is permitted.
- Therefore, if multiple workstations frequently share a file for update, they should all connect to the same node in the cluster. To maintain reasonable file server performance, workstations should access the service through a common file server.
- In a VAXcluster, use one service database for all nodes, unless some services are restricted to specific nodes. In this case, use a service database for each node in the VAXcluster.
- When running in a VAXcluster, store the log file in SYSSPECIFIC, so you know which server produced the log.

5

Managing Performance on the File Server

The PCSA file server offers file caching, which increases performance when using file services. The VMS system resources work together with file caching to give you the best performance possible. To make use of these resources, you need to understand the VMS system resources that the file server uses and the variables the file server uses for file caching. This chapter describes:

- Managing VMS system resources
- Performance enhancements on the file server

Managing VMS System Resources

The PCFS_STARTUP.COM file includes some VMS RUN command qualifiers that allow you to change some VMS limits and quotas. The command qualifiers take effect when the PCFS_SERVER.EXE file is run. The PCFS_STARTUP.COM file, including the default values for the RUN command qualifiers, is displayed in Appendix A. For information about VMS command qualifiers, refer to the *VMS General User's Manual*.

You can edit the PCFS_STARTUP.COM file to change the VMS limits and quotas. For the new values in the the PCFS_STARTUP.COM file to take effect, you need to run the PCFS_STARTUP.COM file. When run, the PCFS_STARTUP.COM file breaks all existing connections and starts a new file server.

Editing the PCFS_STARTUP.COM File

You can change the following command qualifiers in the PCFS_STARTUP.COM file:

- **BUFFER_LIMIT**, which specifies the maximum amount of non-paged system memory (in bytes) that the VMS server can use. The system memory is used for:
 - I/O buffering
 - DECnet request messages
 - File control blocks

The system memory, in bytes, should equal:

$$(Number\ of\ Active\ Clients * 8192) + 12288$$

- **IO_BUFFERED**, which specifies the maximum number of outstanding buffered I/O operations that the VMS server can have at one time.

The **IO_BUFFERED** limit should be greater than or equal to:

$$Number\ of\ Active\ Clients + Number\ of\ Nodes\ on\ the\ Cluster$$

- **MAXIMUM_WORKING_SET**, which specifies the maximum number of pages to which the VMS server can increase its working set size. If the file server's paging rate is excessive, you should increase this value. Also check the **WSMAX SYSGEN** parameter to be sure its value is greater than or equal to the **MAXIMUM_WORKING_SET**.

The PCFS_STARTUP.COM file includes other command qualifiers default values, which you should keep:

- **FILE_LIMIT**, which specifies the maximum number of files the VMS server can have open at any one time. This command qualifier should be greater than or equal to the value you set in the **PCSA SET FILE_SERVER CHARACTERISTICS /FILE_LIMIT** command. Also check the **SYSGEN** parameter **CHANNELCNT** to be sure it is large enough.

Performance Enhancements

The file server provides caching to enhance performance. You can alter the settings for caching to improve the file server performance. This section describes:

- What file server caching does
- Logicals that control file server caching
- How to monitor file server caching
- Evaluating file server caching
- Tuning the file server performance

File Server Caching

Cache is an area of memory that stores file and data frequently used. Successful caching minimizes the frequency of data transfers between storage devices and memory. The file server implements two types of caching for stream files:

- *Open file caching*, which causes file header information to remain in cache memory for a short period of time after it is closed. This feature is useful in applications that open and close the same files frequently.
- *Data caching*, which caches all Input/Output (I/O) requests in memory. This feature reduces the overhead of waiting for disk access when a read or write is requested.

Cache memory is divided into buffers.

Logicals for File Server Caching

The file server performs caching by default. The file server uses logicals that define the amount of cache memory and the size of the cache buffers. Table 5-1 shows the logicals that control caching on the VMS file server. These logicals are defined in the `SYS$COMMON:[SYS$STARTUP]PCFS_LOGICALS.COM` file.

Table 5-1 Caching Logicals

Logical	Default Value	Function
PCFS\$BUFFER_SIZE	8192	Defines the size in bytes of disk read/write buffer. The value is rounded up to the next power of 2, if not already a power of 2.
PCFS\$CACHE_OPEN_FILES	TRUE	Determines whether open files are cached.
PCFS\$CACHE_SIZE	1024	Defines the total number of pages available for caching. Each page is 512 bytes. PCFS\$CACHE_SIZE defines the amount of non-paged memory used by the file server for the cache buffer.

Monitoring File Caching

You can monitor how well the file caching works on your server. The success of caching depends on the:

- Size of your files
- Size of the cache
- Applications you use
- Amount of physical memory

To monitor file caching, the file server provides commands that display statistics for:

- Open file caching
- Network efficiency
- Data caching

Open File Caching

When open file caching is enabled, you can display cache hits and misses and the hit rate. A *cache hit* is when a user requests a file to be opened and that file is already in the open file cache. A *cache miss* is when a user requests a file to be opened and the file is not in the open file cache.

The **PCSA SHOW FILE_SERVER COUNTER** command displays the number of hits, the number of misses, and the rate of hits to total requests.

$$\text{HitRate} = \text{cache hits} / (\text{cache misses} + \text{cache hits}) * 100$$

The hit rate indicates how successful open file caching is.

Measuring Network Efficiency

The **PCSA SHOW FILE_SERVER COUNTER/NETWORK** command displays the number of:

- Requests to read from disk
- Requests to write to disk
- Bytes read from disk or cache
- Bytes written to disk or cache

This command allows you to examine how many bytes are read or written for each request made. The more bytes transferred for each request, the more efficiently the network is functioning.

Network Efficiency per File

The **PCSA SHOW FILE_SERVER COUNTER /NETWORK /FILE** command shows the same statistics as above for a file that is currently opened. By looking at specific files, you can determine whether one file causes a network bottleneck.

Data Caching Statistics

The data caching statistics inform you how well cache is working. It measures the operations between disk and cache memory.

The **PCSA SHOW FILE_SERVER COUNTER /BUFFER_CACHE /GLOBAL** command displays information about the cache buffers, including:

- *Disk reads*, which is the number of times the disk is read
- *Disk writes*, which is the number of times the disk is written to
- *Not-in-cache*, which is the number of times a buffer is not in cache when requested
- *Read waits*, the number of times a read is requested, but the data has not yet been transferred from disk to cache

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- *Read tries*, the total number of times the server tried to read data in cache
- *Buffer waits*, the number of times all cache buffers are busy
- *Serial waits*, the number of times a read or write has been requested but cannot be completed because the operation is waiting for another event to complete
- *File extended*, the number of times additional disk space must be allocated for the file

Evaluating Caching Displays

Open file caching is not effective if there is a low hit rate. This may be caused by applications that open many temporary files. Ineffective open file server caching causes unnecessary overhead and degrades file server performance.

The ratio of read and write requests to actual reads and writes indicates how well caching is working. To evaluate the read and write requests to actual disk reads and disk writes, compare the displays from the two commands:

- `SHOW FILE_SERVER COUNTER /NETWORK /GLOBAL`, read and write requests
- `SHOW FILE_SERVER COUNTER /BUFFER_CACHE /GLOBAL`, disk read and write

If you are reading or writing to disk at the same rate as requesting to read or write to disk, then the caching is not working effectively. Effective use of cache decreases the number of disk accesses. Therefore, the number of requests should be greater than the actual reads or writes. If the ratio of requests to accesses is low, increase the `PCFS$CACHE_SIZE`.

You can compare read waits or buffer-not-in-cache to the total read tries. A read request is waiting for disk access when:

- The ratio of read waits to read tries is high
- The ratio of buffer-not-in-cache to read tries is high

In either case, increase the `PCFS$CACHE_SIZE`.

If there are a large number of buffer waits and buffers are often busy, then there are not enough buffers. You can increase the number of available buffers by increasing the cache memory.

If applications do a large number of random reads of small files, you can decrease the PCFS\$BUFFER_SIZE. A smaller buffer size reduces the overhead of reading data into cache and can be more efficient for applications that only require a small amount of data at a time.

Tuning the File Server

Based on your evaluation, you can improve your server's network performance by tuning the file server. Before changing the file server cache, you need to adjust some VMS system resources. In so doing, make sure that the VMS system has enough system resources for the file server.

You get the best performance on your system by maintaining a balance between resources used for the VMS system and the resources used for the file server. When you increase the resources for the file server, you need to ensure that you still have adequate resources for the VMS system.

The following sections describe how to increase performance on the file server. Performance on the file server depends on:

- Logicals for file server caching
- VMS system resources used by the file server cache
- Other VMS system resources
- Whether the server is dedicated

Changing the Logicals for File Server Caching

This section describes how to change the following file server logicals to increase the file server's performance:

- PCFS\$CACHE_SIZE
- PCFS\$BUFFER_SIZE
- PCFS\$OPEN_FILES

These logicals are defined in the SYSS\$COMMON:[PCFS\$STARTUP]PCFS_LOGICALS.COM file.

PCFS\$CACHE_SIZE

Increasing the value of **PCFS\$CACHE_SIZE** improves the file server's performance in any network environment. The performance improvement you get by increasing this value depends on:

- Whether the same data blocks in cache are used repeatedly
- The frequency at which data in the cache buffers are requested

Cache disposes the least recently used data first.

PCFS\$BUFFER_SIZE

In general, if the applications you use do a large number of random reads of small data blocks, decreasing the **PCFS\$BUFFER_SIZE** reduces the overhead on a disk read. Decreasing the **PCFS\$BUFFER_SIZE** improves performance on a server that does not have a MSCP disk controller, such as a MicroVAX 2000, for applications that do random reads.

PCFS\$CACHE_OPEN_FILES

The **PCFS\$CACHE_OPEN_FILES** determines whether the file server does open file caching. For most applications, using open file caching improves performance; however, for applications that create large numbers of small temporary files, open file caching degrades the file server performance.

Open file caching may cause access conflicts when VMS applications are used with the file server to access the same files.

VMS System Resources for Caching

This section shows how to set VMS system resources when you change the cache size. The VMS system resources that affect the PCFS file server caching are:

- System parameters, which are set by the **SYSGEN** program when you install your system. You must adjust these parameters when you start the file server.
- **RUN** command qualifier, which are set in the server startup file **SYS\$STARTUP:PCFS_STARTUP.COM**
- Physical memory, which limits the amount of cache memory you can use

Table 5-2 shows the VMS system resources that affect the file server's performance.

Table 5-2 System Resources Relevant to Caching

Resource	Type	Function
VIRTUALPAGECNT	System parameter	Maximum number of virtual pages allowed for one process
WSMAX	System parameter	Maximum number of pages allowed in any single working set
PHYSICALPAGES	System parameter	VMS maximum number of pages
MAXIMUM_WORKING_SET	RUN command qualifier	Maximum number of pages which can be guaranteed for the working set size
PAGE_FILE	RUN command qualifier	Maximum number of pages that can be paged to the PAGE_FILE for a specific process
IO_DIRECT	RUN command qualifier	Maximum number of outstanding direct I/O operations the VMS server can have at one time
AST_LIMIT	RUN command qualifier	Maximum number of outstanding Asynchronous System Traps (ASTs) that the VMS server can have

Table 5-3 shows how to set the VMS resources based on the file server caching. You must change the VMS system resources to the minimum values listed in Table 5-3 or the file server will not work.

Table 5-3 Computing VMS Resources for File Caching

Resource	Formula
MAXIMUM_WORKING_SET	Greater than or equal to $PCFSS$CACHE_SIZE + 1024 + (50 * \text{number of active clients})$
PAGE_FILE	Greater than or equal to $PCFSS$CACHE_SIZE + 3000 + (60 * \text{number of active clients})$
WSMAX	Greater than or equal to MAXIMUM_WORKING_SET
VIRTUALPAGECNT	Greater than or equal to PAGE_FILE

Table 5-3 (Cont.) Computing VMS Resources for File Caching

Resource	Formula
PHYSICALPAGES	Equal to 1,047,552 (VMS maximum number of pages). If PHYSICALPAGES is not the VMS maximum, be sure that it represents the amount of physical memory currently available.
IO_DIRECT	Greater than or equal to PCFS\$CACHE_SIZE divided by PCFS\$BUFFER_SIZE
AST_LIMIT	Greater than or equal to IO_DIRECT + IO_BUFFERED + ENQUEUE_LIMIT + QUEUE_LIMIT

An *AST* is an interrupt that is caused by an external event, such as the completion of input or output. An *AST* causes another routine to process, usually a service routine for the user. The user is notified of the event *asynchronously*, that is when the event occurs, rather than *synchronously*, or at a defined time interval. An example of an *AST* is the notification users receive when a batch job finishes.

Use the `PCSA SET FILE_SERVER CHARACTERISTICS` command to limit the number of workstations. If users make more requests than the `AST_LIMIT` supports, users making the extra requests results in an error message.

The `ENQUEUE_LIMIT` is the maximum number of locks that a process can have outstanding at one time. The `QUEUE_LIMIT` is the maximum number of timer queue entries that a process can have outstanding at one time.

The `PCSF$CACHE_SIZE`, `MAXIMUM_WORKING_SET`, and `WSMAX` are interdependent. You must be careful when you set the values for `PCFS$CACHE_SIZE` and `WSMAX`. If you do not set their values correctly, the server can fail due to an insufficient memory allocation.

The `RUN` command qualifier, `MAXIMUM_WORKING_SET`, limits the amount of memory that the file server can use. The `PCSF$CACHE_SIZE` determines how much dynamic memory is needed when the file server starts. Make sure that the `MAXIMUM_WORKING_SET` is greater than or equal to `PCFS$CACHE_SIZE` plus 1024 plus 50 times the number of active clients. The `MAXIMUM_WORKING_SET` is calculated, taking into account the `PCSF$CACHE_SIZE` and the size of the server image, when the startup file runs.

If the calculated `MAXIMUM_WORKING_SET` is greater than the `SYSGEN` parameter `WSMAX`, then VMS allows the file server to use only `WSMAX` instead of `MAXIMUM_WORKING_SET`. The file server could fail when it allocates virtual memory, depending on the value set for `WSMAX`.

To increase the `MAXIMUM_WORKING_SET`, edit the `PCFS_STARTUP.COM` file. Find the first line that uses `MAXIMUM_WORKING_SET`:

```
$ PCFS$MAXIMUM_WORKING_SET=1024+PCFS$CACHE_SIZE
```

Without changing the values in the equation, add an amount onto the end of the equation equal to 50 times the number of active clients. For example, in a network of 4 active clients, add 200 onto the equation, so it reads:

```
$ PCFS$MAXIMUM_WORKING_SET=1024+PCFS$CACHE_SIZE + 200
```

The `PCFS$MAXIMUM_WORKING_SET` variable is used later in an equation. Therefore, it is important that you change the computation.

Monitoring Other VMS Resources

Performance of the file server depends on other VMS system resources in addition to file server caching, which is explained earlier. When you use file server caching, you should ensure that the VMS system has sufficient resources to run.

Monitor the the page fault rate (shown by running the `VMS SHOW SYSTEM` command) and the virtual memory to get the best performance. If the page fault rate is too high, consider:

- Increasing `WSMAX`
- Increasing `MAXIMUM_WORKING_SET`
- Obtaining more physical memory

The server log file `PCFS$LOG_FILES:PCFS_SERVER.LOG` lists messages when you run out of virtual memory. When this happens, increase the value for:

- `PAGE_FILE`
- `VIRTUALPAGECNT`
- Page file size, listed in the `SYSS$SYSTEM:PAGEFILE.SYS` file

Dedicated File Server

Increasing the file server cache can result in the use of more system resources. Therefore, you should monitor the use of resources to ensure that they are sufficient for both the file server and for other system access.

The implementation of file server caching results in less overhead for I/O requests. The performance of the file server tends to be bound to processing (CPU) speed rather than to I/O in an environment in which caching is very efficient. Therefore, as the cache hit rate increases, the file server uses an even greater proportion of CPU resources.

The priority determines the order in which resources are allocated for processing. By default, the file server has a priority of eight. You can modify that priority if users are not getting adequate access to the server. A file server priority that is too high can limit the access of other users to the server.

If the server is a dedicated LAN server, you can allocate all your system resources to increase server performance. If, on the other hand, the server is used for other time-sharing applications, you do not want to use all your system resources for the file server.

If users have trouble accessing the VMS system for uses other than the file server, reduce the priority of the file server by modifying the `SYS$STARTUP:PCFS_STARTUP.COM` file.

6

Printer Services on the Server

A *printer service* is a print queue on a VAX computer that a workstation can access. Workstations can spool a DOS file to a VMS print queue. The file server directs the file to a spool file, and queues a spool file to a VMS print queue.

PCSA printer services are useful because they:

- Allow files to be printed in an isolated area, away from office space
- Provide printing capabilities that are not available locally
- Allow central printer maintenance
- Coordinate sharing printers

This chapter describes how to set up and manage printer services on the server. It explains the following:

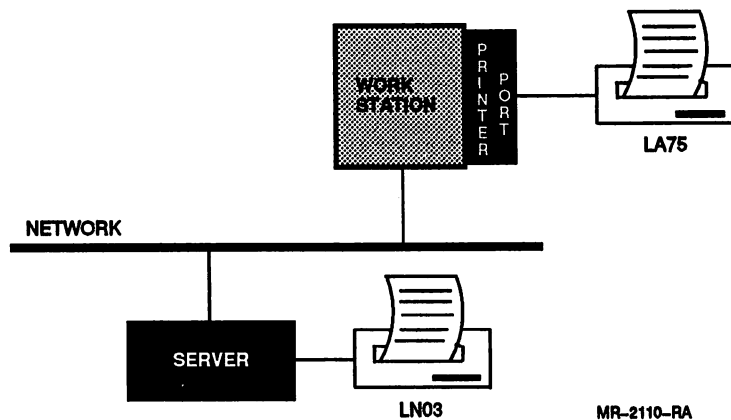
- Printer services
- Setting up printers
- Adding new forms to existing printer queues
- Adding printer services for a DECserver
- Identifying printer output for DOS users

Printer Services

A printer service allows DOS users to access printers connected to the VAX computer.

Figure 6-1 shows a simple configuration of a workstation and printers in a network. The figure shows a local printer connected to the serial printer port on the workstation and a remote printer connected to the workstation through the server.

Figure 6-1 Workstation Using Local and Remote Printers



NOTE

You can direct output only to printers connected to your PC or to your VAX server.

There are four classes of queues you should be familiar with:

- *Execution queues* accept print jobs for processing.
- *Generic queues* hold jobs until they are transferred to an execution queue for processing. The generic queue channels a print job to a physical queue. Separating the physical queue from the generic queue makes it easy to redirect print jobs when a physical device fails.
- *Logical queues* are queues whose output has been redirected.
- *Physical queues* are names that correspond to the terminal line for a printer port.

A *device control library* is a VMS text library that contains one or more files. One file resets the printer to the default mode and the other files establish specific mode for a printer (for example: portrait, landscape, or enhanced).

A *form* in VMS specifies the physical layout of the page on which a file is printed and includes the width of the page. Examples of forms are landscape, portrait, and enhanced. Associated with a form is a module from the device control library.

You need one printer service for each printer form that you want to be made available to the network.

Setting Up Printers

The remainder of this chapter describes how to set up printer services on the server. Once you have completed the directions in this chapter, users can connect to the printer services with the USE command and use the printer service with the NET PRINT command.

Before you add a printer service, make sure the printer is connected to the VAX computer. For information on connecting the printer, see the printer documentation.

There are two situations in which you would set up printer services:

- Setting up the following supported printers:
 - LN03
 - LN03 Plus
 - LA50
 - LA75 Companion
 - LJ250
 - HP LaserJet
- Setting up an unsupported printers with
 - No established VMS print queue
 - An established print queue

Setting up Supported Printers

This section discusses the two categories of supported printers:

- Those being set up for the first time
- Those already established on the server

Setting up a Supported Printer the First Time

If you are adding printer services for supported printers, VMS Services for PCs supplies device control libraries as well as standard names for queues and forms. Table 6-1 lists the printers for which the file server automatically includes a device control library in SYS\$LIBRARY.

Table 6-1 Device Control Libraries

Printer	File Name for Device Control Library
LN03	PCFS_LN03_DEVCTL.TLB
LN03 Plus	PCFS_LN03P_DEVCTL.TLB
LA50	PCFS_LA50_DEVCTL.TLB
LA75 Companion	PCFS_LA75_DEVCTL.TLB
LJ250	PCFS_LJ250_DEVCTL.TLB
HP LaserJet	PCFS_HP_LASERJET_DEVCTL.TLB

After you enter the required information to add a printer service, the PCSA Manager Menu automatically:

- Selects each form from the device control library
- Adds a printer service to the service database for each form
- Grants PUBLIC access to the service
- Creates the spool directory for the service

For supported printers, the PCSA software supplies standard names for printer queues and forms. Table 6-2 lists the queues created; the services, forms, and directories created; and the mode associated with each service. The service name, form name, and directory name are the same. The PCSA Manager Menu creates the directories within the directory represented by the logical PCFS\$SPOOL.

Table 6-2 Print Queues, Services, Forms, Directories, and Modes

Queue	Service/Form/Directory	Mode
PCFS\$LN03	LN03_DPORT	Digital Portrait
	LN03_DLAND	Digital Landscape
PCFS\$LN03P	LN03P_DPORT	Digital Portrait
	LN03P_DLAND	Digital Landscape
	LN03P_SPORT	Standard Portrait
	LN03P_SLAND	Standard Landscape
PCFS\$LA50	LA50_D80	Digital 80-column

Table 6-2 (Cont.) Print Queues, Services, Forms, Directories, and Modes

Queue	Service/Form/Directory	Mode
PCFS\$LA75	LA50_D132	Digital 132-column
	LA75_D80	Digital 80-column
	LA75_D132	Digital 132-column
	LA75_S80	Standard 80-column
	LA75_S132	Standard 132-column
PCFS\$LJ250	LJ250_D80	Digital 80-column
	LJ250_D132	Digital 132-column
PCFS\$HP_LASERJET	HP_LASERJET_PORT	Portrait mode
	HP_LASERJET_LAND	Landscape mode

To add printer services for supported printers, use the PCSA Manager Menu option, **Add a Printer Queue** in the Printer Queue Options menu.

The **Add a Printer Queue** option automatically creates associated printer services.

NOTE

The **Add a Printer Queue** option creates a new SYS\$STARTUP:PCFS_PRINT.COM file containing printer startup commands for:

- The new printer service
- Printer services previously created

Setting Up Supported Printers Already on the Server

If you are setting up a printer that already has a VMS queue, then add a printer service using the PCSA Manager Menu option, **ADD SERVICE** in the Service options menu.

You can now use the PCSA Manager menu to add printer services for the merged forms.

Setting Up Unsupported Printers

For unsupported printers without existing queues, you need to create device control libraries. This section describes:

- Creating device control libraries
- Merging device control libraries
- Setting up printer service without established queues
- Adding new forms for a printer with an existing queue

Creating Device Control Libraries

The programmer's reference documentation for your printer usually describes proper sequence of characters to set up the printer for various effects, such as landscape, portrait, or reset. Use these sequences to create control files in the device control library. Although a device control library is not necessary, it enables you to take advantage of special effects the printer offers. The reset mode places the printer in a known state in between printer jobs.

The following example shows how to create control files for an LN01 printer containing codes for portrait mode, landscape mode, and reset. The following example shows the instructions you enter if you can enter an Escape character with the Escape key:

```
$ CREATE DEC PORTRAIT.TXT
[Esc][?20 J [Esc][10m [Ctrl/Z]
$ CREATE DEC LANDSCAPE.TXT
[Esc][?21 J [Esc][15m [Ctrl/Z]
$ CREATE RESET.TXT
[Esc][!p [Ctrl/Z]
```

Certain VMS terminal characteristics and terminal types (for example, VT1xx, VT2xx, VT3xx or other series terminal) may prevent you from using the Escape key to enter an Escape character for this task. If this is the case, use any editor to create the device control library modules.

Table 6-3 displays the EDT and EVE key sequences to use in place of the Escape key.

Table 6-3 Replacements for the Escape Key

If you are using this editor:	Replace ESC with this key sequence:
EDT	PF1 2 7 PF1 kp3 The 2 and 7 keys are located on the main keyboard; other keys are located on the keypad. You can use this key sequence in screen mode. To exit the EDT editor, enter Ctrl/Z and then Exit at the Asterisk (*) prompt.
EVE	CTRL/V CTRL/

Use the VMS Librarian utility to insert the control files into the device control library. The device control library must be in the directory pointed to by the logical **SYS\$LIBRARY**. For example, to insert the control files just created into the device control library **PCFS_LN01_DEVCTL.TLB**, enter:

```
$ LIBRARY/CREATE/TEXT SYS$LIBRARY:PCFS_LN01_DEVCTL.TLB
$ LIBRARY/INSERT SYS$LIBRARY:PCFS_LN01_DEVCTL.TLB DEC_PORTRAIT.TXT
$ LIBRARY/INSERT SYS$LIBRARY:PCFS_LN01_DEVCTL.TLB DEC_LANDSCAPE.TXT
$ LIBRARY/INSERT SYS$LIBRARY:PCFS_LN01_DEVCTL.TLB RESET.TXT
```

Merging Device Control Libraries

If you have a device control library for a printer that is not listed in Table 6-1 and you want to use the PCSA Manager Menu to add printer services for that printer, you must merge the entries from your device control library with the file server's device control library. To merge the entries:

1. List your device control library entries for the printer. For example, to list the entries in the device control library **MY_DEVCTL.TLB**, enter:

```
$ LIBRARY/LIST/TEXT SYS$LIBRARY:MY_DEVCTL.TLB
```

2. Note the entry names that you want to merge into the file server's device control library.
3. Extract each entry from your device control library. For example, to extract the entry **MY_MODE**, enter:

```
$ LIBRARY/EXTRACT=MY_MODE/TEXT/OUTPUT=MY_MODE.TXT-
_$ MY_DEVCTL.TLB
```

4. Insert each entry into the file server's device control library for the printer. For example, to insert the entry `MY_MODE` into the file server's device control library `PCFS_LN03_DEVCTL.TLB`, enter:

```
$ LIBRARY/INSERT/TEXT PCFS_LN03_DEVCTL.TLB MY_MODE.TXT
```

Perform these steps for each entry that you want to merge with the file server's device control library.

Setting Up Unsupported Printers Without Established Queues

This section describes how to set up an LN01 printer for landscape, portrait forms. The example assumes that the LN01 printer is connected to the TXA1 terminal line on the VMS server.

1. Make sure that the VAX port characteristics match the printer's communication characteristics, such as baud rate and parity. To find the communication characteristics on the printer, read the printer documentation.

The LN01 printer communicates at 4800 baud.

For example, to set up the print queue `PCFS$LN01` for the LN01 printer connected to `TXA1`, enter:

```
$ SET TERM/PERM/WIDTH=80/NOWRAP/PASTRHU/TTSYNCH/SPEED=4800-  
_ $ DEVICE_TYPE=LN01/FORM/TAB TXA1
```

2. Set the device characteristics for `TXA1` to be spooled to an intermediate device. The default device is `SYS$DISK`, which is the current default disk, although you can specify any existing VMS disk. You must enter a port name, such as `TXA1`:

```
$ SET DEVICE/SPOOLED TXA1
```

3. Create a device control library for the printer.

Create control files for an LN01 printer containing codes for portrait mode, landscape mode, and reset. The following examples shows the instructions you use if you can enter an Escape character with the Escape key:

```
$ CREATE LN01_DPORT.TXT  
[Esc][?20 J [Esc][10m [Ctrl/Z]
```

```
$ CREATE LN01_DLAND.TXT  
[Esc][?21 J [Esc][15m [Ctrl/Z]
```

```
$ CREATE LN01_RESET.TXT  
[Esc][!p [Ctrl/Z]
```

Certain VMS terminal characteristics and terminal types (for example, VT1xx, VT2xx, VT3xx or other series terminal) may prevent you from using the Escape key to enter an Escape character for this task. If this is the case, use any editor to create the device control library modules.

Table 6-4 displays the EDT and EVE key sequences to use in place of the Escape key.

Table 6-4 Replacements for the Escape Key

If you are using this editor:	Replace [ESC] with this key sequence:
EDT	[PF1] [2] [7] [PF1] [kp3] The 2 and 7 keys are located on the main keyboard; other keys are located on the keypad. You can use this key sequence in screen mode. To exit the EDT editor, enter [Ctrl/Z] and then [Exit] at the Asterisk (*) prompt.
EVE	[CTRL/V] [CTRL/]

4. Create a device control library called **SYS\$LIBRARY:PCFS_LN01_DEVCTL.TLB**, or any name you choose:

```
$ LIBRARY/CREATE/TEXT SYS$LIBRARY:PCFS_LN01_DEVCTL.TLB
```

5. Insert each control file into the library. Enter:

```
$ LIBRARY/INSERT SYS$LIBRARY:PCFS_LN01_DEVCTL.TLB LN01_DPORT.TXT
$ LIBRARY/INSERT SYS$LIBRARY:PCFS_LN01_DEVCTL.TLB LN01_DLAND.TXT
$ LIBRARY/INSERT SYS$LIBRARY:PCFS_LN01_DEVCTL.TLB LN01_RESET.TXT
```

6. Define a form for the printer using the **DEFINE/FORM** command. A form associates a special attribute, such as paper stock, width, and margin with a job when it is printed.

First, determine the form numbers already used by entering:

```
$ SHOW QUEUE/FORM
```

Define the form by entering:

```
$ DEFINE/FORM formname number /SETUP=module /NOWRAP-  
_ $ /STOCK=DEFAULT /WIDTH=n /NOTRUNCATE
```

Where:

- formname** Is the 1- to 31-character name you assign to the form.
- number** Is the form number (must be an unused form number) in the range 1 to 999.
- /SETUP=module** Specifies the module in the device control library that sets up this form.
- /STOCK=stockname** Specifies the type of paper on which jobs queued with this form are printed. If a queued job requires a stock different than the stock currently being used, the queued job must wait until the requested stock is available.
- /WIDTH=n** Specifies the physical width of the paper in terms of columns or character positions. The value for n must be a positive number between 1 and 65535.

Define separate forms for the portrait and landscape modes you created in step 1. You do not need to define a form for the reset form. For example, to define a form number 100 for portrait mode and 101 for landscape mode, enter:

```
$ DEFINE/FORM LN01_DPORT 100 /SETUP=LN01_DPORT.TXT /NOWRAP-  
_ $ /STOCK=DEFAULT /WIDTH=80 /NOTRUNCATE  
$  
$ DEFINE/FORM LN01_DLAND 101 /SETUP=LN01_DLAND.TXT /NOWRAP-  
_ $ /STOCK=DEFAULT /WIDTH=132 /NOTRUNCATE
```

The module name you specify with the /SETUP qualifier must match the name of the control file you defined in step 3.

7. Create the queue:

```
$ INITIALIZE/QUEUE/START/LIBRARY=PCFS LN01_DEVCTL -  
_ $ /SEPARATE=(FLAG, RESET=(LN01_RESET)) /DEFAULT=(NOFEED) TXA1
```

The /START qualifier specifies that the queue should be started when the queue is created.

The /LIBRARY qualifier specifies the device control library.

8. Create a generic queue associated with the queue.

For example, to create a generic queue PCF\$LN01 associated with TXA1, enter:

```
$ INITIALIZE/QUEUE/START/GENERIC=(TXA1) PCF$LN01
```

Generally, you have one generic queue serving many device queues, which balances the load evenly among the different printers. You may want to limit the load to several printers, which you can do by listing the printers that the generic queue feeds after the /GENERIC qualifier.

For example, if you wanted the generic queue PCF\$LN01 to service printers TXA1 and TXA2, enter:

```
$ INITIALIZE/QUEUE/START/GENERIC=(TXA1, TXA2) PCF$LN01
```

The generic queue PCF\$LN01 will feed both printers connected to the TXA1 and TXA2 ports. The feed queues TXA1 and TXA2 must have been started with an INITIALIZE /ENABLE_GENERIC command.

The LPS40 and LN03R printers have different generic queues associated with different default characteristics. For these printers, you may want more than one generic queue.

9. You must update the VMS startup file specific to your site. The VMS startup file is named SYS\$STARTUP:SYSTARTUP_V5.COM. Edit the SYSTARTUP_V5.COM file and make sure it includes the DEFINE/FORM command you entered in step 6 and the INITIALIZE commands you entered in steps 7 and 8. For example:

```
$ DEFINE/FORM LN01_DPORT 100 /SETUP=LN01_DPORT /NOWRAP-
_$ /STOCK=DEFAULT /WIDTH=80 /NOTRUNCATE
$
$ DEFINE/FORM LN01_DLAND 101 /SETUP=LN01_DLAND /NOWRAP-
_$ /STOCK=DEFAULT /WIDTH=132 /NOTRUNCATE
$
$ SET TERM/PERM/WIDTH=80/NOWRAP/PASTRHU/TTSYNCH/SPEED=4800-
_$ DEVICE_TYPE=LN01/FORM/TAB TXA1
$
$ SET DEVICE/SPOOLED TXA1
$
$ INITIALIZE/QUEUE/START/LIBRARY=PCF$LN01_DEVCTL-
_$ /SEPARATE=(FLAG, RESET=(LN01_RESET)) /DEFAULT=(NOFEED) TXA1
$
$ INITIALIZE/QUEUE/START/GENERIC=(TXA1) PCF$LN01
```

Putting these commands in the startup file ensures that the queue is started each time the VAX server boots. It also is a record of the queue in case the queue needs to be rebuilt.

10. When you add the printer service, you can specify different access allowed for that service:

- Access to the printer service is allowed for all users
- Access to the printer service is customized for some users

To add a service and grant access to all users:

a. Use the PCSA Manager Menu by entering:

```
$ ADMIN/PCSA MENU
```

b. Select **Service Options**.

c. Select **Add a Service** from the Service Options menu.

d. Select **Printer Service** from the Add a Service menu.

e. The PCSA Manager Menu prompts you for the service. Enter the printer service name. It is easier if the service name matches the form name. You must have a different service for different forms.

f. The PCSA Manager Menu prompts you for the queue. Enter the name of the physical or generic queue to which the files are queued. For example, for the LN01 printer, enter PCFS\$LN01.

g. The PCSA Manager Menu prompts you for the form name. Enter the form names you specified in the DEFINE/FORM command. For example, enter LN01_DPORT for portrait mode and LN01_DLAND for landscape mode.

The PCSA Manager Menu grants access to the printer service to all users.

To add a printer service for which you grant access for only some users:

a. Enter the following command for adding a service for portrait mode on the LN01 with the generic queue PCFS\$LN01:

```
$ PCSA ADD SERVICE/PRINTER /FORM=LN01_DPORT -  
$_ LN01_DPORT PCFS$LN01
```

- b. Grant access to the printer service for a specific user, such as SARRO:

```
$ PCSA GRANT SARRO LN01_DPORT
```

For more information on setting up an unsupported printer, see Appendix D in this book, which describes how to set up a HP LASERJET II printer.

Adding New Forms

This section describes how to add forms to new or to established printer services.

In some cases, you may have an existing VMS print queue but want to modify the printer form. The example in this section describes how to create a form for the LA75 Companion printer so it prints in letter-quality mode.

1. Create a control file with a unique sequence of characters that establish a specific mode (such as landscape, portrait, or enhanced) for a printer. See the programming manual for your printer to determine the correct sequence of characters for the desired mode. The file you create is later included in the device control library for your printer.

```
$ CREATE LA75_D80_LQ.TXT
[Esc][?581[Esc][ow[Esc][2"z[Ctrl/Z
```

This example creates a file LA75_D80_LQ.TXT for an LA75 Companion printer that:

- Sets the printer in Digital mode
 - Prints in 80 columns
 - Prints in letter-quality mode
2. Insert the file into the device control library. For example, to insert the previous file LA75_D80_LQ.TXT into the device control library OLD_PRINTERS_DEVCTL.TLB, enter:

```
$ LIBRARY/INSERT/TEXT SYS$LIBRARY:OLD_PRINTERS_DEVCTL.TLB LA75_D80_LQ.TXT
```

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3. Use the DEFINE/FORM command to define the form by entering:

```
$ DEFINE/FORM formname number /SETUP=module /NOWRAP-  
_ $ /STOCK=DEFAULT /WIDTH=n /NOTRUNCATE
```

Where

formname	Is the 1- to 31-character name you assign to the form.
number	Is the form number (must be a unique number) in the range 1- to 999.
/SETUP=module	Specifies the module in the device control library that sets up this form.
/WIDTH=n	Specifies the width of the paper in terms of columns or character positions. The value for n must be a positive number between 1 and 65535.

For example, to define a form LA75_D80_LQ for the Digital LA75 Companion printer, with a form number 100 and a width of 80 characters, enter:

```
$ DEFINE/FORM LA75_D80_LQ 200 /SETUP=LA75_D80_LQ /NOWRAP-  
_ $ /STOCK=DEFAULT /WIDTH=80 /NOTRUNCATE
```

The form you specify in the LIBRARY/INSERT command must match the module you use with the /SETUP qualifier in the DEFINE/FORM command.

4. Update the VMS startup file specific to your site. The VMS startup file is named SYSTARTUP_V5.COM. Edit the SYSTARTUP_V5.COM file and make sure it includes the DEFINE/FORM command you entered in step 3. For example:

```
$ DEFINE/FORM LA75_D80_LQ 200 /SETUP=LA75_D80_LQ /NOWRAP-  
_ $ /STOCK=DEFAULT /WIDTH=80 /NOTRUNCATE
```

5. Add the service and grant users access to the service:

- Use the PCSA Manager Menu (access is automatically granted)
- Use the PCSA Manager commands, ADD SERVICE/PRINTER and GRANT

The GRANT command allows you to customize the accessibility to the service.

For more information on using the ADD SERVICE/PRINTER and GRANT commands of the PCSA Manager see Chapter 9 in this guide.

Setting Up a Printer with a DECserver

This section describes how to set up printers that are connected to a LAT server or DECserver for:

- A single printer
- Several printers

Setting Up a Single Server with a DECserver

To set up a LAT server:

1. Connect the printer to a port on the DECserver and connect a terminal to another free port for command input. The following example assumes the port on the DECserver to which you connect the printer is port number 8.

At the DECserver, enter the following commands, which give you the proper privileges on the the DECserver. Note that the default password SYSTEM may have changed:

```
Local> SET PRIV
Password> SYSTEM
```

Enter these commands to check that port number 8 is working correctly. The second command should cause a spiral test pattern to print on the printer you connected to port number 8. The last command stops the test pattern from printing.

```
Local> SHOW PORT 8
Local> TEST PORT 8
Local> LOGOUT PORT 8
```

2. Set the port characteristics permanently. One of the port characteristics is the speed of the printer. In this example, the printer speed is 9600.

```
Local> DEF PORT 8 ACCESS REMOTE
Local> DEF PORT 8 AUTOBAUD DISABLE
Local> DEF PORT 8 BREAK DISABLE
Local> DEF PORT 8 INPUT SPEED 9600 OUTPUT SPEED 9600
Local> DEF PORT 8 DEDICATED NONE PREFERRED NONE
Local> DEF PORT 8 FORWARD SWITCH NONE
Local> DEF PORT 8 BACKWARD SWITCH NONE
```

3. Associate a name, such as XYZ, with the port:

```
Local> DEF PORT 8 AUTOCONNECT DISABLE NAME XYZ
Local> LOGOUT PORT 8
```

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4. Check that you entered the commands in step 2 correctly by entering:

```
Local> SHOW PORT 8
```

5. Display the Ethernet address of the DECserver by entering:

```
Local> SHOW SERVER
```

Record the Ethernet address of the DECserver, which you need in the next step.

6. Change the default name of the server to another name, such as MYSERVER, by entering:

```
Local> DEF SERVER NAME MYSERVER
```

This command defines the DECserver name to itself.

7. Now, go to a terminal connected to the VMS server. Determine whether the DECserver image software is loaded on the VMS server by checking if any files exist in the SYS\$SYSROOT:[DECSERVER] directory.

The following commands define the DECserver to the VMS server. At the VMS server, enter the following commands to load the DECserver:

```
$ SET DEFAULT SYS$SYSROOT:[DECSERVER]  
$ @DSVCONFIG
```

From the following menu, select item 1, which displays the configuration data.

1. LIST
2. ADD
3. SWAP
4. DELETE
5. RESTORE

Type Ctrl-Z to Exit

Your selection = 1

In the display, look for the Ethernet address of the DECserver to ensure tht the DECserver is being loaded. Make sure that the node name matches the name you defined in step 6. If the name does not match, change it either at the DECserver or on the VMS system. If your DECserver is not displayed, add it by selecting item 2 on the last menu.

8. Before you can downline load the DECserver software, make sure the network circuit is enabled. The following command shows the VAX Ethernet adapter, which is required to enable the boot service for the DECserver, and QNA-0 is your network device:

```
$ MCR NCP
NCP> SHOW CIRC QNA-0 CHAR
```

9. To see information about the DECserver, enter:

```
NCP > SHOW NODE MYSERVER CHAR
```

Make sure the service is enabled. If not, enable it by entering:

```
$ MCR NCP
NCP> SET CIRC QNA-0 SERVICE ENABLED
NCP > DEF CIRCUIT QNA-0 SERVICE ENABLED
```

10. If the DECserver image has been loaded in the terminal server, go to step 13. Make sure the logical MOM\$LOAD is correctly defined. The logical MOM\$LOAD should be equated to the MOM\$SYSTEM, which points to SYS\$SYSROOT:[MOM\$SYSTEM]. Enter:

```
$ SHOW LOGICAL MOM$LOAD
```

11. At the console, enter:

```
$ MCR NCP
NCP> SET LOGGING MONITOR KNOWN EVENTS
NCP> SET LOGGING MONITOR STATE ON
NCP > EXIT
```

These commands allow the datalink layer requests display on any VMS operator terminal.

12. At the DECserver, enter the INIT command to reset the terminal:

```
Local> INIT
```

A screen is displayed on the VAX console or on the DECserver console.

13. Enter the following commands to set up the port for the DECserver:

```
$ SET DEFAULT SYS$SYSTEM
$ RUN LATCP
LCP > SHOW PORT
```

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14. Note the port numbers already defined and enter a new port number. Port numbers must have a prefix of LTA followed by a number that can be as large as 999:

```
LCP > CREATE PORT LTA991:
```

15. Associate the DECserver name, port name, and port number in the SET PORT command:

```
LCP > SET PORT/NODE=MYSERVER /PORT= XYZ LTA991
```

16. Verify the information by entering:

```
LCP > SHOW PORT LTA991:
```

Information similar to the following is displayed:

```
Local Port Name = LTA991:  
Specified Remote Nodename = MYSERVER  
Specified Remote Port Name = XYZ
```

17. Exit the LATCP program:

```
LCP > exit
```

18. Make sure that the printer on the DECserver can be accessed from the VMS server. You can test this by copying a file from the VAX to the port LTA991. To copy the file MYFILE.TXT to port LTA991, enter:

```
$ COPY MYFILE.TXT LTA991:
```

19. Check that you now have a terminal set to LTA991 by entering:

```
$ SHOW TERM LTA991:
```

20. Set the terminal characteristics for LTA991 for the width, page size, case, and speed by entering:

```
$ SET TERM LTA991: /PERM /WIDTH=80 /PAGE=66 /NOBROADCAST -  
$_ /LOWERCASE /SPEED=9600
```

21. Set the device characteristics for LTA991 to be spooled to an intermediate device. The default device is SYS\$DISK, although you can specify any existing VMS disk. You must enter a queue name, such as MYPRINT, which is the name of the queue you create later:

```
$ SET DEVICE LTA991: /SPOOLED=(MYPRINT, SYS$SYSDEVICE)
```

22. Set the protection on the device:

```
$ SET PROTECTION=(S:RWLP,O,G,W)/DEVICE LTA991:
```

23. Initialize the queue. You can associate the queue with its own print symbiont using the /PROCESSOR qualifier. Enter:

```
$ INIT /QUEUE /START /PROCESSOR=LATSYM /ON=LTA991: -
$_/RECORD_BLOCKING MYPRINT
```

24. Check that you can actually print a file, such as MYFILE.TXT by entering:

```
$ PRINT /QUEUE=MYPRINT MYFILE.TXT
```

25. Once these commands work properly, you can include them in your startup files:

- Include the commands that you entered to the LATCP program in steps 14 and 15 in the LTLOAD.COM file
- Include the commands you entered in steps 20 through 23 in the SYS\$STARTUP:SYSTARTUP_V5.COM file.

Setting up Several Printers with a DECserver

The procedure to set up several printers with a DECserver is similar to setting up a single printer with a DECserver.

1. Follow steps 1 through 8 in "Setting Up a Printer with a DECserver" for each printer. After you complete these steps, each printer should have a different port number.
2. Copy a file to each port you created, as described in step 18 in "Setting Up a Printer with a DECserver".
3. You can set up one service on the DECserver to control several printers. You define the service name, which can be associated with more than one port number.

For example, to use a printer service PCSASPOOL with ports 1 and 8, enter:

```
Local > SET SERVICE PCSASPOOL CONNECTIONS -
ENABLED QUEUE ENABLED PORTS 1,8
```

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4. You must rerun the SET PORT command using the service name for each port. For example, to use the two ports LTA990 and LTA991, enter:

```
$ MCR LATCP
LCP> SET PORT /SERVICE=PCASPOOL/QUEUED /NODE=MYSERVER-
_LCP> /NAME=XYZ LTA990:
_LCP>
LCP> SET PORT /SERVICE=PCASPOOL/QUEUED /NODE=MYSERVER-
_LCP> /NAME=ABC LTA991:
```

5. For each port, set the terminal characteristics. For example, for port LTA990, enter:

```
$ SET TERM LTA990 /PERM /WIDTH=80 /PAGE=66 /NOBROADCAST -
$_ /LOWERCASE /SPEED=9600
```

6. Set each device as a spooled device to the disk desired for spooling:

```
$ SET DEVICE LTA990: /SPOOLED=(PCFS$LN03, SYS$SYSDEVICE)
$ SET DEVICE LTA991: /SPOOLED=(PCFS$LN03, SYS$SYSDEVICE)
```

7. Initialize each physical queue associated with each LAT port. Use the device control library, DEVCTL, which is already defined for PCSA printers:

```
$ INITIALIZE /QUEUE /START /LIBRARY=PCFS LN03 DEVCTL -
$_ /SEPARATE = (FLAG, RESET=(RESET))/RECORD_BLOCKING LTA990:
$ INITIALIZE /QUEUE /START /LIBRARY=PCFS LN03 DEVCTL -
$_ /SEPARATE = (FLAG, RESET=(RESET))/RECORD_BLOCKING LTA991:
```

8. Initialize and start the generic print queue. The PCSA generic print queue name for a LN03 is PCFS\$LN03:

```
$ INITIALIZE /QUEUE /START /GENERIC=(LTA990:, LTA991) -
$_ /ON=PCFS$LN03 PCFS$LN03
```

9. To check that the DECserver is set up properly, run two different print commands for the following purposes:
 - For printing a large number of files to one printer to ensure that the first printer is busy
 - For printing a single file to the same queue to see if the file is sent to the second printer

Identifying Printer Output for DOS Users

The file server submits print jobs to VMS print queues. The VMS operating system determines the owner of the job and identifies the owner on the banner page (the very first page of printer output) in one of two ways:

- If the user connects to the printer service and specifies a user name and password, then the user name is displayed on the banner page. For example, the user can connect by entering:

```
USE LPT2: \\server_name\LN03_DPORT%MYNAME *
```

If `server_name` is the DECnet node name of the server, the banner page displays the owner of the printer job as:

```
server_name::MYNAME
```

- If the user connects to the printer service without specifying a user name and password, the file server identifies the owner of the print job as the default account on the server.

For example, if the server name is `LETTER`, the owner of the banner on the print page is:

```
LETTER::PCFS$ACCOUNT
```

7

Managing Version 2.2 DECnet/PCSA Clients on a PCSA Version 3.0 Server

When you upgrade your server VMS Services of PCs Version 3.0, you can continue to connect as clients running DECnet/PCSA Client Version 2.2 software. The server must have the Version 2.2 client software on a system virtual disk called PCSA\$DOS_SYSTEM_V22. The Version 2.2 clients connect to and use the software on PCSA\$DOS_SYSTEM_V22. Any clients running Version 2.2 client software continue to work as always.

Managing Version 2.2 clients on a Version 3.0 server involves some steps that differ from the management of the clients on a Version 2.2 server or the management of Version 3.0 clients on the Version 3.0 server. Managing Version 2.2 clients can involve:

- Changing the workstation configuration to change the services the workstation uses, as needed
- Changing the Ethernet address if you install new Ethernet controllers
- Adding new Version 2.2 clients to the Version 3.0 server

If the workstation you are managing boots from the hard disk or diskette, you can reconfigure or add a new workstation simply by running the Netsetup utility. However, if the workstation uses remote boot, reconfiguring or adding a new workstation involves running the Netsetup utility and using PCSA Manager commands.

The Version 2.2 *Configuring Clients at the Workstation* manual provides information on running the Netsetup utility to configure workstations for local boot. This chapter discusses managing Version 2.2 clients that boot from a Version 3.0 server.

Specifically, the chapter explains:

- How to reconfigure a Version 2.2 client
- How to modify a Version 2.2 client profile for a new Ethernet address
- How to configure a new workstation running DECnet/PCSA client Version 2.2 software for remote boot from a PCSA Version 3.0 server
- The PCSA Manager ADD WORKSTATION command syntax

Reconfiguring a Version 2.2 Client on a Version 3.0 Server

To change the types of services a workstation can connect to, reconfigure the workstation profile using the Netsetup utility. When reconfiguring a Version 2.2 client that boots from a Version 3.0 server, you must run the Version 2.2 Netsetup utility, which is on the Version 2.2 system disk, PCSA\$DOS_SYSTEM_V22. To reconfigure a Version 2.2 client, follow these steps at the workstation:

1. With the USE command, connect to the Version 2.2 system disk.

If you are using Version 3.0 client to reconfigure a Version 2.2 client, you must disconnect from the Version 3.0 system disk and reconnect, using the same drive letter, to the Version 2.2 system disk. For example:

```
C:\> USE J: /D
C:\> C:\DECNET\USE J: \\LETTER\PCSA$DOS_SYSTEM_V22 /V
```

The commands in the preceding example:

- Disconnect the workstation from the Version 3.0 system virtual disk
 - Connect the workstation to the Version 2.2 system virtual disk, using the DECnet subdirectory on drive C.
2. With the USE command, connect to the workstation remote boot service, which is identified by the workstation Ethernet address. The *remote boot service* is virtual disk on which you are storing the workstation profile. For example:

```
C:\> USE G: \\LETTER\02-00-2B-01-22-78
```

This command connects to the workstation remote boot service on the server LETTER.

3. Change directories to the DECnet subdirectory on the Version 2.2 system virtual disk. For example:

```
C:\>J:  
J:\>CD DECNET  
J:\DECNET>
```

4. Run the Netsetup utility and make the changes to the workstation profile. When you have checked the new workstation profile and are ready to write the key disk, the Netsetup utility prompts you for the destination drive.
5. Enter the drive letter for the workstation remote boot service. In the example, the drive letter for the workstation remote boot service is G.

The Netsetup utility writes the boot media to the virtual disk, reconfiguring the remote boot disk for the workstation.
6. Exit from the Netsetup utility.
7. Reboot the workstation to test the configuration. If the workstation does not connect to and boot from the server, reconfigure the workstation. If necessary, use the diagnostic diskettes to check the network connection between the client and the server.
8. Reboot the workstation for the new configuration to take effect.

Modifying a Version 2.2 Client Profile for a New Ethernet Address

If you change the Ethernet controller installed on a Version 2.2 client, update the workstation profile to include the new Ethernet address. From the server, enter the PCSA Manager **MODIFY WORKSTATION** command to change the Ethernet address.

NOTE

The **MODIFY WORKSTATION** command requires **OPER** and **SYSPRV** privileges.

The **MODIFY WORKSTATION** command has the following format.

Format

MODIFY WORKSTATION *nodename*
/DEVICE=VAX-ethernet-adapter
/ADAPTER=(TYPE=PC-Ethernet-adapter,
ADDRESS=hardware-address)
/CLIENT_VERSION=pcsa-version
/COMMENT=string

Parameters

nodename

The network node name is 1 to 6 alphanumeric characters, with at least one alphabetic character.

Qualifiers

/DEVICE=VAX-Ethernet-adapter

An optional qualifier that specifies the Ethernet adapter on the server. If you do not include this qualifier, PCSA Manager determines the type of adapter installed on the server.

/ADAPTER=(TYPE=PC-Ethernet-adapter, ADDRESS=hardware-address)

Specify the Ethernet adapter installed in the workstation and the hardware address for the adapter.

For the adapter, specify one of the following:

- DEPCA
- LANCE
- 3C501
- 3C503
- 3C523
- NI5010

/CLIENT_VERSION=pcsa-version

Use this qualifier to specify the client software version. For Version 2.2, use 22.

/COMMENT=string

Use this qualifier to include a comment that describes the workstation. The comment can be up to 17 characters. The comment is displayed when you use the SHOW WORKSTATIONS command.

Example

```
PCSA_MANAGER> MODIFY WORKSTATION WOOLFE -  
_PCSA_MANAGER> /ADAPTER=(TYPE=3C503, ADDRESS=02-60-8C-02-22-78) -  
_PCSA_MANAGER> /CLIENT_VERSION=22 /COMMENT=COMPAQ_CQSYS33_3C503
```

This example changes the Ethernet address of the workstation WOOLFE, which has a newly installed 3COM 3C503 Ethernet adapter.

Adding a Version 2.2 Client for Remote Boot on a Version 3.0 Server

You can configure a Version 2.2 workstation for remote boot on a Version 3.0 server. To configure the workstation for remote boot, you must have the following information:

- The DECnet node name for the workstation
- The DECnet node address for the workstation
- The Ethernet hardware address for the workstation
- The type of Ethernet controller installed on the workstation
- The type of DOS the workstation uses and how that DOS is identified on the server
- How much space to set aside for the boot disk

After collecting the information for each workstation you want to add to boot from the server, you can configure the workstations for remote boot. If you are configuring a newly installed workstation, follow these steps to add the client to a Version 3.0 server:

1. Create the virtual disk for the workstation remote boot service with the **ADD WORKSTATION** command
2. Configure the workstation with the Netsetup utility

This section explains how to complete each step.

Creating the Virtual Disk for the Workstation Remote Boot Service

To create the virtual disk for the boot media, use the PCSA Manager **ADD WORKSTATION** command. The **ADD WORKSTATION** command requires **OPER** and **SYSPRV** privileges, and has the following format.

Format

ADD WORKSTATION *nodename node-address comment*
/DEVICE=VAX-ethernet-adapter
/ADAPTER=(TYPE=PC-Ethernet-adapter,
ADDRESS=hardware-address)
/DOS=installed-dos-name
/CLIENT_VERSION=pcsa-version
/SIZE=boot-disk-size

Parameters

nodename

The 1- to 6-character DECnet node name registered for the workstation.

node-address

The node address for the workstation is made up of the area number (from 1 to 63) and local number (from 0 to 1023) in the format **xx.xxxx**.

comment" "

Use this parameter to include a comment that describes the workstation. Enclose the comment in quotation marks. The comment can be up to 17 characters long. The comment is displayed when you use the **SHOW WORKSTATIONS** command.

Qualifiers

/DEVICE=VAX-Ethernet-adapter

An optional qualifier that specifies the Ethernet on the server. If you do not include this qualifier, PCSA Manager determines the type of adapter installed on the server. The Ethernet controller on a VMS server is used to service MOP requests for the workstation. Use this qualifier only if the server does not recognize the Ethernet controller.

/ADAPTER=(TYPE=PC-Ethernet-adapter, ADDRESS=hardware-address)

Specify the Ethernet adapter installed in the workstation and the hardware address for the adapter.

For the adapter, specify one of the following:

- DEPCA
- LANCE
- 3C501
- 3C503
- 3C523
- NI5010

/DOS=installed-dos-name

The name you gave DOS when you copied it to the server using the DOSLOAD utility. This qualifier identifies the type and version of DOS that you want the workstation to use.

/CLIENT_VERSION=pcsa-version

Use this qualifier to specify the client software version. For Version 2.2, specify 22.

/SIZE=boot-disk-size

This qualifier sets the size of the virtual disk you are creating. Specify a size that equals the size of diskette drive A on the workstation. Specify one of the following:

- 360 Kbytes
- 720 Kbytes
- 1.2 Mbytes
- 1.44 Mbytes

If you do not include this qualifier, the PCSA Manager automatically sets the size of the virtual disk to 360 Kbytes.

Example

```
PCSA_MANAGER> ADD WORKSTATION BRONTE 8.765 -  
_PCSA_MANAGER>"COMPAQ_CQV33_1.22MB" -  
_PCSA_MANAGER>/ADAPTER=(TYPE=3C503, ADDRESS=02-60-8C-01-22-78) -  
_PCSA_MANAGER>/DOS=CQSYSV33/CLIENT_VERSION=22 /SIZE=1.2MB
```

The command in this example sets aside a 1.2 Mbyte virtual disk to be used by the following type of workstation:

- A COMPAQ
- DECnet node name: BRONTE
- DECnet node address: 8.765
- Ethernet address: 02-60-8C-01-22-78
- An installed 3COM 3C503 Ethernet controller
- Running COMPAQ DOS Version 3.3
- Running DECnet/PCSA Client Version 2.2 software from the server

Configuring A Workstation for Remote Boot

After you create the virtual disk, you can configure the workstation with the Version 2.2 Netsetup utility. When you run the Netsetup utility to configure the workstation for remote boot, you write the profile to the virtual disk you created. The virtual disk becomes the remote key disk for the workstation.

To configure the workstation from the workstation, follow these steps:

1. With the USE command, connect to the Version 2.2 system disk.

If you are using Version 3.0 client to reconfigure a Version 2.2 client, you must disconnect from the Version 3.0 system disk and reconnect, using the same drive letter, to the Version 2.2 system disk. For example:

```
C:\> USE J: /D
C:\> C:\DECNET\USE J: \\LETTER\PCSA$DOS_SYSTEM_V22 /V
```

The commands in the example:

- a. Disconnect the workstation from the Version 3.0 system virtual disk
 - b. Connects the workstation to the Version 2.2 system virtual disk, using the DECnet subdirectory on drive C.
2. Connect to the virtual disk you created to use for the workstation boot device. For example:

```
C:\> USE G: \\LETTER\2-60-8C-01-22-78/V
```

The USE command in the example connects the workstation to the virtual disk set aside for the remote boot service and assigns the drive letter G to the disk.

3. Change directories to the DECnet subdirectory on the Version 2.2 system virtual disk. For example:

```
C:\>J:
J:\>CD DECNET
J:\DECNET>
```

4. Enter the NETSETUP command to run the Netsetup utility from the server. The Version 2.2 Netsetup utility is stored on the system virtual disk, PCSA\$DOS_SYSTEM_V22. For example:

```
J:\DECNET> NETSETUP
```

5. Answer the prompts displayed by the Netsetup utility. For information, see *Configuring Clients at the Workstation*, which is part of the Version 2.2 documentation set.

When you have checked the workstation profile and are ready to write the key disk, the Netsetup utility prompts you for the destination drive.

6. Enter the drive letter for the virtual disk you created with ADD WORKSTATION command. In the example, the drive letter for the workstation boot device is G.

The Netsetup utility writes the boot media to the virtual disk, creating the remote boot disk for the workstation.

7. Exit from the Netsetup utility.
8. Reboot the workstation to test the configuration. If the workstation does not connect to and boot from the server, reconfigure the workstation. If necessary, use the diagnostic diskettes to check the network connection between the client and the server.

Reference

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8

PCDISK Utility

This chapter describes the *PCDISK utility*, which is a file management utility that runs on VMS. This file management utility is a program that provides a set of related general purpose functions, such as file copy, file transfer, and directory listing. With PCDISK, you can access or maintain the contents of a DOS device on the VMS operating system. Throughout this chapter, the term *DOS device* refers to any of the following:

- Virtual disk files that emulate a DOS diskette
- PCSA supported disk services
- VMS accessible DOS-formatted devices, for example, an RX33 diskette

This chapter discusses:

- Supported media
- How to run PCDISK
- Wildcards
- VMS command line editing
- Backup capability
- Command procedures
- PCDISK utility commands

Supported Media

PCDISK supports the following DOS devices:

- DOS virtual disks

VMS sequential files that PCSA supported workstations can access. The full specification for a virtual disk is:

```
node"password"::device:[directory]filename.ext
```

You must specify the file name portion of the DOS device specification. It is not necessary to specify the file extension. The default file extension for virtual disk files is .DSK.

- PCSA disk services

Disk services offered by a PCSA server. The full specification for a PCSA disk service is:

```
node"password"::service_name
```

- DOS-formatted devices

VMS accessible device in DOS format. The device name specification must **not** have a node, directory, or file specification, and must be followed by a colon (for example, DUA2:). Supported DOS-formatted devices include:

- RX23 diskettes (1.4 Mbyte only)
- RX33 diskettes (1.2 Mbyte only)

How to Run PCDISK

To run the PCDISK utility, at the \$ prompt, enter:

```
$ RUN SYS$SYSTEM:PCDISK
```

The following prompt is displayed:

```
PCDISK>
```

After the PCDISK prompt is displayed, you need to connect the DOS devices that contain the files you want to reference. You connect a DOS device with the USE command. For example, to connect a virtual disk file, physical diskette, and a PCSA disk service enter the following.

```
PCDISK>USE A: MY_FILES.DSK
A:\>USE B: DUA1:
A:\>USE C: BRONTE::MY_SERVICE /LAD_SERVICE
A:\>
A:\>SHOW CONNECTIONS
```

Drive	Type	Access	Sectors	Name
A:	Floppy	R/W	2400	DUA0:[USER]MY_FILES.DSK;
B:	Device	R/W	2400	DUA1:
C:	LAD Floppy	R/W	65528	BRONTE::MY_SERVICE

Once you make your connections, you can manage your files within the DOS devices or you can copy files between VMS and the DOS devices using the PCDISK commands. For information on the PCDISK commands, see PCDISK Utility Commands in this chapter.

The following sections describe:

- Information common to all commands
- The PCDISK commands

Information Common to All PCDISK Commands

The following information applies to all PCDISK commands:

- Many commands are followed by qualifiers. These qualifiers supply additional information for specific command execution. Qualifiers are preceded by a forward slash (/). For example:

```
A:\>DEL E:DATA.TXT/LOG
```

The /LOG qualifier indicates that you want a printed message on the screen stating which file you deleted.

- Separate commands and parameters with delimiters. Valid delimiters are:
 - Space
 - Tab
- Commands execute when you press the Return key.
- The prompt is the default drive/directory designation followed by a right angle bracket (>). For example, in the following, the prompt for drive A selected to the root directory, is:

```
A:\>
```

Some command explanations refer to disk drives or files as the source and destination.

- The *source* is the drive or file from which you transfer information.
- The *destination* is the the drive or file to which you transfer information.

In all cases, enter the source before the destination. In the following example, SOURCE.TXT is the source (the file from which the COPY command transfers information) and DESTINAT.TXT is the destination (the file to which the COPY command transfers information):

```
A:\>COPY A:SOURCE.TXT C:DESTINAT.TXT  
A:\>
```

Naming DOS Files

The following rules apply to naming files:

- A file name has two parts:
 - The one- to eight-character file name.
 - The one- to three-character file extension.

NOTE

PCDISK produces an error for any file names that are greater than eight characters and any file extensions that are greater than three characters.

- You cannot use the following characters in a file name or file extension:
, " / \ [] : | < > + = ; period (.)
- Use a period (.) to separate a file name and a file extension.

- You can enter file names and file extensions that use the following characters:

A-Z	a-z	0-9
\$	&	#
%	'	(
)	-	@
^	{	}
~	'	!
-		

- Because the DOS operating system reserves certain words for special purposes, you cannot use the following words as file names:

AUX	CON
PRN	NUL
CLOCK\$	LPT
LPT1	LPT2
LPT3	LPT4
COM1	COM2
COM3	COM4

In addition to naming files, you must also be familiar with DOS directory structures and path names. For information on directories and paths, see your DOS reference manual.

Wildcards

A *wildcard* is a character that is used alone or replaces characters in a file name or file extension. Wildcards can give many commands greater flexibility. You can use wildcards with the following PCDISK commands:

- **ATTRIBUTE**
- **COPY**
- **DELETE**
- **DIRECTORY**
- **EXPORT**
- **IMPORT**

- **RENAME**
- **SET FILE**
- **XCOPY**

The wildcards, which are discussed in the following sections, are:

- **The asterisk**
- **The question mark**
- **The percent sign**

Asterisk

An asterisk (*) in a file name or file extension indicates that any number of characters (zero or more) can occupy that position. For example, if you type the following command:

```
E:\>
```

PCDISK displays the following information:

```
%PCDISK-I-DELETED, File E:\MEMO1.TXT deleted  
%PCDISK-I-DELETED, File E:\MEMO2.TXT deleted  
%PCDISK-I-DELETED, File E:\MEMO.TXT deleted  
%PCDISK-I-DELETED, File E:\MILLER.TXT deleted  
E:\>
```

Question Mark

A question mark (?) is the single character wildcard for DOS file specifications. A question mark in a file name or file extension indicates that any single character, or no character, can occupy that position. For example if you enter the following command:

```
E:\>DEL MEMO?.TXT/LOG
```

PCDISK displays the following information:

```
%PCDISK-I-DELETED, File E:\MEMO1.TXT deleted  
%PCDISK-I-DELETED, File E:\MEMO2.TXT deleted  
%PCDISK-I-DELETED, File E:\MEMO.TXT deleted  
E:\>
```

Percent Sign

The percent sign (%) is the single character wildcard for VMS file specifications. It is used to allow any single character to occupy its position. Unlike the "?", it requires that a character must exist in its position.

```
E:\>IMPORT MEMO%.TXT/LOG
%PCDISK-I-IPD, WORK:[SARRO]MEMO1.TXT;1 imported to E:\MEMO1.TXT
%PCDISK-I-IPD, WORK:[SARRO]MEMO2.TXT;1 imported to E:\MEMO2.TXT
%PCDISK-I-NIPD, 2 Files imported
E:\>
```











NOTE

The % is a valid character within a DOS file specification.

VMS Command Line Editing

PCDISK supports VMS command line editing using control keys. Table 8-1 lists some of the most useful control key combinations.

Table 8-1 Control Keys

Key	Function
	Moves the cursor to the right.
	Moves the cursor to the left.
	Toggles between overstrike and insert mode.
	Cancels command processing and returns you to the VMS prompt. Ctrl/C is displayed as "Cancel."
	Moves the cursor to the end of the command line.
	Moves the cursor to the beginning of the command line.
	Deletes the word to the left of the cursor.
	Deletes from the cursor to the beginning of the line.
	Interrupts command processing and returns you to the VMS prompt. Ctrl/Y is displayed as "Interrupt."
	Interrupts command processing and returns you to the VMS prompt. Ctrl/Z is displayed as "Exit."

In addition, PCDISK also supports parameter prompting. If you omit part of a command, your system prompts you for the missing information. A line beginning with an underscore (_) means the system is waiting for your response. For example, if you want to rename the file STANDARD.EXE on the default drive to SYSTEM.EXE, and you enter the command RENAME only, PCDISK displays the following:

```
A:\> RENAME
_From: STANDARD.EXE
_To: SYSTEM.EXE
A:\>
```

Backup Capability

Using a series of PCDISK commands, you can create a backup virtual disk for your DOS device without using excess disk space. To do this:

- Use the CREATE command to create a virtual disk file. Use the /ALLOCATION qualifier to minimize disk usage.
- With the USE command, connect to the DOS device you want to back up and the newly created virtual disk file.
- Use the XCOPY command and specify the /SUBDIRECTORIES and the /MODIFIED qualifiers to copy only modified files from the source to the destination.

For example,

```
PCDISK>CREATE BACKUP.DSK /SIZE=5MB /ALLOC=100 /VOL=BACKUP
PCDISK>USE A: ACTIVE.DSK
A:\>USE B: BACKUP.DSK
A:\>XCOPY A:\ B:\ /SUBDIRECTORIES /MODIFIED /LOG
...
A:\>EXIT
```

The above commands back up the virtual disk file ACTIVE.DSK to BACKUP.DSK. They scan the directory tree structure of the source device, and create an identical tree structure on the destination device. Only those files that have the "Archive" file attribute are copied. Upon completion of each copy operation, the source file's "Archive" attribute is cleared.

Disk space is dynamically allocated as needed during the backup operation.

The PCDISK Utility Commands section explains the CREATE and XCOPY commands used in the backup operation.

Command Procedures

PCDISK supports PCDISK and DCL command procedures. A *PCDISK command procedure* is a file that contains PCDISK commands. You can write PCDISK command procedures to execute a few commonly used commands from within PCDISK. You can also invoke command procedures from the DCL level. You can use a DCL command procedure to invoke PCDISK and execute commands to do DOS file management functions.

Use a text editor to create and format a command procedure. When you name the command procedure, use the file type COM. The @ command appends the default file type COM to the file name you specify. If you use another file type you must specify the file type when you execute the command procedure.

When you execute a command procedure, the file is read and the commands it contains are run. For example, suppose you have two files in your directory that you connect every time you run the PCDISK utility. You can use the following PCDISK command procedure, called *CONNECT.COM* to connect the files and display a completion message.

```
USE A: DOSA.FPY/LOG
USE B: DOSB.FPY/LOG
```

The following example shows how to start the PCDISK utility and run *CONNECT.COM* from within PCDISK:

```
$ RUN SYS$SYSTEM:PCDISK
PCDISK V1.1 BL3
PCDISK> @CONNECT
%PCDISK-I-VFCON, Diskette DUA0:[MYDIR]DOSA.FPY; connected as drive A:
%PCDISK-I-VFCON, Diskette DUA0:[MYDIR]DOSB.FPY; connected as drive B:
A:\>
```

You can also use a command procedure to start PCDISK from DCL, run commands within the PCDISK utility, and exit. For example, if you have a virtual disk (WORK.DSK) that you want to back up daily, you can use a DCL command procedure to do this. Use the procedure explained in Backup Capability, to create a backup disk (BACKUP.DSK). To back up daily modifications of the virtual disk WORK.DSK, your command procedure might look like the following—BACKUP.COM:

```
$ RUN SYS$SYSTEM:PCDISK
USE A: WORK.DSK
USE B: BACKUP.DSK
XCOPY A:\ B:\ /SUBDIRECTORIES /MODIFIED /LOG
...
EXIT
$ EXIT
```

PCDISK Utility Commands

Table 8-2 lists the PCDISK commands and briefly describes their functions.

Table 8-2 PCDISK Commands

Command	Description	Function
ATTRIBUTE	Attribute	Sets, clears, or displays DOS file attributes.
CHDIR or CD	Change Directory	Displays or sets the default directory.
COPY	Copy	Copies DOS files between and within DOS devices.
CREATE	Create	Creates and formats a DOS virtual disk file.
DELETE	Delete	Removes one or more files from a DOS device.
DIRECTORY	Directory List	Displays information about the file entries contained in a specified directory.
EXIT	Exit	Disconnects any assigned DOS devices, and then exits the PCDISK utility.
EXPORT	Export File	Copies (exports) a DOS file from a DOS device to the VMS file system.
FORMAT	Format	Formats a DOS device.
HELP	Help	Displays help about PCDISK commands.

Table 8-2 (Cont.) PCDISK Commands

Command	Description	Function
IMPORT	Import File	Copies (imports) a file from the VMS file system to a DOS device.
LABEL	Label	Creates, changes, or deletes a disk volume label on a specified drive.
MKDIR or MD	Make Directory	Creates a directory on a DOS device.
RENAME	Rename File	Renames a specified file.
RMDIR or RD	Remove Directory	Removes a directory from a DOS device.
SET	Set	Sets disk and file information within a connected DOS device.
SHOW	Show	Displays information about active connections, services on available servers, and the PCDISK software version.
SPAWN	Spawn	Creates a subprocess, suspending but not ending, the current PCDISK session.
TYPE	Type	Displays the contents of a file.
USE	Use	Connects and disconnects a DOS device.
VOLUME	Volume	Displays the disk volume of a specified drive.
XCOPY	Xcopy	Copies files from more than one directory

The vocabulary in the following command section consists of commands, parameters, and qualifiers. Items in brackets ([]) are optional. If all the parameters are optional, at least one parameter must be used with the command.

When specifying a command or qualifier, use enough letters to uniquely identify the command or qualifier. For example, you can shorten the DIRECTORY command to DIR, and the /LAD_SERVICE qualifier to /LAD. If you do not use enough letters, you will get an error message.

ATTRIBUTE

Sets, clears, or displays DOS file attributes.

DOS file *attributes* are the file's characteristics. The attributes indicate that the files have special protections. Table 8-3 describes the attributes.

Table 8-3 Directory File Attributes

Attribute	Meaning
ARCHIVE	A file that has not been backed up.
HIDDEN	A file that is not visible during normal operations.
READ_ONLY	A file you cannot change or delete.
SYSTEM	A file used by the operating system. System files are normally hidden.

Format

ATTRIBUTE *file-spec* **[/[NO]ARCHIVE][/[NO]HIDDEN] -**
[/[NO]READ_ONLY][/[NO]SYSTEM][/[NO]LOG]

Parameters

file-spec

Is the DOS file specification.

Qualifiers

/ARCHIVE

/NOARCHIVE

Sets or clears the archive file attribute.

HIDDEN

/NOHIDDEN

Sets or clears the hidden file attribute.

/READ_ONLY
/NOREAD_ONLY

Sets or clears the read-only file attribute.

/SYSTEM
/NOSYSTEM

Sets or clears the system file attribute.

/LOG
/NOLOG (default)

Controls whether the **ATTRIBUTE** command displays the file specification and attributes of each file.

Examples

1. **E:\>ATTRIBUTE USE.DIA/HIDDEN/LOG**
%PCDISK-I-ATT, E:\USE.DIA file attributes set to " H "

This example shows how to set the file attribute to hidden on file USE.DIA.

2. **E:\>ATTRIBUTE USE.DIA/NOHIDDEN/LOG**
%PCDISK-I-ATT, E:\USE.DIA file attributes set to " "

This example shows how to clear the hidden file attribute on file USE.DIA.

3. **E:\>ATTRIBUTE MEMO.DIA/SYSTEM/LOG**
%PCDISK-I-ATT, E:\MEMO.DIA file attributes set to " S "

This example shows how to set the file attribute to system on file MEMO.DIA.

CHDIR

Changes or displays the current default directory.

Format

CHDIR or CD *[path]*

Parameters

[path]

Is the path to which you want to change.

You can display the default directory path for the current drive by omitting this parameter or for another drive by specifying the drive letter only.

Examples

1. E:\>CHDIR PERSONAL
E:\PERSONAL>

This example changes from the root directory to the subdirectory \PERSONAL.

2. E:\>CD \PERSONAL\USER\FILES
E:\PERSONAL\USER\FILES>

This example changes \PERSONAL\USER to the subdirectory \PERSONAL\USER\FILES.

3. E:\PERSONAL\USER\FILES>CHDIR..
E:\PERSONAL\USER>

This example changes to the directory above your current directory.

4. E:\PERSONAL\FILES>CD \
E:\>

This example changes from the subdirectory \PERSONAL\USER to the root directory.

COPY

Copies DOS files between and within DOS devices.

Format

```
COPY [drv1:][\path1\][filename1.ext]-  
      [drv2:][\path2\][filename2.ext][/LOG]-  
      [/FORCE_WRITE]
```

Parameters

drv1:

Is the DOS drive containing the file you want to copy. If you omit this drive, the COPY command uses the default drive.

\path1

Is the DOS path name containing the file you want to copy. If you omit this path, the COPY command uses the default path.

filename1.ext

Is the file name and file extension of the file you want to copy. If you omit this, it implies that you want to copy all files within the specified directory.

drv2:

Is the destination DOS drive for the COPY operation. If you omit this drive, the COPY command uses the default drive.

\path2

Is the destination DOS path name for the COPY operation. If you omit this path, the COPY command uses the default path.

filename2.ext

Is the file name and file extension of the destination file. If you omit the destination file name and file extension, the COPY command uses the source file name.

Qualifiers

/LOG

Controls whether the COPY command displays the file specifications of each file copied.

/FORCE_WRITE

Forces the COPY operation to occur even if the destination file has the read-only attribute.

Examples

1. E:\>COPY A:SAMPLE.DAT
E:\>

This example copies SAMPLE.DAT in the default directory on drive A to drive E.

2. E:\>COPY USER.BAT A:
E:\>

This example copies USER.BAT from the default drive to drive A.

3. E:\>COPY MYFILE.TXT YOURFILE.TXT/LOG
%PCDISK-I-CPD, E:\MYFILE.TXT to E:\YOURFILE.TXT
E:\

This example makes a copy of MYFILE.TXT with the name YOURFILE.TXT, and displays a message stating which file you copied.

4. E:\>COPY MYFILE.TXT A:AFILE.TXT

This example copies MYFILE.TXT to drive A and names it AFILE.TXT.

5. E:\>COPY *.* H:/LOG
%PCDISK-I-CPD, E:\RULES.MMS copied to H:\RULES.MMS
%PCDISK-I-CPD, E:\SYMBOL.TXT copied to H:\SYMBOL.TXT
%PCDISK-I-CPD, E:\USER.TXT copied to H:\USER.TXT
%PCDISK-I-NCPD, 3 File(s) copied

This example copies all the files in the root directory on drive E to drive H and displays a listing of all the files you copied.

CREATE

Creates and formats a DOS virtual disk file. If there is a file by the same name in the target directory, the virtual disk file is not created.

Format

```
CREATE file-spec [/ALLOCATION=n][/CONTIGUOUS]-  
      [/SIZE=n][/VOLUME_LABEL=text] [/LOG]
```

Parameters

file-spec

Is the VMS file specification.

Qualifiers

/ALLOCATION=*n*

Forces the allocation of the virtual disk file to the number of 512-byte blocks specified by *n*. The allocation size overrides the implicit size given by the */SIZE* qualifier, but may not exceed it. The */ALLOCATION* quantity must be between the limits specified in Table 8-4. Use the */ALLOCATION* qualifier to create a virtual disk that is physically smaller than its formatted size.

/CONTIGUOUS

Specifies that the virtual disk file must be *contiguous*, that is, the file must occupy consecutive physical disk blocks. An error occurs if there is insufficient contiguous space to create the file. By default, a virtual disk file is allocated "contiguous best try".

/LOG

Controls whether the *CREATE* command displays a completion message stating the name of the new virtual disk file.

/SIZE=*keyword*

Defines the formatted size of the virtual disk file. When the virtual disk file is created, it is allocated the space specified by the */SIZE* qualifier, unless it is overridden by the */ALLOCATION* qualifier. Values for this qualifier and the resultant VMS file sizes (in blocks) are:

Table 8-4 Virtual Disk Sizes in Blocks

Qualifier Value	Default Allocation	Minimum Allocation Size
360KB	720 Blocks	12 Blocks
720KB	1440 Blocks	14 Blocks
1.2MB (default)	2400 Blocks	29 Blocks
1.44MB	2880 Blocks	33 Blocks
5MB	10240 Blocks	66 Blocks
10MB	20480 Blocks	16417 Blocks
20MB	40960 Blocks	16417 Blocks
32MB	65535 Blocks	16417 Blocks

/VOLUME_LABEL=text

Indicates that you want a volume name affixed to your virtual disk file. The volume name can contain 1 to 11 characters. For examples of legal characters in volume labels, follow the PCDISK file naming conventions in Naming DOS Files. In addition to the legal characters, you can use the space and the period (.). If you use a space in the volume label, make sure you enclose the text string in quotes.

Examples

1. E:\>Create USER.DSK/SIZE=360kb/ALLOC=600 -
_E:\>/VOLUME_LABEL="DOS Files"/LOG
%PCDISK-I-CREATE, WORK:[PCDISK]USER.DSK; Created
E:\>

This example shows how to create a 600-block virtual disk with the volume label DOS Files. Because the virtual disk size falls within the correct ranges in Table 8-4, the volume label is created. A completion message is displayed stating the name of the disk.

2. E:\>Create USER.DSK/SIZE=360kb/ALLOC=3
%PCDISK-E-ECREATE, Error creating WORK:[PCDISK]USER.DSK;
-PCDISK-E-ALOUSTRANG, ALLOCATION quantity must be within 12 to
720 blocks
E:\>

This example shows the error message you receive when you try to create a virtual disk file that is less than the minimum allocation size.

DELETE

Removes one or more files from a DOS device.

Format

DELETE *[drv:][\path\][filename.ext][[/LOG]-
[/FORCE_WRITE][/[NO]QUERY]*

Parameters

drv:

Is the DOS drive containing the file you want to delete. If you omit this drive, the DEL command uses the default drive.

\path

Is the DOS path name containing the file you want to delete. If you omit this path, the DEL command uses the current directory.

filename.ext

Is the file name and file extension of the file you want to delete.

Qualifiers

/LOG

Controls whether the **DELETE** command displays the file specification of each file after its deletion.

/FORCE_WRITE

Forces the **DELETE** operation to occur even if the file you want to delete has the read-only attribute.

/QUERY (default)

/NOQUERY

Controls whether the "Are you sure (Y/N)?" query is issued when all files in a directory are specified. **/NOQUERY** would commonly be used within a command procedure.

Examples

1. E:\>DEL MEMO.DAT

This example shows how to delete the file MEMO.DAT on drive E.

2. E:\>DEL MEMO.DAT/LOG
%PCDISK-I-DLD, File MEMO.DAT deleted

This example shows how to delete the file MEMO.DAT on drive E, and display a message stating which file you deleted.

3. E:\>DEL A:TEST.DAT

This example shows how to delete the file TEST.DAT in the default directory on drive A when selected to drive E, enter:

4. E:\>DEL \WORK\MEMO.TXT

This example shows how to delete the file MEMO.TXT in the subdirectory WORK on drive E, enter:

5. E:\>DEL *.COM/LOG
%PCDISK-I-DLD, File E:\TEST.COM deleted
%PCDISK-I-DLD, File E:\LINK.COM deleted
%PCDISK-I-DLD, File E:\BOOK.COM deleted
%PCDISK-I-DLD, File E:\TEXT.COM deleted
%PCDISK-I-NDDL, 4 Files deleted

This example shows how to delete all the files that end with the file extension .COM in the root directory on drive E.

DIRECTORY

Displays information about the file entries contained in a directory. When you use the **DIRECTORY** command, files are listed with the size (in bytes), the time, and the date of their last modification. The last column of the listing displays the file attributes. The file attributes are:

- **A**—archive
- **S**—system file
- **H**—hidden file (hidden files are listed in a directory search)
- **R**—read-only file

Also listed is the volume name, number of bytes used, and the number of files in the directory listing.

Format

```
DIRECTORY [drv:][\path\][filename.ext]-  
          [/[NO]ATTRIBUTES][/[ARCHIVE_ONLY]-  
          [/[NO]HIDDEN]
```

Parameters

drv:

Is the DOS drive containing the files for which you want a directory listing. If you omit this drive, the **DIR** command uses the default drive.

\path

Is the DOS path name for which you want a directory listing. If you omit this path, the **DIR** command uses the current directory.

filename.ext

Is the file name and file extension of the files you want displayed. If this is omitted, all the files with the specified or defaulted directory will be displayed.

Qualifiers

/ATTRIBUTES (default)

/NOATTRIBUTES

Displays or suppresses the file attributes.

/ARCHIVE_ONLY

Specifies that the directory is to include only those files that have the archive bit set.

/HIDDEN (default)

/NOHIDDEN

Displays or suppresses hidden files. */NOHIDDEN* takes precedence when specified with the */ARCHIVE_ONLY* qualifier.

Example

To list all the files for the current directory on drive E.

E:\>DIR

Volume in Drive E is HARD_LOG1
Directory of E:\

USER	<DIR>		9-27-88	11:26a	
SAMPLE	WK1	13758	8-15-88	9:30a	A
SAW	EKE	38912	1-09-88	5:14p	
FALSE	WK1	2332	4-30-88	4:31p	A
456	TMP	133485	9-12-88	1:23a	A
AUTOUSER	BAT	662	7-25-88	2:18p	
JUNK	DAT	68	10-05-88	8:58a	

Total of 189217 bytes in 7 files.

E:\>

EXIT

Releases any connected DOS devices and exits the PCDISK utility.

Format

EXIT [/LOG]

Qualifiers

/LOG

Controls whether the EXIT command displays a completion message for each drive as it is disconnected during the exit procedure.

Example

```
A:\>EXIT/LOG
%PCDISK-I-VFDCON, Diskette WORK:[SARRO]MY_DOS_DISK.DSK; drive E:
disconnected
$
```

This example shows how to display the disconnected drives when you exit, and to display a message stating which drives you disconnected.

EXPORT

Copies (exports) a DOS file from a DOS device to the VMS file system.

Format

```
EXPORT [drv:][\path\]filename1.ext -  
       [disk][directory]filename2.ext -  
       [/FORMAT=record_format][/SIZE=record_size][/LOG]
```

Parameters

drv:

Is the DOS source drive containing the file you want to copy. If you omit this drive, the EXPORT command uses the default drive.

\path

Is the DOS source path name containing the file you want to copy. If you omit this path, the EXPORT command uses the current directory.

filename1.ext

Is the file name and file extension of the file you want to copy.

disk

Is the VMS destination device name. If you omit this name, the EXPORT command uses the default VMS device.

directory

Is the VMS destination directory name. If you omit this directory name, the EXPORT command defaults to the current VMS default directory.

filename2.ext

Is the file name and file extension of the destination file. You can use any valid VMS file name and file extension as the destination file. If you omit the file name and extension, the file defaults to the source file name.

Qualifiers

/FORMAT

Lets you specify the record format of the destination file(s). Use of the ***/SIZE=n*** qualifier overrides this qualifier and causes a fixed record format. Valid record formats include:

- **STREAM** (default)
- **FIXED**

/SIZE

Lets you specify the record size of the destination file(s). If you specify ***/FORMAT=FIXED***, without the ***/SIZE*** qualifier, the record size defaults to 512 bytes. Valid record sizes are in the range of 2 bytes to 32766 bytes. Record size numbers must be even.

/LOG

Controls whether the **EXPORT** command displays the file specifications of each file exported.

Examples

1. **E:\>EXPORT SETUP.BAT**
E:\>

This example shows how to export the file **SETUP.BAT** from the current drive **E** to the default VMS directory.

2. **E:\>EXPORT D:\PERSONAL\SAMPLE.TXT EXAMPLE.DAT**
E:\>

This example shows how to export the file **SAMPLE.TXT** from the subdirectory **\PERSONAL** on drive **D** to the default VMS directory with the destination file name **EXAMPLE.DAT**.

3. **E:\>EXPORT MYFILE.DAT [JONES.TEMP]YOURFILE.DAT/LOG**
%PCDISK-I-EPD, E:\MYFILE.DAT exported to DUA0:[JONES.TEMP]
YOURFILE.DAT
E:\>

This example shows how to export the file **MYFILE.DAT** from drive **E** to the VMS subdirectory **JONES.TEMP**. The destination file is named **YOURFILE.DAT**. A message stating which file you exported, and its destination is displayed.

FORMAT

Lets you format a DOS device. You must have the PHY_IO privilege to format a physical device.

CAUTION

FORMAT destroys all the information recorded on your DOS device. Do not use FORMAT on a DOS device that contains useful information.

Format

FORMAT *drv: [/DEVICE=device_name] -
[/VOLUME_LABEL=text][/LOG]*

Parameters

drv:

Is the DOS drive you want to format.

Qualifiers

/DEVICE=device_name

Specifies physical VMS devices that contain non-DOS media or media that has never been formatted. The VMS device name must not contain a node, directory, or file specification. The device name must be followed by a colon, for example, DUA2:. You can use logicals that adhere to the above conventions. The FORMAT command with this qualifier, will connect the device to the specified DOS drive letter.

/VOLUME_LABEL=text

Indicates that you want a volume name affixed to your DOS-formatted diskette. The volume name contains 1 to 11 characters. Follow the DOS file naming conventions in the section "Naming DOS Files" for examples of legal characters for volume labels.

/LOG

Controls whether the FORMAT command displays a completion message stating the name of the formatted device.

Examples

1. `PCDISK>FORMAT DUA2:`
`PCDISK>`

This example DOS-formats the VMS diskette DUA2.

2. `PCDISK>FORMAT A: /DEVICE=DUA2: /VOLUME_LABEL=CONFERENCES`
`A:\>`

This example DOS-formats the VMS diskette DUA2, affixes the volume label CONFERENCES to it, and automatically connects it to drive A.

3. `A:\>FORMAT A: /VOLUME_LABEL=CONFERENCES /LOG`
`%PCDISK-I-FORMAT, Drive A: disk DUA0:[MYDIR]MYFILES.DSK Formatted`
`A:\>`

This example DOS formats the virtual disk file, affixes the volume label CONFERENCES to it, and displays a completion message.

HELP

Lets you obtain online documentation for any PCDISK command. Displays information including formats and explanations of commands, parameters, and qualifiers.

Format

HELP [*topic*][/*[NO]PAGE*][/*OUTPUT=file_spec*]

Parameters

topic

Is the PCDISK command about which you want information.

Qualifiers

/PAGE (default)

/NOPAGE

Controls whether to stop the HELP display when the screen is full. If you specify */NOPAGE*, output continues until the information display ends or until you manually control the scrolling.

/OUTPUT[=file_spec]

Controls where the output of the command is sent. If you do not enter the qualifier, or if you enter */OUTPUT* without a file specification, the output is sent to the current process default output stream or device identified by the logical name SYS\$OUTPUT.

If you enter */OUTPUT* with a partial file specification (for example, */OUTPUT=JONES*), *HELP* is the default file name and *.LIS* is the default file extension. If you enter a file specification, no wildcards are allowed.

Example

You can obtain online documentation for any PCDISK command by invoking the **HELP** command. To use the **HELP** facility in its simplest form, enter the command **HELP**. **HELP** displays a list of topics and the **Topic?** prompt. To see information on one of the topics, enter the topic name after the prompt. The following is a sample **HELP** display for the PCDISK command **IMPORT**:

```
E:\>HELP IMPORT
```

IMPORT

Import copies one or more VMS files into a DOS device. During wildcard search, any VMS files that do not conform to the DOS file naming conventions will be ignored. These files may be imported by specifying the full VMS file name, (no wildcards), and supplying a valid DOS output file name.

Format:

```
IMPORT VMS-input-spec [DOS-output-spec]
```

Additional information available:

Parameters	Command	Qualifiers
/FORCE_WRITE		/LOG

IMPORT Subtopic?

If the topic has subtopics, **HELP** lists the subtopics and displays the **Subtopic?** prompt. For information on one of the subtopics, enter the name after the prompt. For information on another topic, press the **Return** key. You can ask for information on another topic when **HELP** displays the **Topic?** prompt. To exit the **HELP** system, press **Return** again. At any time, press **CTRL/Z** to exit.

IMPORT

Copies (imports) a file from your VMS file system to a DOS device.

Format

```
IMPORT [device][directory]filename1.ext-  
      [drv:][\path\][filename2.ext]-  
      [/LOG][FORCE_WRITE]
```

Parameters

device

Is the VMS source containing the file you want to import. If you omit this name, the IMPORT command uses the default VMS device.

directory

Is the VMS directory name containing the file(s) you want to copy. If you omit this directory name, the IMPORT command uses the current default VMS directory.

filename1.ext

Is the VMS file name and file extension of the file(s) you want to copy. Make sure your VMS file meets the conventions for DOS file name and file extension. If your VMS file name and file extension do not adhere to the DOS file-naming conventions, you must import the file specifying a valid DOS file name as the destination file name. See the Naming DOS Files section of this chapter.

drv:

Is the DOS destination drive for the IMPORT command. If you omit this drive name, the IMPORT command uses the default drive.

\path

Is the DOS destination path name for the IMPORT command. If you omit this path, the IMPORT command uses the current directory.

filename2.ext

Is the file name and file extension of the destination file. If this is omitted the name of the source file is used.

Qualifiers

/LOG

Controls whether the **IMPORT** command displays the file specifications of each file imported.

/FORCE_WRITE

Forces the **IMPORT** operation to occur even if the destination file has the read-only attribute.

Examples

1. **E:\>IMPORT SETUP.BAT**
E:\>

This example shows how to import the file **SETUP.BAT** from the default VMS directory to the current drive **E**.

2. **E:\>IMPORT PROCEDURES_FOR_COPYING_FILES.TXT -**
_D:\PERSONAL\EXAMPLE.DAT
E:\>

This example shows how to import the file **PROCEDURES_FOR_COPYING_FILES.TXT** from the default VMS directory to the subdirectory **\PERSONAL** on drive **D** and name the destination file to **EXAMPLE.DAT**.

3. **E:\>IMPORT [JONES.TEMP]MYFILE.DAT YOURFILE.DAT/LOG**
%PCDISK-I-IPD, DUA0:[JONES.TEMP]MYFILE.DAT imported to E:
YOURFILE.DAT
E:\>

This example shows how to import the file **MYFILE.DAT** from the VMS subdirectory **JONES.TEMP** to drive **E**. The destination file is named **YOURFILE.DAT**. A screen message stating which file you imported and its destination is displayed.

LABEL

Creates, changes, or deletes a disk volume label on the specified drive. The LABEL command is similar to the SET DRIVE command. The SET DRIVE command uses VMS-like command syntax. The LABEL command performs the same function using DOS-like command syntax. Note that *drv:label* is one parameter. Specify this parameter without spaces.

Format

LABEL [*drv:label*]

Parameters

drv:

The drive is specified as an alpha character A to Z or a to z, followed by a colon (:). If you omit this drive, the LABEL command uses the current default drive.

label=text

Specifies the text of the volume label, which can be a maximum of 11 ASCII characters.

Examples

1. E:\>VOLUME
Volume in drive E has no label
Volume label (11 characters, ENTER for none)? APPLICATION
E\>LABEL
Volume in drive E is APPLICATION

This example shows how to create a disk volume label for drive E by being prompted for the information.

2. E:\>LABEL
Volume in drive E is TEST
Volume label (11 characters, ENTER for none)?
Delete current volume label (Y/N)? Y

This example shows how to delete the disk volume label for drive E.

3. E:\>LABEL E:TASKS
E:\>LABEL
Volume in drive E is TASKS
Volume label (11 characters, ENTER for none)? PRACTICE
E:\>VOLUME
Volume in drive E is PRACTICE

**This example shows how to create the volume label TASKS on drive E,
and then change the volume label to PRACTICE on drive E.**

MKDIR

Creates a directory on a DOS device.

Format

MKDIR or MD *[drv:][\path\]directory name[/LOG]*

Parameters

drv:

Is the DOS drive on which you want to make a subdirectory. If you omit this drive, the MKDIR command uses the current drive.

\path

Is the DOS path name you want to make to the new subdirectory.

directory name

Is the name of the subdirectory you are creating.

Qualifiers

/LOG

Controls whether the MKDIR command displays a message stating which subdirectory you created.

Examples

1. E:\>MKDIR PERSONAL
E:\

This example shows how to create the subdirectory PERSONAL in your root directory.

2. E:\>MD \PERSONAL\USER\LOG
%PCDISK-I-MKDIR, Directory \PERSONAL\USER created
E:\

This example shows how to create the subdirectory USER under the subdirectory PERSONAL and displays a message stating that it was created.

RMDIR

Removes a directory from a DOS device.

Format

RMDIR or RD *[drv:][\path\]\directory name[/LOG]*

Parameters

drv:

Is the DOS drive containing the subdirectory you want to remove.

\path

Is the DOS subdirectory you want to remove. You must delete all files in a subdirectory before you use the RMDIR command. You cannot remove root directories.

directory name

Is the name of the subdirectory you are removing.

Qualifiers

/LOG

Controls whether the RMDIR command displays a message stating which subdirectory you removed.

Examples

1. E:\>RMDIR \DOCUMENTS
E:\>

This example shows how to remove the directory DOCUMENTS from drive E.

2. E:\>RD \PERSONAL\USER\LOG
%PCDISK-I-RMDIR, Directory \PERSONAL\USER removed
E:\>

This example shows how to remove the subdirectory USER from the directory PERSONAL on drive E, and to display a screen message stating which directory you removed.

RENAME

Renames a specified file. Unlike the DOS RENAME command, files can be renamed across directories.

Format

```
RENAME [drv:][\path1\]filename1.ext-  
[\path2\]filename2.ext[/LOG]
```

Parameters

drv:

Is the DOS drive containing the file you want to rename. If you omit this drive, the RENAME command uses the default drive. You cannot rename files across drives.

\path1

Is the DOS path name to the directory containing the file you want to rename. If you omit this path, the RENAME command uses the current directory.

filename1.ext

Is the file name and the file extension of the current file.

\path2

Is the DOS path name to the directory that contains the new file name.

filename2.ext

Is the new file name and file extension.

Qualifiers

/LOG

Controls whether the RENAME command displays the file specifications of each file renamed.

Examples

1. E:\>RENAME PAINTER.TXT ARTIST.DAT
E:\>

This example shows how to rename the file PAINTER.TXT on drive E to ARTIST.DAT.

2. E:\>RENAME BOOK.TMP TOME.TMP/LOG
%PCDISK-I-RENAMED, BOOK.TMP renamed to TOME.TMP
E:\>

This example shows how to rename BOOK.TMP to TOME.TMP, and to display a screen message stating which file you renamed and its new name.

3. A:\>RENAME/LOG *.PSA *.PSE
%PCDISK-I-RND, A:CH1.PSA renamed to CH1.PSE
%PCDISK-I-RND, A:CH2.PSA renamed to CH2.PSE
A:\>

This example shows how to use the asterisk as a wildcard to rename files in the current directory. The files with the extension .PSA are changed to have the extension .PSE.

SET

Sets disk and file information within a connected DOS device.

Format

SET *option*

Description

The SET command options are described individually in this chapter. Table 8-5 lists the SET command options.

Table 8-5 SET Command Options

Option	Function
SET CONDITION	Sets the error severity level at which the PCDISK session will terminate
SET DRIVE	Sets or displays volume information
SET FILE	Sets, clears, or displays DOS file attribute information

SET CONDITION

Sets the error severity level at which the active PCDISK session will terminate. This command would commonly be used within a command procedure to terminate the session when an error occurs, rather than attempt execution of subsequent commands.

Format

SET CONDITION [/SEVERITY=*error_level*]

Qualifiers

/SEVERITY=error_level

Specifies the error severity level at which PCDISK will terminate the current active session. Valid levels are:

- WARNING
- ERROR
- SEVERE_ERROR (default)

Example

```
A:\>SET CONDITION /SEVERITY=ERROR  
A:\>
```

This example sets the error severity level at ERROR. If the active PCDISK session encounters errors of this severity, it will terminate.

SET DRIVE

Sets or displays volume information. This command is similar to the LABEL command. The LABEL command sets or displays volume information using DOS-like command syntax. The SET DRIVE command sets or displays information using VMS-like command syntax. To display the volume label, omit the /VOLUME_LABEL qualifier.

Format

SET DRIVE [*drv:*]/[VOLUME_LABEL]

Parameters

drv:

Specifies the drive on which you want to set or display volume information. If you do not specify a drive, the SET DRIVE command uses the current default drive.

Qualifiers

/VOLUME_LABEL=text

Indicates that you want a volume name affixed to your virtual disk file. The volume name can be from 1 to 11 characters. Specifying "" (quotation marks), causes the volume label to be deleted.

Examples

1. E:\>SET DRIVE E:
Volume in drive E has no label

This example displays that drive E has no volume label.

2. A:\>SET DRIVE A:
Volume in drive A is FILES
A:\>SET DRIVE A:/VOLUME LABEL=""
A:\>

This example shows how to delete the volume label FILES from drive A.

3. E:\>SET DRIVE E:/VOLUME_LABEL=TEST

This example shows how to set the volume label to TEST on drive E.

SET FILE

Sets, clears, or displays DOS file attribute information. This command is similar to the **ATTRIBUTE** command. The **ATTRIBUTE** command sets or displays file attributes using DOS-like command syntax. The **SET FILE** command sets or displays attribute information using VMS-like command syntax. To display the file attributes, omit the **/ATTRIBUTE** qualifier.

Format

SET FILE *file-spec* [**/ATTRIBUTES**]/**LOG**

Parameters

file-spec

Specifies the DOS file(s) from which you want attribute information.

Qualifiers

/ATTRIBUTES=[(keyword[,...])]

Specifies one or more attributes to be set or cleared. The following are valid keywords for the **/ATTRIBUTES** qualifier:

- **[NO]ARCHIVE**
- **[NO]HIDDEN**
- **[NO]READ_ONLY**
- **[NO]SYSTEM**

For an explanation of the above keywords, see the **ATTRIBUTE** command.

/LOG

Controls whether the **SET FILE** command displays the file specification and attributes of each file.

Examples

1.

```
E:\>SET FILE TEST.TXT/ATTRIBUTES=archive/LOG
%PCDISK-I-ATT, E:\TEST.TXT file attributes set to " A "
E:\
```

This example sets the file attribute to archive on file **TEST.TXT**.

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SET FILE

2. **E:\>SET FILE TEST.TXT/ATTRIBUTES=noarchive/LOG**
%PCDISK-I-ATT, E:\TEST.TXT file attributes set to " "
E:\>

This example clears the archive attribute from the file TEST.TXT.

3. **E:\>SET FILE TMP.TXT/ATTRIBUTES=(NOSYSTEM,HIDDEN)/LOG**
%PCDISK-I-ATT, E:\TMP.TXT file attributes set to " H "
C:\>

This example clears the system file attribute from the file TMP.TXT, while setting the hidden file attribute.

SHOW

Displays information about active connections, services on available servers, and the current software version of PCDISK.

Format

SHOW *option*

Description

The SHOW command options are described individually in this chapter. Table 8-6 lists all the SHOW command options.

Table 8-6 SHOW Command Options

Option	Displays
SHOW CONNECTIONS	Active connections
SHOW DRIVE	Total bytes and bytes free in a connected drive
SHOW SERVICE	All the available servers that offer the specified service
SHOW VERSION	PCDISK software version.

SHOW CONNECTIONS

Displays active PCDISK connections. The display includes the:

- DOS drive letter
- DOS device type
- Access mode (for example, Read or Write)
- Number of sectors in the DOS device
- DOS device object

For more information on supported DOS devices and their objects, see the Supported Media section at the beginning of this chapter.

NOTE

The SHOW CONNECTIONS command gives you the same output as the USE command.

Format

SHOW CONNECTIONS

Parameters

None

Example

```
A:\>SHOW CONNECTIONS
Drive      Type      Access  Sectors  Name
A:         Floppy    R/W     2400     DUAO:[SARRO.DISKS]MY_DISK.DSK;
B:  LAD Floppy    R       65535    EXCA$SYSTEM_V20
C:         Hard     R/W     20723    DUAO:[SARRO.DISKS]DOSC.HRD
D:         Device   R/W     2400     DUA1:
A:\>
```

This example shows the active PCDISK connections and displays information about them.

SHOW DRIVE

The **SHOW DRIVE** command displays the total number of bytes and number of bytes free in a connected drive. It also displays the drive letter and volume label of the drive. If you omit the drive specification, the **SHOW DRIVE** command uses the current default drive.

Format

SHOW DRIVE [*drv:*]

Parameters

drv:

Specifies the drive for which you want the byte number, drive letter, and volume label displayed.

Examples

1. A:\>SHOW DRIVE

```
Volume in Drive A has no label
Total bytes           :362496
Total bytes free      :253952
A:\>
```

This example displays the byte count and drive for the current default drive.

2. A:\>SHOW DRIVE E:

```
Volume in drive E is VMS FILES
Total bytes           :1213952
Total bytes free      :32256
A:\>
```

This example displays the drive, volume label, and byte count for the specified drive E.

SHOW SERVICE

The **SHOW SERVICE** command displays all the available servers that offer the specified service. The display includes:

- Server node name
- Service rating
- Access mode
- Connection limit to the service
- Number of users of the service
- Password requirements
- Ethernet address of the server node

Format

SHOW SERVICE PCSA_DISK_SERVICE_NAME

Parameters

None

Example

```
A:\>SHOW SERVICE EXCA$SYSTEM_V20
Server Rating Write Limit Users Password Ethernet address
-----
Bronte      1 No      None    18     No     AA-34-56-78-91-01
Woolfe      1 No      30     2      No     AA-13-14-15-16-17
Milton    65535 No      64     0      No     AA-22-23-30-31-32
```

This example shows the servers that offer the service **EXCA\$SYSTEM_V20** and displays information about it.

SHOW VERSION

The **SHOW VERSION** command displays the **PCDISK** software version.

Format

SHOW *VERSION*

Parameters

None

Example

```
E:\>Show Version  
PCDISK V1.1  
E:\>
```

This example shows the **PCDISK** software version as **PCDISK Version 1.1**.

SPAWN

Creates a subprocess, suspending but not ending, your current PCDISK session. You can use SPAWN to locate virtual disk file or run another utility without ending your PCDISK session. Use the LOGOUT command to terminate the subprocess and return to the PCDISK process.

Format

SPAWN *[command-string]*

Parameters

command-string

Specifies a command string to be executed in the context of the created subprocess. When the command completes, the subprocess terminates, and control is returned to the PCDISK process. The command string cannot exceed 132 characters.

Examples

1. PCDISK>SPAWN
\$DIR

```
Directory WORK:[PCDISK]
```

```
DOSA.FPY;1          DOSC.HRD;1          LOGIN.COM;9
DISK.HLB;23         GAMES.ARC;3        MY_DISK.DSK;1
NEW_FILES.COM;3     INDEX.COM;1
```

```
Total of 10 files.
```

```
$LOGOUT
```

```
Process USER_1 logged out at 14-JUN-1989 10:55:55.70
```

```
PCDISK>
```

This example shows how to spawn from your PCDISK session, locate files in a directory search, and return to your PCDISK session.

2. PCDISK>SPAWN MAIL
MAIL>...
MAIL>EXIT
PCDISK>

This example shows how to spawn from your PCDISK session into the mail utility, and return to your PCDISK session.

TYPE

Displays the contents of a file.

Format

TYPE *[drv:][\path\]filename.ext*

Parameters

drv:

Is the DOS drive containing the file you want to display. If you omit this drive, the TYPE command uses the default drive.

\path

Is the DOS path name containing the file you want to display. If you omit this path, the TYPE command uses the current directory.

filename.ext

Is the file name and file extension of the file you want to display.

Examples

1. E:\>TYPE XFILE.DAT
E:\>

This example shows how to display the file XFILE.DAT in the current directory.

2. E:\>TYPE B:YFILE.DAT

This example shows how to display the file YFILE.DAT in the default directory on drive B.

USE

Displays a DOS device.

NOTE

The USE command gives you the same output as the SHOW CONNECTIONS command.

Format

USE *[option]*

Description

The USE command options are described individually in this chapter. Table 8-7 describes the USE command options.

Table 8-7 USE Command Options

Option	Function
USE	Displays connected DOS devices
USE drv: DOS_device	Connects a DOS device
USE drv: /DELETE	Disconnects a DOS device

Example

```
A:\>USE
Unit   Type      Access  Sectors      Name
A:   Floppy    R/W      720    DUA0:[SARRO.PCDISK]FLOPPY.DSK
E:   Floppy    R/W    10319    DUA0:[SARRO.PCDISK]DATA.DSK
A:\>
```

This example shows the active PCDISK connections and displays information about them.

USE drv: DOS_device

The USE drv: command connects a DOS device.

Format

USE drv: *[DOS device][/LOG][/[NO]WRITE] -
[/VIRTUAL][/LAD_SERVICE]*

Parameters

drv:

Is the DOS drive identifier. The possible values are A to Z.

DOS device

The VMS virtual disk file name, DOS-formatted device, or PCSA disk service name that you want to connect as a DOS drive(s). For more information on supported DOS devices and their specification syntax, see the Supported Media section at the beginning of this chapter.

Qualifiers

/LOG

Controls whether the USE command displays the file specifications of each file connected. Indicates that you want a printed message on the screen stating which file you connected.

/WRITE or /RW (default)

/NOWRITE or /RO

Controls whether you can write to the DOS device. Specify /NOWRITE or /RO to provide read-only access and protect files.

/LAD_SERVICE or /VIRTUAL

Specifies that you want to connect a PCSA disk service.

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USE drv: DOS_device

Examples

1. PCDISK>USE A: MY_DISK.DSK
A:\>

This example shows how to connect the virtual disk MY_DISK.DSK as disk drive A.

2. PCDISK>USE A: DUA2:
A:\>

This example shows how to connect the diskette drive DUA2 as disk drive A.

3. PCDISK>USE A: BRONTE::VXSYS/LAD_SERVICE
A:\>

This example shows how to connect the PCSA disk service VXSYS.

USE drv: /DELETE

Disconnects a DOS device.

Format

USE drv: /DELETE [/LOG]

Parameters

drv:

Is the DOS drive identifier. The possible values are A to Z.

Qualifiers

/DELETE

Indicates that you want to disconnect a selected drive. If you disconnect any drive within a virtual hard disk, all drives on the virtual hard disk are disconnected. The disconnected drives are now free.

/LOG

Controls whether the USE command displays the file specifications of each file disconnected.

Example

```
A:\>USE A:/DELETE/LOG
%PCDISK-I-
VFDCON, Diskette WORK:[PCDISK]DOSA.FPY; Drive A: disconnected
PCDISK>
```

This example shows how to disconnect the active drive and display a message stating which drive you disconnected.

VOLUME

Displays the disk volume label of the specified drive.

Format

VOLUME [*drv:*]

Parameters

drv:

The drive is specified as an alpha character A to Z, or a to z, followed by a colon (:). If you omit the drive, the VOLUME command uses the current default drive.

Example

```
E:\>VOLUME E:  
Volume in drive E is TEST  
E:\>dir
```

This example shows how to use the VOLUME command to determine the volume label on drive E.

XCOPY

Copies groups of files. Unlike the COPY command, XCOPY can copy an entire directory structure, including subdirectories.

Format

```
XCOPY [drv1:][\path1\][filename1.ext]-  
      [drv2:][\path2\][filename2.ext][/ARCHIVE]-  
      [/FORCE_WRITE][/[NO]LOG][/MODIFIED]-  
      [/SUBDIRECTORIES]
```

Parameters

drv1:

Is the DOS drive with which you want the XCOPY command to start. If you omit this drive, XCOPY uses the default drive.

\path1

Is the source directory with which you want the XCOPY command to start.

filename1.ext

Is the source file with which you want the XCOPY command to start.

drv2:

Is the destination drive where the XCOPY command is to copy files.

\path2

Is the destination directory where the XCOPY command is to copy files.

filename2.ext

Is the destination file name. You can specify a different name if you want to rename the file.

Qualifiers

/ARCHIVE

Copies only files that have the archive attribute. The archive attribute of the source file remains unchanged.

/FORCE_WRITE

Forces a copy operation to occur even if the output specification is an existing file that has the read-only file attribute.

/LOG

/NOLOG (default)

Controls whether a completion message is displayed which identifies any subdirectories created and the source and destination of any files copied.

/MODIFIED

Copies files with the archive attribute. Upon completion, the archive attribute of the source file is cleared.

/SUBDIRECTORIES

Copies files from the source directory and its subdirectories, and creates them on the destination drive. Upon completion, the archive attribute of the source file is cleared.

Examples

1. E:\>XCOPY A:\ E:\ /S
E:\>

This example shows how to copy all the files and subdirectories from the source directory to the destination directory.

2. E:\>XCOPY E:\ A:\ /A
E:\>

This example shows how to copy every file that has the archive attribute from drive E to drive A, and retain the archive attribute on the source files.

3. E:\>XCOPY E:\ A:\ /M
E:\>

This example shows how to copy every file that has the archive attribute from drive E to drive A, and clear the archive attribute on the source files.

9

PCSA Manager

PCSA Manager commands can be used to manage the disk server and file server. This chapter describes each command, shows the command's format, and gives an example of its use. The commands are presented in alphabetical order.

To start the PCSA Manager from DCL, enter:

```
$ ADMINISTER/PCSA  
PCSA_MANAGER>
```

You can abbreviate "ADMINISTER/PCSA" by entering:

```
$ ADMIN/PC
```

The PCSA Manager prompt is displayed:

```
PCSA_MANAGER>
```

You can issue commands at the PCSA Manager prompt.

You can also issue PCSA Manager commands from DCL by typing ADMIN/PC before the command. For example, to issue the SHOW FILE_SERVER SESSIONS command from DCL, enter:

```
$ ADMIN/PC SHOW FILE_SERVER SESSIONS
```

You can also use PCSA Manager commands in VMS batch files.

NOTE

However, do not use the PCSA Manager MENU command in a batch file.

Table 9-1 lists the PCSA Manager commands.

Table 9-1 PCSA MANAGER File Server Commands

Use this command...	If you want to...
ADD NODE	Add a workstation or server to the DECnet database
ADD SERVICE/DIRECTORY	Add a file service
ADD SERVICE/PRINTER	Add a print service
ADD TEMPLATE	Add a template for remote boot workstations
ADD USER	Add a user environment
ADD WORKSTATION	Add a Version 2.2 workstation on a Version 3.0 server
BROADCAST	Send messages to clients
CLOSE FILE_SERVER FILE	Close a file
CREATE DISK	Create a virtual disk
DELETE DISK	Delete a virtual disk
DENY	Deny a user access to a service
DENY/GROUP	Deny all users access to a service
DISMOUNT DISK	Dismount a virtual disk
EXIT	Exit the PCSA Manager and return to DCL
GRANT	Grant a user access to a service
GRANT/GROUP	Grant all users access to a service
HELP	Obtain help for the PCSA Manager or its commands
MENU	Use PCSA Manager Menu
MODIFY DISK	Increase the virtual disk file size
MODIFY USER	Modify a user environment
MODIFY WORKSTATION	Change the hardware address or Ethernet adapter of a workstation; or the comment in the remote boot database or the VAX adapter that services remote boot requests
MOUNT DISK	Mount a virtual disk

Table 9-1 (Cont.) PCSA MANAGER File Server Commands

Use this command...	If you want to...
REMOVE CLIENT_OS	Remove a client operating system
REMOVE NODE	Remove a workstation or server from the DECnet database
REMOVE SERVICE	Remove a file server directory or printer service entry from the service database
REMOVE TEMPLATE	Remove a remote boot template
REMOVE USER	Remove a user environment
REMOVE WORKSTATION	Remove the network key disk for the workstation and disable remote boot
SET DISK_SERVER CHARACTERISTICS	Change server characteristics
SET DISK_SERVER SERVICE	Change service characteristics
SET FILE_SERVER CHARACTERISTICS	Define or change server characteristics
SET FILE_SERVER SERVICE	Change service characteristics
SHOW CLIENT_OS	List client operating systems
SHOW DISK_SERVER CHARACTERISTICS	Display disk server characteristics
SHOW DISK_SERVER CONNECTIONS	Display active connections
SHOW DISK_SERVER COUNTERS	Display counters
SHOW DISK_SERVER SERVICES	Display services
SHOW FILE_SERVER CHARACTERISTICS	Display file server characteristics
SHOW FILE_SERVER CONNECTIONS	Display active connections
SHOW FILE_SERVER COUNTERS	Display file server caching statistics
SHOW FILE_SERVER OPEN_FILES	Display open files
SHOW FILE_SERVER SERVICES	Display active file and print services
SHOW FILE_SERVER SERVICES/AUTHORIZED	Display authorized file and print services
SHOW FILE_SERVER SERVICES/REGISTERED	Display registered file and print services

Table 9-1 (Cont.) PCSA MANAGER File Server Commands

Use this command...	If you want to...
SHOW FILE_SERVER SESSION	Display active sessions
SHOW FILE_SERVER STATUS	Display status
SHOW TEMPLATES	List templates for remote boot workstations
SHOW USERS	List registered users
SHOW VERSION	display the current version numbers for the VMS server
SHOW WORKSTATIONS	List workstations that remote boot
START DISK_SERVER CONNECTIONS	Start the disk server
START FILE_SERVER CONNECTIONS	Accept connections
START FILE_SERVER LOGGING	Log server events
STOP DISK_SERVER CONNECTIONS	Stop the disk server
STOP FILE_SERVER CONNECTIONS	Stop file server connections
STOP FILE_SERVER LOGGING	Stop logging server events
STOP FILE_SERVER SESSION	Stop a session
ZERO DISK_SERVER COUNTERS	Reset the counters

You can abbreviate the PCSA Manager commands to their shortest unique form.

ADD NODE

Use this command to register a node in the DECnet database.

Use this command if:

- The server does not recognize unregistered nodes
- You want to communicate to other nodes on the network using DECnet

This command requires OPER and SYSPRV privileges.

Format

ADD NODE *nodename node-address*

Parameters

nodename

Is the DECnet node name of one to six alphanumeric characters. At least one character must be alphabetic.

node-address

Is the DECnet node address of the workstation. The node address is comprised of the area and local number, in the format *xx.xxx*. The area must be a number between 1 and 63, and the local number must be between 0 and 1023, inclusive. Although the NCP program accepts node addresses without a local area number, the PCSA Manager Menu accepts only complete node numbers.

Example

```
PCSA_MANAGER> ADD NODE BRONTE 8.765
%PCSA-I-ADDNODE, adding node BRONTE to DECnet database on all
cluster nodes
PCSA_MANAGER>
```

This example registers the node BRONTE with an address of 8.765.

ADD SERVICE/DIRECTORY

To create a file service in the service database, use the **ADD SERVICE/DIRECTORY** command. A file service is a directory on the VAX server to which client workstations can connect.

There are three types of file services. The file service type determines the default directory, which is represented by a logical. Table 9-2 lists each file service type and the logical that represents the service's default root directory.

This command requires **OPER** and **SYSPRV** privileges.

Table 9-2 File Service Types

Service Type	Logical
SYSTEM	PCFS\$SYSTEM
APPLICATION	PCFS\$APPLICATION
COMMON	PCFS\$COMMON

NOTE

The file service type **USER** is for an entry in the user authorization file (UAF). You can add a **USER** service by creating an account for the user. **USER** services are not maintained by the service database.

The service type also determines the type of security that the file server applies to the service. For **APPLICATION** and **SYSTEM** services, security is controlled with **/ACCESS** qualifier in the **GRANT** command. For **COMMON** services, security is also controlled by the user's VMS access rights.

After using the **ADD SERVICE/DIRECTORY** command, you must grant users access to the service. See the **GRANT** command for more information on granting users access to a file service.

To change the device on which future system, application, and common services are created, edit the **SYS\$STARTUP:PCFS_LOGICALS.COM** file and change the device associated with the relevant service.

Format

ADD SERVICE /DIRECTORY *servicename*

```
[ /[NO]CONFIRM  
  /ROOT = directory  
  /RMS_PROTECTION = mask  
  /TYPE = service  
  /ATTRIBUTES = type  
  /CONNECTIONS = limit  
  /FILE_LENGTH = { ACTUAL  
                  { ESTIMATED } } ]
```

Parameters

servicename

Is the 1- to 25-character name by which the service is known. Do not include spaces in the name.

Qualifiers

/[NO]CONFIRM

Determines whether PCSA Manager should prompt you with the directory specification before creating a directory. If you specify /CONFIRM, PCSA Manager displays the directory specification and prompts you to enter Y (yes) or N (no). By default, PCSA Manager does not prompt you before creating the directory.

/ROOT = *directory*

Explicitly specifies a root directory for the service. If you specify this qualifier, it overrides the default directory specified with the /TYPE qualifier. If you omit the /ROOT qualifier, the directory name is the same as the service name and the device and root directory are determined by the /TYPE qualifier.

CAUTION

A root directory [000000] includes all files and subdirectories on the entire disk. Offering the root directory means offering an entire disk. If you choose to delete all the files in the service when you remove such a service, you delete all files on the entire disk.

9-8 PCSA Manager
ADD SERVICE/DIRECTORY

If you specify only a device for the root directory, the root directory is the default directory from which you are working. Make sure that the default directory is not [000000].

If the directory does not exist, a new directory is created.

/RMS_PROTECTION = mask

Establishes a default RMS protection mask for files created with this service. You can modify this protection when you grant a user or group access to the service. The default protection mask is SYSTEM:RWED, OWNER:RWED, GROUP:, WORLD:.

/TYPE = service

Specifies the file service type, which determines the service's default root directory from the following logicals:

SYSTEM PCFS\$SYSTEM

APPLICATION PCFS\$APPLICATION (this is the default service type)

COMMON PCFS\$COMMON

The default directory name is the same as the service name.

/ATTRIBUTES = type

Specifies the file attributes the file server uses when creating a file with this service. The possible attribute types are:

STREAM Creates RMS stream CR files for this service. This value is the default.

SEQUENTIAL_ Creates RMS sequential fixed 512-byte record files for this service.
FIXED

Use this qualifier only when the service, which is usually an application file service, runs on both the workstation and the VAX, and when the VAX application produces sequential fixed 512-byte records.

/CONNECTIONS = limit

Defines the maximum number of connections that workstations can make to the service. The limit can be a number or the keyword NO_LIMIT, which means there is no limit to the number of workstation connections. By default, there is no limit.

/FILE_LENGTH = ACTUAL | ESTIMATED

Specifies whether the file server should determine an actual or estimated file length for non-stream files:

- ACTUAL** Tells the file server to determine the actual file length in bytes that is returned to MS-DOS if the file were copied.
- ESTIMATED** Tells the file server to estimate the file length based on the end-of-file pointer. **ESTIMATED** is the default.

CAUTION

The **/FILE_LENGTH = ACTUAL** qualifier can degrade file server performance. Use this qualifier with caution.

Examples

1.

```
PCSA_MANAGER> ADD SERVICE/DIRECTORY -
_PCSA_MANAGER> LOTUS123/ROOT = DUB1:[LOTUS123]/CONNECTIONS = 10
%PCSA-I-DIRCREATED, directory DUB1:[LOTUS123] created
%PCSA-I-ACLCREATED, ACL created on DUB1:[0,0]LOTUS123.DIR
%PCSA-I-SERADDED, service "LOTUS123" added
```

PCSA_MANAGER>

This example creates a file service for the application **LOTUS 1-2-3** to which 10 users can connect.

PCSA Manager adds an entry to the service database. The file server stores files for this service in the directory **DUB1:[LOTUS123]**.

2.

```
PCSA_MANAGER> ADD SERVICE/DIRECTORY SALES /TYPE=COMMON /CONFIRM
Create directory SYS$SYSDEVICE:[SALES] [Y or N] (Y) : Y
%PCSA-I-DIRCREATED, directory SYS$SYSDEVICE:[SALES] created
%PCSA-I-ACLCREATED, ACL created on SYS$SYSDEVICE:[0,0]SALES.DIR
%PCSA-I-SERADDED, service "SALES" added
```

PCSA_MANAGER>

This example creates a common file service **SALES** and confirms creation of the directory.

ADD SERVICE/PRINTER

To create a printer service in the service database, use the **ADD SERVICE/PRINTER** command. A printer service is a printer queue on a VAX server that workstations can access.

You can specify an existing directory or a new directory in which this service stores files.

Before you can add a printer service, the printer must have a physical device queue or generic queue. You can create the queue using either the PCSA Manager Menu option, **Add a Printer Queue**, or the DCL printer management commands.

After using the **ADD SERVICE/PRINTER** command, you must grant users access to the service. For more information on granting users access to a print service, See the **GRANT** command in this chapter.

This command requires **OPER** and **SYSPRV** privileges.

Format

```
ADD SERVICE/PRINTER servicename queuename
[
  /[NO]CONFIRM
  /FORM = name
  /SPOOL_DIRECTORY = directory
  /CONNECTIONS = limit
  /RMS_PROTECTION = mask
]
```

Parameters

servicename

Is the 1- to 25-character name by which clients and the network know the service. Do not include spaces in the service name.

queuename

Is the name of either the physical or generic queue to which files are spooled.

Qualifiers

/[NO]CONFIRM

Determines whether the PCSA Manager should prompt you with the directory specification before creating a directory. If you specify **/CONFIRM**, the PCSA Manager displays the directory specification and prompts you to enter Y (yes) or N (no). The default is **/NOCONFIRM**.

/FORM = name

Specifies the name of a form in the device control library, which is used as a prefix for spooled print files. The form places the printer into a known state. If you omit this qualifier, the files are printed using the default form for the printer.

/SPOOL_DIRECTORY = directory

Specifies the spool directory. If the directory does not exist, the PCSA Manager creates it. If you omit this qualifier, PCSA Manager creates a spool directory on the device and root directory represented by the logical name **PCFS\$SPOOL**. The directory name is the same as the service name.

/CONNECTIONS = limit

Defines the maximum number of connections that workstations can make to the service. The limit can be a number or the keyword **NO_LIMIT**, which means there is no limit to the number of workstation connections. By default, there is no limit.

/RMS_PROTECTION = mask

Establishes a default RMS protection mask for files created with this service. You can modify this protection when you grant a user or group access to the service. The default protection mask is **SYSTEM:RWED, OWNER:RWED, GROUP:, WORLD:**

Example

```
PCSA_MANAGER> ADD SERVICE/PRINTER LN03_DPORT PCFS$LN03 -  
_PCSA_MANAGER> /FORM = LN03_DPORT  
%PCSA-I-  
DIRCREATED, directory SYS$SYSDEVICE:[PCFS_SPOOL.LN03_DPORT] created  
%PCSA-I-SERADDED, service "LN03_DPORT" added  
  
PCSA_MANAGER>
```

This example adds the printer service **LN03_DPORT**.

ADD TEMPLATE

The **ADD TEMPLATE** command saves the information needed for configuring one remote boot workstation so that that information can be used when configuring another remote boot workstation. The information is saved in a template.

The **ADD TEMPLATE** command asks you whether you want to dismount the network key disk for the workstation. The network key disk must be dismounted before you can add a template. If you choose to dismount the network key disk and the disk was previously mounted, it is remounted when the command is complete.

You must have **OPER**, **SYSRV**, and **BYPASS** privileges for this command.

Format

ADD TEMPLATE *template-name nodename comment*

Parameters

template-name

Is the name you give for the template. Do not enter a file name with an extension. The template name can be up to 39 characters.

nodename

Is the node name of the workstation whose network key disk you are saving.

comment

Is a comment describing the template. The comment can be up to 35 characters long. Specify a comment according to the DCL convention for entering a string.

Example

```
PCSA_MANAGER> ADD TEMPLATE HUEYSTEMPLATE LETTER "This is a comment"
```

This example creates a template called **HUEYSTEMPLATE** from the network key disk of node **LETTER**. The key disk must reside in the directory **LAD\$BOOT_DISKS** with an extension of **.DSK**.

ADD USER

To add a user environment to the server, use the **ADD USER** command. Adding a user environment to the server creates:

- A VMS user account on the device specified by the logical PCFS\$USER or what you specify using the /ROOT qualifier.
- A VMS user account in the PCFS user group as specified by SYS\$COMMON:[PCSA]PCFS_PARAMS.DAT.
- The file in the user's account:
 - AUTOUSER.BAT, which contains MS-DOS commands to make connections to user-specific resources and printers

This command puts you in the PCSA Manager Menu, which prompts you for information. Then you are asked if you want to edit the AUTOUSER.BAT file using the EDT editor.

This command requires OPER and SYSPRV privileges.

Format

```
ADD USER username [ /ROOT=directory  
/PASSWORD=password  
/VERSION_LIMIT=n  
/[NO]INTERACTIVE ]
```

Parameters

username

Is the 1- to 12-character name used for the user account.

Qualifiers

/ROOT=directory

Explicitly specifies a device and/or directory to contain the user's files. If this qualifier is not specified, the default device is determined from the logical name PCFS\$USER, with the directory name the same as the user name.

9-14 PCSA Manager ADD USER

To change the device on which user accounts are created by default, edit the file `SY$STARTUP:PCFS_LOGICALS.COM` and change the device associated with the `PCFS$USER` logical. You must run the `PCFS_LOGICALS.COM` file for the changes to take effect.

/PASSWORD=password

Specifies the user password containing 1- to 31-characters, \$, or _. The default is `WELCOME`.

/VERSION_LIMIT=n

Specifies the number of versions of any one file that can exist in the user's directory. If you exceed the limit, the system deletes the lowest numbered version. A specification of 0 means no limit. The maximum number of versions allowed is 32,767. The default is 1.

/[NO]INTERACTIVE

Specifies whether the user's account can be used for interactive logins or just connected to via a workstation. If `/INTERACTIVE` is specified, the user may log in interactively. `/NOINTERACTIVE` specifies that the user may only connect to the account from a workstation. `/NOINTERACTIVE` is the default.

Example

```
PCSA_MANAGER> ADD USER/PASSWORD=FORTHE/ROOT=DUA0: DIPPER
```

This example adds a user to the server. When you complete the prompts, the PCSA Manager asks if you want to run `EDT` to edit the `AUTOUSER.BAT` file. You can edit the `AUTOUSER.BAT` file if you want to customize DOS or change the user's path. To complete the command, exit the editor.

ADD WORKSTATION

Use the ADD WORKSTATION command to:

- Use a template key disk for additional workstations configured for remote boot, with the /TEMPLATE qualifier
- Configure a Version 2.2 workstation on a Version 3.0 server

The first Version 3.0 workstation must be configured for remote boot with the Netsetup utility, which is described in *Installation and Configuration Guide: DECnet PCSA Client for DOS (VMS Media)*.

Before using the ADD WORKSTATION/TEMPLATE command, you must have created a template with the ADD TEMPLATE command described in this chapter.

To add a PCSA Client Version 2.2 workstation, see Chapter 7 in this book.

This command requires OPER and SYSPRV privileges.

Format

```
ADD WORKSTATION nodename node-address comment
                 /ADAPTER=(TYPE=PC-Ethernet-adapter,
                 ADDRESS=hardware-address)
                 /TEMPLATE=name
                 [ /DEVICE=VAX-adapter-name
                 /DOS=installed-DOS-name
                 /CLIENT_VERSION=pcsa-version
                 /SIZE=boot-disk-size ]
```

Parameters

nodename

The network node name is one to six alphanumeric characters, with at least one alphabetic character.

node-address

The node address is made up of the area and local number, in the format *xx.xxxx*. The area must be a number between 1 and 63, and the local number must be a number between 0 and 1023 (inclusive). Although it may be proper DECnet notation to omit the area in a local context, the PCSA Manager Menu accepts only complete node numbers.

comment

Specifies the comment used to describe the workstation. Specify a comment according to the DCL convention for entering a string. The comment is displayed when you use the SHOW WORKSTATIONS command.

Qualifiers

/ADAPTER=(TYPE=PC-Ethernet-adapter, ADDRESS=hardware-address)

The adapter is the type of Ethernet adapter in the workstation. You must specify one of the following:

- DEPCA
- LANCE
- 3C501
- 3C503
- 3C523
- NI5010

The workstation must have one of these adapters to remote boot. The hardware address of the Ethernet controller installed in the workstation is used when creating the network key disk. The hardware address is six pairs of hexadecimal digits separated by dashes (-).

/DOS=installed-DOS-name

The name you gave DOS when you copied it to the server using the DOSLOAD utility. You must use this qualifier when configuring a Version 2.2 client on a Version 3.0 server. Do not use this qualifier if you use the /TEMPLATE qualifier.

/CLIENT_VERSION=pcsa-version

Use this qualifier to specify the client version associated with the workstation. The default is 22. To specify a pcsa-version, enter nm. For example, to specify PCSA Version 2.2, type 22. You must use this qualifier if you are configuring a Version 2.2 client on a Version 3.0 server. Do not use this qualifier if you use the /TEMPLATE qualifier.

SIZE=key-disk-size

Specifies the size of the network key disk you are creating. Specify a size that equals the size of the diskette drive A on the workstation. Specify:

- 360 Kbytes
- 720 Kbytes
- 1.2 Mbytes
- 1.44 Mbytes

If you do not include this qualifier, the PCSA Manager automatically sets the size of the virtual disk to 360 Kbytes. Do not use this qualifier if you use the **/TEMPLATE** qualifier.

/TEMPLATE=template-name

Is the name of the template with information for the network key disk. The **ADD WORKSTATION/TEMPLATE** command duplicates the information stored for the network key disk of another workstation specified by the template-name. The **ADD WORKSTATION** command uses the template and the current workstation's node name and address to create a new network key disk. The template-name must be the one set by using the **ADD TEMPLATE** command. Do not enter a file name with an extension. The template name can be up to 39 characters. You can use the **/TEMPLATE** qualifier to create Version 3.0 clients only.

/DEVICE=VAX-adapter-name

Is the Ethernet adapter on the server. If this qualifier is not specified, PCSA Manager determines the type of adapter installed on the server. The Ethernet controller on a VMS server is used to service MOP requests for the workstation. Use this qualifier only if the server does not recognize the Ethernet controller.

Examples

1.

```
PCSA_MANAGER> ADD WORKSTATION BRONTE 9.843 "RON'S PC"-  
_PCSA_MANAGER> /ADAPTER= (TYPE=DEPCA, -  
_PCSA_MANAGER> ADDRESS= 08-00-2B-01-22-78) -  
_PCSA_MANAGER> /TEMPLATE=RONS_TEMPLATE
```

This example shows how to create a network key disk for node BRONTE with the information used for Ron's PC and saved in the template RONS_TEMPLATE.

**9-18 PCSA Manager
ADD WORKSTATION**

```
2. PCSA_MANAGER> ADD WORKSTATION BRONTE 9.213 -  
   _PCSA_MANAGER> "COMPAQ_CQV33_1.22MB" -  
   _PCSA_MANAGER> /ADAPTER=(TYPE=DEPCA, ADDRESS= 24-20-1B-01-22-23) -  
   _PCSA_MANAGER> /DOS=CQSYSV33 /CLIENT_VERSION=22 /SIZE=1.2 MB
```

This example sets aside a 1.2 Mbyte virtual disk to be used for a COMPAQ workstation with a DEPCA controller, using:

- **DECnet node name BRONTE**
- **DECNET node address 9.213 Ethernet address 24-20-1B-01-22-23**

BROADCAST

The **BROADCAST** command lets you send messages to one or more specific workstations or all workstations on a network. To send messages to file server or disk server clients, use the **BROADCAST** command. You can send messages to specific clients or all clients. The message may be up to 127 characters long.

Format

```
BROADCAST [ nodename, ... ] [ message text ]  
          [ * ] [ "message text" ]
```

Parameters

nodename, ...

Is the DECnet node name of one or more specific nodes.

*

Indicates all nodes.

message text

Is the message text, which will be converted to uppercase text.

"*message text*"

Is the message text with the case intact.

Examples

1. `PCSA_MANAGER> BROADCAST * "The server is stopping in 5 minutes."`

This example sends a message to all workstations.

2. `PCSA_MANAGER> BROADCAST TDOG "The server is stopping in 5 minutes."`

This example sends a message to the workstation with the node name TDOG.

CLOSE FILE_SERVER FILE

To close a file that a workstation opened with the file server, use the **CLOSE FILE_SERVER FILE** command. You can close a file if a user leaves the workstation unattended with a file opened so that other users cannot open it.

The file server asks you to verify that you want to close the specified file. If you verify the request, the server closes the file.

This command requires **OPER** and **SYSPRV** privileges.

Format

CLOSE FILE_SERVER FILE *identifier* **/[NO]CONFIRM**

Parameters

-identifier

Is the number the file server assigns when it opens the file. The server assigns a unique file identifier to each open file, even if that file is currently open by another workstation. You can determine the file identifier using the **SHOW FILE_SERVER OPEN_FILES** command.

Qualifiers

/[NO]CONFIRM

Determines whether PCSA Manager should prompt you before closing the file. **/CONFIRM** is the default.

Example

```
PCSA_MANAGER> CLOSE FILE_SERVER FILE 4  
Close file with file-id 4 [Y or N] (Y) : Y  
%PCSA-I-FILECLOSED, file with file-id 4 closed
```

```
PCSA_MANAGER>
```

This example closes a file with the file identifier 4.

CREATE DISK

To create and format an MS-DOS virtual disk file, which you can then offer to the network through the disk server, use the **CREATE DISK** command. If a file by the same name already exists in the target directory, PCSA Manager does not create a virtual disk file.

Before users can connect to the virtual disk, you must offer the virtual disk to the network with the **MOUNT DISK** command.

To create a virtual disk, you must have write access to the directory in which the virtual disk file is created. You do not need **OPER** and **SYSPRV** privileges.

Format

```
CREATE DISK file-spec [ /ALLOCATION = n
                        /CONTIGUOUS
                        /SIZE = n
                        /TYPE = class ]
```

Parameters

file-spec

Is the VMS file specification for the virtual disk file. The default file extension for a virtual disk is **.DSK**. To specify the directory for the virtual disk file, you can:

- Explicitly state the directory for the virtual disk file in the file specification.
- Use the **/TYPE** qualifier to select the type of virtual disk file. PCSA Manager then creates the virtual disk file in the default directory for the specified virtual disk type.

Qualifiers

/ALLOCATION = n

Specifies the number of blocks to allocate to the virtual disk file. The number of blocks must be in a range between the minimum allocation and the default file size in blocks, listed in Table 9-3. This value overrides the implicit size given by the */SIZE* qualifier, but cannot exceed the implicit size. Use this qualifier to create a virtual disk that is physically smaller than its formatted size.

For example, you can create a 5 Mbyte disk, which is 10240 blocks, and choose to allocate 5000 blocks. You can extend the size up to the formatted size (10240 blocks) as necessary. To extend the size, use the *MODIFY DISK* command.

If you omit this qualifier, PCSA Manager allocates the total number of blocks for the specified disk size.

/CONTIGUOUS

Creates the virtual disk file as a contiguous file. By default, or if insufficient contiguous disk space exists, PCSA Manager creates the file *contiguous best try*, which means using the largest contiguous portions of the disk.

/SIZE = n

Defines the size of the virtual disk. For example, to specify a 5 Mbyte disk, type */SIZE = 5MB*. If you create a network key disk, specify a size of either 360KB, 760KB, 1.2MB or 1.44MB.

You should specify a network key disk size that is equal to the size of the floppy drive on the workstation that uses the network key disk.

PCSA Manager allocates the total number of blocks for the size specified by this qualifier, unless you specify the */ALLOCATION* qualifier. PCSA Manager formats the virtual disk according to the size specified. The possible disk sizes and their corresponding VMS file sizes are as follows:

Table 9-3 Allocating Disk Size

Disk Size	Default File Size
360 Kbytes	720 Blocks
720 Kbytes	1440 Blocks
1.2 Mbytes (default)	2400 Blocks

Table 9-3 (Cont.) Allocating Disk Size

Disk Size	Default File Size
1.44 Mbytes	2840 Blocks
5 Mbytes	10240 Blocks
10 Mbytes	20480 Blocks
20 Mbytes	40960 Blocks
32 Mbytes	65535 Blocks

/TYPE = class

Determines a default directory for the virtual disk file. There is one default directory for each type virtual disk file. PCSA Manager creates the virtual disk file in the directory associated with the type. Each directory is represented by a system-wide logical. The types of virtual disk files and the logicals that represent each type's default directory are:

SYSTEM	Device and directory represented by LAD\$SYSTEM_DISKS
BOOT	Device and directory represented by LAD\$BOOT_DISKS
APPLICATION	Device and directory represented by LAD\$APPLICATION_DISKS
USER	No logical; The virtual disk file is created in the current directory. You should create user disks in the user's directory. If your default is not set to the user's directory, specify it in the file specification.

The default is **/TYPE = USER**.

Examples

```
1. PCSA_MANAGER> CREATE DISK JONES
   %PCSA-I-CREATEDISK, creating DUA1:[JONES]JONES.DSK
   %PCSA-I-FORMAT DISK, formatting disk, Size = 1.2MB,
   Allocation = 2400/2400
   %PCSA-I-DISKCREATED, DUA1:[JONES]JONES.DSK created
   PCSA_MANAGER>
```

This example creates and formats a 1.2 Mbyte virtual disk for user JONES in the current directory.

PCSA Manager creates and formats the file JONES.DSK in the current directory.

**9-24 PCSA Manager
CREATE DISK**

```
2. PCSA_MANAGER> CREATE DISK MULTIPLAN /SIZE = 5MB -  
  _PCSA_MANAGER> /TYPE = APPLICATION /ALLOCATION = 5000  
  %PCSA-I-CREATEDISK, creating SYS$SYSDEVICE:[PCSA.LAD]  
  MULTIPLAN.DSK  
  %PCSA-I-FORMAT, formatting disk, Size = 5MB, Allocation =  
  5000/10240  
  %PCSA-I-DISKCREATED, SYS$SYSDEVICE:[PCSA.LAD]  
  MULTIPLAN.DSK created  
  
  PCSA_MANAGER>
```

This example creates and formats a 5 Mbyte virtual disk for the application MULTIPLAN and allocates 5000 blocks to the disk.

DELETE DISK

To delete a virtual disk file, use the **DELETE DISK** command.

Before you delete a virtual disk file, be sure:

- The disk is dismounted. PCSA Manager does not delete the disk if it is mounted.
- You have write access to the virtual disk file. You do not need OPER and SYSPRV privileges.

To determine if the disk is dismounted, use the **SHOW DISK_SERVER SERVICES** command. If the disk is not listed, then it is dismounted.

NOTE

Although you can delete a virtual disk file with the VMS **DELETE** command, you should use the PCSA Manager **DELETE DISK** command because it verifies that the disk is not mounted before attempting to delete it. Deleting a mounted disk can cause unexpected results.

You should use the **BROADCAST** command to notify users that dismount and deletion of the disk is imminent.

Format

DELETE DISK *file-spec* [/TYPE = class]

Parameters

file-spec

Is the VMS file specification for the virtual disk file. The default file extension for a virtual disk is **.DSK**. To specify the directory for the virtual disk file, you can:

- Explicitly state the directory for the virtual disk file in the file specification.
- Use the /TYPE qualifier to select the type of virtual disk file. PCSA Manager then deletes the virtual disk file from the default directory for the specified virtual disk type.

Qualifiers

/TYPE = class

Determines the default directory for the virtual disk file that you want to delete. The types of virtual disk files and the logicals that represent each type's default directory are:

SYSTEM	LAD\$SYSTEM_DISKS
BOOT	LAD\$BOOT_DISKS
APPLICATION	LAD\$APPLICATION_DISKS
USER	No logical; PCSA Manager looks for user disks in the current directory or in the file specification you use in the command line.

Examples

1. PCSA_MANAGER> DELETE DISK JONES
%PCSA-I-DISKDELETED, DUA1:[JONES]JONES.DSK;1 deleted

PCSA_MANAGER>

This example deletes the virtual disk file JONES.DSK from the current directory.

2. PCSA_MANAGER> DELETE DISK MULTIPLAN /TYPE = APPLICATION
%PCSA-I-DISKDELETED, SYS\$SYSDEVICE:[PCSA.LAD]MULTIPLAN.DSK;
1 deleted

PCSA_MANAGER>

This example deletes the virtual disk MULTIPLAN.DSK.

DENY

To deny a user access to a file or print service, use the DENY command. PCSA Manager deletes the user's entry in the service database.

You can deny access to all file and print services granted to a user by specifying an asterisk (*) as the alias.

This command requires OPER and SYSPRV privileges. You can grant a user access to a file or print service with the GRANT command.

Format

DENY *username alias*

Parameters

username

Is the name of the user to whom you want to deny access.

alias

Is the 1- to 25-character name by which the user knows the service. To deny all services granted to a user, specify an asterisk (*).

Examples

```
1. PCSA_MANAGER> DENY JONES PLANS
   %PCSA-I-SERDENIED, service "PLANS" denied to user/
   group "JONES"
```

```
PCSA_MANAGER>
```

This example denies the user JONES access to the file service PLANS.

**9-28 PCSA Manager
DENY**

```
2. PCSA_MANAGER> DENY SMITH *
   %PCSA-I-SERDENIED, service "MULTIPLAN" denied to user/
   group "SMITH"
   %PCSA-I-SERDENIED, service "PLANS" denied to user/
   group "SMITH"
   %PCSA-I-SERDENIED, service "LN03_DPORT" denied to user/
   group "SMITH"
```

```
PCSA_MANAGER>
```

This example denies user SMITH access to all file and print services.

DENY/GROUP

To deny all users in a group access to a file or print service, use the DENY/GROUP command. PCSA Manager deletes the group's entry in the service database.

This command requires OPER and SYSPRV privileges.

You can grant a group of users access to a file or print service with the GRANT/GROUP command.

Format

DENY/GROUP *groupname alias*

Parameters

groupname

Is the name of the group to whom you want to deny access. PUBLIC (which refers to all users) is the only group name that is allowed.

alias

Is the 1- to 25-character name by which users know the service. To deny all services granted to the group, specify an asterisk (*). If you did not assign an alias when granting the service, then the alias is the service name.

Examples

```
1. PCSA_MANAGER> DENY/GROUP PUBLIC TESTS
   %PCSA-I-SERDENIED, service "TESTS" denied to user/
   group "PUBLIC"
```

```
PCSA_MANAGER>
```

This example denies all users in the group PUBLIC access to the service TESTS.

**9-30 PCSA Manager
DENY/GROUP**

2. PCSA_MANAGER> DENY/GROUP PUBLIC *
%PCSA-I-SERDENIED, service "TESTS" denied to user/group "PUBLIC"
%PCSA-I-SERDENIED, service "PLANS" denied to user/group "PUBLIC"
%PCSA-I-SERDENIED, service "LN03_DPORT" denied to user/group
"PUBLIC"

PCSA_MANAGER>

This example denies all users in group PUBLIC access to all services.

DISMOUNT DISK

To specify a virtual disk service as no longer available to the network, use the **DISMOUNT DISK** command. The disk server disconnects all clients and closes the virtual disk file.

To dismount a virtual disk service, you must have write access to the virtual disk file or have **OPER** and **SYSPRV** privileges.

Format

```
DISMOUNT DISK  service [ /CLUSTER  
                        [ /NOPERMANENT  
                        [ /NOPURGE ] ] ]
```

Parameters

service

Is the 1- to 25-character name of the service being dismounted.

Qualifiers

/CLUSTER

Dismounts the specified service for all nodes in a cluster.

/~~NO~~PERMANENT

Specifies whether to permanently dismount (*/PERMANENT*) the specified service or dismount it just this time (*/NO~~PERMANENT~~*). The disk server does not automatically remount the permanently dismounted services upon startup. */PERMANENT* is the default qualifier.

/~~NO~~PURGE

Specifies whether to delete the service's entry (or entries) in the disk server's service database, unless the service is mounted. */NO~~PURGE~~* is the default.

Examples

1. PCSA_MANAGER> DISMOUNT DISK PLANS /CLUSTER
%PCSA-I-DISKDISMOUNTED, SYS\$SYSDEVICE:[PCSA.LAD]PLANS.DSK;
1 dismantled

PCSA_MANAGER>

This example dismantles the service PLANS for all nodes in a cluster.

2. PCSA_MANAGER> DISMOUNT DISK MYDISK
%PCSA-I-DISKDISMOUNTED, DUA1:[JONES]JONES.DSK;1 dismantled

PCSA_MANAGER>

This example dismantles the service MYDISK.

EXIT

To exit the PCSA Manager and return to DCL, use the **EXIT** command.

Format

EXIT

Example

```
PCSA_MANAGER> EXIT  
$
```

This example exits PCSA Manager.

GRANT

To grant a user access to a file or print service, use the GRANT command. This command creates an entry for the specified user in the file server's service database.

Using an alias, you can grant users access to a service using an alternate name. For example, if user A uses LOTUS 1-2-3 Version 2.0 and user B uses LOTUS 1-2-3 Version 2.1, both users can connect to the alias LOTUS. This alias represents the service name LOTUS20 to user A and LOTUS21 to user B. See Example 2 for the command syntax.

This command requires OPER and SYSPRV privileges.

You must create a service before you can grant access to it. To create a service, use the ADD SERVICE command.

Format

```
GRANT  username service [ alias  
                          /ACCESS = (option1[,...])  
                          /RMS_PROTECTION = mask ]
```

Parameters

username

Is the name of the user to whom access is granted. An account must exist in the user authorization file (UAF) for *username*.

service

Is the name of the file or print service being granted.

alias

Is an alias (or alternate name) by which the user knows the service. This is the name the user specifies when making a connection. If you do not specify an alias, the service name is the default alias.

Qualifiers

/ACCESS = (option1[,...])

Is the type of access granted to the service user. Specify one or more of the following:

READ For read access

WRITE For write access

CREATE For create access

From this qualifier, the file server determines if the user's requested operation is compatible with the access granted. If the operation is compatible, the VMS operating system can further restrict access to the service.

WRITE access does not imply **READ** access.

If this qualifier is omitted, the default is **/ACCESS = (READ)**. If you grant access to a printer service, PCSA Manager ignores this qualifier and grants **READ**, **WRITE**, and **CREATE** access.

/RMS_PROTECTION = mask

Establishes a default RMS protection mask for files created with this service. If you omit this qualifier or a class (**SYSTEM**, **OWNER**, **GROUP**, or **WORLD**), the default is determined by the protection mask set when you added the service with the **ADD SERVICE** command. This qualifier has no effect on a printer service.

Examples

1. **PCSA_MANAGER> GRANT JONES REPORTS**
%PCSA-I-SERGRANTED, service "REPORTS" granted to user/group
"JONES"

PCSA_MANAGER>

This example grants user **JONES** read access to the service **REPORTS**.

**9-36 PCSA Manager
GRANT**

```
2. PCSA_MANAGER> GRANT USERA LOTUS20 LOTUS
   %PCSA-I-SERGRANTED, service "LOTUS" granted to user/group "USERA"
PCSA_MANAGER> GRANT USERB LOTUS21 LOTUS
   %PCSA-I-SERGRANTED, service "LOTUS" granted to user/group "USERB"

PCSA_MANAGER>
```

This example grants USERA access to the service LOTUS20 and USERB access to the service LOTUS21 using the same alias.

GRANT/GROUP

To grant all users in a group access to a file or print service, use the GRANT/GROUP command. This command creates an entry for the specified group in the service database.

You must create the service before you can grant access to it. To create a service, use the ADD SERVICE command.

This command requires OPER and SYSPRV privileges.

Format

```
GRANT /GROUP groupname service
               [ alias
                 /ACCESS = (option1[,...])
                 /RMS_PROTECTION = mask ]
```

Parameters

groupname

Is the name of the group to whom access is granted. PUBLIC (which refers to all users) is the only group name that is allowed.

service

Is the name of the file or print service being granted.

alias

Is an alias (or alternate name) by which the user knows the service. This is the name the user specifies when making a connection. If you do not specify an alias, the service name is the default alias.

Qualifiers

/ACCESS = (option1[,...])

Is the type of access granted to the service user. Specify one or more of the following:

READ For read access

WRITE For write access

CREATE For create access

From this qualifier, the file server determines if the user's requested operation is compatible with the access granted. If the operation is compatible, the VMS operating system may further restrict access to the service.

WRITE access does not imply **READ** access.

If this qualifier is omitted, the default is **/ACCESS = (READ)**. If you grant access to a printer service, PCSI Manager ignores this qualifier and grants **READ**, **WRITE**, and **CREATE** access.

/RMS_PROTECTION = mask

Establishes a default RMS protection mask for files created with this service. If you omit this qualifier or a class (**SYSTEM**, **OWNER**, **GROUP**, or **WORLD**), the default is determined by the protection mask set when you added the service with the **ADD SERVICE** command.

Example

```
PCSA_MANAGER> GRANT/GROUP PUBLIC VXSYS /ACCESS = (READ)
%PCSA-I-SERGRANTED, service "VXSYS" granted to user/
group "PUBLIC"
PCSA_MANAGER>
```

This example grants all users in the group **PUBLIC** read access to the service **VXSYS**.

HELP

To obtain help with the PCSA Manager or its commands, use the **HELP** command.

Format

HELP [*command*] [*topic*]

Parameters

command

Is the name of the command for which you want help. If you do not specify a command, PCSA Manager displays general help.

topic

Is the name of a command topic about which more information is available. To see a list of topics for a command, see the command's **HELP** display.

NOTE

You can also obtain help on the PCSA Manager and its commands at the DCL level.

Examples

1. **PCSA_MANAGER> HELP**

HELP

The **HELP** command invokes the VMS help facility to display help about a particular PCSA Manager command. For more information, see the System Administrator's Guide.

Additional information available:

ADD	CLOSE	CREATE	DELETE	DENY	DISMOUNT	EXIT
GRANT	HELP	MENU	MODIFY	MOUNT	REMOVE	SET
SHOW	START	STOP	ZERO			

TOPIC?

**9-40 PCSA Manager
HELP**

This example displays help with the PCSA Manager.

2. PCSA_MANAGER> HELP SHOW FILE_SERVER

SHOW

FILE_SERVER

The SHOW FILE_SERVER command is used to display various information on the operation of the File Server. The information to be displayed is selected from the list below:

Additional information available:

CHARACTERISTICS	CONNECTIONS	COUNTERS	OPEN_FILES
SERVICES	SESSIONS	STATUS	

SHOW FILE_SERVER subtopic?

This example displays help with the PCSA Manager command SHOW FILE_SERVER.

MENU

The **MENU** command invokes the **PCSA Manager Menu**, a menu-driven utility that provides a simplified method of accomplishing many network management tasks.

Format

MENU

Example

```
PCSA_MANAGER> MENU
```

MODIFY DISK

To increase the virtual disk file size allocation, use the **MODIFY DISK** command. Ensure the virtual disk is dismounted before modifying it.

To modify a virtual disk file, you must have write access to the virtual disk file. You do not need **OPER** and **SYSRV** privileges. You can only increase a file's size up to its formatted size.

Format

MODIFY DISK *file-spec* [**/EXTENSION [= n]**]
[**/TYPE = class**]

Parameters

file-spec

Is the file specification for the virtual disk file. To specify the directory for the virtual disk file, you can:

- Explicitly state the directory for the virtual disk file in the file specification.
- Use the **/TYPE** qualifier to select the type of virtual disk file. PCSA Manager then modifies the virtual disk file in the default directory for the specified virtual disk type.

Qualifiers

/EXTENSION [= n]

Specifies the number of blocks to extend the virtual disk file. You cannot extend the disk beyond its formatted size. If you specify an extension beyond the formatted size, PCSA Manager extends the disk to its formatted size. If you do not specify the number of blocks, PCSA Manager extends the disk to its formatted size.

/TYPE = class

Determines the default directory that contains the virtual disk file. There is one default directory for each type of virtual disk file. Each directory is represented by a logical. The types of virtual disk files and the logical representing each type's default directory are:

SYSTEM	LAD\$SYSTEM_DISKS
BOOT	LAD\$BOOT_DISKS
APPLICATION	LAD\$APPLICATION_DISKS
USER	No logical; the virtual disk file is in the current directory or it is stated in the file specification.

The default is ***/TYPE = USER***.

Examples

1. PCSA_MANAGER> MODIFY DISK JONES.DSK /EXTENSION = 50
%PCSA-I-DISKMODIFIED, DUA1:[JONES]JONES.DSK;1 modified
PCSA_MANAGER>

This example extends the virtual disk file JONES.DSK by 50 blocks.

2. PCSA_MANAGER> MODIFY DISK LOTUS.DSK /EXTENSION = 100 -
PCSA_MANAGER> /TYPE = APPLICATION
%PCSA-I-DISKMODIFIED, SYS\$SYSDEVICE:[PCSA.LAD]LOTUS.DSK;1
modified
PCSA_MANAGER>

This example extends the application virtual disk LOTUS.DSK by 100 blocks.

MODIFY USER

To modify a PCSA user environment, use the **MODIFY USER** command. This command allows you to change the **AUTOUSER.BAT** file, which contains MS-DOS commands to make connections to user-specific resources and printers.

The **AUTOUSER.BAT** file is located in the user's VMS default directory.

This command requires **OPER** and **SYSPRV** privileges.

This command asks whether you want to use the **EDT** editor, which allows you to edit the **AUTOUSER.BAT** file. If the **AUTOUSER.BAT** file is not present, this command does nothing.

Format

MODIFY USER *username*

Parameters

username

Is the 1- to 12-alphanumeric character name used for the user account name.

Example

```
PCSA_MANAGER> MODIFY USER GAIPPER
```

This example illustrates how to enter the PCSA Manager Menu to modify the environment of the user, **GAIPPER**. When you complete the prompts, the PCSA Manager asks you if you want to run the **EDT** editor to edit the **AUTOUSER.BAT** file. Edit the **AUTOUSER.BAT** file if you want to customize DOS or change the use's path. Once in the editor, to complete the command, exit the editor.

MODIFY WORKSTATION

To change the following components in the remote boot database, use the **MODIFY WORKSTATION** command:

- The Ethernet address of the workstation
- The Ethernet adapter of the workstation
- The VAX Ethernet adapter
- The client software version
- The comment

Use this command for workstations that remote boot.

To modify a PCSA Client Version 2.2 workstation, see Chapter 7 in this book.

This command requires **OPER** and **SYSPRV** privileges.

Format

```
MODIFY WORKSTATION  nodename
                    /ADAPTER=(TYPE=PC-Ethernet-adapter,
                    ADDRESS=hardware-address)
                    [ /DEVICE=VAX-Ethernet-adapter
                    /CLIENT_VERSION=pcsa-version
                    /COMMENT=string ]
```

Parameters

nodename

The network node name is one to six alphanumeric characters, with at least one alphabetic character.

/ADAPTER=(TYPE=PC-Ethernet-adapter, ADDRESS=hardware-address)

The adapter is the type of Ethernet adapter in the workstation. You must specify one of the following:

- DEPCA
- LANCE

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- 3C501
- 3C503
- 3C523
- NI5010

Only these adapters can be used for remote boot.

The hardware address of the Ethernet controller installed in the workstation is used when creating the boot disk. The hardware address is 6 pairs of hexadecimal digits separated by dashes (-).

Qualifiers

/DEVICE=VAX-Ethernet-adapter

Specifies the Ethernet adapter on the server. If this qualifier is not specified, PCSA Manager determines the type of adapter installed on the server. The Ethernet controller on a VMS server is used to service MOP requests for the workstation. Use this qualifier only if the server does not recognize the Ethernet controller.

/CLIENT_VERSION=pcsa-version

Use this qualifier if the client version is different than the server version. To specify a PCSA version, enter nm. For example, to specify 3.0, enter 30.

/COMMENT=string

Specifies the comment used to describe the workstation. The comment is displayed when you use the SHOW WORKSTATIONS command.

Example

```
PCSA_MANAGER> MODIFY WORKSTATION BRONTE -  
_PCSA_MANAGER> /ADAPTER=(TYPE=DEPCA, ADDRESS=08-00-2B-0D-3D-17)
```

This example changes the Ethernet address of the workstation BRONTE and identifies the type as DEPCA.

MOUNT DISK

To make an existing virtual disk file available as a service to the disk server, use the MOUNT DISK command.

Before you can mount a virtual disk file, you must create it. To create a virtual disk file, see the CREATE DISK command.

To mount a virtual disk, you must have write access to the virtual disk file or OPER and SYSPRV privileges.

Format

```
MOUNT DISK file-spec [ service
                        /ACCESS = option
                        /CLUSTER [= (node,...)]
                        /CONNECTIONS = n
                        /PASSWORD [= password]
                        /[NO]PERMANENT
                        /RATING = n
                        /TYPE = class ]
```

Parameters

file-spec

Is the file specification by which the virtual disk file is known. The default file extension for a virtual disk is .DSK. To specify the directory for the virtual disk file, you can:

- Explicitly state the directory for the virtual disk file in the file specification.
- Use the /TYPE qualifier to select the type of virtual disk file. PCSA Manager then locates the virtual disk file in the default directory for the specified virtual disk type.

service

Is the 1- to 25-character name by which the service is known to the network. Do not include spaces in the service name. If you omit this qualifier, the service name is the file name portion of the file specification.

Qualifiers

/ACCESS = option

Specifies the type of access allowed to the service. The options are:

READ Multiple workstations can use the service for read-only access.

WRITE A single workstation can use the service for read and write access.

If you specify **/ACCESS = WRITE**, do not specify the **/CONNECTIONS** qualifier; write access limits the number of connections to one. The default is **/ACCESS = READ**.

/CLUSTER [= (node,...)]

Mounts the service on all nodes or on the specified node(s) in a cluster. If you omit this qualifier, the service is mounted only on the current node.

/CONNECTIONS = n

Defines the maximum connections that can be made to the service. If this qualifier is omitted, then the default is 30 connections. Do not specify this qualifier if you specified **/ACCESS = WRITE**.

/PASSWORD [= password]

Restricts the service to authorized users. The password can be 1 to 31 characters. If **/PERMANENT** is specified, the server stores the password in the service database. On subsequent restarts, the disk server offers the service with this password. If you do not specify this qualifier, the server allows unrestricted access to the service. If a value is not specified, you are prompted for a password and verification. The password is not echoed on the terminal.

/[NO]PERMANENT

Specifies whether to permanently mount (**/PERMANENT**) the specified service or mount it just this time (**/NOPERMANENT**). The disk server automatically remounts only the permanently mounted services upon startup. **/NOPERMANENT** is the default qualifier.

/RATING = n

Specifies a value, which can be 0 to 65535, for the service rating. The default value is 0. A workstation uses the service rating to determine which service to connect to when multiple virtual disk services with the same name are available on the network. The workstation connects to the service with the highest rating. A rating of 0 is the lowest rating and a rating of 65535 is the highest rating. For more information, see the **USE** command in *Network Commands Reference Manual*.

/TYPE = class

Determines the default directory for the virtual disk file and the service type displayed with the SHOW DISK_SERVER SERVICES command. There is one default directory for each type of virtual disk file. Each directory is represented by a logical. The types of virtual disk files and the logical that represents each type's default directory are:

SYSTEM	LAD\$SYSTEM_DISKS
BOOT	LAD\$BOOT_DISKS
APPLICATION	LAD\$APPLICATION_DISKS
USER	No logical; the virtual disk file is in current directory or it is stated in the file specification.

The default is ***/TYPE = USER***.

NOTE

If you change the location that any of the logicals (LAD\$SYSTEM_DISKS, LAD\$BOOT_DISKS, or LAD\$APPLICATION_DISKS) point to, and a disk was mounted with the previous logical, then you need to use the full file specification for the virtual disk on any subsequent mounts.

Examples

1. PCSA_MANAGER> MOUNT DISK JONES MYDISK /CONNECTIONS=30
%PCSA-I-DISK MOUNTED, DUAL:[JONES]JONES.DSK;1 mounted
%PCSA-I-
MOUNTINFO, service name = MYDISK, server node = LETTER

PCSA_MANAGER>

This example mounts the virtual disk file JONES.DSK as the read-only service MYDISK that a maximum of 30 users can access.

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MOUNT DISK**

```
2. PCSA_MANAGER> MOUNT DISK LOTUS /TYPE = APPLICATION -  
   PCSA_MANAGER> /CLUSTER /PERMANENT  
   %PCSA-I-DISKMOUNTED, SYS$SYSDEVICE:[PCSA.LAD]LOTUS.DIR;1 mounted  
   %PCSA-I-MOUNTINFO, service name = LOTUS, server node = YELLOW  
  
   %PCSA-I-DISKMOUNTED, SYS$SYSDEVICE:[PCSA.LAD]LOTUS.DIR;1 mounted  
   %PCSA-I-MOUNTINFO, service name = LOTUS, server node = GREEN  
  
   %PCSA-I-DISKMOUNTED, SYS$SYSDEVICE:[PCSA.LAD]LOTUS.DIR;1 mounted  
   %PCSA-I-MOUNTINFO, service name = LOTUS, server node = VIOLET  
  
   PCSA_MANAGER>
```

This example mounts permanently the virtual disk file LOTUS.DSK on all nodes in the cluster.

REMOVE CLIENT_OS

To delete a client operating system from the server, use the REMOVE CLIENT_OS command.

You should modify workstation profiles for any workstations set up to use the client operating system you are deleting.

This command requires VOLPRO, MOUNT, LOG-IO, PHY-IO, OPER and SYSPRV privileges.

Format

REMOVE CLIENT_OS *system-id* [/CLIENT_VERSION=*nm*]

Parameters

system-id

The system service identification is used as a subdirectory in the system container file to contain the operating system files. It should follow the system identification convention of *xxSYSDnm*, where *xx* is the system type (VX for VAXmate, IS for IBM, CQ for COMPAQ), *n* is the DOS major version number, and *m* is the DOS minor number. Thus, VXSYSD33 would be the VAXmate MS-DOS 3.3 subdirectory on the system service.

Qualifiers

/CLIENT_VERSION=*nm*

Specifies part of the name of the logical used for the system container file. For example, to delete PCSA Version 3.0, specify /CLIENT_VERSION=30. The /CLIENT_VERSION is used with the *system-id* to determine which system container file contains the DOS to be deleted. If the /CLIENT_VERSION is not specified, the container file with the most recent version of DOS is deleted.

Example

```
PCSA_MANAGER> REM CLIENT_OS ISSYSD33 /CLIENT_VERSION=30
```

This example illustrates how to remove the operating system ISSYSD33 from the server.

REMOVE NODE

To remove a workstation or server from the DECnet database, use the **REMOVE NODE** command.

This command requires **OPER** and **SYSPRV** privileges.

Format

REMOVE NODE *nodename / node-address*

Parameters

nodename

Is the DECnet node name of one to six alphanumeric characters. At least one character must be alphabetic. Either specify *nodename* or *node-address*.

node-address

Is the DECnet node address of the workstation. The node address is comprised of the area and local number, in the format *xx.xxx*. The area must be a number between 1 and 63, and the local number must be between 0 and 1023, inclusive. Although the NCP program accepts node addresses without a local area number, the PCSA Manager Menu accepts only complete node numbers.

Example

```
PCSA_MANAGER> REMOVE NODE BRONTE
```

```
*PCSA-I-ADDNODE, removing node BRONTE from DECnet database on all cluster nodes  
PCSA_MANAGER>
```

This example removes the node **BRONTE** and an address of 8.765 from the DECnet database.

REMOVE SERVICE

To remove a file server directory or printer service entry from the service database, use the **REMOVE SERVICE** command. PCSA Manager:

- Denies all users access to the service
- Disconnects any clients currently connected to the service
- Optionally deletes all files held by the service

This command requires **OPER** and **SYSPRV** privileges.

Format

REMOVE SERVICE *servicename* **[/[NO]KEEP]**

Parameters

servicename

Is the name of the service to be removed.

Qualifiers

[/[NO]KEEP]

Specifies whether PCSA Manager should delete or keep the root directory, any subdirectories, and files that the service holds. The default is **/KEEP**. It is recommended that you back up the directory and files before deleting them.

CAUTION

If the root directory is **[000000]** when you use the **/NOKEEP** qualifier, then the entire disk is deleted. Make sure you know what the root directory is before choosing the **/NOKEEP** qualifier.

If you do not explicitly specify either **/KEEP** or **/NOKEEP**, you are prompted to either keep or delete the files.

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REMOVE SERVICE

Example

```
PCSA_MANAGER> REMOVE SERVICE LOTUS123
```

```
Delete all files in SYS$SYSDEVICE:[PCSA.LOTUS123...] [YES or NO] (NO): Y
*PCSA-I-FILDEL, SYS$SYSDEVICE:[PCSA]LOTUS123.DIR;1 deleted
*PCSA-I-TOTFILDEL, 1 file deleted, 0 files not deleted
*PCSA-I-SERREMOVED, service "LOTUS123" removed
PCSA_MANAGER>
```

This example removes the service LOTUS123 from the service database and deletes the associated directory and all files in the directory.

REMOVE TEMPLATE

To remove a template for a network key disk, use the **REMOVE TEMPLATE** command.

You need **OPER**, **SYSPRV** and **BYPASS** privileges to use this command.

Format

REMOVE TEMPLATE *template-name*

Parameters

template-name

Is the name of the template used to create a network key disk given in the **ADD TEMPLATE** command. Do not enter a file name with an extension. The template name can be up to 39 characters. You can list all the template names by running the **SHOW TEMPLATES** command.

Example

```
PCSA_MANAGER> REMOVE TEMPLATE GAPPER
```

This example illustrates how to remove the template **GAPPER** from the template database.

REMOVE USER

To remove the PCFS\$USER identifier from the VMS user's account and optionally delete the files in the user's directory, use the REMOVE USER command.

This command requires OPER, SYSPRV, and BYPASS privileges.

Format

REMOVE USER *username* *[/[NO]KEEP]*

Parameters

username

Is the 1- to 12-alphanumeric character name used for the user account name.

Qualifiers

[/[NO]KEEP

Specifies whether PCSA Manager should delete or keep the root directory, any subdirectories, and files of the user. The default is /NOKEEP. It is recommended that you back up the directory and files before deleting them.

If you do not use this qualifier, you will be prompted to either keep or delete the files.

Example

```
PCSA_MANAGER> REMOVE USER GAPPER
```

This example illustrates how to remove the account GAPPER, and the files in the directory.

REMOVE WORKSTATION

To remove a workstation, dismount and delete the boot disk, and remove the workstation's entries from the NCP and remote boot databases, use the REMOVE WORKSTATION command.

This command requires OPER and SYSPRV privileges.

Format

REMOVE WORKSTATION *nodename*

Parameters

nodename

The network node name is one to six alphanumeric characters, with at least one alphabetic character.

Example

```
PCSA_MANAGER> REMOVE WORKSTATION WINONE
```

This example illustrates how to remove a workstation, to delete the station's network key disk, and to remove the station from the NCP and remote boot databases.

SET DISK_SERVER CHARACTERISTICS

To define or change the characteristics of the disk server, use the **SET DISK_SERVER CHARACTERISTICS** command.

Place this command in the **LAD_STARTUP.COM** file to set characteristics each time the disk server is started.

This command requires **OPER**, **SYSPRV**, and **SYSNAM** privileges.

Format

```
SET DISK_SERVER CHARACTERISTICS  
    [ /NOUSER_MOUNT  
      /TIMEOUT = seconds ]
```

Qualifiers

/NOUSER_MOUNT

Determines whether non-privileged users can perform PCSA Manager commands for virtual disk services. If you specify */NOUSER_MOUNT*, users without **OPER** and **SYSPRV** may not perform the following commands:

- **CREATE DISK**
- **DELETE DISK**
- **DISMOUNT DISK**
- **MODIFY DISK**
- **MOUNT DISK**
- **SET DISK_SERVER SERVICE**

/USER_MOUNT is the default, which means that any user with write access to a virtual disk can perform the above commands for that disk.

/TIMEOUT = seconds

Determines the number of seconds PCSA Manager waits for a response from the disk server. By default, PCSA Manager waits 90 seconds. If the time expires, PCSA Manager displays a device timeout message. This situation can occur if the VAX computer is heavily loaded and contains many mounted virtual disks. If you see the timeout message, increase the timeout value with this qualifier.

Example

```
PCSA_MANAGER> SET DISK_SERVER CHARACTERISTICS /NOUSER_MOUNT  
%PCSA-I-CHARSET, server characteristics set
```

```
PCSA_MANAGER
```

This example allows only privileged users to create, delete, dismount, modify, mount, or set a virtual disk.

SET DISK_SERVER SERVICE

To change the characteristics of a mounted virtual disk, use the **SET DISK_SERVER SERVICE** command.

To use this command, the virtual disk must be mounted. Use the **SHOW DISK_SERVER SERVICES** command to be sure the disk is mounted.

You must specify at least one qualifier with the **SET DISK_SERVER SERVICE** command and have either write access to the virtual disk file or **OPER** and **SYSPRV** privileges.

Format

```
SET DISK_SERVER SERVICE service  
    [ /CONNECTIONS = n  
      /[/NO]PASSWORD [= password]  
      /RATING = n ]
```

Parameters

service

Is the name of the service being modified.

Qualifiers

/CONNECTIONS = n

Defines the maximum number of connections that can be made to the service. If users have write access to a disk service, only one user can connect at a time, and the value of *n* can be zero or one. Setting the value to one prevents further connections to the service.

/[/NO]PASSWORD [= password]

Specifies or modifies the service's password. If the service currently has a password, specifying **/NOPASSWORD** removes the password.

If you specify **/PASSWORD** with no password value, PCSA Manager prompts you for a password and verification. When you type them at the prompts, the characters are not displayed on the screen. If you omit this qualifier, the password is not changed.

/RATING = n

Specifies a value, which can be 0 to 65535, for the service rating. The default value is zero. For more information on the service rating, see the MOUNT DISK command.

Example

```
PCSA_MANAGER> SET DISK_SERVER SERVICE LOTUS -  
_PCSA_MANAGER> /CONNECTIONS = 2 /PASSWORD  
Password:  
Verification:  
*PCSA-I-SERVICESET, service LOTUS set  
PCSA_MANAGER>
```

This example changes the number of connections users can make and the password for the service LOTUS.

SET FILE_SERVER CHARACTERISTICS

To define or change the characteristics of the file server, use the **SET FILE_SERVER CHARACTERISTICS** command.

This command is in the default PCFS_STARTUP.COM file. You can edit this file and change this command if you want to set characteristics each time the file server is started. Or you can issue this command interactively.

You must specify at least one qualifier with the **SET FILE_SERVER CHARACTERISTICS** command. This command requires **OPER** and **SYSRV** privileges.

Format

SET FILE_SERVER CHARACTERISTICS

```
[ /CONNECTIONS = (option[,...])  
  /{NO}DEFAULT_ACCOUNT [= name]  
  /FILE_LIMIT = (option[,...])  
  /SESSION_LIMIT = limit ]
```

Qualifiers

/CONNECTIONS = (option[,...])

Defines the maximum number of service connections that the file server can establish in total or on a per user basis. The two options are:

- **TOTAL = keyword**, which limits the maximum number of service connections that can be established for all workstations. Enter either an integer value or **NO_LIMIT** for the keyword. If keyword is **NO_LIMIT**, then the number of service connections that can be established to the file server is unlimited.
- **SESSION = keyword**, which limits the maximum number of service connections that can be established for any one workstation. Enter an integer value or **NO_LIMIT** for the keyword. If keyword is **NO_LIMIT**, then the number of service connections that can be established by any one workstation is unlimited.

The default values, which are set as part of the installation procedure, are **TOTAL = NO_LIMIT** and **SESSION = NO_LIMIT**.

/[NO]DEFAULT_ACCOUNT [= name]

Specifies the account in the user authorization file (UAF), that the file server uses for access control when a workstation connects and passes no access control information. The default account is PCFS\$ACCOUNT, which is created at installation.

To disable the file server from using a default account to connect users, specify ***/NODEFAULT_ACCOUNT***. This will force users to enter a valid user name and password when making file service connections.

/FILE_LIMIT = (option[,...])

Defines the maximum number of files that the file server can open in total or on a per user basis. The two options are:

- **TOTAL = keyword**, which limits the maximum number of files that the file server can open for all workstations. Enter an integer or **NO_LIMIT** for the keyword. If keyword is **NO_LIMIT**, the maximum number of files is unlimited. For example, to specify a total file limit of 10, type ***/FILE_LIMIT = (TOTAL = 10)***.
- **SESSION = keyword**, which limits the maximum number of files that the file server can open for one workstation. Enter an integer or **NO_LIMIT** for the keyword. If keyword is **NO_LIMIT**, the maximum number of files is unlimited. For example, to specify a file limit per session of 10, type
- ***/FILE_LIMIT = (SESSION = 10)***.

/SESSION_LIMIT = limit

Defines the maximum number of DECnet sessions (or workstations) the file server supports. For limit, enter an integer or **NO_LIMIT**. If limit is **NO_LIMIT**, then the maximum is determined by local host DECnet configuration parameters.

Examples

1.

```
PCSA_MANAGER> SET FILE_SERVER CHARACTERISTICS -
_PCSA_MANAGER> /CONNECTIONS = (TOTAL = 10)
%PCSA-I-CHARSET, server characteristics set

_PCSA_MANAGER>
```

This example sets the maximum number of service connections for the file server to 10 connections.

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SET FILE_SERVER CHARACTERISTICS

2. **PCSA_MANAGER> SET FILE_SERVER CHARACTERISTICS -**
PCSA_MANAGER> /DEFAULT_ACCOUNT = FSERVE
%PCSA-I-CHARSET, server characteristics set

PCSA_MANAGER>

This example changes the account that the file server checks for access control information when the workstation does not specify it.

3. **PCSA_MANAGER> SET FILE_SERVER CHARACTERISTICS -**
PCSA_MANAGER> /FILE_LIMIT = (TOTAL = 20, SESSION = 10) -
PCSA_MANAGER> /SESSION_LIMIT = 10
%PCSA-I-CHARSET, server characteristics set

PCSA_MANAGER>

This example changes the maximum number of files that the file server can open in total and per workstation, and the maximum number of clients that can connect to the file server.

SET FILE_SERVER SERVICE

To define or change the characteristics of a file or print service, use the **SET FILE_SERVER SERVICE** command. You must specify at least one qualifier with the **SET FILE_SERVER SERVICE** command.

This command requires **OPER** and **SYSPRV** privileges.

Format

SET FILE_SERVER SERVICE *service*

```
[ /ATTRIBUTES = type  
  /CONNECTIONS = limit  
  /ACTIVE | /PERMANENT  
  /FILE_LENGTH = ACTUAL | ESTIMATED  
  /RMS_PROTECTION = mask ]
```

Parameters

service

Is the name of the service being modified.

Qualifiers

/ATTRIBUTES = type

Are the default file attributes used by the file server when creating a file for a file service. The file attribute values are:

- **STREAM**, which are RMS stream files
- **SEQUENTIAL_FIXED**, which are RMS sequential fixed, 512-byte record files

The default value is **/ATTRIBUTES = STREAM**.

Use this qualifier only when the files are used by an application running on both a workstation and a VAX computer, and when the application requires sequential fixed, 512-byte record files on the VAX computer.

For example, to use the same files with **WPS-PLUS/PC** and **WPS-PLUS/VMS**, specify this qualifier so that the file server creates sequential fixed, 512-byte record files that the VAX application can use.

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SET FILE_SERVER SERVICE

This qualifier overrides the /ATTRIBUTES qualifier specified in the ADD SERVICE commands. This qualifier is ignored for print services.

/CONNECTIONS = limit

Defines the maximum number of service connections that can be made to the service. For limit, enter an integer value or NO_LIMIT, which means there is no limit to the number of service connections that can be established.

/ACTIVE | /PERMANENT

Specifies whether to modify the permanent file server values stored in the service database (/PERMANENT) or the values the file server is currently using (/ACTIVE). /ACTIVE is the default qualifier.

/FILE_LENGTH = ACTUAL | ESTIMATED

Specifies whether the file server should determine an actual or estimated file length for non-stream files:

ACTUAL Tells the file server to determine the actual file length in bytes.

ESTIMATED Tells the file server to estimate the file length based on the end-of-file pointer. ESTIMATED is the default.

This qualifier is ignored for print services.

CAUTION

Use the /FILE_LENGTH = ACTUAL qualifier with caution because it can degrade file server performance.

/RMS_PROTECTION = mask

Establishes a default RMS protection mask for files created with this service. You can modify this protection when you grant a user or group access to the service. The default protection mask is SYSTEM:RWED, OWNER:RWED, GROUP:, WORLD:

Examples

```
1. PCSA_MANAGER> SET FILE_SERVER SERVICE VXSYS -
   PCSA_MANAGER> /CONNECTIONS = 10 /PERMANENT
   %PCSA-I-SERVICESET, service VXSYS set
   PCSA_MANAGER>
```

This example changes the value in the file server database for the maximum number of connections.

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SET FILE_SERVER SERVICE

2. PCSA_MANAGER> SET FILE_SERVER SERVICE /CONNECTIONS=10 /ACTIVE
%PCSA-I-SERVICESET, service VXSYS set

PCSA_MANAGER>

This example changes the value that the file server currently uses for the maximum number of connections.

SHOW CLIENT_OS

To display a list of currently configured client operating systems, use the SHOW CLIENT_OS command.

Requires OPER and SYSPRV privileges.

Format

SHOW CLIENT_OS [/CLIENT_VERSION=*nm*]

Qualifiers

/CLIENT_VERSION=nm

You can list the client operating systems by client version. To list Version 3.0, specify 30 for client version. If you do not specify the client version, the most recent version is displayed.

Example

```
PCSA_MANAGER> SHOW CLIENT_OS/CLIENT_VERSION=30
```

Client Operating Systems:

System	VAXmate	Version	Comment
-----	-----	-----	-----
ISSYSD33	No	33	IBM DOS V3.3

This example displays client operating systems.

SHOW DISK_SERVER CHARACTERISTICS

To display the current characteristics of the disk server, use the **SHOW DISK_SERVER CHARACTERISTICS** command. The display includes the current disk server timeout value (in seconds) and whether non-privileged users can create, delete, dismount, modify, mount, or set virtual disks.

No privileges are required for this command.

To change the disk server characteristics, use the **SET DISK_SERVER CHARACTERISTICS** command.

Format

SHOW DISK_SERVER CHARACTERISTICS

Example

```
PCSA_MANAGER> SHOW DISK_SERVER CHARACTERISTICS
```

```
Disk Server characteristics:
```

```
Disk Server request timeout: 30
```

```
All users may perform virtual disk functions.
```

```
PCSA_MANAGER>
```

This example displays whether non-privileged users can create, delete, dismount, modify, mount, or set virtual disks.

SHOW DISK_SERVER CONNECTIONS

To display the current connection information for the disk server, use the SHOW DISK_SERVER CONNECTIONS command.

The information displayed includes:

- The workstation name.
- The service name.
- The access that the workstation has to the services. Access can be read-only (RO) or read-write (RW).
- The virtual disk file name, which is also known as a *container* file name.

No privileges are required for this command.

Format

```
SHOW DISK_SERVER CONNECTIONS  
[ /CLIENT = nodename ]  
[ /SERVICE = service ]
```

Qualifiers

/CLIENT = nodename

Restricts the display to the connections for the specified workstation.

/SERVICE = service

Restricts the display to the connections for the specified service name.

Examples

1. PCSA_MANAGER> SHOW DISK_SERVER CONNECTIONS -
_PCSA_MANAGER> /CLIENT = FLUX /SERVICE = PCSA\$DOS_SYSTEM_V30

Disk server connections:

Client	Service name	Acc	Container File
FLUX	PCSA\$DOS_SYSTEM_V30	RO	DUA0:[LADDR]PCSA\$DOS_SYSTEM_V30.DSK

PCSA_MANAGER>

This example displays the connection information for node FLUX to the service PCSA\$DOS_SYSTEM_V30.

2. PCSA_MANAGER> SHOW DISK_SERVER CONNECTIONS/SERVICE=
PCSA\$DOS_SYSTEM_V30

Disk server connections:

Client	Service name	Acc	Container File
DANY	PCSA\$DOS_SYSTEM_V30	RO	DUA0:[LADDR]VXSYS.DSK
FLUX	PCSA\$DOS_SYSTEM_V30	RO	DUA0:[LADDR]VXSYS.DSK
SKYBLU	PCSA\$DOS_SYSTEM_V30	RO	DUA0:[LADDR]VXSYS.DSK
LAVERN	PCSA\$DOS_SYSTEM_V30	RO	DUA0:[LADDR]VXSYS.DSK

PCSA_MANAGER>

This example displays connection information for all workstations to the service VXSYS.

SHOW DISK_SERVER COUNTERS

To display the current disk server counters, use the **SHOW DISK_SERVER COUNTERS** command. The disk server maintains counters for the disk server cache, services, and workstations.

If you specify the **SHOW DISK_SERVER COUNTERS** command with no qualifiers, the disk server displays all counters.

No privileges are needed for this command.

Format

SHOW DISK_SERVER COUNTERS

[*/CACHE*
/SERVICE [= service]
/CLIENT [= nodename]]

Qualifiers

/CACHE

Displays the current cache counters, which include:

- The current cache size
- The number of cache hits (the number of blocks not read due to the cache) and the cache hit rate. If the disk server performance decreases and the cache hit rate is low (less than 50%), you can increase the cache size until you see an increase in the cache hit rate. See the **START DISK_SERVER CONNECTIONS** command.
- The number of read requests and blocks written
- The number of write requests and blocks written

/SERVICE [= service]

Displays the service counters for all services or the specified service. Use this qualifier and the **/CLIENT** qualifier to restrict the display to client counters for a specified service. The counters include:

- The service name
- The current number of users of the service
- The number of read requests and blocks read

- The number of write requests and blocks written

/CLIENT [= nodename]

Displays the client counters for all workstations or the specified workstation. The counters include:

- The service name
- The client name
- The number of read requests and blocks read
- The number of write requests and blocks written

Examples

1. PCSA_MANAGER> SHOW DISK_SERVER COUNTERS -
PCSA_MANAGER> /CLIENT=LAVERN /SERVICE=PCSA\$DOS_SYSTEM_V30

Disk server client counters:

Service Name	Client	Read Reqs/Blocks	Writes Reqs/Blocks
PCSA\$DOS_SYSTEM_V30	LAVERN	776/2211	0/0

PCSA_MANAGER>

This example displays the client counters for the workstation LAVERN using the service PCSA\$DOS_SYSTEM_V30.

2. PCSA_MANAGER> SHOW DISK_SERVER COUNTERS /CACHE

Disk server cache counters:

Cache size	Cache hits/Rate %	Read Reqs/Blocks	Write Reqs/Blocks
512	1005799/73	221021/1372703	303363/353698

PCSA_MANAGER>

This example displays the cache counters for the disk server.

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SHOW DISK_SERVER COUNTERS

3. PCSA_MANAGER> SHOW DISK_SERVER COUNTERS-
_PCSÄ_MANAGER> /SERVICE=PCSA\$DOS_SYSTEM_V30

Disk server service counters:

Service name	Users	Read Reqs/Blocks	Writes Reqs/Blocks
PCSA\$DOS_SYSTEM_V30	3	1208/4176	0/0

PCSA_MANAGER>

This example displays the service counters for the service VXSYS.

SHOW DISK_SERVER SERVICES

To display information about a disk service, use the **SHOW DISK_SERVER SERVICES** command. If you type this command with no qualifiers, PCSA Manager displays all services available on the current node.

No privileges are needed for this command.

PCSA Manager displays the following information about each service:

- The service name. If the service is boot service, PCSA Manager displays the service name, which is the workstation's Ethernet address, and the workstation's DECnet node name (in parentheses).
- The type of service. See the /TYPE qualifier described below for more information on the types of services.
- The node name of the server offering the service.
- The number of connections that can be established to the service. You can change the number of connections with the **SET DISK_SERVER SERVICES** command.
- The current number of users of the service. In a VAXcluster, this value is only displayed for services mounted on the current node.
- The access the user has to the service. Access can be read-only (RO) or read-write (RW).
- The rating assigned to the service. You can change the rating with the **SET DISK_SERVER SERVICE** command.
- The mount status of the service. The status can be:
 - MNT (mounted)
 - MNT PERM (mounted permanent)
 - DISMNT PERM (dismounted permanent)
 - PEND (pending), which means that the request to mount the disk is pending because the disk is already mounted on another node in the cluster with conflicting access. For example, the status is PEND if a disk is mounted read-write and you attempt to mount it read-only or read-write on another node in the cluster.

- PEND PERM (pending permanent), which means the same as PEND, except that the virtual disk is a permanent entry in the service database.
- The virtual disk file (container file) name, if you specify the /FULL qualifier.

Format

SHOW DISK_SERVER SERVICES

```
[ /[NO]FULL  
  /CLUSTER [= (node,...)]  
  /SERVICE = servicename  
  /TYPE = (class[,...]) ]
```

Qualifiers

/[NO]FULL

Includes the virtual disk file specification in the information display. If you specify /NOFULL, which is the default, the file specification is not included.

/CLUSTER = [(node,...)]

Displays service information for all nodes or the specified node(s) in a cluster. If you omit this qualifier, PCSA Manager displays information for services available on the current node.

/SERVICE = servicename

Specifies the service for which information is displayed.

/TYPE = class[,...]

Specifies whether or not to display information for the specified service class. If you omit this qualifier, PCSA Manager displays information for all services. The classes are:

[NO]ALL	Information for all services
[NO]APPLICATION	Information for application services
[NO]BOOT[:client]	Information all boot services or a specified boot service
[NO]SYSTEM	Information for system services
[NO]USER	Information for user services

Examples

1. PCSA_MANAGER> SHOW DISK_SERVER SERVICES /CLUSTER

Disk server services:

Service name	Type	Server	Limit	Users	Acc	Rating	Status
08-00-2B-02-78-78 (GREEN)							
	BOOT	NODE1	1		RW	1	MNT PERM
08-00-2B-03-02-E4 (YELLOW)							
	BOOT	NODE2	1	0	RW	1	MNT PERM
JOHN	USER	NODE1	1		RW	1	MNT PERM
MARY	USER	NODE1	1		RW	1	MNT PERM
DENNIS	USER	NODE2	1	1	RW	1	MNT PERM
SANDY	USER	NODE1	1		RW	1	MNT PERM
JAMES	USER	NODE1	1		RW	1	MNT PERM
PATTY	USER	NODE1	1		RW	1	MNT PERM
ISSYS	SYST	NODE2	100	0	RO	1	MNT PERM
TONY	USER	NODE1	1		RW	1	MNT PERM
MARK	USER	NODE1	1		RW	1	MNT PERM
JOAN	USER	NODE1	1		RW	1	MNT PERM
PAUL	USER	NODE1	1		RW	1	MNT PERM
TERESA	USER	NODE1	1		RW	1	MNT PERM
SUSAN	USER	NODE2	1	0	RW	44	MNT PERM
VXSYS	SYST	NODE2	100	4	RO	1	MNT PERM

PCSA_MANAGER>

This example displays information about all services offered on a cluster.

2. PCSA_MANAGER> SHOW DISK_SERVER SERVICES/TYPE = BOOT

Disk server services:

Service name	Type	Server	Limit	Users	Acc	Rating	Status
08-00-2B-02-78-78 (GREEN)							
	BOOT	NODE1	1		RW	1	MNT PERM
08-00-2B-03-02-E4 (YELLOW)							
	BOOT	NODE2	1		RW	1	MNT PERM

This example displays information about boot services (network key disks).

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SHOW DISK_SERVER SERVICES

3. PCSA_MANAGER> SHOW DISK_SERVER SERVICES/TYPE = NOBOOT

Disk server services:

Service name	Type	Server	Limit	Users	Acc	Rating	Status
JOHN	USER	NODE1	1		RW	1	MNT PERM
MARY	USER	NODE1	1		RW	1	MNT PERM
DENNIS	USER	NODE2	1	1	RW	1	MNT PERM
SANDY	USER	NODE1	1		RW	1	MNT PERM
JAMES	USER	NODE1	1		RW	1	MNT PERM
PATTY	USER	NODE1	1		RW	1	MNT PERM
ISSYS	SYST	NODE2	100	0	RO	1	MNT PERM
TONY	USER	NODE1	1		RW	1	MNT PERM
MARK	USER	NODE1	1		RW	1	MNT PERM
JOAN	USER	NODE1	1		RW	1	MNT PERM
PAUL	USER	NODE1	1		RW	1	MNT PERM
TERESA	USER	NODE1	1		RW	1	MNT PERM
SUSAN	USER	NODE2	1	0	RW	44	MNT PERM
VXSYS	SYST	NODE2	100	4	RO	1	MNT PERM

PCSA_MANAGER>

This example displays information on all but boot services.

SHOW FILE_SERVER CHARACTERISTICS

SHOW FILE_SERVER CHARACTERISTICS

To display the current characteristics of the file server, use the **SHOW FILE_SERVER CHARACTERISTICS** command. No privileges are needed for this command.

To change a file server characteristic, use the **SET FILE_SERVER CHARACTERISTICS** command.

Format**SHOW FILE_SERVER CHARACTERISTICS****Example**

```
PCSA_MANAGER> SHOW FILE_SERVER CHARACTERISTICS
```

```
File Server characteristics:
```

```
Total server wide sessions           : NO LIMIT
Total server wide connections         : NO LIMIT
Total connections per session         : NO LIMIT
Total server wide open files          : NO LIMIT
Total open files per session          : NO LIMIT
File server buffer size in Kbyte      :      8
Open file buffer cache enabled        :     TRUE
File cache size in pages              :    1024
Server default account                : PCFSSACCOUNT
```

```
PCSA_MANAGER>
```

This example displays the current file server characteristics.

SHOW FILE_SERVER CONNECTIONS

To display a list of active connections to the file server, use the **SHOW FILE_SERVER CONNECTIONS** command. You can display the list of connections for:

- All connections
- A particular client
- A particular service

PCSA Manager displays the following information for each connection:

- The connection ID, which is the unique identifier the file server assigns to each connection
- The workstation's DECnet node name
- The user name specified to make the connection
- The alias name for the service
- The service name
- The access allowed to the service
- The service's root directory specification, if you specify the **/FULL** qualifier

No privileges are needed for this command.

Format

SHOW FILE_SERVER CONNECTIONS

[*/CLIENT = name*
/[NO]FULL
/SERVICE = name]

Qualifiers

/CLIENT = name

Restricts the display to the specified client.

/[NO]FULL

Includes the service's root directory in the information displayed.
/NOFULL is the default.

/SERVICE = name

Restricts the display to the specified service.

Examples

1. PCSA_MANAGER> SHOW FILE_SERVER CONNECTIONS

File Server connections:

Connect ID	Client	User name	Alias name	Service name	Acc
0	ERICA	SMITH	SMITH	SMITH	RWC
2	ERICA	PCFSSACCOUNT	LN03_DPORT	LN03_DPORT	RWC
3	ERICA	PCFSSACCOUNT	LN03_DLAND	LN03_DLAND	RWC
65536	GREEN	PCFSSACCOUNT	LN03_DPORT	LN03_DPORT	RWC
131072	YELLOW	PCFSSACCOUNT	LN03_DPORT	LN03_DPORT	RWC
262144	MITCH	JONES	JONES	JONES	RWC
262145	MITCH	PCFSSACCOUNT	PCCOMMON	PCCOMMON	RWC
262146	MITCH	PCFSSACCOUNT	LN03_DPORT	LN03_DPORT	RWC
262147	MITCH	PCFSSACCOUNT	LN03_DLAND	LN03_DLAND	RWC

PCSA_MANAGER>

This example displays all connections to the file server.

2. PCSA_MANAGER> SHOW FILE_SERVER CONNECTIONS /SERVICE = LN03_DPORT

File Server connections:

Connect ID	Client	User name	Alias name	Service name	Acc
2	ERICA	PCFSSACCOUNT	LN03_DPORT	LN03_DPORT	RWC
65536	GREEN	PCFSSACCOUNT	LN03_DPORT	LN03_DPORT	RWC
131072	YELLOW	PCFSSACCOUNT	LN03_DPORT	LN03_DPORT	RWC
262146	MITCH	PCFSSACCOUNT	LN03_DPORT	LN03_DPORT	RWC

PCSA_MANAGER>

This example shows the connections to the service LN03_DPORT.

SHOW FILE_SERVER COUNTERS

To monitor performance on the file server, use the **SHOW FILE_SERVER COUNTERS** command. This command displays statistics for:

- Open file caching
- Network efficiency
- Data caching

For an explanation of how to interpret the displays produced by this command, see Chapter 4 in this book.

If you specify the **SHOW FILE_SERVER COUNTERS** with no qualifiers, all the counters are displayed.

No privileges are needed for this command.

Format

SHOW FILE_SERVER COUNTERS

```
[ /OPEN_FILE_CACHE  
/NETWORK  
/BUFFER_CACHE  
/GLOBAL  
/FILE=[filename] ]
```

Qualifiers

/OPEN_FILE_CACHE

Displays statistics of open file caching, such as:

- Cache hit, the number of times a user requests a file to be opened and that file is already in the open file cache
- Cache miss, the number of times a user requests a file to be opened and that file is not in the open file cache
- Hit rate, the number of cache hits divided by the total of cache hits plus cache misses

/NETWORK

Displays the number of:

- Requests to read
- Requests to write
- Bytes read from disk or cache
- Bytes written to disk or cache

/BUFFER_CACHE

Displays information about data caching, including:

- Disk reads, the number of times the disk is read
- Disk writes, the number of times the disk is written to
- Buffer waits, the number of times the buffers are busy
- Serial waits, the number of times a read or write request cannot complete because the operation is waiting for another event to complete
- Not-in-cache, the number of times a buffer is not in cache when requested
- Read waits, the number of times a read is requested, but the data is not completely transferred from disk to cache
- Read tries, the total number of times the server tried to read data in cache
- File extended, the number of times the file to be written from the cache onto disk is larger than the file written from disk into cache

/GLOBAL

Displays information for the file server.

/FILE [=filename]

Displays statistics for individual files that are currently open. Use a filename that conforms to the VMS file specification.

Examples

1. PCSA_MANAGER> SHOW FILE_SERVER COUNTERS /NETWORK /GLOBAL

File server global statistic :

SMB Read Requests	SMB Write Requests	Bytes Read	Byte Written
183	6	15764	88

PCSA_MANAGER>

This example displays the read and write requests and bytes read and written.

2. PCSA_MANAGER> SHOW FILE_SERVER COUNTERS /BUFFER_CACHE /GLOBAL

File server Global buffer cache counters :

Disk Reads	Disk Writes	Buffer Waits	Serial Waits
12	0	1	0
Not-in-Cache	Read Waits	Reads Tries	File Extended
1	2	10	0

This example displays statistics for data caching.

SHOW FILE_SERVER OPEN_FILES

To display a list of files currently opened by the file server, use the **SHOW FILE_SERVER OPEN_FILES** command. You can display a list of open files for all clients or for a particular client. The list of open files includes:

- File ID
- The workstation connected to the file
- The file specification
- The file size
- The number of locks currently on the file

No privileges are needed for this command.

Format

SHOW FILE_SERVER OPEN_FILES *[/CLIENT = name]*

Qualifiers

/CLIENT = name

Specifies the client for whom a list of open files are displayed.

Example

PCSA_MANAGER> SHOW FILE_SERVER OPEN_FILES/CLIENT = YELLOW

File Server Open Files:

File ID	Client	File name	File size	Locks
0	YELLOW	DUAO:[BIGMAX]TEST1.DAT	200	0
1	YELLOW	DUAO:[BIGMAX]TEST2.DAT	1543	1

PCSA_MANAGER>

This example displays all files opened by client **YELLOW**.

SHOW FILE_SERVER SERVICES/ACTIVE

To display information about active file or print services, use the **SHOW FILE_SERVER SERVICES/ACTIVE** command. Active file or print services are services to which clients are connected.

This command also displays a service with no users if the service was modified with the **SET FILE_SERVER SERVICES/ACTIVE** command.

The **/ACTIVE** qualifier is the default for the **SHOW FILE_SERVER SERVICES** command.

No privileges are needed for this command.

The information displayed about active services includes:

- The service name
- The service type (USER, SYSTEM, APPLICATION, COMMON, or PRINTER)
- The file attribute (STR for stream and SEQ for sequential fixed) and the file length (EST for estimated and ACT for actual)
- The connections limit for the service
- The number of users connected to the service

Format

```
SHOW FILE_SERVER SERVICES [/ACTIVE]  
                        [ /SERVICE = name ]  
                        [ /TYPE = class ]
```

Qualifiers

/SERVICE = name

Specifies the service for which you want information. If you omit this qualifier, PCSA Manager displays information for all active services.

SHOW FILE_SERVER SERVICES/ACTIVE

/TYPE = (class[,..])

Specifies whether to display information for the specified service class. If you omit this qualifier, PCSA Manager displays information for all service types. The classes are:

```
[NO]ALL
[NO]APPLICATION
[NO]SYSTEM
[NO]COMMON
[NO]USER
[NO]PRINTER
```

Examples

1. PCSA_MANAGER> SHOW FILE_SERVER SERVICES

File Server active services:

Service name	Service type	Att/Len	Limit	Users
SMITH	USER	STR/EST	NONE	1
LN03_DLAND	PRINTER	STR/EST	NONE	2
LN03_DPORT	PRINTER	STR/EST	NONE	4
PCCOMMON	APPLICATION	STR/EST	NONE	1
VXSYS	SYSTEM	STR/EST	NONE	5
ZACHARY	USER	STR/EST	NONE	1
JONES	USER	STR/EST	NONE	1

PCSA_MANAGER>

This example displays all services that workstations are currently using.

2. PCSA_MANAGER> SHOW FILE_SERVER SERVICES/SERVICE = LN03_DPORT

File Server active services:

Service name	Service type	Att/Len	Limit	Users
LN03_DPORT	PRINTER	STR/EST	NONE	4

PCSA_MANAGER>

This example displays information about the active print service LN03_DPORT.

SHOW FILE_SERVER SERVICES/AUTHORIZED

To display information about granted file or print services, use the **SHOW FILE_SERVER SERVICES/AUTHORIZED** command. The information is displayed from the entries in the service database. You can display information by alias, user name, service, or group. The information displayed includes:

- The user name or group name (enclosed in angle brackets)
- The alias for the service
- The service name
- The access that the user or group has to the service (R for read access, W for write access, and C for create access)
- The RMS protection for the files that the specified user creates in the service

No privileges are needed for this command.

Format

```
SHOW FILE_SERVER SERVICES /AUTHORIZED  
[ /ALIAS = name  
  /USERNAME = name  
  /SERVICE = name  
  /GROUP = PUBLIC ]
```

Qualifiers

/ALIAS = name

Specifies an alias for which you want to display services.

/USERNAME = name

Specifies a user name for which you want to display services. Do not use this qualifier with the /GROUP qualifier.

/SERVICE = name

Specifies a service about which you want to display information.

SHOW FILE_SERVER SERVICES/AUTHORIZED

/GROUP = PUBLIC

Specifies the group name for which you want to display services. PUBLIC is the only currently supported group name. Do not use this qualifier with the /USERNAME qualifier.

Examples**1. PCSA_MANAGER> SHOW FILE_SERVER SERVICES/AUTHORIZED**

File Server Authorized Services:

User name	Alias name	Service name	Access	RMS protection
<PUBLIC>	ISSYS	ISSYS	R	S:RWED,O:RWED,G:,W:
<PUBLIC>	LA75_D132	LA75_D132	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LA75_D80	LA75_D80	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LA75_S132	LA75_S132	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LA75_S80	LA75_S80	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LN03_DLAND	LN03_DLAND	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LN03_DPORT	LN03_DPORT	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LN03_JASON	LN03_JASON	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LN03_SLAND	LN03_SLAND	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LN03_SPORT	LN03_SPORT	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	PCCOMMON	PCCOMMON	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	SYS\$PRINT	SYS\$PRINT	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	VXSYS	VXSYS	R	S:RWED,O:RWED,G:,W:
SMITH	MULTIPLAN	MULTIPLAN	RWC	S:RWED,O:RWED,G:,W:
ZACHARY	MULTIPLAN	MULTIPLAN	R	S:RWED,O:RWED,G:,W:

PCSA_MANAGER>

This example displays all users and groups that have access to file and printer services.

**2. PCSA_MANAGER> SHOW FILE_SERVER SERVICES/AUTHORIZED-
_PCSA_MANAGER> /ALIAS = PCCOMMON**

File Server Authorized Services:

User name	Alias name	Service name	Access	RMS Protection
<PUBLIC>	PCCOMMON	PCCOMMON	RWC	S:RWED,O:RWED,G:,W:

PCSA_MANAGER>

This example displays all services authorized for alias PCCOMMON.

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SHOW FILE_SERVER SERVICES/AUTHORIZED

3. PCSA_MANAGER> SHOW FILE_SERVER SERVICES/AUTHORIZED-
_PCSA_MANAGER> /USERNAME = RIES

File Server Authorized Services:

User name	Alias name	Service name	Access	RMS Protection
RIES	VXSYS	VXSYS	RWC	S:RWED,O:RWED,G:,W:

PCSA_MANAGER>

This example displays all file and print services authorized for user RIES.

4. PCSA_MANAGER> SHOW FILE_SERVER SERVICES/AUTHORIZED/SERVICE = WPS

File Server Authorized Services:

User name	Alias name	Service name	Access	RMS Protection
<PUBLIC>	WPS	WPS	RWC	S:RWED,O:RWED,G:,W:

PCSA_MANAGER>

This example displays all authorized users of file service WPS.

SHOW FILE_SERVER SERVICES/AUTHORIZED

5. PCSA_MANAGER> SHOW FILE_SERVER SERVICES/AUTHORIZED-
 _PCSA_MANAGER> /GROUP = PUBLIC

File Server Authorized Services:

User name	Alias name	Service name	Access	RMS Protection
<PUBLIC>	ISSYS	ISSYS	R	S:RWED,O:RWED,G:,W:
<PUBLIC>	LA75_D132	LA75_D132	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LA75_D80	LA75_D80	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LA75_S132	LA75_S132	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LA75_S80	LA75_S80	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LN03_DLAND	LN03_DLAND	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LN03_DPORT	LN03_DPORT	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LN03_JASON	LN03_JASON	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LN03_SLAND	LN03_SLAND	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	LN03_SPORT	LN03_SPORT	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	PCAPP	PCAPP	R	S:RWED,O:RWED,G:,W:
<PUBLIC>	PCCOMMON	PCCOMMON	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	SYSS\$PRINT	SYSS\$PRINT	RWC	S:RWED,O:RWED,G:,W:
<PUBLIC>	VXSYS	VXSYS	R	S:RWED,O:RWED,G:,W:
<PUBLIC>	WPS	WPS	RWC	S:RWED,O:RWED,G:,W:

PCSA_MANAGER>

This example displays all file and print services that have public access.

SHOW FILE_SERVER SERVICES/REGISTERED

To display information about registered file and print services, use the **SHOW FILE_SERVER SERVICES/REGISTERED** command. A registered file or print service is one defined with the **ADD SERVICE/DIRECTORY** or **ADD SERVICE/PRINTER** command. The information is displayed from the entries in the service database. For file services, the display includes:

- The service name
- The service's root directory
- The service type (**SYSTEM**, **APPLICATION**, **COMMON**, or **USER**)
- The file attribute (**STR** for stream and **SEQ** for sequential fixed) and the file length (**EST** for estimated and **ACT** for actual)
- The connections limit for the service
- The RMS protection used for the service, if you specify the **/FULL** qualifier

For print service, the display includes:

- The service name
- The service's spool directory
- The service's queue name
- The service's form name
- The connections limit for the service
- The RMS protection used for the service, if you specify the **/FULL** qualifier

No privileges are required for this command.

Format

```
SHOW FILE_SERVER SERVICES /REGISTERED  
[ /[NO]FULL  
  /SERVICE = name  
  /DIRECTORY | /PRINTER ]
```

Qualifiers

/[NO]FULL

Includes the default protection mask in the information displayed.
/NOFULL is the default.

/SERVICE = name

Specifies the service for which information is displayed. If you do not specify this parameter, PCSA Manager displays information for all registered services.

/DIRECTORY | /PRINTER

Displays either file services or print services.

If you do not specify either qualifier, PCSA Manager displays both file and print services.

Example

```
PCSA_MANAGER> SHOW FILE_SERVER SERVICES/REGISTERED
```

File Server Registered Directory Services:

Service name	Root directory	Service type	Att/Len	Limit
ISSYS	DUB1:[ISSYS]	SYSTEM	STR/EST	NONE
PCCOMMON	DUB0:[PCCOMMON.PCCOMMON]	COMMON	STR/EST	NONE
VXSYS	DUB1:[VXSYS]	SYSTEM	STR/EST	NONE

File Server Registered Printer Services:

Service name	Spool directory	Queue Name	Form Name	Limit
LN03_DLAND	SYS\$SYSDEVICE:[PCFS_SPOOL.LN03_DLAND]	PCFS\$LN03	LN03_DLAND	NONE
LN03_DPORT	SYS\$SYSDEVICE:[PCFS_SPOOL.LN03_DPORT]		LN03_DPORT	NONE

```
PCSA_MANAGER>
```

This example displays all services currently registered with the file server.

SHOW FILE_SERVER SESSIONS

To display a list of DECnet sessions currently active with the file server, use the **SHOW FILE_SERVER SESSIONS** command. You can display a list of sessions for all clients or one particular client. The display includes:

- The session ID, which is a unique identifier the file server assigns for each connected workstation
- The name of the workstation that has an active session
- The number of connections the workstation has for the session
- The number of open files the workstation has for the session

No privileges are needed for this command.

Format

SHOW FILE_SERVER SESSIONS [*/CLIENT = name*]

Qualifiers

/CLIENT = name

Specifies the client for which you want to display information.

Example

```
PCSA_MANAGER> SHOW FILE_SERVER SESSIONS
```

File Server sessions:

Session ID	Client	Connections	Open files
0	FRED	2	3
1	BARNEY	5	10

Total of 2 sessions, 7 connections and 13 open files

```
PCSA_MANAGER>
```

This example lists all clients that are connected to the file server.

SHOW FILE_SERVER STATUS

To display status information about the file server, use the **SHOW FILE_SERVER STATUS** command. The information this command displays includes:

- Whether the server is accepting or rejecting connection requests
- Whether the server is accepting or rejecting connection requests from nodes that are not registered
- The name of the current server log file
- Events currently being logged

No privileges are needed for this command.

Format

SHOW FILE_SERVER STATUS

Example

```
PCSA_MANAGER> SHOW FILE_SERVER STATUS
```

```
File Server status:
```

```
Server is accepting connection requests.  
Server will refuse users that are not registered.
```

```
File Server logging status:
```

```
Logfile : PCFS_SERVER.LOG  
Logging events : CONNECTIONS, ERRORS, FATAL, PROTOCOL, SECURITY
```

```
PCSA_MANAGER>
```

This example displays the current file server status.

SHOW TEMPLATES

To display the templates defined for remote boot workstations, use the **SHOW TEMPLATES** command.

Format

SHOW TEMPLATES

Example

```
PCSA_MANAGER> SHOW TEMPLATES
```

```
Workstation Templates:
```

Template Name	Comment
-----	-----
TESTLAB	Standard test environment
PROTO	Prototype

SHOW USERS

To display a list of currently registered PCSA users, use the **SHOW USERS** command.

No privileges are needed for this command.

Format

SHOW USERS

Example

```
PCSA_MANAGER> SHOW USERS
```

SHOW VERSION

To display the current version numbers for the VMS server software, use the **SHOW VERSION** command.

No privileges are needed for this command.

Format

SHOW VERSION

Example

```
PCSA_MANAGER> SHOW VERSION
```

```
LAD$KERNEL version   : LAD$KERNEL V1.2  
LADDRIVER version   : LADDRIVER V1.2  
PCFS_SERVER version  : VMS Server for MS-DOS V3.0  
PCSA_MANAGER version : PCSA_MANAGER V3.0
```

```
PCSA_MANAGER>
```

This example displays the version numbers for the VMS server software.

SHOW WORKSTATIONS

To display a list of workstations configured for remote boot, use the **SHOW WORKSTATIONS** command.

No privileges are required for this command.

Format

SHOW WORKSTATIONS

Example

```
PCSA_MANAGER> SHOW WORKSTATIONS
```

Registered Remote Boot Workstations:

Name	Hardware Address	Address	Load File	Size	Comment
CHAI5	08-00-3B-04-91-C6	3.854	DEPCA.TSK	1.2MB	NETSETUP_V3.0
WENDY	08-00-2B-07-21-46	3.021	DEPCA.TSK	1.2MB	NETSETUP_V3.0

Total of 2 registered remote boot workstations

START DISK_SERVER CONNECTIONS

To start the disk server after the driver is loaded, use the **START DISK_SERVER CONNECTIONS** command.

This command requires **OPER** and **SYSPRV** privileges.

The disk server startup file, **LAD_STARTUP.COM** contains the command to load the driver and the command to start the disk server automatically.

The **/CACHE** qualifier can affect disk server performance depending on the amount of access to disk server services. To determine if the cache size is adequate, use the **SHOW DISK_SERVER COUNTERS /CACHE** command and check the cache hit rate. If it is low (less than 50%), increase the cache size until you see an increase in the cache hit rate.

Format

START DISK_SERVER CONNECTIONS *[/CACHE = size]*

Qualifiers

/CACHE = size

Defines the size of the disk server cache. The cache size is the amount of non-paged dynamic memory in pages used for disk caching. The cache size is limited by the amount of non-paged dynamic memory, which is determined by the **NPAGEDYN** and **NPAGEVIR SYSGEN** parameters.

The **START DISK_SERVER CONNECTIONS** command in the **LAD_STARTUP.COM** file sets the cache to 512 pages by default. To change the cache size, dismount all disks and restart the disk server specifying the new cache size.

Example

```
PCSA_MANAGER> START DISK_SERVER CONNECTIONS /CACHE = 768  
PCSA-I-CACHESET, server cache size set to 768
```

```
PCSA_MANAGER>
```

This example starts the disk server and sets the cache to 768.

START FILE_SERVER CONNECTIONS

To allow the file server to accept service connections, use the **START FILE_SERVER CONNECTIONS** command.

This command requires **OPER** and **SYSPRV** privileges.

Format

START FILE_SERVER CONNECTIONS *[/[UN]REGISTERED]*

Qualifiers

[/[UN]REGISTERED

/UNREGISTERED allows workstations that are not registered in the DECnet node database to connect to the file server. */REGISTERED*, which is the default qualifier, allows only registered workstations to connect to the file server.

Examples

1. **PCSA_MANAGER> START FILE_SERVER CONNECTIONS /UNREGISTERED %PCSA-I-UNREGCON, File Server will accept unregistered connections**

PCSA_MANAGER>

This example allows the file server to accept connections from unregistered DECnet nodes.

2. **PCSA_MANAGER> START FILE_SERVER CONNECTIONS %PCSA-I-NOUNREGCON, File Server will refuse unregistered connections**

PCSA_MANAGER>

This example allows the file server to accept connections from registered DECnet nodes only.

START FILE_SERVER LOGGING

To turn on logging of file server events, use the **START FILE_SERVER LOGGING** command. You can also open a new log file with this command.

This command requires **OPER** and **SYSPRV** privileges.

Format

START FILE_SERVER LOGGING [*/EVENTS = option[,...]*]
[*/LOG_FILE = filename*]

Qualifiers

/EVENTS = (option[,...])

Starts logging one or more of the events in the following list:

Event type	Function
ALL	All event types
CONNECTIONS	Connections to services
DEFAULT	Default events
ERRORS	Nonfatal errors
FATAL	Fatal errors
LOCKS	MS-DOS file lock and unlock requests
OPENS	File open and close requests
OPERATOR	Operator actions
PROTOCOL	Protocol errors
READS	File read and write requests
SECURITY	Security violations
SESSIONS	DECnet connections

By default, the server logs **ERRORS**, **FATAL**, **OPERATOR**, **PROTOCOL**, and **SECURITY**. If you omit this qualifier, the current log file is closed and a new log file is created. The new log file name is the default log file name unless overridden with the **/LOG_FILE** qualifier.

/LOG_FILE = filename

Specifies a log file name. If logging is currently started, the old log file is closed and a new log file is opened.

Examples

1. PCSA_MANAGER> START FILE_SERVER LOGGING/EVENTS = -
PCSA_MANAGER> (CONNECTIONS,LOCKS)
%PCSA-I-LOGCHARSET, server logging characteristics set

PCSA_MANAGER>

This example logs the file server events CONNECTIONS and LOCKS.

2. PCSA_MANAGER> START FILE_SERVER LOGGING/EVENTS = (SESSIONS) -
PCSA_MANAGER> /LOG_FILE=NEWLOG.LIS
%PCSA-I-LOGCHARSET, server logging characteristics set

PCSA_MANAGER>

This example logs the file server event SESSIONS and to open a new log file.

STOP DISK_SERVER CONNECTIONS

To stop the disk server, use the **STOP DISK_SERVER CONNECTIONS** command. This command also breaks all connections to the disk server, dismounts all mounted virtual disks, and stops the **LAD\$KERNEL** process.

This command requires **OPER** and **SYSPRV** privileges.

NOTE

Depending on the number of virtual disks mounted and the current load on the system, this could take a minute or so before the **LAD\$KERNEL** process actually stops.

To restart the disk server, use the disk server startup file, **SY\$STARTUP:LAD_STARTUP.COM**.

Format

STOP DISK_SERVER CONNECTIONS

Example

```
PCSA_MANAGER> STOP DISK_SERVER CONNECTIONS
%PCSA-I-DSVRSSTOPPED, all connections stopped, LAD$KERNEL
process terminated
```

```
PCSA_MANAGER>
```

This example stops the disk server.

STOP FILE_SERVER CONNECTIONS

To stop file server connections, use the **STOP FILE_SERVER CONNECTIONS** command. This command can:

- Stop the file server process. To restart the file server process, use the **PCFS_STARTUP.COM** file.
- Disconnect a specific connection.
- Disconnect all connections to a specified service.
- Stop the file server from accepting connections to unregistered nodes.

This command requires **OPER** and **SYSPRV** privileges.

You must specify at least one qualifier with the **STOP FILE_SERVER CONNECTIONS** command.

Format

STOP FILE_SERVER CONNECTIONS

**[/ALL_SERVICES
/ID = connection-id
/SERVICE = name
/UNREGISTERED]**

Qualifiers

/ALL_SERVICES

Disconnects all connections, discontinues sessions for all currently active services, and stops the file server process **PCFS_SERVER**.

/ID = connection-id

Disconnects a specific connection. You can obtain the connection-id from the **SHOW FILE_SERVER CONNECTIONS** command.

/SERVICE = name

Disconnects all currently active connections for the specified service.

/UNREGISTERED

Stops the file server from accepting connections for unregistered nodes.

Examples

1. PCSA_MANAGER> STOP FILE_SERVER CONNECTIONS/ALL_SERVICES
%PCSA-I-FSVRSTOPPED, all connections stopped, file server
process terminated

PCSA_MANAGER>

This example disconnects all current file server connections.

2. PCSA_MANAGER> STOP FILE_SERVER CONNECTIONS/SERVICE =
PCSA\$DOS_SYSTEM_V30
%PCSA-I-CONSTOPPED, the specified connections have been stopped

PCSA_MANAGER>

This example disconnects all connections to the service PCSA\$DOS_ SYSTEM_V30.

STOP FILE_SERVER LOGGING

To stop the logging of events to the file server log file, use the **STOP FILE_SERVER LOGGING** command. This command requires **OPER** and **SYSPRV** privileges.

Format

STOP FILE_SERVER LOGGING /EVENTS = (option,[...])

Qualifiers

/EVENTS = (option,[...])

Stops logging one or more of the events in the following list:

Event type	Function
ALL	All event types
CONNECTIONS	Connections to services
DEFAULT	Default events
ERRORS	Nonfatal errors
FATAL	Fatal errors
LOCKS	MS-DOS file lock and unlock requests
OPENS	File open and close requests
OPERATOR	Operator actions
PROTOCOL	Protocol errors
READS	File read and write requests
SECURITY	Security violations
SESSIONS	DECnet connections

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STOP FILE_SERVER LOGGING

Example

```
PCSA_MANAGER> STOP FILE_SERVER LOGGING/EVENTS = (SESSIONS)  
%PCSA-I-LOGCHARSET, server logging characteristics set
```

```
PCSA_MANAGER>
```

This example stops logging SESSIONS.

STOP FILE_SERVER SESSION

To stop a workstation's session with the file server, use the **STOP FILE_SERVER SESSION** command.

This command breaks the DECnet session between the file server and the workstation and disconnects the workstation from all services that it is currently using.

The workstation may reconnect to the file server if the user at the workstation attempts to use that drive.

This command requires **OPER** and **SYSPRV** privileges.

Format

STOP FILE_SERVER SESSION *nodename*

Parameters

nodename

Is the node name of the workstation being disconnected.

Example

```
PCSA_MANAGER> STOP FILE_SERVER SESSION BIGMAX
*PCSA-I-SESSSTOPPED, the specified session has been stopped
```

```
PCSA_MANAGER>
```

This example stops the session between the file server and workstation **BIGMAX**.

ZERO DISK_SERVER COUNTERS

To clear counters maintained by the disk server, use the ZERO DISK_SERVER COUNTERS command.

This command requires OPER and SYSPRV privileges.

Format

ZERO DISK_SERVER COUNTERS

[/CACHE
/SERVICE
/CLIENT[= nodename]]

Qualifiers

/CACHE

Resets the current cache counters, which include:

- The number of write requests
- The number of blocks written
- The number of read requests
- The number of blocks read
- The number of cache hits (the number of blocks not read due to the cache)

/SERVICE [= service]

Resets the service counters for all services or the specified service. If you use this qualifier with the /CLIENT qualifier, PCSA Manager restricts the client counters zeroed to those of the specified service. The counters include the number of:

- Blocks read
- Blocks written
- Read requests
- Write requests

/CLIENT [= nodename]

Resets the client counters for all clients or the specified client. The counters include the number of:

- Blocks read
- Blocks written
- Read requests
- Write requests

Examples

1. PCSA_MANAGER> ZERO_DISK_SERVER_COUNTERS/CACHE
%PCSA-I-CACHEZEROED, server cache counters zeroed

PCSA_MANAGER>

This example resets the cache counters.

2. PCSA_MANAGER> ZERO_DISK_SERVER_COUNTERS -
_PCSA_MANAGER> /CLIENT = YELLOW /SERVICE = PCSA\$DOS_SYSTEM_V30
%PCSA-I-CLIENTZEROED, counters for client YELLOW service
PCSA\$DOS_SYSTEM_V30 zeroed

PCSA_MANAGER>

This example clears all disk server client counters for client YELLOW and service PCSA\$DOS_SYSTEM_V30.

10

LAST Control Program

PCSA implements the Local Area System Transport (LAST) protocol in the VMS device driver LASTDRIVER. The LAST control program (LASTCP) is the management interface that allows you to control and diagnose LASTDRIVER. Using LASTCP, you can:

- Start and stop LASTDRIVER
- Display counters for circuits, lines, nodes, and LASTDRIVER
- Display node characteristics
- Display known clients and servers
- Display LAST status
- Reset counters

This chapter describes the LASTCP commands in alphabetical order.

To start LASTCP from DCL, set your default to SYS\$SYSTEM and enter:

```
$ RUN LASTCP
```

```
%LASTCP-I-VERSION, LASTDRIVER V1.4 is running
```

You can define a LASTCP foreign command, for example:

```
$ LASTCP ::= $LASTCP
```

Then you can issue LASTCP commands from the DCL prompt.

You need normal user privileges to run LASTCP, except where noted.

To use the SHOW, STATUS, and ZERO commands, LASTDRIVER must be started.

Table 10-1 lists the LASTCP commands and their functions.

Table 10-1 LASTCP Commands

If you want to...	See the command...
Leave LASTCP and return to DCL	EXIT
Get help with LASTCP	HELP
Display known clients	SHOW CLIENTS
Display circuit counters	SHOW CIRCUIT COUNTERS
Display line counters	SHOW LINE COUNTERS
Display node characteristics	SHOW NODE CHARACTERISTICS
Display node counters	SHOW NODE COUNTERS
Display known servers	SHOW SERVERS
Display local status	SHOW STATUS
Display transport counters	SHOW TRANSPORT COUNTERS
Start LASTDRIVER	START TRANSPORT
Stop LASTDRIVER	STOP TRANSPORT
Reset counters	ZERO COUNTERS

You can abbreviate LASTCP commands to the first unique characters of the command verb. For example, you can abbreviate the command SHOW SERVERS to SH SE.

EXIT

To exit from LASTCP and return to DCL, use the **EXIT** command. You can also press the **Ctrl/Z** keys to exit from LASTCP.

Format

EXIT

Example

```
LASTCP> EXIT  
$
```

This example leaves LASTCP and returns to DCL.

HELP

The **HELP** command provides help on the LAST control program and its commands.

Format

HELP *topic*

Parameters

topic

Is the LASTCP topic or command for which you want help.

Example

```
LASTCP> HELP SHOW NODE
```

```
SHOW
```

```
  NODE
```

```
  SHOW    ACTIVE NODE    CHARACTERISTICS
          KNOWN NODE     COUNTERS
          NODE node-id
```

Display counters or characteristics for the node(s) selected.

Additional information available:

examples

This example displays help for the LASTCP SHOW NODE command.

SHOW CIRCUIT COUNTERS

The **SHOW CIRCUIT COUNTERS** command displays the circuit counters, which the Ethernet datalink driver maintains.

To use the **SHOW CIRCUIT COUNTERS** command, you must have **SYSPRV** and **SHARE** privileges.

Format

```
SHOW CIRCUIT [COUNTERS]
              [ /ALL_CONTROLLERS
              [ /CONTROLLERS=(controller letter[,...]) ] ]
```

Qualifiers

/ALL_CONTROLLERS

Displays the circuit counters for all Ethernet controllers in use.

/CONTROLLERS= (controller letter[,...])

Displays the circuit counters for the Ethernet controllers specified. To specify an Ethernet controller, determine the device's unit name in the form **DDCU** where:

DD Is the device type
C Is the controller letter
U Is the unit number

For example, the device **XQB3** is controller **B**.

If you omit both qualifiers, **LASTCP** displays the counters for the first Ethernet controller.

10-6 LAST Control Program
SHOW CIRCUIT COUNTERS

Example

```
LASTCP> SHOW CIRCUIT COUNTERS /ALL_CONTROLLERS
```

Ethernet Circuit Counters on unit XQA3:

48938482	Bytes received
44263546	Bytes sent
70647	Data blocks received
66823	Data blocks sent
0	Local buffer errors
0	Multicast received but not enabled

Ethernet Circuit Counters on unit XQB3:

43241769	Bytes received
39768821	Bytes sent
68976	Data blocks received
60375	Data blocks sent
0	Local buffer errors
0	Multicast received but not enabled

This example shows the circuit counters for all Ethernet controllers in use.

SHOW CLIENTS

The **SHOW CLIENTS** command displays information for all known clients in the network. Information includes:

- **Nodename**, which is the client's DECnet node name.
- **Node id**, which is the client's hardware address and incarnation value. The incarnation value is an identifier assigned to each client each time the client is restarted.
- **Physical address**, which is the Ethernet address.
- **Active links**, which is the number of links the client has created.
- **Start time**, which is the time the client connected to the server. If the client is not connected, LASTCP displays a hyphen.

Format

SHOW CLIENTS

Example

LASTCP> SHOW CLIENTS

Node Name	Node Id	Physical Address	Active Links	Start Time
MAG357	08002B05B19B-2122	AA-00-04-00-59-25	1	-
THOLIN	08002B082600-3C2A	AA-00-04-00-40-26	0	-
XOCHTL	08002B080A5E-5D11	AA-00-04-00-05-25	0	-
BRONTE	08002B082415-101F	AA-00-04-00-1D-25	2	-
MILTON	08002B045CD1-050F	AA-00-04-00-2A-26	0	-
WOOLFE	08002B0308F5-4D19	AA-00-04-00-4D-25	0	-
WRONG	08002B045C6D-4711	AA-00-04-00-60-25	2	-
JIMF1	08002B045DDF-310F	AA-00-04-00-2A-27	1	-
SUMAC	08002B080645-0006	AA-00-04-00-42-25	0	-
BOOT	08002B040EEC-D723	08-00-2B-04-0E-EC	0	-

This example displays a list of all known clients.

SHOW LINE COUNTERS

The **SHOW LINE COUNTERS** command displays the line counters, which the datalink maintains. The line counters reflect all users of the datalink for this controller. See the *DECnet-VMS Network Control Program Reference Manual* for a complete description of this counter.

To use the **SHOW LINE COUNTERS** command, you must have **SYSPRV** and **SHARE** privileges.

Format

```
SHOW LINE [COUNTERS]
          [ /ALL_CONTROLLERS
            /CONTROLLERS=(controller letter[,...]) ]
```

Qualifiers

/ALL_CONTROLLERS

Displays the line counters for all Ethernet controllers in use.

/CONTROLLERS= (controller letter[,...])

Displays the line counters for the Ethernet controllers specified. To specify an Ethernet controller, determine the device's unit name in the form **DDCU** where:

- DD** Is the device type
- C** Is the controller letter
- U** Is the unit number

For example, the device **XQB3** is controller **B**.

If you do not specify either qualifier, **LASTCP** displays the counters for the first Ethernet controller.

Example

```
LASTCP> SHOW LINE COUNTERS
```

```
Ethernet Line Counters on unit XQA3:
```

```
 65535  Seconds since last zeroed
 521887  Receive frames
    12   Receive errors
 110796  Multicast frames received
92535097 Receive bytes
 7018641 Multicast bytes received
 438736  Transmit frames
    0    Transmit errors
 32338   Multicast frames transmitted
74717562 Transmit bytes
2420463  Multicast bytes transmitted
    522  Frames sent, single collision
    606  Frames sent, multiple collisions
    0    Frames sent, initially deferred
    0    Transmit collision detect check failures
    0    Data overruns
    1    System buffer unavailable
    0    User buffers unavailable
    0    Unrecognized frame destination
```

This example displays the line counters for the first Ethernet controller.

SHOW NODE CHARACTERISTICS

You can display node characteristics for a specific node, the list of active nodes, or the list of known nodes. The node characteristics are:

- Nodename, which is the client's or server's DECnet node name.
- Node id, which is the node's hardware address and incarnation value. The incarnation value is an identifier assigned to each node each time it is restarted.
- Physical address, which is the Ethernet address.
- Active links, which are the number of links the client has created.
- Start time, which is the time the client connected to the server. If the client is not connected or if the node is a server, LASTCP displays a hyphen.

Format

```
SHOW { NODE nodename  
      KNOWN NODE  
      ACTIVE NODE } [CHARACTERISTICS]
```

Parameters

nodename

Is the client's or server's DECnet node name.

Example

```
LASTCP> SHOW NODE BRONTE
```

Node Name	Node Id	Physical Address	Active Links	Start Time
BRONTE	08002B082415-101F	AA-00-04-00-1D-25	0	-

This example displays node characteristic information for node BRONTE.

SHOW NODE COUNTERS

You can display node counters, which LASTDRIVER maintains for a specific node for all active nodes, or for all known nodes. The information displayed is:

- The number of bytes received and sent
- The number of frames received and sent
- The number of commands received and sent

Format

SHOW { *NODE nodename*
ACTIVE NODE
KNOWN NODE } COUNTERS

Parameters

nodename

Is the DECnet node name for the node whose counters you want to display.

Example

```
LASTTCP> SHOW NODE BRONTE COUNTERS
```

```
Node counters for node BRONTE
```

```
    2415 Bytes received  
   33144 Bytes sent  
     45 Frames received  
     57 Frames sent  
      0 Commands issued  
     17 Commands received
```

This example shows counters for node BRONTE.

SHOW SERVERS

The **SHOW SERVERS** command displays information for all known servers in the network. Information includes:

- Nodename, which is the server's DECnet node name.
- Node id, which is the server's hardware address and incarnation value. The incarnation value is an identifier assigned to each server each time **LASTDRIVER** is started.
- Physical address, which is the Ethernet address. If a server has more than one Ethernet controller, all Ethernet addresses are displayed.
- Active links, which is the number of links the client has created. For the **SHOW SERVERS** command, active links are always 0.
- Start time, which is the time the client connected to the server. For the **SHOW SERVERS** command, start time is always a hyphen.

Format

SHOW SERVERS

Example

```
LASTCP> SHOW SERVERS
```

Node Name	Node Id	Physical Address	Active Links	Start Time
LETTER	08002B028F25-87C0	AA-00-04-00-12-26	0	-
AUTHOR	AA0003013C27-FA60	AA-00-04-00-83-27	0	-
WRITER	08002B035577-0BA0	AA-00-04-00-24-26	0	-
TYP IST	08002B02F0CC-6300	AA-00-04-00-5E-25	0	-
EDITOR	08002B039028-11A0	AA-00-04-00-42-26	0	-
PENCIL	AA00030108C1-3420	AA-00-04-00-08-24	0	-
CRAYON	08002B032BD0-8680	08-00-2B-02-35-DD AA-00-04-00-5F-26	0	-
MARKER	08002B0210CC-87A0	AA-00-04-00-D7-25	0	-
PASTE	08002B029814-44E0	AA-00-04-00-63-25	0	-
PAINTS	08002B06E9F1-E4E0	AA-00-04-00-9A-25	0	-
PINK	08002B02F51B-B9E0	AA-00-04-00-A1-27	0	-
BROWN	08002B0612B6-4980	AA-00-04-00-DA-25	0	-

This example shows all known servers.

SHOW STATUS

The SHOW STATUS command displays the local status of LASTDRIVER. The value of the circuit service timeout is the value that was set with the START TRANSPORT/TIMEOUT command. If the /TIMEOUT qualifier is not used with the START TRANSPORT command, the value of the circuit service timeout is 0.

Format

SHOW STATUS

Example

```
$ RUN SYSS$SYSTEM:LASTCP
%LASTCP-I-VERSION, LASTDRIVER V1.4 is running
LASTCP> SHOW STATUS
Status of LASTDRIVER V1.4 on node TDOG at 1-JAN-1990 15:56:55
Protocol version 3.0, Uptime: 15 06:35:43.14, Checksum Off,
Slow mode Off

66549 Bytes pool
  8 Ethernet buffers
 16 I/O request packets
  9 Association control blocks
  1 Local session control blocks
  0 LSC In-Use blocks
  2 Transaction control blocks
  9 Circuit status blocks
182 Node data blocks
  5 Transmit quota
 80 Maximum circuits
  0 LAN group code
  0 Server circuit timeout
```

This example displays the status of LASTDRIVER.

SHOW TRANSPORT COUNTERS

The SHOW TRANSPORT COUNTERS command displays the transport counters, which LASTDRIVER maintains.

Format

```
SHOW TRANSPORT [COUNTERS]
                 [ /ALL_CONTROLLERS
                 [ /CONTROLLERS=(controller letter[,...]) ] ]
```

Qualifiers

/ALL_CONTROLLERS

Displays the transport counters for all Ethernet controllers in use.

/CONTROLLERS= (controller letter[,...])

Displays the transport counters for the Ethernet controllers specified. To specify an Ethernet controller, determine the device's unit name in the form DDCU where:

- DD Is the device type
- C Is the controller letter
- U Is the unit number

For example, for the device XEB0, the controller letter is B.

If you do not specify either qualifier, LASTCP displays the counters for the first Ethernet controller.

Example

```
LASTCP> SHOW TRANSPORT COUNTERS /CONTROLLERS=(A)
```

```
LASTDRIVER Transport Counters for XQA3
```

```
    251608  Seconds since last zeroed
    5549774  Receive frames
           0  Receive multicasts
           0  Receive duplicates
           0  Receive errors
    00000000  Last receive failure code
    6204594  Transmit frames
           0  Transmit errors
    00000000  Last transmit failure code
           0  Retransmissions
           0  Datalink Restarts
           1  Protocol errors
    00000001  Protocol error bit mask
           0  Checksum errors
           3  Client transaction aborts
           6  Server transaction aborts
           8  Missed segment request aborts
           0  No Transmit buffers
           0  Invalid transaction mode
           0  Illegal circuit ID
          211  Invalid multicast messages
           1  Congested circuit
Protocol errors include:
    Invalid run message
```

This example displays the transport counters for controller A.

START TRANSPORT

Use the **START TRANSPORT** command to initialize an Ethernet controller with the LAST protocol. By default, **LASTDRIVER** is started on the first Ethernet controller (A) on the system.

The **START TRANSPORT** command is also in the **LAD_STARTUP.COM** file, so the transport is started automatically.

To use the **START TRANSPORT** command, you must have **CMKRNL** and **SYSPRV** privileges. Start the transport **after** you start **DECnet**. **DECnet** does not start properly if you start the transport first.

Format

```
START [TRANSPORT]
      [ /ALL_CONTROLLERS
        /CONTROLLERS=(controller letter[...])
        /CHECKSUM
        /CIRCUIT_MAXIMUM=n
        /TRANSMIT_QUOTA=n
        /GROUP=n
        /TIMEOUT=n
        /SLOW_MODE
        /NODENAME=name ]
```

Qualifiers

/CONTROLLERS= (controller letter[...])

Initializes the specified Ethernet controllers with the LAST protocol. Do not use this qualifier with the **/ALL_CONTROLLERS** qualifier. By default, **LASTCP** initializes the first Ethernet controller. To specify an Ethernet controller, determine the device's unit name in the form **DDCU** where:

DD Is the device type
C Is the controller letter
U Is the unit number

For example, for the device **XEB0**, the controller letter is **B**.

/ALL_CONTROLLERS

Initializes all present Ethernet controllers with the LAST protocol. Do not use this qualifier with the /CONTROLLERS qualifier.

/CHECKSUM

Allows LASTDRIVER to checksum all messages sent and received. By default, /CHECKSUM is not enabled.

/CIRCUIT_MAXIMUM=n

Specifies the maximum number of clients that can connect to the disk server. The number of clients can be in the range of 1- to 65535. By default, 80 clients can connect to the disk server.

/GROUP=n

Is the group code to associate with the disk server. By default, the group code is 0. If you assign a group code to a disk server, only workstations with the same group code can connect to services offered by the server.

/TRANSMIT_QUOTA=n

Limits the number of concurrent message buffers that LASTDRIVER can transmit for each transaction. The default transmit quota is five message buffers.

TIMEOUT=n

Specifies the minimum interval in seconds to be used by the server transport to determine when inactive clients should be disconnected. An inactive client is one that has been turned off or otherwise isolated from the server.

By default, the server's timer is specified by the client transport. This qualifier allows a minimum value to be enforced on all connections.

The letter n represents an integer value in the range of 60- to 65535-seconds.

/SLOW_MODE

Forces remote transports to transmit only one segment at a time. Use this qualifier **only** when a transmitter can transmit at a faster rate than the local node can receive. By default, /SLOW_MODE is not enabled.

/NODENAME=name

Initializes LASTDRIVER with the specified node name. By default, LASTCP uses the DECnet node name.

10-18 LAST Control Program
START TRANSPORT

Examples

1. LASTCP> START TRANSPORT /CONTROLLERS=(A)
%LASTCP-I-STARTED, LASTDRIVER V1.4 started on node NODE2
%LASTCP-I-ADAPINIT, Initializing adapter XQA6: for LASTDRIVER
LASTCP>

This example starts LASTDRIVER and initializes controller A.

2. LASTCP> START TRANSPORT /ALL_CONTROLLERS /CIRCUIT_MAXIMUM=50
%LASTCP-I-STARTED, LASTDRIVER V1.4 started on node NODE2
%LASTCP-I-ADAPINIT, Initializing adapter XQA6: for LASTDRIVER
%LASTCP-I-ADAPINIT, Initializing adapter XQB6: for LASTDRIVER
LASTCP>

This example starts LASTDRIVER, initializes all controllers, and limits the number of client connections to 50.

STOP TRANSPORT

The **STOP TRANSPORT** command is used to stop **LASTDRIVER**. Any active sessions are aborted and all system dynamic memory is returned.

To use the **STOP TRANSPORT** command, you must have **CMKRNL** and **SYSPRV** privileges.

Format

STOP TRANSPORT

Example

```
LASTCP> STOP TRANSPORT
%LASTCP-I-STOPPED, LASTDRIVER stopped
LASTCP>
```

This example stops LASTDRIVER.

ZERO COUNTERS

You can reset transport, circuit, or specific-node counters, which are maintained by the datalink or LAST.

Format

ZERO { *TRANSPORT*
CIRCUIT
NODE nodename } [*COUNTERS*]

Parameters

nodename

Is the DECnet node name for the client whose counters you want to reset.

Examples

1. LASTCP> ZERO TRANSPORT COUNTERS
%LASTCP-I-ZEROTRAN, Transport counters zeroed
LASTCP>

This example resets the transport counters on all Ethernet controllers initialized with LAST.

2. LASTCP> ZERO CIRCUIT COUNTERS
%LASTCP-I-ZEROCIRC, Circuit counters zeroed
LASTCP>

This example resets the circuit counters on all Ethernet controllers initialized with LAST.

3. LASTCP> ZERO NODE FLUX COUNTERS
%LASTCP-I-ZERONODE, Node counters for FLUX zeroed
LASTCP>

This example resets the counters for node FLUX.

VMS Server Messages

This chapter lists the messages that the file server and disk server can generate. The messages fall into five categories:

- Messages found in the file server's log file. The default log file that contains these messages is `PCFS$LOG_FILES:PCFS_SERVER.LOG`. The messages are listed alphabetically and followed by an explanation and advice. The logging event that must be enabled to display the message is also listed in parentheses. For more information about logging, see Chapter 9 in this book.
- Messages generated by the file server management interface, `PCSA MANAGER`. The messages are listed alphabetically and followed by an explanation and advice.
- Messages generated by the `LAST` control program, `LASTCP`. These messages are also listed alphabetically and followed by an explanation and advice.
- Messages generated by `LAD$KERNEL` and displayed in the disk server's log file, which is in the directory represented by `LAD$LOG_FILES`. These messages can also be displayed with `PCSA MANAGER` messages.
- Messages generated by the `PCDISK` utility. These messages are listed alphabetically and followed by an explanation and advice.

NOTE

If you are unfamiliar with any of the solutions required for these messages, refer to the appropriate person in your organization. Otherwise, Digital offers training and consulting services that can help you solve these problems. For more information about the services that Digital offers, see the Software Product Description.

Messages in the File Server Log File

Account for user 'name' has expired

Severity: Error

Explanation: The time period in the UAF for the specified user's account has expired.

User Action: Use the VMS AUTHORIZE utility to reactivate the account.

Account for user 'name' is disabled

Severity: Error

Explanation: The specified user can no longer connect to the associated account.

User Action: The /FLAGS=DISUSER qualifier is specified for that account in the UAF. Use the VMS AUTHORIZE utility to reactivate the account.

Account for user 'name' is disabled for current time

Severity: Error

Explanation: The specified user cannot connect to the associated account at the current time.

User Action: The account has been set to deny the user access. Use the /ACCESS qualifier in the VMS AUTHORIZE utility to change the access to the account.

Already connected or connecting to node 'nodename'

Severity: Informational

Explanation: The cluster support attempted to make a connection to a cluster node it already had a connection to. This is an internal error beyond user control. Intracluster connections are established implicitly, without direct action by user.

User Action: Contact your local Digital representative.

Attempt to access server without negotiating a protocol

Severity: Error

Explanation: A workstation tried to access the file server without first negotiating a protocol.

User Action: If the workstation passed data directly to the session layer rather than through the directory, see the *VAXmate Technical Reference Manual* to check that the SMB is in the correct format. Correct the SMB and pass it again.

Attempted seek beyond end of file 'name' by client 'nodename'

Severity: Error

Explanation: The workstation attempted to seek beyond the range of the specified file.

User Action: The workstation should attempt to seek within the file.

Bad transition to state 'number' connecting node 'nodename'

Severity: Error

Explanation: Bad transition of routing block state. This is an internal error.

User Action: Contact your local Digital representative.

Buffer lost or misplaced for node 'nodename'

Severity: Error

Explanation: This is an internal error. The file server lost track of the network I/O buffer.

User Action: Contact your Digital representative.

Can't acquire mutex for buffer(s), status = 'number'

Severity: Error

Explanation: This is an internal error. The file server could not acquire the mutual exclusion semaphore preventing uncoordinated access to the file buffer.

User Action: Contact your Digital representative.

Can't acquire mutex for node 'nodename', status = 'number'

Severity: Informational

Explanation: Failed to acquire a mutual exclusion semaphore used for synchronizing intracenter connection or serializing access to the job-wide queue information context. This is an internal error.

User Action: Contact your local Digital representative.

Cannot allocate multiplex listener VCB for node 'nodename'

Severity: Informational

Explanation: A new multiplexed intracenter session has just started on an existing intracenter link. The attempt to allocate a VCB for the session failed due to memory shortage.

User Action: Increase page file quota or virtual page count, whichever is the limiting factor.

Can't allocate multiplex listener VCB for node 'name'

Severity: Error

Explanation: The file server was unable to allocate the VCB for a surrogate listener thread when forwarding a request on an intracenter link.

User Action: Increase the memory. If this fails, contact your Digital representative.

Can't cancel pending requests to queue 'name' for client 'nodename'

Severity: Error

Explanation: The file server could not cancel queued print requests.

User Action: For more information about print queues, see the *VAX/VMS Guide to System Management and Daily Operations*.

Can't close descriptor 'number', file 'name' for client 'nodename'

Severity: Error

Explanation: The file server cannot close the specified file.

User Action: It is likely that there is a record management system (RMS) problem. For information about RMS, refer to your VMS documentation.

Can't close file 'name' for client 'nodename'

Severity: Error

Explanation: The file server cannot close the specified file for the workstation.

User Action: The disk where the file is stored can be full, write-protected, or off-line. Check these possibilities, then close the file with the CLOSE FILE command.

Can't connect record stream for print file 'name', status = 'number'

Severity: Error

Explanation: The file server cannot perform the stream connect for the specified file.

User Action: It is likely that there is a record management system (RMS) problem. For information about RMS, refer to your VMS documentation.

Can't create file 'name' for client 'nodename'

Severity: Error

Explanation: The file server cannot create the specified file for the workstation.

User Action: The disk where the file is stored may be full, write-protected, or off-line. The user may not have the correct privileges to write to the directory, or may have attempted to create a file through a read-only connection. You should check the disk, the user's authorization, and the directory protection codes.

Can't create FOB for file 'name' for client 'nodename'

Severity: Informational

Explanation: The file server cannot create open file data structure FOB due to memory shortage or other reason. Open file or create file will fail.

User Action: Increase page file quota or virtual page count, whichever is the limiting factor.

Can't create or acquire mutex for 'filename' GOFB, status = 'number'

Severity: Fatal

Explanation: The mutual exclusion semaphore preventing uncoordinated access to information regarding the file could not be created or acquired. This may be an internal error or an indication of insufficient memory.

User Action: Make more memory available to the file server. If this fails, contact your Digital representative.

Can't create mutex for node 'nodename', status = 'number'

Severity: Informational

Explanation: The file server failed to create a mutual exclusion semaphore used to synchronize the creation of intracluster DECnet links.

User Action: Increase page file quota or virtual page count, whichever is the limiting factor.

Can't create mutex for VFILE, status = 'number'

Severity: Error

Explanation: This is an internal error. The file server was unable to create the mutual exclusion semaphore used for serializing OF extension or the one used for serializing buffer flushing.

User Action: Contact your Digital representative.

Can't create or re-open LOG file names for PC file server.

Severity: Fatal

Explanation: The file server will create the pcfs_server.log when it is started up and try to open the file every minute to update the log message. This message says the file server cannot open/create the log file.

User Action: Check the available disk space, and disk quotas. Make sure that the file version number is less than 32767.

Can't create thread for new client 'name', status = 'number'

Severity: Informational

Explanation: The file server failed to create a thread for a client or intraccluster session or for directory read-ahead.

User Action: Increase page file quota or virtual page count, whichever is the limiting factor.

Can't delete file 'name' for client 'nodename'

Severity: Error

Explanation: The file server cannot delete the specified file for the specified workstation.

User Action: The disk may be write-protected or off-line. The user may not have the correct privileges to delete the file. You should check the disk, the user's authorization, and the directory protection codes.

Can't delete FOB for file 'name' for client 'nodename'

Severity: Error

Explanation: When closing a file for the specified workstation, the file server could not delete the file open block (FOB).

User Action: The file server can run with a FOB that cannot be removed, but to delete the FOB, you should restart the file server.

Can't delete MID table entry for node 'nodename'

Severity: Informational

Explanation: When an intraccluster session was shut down, the multiplex ID for the session could not be found in the table of sessions for the intraccluster link the session was being multiplexed over. This is an internal error.

User Action: Contact your local Digital representative.

Can't delete mutex for node 'nodename', status = 'number'

Severity: Informational

Explanation: An error was encountered when deleting the mutual exclusion semaphore used to synchronize the creation of intracuster DECnet links. This is an internal error.

User Action: Contact your local Digital representative.

Can't delete TCB of alias 'name' for client 'nodename'

Severity: Error

Explanation: When disconnecting the specified service for the specified workstation, the file server could not delete the tree connect block (TCB).

User Action: The file server can run with a TCB that cannot be removed, but to delete the TCB, you should restart the file server.

Can't locate file handle 'number' for client 'nodename'

Severity: Error

Explanation: The workstation sent a server message block (SMB) to the file server to access a previously opened file, but the server could not find the file handle in its database.

User Action: If the workstation passed data directly to the session layer rather than through the directory, see the *VAXmate Technical Reference Manual* to check that the SMB is in the correct format. Correct the SMB and pass it again.

Can't locate file 'name' for client 'nodename'

Severity: Error

Explanation: The file server tried to open the specified file, but it does not exist or is actually a directory.

User Action: Check the file name and try the procedure again.

Can't locate tree 'name' for client 'nodename'

Severity: Error

Explanation: The file server established a connection and returned a value for the connection to the workstation. In a successive SMB request, the workstation requested an unrecognized value for the connection.

User Action: If the workstation passed data directly to the session layer rather than through the directory, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Can't lock/unlock byte range in file 'name' for client 'nodename'

Severity: Error

Explanation: The workstation attempted to lock or unlock a byte range in the specified file.

User Action: The byte range in the specified file is locked by another workstation. The workstation that locked the byte range must unlock it before another workstation can access it.

If the workstation passed data directly to the session layer rather than through the directory, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Can't move GOFB for file 'name' to new location

Severity: Informational

Explanation: AN attempt to rename a file resulted in a failure to change the name in the server database due to a memory shortage.

User Action: Increase the page file quota or virtual page count, whichever is the limiting factor.

Can't open ACF data file for PC File Server

Severity: Fatal

Explanation: The file server could not open its service database, which, by default, is `SYS$COMMON:[PCSA]PCFS$SERVICE_DATABASE.DAT`.

User Action: The location of the service database is defined by the logical `PCFS$SERVICE_DATABASE`. Be sure that the service database is located in the directory pointed to by this logical and that the file server has access to it.

Can't open file 'name' for client 'nodename' as SYSTEM

Severity: Fatal

Explanation: The file server could not open or create the specified file for the specified client.

User Action: If this situation occurs, the file server process stops. Ensure that an adequate amount of free disk space is available and restart the server.

Can't open print file 'name', status = 'number'

Severity: Error

Explanation: The file server cannot open the specified file.

User Action: The disk may be full or the print queue may be in error. For information about print queues, see the *VAX/VMS Guide to System Management and Daily Operations*.

Can't process queue information for client 'nodename'. Queue 'name' is stopped.

Severity: Error

Explanation: The workstation requested queue information from the file server. The server cannot access queue information because the queue is stopped.

User Action: Use the `VMS START/QUEUE` command to restart the queue.

Can't queue print file 'name' for user 'nodename', status = 'number'

Severity: Error

Explanation: The file server is unable to send the specified file to the print queue.

User Action: Try to send the file directly from the VMS operating system. If the problem still exists, check the print queue. For more information about print queues, see the *VAX/VMS Guide to System Management and Daily Operations*.

Can't read from file 'name' for client 'nodename'

Severity: Error

Explanation: The file server cannot read the specified file and received an error from the VMS operating system.

User Action: The disk where the file is stored may be off-line. The user may not have the correct privileges to read the directory. Check the disk, the user's authorization, and the directory protection codes.

Can't rename file 'name' for client 'nodename'

Severity: Error

Explanation: The file server cannot rename the specified file.

User Action: The disk where the file is stored may be off-line or write-protected. The user may not have the correct privileges to write to the directory. Check the disk, the user's authorization, and the directory protection codes.

Can't send mail to file flusher, status = 'number'

Severity: Error

Explanation: This is an internal error. The file server detected an excessive number of dirty buffers (buffers containing modifications not yet written to disk), and unsuccessfully tried to send mail to the buffer flusher thread. These buffers will get written to the disk by the next periodic flush done by the buffer flusher, or by the next flush or close command sent by the client.

User Action: Contact your Digital representative.

11-12 VMS Server Messages

Can't send mail to thread for node 'nodename', status = 'number'

Severity: Error

Explanation: This is an internal error. The mail message is used when starting up a listener thread could not be sent.

User Action: Contact your Digital representative.

Can't send SMB to multiplex listener for node 'nodename'

Severity: Informational

Explanation: The multiplexer for the intraccluster link was unable to hand off a message to a particular multiplexed session. This is an internal error.

User Action: Contact your local Digital representative.

Can't start multiplex listener for node 'nodename'

Severity: Error

Explanation: A cluster node could not create a thread for the specified workstation.

User Action: Increase the page file quota or virtual page count, whichever is the limiting factor.

Can't translate SYS\$NODE

Severity: Fatal

Explanation: The file server could not determine the VAX computer's DECnet node name or address.

User Action: Ensure that DECnet is running and the executor is defined. Then start the file server using the PCFS_STARTUP.COM file.

Can't truncate file 'name'

Severity: Error

Explanation: The file server could not truncate the specified file to a particular size.

User Action: None

Can't update ACE of file 'name' for client 'nodename'

Severity: Error

Explanation: The file server could not update the access control entry in the specified file's access control list for the specified client.

User Action: The ACL may be full or otherwise in error. Check the ACL using the ACL editor. For more information on ACLs, see the *VAX/VMS Access Control List Editor Reference Manual*.

Can't write to file 'name' for client 'nodename'

Severity: Error

Explanation: The file server cannot write data to the specified file.

User Action: The disk may be full, write-protected, or off-line. The user may not have the correct privileges to write to the directory or may have attempted to write to a read-only file. Check the disk, the user's authorization, and the directory protection codes. Make sure the user is not over quota.

Can't write to print spooler

Severity: Error

Explanation: The file server cannot print a file because the server cannot write to the print spooler directory.

User Action: Check that the print spooler directory is large enough. Make sure users have write privileges to the printer queue directory. For information about the printer queue directory and service name, see Chapter 6, *Printer Services on the Server*.

CHKPRO denied access, status = 'number'

Severity: Error

Explanation: Access is denied to a client.

User Action: To change a client's access to a service, use the PCSA GRANT command described in Chapter 9 in this book.

Close failed for file 'name', status = 'number'

Severity: Fatal

Explanation: The file server could not close the specified file.

User Action: It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

Closed file 'name' for client 'nodename'

Severity: Informational

Explanation: The file server closed the specified file as requested by the workstation.

User Action: None

Connection from client 'nodename' refused

Severity: Error

Explanation: The file server refused the workstation NET USE command to establish a connection.

User Action: The workstation may not have the correct privileges or may be unregistered.

Could not re-open LOG file 'name' for PC File Server

Severity: Fatal

Explanation: After the server closed the log file for a scheduled update, the file server failed to re-open the log file.

User Action: Determine whether the disk where the log file is stored is write-protected or off-line. If this situation occurs, the file server process stops and the file server must be restarted.

Couldn't send mail to thread for node 'nodename', status = 'number'

Severity: Informational

Explanation: An attempt to send inter-thread mail failed either when starting a session listener thread or when synchronizing with a directory read-ahead thread. This is an internal error.

User Action: Contact your local Digital representative.

Create of network listener thread failed, status = 'number'

Severity: Fatal

Explanation: The file server was unable to create a network listener, which listens for network connection requests from workstations.

User Action: If this situation occurs, the file server process stops and the file server must be restarted.

Created file 'name' for client 'nodename'

Severity: Informational

Explanation: The file server created the specified file as requested by the workstation.

User Action: None

DECnet shutting down, server exiting

Severity: Informational

Explanation: Because a command was issued to stop DECnet, the file server is stopping.

User Action: Restart DECnet and the file server using the command procedure, STARTNET.COM.

DISPOSE: free failed

Severity: Fatal

Explanation: The file server failed to release a block of memory space.

User Action: Contact your Digital representative.

DISPOSE: free failed

Severity: Fatal

Explanation: The file server failed to release a block of memory space.

User Action: Contact your Digital representative.

DISPOSE: null pointer

Severity: Fatal

Explanation: The address of the memory block to be released is NULL.

User Action: Contact your Digital representative.

Duplicate Negotiate Protocols received from client 'name'

Severity: Error

Explanation: The specified workstation attempted to negotiate a protocol with the file server more than once.

User Action: If the workstation passed data directly to the session layer rather than through the directory, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Error closing print file 'name', status = 'number'

Severity: Error

Explanation: The file server could not close the specified print file.

User Action: It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

Error finding rights held by UIC ['group', 'member'], status = 'number'

Severity: Informational

Explanation: The server failed to read user's rights list in VMS system call.

User Action: Check for an incorrect definition of the logical name RIGHTSLLIST or a bad format for the RIGHTSLLIST.DAT file.

Error parsing filename 'name', status = 'number'

Severity: Error

Explanation: The file server could not determine the file specification.

User Action: If the file specification includes logicals, ensure that they are valid.

Error processing job info on queue 'name' by client 'nodename'

Severity: Error

Explanation: The file server cannot read the print queue.

User Action: For information about print queues, see the *VAX/VMS Guide to System Management and Daily Operations*.

Error retrieving info for queue 'name' by client 'nodename'

Severity: Error

Explanation: The file server could not get the appropriate print queue information.

User Action: For information about print queues, see the *VAX/VMS Guide to System Management and Daily Operations*.

Extend failed for file, status = 'number'

Severity: Error

Explanation: Failed to extend the file to a desired size because of the VMS error indicated.

User Action: Contact your Digital representative.

Failed to make tree connections to cluster node 'nodename', status 'number'

Severity: Error

Explanation: The file server could not make a connection to the specified cluster node.

User Action: To ensure that the node to which the file server is trying to connect is accepting connections, connect to each node in the cluster.

File buffer cache inconsistency

Severity: Fatal

Explanation: This is an internal error. A sequence of events has occurred which is inconsistent with the integrity of data being read from or written to the disk.

User Action: Contact your Digital representative.

File buffer space exhausted

Severity: Error

Explanation: All available file buffers are in use. Read or write attempts at this time may fail.

User Action: If there are any disks off-line that are being used by the file server, place them back online. If there are no disks off-line, specify a larger file buffer cache using PCFSS\$CACHE_SIZE.

File closer failed with status 'number', VCB delete not complete

Severity: Informational

Explanation: The server failed to close the file during the cancellation of session with the client. The status shows the error code. This is an internal error.

User Action: Contact your local Digital representative.

File names already locked by node 'nodename'

Severity: Informational

Explanation: An attempt was made to open a file already locked by the current server. This is an internal error.

User Action: Contact your local Digital representative.

File 'name' is not a STREAM file (client 'nodename')

Severity: Error

Explanation: The workstation requested that the file server open a non-stream file for writing.

User Action: The file server can only write to stream files, which are usually created by the server.

File still open for client 'nodename'

Severity: Error

Explanation: While the workstation had a file that was open, the workstation disconnected its session. The file server closes the file and logs this message for your information.

User Action: None

File 'name' still open for client 'name'

Severity: Error

Explanation: File 'name' still open when it was forced to close.

User Action: Contact your Digital representative.

FOB table is full

Severity: Informational

Explanation: The maximum number of open files allowed by server has been reached.

User Action: Modify the maximum number of open files by using PCSA_MANAGER.

GOFB for 'filename' not in cache

Severity: Error

Explanation: This is an internal error. The open file cache was about to close a file and discovered that the file had disappeared from the list of files waiting to be closed.

User Action: Contact your Digital representative.

Insufficient heap space (malloc failed)

Severity: Informational

Explanation: An attempt to allocate memory from the VMS memory pool failed.

User Action: Increase the page file quota or virtual page count, whichever is the limiting factor.

Invalid context for Find Next from client 'nodename'

Severity: Error

Explanation: The workstation used the MS-DOS operating system Find First and Find Next calls incorrectly.

User Action: The workstation should try the procedure again using the calls correctly.

Invalid device 'name' in root directory for client 'nodename'

Severity: Error

Explanation: The string specification for the device is invalid.

User Action: Ensure that the service name or UAF entry is correct.

Invalid mailbox message type 'number'

Severity: Error

Explanation: The file server received an undefined message from DECnet.

User Action: For information about mailbox messages, see the *DECnet-VAX User's Guide*.

Invalid NCB received

Severity: Error

Explanation: The file server cannot read a network control block (NCB) from DECnet, because the NCB is in an incorrect format.

User Action: For more information about network control blocks, see the *DECnet-VAX User's Guide*.

Invalid number of jobs requested from queue 'name' by client 'nodename'

Severity: Error

Explanation: The workstation passed a server message block (SMB) request that contains an invalid maximum count for the queue entries.

User Action: Correct the SMB and pass it again.

Invalid object type specified by operator

Severity: Error

Explanation: The file server received a server message block (SMB) request to close or limit an object (for example, a session or a connection) with an unknown type.

User Action: Correct the SMB and pass it again.

Invalid object value specified by Operator

Severity: Error

Explanation: The file server received a server message block (SMB) request to limit or close an unknown object (a session or a connection, for example).

User Action: Correct the SMB and pass it again.

Invalid path 'name' from client 'nodename'

Severity: Error

Explanation: The workstation specified an invalid path name in a command that sent a server message block (SMB) to the file server.

User Action: The workstation should issue the command again using a valid path name.

Invalid Protocol from client 'nodename'

Severity: Error

Explanation: A workstation tried to negotiate a protocol with the file server, and the server did not recognize any of the protocol strings.

User Action: The workstation is not using the VAXmate network software.

Invalid queue 'name' specified in request by client 'nodename'

Severity: Error

Explanation: The workstation requested print queue information for an invalid print queue.

User Action: The workstation should make the request again using a valid print queue name.

Invalid SMB

Severity: Fatal

Explanation: The file server received a server message block (SMB) that the server cannot read.

User Action: The SMB is in an incorrect format. If this situation occurs, the file server process stops. Restart the file server, correct the SMB, and send the SMB again.

Invalid SMB format from client 'nodename'

Severity: Error

Explanation: The workstation passed a server message block (SMB) to the file server in an invalid format.

User Action: If the workstation passed data directly to the session layer rather than through the directory, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Invalid state number 'number' for RB (node 'nodename')

Severity: Error

Explanation: The state of the Routing Block (RB) is invalid.

User Action: For information about the Routing Block, see the *DECnet-VAX User's Guide*.

Invalid Username/Password for client 'nodename'

Severity: Error

Explanation: A NET USE command specified an unrecognized user name or an illegal password.

User Action: The user should request the connection specifying the correct user name and password.

Invalid VCB

Severity: Fatal

Explanation: The file server cannot read a virtual circuit block (VCB) because the VCB is in an incorrect format.

User Action: If this situation occurs, the file server process stops. Restart the file server, correct the VCB, and send the VCB again.

LIB\$ASN_WITH_MBX failed, status = 'number'

Severity: Fatal

Explanation: When the file server was started, it failed to initialize itself.

User Action: Ensure that the file server is started in a privileged account and that DECnet is running.

Link to cluster member 'nodename' failed, status = 'number'

Severity: Error

Explanation: The file server could not make a connection to the specified cluster node.

User Action: To ensure that the node to which the file server is trying to connect is accepting connections, connect to each node in the cluster.

Locked range 'number' to 'number' in file 'name' for client 'nodename'

Severity: Informational

Explanation: The file server locked the specified range in the file as requested by the workstation.

User Action: None

Login break in attempt detected on PC file server from client

Severity: Informational

Explanation: The file server detected a break in attempt on user account. The file server is taking evasive action.

User Action: Change the password and notify your system manager.

Manager requested crash

Severity: Fatal

Explanation: PCSA_MANAGER requested stopping the file server.

User Action: If this situation occurs, the file server process stops. Start the file server again using the PCFS\$STARTUP.COM file.

Maximum number of users for service 'name' exceeded

Severity: Error

Explanation: The number of users connected to the specified service has reached its limit.

User Action: Change the limit to allow more users to connect or try the procedure again after another user disconnects.

11-24 VMS Server Messages

Message from PCFS_SERVER: Invalid Username/Password from client

Severity: Informational

Explanation: Invalid combination of user name and password was used in login.

User Action: None.

MID to VID table for node 'nodename' is full

Severity: Informational

Explanation: An attempt to expand the table for multiplex ID for intracluster sessions failed due to memory shortage.

User Action: Increase page file quota or virtual page count, whichever is the limiting factor.

MSG\$_DISCON for unknown unit 'number'

Severity: Fatal

Explanation: There was an attempt to stop a circuit that does not exist.

User Action: If this situation occurs, the file server process stops. For information about MSG\$_DISCON, see the *DECnet-VAX User's Guide*. Restart the file server.

No memory for allocation

Severity: Error

Explanation: The file server could not perform the operation because the VAX computer had no memory available.

User Action: You should stop and then restart the file server with the PCFS_STARTUP.COM file. However, if error occurs frequently, do a SHOW PROCESS/QUOTAS/ACCOUNTING to determine if page file quota or virtual page count is the limiting factor. Then either change the value given on the /PAGE_FILE qualified in the PCFS_STARTUP.COM or change the value of the SYSGEN parameter VIRTUALPAGECNT.

No more heap space (malloc failed)

Severity: Fatal

Explanation: Dynamic memory allocation has failed. Your VAX computer may have run out of memory. If this situation occurs, the file server process stops.

User Action: Restart the file server. However, if error occurs frequently, do a SHOW PROCESS/QUOTAS/ACCOUNTING to determine if page file quota or virtual page count is the limiting factor. Then either change the value given on the /PAGE_FILE qualified in the PCFS_STARTUP.COM or change the value of the SYSGEN parameter VIRTUALPAGECNT.

No new mutex for accepting connection from 'nodename'

Severity: Informational

Explanation: When two cluster members attempt to connect simultaneously, the link should be established by the one with the higher cluster system ID (CSID). The system with the lower CSID gives up its connection request and agrees to accept the connection from the other system. This error occurs when the low CSID system cannot find the new mutual exclusion semaphore to synchronize with. This is an internal error.

User Action: Contact your local Digital representative.

No PCB available

Severity: Error

Explanation: An abundance of mail server processes has caused you to run out of process slots. Check the MAXPROCESSCNT and BALSETCNT SYSGEN parameters.

User Action: Refer your system administrator to the *VMS System Generation Utility Manual*.

Opened file 'name' for client 'nodename'

Severity: Informational

Explanation: The file server opened the specified file as requested by the workstation.

User Action: None

OPER or SYSPRV privilege required to perform operator functions

Severity: Error

Explanation: Someone tried to use the file server operator interface from an account that does not have OPER or SYSPRV privileges.

User Action: Use the file server operator interface from an account with these privileges.

Operator: LIMIT CONNECTS /ALIAS='name' 'number'

Severity: Informational

Explanation: Echo on the operator action to set connection limit.

User Action: None.

Operator: SET ALIAS 'name'

Severity: Informational

Explanation: Echo on the operator action to set alias name.

User Action: None.

Out of file slots

Severity: Error

Explanation: Because the file server reached the maximum number of files that can be open at one time, the file server could not open or create a file.

User Action: Try the procedure again after a file is closed.

Password has expired for user 'name'

Severity: Security

Explanation: The password for the user's account has expired.

User Action: Reset the user's password and account and try the procedure again.

Range 'number' - 'number' conflicts with existing LB

Severity: Error

Explanation: The file server tried to lock the specified byte range in a file, but the range is already locked.

User Action: Wait until the first lock is cleared and then try the procedure again.

Read failed for file 'name', status = 'number'

Severity: Error

Explanation: While reading the specified file, the file server received an error.

User Action: The file may be locked, deleted, or there may be a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

Read 'number' characters from file 'name' for client 'nodename'

Severity: Informational

Explanation: The file server read the specified characters from the file as requested by the workstation.

User Action: None

Record stream disconnect failed for file 'name', status = 'number'

Severity: Error

Explanation: While trying to close the specified file, the file server received an error.

User Action: It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

Requested range in file 'name' locked against client 'nodename'

***Severity:* Error**

Explanation: The workstation cannot access the range of the specified file because another workstation has already locked that range.

User Action: The range must be unlocked by the workstation that locked it before another workstation can access that range. You can also use the `PCSA_MANAGER CLOSE SESSION` command to disconnect the workstation and remove the lock.

Server crash dump will follow immediately

***Severity:* Fatal**

Explanation: This message appears in the log file when the file server encounters severe problems and is immediately going to crash.

User Action: Contact your Digital representative.

Server started on node 'name'

***Severity:* Informational**

Explanation: The file server started on the specified DECnet node. This is the first message in the log file when the server starts.

***User Action:* None**

Simultaneous connect from node with lower CSID 'number' rejected

***Severity:* Informational**

Explanation: While routing packets, two cluster nodes attempted to connect to each other simultaneously. The node with the higher cluster system identifier (CSID) accepts the connection.

***User Action:* None**

SMB read failed for multiplex listener for node 'nodename', status = 'number'

***Severity:* Error**

Explanation: This is an internal error. An attempt to read a message from a multiplexed intracluster link failed.

User Action: Contact your Digital representative.

SMB read a file for multiplex listener for node 'nodename'

Severity: Informational

Explanation: The file server encountered an error while attempting to read a message for a multiplexed session (after the message had been received by DECnet), possibly due to an error in multiplexing. This is an internal error.

User Action: Contact your local Digital representative.

SYSS\$ASSIGN failed for device 'name', status = 'number'

Severity: Error

Explanation: The file server cannot assign a unit number to a session.

User Action: For information about the ASSIGN system service, see the *DECnet-VAX User's Guide*.

SYSS\$ASSIGN failed for device _NET, status = 'number'

Severity: Informational

Explanation: An error was encountered when there was an attempt to accept a client or intranode connection or to create an intranode connection.

User Action: For information about the ASSIGN system service, see the *DECnet-VAX User's Guide*.

SYSS\$ENQ failed, status = 'number'

Severity: Fatal

Explanation: The file server was unable to obtain a resource lock on a file.

User Action: If this situation occurs, the file server process stops and you must restart the file server.

SYSS\$GETDVIW failed, status = 'number'

Severity: Fatal

Explanation: The file server attempted to call the system routine SYSS\$GETDVIW (get device information), but failed.

User Action: If this situation occurs, the file server process stops. Thus, you must restart the file server.

SY\$\$QIO(IO\$_READVBLK) failed for mailbox, status = 'number'

Severity: Fatal

Explanation: The file server attempted to read a DECnet message that does not exist.

User Action: For more information about mailbox messages, see the *DECnet-VAX User's Guide*. You must restart the file server.

SY\$\$QIOW(IO\$_ACPCONTROL) failed, status = 'number'

Severity: Fatal

Explanation: When the file server was started, the file server failed to initialize itself.

User Action: Ensure that the file server is started in a privileged account and that DECnet is running. When status=20, the PCFS_STARTUP.COM file may have tried to start the file server process while another server process was running. Ensure that the new server process is started from the same group as the first server process.

TCB delete failed with status 'number', vcb delete not complete

Severity: Error

Explanation: An attempt to delete an invalid Tree Connect Block failed.

User Action: Contact your Digital representative.

Too much data requested by client 'nodename', virtual circuit aborted

Severity: Error

Explanation: The workstation asked the file server for too much data, and the server disconnected the workstation session.

User Action: If the workstation passed data directly to the session layer rather than through the directory, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Tree connect for client 'nodename' to directory 'name'

Severity: Informational

Explanation: The file server established a connection to the specified directory as requested by the workstation NET USE command.

User Action: None

Tree disconnect for client 'nodename' from directory 'name'

Severity: Informational

Explanation: The file server disconnected a connection to the specified directory as requested by the workstation NET USE /D command.

User Action: None

Tree 'name' still connected to client 'nodename'

Severity: Error

Explanation: The workstation unexpectedly disconnected its session when it still had an active connection with the file server. The file server closes the active connection automatically.

User Action: None

Tried to unlink GOFB for files while busy

Severity: Fatal

Explanation: This is an internal error. An attempt was made to open or close a file while it was already in the process of being opened, closed or renamed.

User Action: Contact your Digital representative.

Unit 'number': can't create GOFB for file 'name'

Severity: Informational

Explanation: The file server cannot create an open file data structure GOFB due to memory shortage or other reason. Open file or create file will fail.

User Action: Increase the page file quota or the virtual page count, whichever is the limiting factor.

11-32 VMS Server Messages

Unit 'number': can't create TCB for tree 'name'

Severity: Informational

Explanation: An attempt to create a tree connection data structure TCB failed due to memory shortage or other reason. A tree connection from client will fail.

User Action: Increase the page file quota or the virtual page count, whichever is the limiting factor.

Unit 'number': directory create for 'name', errno = 'number'

Severity: Error

Explanation: You have tried to create a directory that already exists.

User Action: Create a directory with a different name.

Unit 'number': can't find or create UB for tree 'name'

Severity: Informational

Explanation: An attempt to create data structure UB for storing client information failed due to a memory shortage or other reason. The tree connection will fail.

User Action: Increase the page file quota or the virtual page count, whichever is the limiting factor.

Unit 'number': first four bytes of SMG != 0xFF 'S' 'M' 'B'

Severity: Error

Explanation: Invalid data structure SMB encountered by the file server.

User Action: Contact your Digital representative.

Unit 'number': invalid SMB byte data type 0x%x

Severity: Error

Explanation: Invalid data structure SMB encountered by the file server.

User Action: Contact your Digital representative.

Unit 'number': link to cluster member aborted

Severity: Informational

Explanation: The file server received an indication that a link to another cluster member was aborted by the remote end. This can happen when the file server or operating system on the other cluster member crashes or is shut down.

User Action: None.

Unit 'number': can't create ACE for file 'name'

Severity: Error

Explanation: There was not enough memory to allocate the space needed to store the access control entry for the specified file.

User Action: Add more memory to the system or reduce the amount of memory required by reducing:

- The number connections allowed
- The number of open files allowed

Unit 'number': can't create file 'name' on top of directory

Severity: Error

Explanation: A workstation requested the file server to create the specified file. The file server cannot create the file because a subdirectory with the same name already exists.

User Action: The user should request the file creation again and specify a unique file name.

Unit 'number': can't open file 'name'

Severity: Error

Explanation: The file server did not open the specified file for a workstation.

User Action: The user may not have the correct privileges to open the file. The disk may be write-protected or off-line. A process may have opened the file in a way that precludes another process from opening it. Check these possibilities and try to open the file again.

Unit 'number': connect accept (SYS_\$QIOW (IO_\$ACCESS)) failed, status = 'number'

Severity: Error

Explanation: The file server received a request to connect from a workstation, but DECnet does not allow the file server to make the connection.

User Action: Ensure that the workstation session is still active and that the DECnet is functioning properly.

Unit 'number': connect accepted

Severity: Informational

Explanation: A workstation requested a connection that the file server accepted.

User Action: None

Unit 'number': connect requested, process 'number'

Severity: Informational

Explanation: A workstation requested a connection to the file server. The workstation may or may not have been connected.

User Action: None

Unit 'number': DECnet read AST returned error status 'number'

Severity: Error

Explanation: The file server requested its next message from DECnet, and the VMS operating system returned an error.

User Action: Check that DECnet is functioning properly. You may have exceeded the AST limit. For more information about the AST limit, see Chapter 4, Managing the File Server.

Unit 'number': DECnet read QIO returned error status 'number'

Severity: Error

Explanation: DECnet cannot read what it was attempting to read.

User Action: Make sure DECnet is functioning properly. For information about QIO error status, see the *DECnet-VAX User's Guide*.

Unit 'number': directory 'name' already exists

Severity: Error

Explanation: Because the directory already exists, the file server cannot create a directory for the specified user.

User Action: The user should create the directory using another name.

Unit 'number': directory create for 'name' failed, errno = 'number'

Severity: Error

Explanation: The operation failed because the user did not have the privileges required to create the directory.

User Action: Ensure that the user has the correct privileges. The user should connect to a service where the user has the required privileges.

Unit 'number': disconnect initiated by client

Severity: Informational

Explanation: A workstation requested to be disconnected from the file server. The workstation may or may not have been disconnected.

User Action: None

Unit 'number': first four bytes of SMB !=0xFF 'S' 'M' 'B'

Severity: Error

Explanation: The workstation passed a server message block (SMB) that does not begin with the correct four bytes: FF, 'S', 'M', 'B'. The file server disconnects the workstation session.

User Action: If the workstation passed data directly to the session layer rather than through the directory, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Unit 'number': Invalid SMB byte data type 'number'

Severity: Error

Explanation: The workstation passed a server message block (SMB) with an invalid type of data field.

User Action: If the workstation passed data directly to the session layer rather than through the directory, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Unit 'number': Invalid SMB received

Severity: Error

Explanation: The file server received a server message block (SMB) from the workstation that the server did not understand.

User Action: If the workstation passed data directly to the session layer rather than through the directory, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Unit 'number': link aborted

Severity: Error

Explanation: A workstation unexpectedly disconnected its session without specifying the NET USE device /D command. The workstation may have been turned off or reset while still connected to the server.

User Action: None

NOTE

It is not uncommon for a log file to contain a number of "link aborted" messages. You do not have to respond to these messages unless users are complaining about losing links to the server.

Unit 'number': link abort failed, status = 'number'

Severity: Error

Explanation: The workstation unexpectedly disconnected its session with the file server. The file server could not disconnect the session.

User Action: For information about the link abort, see the *DECnet-VAX User's Guide*.

NOTE

It is not uncommon for a log file to contain a number of "link aborted" messages. You do not have to respond to these messages unless users are complaining about losing links to the server.

Unit 'number': link close failed status = 'number'

Severity: Error

Explanation: The workstation requested to close a session. The file server could not de-assign the unit and close the session.

User Action: For more information about the failure, see the *DECnet-VAX User's Guide*.

Unit 'number': link disconnected by 3rd party

Severity: Error

Explanation: A workstation session was unexpectedly disconnected by a party other than the workstation or the file server.

User Action: Use the network control program (NCP) to see if the network is still active. Check that the network hardware is working properly. After checking these, the workstation should re-establish the session with the NET USE command.

Unit 'number': link to cluster member 'nodename' failed, status 'number'

Severity: Error

Explanation: The file server's link to the specified cluster node was aborted.

User Action: To ensure that the node to which the file server is trying to connect is accepting connections, connect to each node in the cluster.

Unit 'number': no VCB exists

Severity: Informational

Explanation: The file server cannot find the VCB structure in the deletion of the VCB in server data. This is an internal error.

User Action: Contact your local Digital representative.

Unit 'number': path to client lost

Severity: Error

Explanation: A workstation session with the file server was disconnected. The session time probably expired.

User Action: To re-establish the session, the workstation should issue the NET USE command.

Unit 'number': Requested access for file 'name' denied

Severity: Error

Explanation: The file server did not allow the workstation to access the specified file. The workstation does not have the correct privileges to access the file.

User Action: You can either change the privileges to allow access to the file or tell the user about the file restricted access.

Unit 'number': SMB byte data should be null-terminated but isn't

Severity: Error

Explanation: The workstation passed a server message block (SMB) containing string information that did not end with a zero.

User Action: If the workstation passed data directly to the session layer rather than through the directory, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Unit 'number': SMB claims to be bigger ('number' bytes) than containing message ('number' bytes)

Severity: Error

Explanation: The workstation passed a server message block (SMB) with a number of byte parameters greater than the total byte parameters in the received message.

User Action: If the workstation passed data directly to the session layer rather than through the directory, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Unit 'number': SMB claims word parameters longer than message

Severity: Error

Explanation: The workstation passed a server message block (SMB) with the number of word parameters greater than the total word parameters in the received message.

User Action: If the workstation passed data directly to the session layer rather than through the redirector, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Unit 'number': stunted SMB received

Severity: Error

Explanation: The workstation passed a server message block (SMB) with total parameters greater than the total parameters of the received message.

User Action: If the workstation passed data directly to the session layer rather than through the redirector, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Unit 'number': SYS\$DASSGN failed, status = 'number'

Severity: Error

Explanation: The workstation disconnected its session with the file server, but the server cannot de-assign the unit number associated with that session.

User Action: For information about the \$DASSGN system service, see the *DECnet-VAX User's Guide*.

Unit 'number': SYS\$QIOW(IO\$_WRITEVBLK) failed, unit = 'number', status = 'number'

Severity: Error

Explanation: The file server cannot write a message to reply to DECnet.

User Action: For information about the IO\$_WRITEVBLK system service, see the *DECnet-VAX User's Guide*.

Unit 'number': unable to create VCB

Severity: Informational

Explanation: An attempt to create a data structure VCB for storing virtual circuit information failed due to memory shortage or other reason. The server-client session creation will fail.

User Action: Increase page file quota or virtual page count, whichever is the limiting factor.

Unit 'number': virtual circuit aborted by server

Severity: Error

Explanation: The file server disconnected a workstation session with the server, because the workstation passed an incorrect server message block (SMB).

User Action: If the workstation passed data directly to the session layer rather than through the redirector, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

Unknown errno value 'number'

Severity: Error

Explanation: There was an unknown error encountered when parsing ERRNO code.

User Action: None.

Unknown errno value 'number'

Severity: Informational

Explanation: Unknown error found in interpreting the ERRNO code. This is an internal error.

User Action: Contact your local Digital representative.

Unknown VMS error 'number'

Severity: Error

Explanation: An attempt was made to translate a VMS error code into a DOS error code, but the VMS error code was not in the list of known errors.

User Action: Contact your Digital representative.

Unlocked range 'number' to 'number' in file 'name' for client 'nodename'

Severity: Informational

Explanation: The file server unlocked the specified range in the file as requested by the workstation.

User Action: None

Wait failed for file 'name', status 'number'

Severity: Error

Explanation: The file server received an error while waiting for an I/O operation to complete on the specified file.

User Action: It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

Write failed for file 'name', status = 'number'

Severity: Error

Explanation: The file server received an error while writing to the specified file.

User Action: It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

Wrote 'number' characters to file 'name' for client 'nodename'

Severity: Informational

Explanation: The file server wrote the specified characters to the file as requested by the workstation.

User Action: None

PCSA Manager Messages

These messages are generated when you use the PCSA Manager. Most messages are one of three types. Some PCSA Manager commands are displayed with a VMS error message; some are displayed with a LAD\$KERNEL message; and some are displayed with another PCSA Manager message. For more information on VMS error messages, see the VMS documentation set. For more information on LAD\$KERNEL messages, see the LAD\$KERNEL messages later in this chapter.

%PCSA-E-ACFCLOSEERR, Error closing File Server Access Control File

Severity: Error

Explanation: PCSA Manager could not close the file server's access control file (or service database).

User Action: The VAX computer may have an I/O problem. See the VMS error message also displayed.

%PCSA-E-ACFOPENERR, Error opening File Server Access Control File

Severity: Error

Explanation: PCSA Manager could not open the file server's access control file (or service database).

User Action: The service database (PCFS\$SERVICE_DATABASE.DAT) may not exist or the protections on the file may be incorrect.

%PCSA-E-ACFREADERR, Error reading File Server Access Control File

Severity: Error

Explanation: PCSA Manager could not read the file server's access control file (or service database).

User Action: The VAX computer may have an I/O problem. See the VMS error message also displayed.

%PCSA-E-ACFWRITEERR, Error writing File Server Access Control File

Severity: Error

Explanation: PCSA Manager could not write to the file server's access control file (or service database).

User Action: The VAX computer may have an I/O problem. See the VMS error message also displayed.

%PCSA-E-ACLNOTCREATED, ACL not created on 'directory'

Severity: Error

Explanation: An access control list for the specified directory was not created.

User Action: The reason it was not created is described in the other error message displayed.

%PCSA-E-ACREXISTS, Record for user/group 'name' service 'name' exists

Severity: Error

Explanation: You tried to grant the specified user or group access to a service to which the user or group already has access.

User Action: Ensure that you used the correct user or group name and service name.

%PCSA-E-ADDOSABORT, Client operating system addition aborted

Severity: Informational

Explanation: You entered a Ctrl/Z during the addition of a client operating system.

User Action: None

%PCSA-E-AMBKWD, Ambiguous qualifier or keyword - supply more characters

Severity: Error

Explanation: The command qualifier that you specified is not unique.

User Action: Enter the command again and specify a unique qualifier.

%PCSA-E-BADDSVRECV, Receive from Disk Server failed

Severity: Error

Explanation: PCSA Manager received an error when trying to receive a message from LAD\$KERNEL.

User Action: Check the VMS message also displayed.

%PCSA-E-BADDSVRSEND, Send to Disk Server failed

Severity: Error

Explanation: PCSA Manager received a error when trying to send a message to LAD\$KERNEL.

User Action: Check the VMS error message also displayed.

%PCSA-E-BADFSVRMSG, bad message received from File Server

Severity: Error

Explanation: PCSA Manager received a message from the file server, but the format was incorrect.

User Action: Check the VMS error message also displayed.

%PCSA-E-BADFSVRRECV, Receive from File Server failed

Severity: Error

Explanation: PCSA Manager received an error when trying to receive a message from the file server.

User Action: Check the VMS message also displayed.

%PCSA-E-BADFSVRSEND, Send to File Server failed

Severity: Error

Explanation: PCSA Manager received a error when trying to send a message to the file server.

User Action: Check the VMS error message also displayed.

%PCSA-E-BADOSFLOPPY, bad operating system disk

Severity: Error

Explanation: While adding a client operating system, PCSA Manager encountered a non-recoverable error reading the media.

User Action: Get a new set of media and try it again.

%PCSA-E-BADPROTOCOL, protocol refused

Severity: Error

Explanation: PCSA Manager could not establish a link to the file server.

User Action: The version of PCFS_SERVER is not compatible with PCSA Manager. Reinstall the latest version of PCSA.

%PCSA-E-BADREQUEST, unable to process request

Severity: Error

Explanation: Because the workstation passed an incorrect server message block (SMB), the server could not process the request.

User Action: If the workstation passed data directly to the session layer rather than through the redirector, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

%PCSA-E-BADSMB, invalid SMB

Severity: Error

Explanation: The server received an incorrect server message block (SMB).

User Action: If the workstation passed data directly to the session layer rather than through the redirector, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

%PCSA-E-CANTDELRBNODE, cannot delete a remote boot workstation from the NCP database

Severity: Error

Explanation: You tried to delete a node from the NCP database that is registered for remote boot.

User Action: Delete the registration of the workstation for remote boot and try again.

%PCSA-E-CANTGETLOGFIL, cannot get name of file server log file

Severity: Error

Explanation: PCSA Manager could not get the name of the file server log file.

User Action: Ensure that the file server is running.

%PCSA-E-DEVALALLOC, Device already allocated

Severity: Error

Explanation: You tried to attach a printer to a device that is already allocated.

User Action: Do one of the following:

- Deallocate the specified device.
- Use another device.

%PCSA-E-DIRNOTCREATED, Directory 'name' not created

Severity: Error

Explanation: The directory for the service you are adding was not created. The reason it was not created is described in the other error message displayed.

User Action: Check the VMS error message also displayed.

%PCSA-E-DISKISMOUNTED, 'filename' mounted as 'diskname'

Severity: Error

Explanation: You tried to delete the virtual disk while it was mounted.

User Action: Dismount the virtual disk; then delete it.

%PCSA-E-DISKSRVNOTRUN, Disk Server is not running

Severity: Error

Explanation: The disk server's executable file (LAD\$KERNEL) is not running.

User Action: Start the disk server using the LAD\$STARTUP.COM file.

%PCSA-E-DISKSRVNOTSTARTED, Disk Server is not started

Severity: Error

Explanation: The disk server is running but not started.

User Action: Start the disk server with the PCSA START DISK_SERVER CONNECTIONS command.

%PCSA-E-DOSEXISTS, Tried to add operating system with same name

Severity: Error

Explanation: You attempted to add a client operating system using the same name as a DOS that already exists on the container file

User Action: Try again, but use a different name that is unique.

%PCSA-E-ERRACCFIL, error accessing file 'filename'

Severity: Error

Explanation: PCSA Manager could not access the indicated file.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-ERRCLSDISK, Error closing 'filename'

Severity: Error

Explanation: PCSA Manager could not close the container file for the virtual disk it was creating.

User Action: The VMS CLOSE operation may have failed. Check the VMS error message also displayed.

%PCSA-E-ERRCLSFIL, error closing file 'filename'

Severity: Error

Explanation: PCSA Manager could not close the indicated file.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-ERRCREDISK, Error creating 'filename'

Severity: Error

Explanation: PCSA Manager could not create the container file for the specified virtual disk.

User Action: The VMS CREATE operation may have failed. Check the VMS error message also displayed.

%PCSA-E-ERRCREFIL, error creating file 'filename'

Severity: Error

Explanation: PCSA Manager could not create the indicated file.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-ERRDELDISK, Error deleting 'filename'

Severity: Error

Explanation: PCSA Manager could not delete the container file for the specified virtual disk.

User Action: The VMS DELETE operation may have failed. Check the other error message also displayed.

%PCSA-E-ERRDELREC, error deleting record for file 'filename'

Severity: Error

Explanation: PCSA Manager could not delete the indicated file.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-ERRDISMNTDISK, Error dismounting 'filename'

Severity: Error

Explanation: PCSA Manager could not dismount the specified virtual disk.

User Action: Check the other error message also displayed.

%PCSA-E-ERRMNTDISK, Error mounting 'filename'

Severity: Error

Explanation: PCSA Manager could not mount the specified virtual disk.

User Action: Check the other error message also displayed.

%PCSA-E-ERRMODDISK, Error modifying 'filename'

Severity: Error

Explanation: PCSA Manager could not modify the specified virtual disk.

User Action: Check the other error message displayed.

%PCSA-E-ERROPNDISK, Error opening 'filename'

Severity: Error

Explanation: PCSA Manager could not open the specified virtual disk. The VMS OPEN operation may have failed.

User Action: Check the VMS error message also displayed.

%PCSA-E-ERROPNFIL, Error opening file 'filename'

Severity: Error

Explanation: PCSA Manager could not open the indicated file.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-ERROPNLOG, Error opening log file 'filename'

Severity: Error

Explanation: The file server was unable to open the specified log file.

User Action: Ensure that the device, directory, and file name are valid VMS names.

%PCSA-E-ERRREADDISK, Error reading 'filename'

Severity: Error

Explanation: PCSA Manager could not read the indicated file.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-ERRREADFIL, Error reading file 'filename'

Severity: Error

Explanation: PCSA Manager could not read the indicated file.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-ERRREWFIL, Error rewinding file 'filename'

Severity: Error

Explanation: PCSA Manager could not rewind the indicated file.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-ERRSETCHAR, Error setting characteristics

Severity: Error

Explanation: PCSA Manager could not define or change the file or disk server characteristics. The reason it could not set the characteristics is described in the other error message displayed.

User Action: Check the error message also displayed.

%PCSA-E-ERRSETSERVICE, Error setting service 'name'

Severity: Error

Explanation: PCSA Manager could not define or change the specified service. The reason it could not set the service is described in the other error message displayed.

User Action: Check the error message also displayed.

%PCSA-E-ERRUPDREC, Error updating record for file 'filename'

Severity: Error

Explanation: PCSA Manager could not update a record in the indicated file.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-ERRWRITEFIL, Error writing file 'filename'

Severity: Error

Explanation: PCSA Manager could not write to the indicated file.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-ERRWRITEDISK, Error writing 'filename'

Severity: Error

Explanation: PCSA Manager could not write to the specified virtual disk.

User Action: The VMS WRITE operation may have failed. Check the VMS error message also displayed.

%PCSA-E-ERRZEROCACHE, Error zeroing cache counters

Severity: Error

Explanation: PCSA Manager could not reset the cache counters.

User Action: Check the LAD\$KERNEL message also displayed.

%PCSA-E-ERRZEROCLIENT, Error zeroing counters for client 'nodename' service 'name'

Severity: Error

Explanation: PCSA Manager could not reset the counters for the specified client and service.

User Action: Check the LAD\$KERNEL message also displayed.

%PCSA-E-ERRZEROSERVICE, Error zeroing counters for service 'name'

Severity: Error

Explanation: PCSA Manager could not reset the counters for the specified service name.

User Action: Check the LAD\$KERNEL message also displayed.

%PCSA-E-FILEEXISTS, File "filename" already exists

Severity: Error

Explanation: The Manager is trying to create a file that already exists. The Manager cannot create a new file to supersede.

User Action: Do one of the following:

- Specify another name.
- Remove the file that already exists.

%PCSA-E-FILESRVNOTRUN, File Server is not running

Severity: Error

Explanation: The file server's executable file (PCFS_SERVER) is not running.

User Action: Start the file server using the PCFS_STARTUP.COM file.

%PCSA-E-FILNOTOPNUPDATE, File not open for update

Severity: Error

Explanation: An error occurred in the PCSA Manager I/O layer due to a conflict in the file open mode and the file access requested. This is an internal PCSA Manager error.

User Action: Contact your local Digital representative.

%PCSA-E-FILNOTOPNWRITE, File not open for write

Severity: Error

Explanation: An error occurred in the PCSA Manager I/O layer due to a conflict in file open mode and the file access requested. This is an internal PCSA Manager error.

User Action: Contact your local Digital representative.

%PCSA-E-IDENTNOTADDED, Identifier "identifier" not added for user

Severity: Error

Explanation: The Manager was unable to add an identifier to a user account.

User Action: You should check the system service error that follows. Take the appropriate action.

%PCSA-E-IDENTNOTREMOVED, Identifier "Identifier" not removed for user

Severity: Error

Explanation: The Manager was unable to remove an identifier from a user account.

User Action: You should check the system service error that follows. Take the appropriate action.

%PCSA-E-INTERNALERR, Internal error

Severity: Error

Explanation: An error occurred internal to the PCSA Manager.

User Action: Contact your local Digital representative.

%PCSA-E-INVCLIENT, Invalid client name syntax - see command documentation

Severity: Error

Explanation: The syntax for the specified client is incorrect.

User Action: The client name (DECnet node name) can include up to six characters. Enter the command again and specify the correct client name.

%PCSA-E-INVCLIENTOS, Invalid client name syntax

Severity: Error

Explanation: You specified an invalid client operating system name.

User Action: Specify a valid client operating system name, such as VXSYS33.

%PCSA-E-IVENETCONT, Invalid Ethernet controller - see command documentation

Severity: Error

Explanation: You entered an invalid Ethernet controller name.

User Action: Enter a valid Ethernet controller name.

%PCSA-E-INVFILACCESS, Invalid or incompatible access

Severity: Error

Explanation: An error occurred in the PCSA Manager I/O layer because an invalid access mode was specified during a file open request. This is an internal PCSA Manager error.

User Action: Contact your local Digital representative.

%PCSA-E-INVHWADDR, Invalid hardware address, see command documentation

Severity: Error

Explanation: You entered an invalid hardware address for a workstation.

User Action: Enter one in the form **xx-xx-xx-xx-xx-xx**, where **x** is alphanumeric.

%PCSA-E-INVFILMODE, Invalid or incompatible mode

Severity: Error

Explanation: An error occurred in the PCSA Manager I/O layer because an invalid access mode was specified during a file open request. This is an internal PCSA Manager error.

User Action: Contact your local Digital representative.

%PCSA-E-INVFORM, Invalid form name syntax - see command documentation

Severity: Error

Explanation: The syntax for the specified form name is incorrect.

User Action: A form name can include 1 to 31 characters. Do not specify spaces in the form name. Enter the command again and specify the correct form name.

%PCSA-E-INVGROUPNAME, Invalid group name 'name'

Severity: Error

Explanation: The group name that you specified is incorrect.

User Action: The correct group name is PUBLIC. Enter the command again and specify the correct name.

%PCSA-E-INVNODEADDR, Invalid node address syntax - see command documentation!

Severity: Error

Explanation: The node address was incorrectly entered and PCSA Manager could not parse it.

User Action: Enter a valid node address.

%PCSA-E-INVPWDUSR, Invalid password or service name

Severity: Error

Explanation: The password or service name that you specified is incorrect.

User Action: Enter the command again, specifying the correct password or service name.

%PCSA-E-INVQUEUE, Invalid queue name syntax - see command documentation

Severity: Error

Explanation: The syntax for the specified queue name is incorrect.

User Action: A queue name can include 1 to 31 characters. Do not specify spaces in the queue name. Enter the command again and specify the correct queue name.

%PCSA-E-INVROOT, Invalid root directory syntax

Severity: Error

Explanation: The directory syntax for the /ROOT qualifier is incorrect.

User Action: The directory syntax must be a valid VMS device and directory specification, DEVICE:[DIRECTORY]. Enter the command again and specify the correct directory syntax.

%PCSA-E-INVSERVICE, Invalid service name syntax - see command documentation

Severity: Error

Explanation: The syntax for the specified service name is incorrect.

User Action: A service name can include 1 to 25 characters. Do not specify spaces in the service name. Enter the command again and specify the correct service name.

%PCSA-E-INVSYSCODE, Invalid operating system code - see command documentation!

Severity: Error

Explanation: You entered an invalid operating system code.

User Action: Enter a valid operating system code.

%PCSA-E-INVTERMNAME, Invalid terminal port - see command documentation!

Severity: Error

Explanation: You entered an invalid terminal port name.

User Action: Enter a valid terminal port name.

%PCSA-E-INVUSER, Invalid user name syntax - see command documentation

Severity: Error

Explanation: The syntax for the specified user name is incorrect.

User Action: A user name can include 1 to 12 characters. Do not specify spaces in the user name. Enter the command again and specify the correct user name.

%PCSA-E-INVVALUE, Invalid value syntax - see command documentation

Severity: Error

Explanation: You specified a qualifier that included an invalid value or character.

User Action: Check the valid values for the command in *Chapter 10, LAST Control Program* and enter the command again. Enter the command again using the correct value.

%PCSA-E-INVVERCODE, Invalid operating system version code - see command documentation!

Severity: Error

Explanation: You entered an invalid operating system version code.

User Action: Enter a valid operating system code.

%PCSA-E-IVKEYW, Unrecognized keyword - check validity and spelling

Severity: Error

Explanation: PCSA Manager does not recognize the argument or value you specified with a qualifier.

User Action: Check the valid values or arguments for the command in Chapter 9, PCSA Manager and enter the command again.

%PCSA-F-MEMGETERR, Virtual memory allocation failed

Severity: Fatal

Explanation: PCSA Manager requested more dynamic memory than was available from the operating system.

User Action: Increase the amount of dynamic memory available to the system.

%PCSA-F-MEMFREEERR, Virtual memory de-allocation failed

Severity: Fatal

Explanation: This is an internal PCSA Manager error.

User Action: Contact your local Digital representative.

%PCSA-F-Attempt to de-allocate nonexistent memory

Severity: Fatal

Explanation: This is an internal PCSA Manager error.

User Action: Contact your local Digital representative.

%PCSA-E-NETCLOSEERR, Error closing network database

Severity: Error

Explanation: An error occurred closing the remote boot database, by default located in the SYS\$COMMON:[PCSA]PCSA\$BOOT_DATADASE.DAT or wherever the logical PCSA\$BOOT_DATABASE points.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-NETOPENERR, Error opening network database

Severity: Error

Explanation: An error occurred opening the remote boot database, located by default in the SYS\$COMMON:[PCSA]PCSA\$BOOT_DATABASE.DAT or wherever the logical PCSA\$BOOT_DATABASE points.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-NETREADERR, Error reading network database

Severity: Error

Explanation: An error occurred reading the remote database, by default located in the SYS\$COMMON:[PCSA]PCSA\$BOOT_DATABASE.DAT or wherever the logical PCSA\$BOOT_DATABASE points.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-NETWRITEERR, Error writing network database

Severity: Error

Explanation: An error occurred writing the remote boot database, by default located in the SYS\$COMMON:[PCSA]PCSA\$BOOT_DATABASE.DAT or wherever the logical PCSA\$BOOT_DATABASE points.

User Action: Refer to the second error message that accompanies this message. It is likely that there is a record management system (RMS) problem. Refer to your VMS documentation set for information about RMS.

%PCSA-E-NOACTCONNECTS, No active connections

Severity: Informational

Explanation: There are no active connections. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOACTCONMATCH, No active connections match user constraints

Severity: Informational

Explanation: None of the active connections matched the constraints that you entered in the command. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOACTIONSEL, No actions selected on command line

Severity: Error

Explanation: You did not specify enough information on the command line.

User Action: Check the valid commands, values, or arguments in Chapter 10, LAST Control Program and enter the command again.

%PCSA-E-NOACTSERMATCH, No active services match user constraints

Severity: Informational

Explanation: None of the active services matched the constraints that you entered in the command. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOACTSERVICES, No active services

Severity: Informational

Explanation: There are no active services. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOACTSESMATCH, No active sessions match user constraints

Severity: Informational

Explanation: None of the active services matched the constraints that you entered in the command.

User Action: None

%PCSA-E-NOACTSESSIONS, No active sessions

Severity: Informational

Explanation: There are no active sessions. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOAUTSERMATCH, No authorized services match user constraints

Severity: Informational

Explanation: None of the authorized services matched the constraints that you entered in the command. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOAUTSERVICES, No authorized services

Severity: Informational

Explanation: There are no authorized services. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOCLICOUMATCH, No client counters match user constraints

Severity: Informational

Explanation: None of the client counters matched the constraints that you entered in the command. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOCLICOUNTERS, No client counters

Severity: Informational

Explanation: There are no authorized services. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOCLIENTSYS, No client operating systems defined

Severity: Informational

Explanation: No client operating systems have been installed, or all of them have been deleted. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NODSVRLINK, Unable to establish link to Disk Server

Severity: Error

Explanation: PCSA Manager could not connect to LAD\$KERNEL to perform the current operation.

User Action: Ensure that LAD\$KERNEL is running. Check the VMS error message also displayed.

%PCSA-E-NOFSVRLINK, Unable to establish link to File Server

Severity: Error

Explanation: PCSA Manager could not connect to the file server to perform the current operation.

User Action: Ensure that the file server is running. Check the VMS error message also displayed.

%PCSA-E-NOMATADAPTER, Unsupported network adapter code

Severity: Error

Explanation: The Manager could not, from the Ethernet adapter installed on the workstation, determine the remote boot load file to use.

User Action: If the message is displayed, contact your local Digital representative.

%PCSA-E-NONEXACR, Nonexistent record user/group 'name' service 'name'

Severity: Error

Explanation: You tried to deny the specified user or group access to a service to which the user or group does not have access.

User Action: Ensure that you used the correct user name or service name.

%PCSA-E-NONEXSERVICE, Nonexistent service 'name'

Severity: Error

Explanation: You tried to remove the specified service, but it does not exist.

User Action: Ensure that you used the correct service name.

%PCSA-E-NONEXVMSUSER, Nonexistent VMS user 'name'

Severity: Error

Explanation: The user name that you specified does not exist in the UAF.

User Action: Create an entry in the UAF for the user name or specify the correct user name.

%PCSA-E-NOOPNFILES, No open files

Severity: Informational

Explanation: There are no open files. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOOPNFILESMATCH, No open files match user constraints

Severity: Informational

Explanation: None of the open files matched the constraints that you entered in the command. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOPRIV, Insufficient privileges for attempted operation

Severity: Error

Explanation: The account from which you are running PCSA Manager does not have the necessary privileges to perform the requested operation.

User Action: Most commands that affect the operation of the file or disk server require OPER and SYSPRV privileges. Most commands that affect disk server services require either OPER and SYSPRV privileges or write access to the virtual disk file. Use the SYSTEM MANAGER account.

%PCSA-E-NOREGSERVICES, No registered services

Severity: Informational

Explanation: There are no registered services. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOREGSERMATCH, No registered services match user constraints

Severity: Informational

Explanation: None of the registered services matched the constraints that you entered in the command. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOREGUSERS, No registered services match user constraints

Severity: Error

Explanation: There are no PCSA registered users.

User Action: None

%PCSA-E-NOREMBOOTNODE, No remote booting nodes defined

Severity: Informational

Explanation: There are no remote boot workstations defined. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOSERCOUMATCH, No service counters match user constraints

Severity: Informational

Explanation: None of the service counters matched the constraints that you entered in the command. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOSERCOUNTERS, No service counters

Severity: Informational

Explanation: There are no registered services. Thus, PCSA Manager has nothing to display.

User Action: None

%PCSA-E-NOSYSACEMAT, No matching operating system - ACE not found

Severity: Error

Explanation: Rarely seen. Software tried to delete an operating system, and its Application Control Entry (ACE) was not found.

User Action: Contact your local Digital representative.

%PCSA-E-NOSYSCONT, System container file not found

Severity: Error

Explanation: An error occurred opening the system container file you specified.

User Action: If you did not explicitly specify the system container file name, check the file specified by the PCSA\$SYSTEM_CONTAINER logical name.

%PCSA-E-NOWILDCARDS, No wildcards allowed on file specification

Severity: Error

Explanation: You specified an asterisk (*) or a percent sign (%) in a file specification that does not accept wildcards.

User Action: Enter the command again without specifying the wildcard.

%PCSA-E-NOWSTEMPL, No workstation templates installed

Severity: Error

Explanation: No workstation templates are installed.

User Action: None

%PCSA-E-OSENHERR, Error installing operating system enhancements

Severity: Error

Explanation: An error occurred while installing client operating system enhancements.

User Action: Container file may be corrupted, rebuild the file.

%PCSA-E-OSNOTADDED, Client OS 'name' not removed

Severity: Error

Explanation: The client operating system specified was not added to the system container file.

User Action: Check the other error messages displayed.

%PCSA-E-OSNOTREMOVED, Client OS 'name' not removed

Severity: Error

Explanation: The client operating system specified was not removed from the system container file.

User Action: Check the other error messages displayed.

%PCSA-E-OUTOFRANGE, Keyword 'x' must be within range 'y' - 'z'

Severity: Error

Explanation: You specified a qualifier that included a value that is out of the range for that qualifier.

User Action: Enter the command again using a value in the range.

%PCSA-E-PWDNOTVER, Password verification error - password not set

Severity: Error

Explanation: You entered the /PASSWORD qualifier without a parameter. Therefore, PCSA Manager prompted you for the password twice. The verification entry (second prompt) did not match the first entry.

User Action: Enter the password on the command line or enter an identical password at both prompts.

%PCSA-E-REBOOTERR, Error writing to the remote boot command file, deleting it

***Severity:* Error**

***Explanation:* A general error occurred while building the remote boot command file.**

***User Action:* You should correct the reported error.**

%PCSA-E-SEREXISTS, Service 'name' already exists

***Severity:* Error**

***Explanation:* The service that you are adding or creating already exists.**

***User Action:* Enter the command again and specify a unique service name.**

%PCSA-E-SERNOTADDED, Service 'name' not added

***Severity:* Error**

***Explanation:* The service you specified was not added to the service database. The reason it was not added is described in the other error message displayed.**

***User Action:* Check the other error message also displayed.**

%PCSA-E-SERNOTDENIED, Service 'name' not denied

***Severity:* Error**

***Explanation:* Access to the specified service was not denied. The reason it was not denied is described in the other error message displayed.**

***User Action:* Check the other error message also displayed.**

%PCSA-E-SERNOTGRANTED, Service 'name' not granted

***Severity:* Error**

***Explanation:* Access to the specified service was not granted. The reason it was not granted is described in the other error message displayed.**

***User Action:* Check the other error message also displayed.**

%PCSA-E-SERNOTREMOVED, Service 'name' not removed

Severity: Error

Explanation: The service you specified was not removed from the service database. The reason it was not removed is described in the other error message displayed.

User Action: Check the other error message also displayed.

%PCSA-E-SYNTAX, Error parsing 'XX'

Severity: Error

Explanation: The syntax for a specified keyword value is invalid.

User Action: Check the command documentation in Chapter 10, LAST Control Program and enter the command again.

%PCSA-E-SYSSERERROR, System service error

Severity: Error

Explanation: A VMS system service failed.

User Action: Check the VMS error message also displayed.

%PCSA-E-UNKNOWNITEM, Item to close/stop did not exist

Severity: Error

Explanation: The file, connection, or session that you want to close or stop does not exist.

User Action: Check the item name or identifier and enter the command again.

%PCSA-E-UNKWNFSVRERR, File server reported unknown error; Class = eclass, Code = ecode

Severity: Error

Explanation: The server received an incorrect server message block (SMB).

User Action: If the workstation passed data directly to the session layer rather than through the redirector, see the *VAXmate Technical Reference Manual* to check that the SMB has the correct format. Correct the SMB and pass it again.

%PCSA-E-USERISREG, User is already registered

Severity: Error

Explanation: You tried to register a user that is already registered.

User Action: Do not try to register a user that is already registered.

%PCSA-E-USERNOTREG, User is not registered

Severity: Error

Explanation: You tried to modify/delete a user that is not registered.

User Action: Do not try to modify/delete a user that is not registered.

%PCSA-E-USRNOTADDED, User 'name' not added

Severity: Error

Explanation: The user you specified was not added to the user authorization file.

User Action: Check the other error messages displayed.

%PCSA-E-USRNOTREMOVED, User 'name' not removed

Severity: Error

Explanation: The user you specified was not removed from the user authorization file.

User Action: Check the other error messages displayed.

%PCSA-E-WORNOTADDED, Workstation 'name' not added

Severity: Error

Explanation: The workstation you specified was not added to the remote boot database.

User Action: Check the other error messages displayed.

%PCSA-E-WORNOTMODIFIED, Workstation "name" not modified

Severity: Error

Explanation: A general error occurred while modifying a workstation.

User Action: You should correct the reported error.

%PCSA-E-WORNOTREMOVED, Workstation 'name' not removed

Severity: Error

Explanation: The workstation specified was not removed from the remote boot database.

User Action: Check the other error messages displayed.

%PCSA-E-WSNOTREG, Workstation not registered for remote boot - user abort

Severity: Error

Explanation: You tried to register a workstation that is already registered.

User Action: None

%PCSA-W-CACHENOTSET, Server cache size not set, server is already active

Severity: Warning

Explanation: You tried to start the LAD driver, but it was already running.

User Action: Stop the LAD driver. Then, start the LAD driver.

%PCSA-W-CONCREFAILED, Contiguous create failed, attempting contiguous best try

Severity: Warning

Explanation: PCSA Manager attempted to create a contiguous disk. However, there is not enough contiguous virtual disk space available so PCSA Manager attempts to create the disk contiguous best try.

User Action: None

%PCSA-W-DSVROUTOFSEQ, Out of sequence message received from LAD\$KERNEL; expected 'x', received 'y'

Severity: Warning

Explanation: PCSA Manager received an unexpected response to a message from LAD\$KERNEL.

User Action: Check the other error message also displayed.

%PCSA-W-FILNOTDEL, Error deleting 'filename'

Severity: Warning

Explanation: While removing a service, PCSA Manager tried to delete the specified file, but an error occurred.

User Action: Check the file protection to ensure the file can be deleted. Check the VMS error message also displayed.

%PCSA-W-OSENHNOTINST, Operating system enhancements not installed - Improper version

Severity: Warning

Explanation: The version number of the operating system is incompatible with the installation of the enhancements, so none were installed.

User Action: If this message is displayed, call your local Digital representative.

%PCSA-W-REBOOTWARN, No remote boot nodes defined in database

Severity: Warning

Explanation: You specified that PCSA Manager should build the remote boot command file. PCSA Manager built the file, but there were no remote boot workstations defined.

User Action: Define one or more remote boot workstations and try it again.

LASTCP Messages

The following messages are output by LASTCP.

%LASTCP-E-ASSIGNERR, Error assigning unit 'ddcu'

Severity: Error

Explanation: LASTCP was unable to assign the specified device. The reason LASTCP could not assign it is described in the VMS error message also displayed.

User Action: Check the VMS error message also displayed.

%LASTCP-E-DRVRALRSTRT, LASTDRIVER is already started

Severity: Error

Explanation: You attempted to start LASTDRIVER when it was already started.

User Action: None

%LASTCP-E-ERRSETQUO, Error setting process quotas

Severity: Error

Explanation: LASTDRIVER could not set process quotas. You must have CMKRNL (change mode to kernel) privilege to set process quotas.

User Action: Ensure that you have this privilege and enter the command again.

%LASTCP-E-INVQUOTA, Invalid transmit quota 'x'

Severity: Error

Explanation: The value you specified for the transmit quota is not correct.

User Action: Use a valid quota is in the range 1-255.

%LASTCP-E-IVCMD, Invalid command

Severity: Error

Explanation: The command you entered is not a valid LASTCP command.

User Action: Check the command syntax and enter it again.

%LASTCP-E-IVQUAL, Value for qualifier 'name' is invalid as 'x'

Severity: Error

Explanation: The value you specified for a qualifier or parameter is invalid.

User Action: Check the command's description in Chapter 10, LAST Control Program and enter the command again.

%LASTCP-E-NOCONTROL, Controller 'letter' is not active

Severity: Error

Explanation: The Ethernet controller that you specified is not running or does not exist.

User Action: If the Ethernet controller is not running, initialize it and enter the command again. The default controller is A.

%LASTCP-E-NODEVFOUND, No Ethernet device found - use LAST\$DEVICE

Severity: Error

Explanation: The Ethernet device is not defined to LASTCP.

User Action: You must specify the Ethernet device using the logical LAST\$DEVICE.

%LASTCP-E-NONODNAM, Node name required to start transport

Severity: Error

Explanation: LASTDRIVER could not determine the VAX computer's DECnet node name.

User Action: If DECnet is not running, specify the /NODENAME qualifier with the LASTCP START TRANSPORT command.

%LASTCP-E-NOSUCHNODE, Node 'name' not found

Severity: Error

Explanation: The specified node name is not known to LASTDRIVER.

User Action: Enter a valid node name.

%LASTCP-E-NOTINITED, LASTDRIVER controller Init not called

Severity: Error

Explanation: The transport is loaded but the controller did not initialize.

User Action: Restart the driver by running the LAD_STARTUP.COM file.

%LAD-E-MOUNTFAILED Mount request failed

Severity: Error

Explanation: LAD\$KERNEL could not mount the requested virtual disk.

User Action: Check the other message displayed and try the command again.

%LAD-E-NOCACHE Server cache not set

Severity: Error

Explanation: The disk server's cache is not set because the driver is not started.

User Action: Set the cache to start the driver.

%LAD-E-NOSERVERDATAB Couldn't find server database file

Severity: Error

Explanation: LAD\$KERNEL could not find the disk server's service database, SYS\$COMMON:[PCSA]LAD\$SERVICE_DATABASE.DAT.

User Action: Ensure that the database, SYS\$COMMON:[PCSA]LAD\$SERVICE_DATABASE.DAT exists. Then, enter the command again.

%LAD-E-NOSUCHSERVICE Service name not found

Severity: Error

Explanation: The service name that you specified is not in the disk server's service database.

User Action: Either add a service with that name or enter the correct service name.

%LAD-E-NOTMOUNTED Service is not mounted

Severity: Error

Explanation: The service you tried to dismount is not mounted.

User Action: Check the name of the service and enter the command again. Also, check the VMS message displayed.

%LASTCP-E-NOCONTROL, Controller 'letter' is not active

Severity: Error

Explanation: The Ethernet controller that you specified is not running or does not exist.

User Action: If the Ethernet controller is not running, initialize it and enter the command again. The default controller is A.

%LASTCP-E-NODEVFOUND, No Ethernet device found - use LAST\$DEVICE

Severity: Error

Explanation: The Ethernet device is not defined to LASTCP.

User Action: You must specify the Ethernet device using the logical LAST\$DEVICE.

%LASTCP-E-NONODNAM, Node name required to start transport

Severity: Error

Explanation: LASTDRIVER could not determine the VAX computer's DECnet node name.

User Action: If DECnet is not running, specify the /NODENAME qualifier with the LASTCP START TRANSPORT command.

%LASTCP-E-NOSUCHNODE, Node 'name' not found

Severity: Error

Explanation: The specified node name is not known to LASTDRIVER.

User Action: Enter a valid node name.

%LASTCP-E-NOTINITED, LASTDRIVER controller init not called

Severity: Error

Explanation: The transport is loaded but the controller did not initialize.

User Action: Restart the driver by running the LAD_STARTUP.COM file.

%LASTCP-E-NOTLOADED, LASTDRIVER is not loaded

Severity: Error

Explanation: The transport is not loaded.

User Action: Run the LAD_STARTUP.COM file to load the transport.

%LASTCP-E-NOTSTARTED, LASTDRIVER not started

Severity: Error

Explanation: To use the command you entered, LASTDRIVER must be started.

User Action: Start LASTDRIVER with the LASTCP START TRANSPORT command.

%LASTCP-E-NOTSTOPPED, LASTDRIVER not stopped

Severity: Error

Explanation: LASTCP could not stop the transport.

User Action: You may not have the correct privileges or the device may be off-line. Check the VMS error messages also displayed.

%LASTCP-E-STRTERR, Error Initializing 'ddcu' for LASTDRIVER

Severity: Error

Explanation: LASTDRIVER could not initialize the port for the specified controller.

User Action: The controller may be unplugged or another hardware problem may exist. Check the controller and enter the command again.

%LASTCP-E-VERSERR, LASTDRIVER version mismatch

Severity: Error

Explanation: The version of LASTDRIVER does not match the version of LASTCP.

User Action: Determine which component is running the latest version and use the new version of the other component.

LAD\$KERNEL Messages

The following messages are displayed by LAD\$KERNEL. Some messages are displayed as part of a pair of messages. The other message may come from PCSA Manager or VMS. For more information on the PCSA Manager message, see the PCSA Manager messages earlier in this chapter. For more information on the VMS message, see the VMS documentation set.

%LAD-E-DISMOUNTFAILED Dismount request failed

Severity: Error

Explanation: The service that you tried to dismount was not dismounted.

User Action: Check the other message displayed.

%LAD-E-DUPSERVNAME Duplicate service name detected

Severity: Error

Explanation: The service name that you specified already exists.

User Action: Enter the command again using another service name.

%LAD-E-INVACCMODE Invalid access mode specified

Severity: Error

Explanation: An invalid access mode was specified.

User Action: Access modes can be either READ or WRITE. Other access modes are not allowed. Enter the command again and specify the correct mode.

%LAD-E-INVPASS Invalid password specified

Severity: Error

Explanation: The password that you specified is incorrect.

User Action: Enter the command again using the correct password.

%LAD-E-MOUNTFAILED Mount request failed

Severity: Error

Explanation: LAD\$KERNEL could not mount the requested virtual disk.

User Action: Check the other message displayed and try the command again.

%LAD-E-NOCACHE Server cache not set

Severity: Error

Explanation: The disk server's cache is not set because the driver is not started.

User Action: Set the cache to start the driver.

%LAD-E-NOSERVERDATAB Couldn't find server database file

Severity: Error

Explanation: LAD\$KERNEL could not find the disk server's service database, SYS\$COMMON:[PCSA]LAD\$SERVICE_DATABASE.DAT.

User Action: Ensure that the database, SYS\$COMMON:[PCSA]LAD\$SERVICE_DATABASE.DAT exists. Then, enter the command again.

%LAD-E-NOSUCHSERVICE Service name not found

Severity: Error

Explanation: The service name that you specified is not in the disk server's service database.

User Action: Either add a service with that name or enter the correct service name.

%LAD-E-NOTMOUNTED Service is not mounted

Severity: Error

Explanation: The service you tried to dismount is not mounted.

User Action: Check the name of the service and enter the command again. Also, check the VMS message displayed.

%LAD-E-REMOUNTFAILED Cannot remount permanent services

Severity: Error

Explanation: LAD\$KERNEL could not remount the permanent services.

User Action: Check the other message displayed.

%LAD-E-SETFAILED Set request failed

Severity: Error

Explanation: The PCSA SET DISK_SERVER SERVICE command failed to set the requested characteristic.

User Action: Check the other message displayed.

%LAD-E-SHOWFAILED Show request failed

Severity: Error

Explanation: The PCSA SHOW DISK_SERVER command failed to display the requested information.

User Action: Check the other message displayed.

%LAD-E-SPURIOUSDISMOUNT Spurious dismount request

Severity: Warning

Explanation: You attempted to dismount a virtual disk that is currently being dismounted. The disk is dismounted correctly.

User Action: None

%LAD-E-WAITING Waiting for DECnet/VAX

Severity: Error

Explanation: You tried to start the disk server and DECnet/VAX is not running.

User Action: To start the disk server, DECnet/VAX must be running. To start DECnet/VAX, use the command procedure SYS\$MANAGER:STARTNET.COM. If you have not included a call to LAD\$STARTUP.COM in the command procedure SYS\$MANAGER:STARTNET.COM, start the disk server using the LAD\$STARTUP.COM file.

%LAD-E-ZEROFAILED Zero request failed

Severity: Error

Explanation: The PCSA ZERO DISK_SERVER COUNTERS command failed to zero the requested counters.

User Action: Check the other message displayed.

PCDISK Messages

The following messages are displayed by PCDISK. Some messages are displayed as part of a pair of messages. The other message may come from PCSA Manager or VMS. For more information on the PCSA Manager message, see the PCSA Manager messages earlier in this chapter. For more information on the VMS message, see the VMS documentation set.

PCDISK-E-ECHDIR, Error changing directory to 'directory-spec'

Severity: Error

Explanation: PCDISK could not change default directories.

User Action: Check the other error message also displayed.

PCDISK-E-ECOPY, Error copying 'file-spec' to 'file-spec'

Severity: Error

Explanation: PCDISK could not copy the file.

User Action: Check the other error message also displayed.

PCDISK-E-EDELETE, Error deleting file 'file-spec'

Severity: Error

Explanation: PCDISK could not delete the file.

User Action: Check the other error message also displayed.

PCDISK-E-EDIR, DIRECTORY command error

Severity: Error

Explanation: PCDISK detected an error in the DIRECTORY command.

User Action: Check the other error message also displayed.

PCDISK-E-EXPORT, Error exporting 'DOS-file-spec' to 'VMS-file-spec'

Severity: Error

Explanation: PCDISK could not copy the DOS file to VMS.

User Action: Check the other error message also displayed.

PCDISK-E-EIMPORT, Error importing 'VMS-file-spec' to 'DOS-file-spec'

Severity: Error

Explanation: PCDISK could not copy the VMS file to DOS.

User Action: Check the other error message also displayed.

PCDISK-E-EINDRV, Invalid drive specification

Severity: Error

Explanation: PCDISK found an invalid drive specification. Drive is not currently mounted.

User Action: Connect the drive.

PCDISK-E-EMKDIR, Error creating subdirectory 'dir-spec'

Severity: Error

Explanation: PCDISK could not create the subdirectory.

User Action: Check the other error message also displayed.

PCDISK-E-ERENAME, Error renaming 'file-spec' to 'file-spec'

Severity: Error

Explanation: PCDISK could not rename the file.

User Action: Check the other error message also displayed.

PCDISK-E-ERMDIR, Error removing subdirectory 'dir-spec'

Severity: Error

Explanation: PCDISK could not remove the subdirectory.

User Action: Check the other error message also displayed.

PCDISK-E-ETYPE, Error typing file 'file-spec'

Severity: Error

Explanation: PCDISK could not type the file.

User Action: Check the other error message also displayed.

PCDISK-E-EUSE, USE command error

Severity: Error

Explanation: PCDISK detected an error in the USE command.

User Action: Check the other error message also displayed.

PCDSHR-E-BADFAT, Invalid FAT format

Severity: Error

Explanation: PCDISK detected an invalid file allocation table (FAT). The virtual disk may be corrupted.

User Action: Connect to the virtual disk through PCSA and run CHKDSK.

PCDSHR-E-EACCES, Permission denied on file operation

Severity: Error

Explanation: An attempt was made to do a file operation on a subdirectory. This can happen when copying a file to a directory that has a subdirectory of the same name.

User Action: Verify that the target is not a subdirectory of the directory with the same name.

PCDSHR-E-BADBPB, Invalid BPB format

Severity: Error

Explanation: The virtual disk BIOS parameter block is an invalid format.

User Action: Connect to the virtual disk using PCSA and run CHKDSK.

PCDSHR-E-EBADF, Invalid file handle

Severity: Error

Explanation: An invalid file handle was passed to a PCDISK callable routine.

User Action: Check for a programming error.

PCDSHR-E-BUFTOSM, Buffer is too small to fit requested information

Severity: Error

Explanation: A PCDISK routine was called with an insufficient buffer size to fit requested information.

User Action: Enlarge your buffer size.

PCDSHR-E-DEVALLOC, Device is allocated to another user

Severity: Error

Explanation: An attempt was made to allocate a diskette device that is allocated to another user.

User Action: Wait until the current owner has de-allocated the device.

PCDSHR-E-DEVMOUNT, Device is already mounted

Severity: Error

Explanation: Attempt to mount a diskette device that is already mounted.

User Action: Verify the device name or logical name. If the device name is correct and if the device can be dismounted, dismount the volume and re-enter the request.

PCDSHR-E-DINUSE, Specified drive is currently in use

Severity: Error

Explanation: Attempt to connect a virtual disk to a drive letter that currently has a disk connected.

User Action: Connect the virtual disk on a free drive.

PCDSHR-E-DNF, Directory not found

Severity: Error

Explanation: PCDISK could not find the specified subdirectory.

User Action: Check to see if the path is specified correctly and is actually a directory.

PCDSHR-E-EDEXST, Directory already exists

Severity: Error

Explanation: An attempt was made to create a subdirectory that already exists.

User Action: Create a subdirectory using a different file name.

PCDSHR-E-EDNOEMP, Directory is not empty

Severity: Error

Explanation: PCDISK cannot remove a directory that is not empty.

User Action: Delete the files within the directory and reissue the command.

PCDSHR-E-EDRONLY, Target device is connected read only

Severity: Error

Explanation: Attempted to do a write operation to a device that is connected read-only. PCDISK connects virtual disks with read/write access by default. However, if PCSA has the disk mounted, PCDISK will connect the disk read-only.

User Action: Dismount the disk in PCSA, reconnect to it in PCDISK and reissue the command.

PCDSHR-E-EDEXST, File already exists

Severity: Error

Explanation: An attempt was made to do a non-supersede file create when the specified file already exists.

User Action: Create a file using a different file name.

PCDSHR-E-EDRONLY, Attempted write access to a read only file.

Severity: Error

Explanation: Attempted to do a write operation to a file that is read-only.

User Action: Change the file attributes using DOS and re-enter the original command.

PCDSHR-E-EINDIR, Invalid directory specification

Severity: Error

Explanation: PCDISK found an invalid directory specification

User Action: Check the delimiters in the directory specification.

PCDSHR-E-EINDRV, Invalid drive specification

Severity: Error

Explanation: PCDISK found an invalid drive specification.

User Action: Check the delimiters in the drive specification.

PCDSHR-E-EINFIL, Invalid file specification

Severity: Error

Explanation: PCDISK found an invalid file specification.

User Action: Check the delimiters in the file specification.

PCDSHR-E-EINVAL, Invalid argument

Severity: Error

Explanation: An invalid argument was passed to a PCDISK callable routine.

User Action: Check for a programming error.

PCDSHR-E-EMFILE, Too many open files

Severity: Error

Explanation: You attempted to open more than the maximum number of open files allowed by PCDISK.

User Action: Close some of your open files.

PCDSHR-E-ENOSPC, No space left on device

Severity: Error

Explanation: You attempted to allocate more space on a device that is full.

User Action: Delete the files you do not need and re-enter the command.

PCDSHR-E-ENOTCONN, Drive not connected

Severity: Error

Explanation: You attempted to do a device operation to a drive that is not currently connected.

User Action: Verify the drive specification or connect the drive and re-enter the command.

PCDSHR-E-EDRONLY, Attempt to remove a read only subdirectory.

Severity: Error

Explanation: An attempt was made to remove a subdirectory that has the read-only attribute.

User Action: Change the read-only attribute of the subdirectory and reissue the command.

PCDSHR-E-EXDEV, Cannot rename a file to another device

Severity: Error

Explanation: An attempt was made to rename a file across devices.

User Action: Use the copy and delete commands to move a file to a different device.

PCDSHR-E-FNF, File not found

Severity: Error

Explanation: PCDISK could not find the specified file.

User Action: Check you default path or your path specification, and verify that the device, directory, file name, and file type were all specified correctly.

PCDSHR-E-NDAVAIL, No device table entries available

Severity: Error

Explanation: Attempt to connect more than the maximum number of drives allowed by PCDISK.

User Action: Connect the allowable number of drives.

PCDSHR-E-RESINUSE, Requested resource is in use

Severity: Error

Explanation: PCDISK callable routine sequence was called out of order.

User Action: Check for programming error.

PCDSHR-F-ENOMEM, Insufficient memory for allocation of file or device buffers

Severity: Fatal

Explanation: PCDISK got an error when attempting to reallocate memory large enough to fit requested path information.

User Action: Contact your local Digital representative.

A

PCFS_STARTUP.COM File

This appendix lists the default PCFS_STARTUP.COM file. For more information on this file, see Chapter 4, Managing the File Server.

```
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ !           VAX/VMS Server for MS-DOS (PCFS) Startup Command File           !
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ !           COPYRIGHT (C) 1988, 1989 BY                                     !
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$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ ! PCFS_STARTUP.COM starts up the File Server and the NETBIOS process.     !
$ !   If there are no parameters on the command line, then it will         !
$ !   startup both processes.                                               !
$ !
$ !   If there are parameters on the command line, then the specified      !
$ !   process will be started. The valid parameters are                     !
$ !
$ !           NETBIOS                                                         !
$ !           PCFS_SERVER                                                     !
$ !
$ !   For example:                                                           !
$ !
$ !           $ @PCFS_STARTUP           ! startup all processes !
$ !   or
$ !           $ @PCFS_STARTUP NETBIOS   ! startup netbios only !
$ !   or
$ !           $ @PCFS_STARTUP PCFS_SERVER ! startup server only  !
$ !   or
$ !           $ @PCFS_STARTUP PCFS_SERVER NETBIOS ! startup both !
```



```

$ !      Insure that the correct privileges are enabled.          !
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ PCFS$PRIVS = "NOEXQUOTA,BYPASS,CMEEXEC,CMKRNL,DETACH,GROUP,LOG_IO,NETMBX,
OPER,PHY_IO,PRMMEX,PSWAPM,SYSGBL,SYSLCK,SYSNAM,SYSPRV,TMPMBX,WORLD"
$ SAVE$PRIVS = F$SETPRV(PCFS$PRIVS)
$ IF .NOT. F$PRIV(PCFS$PRIVS)
$ THEN
$   PCFS$PRIV = F$SETPRV(SAVE$PRIVS)
$   EXIT 36                      ! No privilege error code
$ ENDIF
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ !      If a version of the server is already running, stop it.    !
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ CONTEXT = ""
$ PCFS_LOOP:
$   FID = F$PID (CONTEXT)
$   IF PID .EQS. "" THEN GOTO PCFS_DONE
$   NAME = F$GETJPI (PID, "PRCNAM")
$   IF NAME .NES. "PCFS_SERVER" THEN GOTO PCFS_LOOP
$   STOP /ID='PID'
$ PCFS_DONE:
$ WAIT 00:00:05          ! Wait for process deletion
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ !      Define PCFS specific logicals.                              !
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ @SYSS$STARTUP:PCFS_LOGICALS.COM
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ !      Create SYSS$SPECIFIC:[PCSA] directory, if necessary.      !
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ IF F$SEARCH("SYSS$SPECIFIC:[000000]PCSA.DIR") .EQS. "" THEN -
CREATE/DIRECTORY SYSS$SPECIFIC:[PCSA] /OWNER=[1,1]
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ !      Make sure the default SPOOL directory exists.            !
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ IF F$SEARCH("PCFS$SPOOL:[000000]DEFAULT.DIR") .EQS. "" THEN -
CREATE/DIRECTORY PCFS$SPOOL:[DEFAULT]
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ !      Install PCFS_MAILSHR.EXE as a shareable image, header resident. !
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ INSTALL := "$SYSS$SYSTEM:INSTALL/COMMAND_MODE"
$ IF F$FILE("$SYSS$SHARE:PCFS_MAILSHR.EXE","KNOWN") -

```


A-6 PCFS_STARTUP.COM File

```

$ !
$ NETBIOS$CURRENT = F$TRNLNM("SYS$DISK")+F$DIRECTORY()
$ SET DEFAULT SYSS$SPECIFIC:[PCSA]
$ RUN  SYS$SYSTEM:NETBIOS.EXE -
      /DETACH -
      /INPUT-NL: -
      /OUTPUT=NETBIOS$LOG_FILES:NETBIOS_OUTPUT.LOG -
      /ERROR=NETBIOS$LOG_FILES:NETBIOS_ERROR.LOG -
      /PROCESS=NETBIOS -
      /PRIORITY=8 -
      /BUFFER_LIMIT=100000 -
      /DUMP
$ SET DEFAULT 'NETBIOS$CURRENT'
$ WAIT 00:00:10      ! Wait for process startup
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ !           Install NETBIOS$SHR.EXE as a shareable image, header resident.!
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ ! NOTE: Install requires CMKRNL
$ !
$ INSTALL = "$SYSS$SYSTEM:INSTALL/COMMAND_MODE"
$ INS_CMD = "CREATE /OPEN/SHARE/HEADER "
$ IF F$FILE("SYS$SHARE:NETBIOS$SHR.EXE","KNOWN") THEN INS_CMD = "REPLACE "
$ INSTALL 'INS_CMD SYSS$SHARE:NETBIOS$SHR.EXE
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ !           Declare a netbios name for use by PCMAIL
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ IF F$SEARCH("SYS$SYSTEM:PCSA_CLAIM_NAME.EXE") .NES. ""
$ THEN
$   NODE := 'F$TRNLNM("SYS$NODE")'
$   NODE = NODE - " " - ":" - ":"
$   IF NODE .NES. ""
$   THEN
$     CLAIM_NAME := $SYSS$SYSTEM:PCSA_CLAIM_NAME.EXE
$     CLAIM_NAME 'NODE' _PCSA$RMI 0 _PCSA$RMI
$   ENDIF
$ ENDIF
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ !           Reset this process' initial privileges.
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ NETBIOS$PRIV = F$SETPRV(SAVE$PRIVS)
$ RETURN

```

B

LAD_STARTUP.COM file

This appendix lists the default LAD_STARTUP.COM file. For more information on this file, see Chapter 3, Managing the Disk Server, in this book.

```
$ ! LAD_STARTUP.COM
$ !
$ ! Startup file for PCSA Local Area Disk Server
$ !
$ GOTO LAD$STARTUP
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ !          COPYRIGHT (C) 1987,1988,1989 BY      !
$ !    DIGITAL EQUIPMENT CORPORATION, MAYNARD  !
$ !    MASSACHUSETTS.  ALL RIGHTS RESERVED    !
$ !          !
$ ! THIS SOFTWARE IS FURNISHED UNDER A LICENSE AND MAY BE USED AND !
$ ! COPIED ONLY IN ACCORDANCE WITH THE TERMS OF SUCH LICENSE AND WITH !
$ ! THE INCLUSION OF THE ABOVE COPYRIGHT NOTICE.  THIS SOFTWARE OR ANY !
$ ! OTHER COPIES THEREOF MAY NOT BE PROVIDED OR OTHERWISE MADE AVAIL- !
$ ! ABLE TO ANY OTHER PERSON.  NO TITLE TO AND OWNERSHIP OF THE SOFT- !
$ ! WARE IS HEREBY TRANSFERRED.                !
$ !          !
$ ! THE INFORMATION IN THIS SOFTWARE IS SUBJECT TO CHANGE WITHOUT !
$ ! NOTICE AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL !
$ ! EQUIPMENT CORPORATION.                !
$ !          !
$ ! DIGITAL ASSUMES NO RESPONSIBILITY FOR THE USE OR RELIABILITY OF ITS !
$ ! SOFTWARE ON EQUIPMENT THAT IS NOT SUPPLIED BY DIGITAL.  !
$ !          !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ LAD$STARTUP:
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !          !
$ ! Ensure that the correct privileges are enabled.  !
$ !          !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ LAD$PRIVS = "CMKRNL, DETACH, NETMBX, PRMMBX, SYSLCK, SYSNAM, SYSPRV, TMPMBX, LOG_IO, OPER"
$ SAVE$PRIVS = F$SETPRV (LAD$PRIVS)
$ IF .NOT. F$PRIV (LAD$PRIVS) THEN EXIT 36 ! No privilege error code
$ !
$ ! Define LAD logical names and make sure the PCSA directory exists.
$ !
$ @SYS$STARTUP:LAD_LOGICALS
$ IF F$SEARCH ("SYS$SPECIFIC:[000000]PCSA.DIR") .EQS. "" THEN -
  CREATE/DIRECTORY SYS$SPECIFIC:[PCSA]/OWNER=[1,1]
$ !
```

B-2 LAD_STARTUP.COM file

```
$ ! Make sure the lad service database exists
$ !
$ IF F$SEARCH ("LAD$SERVICE_DATABASE") .EQS. "" THEN -
CREATE/FDL-SYS$COMMON:[PCSA]LAD$SERVICE_DATABASE.FDL
$ !
$ ! Insure user has sufficient privilege to open LAD$SERVICE_DATABASE.DAT
$ !
$ DATABASE = F$PARSE("LAD$SERVICE_DATABASE","SYS$COMMON:[PCSA].DAT")
$ OPEN/SHARE/READ/WRITE/ERROR-DATABASE_NOPRIV DATABASE 'DATABASE'
$ CLOSE DATABASE ! we have sufficient privilege to open the file
$ ADD_BYPASS := ""
$ GOTO DATABASE_PRIV
$DATABASE_NOPRIV:
$ !
$ ! Current levels of privilege do not allow access to the database. Try BYPASS
$ !
$ ADD_BYPASS := ",BYPASS"
$ SAVE$PRIVS = SAVE$PRIVS + "," + F$SETPRV("BYPASS")
$ IF F$PRIV("BYPASS") THEN GOTO DATABASE_PRIV ! We've got privilege now.
$ WRITE SYS$ERROR "LAD-F-CANNOTOPEN, can not open 'database'"
$ EXIT 36
$DATABASE_PRIV:
$ !
$ !
$ COUNT = 0
$ TIMEOUTMSG = "?? Time out waiting for DECnet to start"
$BATCH_LOOP:
$ IF F$TRNLNM("SYS$NODE") .NES. "" THEN GOTO START_DRIVERS
$ IF F$MODE() .NES. "BATCH" THEN GOTO SUBMIT_JOB
$ IF COUNT .GE. 6 THEN GOTO ABORT_WAIT
$ COUNT = COUNT + 1
$ WAIT 0:0:10
$ GOTO BATCH_LOOP
$ !
$ ! DECnet has not started yet, so we must get out of its way.
$ ! Create a batch queue and submit this procedure to it.
$ ! Create a queue named LAD$BATCH unless we are in a cluster, then generate
$ ! a queue named LAD$nonename$BATCH queue
$ !
$SUBMIT_JOB:
$ PRIOR = F$GETSYI ("DEFPRI")
$ ON_NODE = ""
$ QUEUE = "LAD$BATCH"
$ IF .NOT F$GETSYI ("CLUSTER_MEMBER") THEN GOTO NOT_CLUSTER
$ THIS_NODE = F$GETSYI ("NODENAME")
$ ON_NODE=" /ON=" + (THIS_NODE - ":" - ":" + ":")
$ QUEUE = "LAD$" + THIS_NODE + "$BATCH"
$NOT_CLUSTER:
$ INITIALIZE/QUEUE /START 'QUEUE' /BATCH /JOB:1 /BASE_PRIORITY='PRIOR' /ON_NODE
$ SUBMIT/NOPRINT/QUEUE='QUEUE' 'F$ENVIRONMENT ("PROCEDURE")/KEEP
$ PURGE SYS$MANAGER:LAD_STARTUP.LOG/KEEP=5
$ EXIT
$ !
$ ! DECnet is now running, continue startup
$ !
$START_DRIVERS:
$ !
$ ! Connect the drivers if not already connected
$ !
$ SYSGEN := $SYSGEN
$ IF F$GETDVI (" LAST:", "EXISTS") THEN GOTO LAST_DONE
$ SYSGEN CONN LAST/NOADAP/DRIVER-LASTDRIVER
$ !
```

```

$ ! Now MAYBE start the transport if not already running
$ !
$LAST_DONE:
$ LASTTCP := $LASTTCP
$ DO START = 0
$ DEFINE/USER SYS$OUTPUT LASTTCP.LIS
$ LASTTCP
$ DEFINE/USER SYS$OUTPUT NL:
$ DEFINE/USER SYS$ERROR NL:
$ SEARCH LASTTCP.LIS/OUT=LASTTCP1.LIS RUNNING ! Search for "RUNNING"
$ IF F$FILE_ATTRIBUTES ("LASTCP1.LIS","ALQ") .EQ 0 THEN DO START = 1
$ IF F$SEARCH ("LASTCP.LIS") .NES "" THEN DELETE/NOCONFIRM LASTCP.LIS;
$ IF F$SEARCH ("LASTCP1.LIS") .NES "" THEN DELETE/NOCONFIRM LASTCP1.LIS;
$ IF DO START THEN LASTTCP START TRANSPORT /CIRCUIT_MAXIMUM=80
$DRIVERS_STARTED:
$ IF F$GETDVI ("LAD:", "EXISTS") THEN GOTO LAD_DONE
$ SYSGEN CONN LAD/NOADAP/DRIVER=LADDRIVER
$LAD_DONE:
$ IF F$GETDVI ("LADC:", "EXISTS") THEN GOTO LADC$DONE
$ SYSGEN CONN LADC/NOADAPTER/DRIVER=LACCDRIVER
$LADC$DONE:
$ !
$ ! See if kernel process is already running
$ !
$ T1 = F$TRNLNM ("LAD$MAILBOX")
$ IF T1 .EQS. "" THEN GOTO START_KERNEL
$ IF F$GETDVI (T1,"REFCNT") .GT. 0 THEN GOTO KERNEL_STARTED
$START_KERNEL:
$ !
$ ! First establish the maximum number of services
$ !
$ LAD$MAXIMUM_SERVICES = F$TRNLNM ("LAD$MAXIMUM_SERVICES")
$ IF LAD$MAXIMUM_SERVICES .EQS. "" -
  .OR F$type (LAD$MAXIMUM_SERVICES) .NES. "INTEGER" -
  .OR F$INTEGER (LAD$MAXIMUM_SERVICES) .LE. 0 THEN -
  LAD$MAXIMUM_SERVICES = 50 ! DEFAULT MAX SERVICES
$ !
$ ! Now build ENQLM value
$ !
$ ENQLM = F$GETSYI ("PQL_DENQLM") + (LAD$MAXIMUM_SERVICES * 3) + 3 ! ENQLM
$ !
$ ! Cycle any existing log files
$ !
$ IF F$SEARCH ("LAD$LOG_FILES:LAD$KERNEL_ERROR.LOG") .EQS "" THEN -
  GOTO ERROR_FILE_DONE
$ RENAME LAD$LOG_FILES:LAD$KERNEL_ERROR.LOG .OLD
$ PURGE LAD$LOG_FILES:LAD$KERNEL_ERROR.OLD/KEEP=3
$ERROR_FILE_DONE:
$ IF F$SEARCH ("LAD$LOG_FILES:LAD$KERNEL.LOG") .EQS "" THEN -
  GOTO OUTPUT_FILE_DONE
$ RENAME LAD$LOG_FILES:LAD$KERNEL.LOG .OLD
$ PURGE LAD$LOG_FILES:LAD$KERNEL.OLD/KEEP=3
$OUTPUT_FILE_DONE:
$ !
$ ! Calculate LAD$KERNEL process priority
$ !
$ ! Make sure it runs at a higher priority than interactive users
$ ! but at a lower priority than real time i.e. [1-15]
$ !
$ PRIOR = F$GETSYI ("DEFPRI") + 4
$ IF PRIOR .GT. 15 THEN PRIOR = 15
$ !
$ ! Start the kernel process

```

B-4 LAD_STARTUP.COM file

```
$ !
$ RUN /DETACH SYS$SYSTEM:LAD$KERNEL -
  /PRIVILEGES=(SYSLCK, SYSPRV, NETMBX, TMPMBX, PRMBX, WORLD'ADD_BYPASS') -
  /PROCESS_NAME=LAD$KERNEL-
  /ERROR=LAD$LOG_FILES:LAD$KERNEL_ERROR.LOG-
  /OUTPUT=LAD$LOG_FILES:LAD$KERNEL.LOG-
  /DUMP
  /NOAUTHORIZE-
  /WORKING SET=512-
  /EXTENT=1024-
  /MAXIMUM WORKING SET=2048-
  /PAGE FILE=10000-
  /AST_LIMIT=100-
  /BUFFER_LIMIT=20480-
  /ENQUEUE_LIMIT='ENQLM-
  /FILE_LIMIT=30-
  /PRIORITY='PRIOR

$ !
$ ! Now wait for KERNEL process to declare communication mailbox
$ !
$ COUNT = 0
$ TIMEOUTMSG = "?? Timeout waiting for LAD$KERNEL to start"
$KERNEL_WAIT_LOOP:
$ IF F$TRNLNM("LAD$MAILBOX") .NES. "" THEN GOTO KERNEL_STARTED
$ IF COUNT .EQ. 12 THEN GOTO ABORT_WAIT
$ COUNT = COUNT + 1
$ WAIT 0:0:10
$ GOTO KERNEL_WAIT_LOOP
$ABORT_WAIT:
$ WRITE SYS$OUTPUT TIMEOUTMSG
$ EXIT &x1000002
$KERNEL_STARTED:
$ MC PCSA_MANAGER START DISK CONNECTIONS/CACHE=512
$ !
$ ! If PCSA_MANAGER returns "Request Timeout" for DISK service
$ ! requests, increase the /TIMEOUT qualifier accordingly
$ !
$ !MC PCSA_MANAGER SET DISK_SERVER CHARACTERISTICS/TIMEOUT=90
$ !MC PCSA_MANAGER SET DISK_SERVER CHARACTERISTICS/USER_MOUNT
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ ! Reset this process' initial privileges.
$ !
$ !!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
$ !
$ LAD$PRIVS = F$SETPRV(SAVE$PRIVS)
```

C

VMS Server Environment

This appendix describes the VMS server environment that is created at installation. The environment includes:

- Directories and files
- System logicals
- Entries in the rights database and the UAF

VMS Server Directories and Files

The installation procedure:

- Copies all executables to `SYS$COMMON:[SYSEXE]`
- Copies all device drivers to `SYS$COMMON:[SYS$LDR]`
- Copies file and disk server command files to `SYS$COMMON:[SYSMGR]`
- Creates the directory `SYS$COMMON:[PCSA]` to store the file and disk server database files
- Copies device control libraries to `SYS$COMMON:[SYSLIB]`

The first time the file server or disk server runs, the directory `SYS$SPECIFIC:[PCSA]` is created. This directory is the default directory for the server log files.

VMS Server System Logicals

The installation procedure creates two command files, `LAD_LOGICALS.COM` and `PCFS_LOGICALS.COM`, that contain logicals to define default directories for services. The server start-up files invoke their respective logical command files. Tables C-1 and C-2 describe the default logicals in each command file.

Table C-1 File Server Logicals in PCFS_LOGICALS.COM

Logical Name	Represents
PCFS\$SYSTEM	MS-DOS system directories
PCFS\$APPLICATION	MS-DOS applications
PCFS\$USER	MS-DOS user accounts
PCFS\$COMMON	MS-DOS common areas
PCFS\$SERVICE_DATABASE	File server service database
PCFS\$LOG_FILES	File server log files
PCFS\$SPOOL	MS-DOS spool directories
PCFS\$BUFFER_SIZE	Size of cache buffers
PCFS\$CACHE_SIZE	Size of cache
PCFS\$OPEN_FILES	Whether to perform open file caching

Table C-2 Disk Server Logicals in LAD_LOGICALS.COM

Logical Name	Represents
LAD\$SYSTEM_DISKS	MS-DOS system directories
LAD\$BOOT_DISKS	MS-DOS network key disks
LAD\$APPLICATION_DISKS	MS-DOS applications
LAD\$SERVICE_DATABASE	Disk server service database
LAD\$LOG_FILES	Disk server log files
PCSA\$BOOT_DATABASE	Remote boot database
PCSA\$CLIENT_LOADER	Client operating system load device ¹
PCSA\$SYSTEM_CONTAINER	Container file for the system disk

¹Only valid in a PCLAN server environment

To change the definitions of a logical, edit the appropriate command file. If in a local area VAXcluster (LAVC), the disk server is not running on the boot node, we recommend that you redefine the disk server logicals, except the service database logical. The logicals should point to a local disk on the node running the disk server.

Rights Database

The **VMSINSTAL** procedure adds these identifiers to the rights database:

- **PCFS\$READ**
- **PCFS\$UPDATE**
- **NETBIOS\$ACCESS**
- **PCFS\$USER**

The file server uses these identifiers to grant users access to system and application services. When a user connects to a file server, it obtains the user's identifier list from the rights database and, with the user's default privileges and UIC, determines access to the file. For more information on file server security, see Chapter 4, *Managing the File Server*.

UAF Entries

The file server uses the user authorization file (UAF):

- To determine service access when a client workstation issues a **NET USE** command
- As a database to validate access to a personal account.

The **VMSINSTAL** procedure creates the default account **PCFS\$ACCOUNT**. Clients using PCSA Version 1.0 or 1.1 can use this account to access the file server. The default account has no interactive or batch facilities. To change the default account, use the **PCSA SET FILE_SERVER SERVICE CHARACTERISTICS** command, which is described in Chapter 9, *PCSA Manager*.

All file server users must have an account in the UAF or use the default account. When issuing a **NET USE** command, the user specifies the account name and password to provide access control information. For more information on file server access control, see Chapter 4, *Managing the File Server*.

D

Sample Setup of an Unsupported Printer

The following is an example of how to set up an unsupported printer. The setup of the HP LaserJet II printer is illustrated below.

1. Connect the hardware.

Connect the LaserJet to the VAX server using the Serial Interface. The cable should be a null modem cable (pins 2 and 3 cross over) with a female DB25 connector at the VAX end and a male DB25 connector at the printer end.

Figure D-1 Cable Connections

	PIN		PIN	
	---		---	
GROUND	1	-----	1	GROUND
TRANSMIT	2	--\ /--	2	Transmit
RECEIVE	3	--/ \--	3	RECEIVE
		X		
SIGNAL GROUND	7	-----	7	SIGNAL GROUND

2. Configure the LaserJet for proper operation when connected to the VAX server.

- a. Using the printer ON-LINE button, place the printer offline (light above the ON-LINE button is off).

D-2 Sample Setup of an Unsupported Printer

- b. Using the printer MENU button, set the following items (use "+" and "-" buttons to cycle through available settings and use the 'ENTER' button to select a setting):

```
COPIES=01
MANUAL FEED=OFF
FONT Source=I
FONT NUMBER=00
FORM=060 LINES
```

- c. Hold the MENU button down for 5 to 10 seconds until it changes from "00 READY" to "SYM SET=...".

Set the following items (use the "+" and "-" buttons to cycle through available settings and use the ENTER button to select a setting):

```
SYM SET=ROMAN-8
AUTO CONT=OFF
I/O=SERIAL
BAUD RATE=9600
ROBUST XON=ON
DTR POLARITY=HI
```

- d. Place the printer online using the ON-LINE button.

3. Create a device control library (SYS\$LIBRARY:PCFS_LASERJET_DEVCTL.TLB)

- The following example shows the method to use if you can enter an Escape character with the Escape key in creating the device control library modules:

```
$ CREATE LJ_PORTRAIT.TXT
[Esc]&100 [Ctrl/Z]          ! escape, ampersand, lowercase l, zero,
$                               ! Capital O, Control/Z

$ CREATE LJ_LANDSCAPE.TXT
[Esc]&110 [Ctrl/Z]          ! escape, ampersand, lowercase l, one,
$                               ! Capital O, Control/Z

$ CREATE RESET.TXT
[Esc]E [Ctrl/Z]            ! escape, Capital E, Control/Z

$ LIBRARY /CREATE /TEXT SYS$LIBRARY:PCFS_LASERJET_DEVCTL.TLB
$ LIBRARY /INSERT SYS$LIBRARY:PCFS_LASERJET_DEVCTL.TLB LJ_PORTRAIT.TXT
$ LIBRARY /INSERT SYS$LIBRARY:PCFS_LASERJET_DEVCTL.TLB LJ_LANDSCAPE.TXT
$ LIBRARY /INSERT SYS$LIBRARY:PCFS_LASERJET_DEVCTL.TLB RESET.TXT
$ DELETE LJ_PORTRAIT.TXT;*
$ DELETE LJ_LANDSCAPE.TXT;*
$ DELETE RESET.TXT;*
```

- Some VMS terminal characteristics and terminal types (for example, VT1xx, VT2xx, VT3xx or other series terminal) can prevent you from using the Escape key to enter an Escape character for this task. If this is the case, use any editor to create the device control library modules.

Table D-1 displays the EDT and EVE key sequences to use in place of the Escape key.

Table D-1 Replacements for the Escape Key

If you are using this editor:	Replace ESC with this key sequence:
EDT	PF1 2 7 PF1 kp3 The 2 and 7 keys are located on the main keyboard; other keys are located on the keypad.
EVE	CTRL/V CTRL/]

For example, to create the device control library module LJ_PORTRAIT.TXT using EDT:

- Enter:


```
$ EDIT/EDT LJ_PORTRAIT.TXT
```
- Go into screen mode.
- Enter the following key sequence:

PF1 **2** **7** **PF1** **kp3**&100

Where:

PF1	Is the key marked PF1, or is the gold-colored key on the keypad.
2	Is the 2 key on the main keyboard.
7	Is the 7 key on the main keyboard.
PF1	Is the key marked PF1, or is the gold-colored key on the keypad.
kp3	Is the 3 key on the keypad.

D-4 Sample Setup of an Unsupported Printer

&	Is the ampersand.
l	Is the lowercase letter L.
0	Is the digit zero on the main keyboard.
O	Is the uppercase letter O.

- d. To exit from EDT, enter:

Ctrl/Z
* Exit

To create the device control library module LJ_PORTRAIT.TXT using EVE:

- a. Enter:

```
$ EDIT/TPU LJ_PORTRAIT.TXT
```

- b. Enter the following key sequence:

CTRL/V **CTRL/[** &100

Where:

CTRL/V	Hold the CTRL key and press the letter V key.
CTRL/[Hold the CTRL key and press the [key (open square bracket).
&	Is the ampersand.
l	Is the lowercase letter L.
0	Is the digit zero on the main keyboard.
O	Is the uppercase letter O.

For additional information on valid escape sequences for the HP LaserJet II printer, consult the *LaserJet Series II User's Manual* and *LaserJet Series II Technical Reference Manual*.

4. Define forms that use the newly created device control library modules.

```
$ DEFINE /FORM LJ_PORTRAIT 801 -  
/SETUP=LJ_PORTRAIT -  
/NOWRAP -  
/STOCK=DEFAULT -  
/WIDTH=80 -  
/NOTRUNCATE
```

```

$ DEFINE /FORM LJ_LANDSCAPE 802 -
        /SETUP=LJ_LANDSCAPE -
        /NOWRAP -
        /STOCK=DEFAULT -
        /WIDTH=132 -
        /NOTRUNCATE

```

5. Set up the terminal port and create the necessary VMS print queue on the VAX.

```

$ SET PROTECTION=(S:RWLP,O,G,W) /DEVICE = TTA2

$ SET TERMINAL /PERMANENT TTA2 -
        /DEVICE_TYPE=UNKNOWN -
        /WIDTH=132 -
        /FORM -
        /TAB -
        /NOWRAP -
        /PASTHRU -
        /TTSYNC -
        /NOTYPE_AHEAD -
        /SPEED=9600

$ SET DEVICE /SPOOLED=(node$TTA2,sys$specific) TTA2

$ INITIALIZE /QUEUE /ON=node::TTA2 node$TTA2 -
        /START -
        /LIBRARY=PCFS_LASERJET_DEVCTL -
        /SEPARATE=(FLAG, RESET=(RESET)) -
        /DEFAULT=(NOFEED)

$ INITIALIZE /QUEUE /START /GENERIC=(node$TTA2) PCFS$LASERJET

```

In this example, node is the system's DECnet node name and TTA2 is the serial port to which the printer is attached.

Modify SYS\$MANAGER:SYSTARTUP_V5.COM to include the above DCL commands so that the queues will start each time the system reboots.

6. If the terminal port is on a LAT server, use the following commands to create the queues and start them.

```

$ SET PROTECTION=(S:RWLP,O,G,W) /DEVICE LTA2

$ SET TERMINAL /PERMANENT TTA2 -
        /DEVICE_TYPE=UNKNOWN -
        /WIDTH=132 -
        /FORM -
        /TAB -
        /NOWRAP -
        /PASTHRU -
        /TTSYNC -
        /NOTYPE_AHEAD -
        /SPEED=9600

$ SET DEVICE /SPOOLED=(node$LTA2,sys$specific) LTA2

```

D-6 Sample Setup of an Unsupported Printer

```
$ INITIALIZE /QUEUE /ON=node::LTA2 node$LTA2
  /START -
  /LIBRARY=PCFS_LASERJET_DEVCTL -
  /PROCESSOR=LATSYM -
  /SEPARATE=(FLAG, RESET=(RESET)) -
  /DEFAULT=(NOFEED)

$ INITIALIZE /QUEUE /START /GENERIC=(node$LTA2) PCFS$LASERJET
```

In this example node is the system's DECnet node name and LTA2 is the serial port that the printer is attached to.

Modify SYS\$MANAGER:SYSTARTUP_V5.COM to include the above DCL commands so that the queues will start each time the system reboots.

7. Add the printer to the PCSA printer service database so that it is accessible to PCSA clients. You do this by using the PCSA Manager Menu utility. Call up the utility by entering:

```
$ ADMINISTER/PCSA MENU
```

- Select **Service Options** from the PCSA Manager menu that is displayed.
- Select **Add a Service** from the Service Options menu.
- Select **Printer Service** from the Add a Service menu.

The PCSA Manager Menu utility prompts you for:

- Printer Service Name: LJ_PORTRAIT
- Queue for the Service: PCFS\$LASERJET
- Form name to use with the service (Default: No Form): LJ_PORTRAIT

8. The PCSA Manager Menu utility repeats the prompts for a printer service name, so you can add additional printer services. Add a printer service for each form you defined. For example:

```
Printer file service name (Example: LASER): LJ_LANDSCAPE
Enter queue for this service (Example: SYS$PRINT): PCFS$LASERJET
Form name to use with this service (Default: No Form): LJ_LANDSCAPE
```

Printer file service name (Example: LASER) :

9. Exit the PCSA Manager Menu.

Use repeatedly until you get out of the PCSA Manager Menu and back to the DCL prompt.

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| <input type="checkbox"/> Educator/Trainer | <input type="checkbox"/> System Manager |
| <input type="checkbox"/> Programmer/Analyst | <input type="checkbox"/> Other (please specify) _____ |
| <input type="checkbox"/> Sales | |

Name/Title _____ Dept. _____

Company _____ Date _____

Mailing Address _____

Phone _____

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