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VAX/VMS
Operator's Guide

Order No. AA-D025B-TE

VAX11

March 1980

This manual contains descriptions of operating procedures and commands that a system operator uses to keep the VAX/VMS operating system running smoothly. This manual also contains the messages produced by the Operator's Communication Process (OPCOM).

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PREFACE

MANUAL OBJECTIVES

The VAX/VMS Operator's Guide contains information that is useful in the day-to-day operation of the VAX/VMS operating system. Its objectives are twofold:

1. To give the reader an understanding of the duties of the VAX/VMS system operator
2. To gather in one volume the procedures, commands, and system messages that specifically pertain to the operation of the VAX/VMS system

INTENDED AUDIENCE

This guide is intended for operators of the VAX/VMS system and for persons who must occasionally perform an operator's functions on the system. Section 1.1 outlines and briefly describes the duties of an operator.

STRUCTURE OF THIS DOCUMENT

This operator's guide consists of eight chapters and two appendixes, as follows:

- Chapter 1 briefly describes the duties of the system operator.
- Chapter 2 explains how to handle files and volumes.
- Chapter 3 describes how to control print and batch queues.
- Chapter 4 describes how to use the card reader.
- Chapter 5 describes the error log file.
- Chapter 6 describes the operator's log file.
- Chapter 7 describes how to shut down and restart the system.
- Chapter 8 describes the DIGITAL Command Language (DCL) commands commonly used by the operator. Most of the commands in this chapter are not included in the VAX/VMS Command Language User's Guide.
- Appendix A briefly summarizes all DCL commands.
- Appendix B contains a table of VAX/VMS device codes and a section for operator's notes.

The section called VAX/VMS Operator's Notes has been included following Appendix B, so that any new procedures or changes to procedures specific to the operator's installation can be recorded.

ASSOCIATED DOCUMENTS

The VAX-11 Information Directory and Index provides a complete list of all VAX-11 documents and includes a brief description of each.

For general background information about the VAX/VMS system, see the VAX/VMS Primer and the VAX/VMS Summary Description and Glossary.

The following VAX/VMS documents may also be useful:

- VAX/VMS Command Language User's Guide
- VAX/VMS Guide to Using Command Procedures
- VAX/VMS Release Notes
- VAX-11/RSX-11M User's Guide
- VAX-11 Software Installation Guide
- VAX/VMS System Manager's Guide
- VAX/VMS System Messages and Recovery Procedures Manual
- VAX-11 Utilities Reference Manual
- RMS-11 User's Guide

For hardware operating instructions, refer to the appropriate hardware manual for VAX-11 users.

For controlling network operations, refer to the DECnet-VAX System Manager's Guide.

CONVENTIONS USED IN THIS DOCUMENT

Convention	Meaning
<CTRL/X>	THE expression <CTRL/X> indicates that the user enters control character x by pressing the appropriate letter while simultaneously pressing the CTRL key (for example, <CTRL/Y>, <CTRL/C>, <CTRL/Z>).
$ INITIALIZE/QUEUE $_Queue: LPA0:	In all examples, the output lines and prompting characters printed or displayed by the system are in black ink; all user-entered commands are in red ink.
$ START/QUEUE LPB0: . . .	Vertical ellipsis indicates that not all of the data that the system would display is shown.

Convention	Meaning
Keyword,...	Horizontal ellipsis indicates that additional parameters, values, or information may be entered.
[queue-name]	Square brackets mean that the enclosed expression is optional. However, square brackets are not optional in: - The syntax of a directory name - A file specification - The syntax of a substring specification - The SET UIC command
(RET)	ANGLE brackets (<>) which contain a 1- to 3-character abbreviation indicate that a particular key on the terminal is pressed (for example, <RET> for the RETURN key or <ESC> for the ESCAPE key). Note that both symbols, <CR> and <RET>, indicate the same action: press the RETURN key.

SUMMARY OF TECHNICAL CHANGES

This section summarizes the technical changes made for Version 2.0 of the VAX/VMS Operator's Guide.

The following command has been added:

SET TIME

The following qualifiers have been added to the following commands:

Command	Qualifier
INITIALIZE/QUEUE	/CHARACTERISTICS=(c[,...]) /CPUDEFAULT=t /CPUMAXIMUM=t /PROCESS=process-name /WSDEFAULT=n /WSQUOTA=n
START/QUEUE	/CHARACTERISTICS=(c[,...]) /CPUDEFAULT=t /CPUMAXIMUM=t /PROCESS=process-name /WSDEFAULT=n /WSQUOTA=n

In addition, the following miscellaneous changes have been made:

- Information concerning the Bad Block Locator Utility (BAD), the Disk File Structure Verification Utility (VFY), and Disk Save and Compress (DSC) Utilities can now be found in the VAX-11 Utilities Reference Manual
- Information concerning RUN SYS$SYSTEM:SYE and RUN SYS$SYSTEM:INSTALL commands can now be found in the VAX/VMS System Manager's Guide

The following appendixes have been added to this volume:

- Appendix A contains a summary of all DIGITAL Command Language (DCL) commands
- Appendix B contains the Table of Device Codes and a section called VAX/VMS Operator's Notes

CHAPTER 1

INTRODUCTION

The VAX/VMS system operator is responsible for keeping the VAX/VMS operating system running smoothly and for providing the best possible service to system users.

1.1 DUTIES OF THE OPERATOR

The VAX/VMS system runs, to a great extent, without operator intervention. However, in many installations, one or more operators keep the system running smoothly. Typically, the system operator performs the following tasks:

- Physically mounts magnetic tapes and disks at the request of the users who own them
- Initializes and mounts system volumes
- Backs up critical public files and volumes
- Carries out user requests
- Sends messages to specific users
- Broadcasts messages to all users
- Controls print and batch queues
- Tends line printers
- Tends card readers
- Monitors the system and notes and responds to emergencies
- Prints copies of the operator's log file and the error log file
- Shuts down and restarts the system
- Brings up and shuts down network components

To carry out their tasks, operators of the VAX/VMS system may have to:

1. Establish working relationships with other users of the system
2. Interact with the VAX/VMS operating system
3. Interact directly with the VAX-11 processor on which the operating system runs

The relationships between the VAX/VMS operator and users and their programs are based on two-way communication: messages pass between the operator and other users. A record of these messages is displayed or printed on the operator's terminal; the messages are also entered in the operator's log file for later reference.

The interactions between the operator and the VAX/VMS operating system are based on the operator's ability to use the entire set of VAX/VMS commands and on the operator's understanding of the system messages displayed or printed on the operator's terminal. System messages and messages that pass between the operator and other users, are entered in the operator's log file.

Interactions between the operator and the VAX-11 processor require the operator to operate and to maintain the peripheral devices supported by the system. For detailed instructions on operating and maintaining these peripheral devices, see the appropriate hardware manual for VAX-11 users.

1.2 OPERATOR PRIVILEGES

Operators are granted privileges to perform functions that are denied to most other users. These privileges always include the privilege of performing operator functions (the OPER privilege). Table 1-1 summarizes the privileges an operator needs to use certain procedures and commands documented in this manual. The system manager is responsible for granting these and other privileges to the authorization record of the operator. The VAX/VMS System Manager's Guide fully describes these and all other privileges and how to set up authorization records for operators.

Table 1-1
Operator Privileges

Privilege	Function
BYPASS	Bypass user identification code (UIC) protection in accessing files
CMKRNL	Change execution mode to kernel
GROUP	Affect processes within the same group
GRPNAM	Insert logical names into the group logical name table
LOG_IO	Issue logical I/O requests
NETMBX	Create network devices
OPER	Execute operator functions
PHY_IO	Issue physical I/O requests
PRMCEB	Create or delete permanent common event flag clusters

(continued on next page)

Table 1-1 (Cont.)
Operator Privileges

Privilege	Function
PRMMBX	Create permanent mailboxes
SYSNAM	Insert system logical names into the system logical name table
SYSPRV	Assume system UIC protection in accessing files
TMPMBX	Create temporary mailboxes
VOLPRO	Override volume protection

1.3 THE OPERATOR'S TERMINAL

Operators of the VAX/VMS system can perform many of their duties from user terminals. However, one of the operator's chief functions, communicating with other users, must be performed at a terminal that has been defined as an operator's terminal. An operator can define a terminal to be an operator's terminal by using the privileged command, REPLY/ENABLE (described in Section 6.3.3 and Chapter 8).

Other operator functions can be performed only from the system console terminal. These functions include bootstrapping and halting the system and examining physical memory.

1.4 COMMANDS USED BY OPERATORS

This manual contains descriptions of the DIGITAL Command Language (DCL) commands that operators of the VAX/VMS system most often use to keep the system running smoothly. Most of these commands require the OPER privilege. See Chapter 8 for detailed descriptions of these commands. For information on DCL commands not discussed in this manual, refer to the VAX/VMS Command Language User's Guide.

1.4.1 Command Line Format

The general format of a DCL command is:

```
command-name[/qualifiers...] parameter[/qualifiers...][...]
```

Because a command can be continued on more than one line, the term "command string" is used to define the entire command that is passed to the system. A command string is the complete specification of a command, which includes the command name, command qualifiers, parameters, and parameter qualifiers. See the VAX/VMS Command Language User's Guide for a detailed description of command syntax.

1.4.2 Summary of DCL Commands Used by Operators

Table 1-2 briefly describes the DCL commands commonly used by operators.

Table 1-2
DCL Commands Commonly Used by Operators

Command	Function
ALLOCATE[1]	Reserves a device for use by a single user and, optionally, assigns a logical name to the device
ASSIGN/MERGE	Removes all jobs from one queue and places them in another queue
ASSIGN/QUEUE	Assigns a logical queue to a specific device
COPY[1]	Copies one or more files into one or more additional files
DEALLOCATE[1]	Relinquishes use of a previously allocated device, thus making the device available to other users
DEASSIGN/QUEUE	Deassigns a queue from a specific device
DELETE/ENTRY[1,2]	Deletes an entry from a print or batch queue or stops processing the current job
DELETE/QUEUE	Deletes batch and print queues
DIRECTORY[1]	Displays information about a file or group of files
DISMOUNT[1]	Releases the connection between a user and a disk or tape volume that is currently mounted on a device
INITIALIZE/QUEUE	Creates batch and print queues
MOUNT[1]	Makes a disk or tape volume available for the reading or writing of files and, optionally, assigns a logical name to the device on which the volume is mounted
PRINT[1]	Queues a file for printing on a specific device

1. Described in the VAX/VMS Command Language User's Guide.

2. Allows a user with either operator (OPER) or world (WORLD) privilege to affect any job in the system.

(continued on next page)

Table 1-2 (Cont.)
DCL Commands Commonly Used by Operators

Command	Function
REPLY	Allows the operator to communicate with system users, selectively enable and disable operator status, and examine the operator's log file
SET ACCOUNTING	Selectively enables and disables the recording of particular kinds of accounting information
SET DEVICE	Establishes the spooling and error-logging status on a specific device
SET LOGINS	Establishes the maximum number of users able to log in to the system
SET PRINTER	Establishes the characteristics of a specific line printer
SET PROTECTION/DEVICE	Establishes the protection for a non-file-structured device
SET QUEUE/ENTRY[1,2]	Changes the status or attributes of jobs in print or batch queues that have not yet been processed by the system
SET TIME	Resets the system time
SET UIC	Establishes a new user identification code (UIC) as the process UIC
SHOW DEFAULT[1]	Displays the current default directory and disk device
SHOW DEVICES[1]	Displays the status of devices in the system
SHOW QUEUE[1]	Displays the names, job identification numbers, and status of current and pending jobs in print and batch job queues

1. Described in the VAX/VMS Command Language User's Guide.

2. Allows a user with either operator (OPER) or world (WORLD) privilege to affect any job in the system.

(continued on next page)

Table 1-2 (Cont.)
DCL Commands Commonly Used by Operators

Command	Function
SHOW TIME[1]	Displays the current date and time on the terminal
START/QUEUE	Starts batch and print queues
STOP[1,2]	Halts execution of a command procedure, program, subprocess, or detached process
STOP/ABORT[1,2]	Stops printing a job that is currently being printed
STOP/ENTRY[1,2]	Stops executing a batch job that is currently running and deletes it
STOP/QUEUE	Suspends batch and print queues
STOP/REQUEUE[1,2]	Stops printing a job currently being printed; then requeues that job and gives it a priority of 1
SUBMIT[1]	Queues one or more command procedure(s) to a batch job queue
TYPE[1]	Displays the contents of a file or files at the current output device

1. Described in the VAX/VMS Command Language User's Guide.

2. Allows a user with either operator (OPER) or world (WORLD) privilege to affect any job in the system.

CHAPTER 2

HANDLING FILES AND VOLUMES

Generally, users prepare their own volumes for use. However, depending on the physical arrangement of the installation and the type of volume to be accessed, the operator may be called upon to assist in the preparation of volumes for use. The following list provides some of the reasons why operator assistance may be required:

- The processor and its peripheral devices are off limits to or remotely located from some or all users
- The magnetic tape file system has requested that a tape volume be mounted
- A system or public disk needs to be mounted

Therefore, at some installations, communication with a system operator is required for users to either gain access to or create files. Tape and disk volumes must be physically mounted on devices, and the files contained on these volumes must be backed up regularly.

Physically mounting a volume means placing the volume on a specific drive and starting the drive. For tape drives, the operator loads the tape into the drive and then presses the LOAD button to start the tape drive. For disk drives, the operator places the disk in the disk drive and then presses the START or RUN button to start the disk drive.

The operator also may assist in backing up a volume. Backing up a volume means copying the contents of the volume to another volume or set of volumes (for example, another disk or tape). Backing up volumes is a precautionary measure to prevent the loss or destruction of valuable information.

2.1 ACCESSING TAPE AND DISK VOLUMES

Before a user can access a tape or disk volume, the following steps must be performed:

1. The device on which the volume is placed must be allocated using the ALLOCATE command.
2. The volume must be physically mounted on the device.
3. If it is a new volume, then it must be initialized using the INITIALIZE command.
4. The user must mount the volume using the MOUNT command.

Allocating devices and initializing and mounting volumes are fully described in the VAX/VMS Command Language User's Guide under the ALLOCATE, INITIALIZE, and MOUNT commands and in the chapter in that manual pertaining to disk and tape volumes.

The following sections discuss when and how the operator assists users in gaining access to files on particular volumes. The latter part of the chapter contains step-by-step procedures for accessing tape and disk volumes.

2.2 REQUESTS TO MOUNT VOLUMES

The operator receives requests to physically mount volumes from users and from the magnetic tape file system. Generally, a user sends a request to physically mount either disk or tape volumes. However, sometimes the file system contacts the operator when the next tape in the tape volume set must be physically mounted.

When users and the file system send messages to the operator, the messages are produced on the operator's terminal by the Operator's Communication Process (OPCOM) and are preceded by the label Opcom. After receiving a request and performing the task, the operator responds to the request using the privileged REPLY command.

The following sections describe the different types of requests an operator can receive and how the operator responds to them. For additional information on tapes and disks, see the VAX/VMS Command Language User's Guide.

2.2.1 User Requests to Physically Mount Tape and Disk Volumes

System users specify the REQUEST command to send messages to the operator. Below is a typical message sent to the operator's terminal after a user requests the operator to physically mount a tape volume:

```
Opcom, 02:53:13.79, LORENZO    Accnt=SALARY  REPLY-ID=24
Opcom, TTA4:, "Mount PAYROLL01 on MTA0:"
```

LORENZO

Indicates the user's process name.

Accnt=SALARY

Indicates an accounting information file used for collecting cumulative resource usage statistics.

REPLY-ID=24

Indicates a unique identification number that the system assigns to a request and that the operator uses to respond to a request.

TTA4:

Indicates the terminal from which the request was sent.

"Mount PAYROLL01 on MTA0:"

Indicates the message that the user sent.

After placing the tape on the specified drive and readying the device, the operator issues a REPLY command to notify the user that the tape is available for use:

```
$ REPLY/TO=24
```

This command informs the user that the volume is ready for use. The user then can issue a MOUNT command to mount the tape.

Alternatively, the operator can issue one of the following REPLY commands to notify the user that the tape is not ready for use:

```
$ REPLY/ABORT=24
```

This REPLY command indicates that the request cannot be satisfied.

```
$ REPLY/PENDING=24
```

This REPLY command indicates that the user's request cannot be satisfied immediately. Eventually, the operator must follow the REPLY/PENDING command with either a REPLY/TO command or a REPLY/ABORT command.

If the REPLY/PENDING command is used by the operator, the user's terminal is "locked". The user's process associated with the terminal remains in a wait state until the operator either satisfies or aborts the request.

2.2.2 File System Requests to Physically Mount Additional Tape Volumes

Requests to place a volume on a device usually come from a user. However, sometimes the magnetic tape file system requests that a tape volume be mounted. A request from the file system usually occurs when the tape reaches end-of-tape, and the file system needs another tape to finish the operation. The file system suspends processing and sends a request to the operator to mount another tape, as in the following example:

```
Opcom, 11:21:07.56, MARCELLO     Accnt=TESTPROC Reply-ID=316
Opcom, MOUNT RELATIVE VOLUME 3 (PAD003) ON MTA0:
```

The above message exemplifies a standard message from the file system. A request from the file system is identical to a user request except that no terminal name is included.

After placing the volume on the device and readying the device, the operator issues a REPLY command to notify the file system that the tape is available for use:

```
$ REPLY/TO=316
```

OPCOM verifies the REPLY-ID and then the file system verifies the volume name. If both the identification number and volume name are correct, processing continues.

Alternatively, the operator can issue the following REPLY command to notify the file system that the tape cannot be readied for use:

```
$ REPLY/ABORT=316
```

This REPLY command indicates that the file system request cannot be satisfied. This command usually causes the user's program to terminate.

2.2.3 File System Requests to Physically Mount and Initialize Tape Volumes

When a tape reaches end-of-tape and the user has not previously initialized additional tape volumes, the operator must initialize the new tape after placing it on the drive.

When the tape reaches end-of-tape, the file system suspends processing and sends a message to the operator to mount the next tape. The message is similar to the one that the file system sends when a user needs the next tape in a volume set:

```
Opcom, 16:43:28.08, RUTAD ACCNT=DOCUMENT REPLY-ID=34
Opcom, MOUNT RELATIVE VOLUME 2 () ON MTA1:
```

Note that in the message the parentheses are empty. This is because there is not another tape in the tape volume set to be mounted. If the file system wants another tape, the operator finds a blank or scratch tape, places it on the device, and initializes the tape. To initialize a tape that previously has been written to, the operator specifies the volume-label and /INITIALIZE when responding to the file system request, as shown below:

```
$ REPLY/TO=34 "DGB002/INITIALIZE"
```

Note that the message is enclosed within double quotation marks.

NOTE

All tapes that have been processed by a verifying machine or that never have been written to before should be initialized using the INITIALIZE command described in the VAX/VMS Command Language User's Guide.

Alternatively, the operator can issue the following REPLY command to notify the file system that the tape cannot be readied for use:

```
$ REPLY/ABORT=34
```

This REPLY command indicates that the request cannot be satisfied.

2.3 ERRORS WHEN MOUNTING TAPE AND DISK VOLUMES

After the operator has mounted a tape or disk volume, a message may appear on the operator's terminal indicating that the volume is not properly mounted. Table 2-1 lists the probable causes for an error message and the operator action required to remedy the situation. For more information on error messages, refer to the VAX/VMS System Messages and Recovery Procedures Manual.

Table 2-1
Mounting Volume Errors: Causes and Corrective Action

Cause	Corrective Action
The operator mounted the wrong volume on the device	Remove the volume and replace it with the correct one
The ONLINE (for tapes) or the READY (for disks) indicator is not lit	Press the LOAD button on the tape drive
	Press the LOAD button and then press the ONLINE button on the tape drive
	Press the RUN or START button on the disk drive
The WRITE-LOCK indicator is illuminated, but the user wants to write to the volume	Insert the write-ring into the tape
	Push the WRITE-LOCK switch to the OFF position on the disk drive
The operator mounted a used tape that had not been initialized and did not specify the volume label and /INITIALIZE	Reissue the REPLY command and include the volume label and /INITIALIZE

2.4 BACKING UP TAPE AND DISK VOLUMES

The operator can choose one of the following ways to back up tape and disk volumes. The type of back-up desired determines which method is used. The methods are:

- Disk Save and Compress Utilities (DSC)
- COPY command
- File Transfer Utility (FLX)
- RMSBCK and RMSRST Utilities

For information on the RMSBCK and RMSRST Utilities, refer to the RMS-11 User's Guide. Information concerning FLX and DSC Utilities can be found in the VAX-11 Utilities Reference Manual.

The following section discusses various ways an operator can back up volumes and files. The latter part of the chapter contains step-by-step procedures for backing up tape, disk, and console medium volumes.

2.4.1 Disk Save and Compress Utility

The operator uses the Disk Save and Compress (DSC) Utilities to back up and restore disk volumes. These utilities copy all the blocks allocated to files onto a target or scratch volume. DSC has three forms: DSC1, DSC2 and Stand-Alone DSC-2. The DSC1 Utility is used to

back up Files-11 Structure Level 1 volumes. The DSC2 and Stand-Alone DSC-2 Utilities are used to back up Files-11 Structure Level 2 volumes.

The Stand-Alone DSC-2 Utility enables operators with single-disk systems to back up and restore system disks. The procedures for backing up and restoring disk volumes on a single-disk system are documented in Sections 2.5.5 and 2.5.6. The Stand-Alone DSC-2 Utility also allows operators on double-disk systems to back up data disks.

The command string format is identical for all three DSC Utilities (DSC1, DSC2, and Stand-Alone DSC-2). Note that the left side of the equal sign denotes output parameters; the right side denotes input parameters, as specified below:

```
devcu:  [,devcu:...] [dsclabel] [/qualifier(s)]=

                devcu:  [,devcu:...] [dsclabel] [/qualifier]
```

Parameters

devcu: [,devcu:...]

The above format describes the physical device(s) to or from which data is to be transferred. The components of the devcu format are as follows:

dev is the 2-character device code

c is the device controller letter

u is the device unit number

The colon acts as a delimiter, and therefore must follow the device specification. For example:

```
DMA0:
```

If there is more than one output device, specify each and separate them with commas. For example:

```
DMA0:,DMA1:,DMB2:
```

dsclabel

This is an optional file label for the DSC file created when a disk-to-magnetic tape operation is performed. If specified, dsclabel must be a 1- through 12-character alphanumeric label. If dsclabel is not specified in the output specification, the volume label of the input disk volume becomes the output volume label. If dsclabel is not specified in the input specification, the DSC Utility uses the first file specification on the first input device specified in the command string for the volume label.

For disk-to-disk operations, the dsclabel that the operator specifies becomes the volume label of the output disk. If dsclabel is not specified, the output disk volume label remains the same as the input disk volume label.

Specify dsclabel before any qualifiers.

/qualifier(s)

Output file qualifiers determine which operations will be performed. They can be specified in any order; for example /DENS=1600/VE has the same effect as /VE/DENS/=1600. Refer to the VAX-11 Utilities Reference Manual for specific information on DSC Utilities and their qualifiers.

2.4.2 COPY Command

The operator uses the DCL COPY command to copy selected files from one volume to another. This command is fully described in the VAX/VMS Command Language User's Guide.

2.4.3 File Transfer (FLX) Utility

Distributed with the VAX/VMS software is a command procedure that copies and restores the contents of RT-11-formatted floppy diskettes. This command procedure uses the File Transfer Utility (FLX) to perform the copy operation. Invoking and using the command procedure that employs the FLX Utility is described in Sections 2.5.9 and 2.5.10.

For more information on the File Transfer Utility (FLX), refer to the VAX-11 Utilities Reference Manual.

2.4.4 RMSBCK and RMSRST Utilities

The RMSBCK Utility creates back-up copies of one or more files on a storage medium. The RMSRST Utility reverses the process performed by the RMSBCK Utility. RMSRST reads back-up files as input and produces standard RMS-11 files as output. The structure, context, and attributes of these restored files is the same as the original files at the time they were backed up. For more information on these utilities, refer to the RMS-11 User's Guide.

2.4.5 Scheduling Back-Ups

The system manager generally is responsible for setting up a schedule for backing up files and volumes. This schedule should inform the operator of the frequency with which the volumes are updated and the importance of the files contained on these volumes. Once the schedule is established, the system operator is usually responsible for maintaining this schedule.

2.5 PROCEDURES FOR HANDLING FILES AND VOLUMES

This section contains step-by-step procedures for accessing tape and disk volumes and for performing back-up and restore operations on different types of volumes.

2.5.1 Operator Assistance in Handling Disks and Single-Volume Tapes

The procedure below describes how to physically mount a specific disk or tape on a device, when requested by a user issuing the REQUEST command.

Procedure

1. Observe the following message on the operator's terminal:

```
OPCOM, hh:mm:ss.cc, process-name ACCNT=account-name REPLY-ID=identification-number
Opcom, terminal-name:, "mount-message"
```

2. Locate the volume and place it on the specified device.

3. Ready the device by pressing either:

   a. The LOAD button if it is a magnetic tape drive

   b. The RUN/STOP button or the START/STOP switch if it is a disk drive.

4. Issue one of the following REPLY commands in response to the user's request:

   a. REPLY/TO=identification-number ["message-text"]

   b. REPLY/ABORT=identification-number ["message-text"]

   c. REPLY/PENDING=identification-number ["message-text"]

   For more information on the REPLY command, see Section 2.2.1 or Chapter 8.

Examples

1.
```
OPCOM, 12:54:57.07, BOBA    ACCNT=CIRCUS REPLY-ID=29
   Opcom, _TTF1:, "MOUNT SYSFILE ON DBA1:"

$ REPLY/TO=29 "SYSFILE MOUNTED ON DBA1:"
$
   OPCOM, 01:03:43.90, REQUEST COMPLETED, operator=_OPA0:, ID=29
```

   OPCOM alerts the operator to place the disk volume named SYSFILE on DBA1. The operator locates the volume, places it on the device, readies the device, and then informs the user that the volume is ready for use.

2.
```
OPCOM, 09:45:23.74, LEBB    ACCNT=WATER REPLY-ID=4
   Opcom, _TTF3:, "MOUNT TESTER ON MTA0:"

$ REPLY/PENDING=4 "PLEASE WAIT A FEW MINUTES"
$ REPLY/TO=4 "MTA0:  IS DOWN -- TESTER MOUNTED ON MTA2:"
$
   Opcom, 10:02:34.12, REQUEST COMPLETED, operator=_OPA0:, ID=4
```

   OPCOM sends a message to the operator's terminal to inform the operator that a user wants the magnetic tape named TESTER placed on MTA0. The operator issues a REPLY/PENDING command to inform the user that the task cannot be performed on the device that the user requested. Later, the operator mounts the magnetic tape on MTA2 and notifies the user that the tape volume is on MTA2.

2.5.2 Operator Assistance in Handling Multivolume Tape Sets

The procedure below describes how to physically mount previously initialized tapes in multivolume sets.

Procedure

1. Observe the following message, which is sent from the file system and displayed on the console terminal and all operators' terminals:

```
OPCOM, hh:mm:ss.cc, process-name   ACCNT=account-name  REPLY-ID=identification-number
Opcom, MOUNT RELATIVE VOLUME x (label-name) ON device-name:
```

2. Locate the tape and place it on the specified device. Ready the device by pressing the LOAD button.

3. Issue one of the following REPLY commands in response to the request:

   a. REPLY/TO=identification-number

   b. REPLY/ABORT=identification-number

   Note that if the REPLY command does not include a message, OPCOM usually issues a default message. For more information on the REPLY command, see Section 2.2.2 or Chapter 8.

Examples

1.
```
OPCOM, 14:24:07.53, GREICO       ACCNT=MASTERS REPLY-ID=4
Opcom, MOUNT RELATIVE VOLUME 3 (GMB00A) ON MTA1:

$ REPLY/TO=4
$

   Opcom, 14:31:43.71, REQUEST COMPLETED, operator=_OPA0:, ID=4
```

   A user is reading or writing to the first tape in the volume set GMB00A. The first OPCOM message informs the operator that the user needs the second volume of the tape set. After mounting it, the operator issues the REPLY command to inform the file system that the tape has been mounted and the system can resume processing.

2.5.3 Operator Assistance in Creating a Multivolume Tape or Disk Set

The procedure below describes how to physically mount and initialize additional tapes or disks in multivolume sets.

Procedure

1. Observe the following message on the operator's terminal:

```
OPCOM, hh:mm:ss.cc, process-name    ACCNT=account-name  REPLY-ID=identification-number
Opcom, MOUNT RELATIVE VOLUME x () ON device-name:
```

2. If the user previously did not tell the operator that an additional tape or disk might be needed and specify the volume label of the tape or disk, the operator should try to contact the user to obtain this information:

   a. Does the user want another tape or disk?

   b. What is the volume label of the tape or disk?

3. Enter the following command if the user does not want another tape or if the user cannot be contacted:

```
$ REPLY/ABORT=identification-number
```

NOTE

Steps 4, 5, and 6 below should be ignored if the operator aborts the user request. Aborting the request usually aborts the user's program. For more information on the REPLY command, see Section 2.2.3 or Chapter 8.

4. Apply a visible label to the outside of the tape or disk volume specifying the volume label and the relative volume number.

5. Place the tape on the specified drive and ready the device by pressing either:

   a. The LOAD button if it is a magnetic tape drive

   b. The RUN/STOP button or START/STOP switch if it is a disk drive. If the drive does not come online automatically, press the ONLINE button.

6. Issue the following REPLY command to initialize the tape and inform the file system that the tape is available for use:

```
$ REPLY/TO-identification-number "volume-label/INITIALIZE"
```

   For more information on the REPLY command, see Section 2.2.3 or Chapter 8.

Examples

1.
```
   OPCOM, 14:16:24.98, RACHEL  ACCNT=NAMES REPLY-ID=6
   Opcom, MOUNT RELATIVE VOLUME 2 () on MTA1:

$ REPLY/TO=6 "GMB002/INITIALIZE"
$
   Opcom, 14:23:36.10, REQUEST COMPLETED, operator=_OPA0:,ID=6
```

The OPCOM message notifies the operator that a user needs a second tape. After mounting the tape, the operator issues the REPLY/TO command to indicate the tape is mounted. The volume label GMB002 is assigned to the tape by the /INITIALIZE message.

2.
```
   OPCOM, 09:15:32.67, JOHN ACCNT=HISTORY REPLY-ID=8
   Opcom, MOUNT RELATIVE VOLUME 2 (CIVIL) ON DBA1:

$  REPLY/TO=8
$
   Opcom, 09:21:29.74, REQUEST COMPLETED, operator=OPA0:,ID=8
```

The OPCOM message indicates that the user needs another disk. After mounting the disk, the operator issues the REPLY/TO command to indicate the disk is mounted.

3.
```
   OPCOM, 12:56:03.76, RAP  ACCNT=SESSIONS REPLY-ID=15
   Opcom, MOUNT RELATIVE VOLUME 3 () on MTA1:

$ REPLY/ABORT=15
$
   Opcom, 13:03:12.42, REQUEST ABORTED, operator=_OPA0:,ID=15
```

The first OPCOM message indicates that the user needs another tape. Upon notifying the user, the operator discovers that the user does not want another tape. The operator cancels the request using the REPLY/ABORT command. The second OPCOM message confirms that the request has been canceled.

2.5.4 Mounting Public Disks

This procedure describes how to mount a disk as a public disk.

Public disks are disks that contain more than one user's files. These disks must be designated as shareable at the time they are mounted, so that the files can be accessed by all users on the system. Use the /SYSTEM qualifier with the MOUNT command to create a shareable disk.

Procedure

1. Allocate a drive by issuing the following command:

   ```
   $ ALLOCATE device-name:
   ```

2. Locate the disk and put a visible volume label on the outside of the volume if one is not already there. Place the disk on the allocated drive.

3. Ready the device by pressing the START/STOP switch or the RUN/STOP button.

4. Issue the MOUNT/SYSTEM command to allow all users to access files on the disk:

   ```
   $ MOUNT/SYSTEM  device-name:  volume-label
   ```

   NOTE

   To use the /SYSTEM qualifier, the operator needs the SYSNAM privilege.

5. Optionally, inform all users on the system that the disk is available for use:

   ```
   $ REPLY/USER/BELL "message-text"
   ```

Examples

1. ```
   $ ALLOCATE DBB2:
     DBB2:  ALLOCATED
   $ MOUNT/SYSTEM DBB2:  USERFILES
   %MOUNT-I-MOUNTED,  USERFILES     mounted on  DBB2:
   $ REPLY/USER/BELL "PUBLIC VOLUME MOUNTED ON DBB2:"
   ```

   The ALLOCATE command requests the allocation of DBB2; the response from the system indicates that DBB2 is allocated. The MOUNT/SYSTEM command ensures the disk mounted on DBB2 is available to all users. The system response indicates that the disk was successfully mounted. The REPLY/USER/BELL command broadcasts a message that informs all users logged in to the system that the disk mounted on DBB2 can be accessed.
   ```

2.5.5 Backing Up the System Disk to Tape

The procedure below uses the Stand-Alone DSC-2 Utility to copy the contents of the system disk onto magnetic tapes. To restore the contents of the tapes to disk, the operator uses the procedure described in Section 2.5.6.

User files with protection codes denying read access to system users will not be backed up.

This procedure must be performed from the system console terminal.

Procedure

1. Run the SHUTDOWN.COM command procedure as described in Section 7.3.1.

2. Write-protect the system disk by setting the WRITE-PROTECT switch on the disk drive to the ON position.

3. Place a magnetic tape on an available drive and ready the device. If there is more than one tape drive, mount and ready additional magnetic tapes on each available drive.

4. Verify that the system console medium is in the console drive.

5. Halt the CPU by typing:

   CTRL/P
   >>> HALT

6. Type the following command to bootstrap the Stand-Alone DSC-2 Utility:

   >>> BOOT DSC

   The following console message will be printed at the terminal:

   ```
   CPU HALTED
   INIT SEQ DONE
   LOAD DONE, 00002000 BYTES LOADED

   Please insert first system diskette or cartridge and
   type <RET>
   ```

   Load the first Stand-Alone DSC-2 console medium into the console device and press the RETURN key.

   After the operator presses the RETURN key, the console subsystem loads the Stand-Alone DSC-2 Utility on the console medium. This takes approximately 6 minutes. Approximately three minutes later, the following message will be displayed at the console terminal:

   ```
   VAX/VMS Version 2.0 17-MAR-80 18:1

   Please insert second diskette or cartridge and type
   <RET>
   ```

   At this point, load the second Stand-Alone DSC-2 Utility console medium into the console drive and press the RETURN key.

Approximately one minute later, at the completion of loading, the following prompt will be printed at the console terminal:

```
DSC2>
```

7. A copy of the Stand-Alone DSC-2 Utility for Files-11 Structure Level 2 disks is now running. Type the appropriate DSC-2 command for the system disk and the kind of back-up needed. The following commands are examples of different types of back-ups:

```
DSC2>MTA0:/RW/DENS=1600/VE = DBA0:
```

The above command copies the contents of the disk mounted on DBA0 to the tape mounted on MTA0. The /RW qualifier causes the tape to be rewound before the copy operation begins. The /DENS=1600 qualifier requests that the data be copied to the tape at 1600 bits per inch. The /VE qualifier requests that the contents of the tape be compared with the contents of the disk to insure the copy operation was successful.

```
DSC2>MTA0:,MTA1:/RW/VE = DBA0:
```

In this example, the Stand-Alone DSC-2 Utility copies the contents of the disk mounted on DBA0 to the output devices MTA0 and MTA1. When the Stand-Alone DSC-2 Utility finishes copying data to the first tape, MTA0, the first tape is rewound while data is written to the second tape, thus hastening the copy operation. When the density of the target tape is not specified, the Stand-Alone DSC-2 Utility copies the data onto the tape at the density at which the tape was written previously. The /VE qualifier requests that the contents of the tape be compared with the contents of the disk to make certain the copy operation was successful.

8. To terminate the Stand-Alone DSC-2 Utility, type the following commands from the console terminal:

   a. Type <CTRL/P> in response to the prompt DSC>. The system will respond with the console system prompt as follows:

```
>>>
```

   b. Type HALT or the H command and press the RETURN key in response to the above console system prompt. A message confirming that the system has halted and the console system prompt should be printed at the terminal as follows:

```
HALTED AT ...

>>>
```

9. See the VAX-11 Utilities Reference Manual if the Stand-Alone DSC-2 Utility returns any error messages.

10. Label each magnetic tape with the following information:

- The volume label of the disk backed up
- The current date
- The density at which the data was recorded
- The relative volume number.

2.5.6 Restoring the System Disk from Tape

The procedure below describes how to copy the contents of a magnetic tape to disk. To perform this procedure, the operator must enter the commands from the console terminal.

Procedure

1. Shut down the system by following the SHUTDOWN.COM command procedure documented in Section 7.3.1.

2. Place a target volume in an available drive and ready the device by pressing the RUN/STOP button or START/STOP switch.

3. Place the magnetic tape that contains the data to be restored on a tape drive. If this data is stored on more than one tape, place the additional tapes on additional tape drives.

4. Verify that the system console medium is in the console drive.

5. Halt the CPU by typing:

   CTRL/P
   >>> HALT

6. Type the following command to bootstrap the Stand-Alone DSC-2 Utility:

   >>> BOOT DSC

   The following message will be printed at the console terminal:

   ```
   CPU HALTED
   INIT SEQ DONE
   LOAD DONE, 00002000 BYTES LOADED

   Please insert first system diskette or cartridge and
   type <RET>
   ```

   Load the first Stand-Alone DSC-2 console medium into the console drive and press the RETURN key.

   After the operator presses the RETURN key, the console system loads the Stand-Alone DSC-2 Utility. This takes approximately 6 minutes. Approximately three minutes later, the following message will be displayed at the console terminal:

   ```
   VAX/VMS Version 2.0 19-OCT-79 18:1

   Please insert second diskette or cartridge and type
   <RET>
   ```

   At this point load the second Stand-Alone DSC-2 Utility console medium into the console drive and press the RETURN key.

   Approximately one minute later, at the completion of loading, the following prompt will be printed at the console terminal:

   ```
   DSC2>
   ```

7. A copy of the Stand-Alone DSC-2 Utility for Files-11 Structure Level 2 volumes is now running. Type the appropriate Stand-Alone DSC-2 Utility command to restore the system disk as desired. The following commands exemplify different types of restoration.

```
DSC2>DBA0:/VE =MTA0:/RW
```

This command copies the contents of the tape mounted on MTA0 to the disk mounted on DBA0. The /RW qualifier causes the tape to be rewound before the copy operation is started. The /VE qualifier requests that the contents of the tape and disk be compared to ensure the copy operation was successful.

```
DSC2>DBA0:/VE = MTA0:,MTA1:/RW
```

In this example, the Stand-Alone DSC-2 Utility copies the contents of the tapes mounted on MTA0 and MTA1 to the disk mounted on DBA0. First, the Stand-Alone DSC-2 Utility copies the contents of the tape mounted on MTA0. When all the data on the tape has been copied and verified, the Stand-Alone DSC-2 Utility begins to copy the contents of the second tape. The /RW qualifier ensures both tapes are rewound before either copy operation begins. The /VE qualifier requests that the Stand-Alone DSC-2 Utility perform a verification pass after each volume reaches end-of-tape. When the verify pass reaches end-of-tape on the first volume, the copy operation continues on the second volume.

8. To terminate the Stand-Alone DSC-2 Utility type the following commands from the console terminal:

   a. Type <CRTL/P> in response to the prompt DSC>. The system will respond with the console system prompt (>>>) as follows:

      ```
      >>>
      ```

   b. Type HALT or the H command and press the RETURN key in response to the above console system prompt. A message confirming that the system has halted should be printed at the terminal as follows:

      ```
      HALTED AT ...
      ```

9. Refer to the VAX-11 Utilities Reference Manual if the Stand-Alone DSC-2 Utility returns any verification messages.

10. Label the disk with the following information: the name of the tape from which the data was restored and the current date.

2.5.7 Backing Up a Public Disk to Disk

The procedure below describes how to copy the contents of a public, or nonsystem, disk to another disk. A public disk is a disk that has been mounted by use of the /SYSTEM qualifier.

This procedure is performed online. The operator need only write-lock the device to prevent users from changing any data on the disk. However, users still can read data.

Procedure

1. Issue the following command to warn all users that the disk will be dismounted and write-locked so the contents of the disk can be copied to another disk:

   ```
   $ REPLY/ALL/BELL "message-text"
   ```

   This message should include the name of the source disk being write-locked and indicate in how many minutes the write-lock will occur.

2. At the time indicated by the message, issue the DISMOUNT/NOUNLOAD command to logically dismount the source disk as follows:

   ```
   $ DISMOUNT/NOUNLOAD device-name
   ```

3. Write-lock the source disk by pressing the WRITE-PROTECT switch to the ON position. This switch is located on the front panel of the disk drive.

4. Mount the source disk again using the MOUNT command as follows:

   ```
   $ MOUNT/SYSTEM device-name:  volume-label
   ```

5. Allocate a drive for the target volume by typing:

   ```
   $ ALLOCATE device-name:
   ```

6. Place the target volume in the allocated drive and ready the device by pressing the RUN/STOP button or the START/STOP switch.

7. Mount the target volume by issuing the following command:

   ```
   $ MOUNT/FOREIGN device-name:
   ```

8. Issue the following command to find out the structure level of the source disk:

   ```
   $ DIRECTORY device-name:[0,0]
   ```

   The above DIRECTORY command requests a listing of the master directory. If the directory listing is alphabetized, it usually is a Files-11 Structure Level 2 volume; otherwise, it usually is a Files-11 Structure Level 1 volume.

9. Run the appropriate DSC Utility by typing one of the following commands:

   a. $ RUN SYS$SYSTEM:DSC1
      DSC> output-device-name:/VE = input-device-name:

   b. $ RUN SYS$SYSTEM:DSC2
      DSC> output-device-name:/VE = input-device-name:

10. See the VAX-11 Utilities Reference Manual if the DSC Utility returns any verification error messages.

11. Dismount and deallocate the target volume by typing:

```
$ DISMOUNT device-name:
$ DEALLOCATE device-name:
```

12. Remove the target volume from the drive and put a label on the outside of the volume that specifies the volume label and current date.

13. Dismount the source disk by typing the DISMOUNT/NOUNLOAD command as follows:

```
$ DISMOUNT/NOUNLOAD device-name:
```

14. Write-enable the source disk by pressing the WRITE-PROTECT switch to the OFF position.

15. Remount the source disk by typing the MOUNT command as follows:

```
$ MOUNT/SYSTEM device-name:  volume label
```

16. Inform all users that the source disk is no longer write-locked by issuing the following command:

```
$ REPLY/ALL/BELL "message-text"
```

Examples

1.
```
$ REPLY/ALL/BELL "DMA2:  WILL BE WRITE-LOCKED IN 5 MINS.  FOR BACK-UP."

_OPA0:,SYSTEM     06:31:29.78
"DMA2:  WILL BE WRITE-LOCKED IN 5 MINS FOR BACK-UP."
$ DISMOUNT/NOUNLOAD DMA2:
$ MOUNT/SYSTEM DMA2: DMA4
%MOUNT-I-WRITELOCK, volume is write locked
%MOUNT-I-MOUNTED, DMA4      mounted on _DMA2:
$ ALLOCATE DMA1:
  _DMA1: ALLOCATED
$ MOUNT/FOREIGN DMA1:
%MOUNT-I-MOUNTED, RUTH      mounted on _DMA1:
$ DIRECTORY DMA2:[0,0]
```

```
Directory _DMA2:[000,000]

000000.DIR;1        BACKUP.SYS;1        BADBLK.SYS;1        BADLOG.SYS;1
BITMAP.SYS;1        CONTIN.SYS;1        CORIMG.SYS;1        INDEXF.SYS;1
SYSTEST.DIR;1       VOLSET.SYS;1

Total of 10 files.
$ RUN SYS$SYSTEM:DSC2
DSC2>DMA1:/VE=DMA2:
DSC -- 45 STARTING VERIFY PASS

DSC2>^Z
$ DISMOUNT DMA1:
$ DEALLOCATE DMA1:
$ DISMOUNT/NOUNLOAD DMA2:
$ MOUNT/SYSTEM DMA2: DM4
%MOUNT-I-MOUNTED, DM4     mounted on _DMA2:
$ REPLY/ALL/BELL "DMA2: IS NO LONGER WRITE-LOCKED."

_OPA0:,SYSTEM     06:46:44,23
"DMA2: IS NO LONGER WRITE-LOCKED."

$
```

The operator informs all system users that DMA2 will be dismounted and write-locked for back-up purposes. The operator logically dismounts the source disk, write-locks it, and then remounts it. After remounting the source disk, the operator performs the necessary steps to mount and ready the target disk.

The operator uses the DIRECTORY command to request a listing of the master directory. When this directory is alphabetized, the volume usually has a Files-11 Structure Level 2 format. When the master directory is randomly ordered, the volume usually has a Files-11 Structure Level 1 format.

The operator then performs the copy operation by using the RUN SYS$SYSTEM:DSC2 command. The qualifier /VE requests that the contents of both disks be checked against each other to ensure that the copy operation was successful. DSC informs the operator when the verify pass begins. At completion, the prompt DSC2> returns. To terminate the DSC2 Utility, the operator presses <CTRL/Z>. The dollar sign prompt ($) returns.

The operator then dismounts and deallocates the target disk, dismounts, write-enables, and remounts DMA2, and finally, informs all users that DMA2 can be written to.

2.5.8 Selective Back-Up of Files

The procedure below describes how to copy selected files from one disk to another. Generally, if files must be backed up regularly, the operator should create a command procedure that contains the required back-up commands. Then the operator need only specify the execute command (@) before the command procedure file specification and the system will begin processing the commands in the command procedure.

For more information on creating command procedures, refer to the VAX/VMS Guide to Using Command Procedures.

Procedure

1. Allocate a drive for the target volume by typing:

   ```
   $ ALLOCATE device-name:
   ```

2. Place the target volume in the allocated drive. Ready that device by pressing either the RUN/STOP button or the START/STOP switch.

3. Mount the target volume by typing:

   ```
   $ MOUNT output device-name:  volume-label
   ```

   NOTE

   When the target volume has not been initialized previously or is an RP05 or an RP06, mount the volume using the /FOREIGN qualifier, run BAD, dismount the volume, and then initialize it. Refer to the VAX-11 Utilities Reference Manual for more information on BAD.

4. Type the following command to allocate a drive for the source disk:

   ```
   $ ALLOCATE source-device-name:
   ```

5. Place the source disk in the allocated drive and ready that device by pressing the RUN/STOP button or the START/STOP switch.

6. Mount the source disk by typing:

   ```
   $ MOUNT source-device-name:  volume-label
   ```

7. Create directories on the target volume by typing:

   ```
   $ CREATE/DIRECTORY output-device-name:[directory]
   ```

   Generally, the operator creates a separate directory for each user who has files to be backed up.

8. Copy the files from the source disk to the target volume by typing the following command:

```
$ COPY  input-device:[directory]filename.type.ver  output-device:[directory]
```

   This command is repeated for each file that is to be copied. If a user has several files of the same file name, type, or version, the operator can use wild card characters to indicate them. See the VAX/VMS Command Language User's Guide for more information on wild card characters.

9. Dismount and deallocate the target volume by typing:

```
$ DISMOUNT device-name:
$ DEALLOCATE device-name:
```

10. Remove the target volume from the device and affix a label to the outside of it that indicates the volume label and the current date.

11. Dismount and deallocate the source disk by typing:

```
$ DISMOUNT device-name:
$ DEALLOCATE device-name:
```

12. Remove the source disk from the device.

Examples

1.
```
$ ALLOCATE DMA0:
  _DMA0:  ALLOCATED
$ MOUNT DMA0:  MYVOLUME
%MOUNT-I-MOUNTED, MYVOLUME           mounted on _DMA0:
$ ALLOCATE DMA1:
  _DMA1:  ALLOCATED
$ MOUNT DMA1:  DATCOM
%MOUNT-I-MOUNTED, DATCOM          mounted on _DMA1:
$ CREATE/DIRECTORY DMA0:[RMSTST]
$ CREATE/DIRECTORY DMA0:[FORMAB]
$ CREATE/DIRECTORY DMA0:[SYSTEM]
$ COPY DMA1:[RMSTST]*.*       DMA0:[RMSTST]
$ COPY DMA1:[FORMAB]*.COM       DMA0:[FORMAB]
$ COPY DMA1:[SYSTEM]DUNGEON.*       DMA0:[SYSTEM]
$ DISMOUNT DMA0:
$ DEALLOCATE DMA0:
$ DISMOUNT DMA1:
$ DEALLOCATE DMA1:
```

   The operator copies files from three directories on DMA1 to three newly created directories on DMA0. After performing the necessary steps to mount and ready the target and source volumes, the operator creates three directories [RMSTST], [FORMAB], and [SYSTEM] on the target volume. Using the COPY command, the operator copies:

   - All the files in the [RMSTST] directory on the source disk to the [RMSTST] directory on the target volume
   - All the files of the file type COM in the [FORMAB] directory on the source disk to the [FORMAB] directory on the target volume

- All the files with the file name DUNGEON in the [SYSTEM] directory on the source disk to the [SYSTEM] directory on the target volume

Upon completion of the copy operation, the operator dismounts and deallocates the target and source volumes.

2.5.9 Backing Up the Console Medium

The procedure below outlines steps required to back up the console medium to a Files-11 structured volume. Included in this procedure is CONSCOPY.COM, the command procedure used for backing up the console medium. CONSCOPY.COM backs up the console medium by copying the medium onto a Files-11 structured volume such as tape, disk, or floppy diskette. To restore the console medium from a Files-11 volume, refer to the procedure that follows this one.

Procedure

1. Allocate a device for the target volume as follows:

   ```
   $ ALLOCATE device-name:
   ```

2. Then mount the target volume as follows:

   ```
   $ MOUNT device-name:  volume-label
   ```

   The system should respond with an information message similar to the one below:

   ```
   %CLI-I-MOUNTED,volume-label     mounted on _device-name:
   ```

   The above message informs the operator the volume was mounted successfully and notes the name of the device on which the volume was mounted.

3. Create an empty directory on the target volume by typing:

   ```
   $ CREATE/DIRECTORY device-name:[directory]
   ```

4. Insert the console medium into the console drive.

5. Type the following command string to invoke CONSCOPY.COM:

   ```
   $ @[SYSUPD]CONSCOPY
   ```

6. CONSCOPY.COM responds with the informative message:

   ```
   This command file requires CMEXEC, CMKRNL privileges.
   .
   .
   .
   ```

   After the above message informs the operator which user privileges are needed to execute the CONSCOPY.COM command procedure, a brief summary of CONSCOPY.COM follows.

7. CONSCOPY.COM then prompts for the target volume device and directory names:

   ```
   What is the files-11 device and directory (DDUC:[DIRECTORY]):
   ```

   Type the target volume device and directory names.

8. The procedure then asks:

   ```
   Is your console medium a floppy diskette?  (Y/N):
   ```

9. Answer SAVE to the following question:

   ```
   Do you wish to SAVE or RESTORE your console medium?:
   ```

10. The procedure then instructs:

    Insert the medium to be saved into the console device, type <ret> when ready:

11. After pressing the RETURN key, the system will respond with an information message, similar to the one in Step 2. The message informs the operator that the console medium was successfully mounted and provides the device name on which the medium was mounted. CONSCOPY.COM proceeds to back up the console medium onto the target volume.

12. When CONSCOPY.COM completes the back-up procedure, the message below is printed at the terminal:

    Backup of the console medium is now complete. Remove the medium from the console drive.

13. Mount the console medium by typing:

    ```
    $ MOUNT/FOREIGN/SYSTEM/PROTECTION=(SYSTEM:RWLP) CSA1: CONSOL
    ```

Examples

1.
```
$ ALLOCATE DMA1:
 DMA1:  ALLOCATED
$ MOUNT DMA1:
% MOUNT-I-MOUNTED,SURE mounted on _DMA1:
$ CREATE/DIRECTORY DMA1:[WHYNOT]
$ @[SYSUPD]CONSCOPY
!
This command file requires CMEXEC,CMKRNL privileges.
!
! This command file saves the contents of the console medium on the
! user-specified device and directory, or restores the console medium from
! the files in the user-specified device and directory.
!
! On a restore operation, the entire contents of the specified directory are
! transferred to the output device; therefore only the files necessary to re-
! build the medium should be placed in the directory.
!
What is the files-11 device and directory (DDCU:[DIRECTORY]): DMA1:[WHYNOT]
Is your console medium a floppy diskette?  (Y/N):  Y
Do you wish to SAVE or RESTORE your console medium?:   SAVE
Insert the medium to be saved into the console device,
type <ret> when ready:  (RET)
%MOUNT-I-MOUNTED,              mounted on _CSA1:
!
! Backup of the console medium is now complete.  Remove the medium
! from the device.
!
$ MOUNT/FOREIGN/SYSTEM/PROTECTION = (SYSTEM:RWLP) CSA1: CONSOLE
%MOUNT-I-MOUNTED, CONSOLE       mounted on _CSA1:
```

In this example, the operator backs up the console medium to a disk on the device DMA1 in the directory WHYNOT. The operator begins the back up operation by allocating the disk drive DMA1. Then the operator mounts the disk labeled SURE on the disk drive. Once the operator receives the information message that the disk was successfully mounted, the operator invokes the CONSCOPY.COM command procedure. CONSCOPY prompts the operator for the following information:

- The name of the device and directory to which the contents of the console medium are to be backed up

- Whether the console medium is a floppy diskette
- Whether the console medium should be saved or restored
- Whether the console medium is in the console drive

The CONSCOPY.COM command procedure then proceeds to back up the console medium to the disk volume. CONSCOPY.COM informs the operator when the back up procedure has finished backing up the console medium. The operator removes the console medium from the console drive. The operator then mounts the standard console medium.

2.5.10 Restoring the Console Medium from Disk

The procedure below outlines steps required to restore the contents of the console medium from a Files-11 structured volume. Included in the procedure below is CONSCOPY.COM, the command procedure that restores the contents of the console medium from the Files-11 structured volume. To back up the console medium to a Files-11 structured volume, refer to the preceding procedure.

Procedure

1. Locate the directory on the Files-11 structured volume that contains the contents of the console medium to be restored.

2. Dismount and remove the current console medium, if mounted, by typing:

   ```
   $ DISMOUNT CSA1:
   ```

3. Type the following command string to invoke CONSCOPY.COM.

   ```
   $ @[SYSUPD]CONSCOPY
   ```

4. The above command string invokes CONSCOPY.COM which responds with the informative message:

   ```
   This command file requires CMEXEC,CMKRNL privileges.
   .
   .
   .
   ```

   After this message informs the operator which user privileges are required to execute the CONSCOPY.COM command procedure, a brief summary of the procedure follows.

5. CONSCOPY.COM then prompts for the Files-11 device and directory names:

   ```
   What is the Files-11 device and directory (DDUC:[DIRECTORY]):
   ```

   Type the device and directory names.

6. The procedure then asks:

   ```
   Is your console medium a floppy diskette? (Y/N):
   ```

7. Answer RESTORE to the following question:

   ```
   Do you wish to SAVE or RESTORE your console medium?:
   ```

8. The procedure instructs:

   ```
   Insert the medium to be saved into the console device,
   type <ret> when ready:
   ```

9. After the operator presses the RETURN key, the system responds with an information message similar to the one below:

   ```
   %MESSAGE-I-MOUNTED, volume-label     mounted on _CSA1:
   ```

   The above message informs the operator that the console medium has been successfully mounted on CSA1. CONSCOPY.COM proceeds with the restoration of the console medium, which takes approximately 5 minutes.

10. When CONSCOPY.COM completes the restore operation, a directory listing the files that were restored to the volume is printed at the terminal.

11. CONSCOPY.COM then prints the informative message:

    If no bootstrap file is to be written on the console medium type only a <RET> in response to the next query.

    The name of the bootstrap file supplied by DEC is CONSOL.SYS.

12. The query asks:

    What is the name of the bootstrap file?:

    If the file name CONSOL.SYS is typed in response to the above query, a bootstrap block that directs the system to the bootstrap file CONSOL.SYS will be written onto the restored console medium. A bootstrap block must be present if the console medium being restored will be used to bootstrap a VMS system. If the RETURN key is pressed, no bootstrap block will be written to the console medium being restored.

13. When restoration of the console medium is complete, the procedure informs:

    Restoration of the console medium is complete. Remove the medium from the device drive.

14. Remove the console medium that was copied and insert the standard console medium.

    Mount the standard console medium and type:

    ```
    $ MOUNT/FOREIGN/SYSTEM/PROTECTION=(SYSTEM:RWLP) CSA1: CONSOLE
    ```

Examples

1.
```
$ Dismount CSA1:
$ @[SYSUPD]CONSCOPY
This command file requires CMEXEC,CMKRNL privileges.
!
! This command file saves the contents of the console medium on the
! user-specified device and directory, or restores the console medium from
! the files in the user-specified device and directory.
!
! On a restore operation, the entire contents of the specified directory are
! transferred to the output device; therefore only the files necessary to re-
! build the medium should be placed in the directory.
!
What is the files-11 device and directory (DDCU:[DIRECTORY]): DMA1:[WHYNOT]
Is your console medium a floppy diskette?  (Y/N): Y
Do you wish to SAVE or RESTORE your console medium?: RESTORE
Insert a scratch medium into the console device drive.
type <ret> when ready: (RET)
%MOUNT-I-MOUNTED, SCRTCH        mounted on _CSA1:
```

```
DIRECTORY CS1:
 1-APR-80

ABBREV.HLP     4.  1-APR-80
BOOT  .HLP    11.  1-APR-80
CONSOL.HLP    11.  1-APR-80
CONSOL.SYS    31.  1-APR-80
CRASH          1.  1-APR-80

     .           .       .
     .           .       .
     .           .       .

< UNUSED >    80.

80. FREE BLOCKS

TOTAL 400. BLOCKS IN 83. FILES

!
! If no bootstrap file is to be written on the console medium type only a <RET>
! in response to the next query.
!
! The name of the bootstrap file supplied by DEC is CONSOL.SYS
!
What is the name of the bootstrap file?: CONSOL.SYS
!
! Restoration of the console device is complete.  Remove the medium
! from the device drive.
!
$ MOUNT/FOREIGN/SYSTEM/PROTECTION=(SYSTEM:RWLP) CSA1: CONSOLE
%MOUNT-I-MOUNTED, CONSOLE       mounted on _CSA1:
```

In this example, a scratch diskette is already mounted in the console device when the operator begins the restoration operation. The operator dismounts the console medium by typing the DISMOUNT command and begins the restoration operation by typing the command @[SYSUPD]CONSCOPY.

The CONSCOPY command procedure requests the following information:

- The names of the device and directory that contain the data to be restored onto the console medium. The operator responds with DMA1:[WHYNOT].
- Whether the console medium is a floppy diskette.
- Whether to save or restore the console medium. The operator responds by typing RESTORE.
- Whether the console medium is inserted in the console device drive. The operator responds by pressing the RETURN key to indicate that the console medium is inserted into the console device drive.

The CONSCOPY command procedure then performs the restoration operation and, at completion, displays the directory listing of the disk. Then CONSCOPY.COM requests the name of the bootable system image. The operator responds with CONSOLE.SYS. A bootstrap block is written on the console medium and the CONSCOPY.COM informs the operator the restoration of the console medium is complete. After the operator removes the restored console medium from the console drive, the operator then inserts and mounts the standard console medium in the drive.

CHAPTER 3

CONTROLLING PRINT AND BATCH QUEUES

Although the system manager is responsible for creating print and batch queues, the operator must be able to control these queues so that the system can run smoothly. This chapter describes the procedures for controlling print and batch queues. Procedures for creating new print and batch queues are described in the VAX/VMS System Manager's Guide.

3.1 DEFINITION OF QUEUE

A queue is a list containing jobs that are waiting to be executed. Jobs are executed according to priority.

Print jobs are placed in print queues by means of the PRINT command. Batch jobs are placed in batch queues by means of the SUBMIT command. Print queues can be any one of the following:

- Physical-device queues -- queues associated with (that is, named for) a specific print device.
- Generic queues -- queues from which jobs can be given to any available print device that has matching characteristics.
- Named, or logical, queues -- queues that are not associated with a print device. To obtain printed output from a logical queue, the operator must explicitly assign the queue to a print device. The ASSIGN/QUEUE command, described in Chapter 8, is used for this purpose.

3.2 COMMANDS FOR CONTROLLING PRINT AND BATCH QUEUES

The commands listed in Table 3-1 allow the operator to manipulate queues and the jobs that they contain. The print and batch queue commands that require special privileges are described in Chapter 8. Appendix A alphabetically lists and gives a brief summary description of all DCL commands.

Table 3-1
Commands for Controlling Print and Batch Queues

Command	Function
ASSIGN/MERGE	Removes all jobs from one print queue and places them in another queue
ASSIGN/QUEUE	Assigns a device to a logical queue
DEASSIGN/QUEUE	Deassigns a device from a queue
DELETE/ENTRY [1,2]	Deletes an entry from a print or batch job queue or stops printing the current job
DELETE/QUEUE	Deletes print and batch queues
INITIALIZE/QUEUE	Creates print and batch queues
PRINT [1]	Queues one or more files for printing, either on a default system printer or other device
SET DEVICE	Establishes the spooling and error-logging status on a device
SET QUEUE/ENTRY [1,2]	Changes the status or attributes of jobs in print or batch queues that have not yet been processed by the system
SHOW DEVICES [1]	Displays the status of devices in the system
SHOW QUEUE [1]	Displays the names, job identification numbers, and status of current and pending jobs in print or batch queues
START/QUEUE	Starts print or batch queues
STOP [2]	Halts execution of a command procedure, program, subprocess, or detached process
STOP/ABORT [1,2]	Stops printing a job that is currently printing

1. This command is described in the VAX/VMS Command Language User's Guide.

2. Allows a user with either operator (OPER) or world (WORLD) privilege to affect any job in the system.

(continued on next page)

Table 3-1 (Cont.)
Commands for Controlling Print and Batch Queues

Command	Function
STOP/ENTRY [1,2]	Stops executing a batch job that is currently running and deletes it
STOP/QUEUE	Suspends print queues and stops batch queues
STOP/REQUEUE [1,2]	Stops printing a job that is currently printing and requeues that job, giving it a priority of 1
SUBMIT [1]	Enters a job in a batch queue

1. This command is described in the VAX/VMS Command Language User's Guide.

2. Allows a user with either operator (OPER) or world (WORLD) privilege to affect any job in the system.

3.3 PROCEDURES FOR CONTROLLING PRINT AND BATCH QUEUES

The following section contains step-by-step procedures for controlling print and batch queues established on the VAX/VMS operating system.

3.3.1 Merging Print Queues

When a problem occurs with a print device, the queue associated with that print device should be rerouted to another print device. The procedure below describes how to merge two print queues without losing jobs in either queue.

Procedure

1. Stop the queue associated with the malfunctioning print device by issuing the following command:

   ```
   $ STOP/QUEUE/NEXT queue-name1
   ```

   This command inhibits further dequeuing but permits the current job to be completed. However, if the print device is inoperable, the current job will not be completed.

2. Requeue the current job by typing the following command:

   ```
   $ STOP/REQUEUE queue-name1
   ```

   By requeuing the current job, this command ensures this job will be printed in its entirety. Other jobs in the queue will not be dequeued because the queue is stopped.

3. Take the device offline.

4. Reroute the jobs queued to the malfunctioning print device to another print device by entering the following command:

   ```
   $ ASSIGN/MERGE queue-name2 queue-name1
   ```

   The operator should check that the characteristics of the new print device are appropriate for the new jobs.

5. Optionally, delete the queue associated with the malfunctioning print device by typing:

   ```
   $ DELETE/QUEUE  queue-name
   ```

Example

1. ```
   $ STOP/QUEUE/NEXT   LPB0
   $ STOP/REQUEUE   LPB0
   $ ASSIGN/MERGE LPA0   LPB0
   $ DELETE/QUEUE   LPB0
   ```

   The STOP/QUEUE/NEXT command prevents further dequeuing from the LPB0 queue. The STOP/REQUEUE command terminates the job currently being printed or attempting to print and places it back in the queue with a priority of 1. The next job in the LPB0 queue will not be dequeued because the queue has been stopped. The ASSIGN/MERGE command removes the jobs from the print queue LPB0 and places them in the print queue LPA0. The print queue LPB0 is then deleted by means of the DELETE/QUEUE command.
   ```

3.3.2 Preventing Loss of Data When the Line Printer Runs Out of Paper

The procedure below describes how to prevent loss of data while paper is loaded in the line printer.

When a line printer runs out of paper, OPCOM prints the following message on the operator's terminal to indicate that the device is not ready:

```
Opcom, hh:mm:ss.cc, device is offline, device-name
```

Procedure

1. Suspend the current queue operation by issuing the following command:

   ```
   $ STOP/QUEUE queue-name
   ```

   The SHOW QUEUE queue-name command will now show the queue as PAUSED.

2. Take the printer offline.

3. Load a new box of paper in the printer and return the printer to the online condition.

4. Resume printing by entering the command:

   ```
   $ START/QUEUE/optional-qualifier queue-name
   ```

   Note that the operator can optionally append one of the following qualifiers to the above command to insure the output of the interrupted print job is complete:

/BACKSPACE	Backspaces one page before printing resumes.
/TOP_OF_FILE	Starts at the beginning of the job and prints the job that was being printed when the paper ran out.

Example

1. Opcom, 22:08:43.40, device is offline, LPA0:

   ```
   $ STOP/QUEUE  LPA0
   $ START/QUEUE/TOP_OF_FILE  LPA0
   ```

   OPCOM notifies the operator that line printer LPA0 went offline at 22:08:43.40. The operator stops the queue associated with the printer and takes the printer offline. After loading a new box of paper in the printer, the operator returns the printer to the online condition. Printing resumes after the operator types the START/QUEUE command. The /TOP_OF_FILE qualifier indicates that the job which was being printed when the operator issued the STOP/QUEUE command will be restarted at the beginning of the file.

3.3.3 Terminating the Execution of a Batch Job

The procedure below describes how to terminate the execution of a batch job. The operator usually performs this task only if the system manager or the owner of a job requests that the job be terminated.

Procedure

1. Type the following command to determine the job number of the batch job and the name of the queue in which the job is located:

```
$ SHOW QUEUE/BATCH/ALL
```

2. Delete the batch job by issuing one of the following commands:

```
$ STOP/ENTRY=job-number    queue-name
$ DELETE/ENTRY=job-number  queue-name
```

Example

1.
```
$ SHOW QUEUE/BATCH/ALL

* Batch Queue "SYS$BATCH" Joblim=6, Basepri=4, Swap

  Current Job 376  DEBUG    DBGBUILD  Pri=4, 24-JUL-1980 11:09
  Current Job 315  JEROME   BEGINBLD  Pri=4, 24-JUL-1980 10:05
  Current Job 313  SYSTEM   DELETELO  Pri=4, 24-JUL-1980 09:57
  Current Job 312  SYSTEM   LNK32     Pri=4, 24-JUL-1980 09:57
  Current Job 207  LANGLEY  FORPROG   Pri=4, 24-JUL-1980 09:24

$ STOP/ENTRY=207  SYS$BATCH
```

A user has requested that job 207 be stopped. The operator types the SHOW QUEUE/BATCH/ALL command to determine the queue in which the job has been entered. The display shows that job 207 is in the SYS$BATCH queue. The operator then deletes the job by typing the STOP/ENTRY command.

3.3.4 Terminating the Printing of a Print Job

The procedure below describes how to terminate a print job that is currently being printed on a print device. The operator usually performs this task only if the system manager or the owner of a job requests that the job be terminated, or if the operator observes garbled output on the print device.

Procedure

1. Enter the following command:

   ```
   $ STOP/ABORT print-device
   ```

   The above command terminates the current job and begins printing the next job in the queue.

Example

1. ```
   $ STOP/ABORT   LPA0
   ```

   This command terminates the printing of the current print job on LPA0. The next job in the queue is immediately dequeued for printing.
   ```

3.3.5 Removing a Batch or Print Job from a Queue

The procedure below describes how to delete a batch or print job that has been entered in a queue but has not yet been processed. The operator usually performs this task only if the system manager or the owner of the job requests that the job be deleted.

Procedure

1. Type the following command to determine the job number and the name of the queue in which the job is located:

   ```
   $ SHOW QUEUE/DEVICES/ALL
   ```

2. Delete the job by issuing the following command:

   ```
   $ DELETE/ENTRY=job-number queue-name
   ```

Example

1.
```
$ SHOW QUEUE/DEVICES/ALL

    * Generic Device Queue "SYS$PRINT" Flag

    * Device Queue "LPA0" Forms=0, Genprt lower flag

      Current Job 1327 RAP          ASHLEY , Pri=4,  5-JUL-80 15:4

    * Device Queue "LPB0" Forms=0, Genprt Lower Flag

    * Device Queue "LPD0" Forms=0, Nogen Lower

    * Device Queue "SYS$HOUSTON" Forms=0, Nogen

      This queue assigned to LPD0

    * Device Queue "SYS$LPDOC" Forms=0, Nogen Flag

      This queue assigned to LPC0

    * Device Queue "LPC0" Forms=0, Nogen lower Flag

      Current Job 1328 SMITH     OEUVRE  , Pri=4,  5-JUL-80 16:10

$ DELETE/ENTRY = 1328 LPC0
```

   A user has requested that job 1328 be deleted. The operator types the SHOW QUEUE/DEVICES/ALL command to determine in which queue the job has been entered. The display shows that job 1328 is in the LPC0 queue. The operator then aborts the job by typing the DELETE/ENTRY command and by specifying the job-number 1328.

CHAPTER 4

USING THE CARD READER

The card reader is used by the operator to read card decks. Users may submit to the operator the two following types of card decks for processing:

- Batch job card decks
- Data card decks

An operator must understand the two types of card decks and how to tend the card reader in order to use the card reader and ensure card decks are processed efficiently. This chapter describes which cards the operator should check before processing a card deck through the card reader and how to determine which cards are damaged. Section 4.3.2 outlines a procedure for processing a card deck through the card reader.

4.1 TYPES OF CARD DECKS

Before loading a card deck into the card reader, the operator should determine:

- Whether the deck is a batch job or a data deck, because their processing requirements differ.
- Whether the card reader is set to the correct translation mode.

4.1.1 Batch Job Card Deck

A batch job card deck can be divided into three segments: the initial cards, those that follow, and the last card. The initial two cards in a batch job card deck are the $JOB and the $PASSWORD cards. These cards log in the user and the batch job to the system. Following the initial two cards are program cards. Program cards contain instructions which direct the system to libraries, routines, and data needed to complete the batch job. The last card must be either an End-Of-Job command card ($EOJ) or an End-Of-File (EOF) card. Both of these cards tell the system this is the end of the job.

4.1.1.1 **Checking Batch Job Card Deck Input** - When a batch job is inserted into the card reader input hopper for processing, the first two cards in the card deck must be:

- A $JOB card
- A $PASSWORD card

The system cannot execute the job without these cards. If the operator is given a card deck with these cards omitted, the operator should return the deck so the user can insert these cards.

The last card in the deck must be one of the following:

- A $EOJ card
- An EOF card (12-11-0-1-6-7-8-9 overpunch)

If the last card is not one of these end cards, the operator can type one on the card punch and insert it at the end of the deck.

4.1.1.2 **Checking Batch Job Output** - The log file produced by a card reader batch job is queued for printing to the default system print queue, SYS$PRINT. To have the log file queued to a different queue, the user can include an $ASSIGN or $DEFINE card in the job to redefine SYS$PRINT. The VAX/VMS Command Language User's Guide explains how to use the ASSIGN and DEFINE commands.

If an error occurs while the system is attempting to validate the $JOB and $PASSWORD cards, a listing containing the error message is queued to SYS$PRINT. The user's name (if any) on the listing flag page is the user's name from the $JOB card. The job name is INPBATCH.ERR. When the user's name cannot be determined from the $JOB card, the deck is simply flushed through the card reader and no listing is queued.

4.1.2 A Data Card Deck

A data deck is a deck of cards containing data that either will be read by a program or copied to a file for later use. The process that will read the data deck usually is associated with an interactive user at a terminal or a batch job that is submitted by an interactive user. Since the user and process already are logged in to the system, the first card can contain any data the user wants to specify. However, the program must read the exact number of cards supplied, or the last card should be an EOF card (12-11-0-1-6-7-8-9 overpunch) to inform the program that this is the end of the data deck.

4.1.2.1 **Checking Data Deck Input** - When a user wants a data deck to be read, the operator should ensure that the user has allocated the card reader. If the card reader is not allocated, the system tries to submit the deck as a batch job and subsequently just flushes the deck through the reader, rejecting the job.

If the program does not read the exact number of cards, as with the COPY command, the EOF card (12-11-0-1-6-7-8-9 overpunch) must be the last card in the deck to inform the program that this is the end of the deck. Without this card, the program waits indefinitely for more cards and the system prints "card reader offline" messages on the

operator's terminal. If the card deck lacks an EOF card, the operator can type an EOF card on a card punch and insert it at the end of the deck.

4.2 CARD READER TRANSLATION MODES

For the system to read input properly, the card reader must be set to the correct translation mode. The translation mode used must be the same as the translation mode of the card punch on which the cards were punched. VAX/VMS supports 026 and 029 card punches. (These translation modes are discussed in detail in the VAX/VMS I/O User's Guide and the VAX/VMS Guide to Using Command Procedures.)

4.2.1 Setting the Translation Mode

For the operator to set the card reader to the correct translation mode either:

- The first card in the deck must be the translation mode card, or
- The operator must know the mode in which the cards were punched

Without the above information, the operator cannot set the card reader to the correct translation mode.

To set the translation mode of the card reader for many decks of the same type, use the SET CARD_READER command. This command is fully described in the VAX/VMS Command Language User's Guide. By default, when the system is bootstrapped, the translation mode is set to 029.

4.3 TENDING THE CARD READER

The operator's job of tending the card reader includes:

- Ensuring that the cards in batch jobs and data decks are properly ordered as discussed in the preceding pages
- Replacing physically defective cards
- Operating the card reader

NOTE

For more information on card reader batch jobs from a system user's viewpoint, refer to the VAX/VMS Guide to Using Command Procedures.

4.3.1 Replacing Physically Defective Cards

Even when the card deck contains all the required cards, the card reader may not be able to read the deck. This usually occurs because one or more cards are physically defective.

If the deck contains a faulty card, one of the error indicators located on the front panel of the card reader lights up when the card is read. The card reader goes offline, and operator intervention is required to put it back online. Table 4-1 at the end of this chapter describes the error indicators, reasons why they may light up, and the operator action required to correct the situation.

4.3.2 Operating the Card Reader

The following section contains a step-by-step procedure for processing card decks through the card reader.

Procedure

This procedure describes how to load and process a card deck through a card reader.

1. Remove the card weight from the input hopper. Place the cards, face down and with column 1 on the left, in the hopper. Ensure that the first card to be read is at the bottom of the hopper.

NOTE

Do not pack the input hopper so full that the air from the blower cannot riffle the cards. If the cards are packed too tightly, the vacuum picker cannot operate properly.

2. Press the RESET button. The HOPPER CHECK error indicator and the STOP light will go out and the cards will be read.

NOTE

If the card deck is too large to fit in the input hopper, the excess cards can be loaded while the reader is operating if tension is maintained on the front portion of the deck.

3. Remove the cards from the output stacker when the HOPPER CHECK error indicator and the STOP light are lit.

NOTE

If the STOP button is accidentally pressed while the card deck is being read, return the last card in the output hopper to the bottom of the input hopper and press the RESET button.

4. If the cards are not read properly after the RESET button has been pressed, refer to Table 4-1 below for recovery procedures.

Table 4-1
Card Reader Errors: Causes and Corrective Actions

Error Indicator	Causes	Corrective Action
READ CHECK	Card edges torn Punch in column 0 or 81	Remove the faulty card from the output stacker, duplicate the card, place it in the input hopper, and press the RESET button If READ CHECK occurs for all cards, the read logic of the card reader is malfunctioning
PICK CHECK	Damage to leading edge Torn webs Cards stapled together	Remove the card from the input hopper, duplicate the faulty card, place the card back in the input hopper, and press the RESET button If there is no evidence of card damage, check for excessive warping of the card deck and/or a build-up of ink glaze on the picker face
STACK CHECK	Jam in the card track Badly mutilated card	Correct the jam and/or remove the mutilated card from the output stacker, duplicate the card, place it in the input hopper, and press the RESET button
HOPPER CHECK	Input hopper empty Output stacker full	Load the input hopper Unload the output stacker

CHAPTER 5

THE ERROR LOG FILE

The system automatically writes messages to the latest version of the error log file as the following events occur:

- Errors -- Device errors, machine checks, bus errors, Synchronous Backplane Interconnect (SBI) alerts, soft Error Correction Code (ECC) errors, asynchronous write errors, hard ECC errors
- Configuration Changes -- Volume mounts and dismounts
- System Events -- Cold start up, warm start up, crash start up, message from Send Message to Error Log system service, time stamp

Because the information in the error log file is essential for efficient maintenance of the system, the operator may be asked to maintain this file and to print copies of the file for the system manager.

5.1 MAINTAINING THE ERROR LOG FILE

The error log file (SYS$SYSDISK:[SYSERR]ERRLOG.SYS) resides on the system disk in the [SYSERR] directory.

The error-logging facility consists of three parts:

- A set of executive routines that detect errors and events and write relevant information into error log buffers in memory
- A program called ERRFMT that periodically empties the error log buffers, transforms the descriptions of the errors into standard formats, and stores the formatted information in a file on the system disk
- A program called SYE that generates readable reports from the information formatted by ERRFMT

The executive routines and the ERRFMT program operate continuously without operator intervention. The routines fill the error log buffers in memory with raw data on every detected error and event. When one of the available buffers becomes full, or when a time allotment expires, ERRFMT writes the information into the ERRLOG.SYS file. Then SYE can use ERRLOG.SYS as its input file to create an error log report as its output file.

While SYE is accessing ERRLOG.SYS, ERRFMT cannot write any error information into it. If SYE is accessing the highest version of

ERRLOG.SYS when ERRFMT needs to log an error, ERRFMT creates a new version of the file. The new version continues logging errors where the previous version stopped.

All versions of the ERRLOG.SYS file remain on the system disk (SYS$SYSDISK) until they are explicitly deleted. Therefore, the system manager or the operator must devise a plan for regular maintenance of the error log file.

One way to maintain the versions of this file is to rename the highest version of the ERRLOG.SYS file on a daily basis. To free space on the system disk, the operator can then back up the old versions of the file onto a different volume and delete these versions from the system disk. The operator should not delete an error log file that has not been backed up. A detailed example of this maintenance procedure is provided below.

5.2 PRINTING THE ERROR LOG FILE

The procedure below describes how to rename a formatted error log file and obtain a copy of it. Note that these instructions are for renaming and printing one version of the error log file at a time. For a complete description of the SYE Utility, refer to the VAX/VMS System Manager's Guide.

Procedure

1. Set the default disk to the system disk and the default directory to [SYSERR] by typing the following command:

```
$ SET DEFAULT SYS$SYSDISK:[SYSERR]
```

2. Examine the [SYSERR] directory to see which versions of the ERRLOG.SYS file are on disk by typing:

```
$ DIRECTORY ERRLOG.SYS
```

3. Rename all versions of the ERRLOG.SYS file, one at a time, to ERRLOG.OLD by issuing the command:

```
$ RENAME/LOG ERRLOG;n    ERRLOG.OLD
```

NOTE

To preserve the chronological order of the files after renaming, first rename the oldest version of ERRLOG.SYS (the version with the lowest version number, n), then rename versions n+1, n+2, and so on.

Do not use a wild card character in the version field of the file specification to rename more than one version of ERRLOG.SYS at a time. When a wild card character is used for n, the most recent version of ERRLOG.SYS is renamed first, thereby reversing the chronological order of the renamed files.

4. Invoke the SYE Utility to format the error log file into a readable error log report by typing the command:

```
$ RUN SYS$SYSTEM:SYE
```

   After the above command string is processed, the SYE Utility prompts for input and output file specifications, options, a device name, and entry dates.

5. Respond to the SYE prompt by specifying the name of the error log file and the type of output desired. Note that if the operator responds to all the SYE Utility prompts by pressing the RETURN key, the SYE Utility defaults to the specifications contained in the square brackets (as shown in the example below).

6. Obtain a printed copy of the error log report by entering an output file name in response to the SYE prompt for an output file as shown in the example below. Then enter the following command:

```
$ PRINT file-name
```

   The file name indicates the name of the file containing the error log report.

Example

1.
```
$ SET DEFAULT SYS$SYSDISK:[SYSERR]
$ DIRECTORY ERRLOG.SYS

Directory DBA0:[SYSERR]

ERRLOG.SYS;1

Total of 1 File.

$ RENAME ERRLOG.SYS ERRLOG.OLD
$ RUN SYS$SYSTEM:SYE
SYE VERSION 2.1
_input file:     [ [SYSERR]ERRLOG.OLD ]   ? RET
_output file:    [SYS$OUTPUT]             ?ERRLOG.LIS
_options:        [ROLL-UP]                ? RET
_device name:    [<CR>]                   ? RET
_after date:     [FIRST ENTRY]            ? RET
_before date:    [LAST ENTRY]             ? RET

%SYE-I-SUCCOM, SUCCESSFUL COMPLETION
$ PRINT ERRLOG.LIS
```

   The SET DEFAULT command sets the operator's default disk and directory to DBB2:[SYSERR]. The DIRECTORY command lists all the ERRLOG.SYS files contained in the [SYSERR] directory. In this example, [SYSERR] contains only one version of ERRLOG.SYS. The RENAME command renames ERRLOG.SYS to ERRLOG.OLD; a new version number is assigned if a file of this name already exists.

The operator then invokes the SYE Utility by typing RUN SYS$SYSTEM:SYE. The SYE Utility lists the defaults enclosed in square brackets for each of the following parameters and prompts for any changes in these:

- The name of the file to be manipulated (here, ERRLOG.OLD, the default input file).
- The name of the file that is to contain the error log report. The error log file in the preceding example is written to ERROLOG.LIS, which facilitates obtaining a printed copy of the error log file later. The default output file, SYS$OUTPUT, is printed at the operator's terminal.
- The type of report that SYE should generate. The type of report here is a summary ROLL-UP report. For a description of other types, see the VAX/VMS System Manager's Guide.
- The devices for which SYE should report errors. By pressing the RETURN key, the operator requests error reports for all devices.
- The time from which SYE should record errors. By pressing the RETURN key, the operator requests that SYE report all errors that occurred since the error log file was created.
- The time until which SYE should record errors. By pressing the RETURN key, the operator requests that SYE report the occurrence of errors up to and including the last error in the error log file.

The SYE Utility creates a readable error log report. The operator obtains a hard copy of this report by pressing the return key in response to the final SYE prompt provided the operator previously had not specified an output file name. If the operator had chosen an output file name other than SYS$OUTPUT as in the preceding example, an additional step (use of the PRINT command) is required to produce a printed copy of the report.

CHAPTER 6

THE OPERATOR'S LOG FILE

The operator's log file records the occurrence of system events that are of interest to system managers and operators. The following list summarizes the six types of messages recorded in the operator's log file:

- Initialization of the operator's log file
- Status reports for devices attached to the system
- Terminals enabled and disabled
- Time stamps
- User requests and operator replies
- DECnet status messages

These messages are produced by the operator's communication process (OPCOM) and are preceded by the label Opcom. Figure 6-1 at the end of this chapter shows some of the typical messages that appear in the operator's log file. Section 6.3 explains the messages in detail.

6.1 MAINTAINING THE OPERATOR'S LOG FILE

The operator's log file (SYS$SYSDISK:[SYSMGR]OPERATOR.LOG) resides on the system disk in the [SYSMGR] directory. This file is in ASCII format and can be printed as readable text. The operator should print copies of the operator's log file regularly, and the system manager should retain these copies for reference. Section 6.2 describes how to print copies of the operator's log file.

A new version of the operator's log file is created each time the system is rebootstrapped. The operator or the system manager should devise a plan for regular maintenance of these files.

One way to maintain these files is to rename the highest version of the operator's log file on a daily basis. For example, the operator might rename the current version of OPERATOR.LOG to OPERATOR.OLD every morning at 9:00 A.M. To free space on the system disk, the operator then could back up the renamed version of the file on a different volume and delete the renamed file from the system disk. The operator should not delete versions of the operator's log file that have not been backed up.

The procedure for renaming the operator's log file is the same as that described in Section 5.2 for renaming the error log file.

6.2 PRINTING THE OPERATOR'S LOG FILE

The procedure below describes how to produce a printed copy of the current version of the operator's log file (OPERATOR.LOG). An operator should periodically print a copy of this file for the system manager to review.

Procedure

1. Close the current log file and open a new one by entering the following command from the operator's terminal:

   ```
   $ REPLY/LOG
   ```

2. Set the default to the system disk by typing:

   ```
   $ SET DEFAULT SYS$SYSDISK:[SYSMGR]
   ```

3. Use the following command to examine the directory [SYSMGR] to see which versions of the operator's log file are on the disk:

   ```
   $ DIRECTORY OPERATOR.LOG
   ```

4. Obtain a printed copy of the operator's log file by issuing the following command from an operator's terminal:

   ```
   $ PRINT OPERATOR.LOG;n
   ```

   NOTE

   The version number, n, must be one less than the highest version of this file. The highest version number is the current operator's log file.

Example

1.
```
$ REPLY/LOG
   Opcom, 16-JUL-1980 12:29:24.52, logfile initialized, operator=_TTA2:

$ SET DEFAULT SYS$SYSDISK:[SYSMGR]
$ DIRECTORY OPERATOR.LOG

Directory _DRA5:[SYSMGR]

OPERATOR.LOG;582          OPERATOR.LOG;581

Total of 2 Files.

$ PRINT OPERATOR.LOG;581
```

The REPLY/LOG command closes the current log file and opens a new one; the response from OPCOM verifies that a new log file has been opened. The SET DEFAULT command sets the operator's default disk to the system disk, thus enabling the operator to examine the files contained in the directory [SYSMGR]. The operator then issues the PRINT command to request that the second-most recent version of the operator's log file (OPERATOR.LOG) be printed.

6.3 MESSAGES IN THE OPERATOR'S LOG FILE

This section describes the six types of message that appear in the operator's log file.

6.3.1 Initialization Messages

When the operator issues the REPLY/LOG command, the current operator's log file is closed and a new version of that file is created and opened. All subsequent OPCOM messages are recorded in this new log file.

When a new log file is created, the first message recorded in it is an initialization message that tells the operator when and by whom the log file was initialized. This message appears in the following format:

```
Opcom, dd-mmm-yyyy, hh:mm:ss,cc, logfile initialized, operator=operator-name
```

6.3.2 Device Status Messages

Some VAX/VMS I/O drivers send messages to OPCOM concerning changes in the status of the devices they control. For example, when a device goes offline, an OPCOM message is written into the operator's log file at 30-second intervals until the device is explicitly returned to online status.

The device status message appears in the operator's log file in the following format:

```
Opcom, hh:mm:ss,cc, device is offline, device-name
```

The devices for which this message can appear are card readers, line printers, and magnetic tapes. For information on DECnet status messages, see the DECnet-VAX System Manager's Guide.

6.3.3 Terminal Enable and Disable Messages

The operator designates a terminal as an operator's terminal by issuing the REPLY/ENABLE command from the desired terminal. OPCOM confirms the request by displaying the following message at the operator's terminal and in the operator's log file:

```
Opcom, dd-mmm-yyyy hh:mm:ss,cc, terminal enabled, operator=operator-name
```

This message tells the operator which terminal has been established as an operator's terminal and when it was so established.

If a terminal has been designated as an operator's terminal for a particular function, OPCOM displays the name of that function. For example, if the operator issues the command REPLY/ENABLE=TAPES, OPCOM displays the following message:

```
Opcom, 14-AUG-1980 10:25:35/74, terminal enabled, operator=_TTE1:

$

Opcom, 10:25:38.82, operator terminal status, _TTE1:
TAPES,
```

OPCOM confirms that the terminal is established as an operator's terminal and indicates that the terminal can only receive and respond to requests concerning the mounting and dismounting of tapes.

A terminal that has been designated as an operator's terminal is not automatically returned to nonoperator status when the operator logs off. To return the terminal to normal (nonoperator) status, the operator must issue the REPLY/DISABLE command from the terminal. OPCOM confirms that the terminal is no longer an operator's terminal by displaying a message in the following format both at the operator's terminal and in the operator's log file:

```
Opcom, dd-mmm-yyyy hh:mm:ss.cc, terminal disabled, operator=operator-name
```

This message tells the operator which terminal has been restored to nonoperator status and when the transition occurred.

If a terminal is designated as an operator's terminal and only partial operator status is disabled, OPCOM displays a status message. This message lists which requests the terminal can still receive and respond to. This message is displayed at the operator's terminal and in the operator's log file in the following format:

```
Opcom, hh:mm:ss.cc, Operator terminal status, operator=operator-name
status-report
```

For example, suppose an operator designates a terminal as an operator's terminal that receives messages concerning magnetic tapes, disks, and operator 1. Later, the operator relinquishes the terminal's ability to receive messages concerning tapes. When the operator issues the REPLY/DISABLE=TAPES command, OPCOM returns the following message:

```
Opcom, 09:23:45.32, Operator terminal status, operator=_TTA3:
DISKS, OPER(1)
```

This message tells the operator that terminal TTA3 still receives and can respond to messages about disks and operator 1.

6.3.4 Time Stamp Messages

A time stamp message is recorded at 30-minute intervals in the operator's log file. These messages serve as markers for estimating when a system failure occurred.

A time stamp message appears in the log file in the following format:

```
Opcom, dd-mmm-yyyy hh:mm:ss.cc, logfile time stamp
```

6.3.5 User Request and Operator Reply Messages

To communicate with the operator, the user issues the REQUEST command, specifying either the /REPLY or /TO qualifier.

If the user issues a REQUEST/REPLY command, the request is recorded in the operator's log file in the following format:

```
Opcom, hh:mm:ss.cc, Username Accnt=account-name Reply-ID=identification-number
Opcom, terminal-name, "message-text"
```

This message tells the operator, which user sent the message, the time the message was sent, the identification number assigned to the message, and the message itself.

If the user issues a REQUEST/TO command, the request is recorded in the operator's log file in the format described above, but without an identification number.

When the operator responds to a user's request and specifies either the /ABORT qualifier or the /TO qualifier, the response is recorded in the operator's log file in the following format:

```
Opcom, hh:mm:ss.cc, operator-response, operator=operator-name
```

This message indicates how the operator responded to the user's request, as well as when the response was issued and which operator responded.

When the operator responds to a user's request using the /PENDING qualifier, the response is not recorded in the operator's log file because the request has not yet been completed (that is, the request has not been fulfilled or aborted).

When a user issues a REQUEST/REPLY command and the operator has disabled all terminals as operator's terminals, OPCOM records all subsequent user's requests in the log file in the format shown above, but returns a message to the user indicating that no operator coverage is available.

All other OPCOM responses to REPLY commands, except responses involving the REPLY/ENABLE, REPLY/DISABLE, and REPLY/LOG commands, are not logged in the operator's log file.

```
Opcom,    9-JUL-1980   18:52:10.61,   logfile initialized, operator=_OPA2:
Opcom,    9-JUL-1980   19:22:13.85,   logfile time stamp
Opcom,    9-JUL-1980   19:40:37.95,   terminal enabled, operator=_TTA1:
Opcom,    9-JUL-1980   19:40:50.31,   terminal disabled, operator=_TTA1:
Opcom,    9-JUL-1980   20:12:13.78,   logfile time stamp
Opcom,    9-JUL-1980   20:47:13.78,   logfile time stamp
Opcom,    9-JUL-1980   21:17:26.84,   terminal enabled operator=_TTA2:
Opcom, 21:18:42.77,   SWORDS    Accnt=DOCUMENT
Opcom, _TTA1:,  "ARE  YOU READY?"

Opcom, 21:22:31.65, PARDON            Accnt=DOCUMENT Reply-ID=0
Opcom, _TTA1:, "ARE YOU READY?"

Opcom, 06:58:58.70,    device is offline, LPA0:
Opcom, 06:59:26.70,    device is offline, LPA0:
Opcom, 07:00:01.70,    device is offline, LPA0:
Opcom, 07:00:30.70,    device is offline, LPA0:
Opcom, 07:01:05.70,    device is offline, LPA0:

Opcom, 11:31:19.70,    device is offline, LPA0:
Opcom, 11:31:51.70,    device is offline, LPA0:
Opcom, 14-JUL-1980     13:59:30.27, terminal enabled, operator=_TTC3:
Opcom, 13:59:41.88, SPARLP     Accnt=VMS
Opcom, TTC3:, "TEST   THIS   PLEASE"

Opcom, 15:26:42.73,    device is offline, CRA0:
```

Figure 6-1 The Operator's Log File (OPERATOR.LOG)

CHAPTER 7

SHUTTING DOWN AND RESTARTING THE SYSTEM

Occasionally, the operator may need to shut down and restart the VAX/VMS operating system. Reasons for halting the system include danger of power loss, the need to back up the system disk, a hardware or software problem, or the need to use the computer system for a specific application. The operator restarts the system once the problem is solved or when the specific application begins.

7.1 SHUTTING DOWN THE OPERATING SYSTEM

This chapter describes three procedures the operator can use to shut down the system:

1. An orderly shutdown of the system
2. Two emergency shutdowns of the system

The first procedure is a command procedure that is distributed with the VAX/VMS software. This command procedure, named SHUTDOWN.COM, resides in the SYS$SYSTEM directory. Once invoked, SHUTDOWN.COM automatically performs specific housekeeping functions that ensure a smooth shutdown of the system. These housekeeping functions include disabling future logins, stopping the batch and device queues, dismounting mounted volumes, and stopping user processes. This procedure also invokes a site-specific command procedure named SYSHUTDWN.COM that is tailored by the system manager to the needs of the specific installation. SYSHUTDWN.COM file is present in the distribution kit but contains no commands.

If the operating system cannot be shut down by means of the SHUTDOWN.COM command procedure, the operator should use the second emergency shutdown procedure, RUN SYS$SYSTEM:OPCCRASH. This program shuts down the system immediately. The error log buffers are written to the system dump file. Pages on the modified list are written to disk. Then the system disk is dismounted. Data may be lost, since the OPCCRASH command procedure performs only minimal housekeeping functions. Therefore, an emergency shutdown of the system should be used only if the orderly shutdown procedure fails.

The CRASH command procedure also is an emergency shutdown procedure that is stored on the system console medium and is distributed with the VAX/VMS software. By forcing the system to fail, the CRASH command procedure shuts down the system. Data may be lost since no housekeeping functions are performed. Therefore, the CRASH command procedure should not be used unless the system will not accept command input.

7.2 RESTARTING THE OPERATING SYSTEM

Restarting the system means loading the operating system into memory and performing the necessary housekeeping functions for the system to run properly. Generally, when the system fails, it automatically restarts itself. However, sometimes operator assistance is required to restart the system. This usually occurs after the operator has halted the operating system by one of the methods described in the previous section.

7.2.1 The Start-Up Command Procedure

When the operating system is bootstrapped, the command procedure SYS$SYSTEM:STARTUP.COM is automatically executed. This command procedure contains commands for performing site-independent operations that must be performed if the system is to run properly. These operations include assigning system-wide logical names, installing executable images as known images, and creating permanent global sections. The SYS$SYSTEM:STARUP.COM command procedure also invokes a site-specific command procedure named [SYSMGR]SYSTARTUP.COM in which the system manager places site-specific initialization commands. This file is furnished in the distribution kit without commands.

7.2.2 Restarting Problems

Sometimes the operating system does not bootstrap after the operator has issued the restart command. This can be caused by either a hardware or software malfunction.

7.2.2.1 **Hardware Problems** - A read error on a tape drive or floppy diskette, or a machine check error may indicate a hardware malfunction. Whenever a hardware problem occurs, a question mark (?) character usually precedes the error message that is displayed on the system console terminal. When a hardware problem occurs, the operator should:

- Notify the system manager
- Consult the appropriate hardware manual for VAX-11 users
- Contact the appropriate DIGITAL field service representative

7.2.2.2 **Software Problems** - When the operating system is loaded into memory, but the STARTUP.COM command procedure is not executed, a software malfunction has probably occurred. The operator can perform one or more of the following actions to correct the situation:

- Repeat the start-up procedure
- Start the system from another drive or disk

7.3 PROCEDURES FOR SHUTTING DOWN AND RESTARTING THE SYSTEM

The following section contains step-by-step procedures for shutting down and restarting the VAX/VMS operating system.

7.3.1 Orderly Shutdown of the System

The command procedure below describes how to shut down the system in an orderly fashion. This procedure is contained in a command file. At the discretion of the system manager or operator, commands can be added to the SYSHUTDWN.COM command procedure to perform additional housekeeping functions.

Procedure

1. Type the following command to begin the shutdown procedure:

   ```
   $ @SYS$SYSTEM:SHUTDOWN
   ```

2. Enter an integer in response to the following question:

   ```
   How many minutes until shutdown?:
   ```

3. In response to the following prompt, give the reason for shutting down the system:

   ```
   Reason?:
   ```

4. Respond by typing a Y (Yes) or N (No) to the following question:

   ```
   Do you want to spin down the disks?:
   ```

   The execution of the shutdown procedure continues while the following events occur and are printed on the terminal:

   a. A message that requests users to log out is broadcast to all users on the system. This message is broadcast at decreasing time intervals.

   b. Batch and device queues are stopped and all future nonoperator logins are disabled when there are four or fewer minutes left until system shutdown.

   c. The site-specific command procedure SYSHUTDWN.COM is invoked. This command procedure contains commands inserted by the system manager to tailor the shutdown procedure to the needs of the installation.

   d. All mounted volumes are dismounted and, if requested by the operator, the disks are spun down.

   e. All user processes are stopped. However, the following processes continue: NULL, SWAPPER, JOB_CONTROL, OPCOM, ERRFMT, ancillary control processes (ACPs), and the process running the SHUTDOWN.COM command procedure. ACPs may delete themselves when their mounted volumes are finally dismounted.

   f. The operator's log file is closed.

   g. The program SYS$SYSTEM:OPCCRASH is invoked to shut down the system.

4. Observe the following message typed on the system console:

   ```
   SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
   ```

5. Enter the following two console commands to halt the system:

```
CTRL/P
>>> HALT
```

The control character <CTRL/P> will not be echoed at the console terminal. The console command language prompt (>>>) will be printed at the terminal after <CTRL/P> is typed. Typing <CTRL/P> places the console terminal under the control of the console subsystem instead of the VAX/VMS operating system. The HALT or the H command halts the system completely.

Examples

```
$ @SYS$SYSTEM:SHUTDOWN
        System shutdown command procedure.
  17-MAR-1980 11:11:34
How many minutes until shutdown?: 5
Reason?:  WEEKLY SYSTEM DISK BACK-UP
Do you want to spin down the disks?: NO
   Opcom, 11:12:20:32, Operator terminal status, _OPA0:
   CENTRAL, PRINTER, TAPES, DISKS, DEVICES, CARDS, NETWORK,
   OPER(1,2,3,4,5,6,7,8,9,10,11,12)

_OPA0:,SYSTEM        11:12:20.72
"SYSTEM SHUTDOWN IN 5 MINUTES.

_OPA0:,SYSTEM        11:12:22.73
"WEEKLY SYSTEM DISK BACK-UP

  Login quotas - Interactive limit-0, Current interactive value=1
        Non-operator logins are disabled.

_OPA0:,SYSTEM        11:14:27.30
"BATCH AND DEVICE QUEUES HAVE BEEN STOPPED"

_OPA0:,SYSTEM        11:14:29.86
"SYSTEM SHUTDOWN IN 2 MINUTES.  LOGINS ARE DISABLED, PLEASE LOGOFF.

_OPA0:,SYSTEM        11:14:31.54
"WEEKLY SYSTEM DISK BACK-UP

_OPA0:,SYSTEM        11:15:32.62
"SYSTEM SHUTDOWN IN 1 MINUTE.  LOGINS ARE DISABLED, PLEASE LOGOFF.

_OPA0:,SYSTEM        11:15:34.26
"WEEKLY SYSTEM DISK BACK-UP

_OPA0:,SYSTEM        11:16:35.39
"SYSTEM SHUTDOWN IN 0 MINUTES.  LOGINS ARE DISABLED, PLEASE LOGOFF.

_OPA0:,SYSTEM,       11:16:37.08
"WEEKLY SYSTEM DISK BACK-UP

     Invoke installation dependent shutdown procedure.
     Stop all user processes.
     Dismount all mounted volumes.
  OPCOM, 11:16:43.62, SYSTEM        Accnt=SYSTEM
  Opcom, _OPA0:, "OPERATOR REQUESTED SHUTDOWN"

  Opcom, 17-MAR-1980 11:16:45.02, logfile closed, operator=_OPA0:

   SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
```

```
CTRL/P
>>> HALT

     HALTED AT 80007100
```

In this example, the operator requests that the system be shut down in 5 minutes to allow a system disk back-up. The operator indicates when and why the system will be shut down and whether the disks should be spun down. The system then performs housekeeping functions that ensure a clean shutdown. When housekeeping operations are complete, a system message requests the operator to halt the system using the console terminal. The operator types <CTRL/P> and the HALT or H command to complete the system shutdown procedure.

7.3.2 Emergency Shutdown of the System

The procedure below describes how to halt the system immediately without performing any of the housekeeping functions that ensure a smooth shutdown. Generally, the operator shuts down the system by following the orderly shutdown procedure described previously. However, if that procedure fails, the operator can perform an emergency shutdown.

To perform this procedure, the operator must enter the commands from the system console.

Procedure

1. Enter the following command to force an immediate shutdown of the system:

   ```
   $ RUN SYS$SYSTEM:OPCCRASH
   ```

2. If the system fails to accept or to respond to the command issued in step 1 use the CRASH command procedure that is described on the pages following this procedure.

3. Observe the following information typed on the system console:

   ```
   SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM
   ```

4. Type <CTRL/P> after the above message is printed at the console terminal. The system responds with the console system prompt (>>>) as shown below. Then type the HALT or H command to halt the system.

   ```
   CTRL/P
   >>>HALT
   ```

5. The console program reports that the system is halted by printing the contents of the system program counter at the time of the halt.

   ```
   HALTED AT "address"
   ```

Example

1.
```
$ RUN SYS$SYSTEM:OPCCRASH

     SYSTEM SHUTDOWN COMPLETE - USE CONSOLE TO HALT SYSTEM

CTRL/P
>>>HALT

     HALTED AT 8000708A
```

   The operator types the command string for an emergency shutdown. The system then instructs the operator to use the console to halt the system. The operator presses <CTRL/P> to return the console terminal to the control of the console subsystem. The console subsystem responds with the console command language prompt (>>>). The operator then types the HALT or H command to halt the system.

7.3.3 Forcing the System to Fail

The CRASH command procedure described below forces the system to fail, which results in an immediate shutdown of the system. After the CRASH command procedure is invoked, a fatal bug check message is printed at the console terminal and the system dump file is written to the disk. Later, these can be used to determine why the system did not respond to command input. However, data may be lost, since no other housekeeping functions are performed. Therefore, the CRASH command procedure only should be used if the system will not accept command input; that is, if the system fails to accept or respond to the OPCCRASH procedure described on the preceding pages.

Note that, if a copy of the system dump file later is sent to DIGITAL for analysis, a copy of the console listing also should be sent. This listing displays fatal bug check information that is not contained in the system dump file (for example, program counter (PC) and processor status longword (PSL) data).

All commands that invoke the CRASH command procedure must be typed from the system console terminal.

Procedure

1. Type <CTRL/P> to return control to the console command language level, as follows:

   ```
   CTRL/P
   >>>
   ```

2. The system responds by printing the console command language prompt, (>>>). After the prompt, type @CRASH as follows:

   ```
   >>>@CRASH
   ```

   NOTE

   Not all VAX-11 console processors execute command procedures. If the processor does not support command procedures, the operator can type each command individually. The example that follows displays the information needed for the operator to enter the commands.

3. The @CRASH command invokes the CRASH command procedure. The system initially responds by printing the following message at the console terminal:

   ```
   Command file to crash VMS abnormally
   ```

   Additional messages and information, such as the fatal bug check message are printed at the console terminal, as shown in the example below and the system dump file is written to the disk.

Example

```
(CTRL/P)

>>> @CRASH

!

! Command file to crash VMS abnormally

!

HALT                    ! HALT SYSTEM, EXAMINE PC,

          HALTED AT 8000702A
EXAMINE PSL             ! PSL,

          00000000
EXAMINE/INTERN/NEXT:4 0 !  And all stack pointers

        I   00000000   80001D48
        I   00000001   00000000
        I   00000002   00000000
        I   00000003   00000000
        I   00000004   8009E600
DEPOSIT PC=-1           ! Invalidate PC

DEPOSIT PSL=1F0000      ! Kernel mode, IPL 31

CONTINUE

<@EOF>
<@EXIT>

**** FATAL BUG CHECK, VERSION = 2.0 INVEXCEPTN, Exception while  above
ASTDEL or on interrupt stack

     CURRENT PROCESS = NULL

     REGISTER DUMP

          R0 = 0000001F
          R1 = 001F0000
          R2 = 00000000
          R3 = 00000000
          R4 = 00000000
          R5 = 00000000
          R6 = 00000000
          R7 = 00000000
          R8 = 00000000
          R9 = 00000000
          R10= 00000000
          R11= 00000000
          AP = 00000000
          FP = 00000000
          SP = 80001D14
          PC = 800038C1
          PSL= 001F0009

     KERNEL/INTERRUPT STACK

          80001D1C  00000004
          80001D20  00000000
          80001D24  FFFFFFFD
```

```
     80001D28  00000000
     .
     .
     .

HALT INST EXECUTED
HALTED AT 800071B3

>>>
```

Typing @CRASH invokes the CRASH command procedure. This procedure instructs the system to examine the program counter (PC), the processor status longword (PSL), and the stack pointers. Values are deposited in the PC and PSL to cause an exception condition that forces a system dump. The fatal bug check message is printed at the console terminal. Finally, the system halts and prints the contents of the program counter. The console system prompt (>>>) returns.

If enabled, some systems will halt and then automatically rebootstrap. However, systems which are not enabled to automatically rebootstrap, must be rebootstrapped by the operator.

7.3.4 Restarting the System

The procedure below describes how to restart the VAX/VMS operating system after it has been shut down and consequently needs to be bootstrapped. To perform this procedure, the operator must enter the commands from the system console.

Procedure

1. Enter the following console command to bootstrap the system:

   ```
   >>> BOOT [device-name]
   ```

2. Observe the bootstrap information printed on the system console.

3. Press the RETURN key to log in to the system and resume routine operations.

Example

1.
```
>>> BOOT DM0

        CPU HALTED
        INIT SEQ DONE
        HALT INST EXECUTED
        HALTED AT 200034F9

        G  0000000E  00000200
        LOAD DONE  00002000 BYTES LOADED

   VAX/VMS Version 2.0 14-APR-1980 10:30

    Opcom, 27-SEP-1980 11:25:55.98, logfile initialized, operator=_OPA0:
```

   After the operator enters the BOOT command, the operating system is loaded into memory and the STARTUP.COM file is executed. Upon completion, the system is initialized and ready to accommodate system users.

CHAPTER 8

DCL COMMANDS USED BY OPERATORS

This chapter describes the DCL commands most commonly used by operators; that is, commands that can only be executed by users who have the operator (OPER) privilege. Typically, only system managers and system operators have this privilege.

Some commands require one or more privileges in addition to the OPER privilege; these requirements are noted in the command descriptions. An operator who does not have these privileges but needs to use a command that requires them should see the system manager.

Most commands that do not require the OPER privilege, are documented in the VAX/VMS Command Language User's Guide. That guide also contains an introduction for using DCL commands.

ASSIGN/MERGE

8.1 ASSIGN/MERGE

Description

This command removes jobs from one print queue and merges them with another queue.

Before the merge operation can take effect, the operator stops the source queue (that is, the queue to be merged) using the STOP/QUEUE command described in Section 8.9. The operator need not stop the target queue (that is, the queue that will accommodate the source queue).

The ASSIGN/MERGE command is particularly useful when a line printer malfunctions: by issuing an ASSIGN/MERGE command, the operator can reroute the queue to a different print device. Note that to perform the merge operation without losing or disrupting any jobs, the operator should follow the procedure described in Section 3.3.1. The original queue then can be deleted.

Format

```
ASSIGN/MERGE device-name[:]    queue-name[:]

Command Qualifiers        Defaults

None.                     None.
```

Prompts

Device: device-name[:]

Log_Name: queue-name[:]

Command Parameters

device-name[:]

Specifies the name of a line printer or device to which the files will be directed.

queue-name[:]

Specifies the name of a queue that is going to be reassigned to a new print queue.

Example

1.
```
$ STOP/QUEUE   LPB0
$ ASSIGN/MERGE   LPA0  LPB0
```

The STOP/QUEUE command stops the print queue LPB0 immediately. The ASSIGN/MERGE command removes the jobs from the LPB0 print queue and places them in the LPA0 print queue.

ASSIGN/QUEUE

8.2 ASSIGN/QUEUE

Description

This command assigns, or redirects, a logical queue to a specific device.

Jobs in a logical queue cannot be initiated from the queue unless the operator:

1. Assigns the logical queue to a physical-device queue
2. Starts both the logical queue and the physical-device queue

To assign a logical queue to a physical-device queue, the operator specifies the ASSIGN/QUEUE command. To start printing jobs, the operator specifies the START/QUEUE command for both queues (described in Section 8.8).

Format

ASSIGN/QUEUE device-name[:] logical-queue-name[:]	
Command Qualifiers	Defaults
None.	None.

Prompts

Device: device-name[:]

Log_Name: logical-queue-name[:]

Command Parameters

device-name[:]

Specifies the name of a queue associated with a specific device (such as a line printer) that is to be associated with a logical queue.

logical-queue-name[:]

Specifies the name of the logical queue that is to be assigned to a specific device such as a line printer. (A logical queue is a queue whose name does not match a physical device and that is not a generic queue.)

Examples

1.
```
$ INITIALIZE/QUEUE/FLAG TEST_QUEUE
$ INITIALIZE/QUEUE/FLAG  LPA0
$ ASSIGN/QUEUE LPA0 TEST_QUEUE
$ START/QUEUE  LPA0
$ START/QUEUE TEST_QUEUE
```

   The INITIALIZE commands create the logical queue TEST_QUEUE and the print queue LPA0. Both these queues are initialized with a header page preceding each job. The ASSIGN/QUEUE command associates the logical queue TEST_QUEUE with the print queue LPA0 and the printing of jobs begins when the queues are started with the START/QUEUE commands.

2.
```
$ INITIALIZE/QUEUE  LPB0
$ START/QUEUE  LPB0
```

   The ASSIGN/QUEUE command is not needed here because a logical queue is not being initialized. A physical-device queue is being initialized; LPB0 is the name of a line printer. Thus, to begin printing, only the START/QUEUE command is needed.

DEASSIGN/QUEUE

8.3 DEASSIGN/QUEUE

Description

This command deassigns a logical queue from a specific device such as a line printer. (A logical queue is a queue whose name does not match a physical device.) The DEASSIGN/QUEUE command is the complement of the ASSIGN/QUEUE command described in Section 8.2.

Before issuing the DEASSIGN/QUEUE command, the operator must stop the logical queue with the STOP/QUEUE command (described in Section 8.9). Once the operator issues the DEASSIGN/QUEUE command, the jobs in the logical queue remain in a hold state until the queue is reassigned to another print queue or device.

Format

```
DEASSIGN/QUEUE  logical-queue-name[:]

Command Qualifiers        Defaults

None.                     None.
```

Prompts

```
Log_Name:  logical-queue-name[:]
```

Command Parameters

logical-queue-name[:]

Specifies the name of a logical queue that is to be deassigned from a specific device or print queue.

Example

1.
```
$ ASSIGN/QUEUE LPA0  ASTER
    .
    .
    .
$ STOP/QUEUE/NEXT  ASTER
$ DEASSIGN/QUEUE  ASTER
```

The ASSIGN/QUEUE command associates the logical queue ASTER with the print queue LPA0. Later, the operator decides to deassign the queue ASTER from LPA0. First, the operator uses the STOP/QUEUE/NEXT command to stop the logical queue after the current print job is printed. Then, the operator deassigns the logical queue using the DEASSIGN/QUEUE command.

DELETE/QUEUE

8.4 DELETE/QUEUE

Description

This command deletes a specific print or batch queue and all the jobs the queue contains.

The DELETE/QUEUE command takes effect only if the specified queue has been stopped. The operator stops the queue using the STOP/QUEUE command (described in Section 8.9) before issuing the DELETE/QUEUE command.

Format

```
DELETE/QUEUE  queue-name[:]

Command Qualifiers        Defaults

None.                     None.
```

Prompts

```
File:  queue-name[:]
```

Command Parameters

queue-name[:]

Specifies the name of the print or batch queue to be deleted.

Example

1.
```
$ INITIALIZE/QUEUE/FLAG LPA0
$ START/QUEUE LPA0
   .
   .
   .
$ STOP/QUEUE/NEXT LPA0
$ DELETE/QUEUE LPA0
```

The first two commands initialize and start the print queue LPA0. Later, the operator decides to delete that queue. First the operator stops the queue by using the STOP/QUEUE/NEXT command. The operator then deletes the queue by issuing the DELETE/QUEUE command.

INITIALIZE/QUEUE

8.5 INITIALIZE/QUEUE

Description

This command creates or initializes print and batch queues. The operator uses this command to create print and batch queues and to assign them names and attributes. Generally, these queues are created by the operator who enters them in a site-specific system start-up command procedure. (The VAX/VMS System Manager's Guide contains examples of such entries.) However, the operator can create additional queues as they are needed.

To begin printing jobs from print queues and executing jobs from batch queues, the operator issues the START/QUEUE command (described in Section 8.9). Note that all the options that can be specified in the INITIALIZE/QUEUE command also can be specified in the START/QUEUE command.

When the operator creates a batch queue, the qualifier /BATCH is required.

Format

```
INITIALIZE/QUEUE  queue-name[:]

Command Qualifiers                          Defaults

/BATCH
/[NO]BURST                                  /NOBURST
/CHARACTERISTICS=(c[,...])
/CPUDEFAULT=t
/CPUMAXIMUM=t
/[NO]DISABLE_SWAPPING                       /NODISABLE_SWAPPING
/[NO]ENABLE_GENERIC_PRINTING                /ENABLE_GENERIC_PRINTING
/[NO]FLAG                                   /NOFLAG
/FORMS_TYPE=n
/[NO]GENERIC                                /NOGENERIC
/JOB_LIMIT=n                                /JOB_LIMIT=1
/PRIORITY=n                                 /PRIORITY=4
/PROCESS=process-name
/TERMINAL
/WSDEFAULT=n
/WSQUOTA=n
```

Prompts

Queue: queue-name[:]

Command Parameters

queue-name[:]

Specifies the name of a physical-device, generic, or logical queue.

Command Qualifiers

/BATCH

Indicates that this is a batch queue.

/BURST
/NOBURST

Control whether a burst header page is printed for each print job.

Use the /BURST qualifier to print a header page over the paper perforations so that the page header is visible from the side of a stack of paper. A burst header uses an extra page for each job but simplifies separating listings.

The default is /NOBURST.

/CHARACTERISTICS=(c[,...])

Specifies one or more desired characteristic(s) for printing a file. If more than one characteristic is specified, separate each with a comma and enclose the list in parentheses. For further information on specifying characteristics, refer to the VAX/VMS System Manager's Guide.

/CPUDEFAULT=t

Defines the default CPU time limit for batch jobs.

Specify the value t as a delta time value, the numeric value 0, or either the word NONE or INFINITE. The value 0 and the word INFINITE allow a job unlimited CPU time, provided the CPU time limit is not restricted by the /CPUMAXIMUM qualifier or the user authorization file. Specify NONE when a default CPU time limit is not desired.

The value for t cannot exceed the CPU time limit set by the /CPUMAXIMUM qualifier.

/CPUMAXIMUM=t

Defines the maximum CPU time limit for batch jobs. Use this qualifier to override the CPU time limit specified in the user authorization file.

Specify the value t as a delta time value, the numeric value 0, or either the word NONE or INFINITE. Specify NONE when a maximum CPU time limit is not desired. Refer to Table 8-1 below for more information on specifying CPU time limits.

Table 8-1
CPU Time Limit Specifications and Action

CPU time limit specified by the SUBMIT command?	Default CPU time limit specified for queue?	Maximum CPU time specified for queue?	Action taken
No	No	No	Use UAF value
Yes	No	No	Use smaller of SUBMIT command and UAF value
Yes	Yes	No	Use smaller of SUBMIT command and UAF value
Yes	No	Yes	Use smaller of SUBMIT command and maximum value
Yes	Yes	Yes	Use smaller of SUBMIT command and maximum value
No	Yes	Yes	Use smaller of queue's default and maximum value
No	No	Yes	Use maximum value
No	Yes	No	Use smaller of UAF and queue's default value

A CPU time limit for processes is specified by each user record in the system user authorization file (UAF). An operator can also specify the following: a default CPU time limit for all jobs in a given queue and a maximum CPU time limit for all jobs in a given queue. The above decision table shows the action taken for each value specified and possible combinations of specifications.

/DISABLE_SWAPPING
/NODISABLE_SWAPPING

Control whether batch jobs executed from a queue can be swapped in and out of memory.

The default is /NODISABLE_SWAPPING.

/ENABLE_GENERIC_PRINTING
/NOENABLE_GENERIC_PRINTING

Specify whether files queued to a generic queue can be placed in this physical-device queue for printing.

The default is /ENABLE_GENERIC_PRINTING.

/FLAG
/NOFLAG

Specify whether a header page is printed at the beginning of the first file in each print job.

The default is /NOFLAG.

/FORMS_TYPE=n

Specifies the forms type for a specified queue. Once a queue has been assigned a forms type, all jobs in that queue that do not conform to that forms type are placed in a hold state.

Specify the forms type using a numeric value or an alphanumeric code. Codes for forms type are installation-specific.

/GENERIC
/NOGENERIC

Specify that this a generic queue and any files placed in this queue can be moved for printing to any available physical-device queue that has matching characteristics.

The default is /NOGENERIC.

/JOB_LIMIT=n

Indicates the number of batch jobs that can be executed concurrently from the queue. The job limit default value (n) is 1.

/PRIORITY=n

Specifies the base process priority at which jobs are initiated from batch queue. The default priority value (n) is 4.

/PROCESS=process-name

Allows users to specify their own print symbionts. Specify the print symbiont name using 1 through 15 character(s). The system will supply the device and directory name SYS$SYSTEM and the file type EXE.

/TERMINAL

Indicates that the generic queue will be associated with terminals instead of line printers. The /TERMINAL qualifier allows all jobs entered in the queue to be moved to any physical-device queue associated with a terminal that has matching characteristics.

/WSDEFAULT=n

Defines a working set default for a batch job. Use this qualifier to override the value in the user authorization file.

A positive integer in the range 1 through 65535, 0, or the word NONE may be specified for n. Specify 0 or NONE and the working set default value becomes the value specified either in the user authorization file or by the SUBMIT command (if specified). For more information refer to Table 8-2 below.

/WSQUOTA=n

Defines the working set page size for a batch job. This is called the working set quota. Use this qualifier to override the value in the user authorization file.

Specify a positive integer in the range 1 through 65535, 0, or the word NONE as the value for n. If 0 or NONE is specified for n, the working set quota defaults to the value specified either in the user authorization file or by the SUBMIT command (if specified). For more information refer to Table 8-2 below.

Table 8-2
Working Set Default and Working Set Quota Decision Table

Value specified by SUBMIT command	Value specified for queue?	Action taken
No	No	Use UAF value
No	Yes	Use value for queue
Yes	Yes	Use smaller of the two
Yes	No	Compare specified value with UAF value; use smaller

A working set default size and a working set quota (maximum size) are included in each user record in the system user authorization file (UAF), and can be specified for individual jobs and/or for all jobs in a given queue. The above decision table shows the action taken for different combinations of specifications that involve working set size and working set quota values.

Examples

1.
```
$ INITIALIZE/QUEUE/BATCH/JOB_LIMIT=4 SYS$BATCH
$ START/QUEUE SYS$BATCH
$ INITIALIZE/QUEUE/FLAG  LPA0
$ START/QUEUE  LPA0
```

   This sequence of commands initializes and starts the batch queue SYS$BATCH and the print queue LPA0. The /JOB_LIMIT=4 qualifier allows as many as four batch jobs to be initiated concurrently from the batch queue. The /FLAG qualifier causes a header page to precede each print job in the print queue.

2.
```
$ INITIALIZE/QUEUE  TESTER
$ INITIALIZE/QUEUE/FLAG  LPA0
$ ASSIGN/QUEUE  LPA0  TESTER
$ START/QUEUE  TESTER
$ START/QUEUE  LPA0
```

This sequence of commands causes all jobs queued to the logical queue TESTER to be printed on the print queue LPA0. The INITIALIZE commands initialize the logical queue TESTER and the print queue LPA0. The print queue LPA0 is enabled to print a header page at the beginning of the first file in each job. Next, the ASSIGN/QUEUE command associates the logical queue TESTER with the print queue LPA0. After the START commands are issued, all jobs queued to TESTER and LPA0 will be printed on LPA0.

8.6 REPLY

Description

This command is used by the operator to:

- Respond to user requests
- Respond to magnetic tape file system requests
- Display messages at a user's terminal
- Enable and disable operator status on a terminal
- Close the operator's log file and open a new one

Thus, the operator uses the REPLY command to communicate with system users.

Responding to User Requests: When a user issues the REQUEST/REPLY command, the process associated with the requesting user's terminal is put in a wait state until the operator responds using one of the following REPLY commands:

- REPLY/ABORT=identification-number "message-text"
- REPLY/PENDING=identification-number "message-text"
- REPLY/TO=identification-number "message-text"

The /ABORT qualifier indicates that the user's request has been canceled.

The /PENDING qualifier sends a message to the user and keeps the user's process in a wait state until the request can be fulfilled or aborted.

The /TO qualifier indicates that the user's request has been fulfilled.

When a user issues the REQUEST/REPLY command, the message appears at the system console terminal as follows:

```
Opcom, hh:mm:ss:cc Username    ACCNT=account-name  REPLY-ID=identification-number
Opcom, terminal-name:, "message-text"
```

The user cannot enter any further commands until the operator responds using the /ABORT or /TO qualifier or the user aborts the request. If the operator does not respond and the user does not abort the request, the request is repeated at 5-minute intervals on the operator's terminal until the operator replies.

Chapter 2 describes several procedures that require operator assistance so that users can gain access to tape and disk volumes. The REPLY command is an essential part of these procedures.

Responding to File System Requests: When a multivolume tape volume reaches end-of-tape, the magnetic tape file system suspends processing and sends a message to the operator to mount the next tape. The operator responds using one of the following REPLY commands:

- REPLY/TO=identification-number
- REPLY/TO=identification-number "label/INITIALIZE"
- REPLY/ABORT=identification-number

The /TO qualifier indicates that the file system request has been fulfilled. When the request from the magnetic tape file system specifies a volume label, the operator mounts the specified tape and issues the REPLY/TO command without including any message text. However, if the file system request does not specify a volume label, the operator mounts a scratch tape and issues the REPLY/TO command with the message "label/INITIALIZE". The double quotation marks are required syntax.

The /ABORT qualifier indicates that the file system request has been canceled.

For more information on operator responses to file system requests, see Chapter 2.

Displaying Messages at Users' Terminals: To contact one or more system users, the operator issues one of the following REPLY commands:

- REPLY/ALL "message text"
- REPLY/TERMINAL=(terminal-name[,...]) "message text"
- REPLY/USER "message text"

The /ALL qualifier sends a message to all terminals that are online and connected to the VAX/VMS system. Generally, to broadcast an important message, such as a message that indicates a system shutdown, the operator specifies the /ALL qualifier.

The /TERMINAL qualifier sends a message to one or more specific terminals on the system.

The /USER qualifier sends a message to all terminals at which system users are logged in.

Note that the /TO qualifier is not used here because the operator is not replying to a specific request from either the file system or a user.

Enabling and Disabling Operator Status on a Terminal: Any terminal connected to the VAX/VMS operating system can be established as an operator's terminal. The operator logged into an account with operator privilege enters the REPLY/ENABLE command at the designated terminal, then that terminal can be used to respond to user requests and monitor device status.

Operator messages are printed on the system console terminal unless it is explicitly disabled as an operator's terminal.

When the operator enters the REPLY/ENABLE command, OPCOM confirms that the terminal has been enabled by displaying the following message:

```
Opcom, dd-mmm-yyyy hh:mm:ss.cc, terminal enabled, operator=operator-name

Opcom, hh:mm:ss.cc, Operator terminal status, operator-name
CENTRAL, PRINTER, TAPES, DISKS, DEVICES, CARDS, NETWORK.
OPER (1,2,3,4,5,6,7,8,9,10,11,12)
```

When the operator enters the REPLY/DISABLE command, OPCOM confirms that the terminal is no longer an operator terminal by displaying the following message:

```
Opcom, hh:mm:ss.cc, terminal disabled, operator=operator-name
```

To grant specific operator status on a particular terminal, the operator includes one or more keywords after the /ENABLE qualifier. For example, to establish a terminal as an operator terminal that receives messages pertaining to mounting and dismounting tapes, the operator types:

```
$ REPLY/ENABLE=TAPES

   Opcom, 1-AUG-1980 18:40:28.37, terminal enabled, operator=_TTE3:
$
   Opcom, 18:40:31.47, Operator terminal status, _TTE3:  TAPES,
```

OPCOM confirms that the terminal has operator status for tape messages.

To discontinue communication with a particular facility, the operator includes one or more keywords after the /DISABLE qualifier. For example, to inhibit an operator terminal from receiving messages pertaining to mounting and dismounting disks, the operator types the following command:

```
$ REPLY/DISABLE=DISKS

   Opcom, 18:44:04.48, Operator terminal status, _TTE5:
   CENTRAL, PRINTER, TAPES, DEVICES, CARDS, NETWORK,
   OPER(1,2,3,4,5,6,7,8,9,10,11,12)
```

Note that OPCOM lists the specific operator status still assigned to the terminal.

When an operator disables operator status on all terminals, including the system console terminal, OPCOM records all subsequent user requests in the operator log file and responds to these requests with the following message:

```
%OPCOM-S-OPRNOTIF, operator notified, waiting. hh.mm.ss.cc
%OPCOM-S-OPREPLY, no operator response text
%OPCOM-S-NOPERATOR, no operator coverage
```

To determine the operator status and obtain a list of pending requests for a particular terminal, the operator types the following command:

```
$ REPLY/STATUS
```

This command also shows all outstanding requests for this operator.

Closing the Operator's Log File and Opening a New One: To close the current operator's log file and open a new one, the operator issues the REPLY/LOG command. All subsequent messages are recorded in the new log file. To close the current log file without opening a new one, the operator issues the REPLY/NOLOG command. All subsequent messages are not recorded until the operator issues the REPLY/LOG command.

For more information about the operator log file, see Chapter 6. To examine the contents of the operator's log file, use the procedure documented in Chapter 6.

Format

```
REPLY     [message-text]

Command Qualifiers                          Defaults

/ABORT=identification-number                 None.
/ALL
/BELL
/DISABLE[=(keyword[,...])]
/ENABLE[=(keyword[,...])]
/[NO]LOG
/PENDING=identification-number
/STATUS
/TERMINAL=(terminal-name[,...])
/TO=identification-number
/USER
```

Prompts

None.

Command Parameters

message-text

Indicates the message to be displayed at one or more user's terminals. The maximum length of a message is 128 characters; if this limit is exceeded, an error occurs. When a message consists of more than one word, the message should be enclosed within quotation marks.

Use the "label/INITIALIZE" message with the REPLY/TO command to initialize a volume requested by the magnetic tape file system whenever the file system request to mount a volume does not specify the volume label.

Command Qualifiers

/ABORT=identification-number

Sends a message to the user or magnetic tape file system corresponding to the unique identification number and aborts the request.

/ALL

Broadcasts a message to all terminals that are attached to the system, that have broadcast message reception enabled, and that are turned on.

/BELL

Rings a bell at a terminal as it receives a message. This qualifier can be specified with one of the following qualifiers:

```
/ALL
/TERMINAL=(terminal-name[,...])
/USER
```

/DISABLE[=(keyword[,...])]

Restores to normal status (that is, nonoperator status) a terminal at which the command is issued or whose name is specified. The REPLY/DISABLE command cannot be issued from a batch job.

To restrict the types of messages displayed on an operator's terminal, specify one or more of the keywords in Table 8-3 at the end of this section.

If no keywords are specified, all operator characteristics are disabled. If more than one keyword is specified, separate each with a comma and enclose the entire list in parentheses.

/ENABLE[=(keyword[,...])]

Designates the terminal at which the command is issued to be an operator's terminal. The REPLY/ENABLE command cannot be issued from a batch job.

To designate a terminal to receive messages from a particular facility, specify one or more of the keywords in Table 8-3 at the end of this section.

/LOG
/NOLOG

Control whether a new operator's log file is opened. The /LOG qualifier closes the current log file and opens a new one. The operator can examine the contents of the previous log file.

The /NOLOG qualifier closes the current log file but does not open a new one. Hence, no messages are recorded until the operator opens another log file.

/PENDING=identification-number

Sends a message to the user indicated by the unique identification number and keeps the process from which the request was issued in a wait state. The user cannot enter other commands until the operator fulfills or aborts the request.

/STATUS

Reports the current operator status and all outstanding user requests for the terminal from which this command was entered.

/TERMINAL=(terminal-name[,...])

Broadcasts a message to one or more specified terminals. If more than one terminal is specified, separate them with commas and enclose the entire list within parentheses.

/TO=identification-number

Sends a message to the user or file system indicated by the identification number and completes the request.

/USER

Broadcasts a message to all terminals at which users are logged in to the system.

Table 8-3
REPLY/ENABLE and REPLY/DISABLE Keywords

Keyword	Function
CENTRAL	Inhibits/allows messages sent to the operator identified as the central system operator.
DEVICES	Inhibits/allows messages pertaining to mounting disks and tape volumes.
DISKS	Inhibits/allows messages pertaining to mounting and dismounting disk volumes
NET	Inhibits/allows messages pertaining to networks. The CENTRAL keyword must also be specified to inhibit network messages.
OPER1 through OPER12	Inhibits/allows messages sent to operators identified as OPER1, OPER2,..., OPER12.
PRINTER	Inhibits/allows messages pertaining to print requests.
TAPES	Inhibits/allows messages pertaining to mounting and dismounting tape volumes.

Examples

1. $REPLY/ALL/BELL "SYSTEM GOING DOWN FOR BACK-UP. PLEASE LOG OFF."

   This command broadcasts a message to all terminals on the system. This message is prefixed with terminal name, the user name of the sender, and, when DECnet is installed, the node name.

2.
```
$ REPLY/ENABLE=DISKS
   Opcom, 14-JUN-1980  10:21:56.04, terminal enabled, operator=_TTA3:
$
   Opcom, 10:22:01.03, Operator terminal status, _TTA3:
   DISKS,
```

The REPLY/ENABLE command designates the terminal TTA3 as an operator terminal that receives messages pertaining to mounting and dismounting disks. The OPCOM message confirms that terminal TTA3 is established as an operator's terminal.

3.
```
$  Opcom, 13:01:43.22, RALPH ACCNT=DOCUMENT REPLY-ID=57
   Opcom, "TTA1":, "PLEASE MOUNT OPGUIDE ON DBA3:"
$ REPLY/PENDING=57 "YOU'LL HAVE TO WAIT-THERE ARE SEVERAL REQUESTS BEFORE YOURS"
   .
   .
   .
$ REPLY/TO=57

   Opcom, 13:11:14.55, REQUEST COMPLETED, operator=TTA4: ID=57
```

The OPCOM message indicates that a user wants the operator to place the disk volume labeled OPGUIDE on the disk drive DBA3 and ready the device. The REPLY/PENDING command indicates that the operator can perform the task but not immediately; the /PENDING qualifier keeps the process associated with the user in a wait state. Therefore, the user cannot enter other commands until the operator fulfills or aborts the request. The operator later mounts the specified disk on the specified drive and sends a message to the user indicating that the request has been fulfilled. When no message accompanies the REPLY/TO command, OPCOM sends a standard message indicating that the task has been performed.

4.
```
$ REPLY/STATUS
   Opcom, 15:25:43.73, Operator terminal status, _TTE3:
   CENTRAL, PRINTER, TAPES, DISKS, DEVICES, CARDS, NETWORK
   OPER(1,2,3,4,5,6,7,8,9,10,11,12)
```

The REPLY/STATUS command requests that the operator terminal status for terminal TTE3 be displayed. The response from OPCOM indicates that terminal TTE3 is enabled to receive messages from all devices.

5.
```
$ REPLY/BELL/TERMINAL=TTC1:  "YOUR FILE HAS COMPLETED PRINTING.  BOB S."
```

This REPLY command sends a message to the user logged in at terminal TTC1. When the message is displayed, a bell rings at that terminal.

6.
```
$ REPLY/ENABLE
$
   Opcom, 15:00:24.69, terminal enabled, operator=_TTC0:
$
   Opcom, 15:00:27.53 Operator terminal status, _TTC0:
   CENTRAL, PRINTER, TAPES, DISKS, DEVICES, CARDS, NETWORK,
   OPER(1,2,3,4,5,6,7,8,9,10,11,12)
   .
   .
   .
$ REPLY/DISABLE=(PRINTER, TAPES)
   Opcom, 17:14:36.39, Operator terminal status, _TTC0:
   CENTRAL, DISKS, DEVICES, CARDS, NETWORK,
   OPER(1,2,3,4,5,6,7,8,9,10,11,12)
```

The REPLY/ENABLE command designates terminal TTC0 to receive messages from all facilities. Later, the REPLY/DISABLE command selectively disables TTC0 from receiving messages pertaining to print devices and tapes.

8.7 SET

Description

The Set command options allow the operator to establish or change the characteristics of a process, job, or device.

The Set command options described on the following pages are confined to those options that require privileges not normally given to users. The options that do not require special privileges are described under the Set command in the VAX/VMS Command Language User's Guide. Table 8-4, below, lists all Set command options.

Format

```
SET     option

Options

ACCOUNTING
DEVICE
LOGINS
PRINTER
PROTECTION/DEVICE
TIME
UIC
```

Prompts

What: option

Table 8-4
Options for the Set Command

Option	Description
ACCOUNTING	Selectively enables or disables the recording of particular kinds of accounting information
CARD_READER[1]	Defines the translation mode for a card reader
[NO]CONTROL_Y[1]	Enables or disables the use of the <CTRL/Y> function key to interrupt an image
DEFAULT[1]	Changes the default directory and/or disk device used to locate and catalog files

1. Described in the VAX/VMS Command Language User's Guide.

(continued on next page)

Table 8-4 (Cont.)
Options for the Set Command

Option	Description
DEVICE	Establishes the spooling and error-logging status on a device
HOST[1]	Establishes a virtual communication link between a terminal and a network node to which the terminal is not directly connected
LOGINS	Establishes the maximum number of users able to log in to the system
MAGTAPE[1]	Defines the density of a magnetic tape device or rewinds a tape
MESSAGE[1]	Overrides or supplements system messages
[NO]ON[1]	Suppresses or restores command interpreter error-checking in a command procedure
PASSWORD[1]	Allows users to change their own passwords
PRINTER	Establishes the characteristics of a specific line printer
PROCESS[1]	Defines execution characteristics of a process
PROCESS/PRIORITY[1]	Changes the base priority of a process
PROTECTION[1]	Changes the protection applied to a file or a group of files, restricting or allowing access to the file by different categories of users
PROTECTION/DEFAULT[1]	Establishes the default protection for all files subsequently created during the terminal session or batch job
PROTECTION/DEVICE	Establishes the protection for a non-file-structured device
QUEUE/ENTRY[1]	Changes the current status or attributes of jobs that have not yet been processed, but are in print or batch queues

1. Described in the VAX/VMS Command Language User's Guide.

(continued on next page)

Table 8-4 (Cont.)
Options for the Set Command

Option	Description
RMS_DEFAULT[1]	Defines default multiblock and multibuffer counts for VAX-11 RMS file operations
TERMINAL[1]	Defines the characteristics of a terminal
TIME	Resets the system time
UIC	Establishes a new user identification code (UIC) as the process UIC
[NO]VERIFY[1]	Suppresses or causes all command lines in command procedures subsequently executed to be displayed at the terminal or printed in a batch job
WORKING_SET[1]	Establishes a default working set size for images executed in the current process

1. Described in the VAX/VMS Command Language User's Guide.

SET ACCOUNTING

8.7.1 SET ACCOUNTING

Description

This command enables or disables the logging of various activities in the accounting log file (SYS$SYSDISK:[SYSMGR]ACCOUNTING.DAT). The operator also can use SET ACCOUNTING to close the current accounting log file and to open a new one with a version number incremented by 1.

As described in the VAX/VMS System Manager's Guide, when the operator enables accounting by use of the /ENABLE qualifier, the following types of accounting records can be recorded in the accounting file:

1. Records written when interactive processes terminate
2. Records written when batch processes terminate
3. Records written when subprocesses or detached processes terminate
4. Records written when printing jobs are completed
5. Records written when login failures occur
6. Records written when users' messages are sent to the accounting file

Note that when the system is initially bootstrapped all accounting is enabled. Accounting must be explicitly disabled.

For a detailed description of the accounting log file records, see the discussion of the Send Message to Accounting Manager System Service in the VAX/VMS System Services Reference Manual or the VAX/VMS System Manager's Guide.

Format

```
SET ACCOUNTING

Command Qualifiers                          Defaults

/DISABLE[=(keyword[,...])]                  None.
/ENABLE[=(keyword[,...])]
/NEW_FILE
```

Prompts

None.

Command Parameters

None.

Command Qualifiers

/DISABLE[=(keyword[,...])]

Disables the logging of all activities in the accounting log file. To disable specific activities selectively, the operator includes one or more keywords with /DISABLE. When more than one keyword is specified, each is separated by a comma and the entire list is enclosed in parentheses. Table 8-5 lists and describes the activities that can be disabled.

/ENABLE[=(keyword[,...])]

Enables the logging of all activities in the accounting file. To enable specific activities selectively, the operator includes one or more keywords with /ENABLE. When more than one keyword is specified, each is separated by a comma and the entire list is enclosed within parentheses. Table 8-5 lists and describes the activities that can be enabled.

/NEW_FILE

Closes the current accounting file named ACCOUNTNG.DAT, and opens a new version of that file.

Table 8-5
SET ACCOUNTING/DISABLE and SET ACCOUNTING/ENABLE Keywords

Keyword	Function
BATCH	Inhibits/allows the recording of batch job termination
INTERACTIVE	Inhibits/allows the recording of interactive job termination
LOGIN_FAILURE	Inhibits/allows the recording of login failures
PRINT	Inhibits/allows the recording of all print jobs
PROCESS	Inhibits/allows the recording of all process termination

Examples

1. $ SET ACCOUNTING/ENABLE=(BATCH,INTERACTIVE)

   This command requests that all batch and interactive jobs be recorded in the accounting file at job termination.

2. $ SET ACCOUNTING/NEW_FILE

   This command closes the current accounting file and creates a new version of it.

SET DEVICE

8.7.2 SET DEVICE

Description

This command establishes a print device or terminal as a spooled device or establishes the status of error-logging for a device.

When the operator specifies the /SPOOLED qualifier, program output that uses RMS or FCS and specifies the print device name is written onto an intermediate disk rather than written directly to the print device or terminal.

When the operator specifies the /ERROR_LOGGING qualifier, all error messages reported by the device on which error-logging is enabled, are recorded in the error log file.

Format

```
SET DEVICE device-name[:]

Command Qualifiers                                          Defaults

/[NO]SPOOLED[=(queue-name,intermediate-disk-name[:])]       None.
/[NO]ERROR_LOGGING
```

Prompts

Device: device-name[:]

Command Parameters

device-name[:]

Specifies the name of the device whose spooling or error-logging status is to change. The device must be a print device or a terminal if its spooling status is to change; the device must be a disk, or magnetic tape if its error-logging status is to change.

Command Qualifiers

/SPOOLED[=(queue-name[:],intermediate-disk-name[:])]
/NOSPOOLED

Control whether files will be spooled to an intermediate disk.

The queue name indicates the print queue to which a file is queued. If a queue name is not supplied, it defaults to the name of either the print device or terminal.

The intermediate disk name identifies the disk to which the spooled files are written. If the intermediate disk name is not supplied, it defaults to SYS$DISK (the current default disk). The intermediate disk must be mounted before files can be written to it.

Once the device has been set spooled to a disk, that disk cannot be dismounted until the spooled device is set /NOSPOOLED. All channels must be deassigned from a print device before its spooling characteristics can be changed. Also, the queue that is assigned to the device must be stopped.

/ERROR_LOGGING
/NOERROR_LOGGING

Control whether device errors are logged in the error log file.

By default, when the system is bootstrapped, error-logging is enabled. The current status can be determined with the SHOW DEVICE/FULL command.

Examples

1. $ SET DEVICE/SPOOLED=(LPA0) LPA0:

   In this command, the /SPOOLED qualifier requests that the print queue LPA0 be spooled to an intermediate disk before files directed to the disk are printed. Because no intermediate disk was specified, the intermediate disk defaults to SYS$DISK.

2. $ SET DEVICE/ERROR_LOGGING DBB2:

   This command requests that all device errors reported on DBB2 be logged in the error log file.

SET LOGINS

8.7.3 SET LOGINS

Description

This command imposes a limit on the number of users who can gain access to the operating system. This command also displays the current interactive level as described below.

The SET LOGINS command is not retroactive. Therefore all users logged in to the system before the operator issues the SET LOGINS command are not affected by the command. However, once the limit set by the operator is reached, no more users can log in to the system until someone else logs out. Users with the OPER privilege are not affected by the limit.

The SET LOGINS command, when issued without the /INTERACTIVE command qualifier, has no effect.

If the operator does not specify a value for n in the /INTERACTIVE=n qualifier, the SET LOGINS command displays the following information:

```
Login quotas - Interactive limit=x, Current interactive value=y
```

The value x represents the current interactive limit, and the value y represents the number of users currently logged in to the system.

Format

SET LOGINS	
Command Qualifiers	Defaults
/INTERACTIVE[=n]	None.

Prompts

None.

Command Parameters

None.

Command Qualifiers

/INTERACTIVE[=n]

Establishes the number of interactive users allowed to gain access to the system. When the operator does not supply a value for the n, SET LOGINS displays the current status of the login quotas.

Examples

1. $ SET LOGINS/INTERACTIVE=5

   Login quotas - Interactive limit=5, Current interactive value=3

   This command specifies that only five interactive users can be logged in to the system.

2. $ SET LOGINS/INTERACTIVE

   Login quotas - Interactive limit=15, Current interactive value=4

   When the SET LOGINS command is issued without a parameter, the /INTERACTIVE qualifier requests that the current status of the login quotas be displayed. The message returned indicates that the maximum number of interactive users allowed on the system is 15 and that the number of interactive users currently logged in is 4.

SET PRINTER

8.7.4 SET PRINTER

Description

This command establishes the characteristics of a specific line printer. The defaults listed below are the defaults for an initially bootstrapped system.

Format

```
SET PRINTER printer-name[:]

Command Qualifiers                      Defaults

/[NO]CR                                 /NOCR
/[NO]FF                                 /FF
/LA11
/LA180
/[NO]LOWERCASE                          /NOLOWERCASE
/LP11                                   /LP11
/PAGE=n                                 /PAGE=64
/UNKNOWN
/[NO]UPPERCASE                          /UPPERCASE
/WIDTH=n                                /WIDTH=132
```

Prompts

Device: printer-name[:]

Command Parameters

printer-name[:]

Specifies the name of a line printer that will have its characteristics set or modified. If the printer is set /SPOOLED, the logical I/O privilege (LOG_I/O) is required to modify its characteristics.

Command Qualifiers

/CR
/NOCR

Control whether the printer driver outputs a carriage return character; this characteristic is set for printers on which line feeds do not imply carriage returns.

Specify /NOCR for printers where the line feed, form feed, vertical feed, and carriage return characters empty the printer buffer, so carriage return characters will be held back and output only if the next character is not a form feed or vertical tab. Carriage return characters are always output on devices that have the carriage return function characteristic set.

The default is /NOCR.

/FF
/NOFF

Indicate whether the printer performs a mechanical form feed. Use the /NOFF qualifier when the printer does not automatically perform mechanical form feeds. This qualifier allows the driver to convert form feeds into multiple line feeds and to output them.

The default qualifier is /FF.

/LA11

Allows the operator to set the appropriate printer type when the printer is an LA11 line printer. This qualifier provides information for the SHOW PRINTER command which in turn provides the user with information about specific printers.

/LA180

Allows the operator to set the appropriate printer type when the printer is an LA180 line printer. This qualifier provides information for the SHOW PRINTER command which in turn provides the user with information about specific printers.

/LOWERCASE
/NOLOWERCASE

Indicate whether the printer prints lowercase or just uppercase alphabetic letters. When the operator specifies the /NOLOWERCASE, all alphabetic characters are translated to uppercase.

The /[NO]LOWERCASE and /[NO]UPPERCASE qualifiers are complementary. That is, /LOWERCASE is equivalent to /NOUPPERCASE, and /NOLOWERCASE is equivalent to /UPPERCASE.

The default is /NOLOWERCASE.

/LP11

Allows the operator to set the appropriate printer type when the printer is an LP11 line printer. This qualifier provides information for the SHOW PRINTER command which in turn provides the user with information about specific printers.

/PAGE=n

Establishes the number of lines per page on the currently installed forms; the number of lines can range between 0 and 255. The print symbiont uses this value to determine when to perform an automatic form feed. The printer driver uses this value as described by the /NOFF qualifier to determine the number of line feeds that must be issued to simulate a form feed.

The default value is 64 lines per page.

/UNKNOWN

Allows the operator to set the appropriate printer type when the printer is an unknown printer type. This qualifier provides information for the SHOW PRINTER command which in turn provides the user with information about specific printers.

/UPPERCASE
/NOUPPERCASE

Indicate whether the printer prints lowercase or just uppercase alphabetic characters. When the operator specifies /UPPERCASE, all alphabetic characters are translated to uppercase.

The /[NO]UPPERCASE and /[NO]LOWERCASE qualifiers are complementary. That is, /UPPERCASE is equivalent to /NOLOWERCASE, and /NOUPPERCASE is equivalent to /LOWERCASE.

The default is /UPPERCASE.

/WIDTH=n

Establishes the number of characters per output line on currently installed forms, where the width, n, can range between 0 and 65535.

The default value is 132 characters per line.

Examples

1. $ SET PRINTER/PAGE=60/WIDTH=80 LPA0:

   The SET PRINTER command establishes the size of an output page as 60 lines and the width of a line as 80 characters.

2. $ SET PRINTER/LA11 LPB0:

   The SET PRINTER command establishes the line printer LPB0 as an LA11 printer.

3. $ SET PRINTER/LOWERCASE LPA0:

   The SET PRINTER command requests that lowercase printing be enabled on line printer LPA0.

SET PROTECTION/DEVICE

8.7.5 SET PROTECTION/DEVICE

Description

This command establishes the protection to be applied to a specific non-file-structured device. The protection for the device thus limits the type of access available to users.

Devices can be accessed by users in four categories:

- System -- all users who have group numbers of 0 through 10 octal and users with physical or logical I/O privilege (generally, system managers, system programmers, and operators). The above group number for system users is the default group number. The group number parameter can be changed at system generation time to any octal value in the 0 through 377 range.
- Owner -- the user identification code (UIC) of the person who issued the SET PROTECTION command and therefore owns the device.
- Group -- all users who have the same group number in their UICs as the owner of the device.
- World -- all users who do not fall into the categories above.

For shareable devices (such as the LPA-11), each category of users below can be allowed or denied one of the following types of access:

- Read -- the right to issue read requests to the device
- Write -- the right to issue write requests to the device
- Logical I/O -- the right to issue logical I/O requests to the device
- Physical I/O -- the right to issue physical I/O requests to the device

For nonshareable devices, such as terminals and card readers, each category of users either can be allowed or denied access to allocate and assign channels to the device. The Read category controls whether a user can allocate and assign channels to the device. All other categories are not relevant for nonshareable devices.

Any combination of access types can be specified for any category of user.

When the operator specifies a user access code, the code must be abbreviated to one character. The abbreviations are:

READ	R
WRITE	W
LOGICAL I/O	L
PHYSICAL I/O	P

The user-access codes and user categories can be specified in any order. If the operator omits a user access code for a user category, that category of user is denied that type of access. If the operator omits a user category, the user category is allowed all access.

To specify a protection code, the operator separates the user category from the access type with a colon. To specify more than one user category, separate each category by a comma and enclose the entire protection encoding in parentheses.

Format

```
SET PROTECTION[=code]/DEVICE device-name[:]

Command Qualifiers        Defaults

/OWNER_UIC=uic            None.
```

Prompts

File: device-name[:]

Command Parameters

code

Establishes the protection code for a device. The protection code defines the user and type of access allowed the user. The code should be specified according to the syntax rules explained in the "Description" section.

If the operator does not specify a protection code, no protection checks are made and all users are allowed to gain access to the device.

device-name[:]

Specifies the name of the device whose protection is to be set or modified. The device must be a non-file-structured device.

Command Qualifiers

/OWNER_UIC=uic

Requests that the identification code be assigned ownership of the device for the purpose of access checks. The default owner is the UIC of the process issuing the SET PROTECTION command.

Specify the UIC in the format:

[group,member]

In this format, group is an octal number from 0 through 377 representing the user's group number; and member is an octal number from 0 through 377 representing the user's member number.

The square brackets ([ ]) are required to enclose the UIC.

Examples

1. $ SET PROTECTION=(SYS:RWLP,OWN:RWLP,G:,W:)/DEVICE LAA0:

   This command requests that the protection for device LAA0 be set to allow all types of access to system processes and processes with the UIC of the current process and to deny access to anyone else.

2. $ SET PROTECTION=(SYS:,OWN:RWLP,G:,W:)/DEVICE/OWNER_UIC=[103,4] LAB0:

   This command requests that the protection for device LAB0 be set to allow all types of access to processes with a UIC of [103,4] and to deny access to anyone else.

3. $ SET PROTECTION=(SYS:R,O:G:,W:)/DEVICE/OWNER_UIC=[1,4] TTA1:

   This command requests that the protection for the terminal TTA1 is to be set to allow only system processes to allocate the device and denies accessibility to the device to anyone else. This type of protection is recommended for interactive terminals, if a secure system is desired. Note that the above protection code only restricts which users can allocate the device, but does not restrict users from logging in to the device.

SET TIME

8.7.6 SET TIME

Description

Resets the system time. The system time is used for all time-dependent activities in the VAX/VMS system.

Format

SET TIME=time	
Command Qualifiers	Defaults
None.	None.

Prompts

None.

Command Parameters

=time

The VAX/VMS system contains an interval clock, which is used both, as a timer to record intervals between various internal events and as the source clock for displaying the time of day.

The SET TIME command allows the operator to reset the system time. However, both, OPER and LOG_IO privileges are required.

To reset the system time, type the SET TIME command followed by an explicit time value expressed in the standard absolute time format, described below. The interval system clock is reset to the time specified.

The date, the time, or both can be specified. The following format is used to specify the absolute time parameter:

[dd-mmm-yyyy[:]] [hh:mm:ss.c]

Field	Description
dd	Day of the month (1 through 31)
mmm	Month; must be specified using one of the 3-character abbreviations listed below: JAN, FEB, MAR, APR, MAY, JUN JUL, AUG, SEP, OCT, NOV, DEC
yyyy	Year

Field	Description
hh	Hour of the day (0 through 23)
mm	Minute of the hour (0 through 59)
ss	Seconds (0 through 59)
c	Hundredths of seconds (0 through 99)

Note that the period between seconds and hundredths of seconds is a delimiter; it is not a decimal point. For further information on absolute time format, refer to the VAX/VMS Command Language User's Guide.

Examples

1.
```
$ SET TIME = 3:21:24.03

$ SHOW TIME

19-JAN-1980 3:22:19.53
```

The SET TIME command sets the system time to the specified time. The operator requests a display of the current time with the SHOW TIME command.

SET UIC

8.7.7 SET UIC

Description

This command establishes a new user identification code as the default. The operator uses the SET UIC command to gain access to a restricted file; that is, a file contained in a directory whose protection restricts access to the owner of that directory.

Use of this command requires change-mode-to-kernel (CMKRNL) privilege.

By default, the SET UIC command changes the default directory name to the UIC supplied. Hence, to set the default directory to a code different from the UIC, the operator must issue the SET DEFAULT command after the SET UIC command.

Format

SET UIC uic

Command Qualifiers	Defaults
None.	None.

Prompts

File: uic

Command Parameters

uic

Specifies the group number and member number. The format for the UIC is:

[group,member]

In this format, group is an octal number from 0 through 377 representing the user's group number; and member is an octal number from 0 through 377 representing the user's member number.

Enclose the UIC within square brackets or angle brackets.

Examples

1. $ SET UIC [370,10]

   This command establishes the operator's UIC as [370,10]. The operator can now read or modify any files whose access is restricted to this UIC.

2. $ SET UIC [214,4]
   $ SET DEFAULT [ANDERS]

   The SET UIC command sets the operator's UIC to [214,4]; the SET DEFAULT command sets the default directory name to [ANDERS].

START/QUEUE

8.8 START/QUEUE

Description

This command starts or restarts specific print and batch queues. The operator uses the START/QUEUE to start executing or printing jobs in a newly created queue or to restart executing or printing jobs in an existing queue that was previously stopped.

To start a newly created queue, the operator must first initialize the queue with the INITIALIZE/QUEUE command. Note that any qualifier specified with the INITIALIZE/QUEUE command also can be specified with the START/QUEUE command. Also, this command can override options that are common to itself and the INITIALIZE/QUEUE command such as /ENAB-GEN, /BURST and /FORMS.

Format

```
START/QUEUE  queue-name[:]

Command Qualifiers                          Defaults

/BACKSPACE
/BATCH
/[NO]BURST                                  /NOBURST
/CHARACTERISTICS=(c[,...])
/CPUDEFAULT=t
/CPUMAXIMUM=t
/[NO]DISABLE_SWAPPING                       /NODISABLE_SWAPPING
/[NO]ENABLE_GENERIC_PRINTING                /ENABLE_GENERIC_PRINTING
/[NO]FLAG                                   /NOFLAG
/FORMS_TYPE=n
/[NO]GENERIC                                /NOGENERIC
/JOB_LIMIT=n                                /JOB_LIMIT=1
/NEXT
/PRIORITY=n                                 /PRIORITY=4
/PROCESS=process-name
/TERMINAL
/TOP_OF_FILE
/WSDEFAULT=n
/WSQUOTA=n
```

Prompts

Queue: queue-name[:]

Command Parameter

queue-name[:]

Specifies the name of a queue to be started or restarted.

Command Qualifiers

/BACKSPACE

Backspaces one page before printing resumes. This qualifier is used in restarting a queue.

/BATCH

Indicates that this is a batch queue.

/BURST
/NOBURST

Control whether a burst header page is printed for each print job.

Use the /BURST qualifier to print a header page over the paper perforations; so that the page header is visible from the side of a stack of paper. Using this qualifier simplifies separating listings.

The default is /NOBURST.

/CHARACTERISTICS=(c[,...])

Specifies one or more desired characteristics for printing a file(s). If more than one characteristic is desired, separate each with a comma and enclose the list in parentheses. For further information on specifying characteristics, refer to the VAX/VMS System Manager's Guide.

/CPUDEFAULT=t

Defines the default CPU time limit for batch jobs.

Specify the value t with a delta time value, 0, or, either the word NONE or INFINITE. Both 0 and the word infinite allow a process unlimited CPU time when the CPU time limit is not restricted by the /CPUMAXIMUM qualifier or the value in the user authorization file. Specify NONE when a default CPU time limit is not desired.

The value for t cannot exceed the CPU time limit set by the /CPUMAXIMUM qualifier. For more information, refer to Table 8-1 in Section 8.5.

/CPUMAXIMUM=t

Defines the maximum CPU time limit for batch jobs. Use this qualifier to override the CPU time limit specified in the user authorization file.

Use a delta time value, 0, or the word NONE or INFINITE to specify the value t. The values 0 and INFINITE allow the process unlimited CPU time. Specify NONE when a maximum CPU time limit is not desired. For more information refer to Table 8-1 in Section 8.5.

/DISABLE_SWAPPING
/NODISABLE_SWAPPING

Control whether batch jobs executed from the queue can be swapped in and out of memory.

The default is /NODISABLE_SWAPPING.

/ENABLE_GENERIC_PRINTING
/NOENABLE_GENERIC_PRINTING

Specifies whether files queued to a generic queue can be placed in this physical-device queue for printing.

The default is /ENABLE_GENERIC_PRINTING.

/FLAG
/NOFLAG

Specifies whether a header page is printed at the beginning of the first file in each print job.

The default is /NOFLAG.

/FORMS_TYPE=n

Specifies the forms type for a specific queue. Once a queue has been assigned a forms type, all jobs in that queue that do not conform to that forms type are placed in a holding state.

Specify the forms type using a numeric value or an alphanumeric code. Codes for forms type are installation-specific.

/GENERIC
/NOGENERIC

Specifies that this is a generic queue and any files placed in this queue can be moved for printing to any available physical-device queue that has matching characteristics.

The default is /NOGENERIC.

/JOB_LIMIT=n

Indicates the number of batch jobs that can be executed concurrently from the batch queue. The job limit default value for n is 1.

/NEXT

Indicates whether the current job will be printed when the queue is restarted.

/PRIORITY=n

Specifies the base process priority at which jobs are initiated from this batch queue. The queue priority default value of n is 4.

/PROCESS=process-name

Allows users to specify their own print symbionts. Specify the print symbiont name using 1 through 15 character(s). The system will supply the device and directory name SYS$SYSTEM, and the file type EXE.

/TERMINAL

Indicates that the generic queue will be associated with terminals instead of print devices.

/TOP_OF_FILE

Prints, starting from the beginning of the job, the job that was being printed when the queue was stopped. This qualifier is used in restarting a queue.

/WSDEFAULT=n

Defines a working set default for a batch job.

A positive integer in the range 1 through 65535, 0, or the word NONE may be be specified for n. Specify 0 or NONE and the working default set value becomes the value specified either in the user authorization file or by the SUBMIT command (if specified). For more information, refer to Table 8-2 in Section 8.5.

/WSQUOTA=n

Defines a working set page size for a batch job.

A positive integer in the range 1 through 65535, 0, or the word NONE may be specified for n. If 0 or NONE is specified for n, the value for the working set quota is the value specified either in the user authorization file or by the SUBMIT command. For more information, refer to Table 8-2 in Section 8.5.

Examples

1.
```
$ START/QUEUE/BATCH SYS$BATCH
```

   This command starts the batch queue named SYS$BATCH. The /BATCH qualifier indicates that this is a batch queue.

2.
```
$ STOP/QUEUE  LPA0
$ START/QUEUE/TOP_OF_FILE  LPA0
```

   The STOP/QUEUE command suspends operation of the physical queue LPA0. Then the START/QUEUE/TOP_OF_FILE command resumes operation; however, the job currently printing is started again from the beginning.

3.
```
$ INITIALIZE/QUEUE LPA0
$ START/QUEUE/NOFLAG  LPA0
```

   The INITIALIZE/QUEUE command initializes the queue named LPA0. The START/QUEUE command then starts the queue. The /FLAG qualifier requests that a header page precede each job in the queue.

8.9 STOP/QUEUE

Description

This command suspends or controls operations of specific batch and print queues. When the operator issues the STOP/QUEUE command without including any qualifiers, the current queue is placed in a paused state.

To delete a queue, the operator must first stop the queue using STOP/QUEUE.

Format

```
STOP/QUEUE  queue-name[:]

Command Qualifiers                    Defaults

/ABORT                                None.
/ENTRY
/NEXT
/REQUEUE
```

Prompts

QUEUE: queue-name[:]

Command Parameter

queue-name[:]

Specifies the name of the queue to be stopped.

Command Qualifiers

/ABORT

Aborts a print job that is currently being printed; the next job in the print queue is then started without a pause or stop. The STOP/QUEUE/ABORT command is equivalent to the STOP/ABORT command. This command is fully described in the VAX/VMS Command Language User's Guide.

This qualifier can only be applied to jobs in a print queue.

/ENTRY

Terminates the execution of a batch job that is running. This qualifier terminates only jobs that are running. To delete an entry that is in a queue and awaiting execution, use the DELETE/ENTRY command. The STOP/QUEUE/ENTRY is equal to the STOP/ENTRY command described in the VAX/VMS Command Language User's Guide.

/NEXT

Inhibits further dequeueing from a specific queue. When /NEXT is specified, the current job is allowed to complete before the queue is stopped. When this qualifier is omitted, the queue is paused immediately.

/REQUEUE

Stops printing the current job, requeues the job, and gives it a priority of 1. The next job in the queue is immediately dequeued for printing. The STOP/QUEUE/REQUEUE command is equal to the STOP/REQUEUE command described in the VAX/VMS Command Language User's Guide.

Examples

1. $ STOP/QUEUE/ABORT LPA0

   This command aborts the job currently printing on LPA0. The next job in the queue then begins printing.

2. $ STOP/QUEUE/NEXT LPB0

   This command inhibits further printing of jobs in the queue LPB0; the /NEXT qualifier allows the current job to complete printing.

3. Opcom, 01:15:34.28, device is offline, LPA0

   $ STOP/QUEUE LPA0

   The OPCOM message indicates that print device LPA0 is malfunctioning. The operator issues the STOP/QUEUE command to suspend the queue associated with the malfunctioning print device and to find out what is wrong.

APPENDIX A

SUMMARY OF DCL COMMANDS

This appendix summarizes all DCL commands. For complete descriptions of commands not discussed in this manual, refer to the VAX/VMS Command Language User's Guide, unless noted otherwise.

Command	Description
@	Execute procedure; executes a command procedure or places data in a command file in the input stream
=	Arithmetic assignment; equates a local symbol name to an arithmetic expression or constant
==	Arithmetic assignment; equates a global symbol name to an arithmetic expression or constant
:=	String assignment; equates a local symbol name to any character string; defines a local symbol name as a synonym for all or a portion of a DCL command
:==	String assignment; equates a global symbol name to any character string; defines a global symbol name as a synonym for all or a portion of a DCL command
ALLOCATE	Reserves a device for use by a single user and, optionally, assigns a logical name to the device
ANALYZE	Describes the contents of an object file or the symbol information appended to a shareable image file
APPEND	Adds the contents of one or more files to the end of another file
ASSIGN	Defines a file specification or a device name to be associated with a logical name for subsequent use in commands or programs
ASSIGN/MERGE[1]	Removes all jobs from one print queue and places them in another queue

1. Described in this manual.

Command	Description
ASSIGN/QUEUE[1]	Assigns a device to a logical queue
BASIC	Invokes the VAX-11 BASIC compiler to enter and compile BASIC language source statements
BASIC/RSX11	Invokes the PDP-11 BASIC-PLUS-2 compiler to enter and compile BASIC language source statements
BLISS	Invokes the VAX-11 BLISS-32 compiler to compile one or more BLISS source programs
CANCEL	Halts periodic execution of an image scheduled for execution in a process
CLOSE	Cancels an input or output path to a sequential file or device
COBOL/C74	Invokes the VAX-11 COBOL-74 compiler to compile COBOL source statements
COBOL/RSX11	Invokes the PDP-11 COBOL-74/VAX compiler to compile COBOL language source statements
CONTINUE	Resumes execution of an interrupted command, program, or command procedure
COPY	Copies one or more files into one or more additional files
CORAL	Invokes the VAX-11 CORAL 66 compiler to compile one or more CORAL source language programs
CREATE	Creates a file from data entered at the terminal or in the input stream
CREATE/DIRECTORY	Defines a new directory or subdirectory for cataloging files
DEALLOCATE	Relinquishes use of a previously allocated device, thus making the device available to other users
DEASSIGN	Cancels a logical name assignment made with the ALLOCATE, ASSIGN, or DEFINE command
DEASSIGN/QUEUE[1]	Deassigns a device from a queue
DEBUG	Invokes the VAX-11 Symbolic Debugger to begin or continue interactive debugging
DECK	Marks the beginning of records to be read as the input data stream for a command (required only when data contains a dollar sign in the first position of any record)
DEFINE	Equates character strings with file specifications or logical names

1. Described in this manual.

Command	Description
DELETE	Removes a directory entry for a file or files and makes any data in the file(s) inaccessible
DELETE/ENTRY	Deletes an entry from a print or batch job queue or stops processing the current job
DELETE/QUEUE[1]	Deletes batch and print queues
DELETE/SYMBOL	Deletes a local or global symbol definition
DEPOSIT	Replaces the contents of a location in virtual memory with new data or instructions
DIFFERENCES	Compares the contents of two files and displays the differences between them
DIRECTORY	Displays information about a file or group of files
DISMOUNT	Releases the connection between a user and a disk or tape volume that is currently mounted on a device
DUMP	Displays data in ASCII, hexadecimal, octal, or decimal format
EDIT/EDT	Begins an interactive editing session with the EDT editor to create or modify a file
EDIT/SLP	Provides input to the batch editor, SLP
EDIT/SOS	Begins an interactive editing session with the SOS editor to create or modify a file
EDIT/SUM	Invokes the SUMSLP batch-oriented editor to update a single input file with multiple files of edit commands
EOD	Marks the end of an input data stream begun with the DECK command
EOJ	Signals the end of a batch job submitted through a card reader
EXAMINE	Displays the contents of a location in virtual memory
EXIT	Terminates an image or a command procedure processing at the current level
FORTRAN	Invokes the VAX-11 FORTRAN compiler to compile a set of FORTRAN language source statements.
GOTO	Transfers control to another statement in the command procedure
HELP	Displays information on the current output device from the system help files or any help library

Command	Description
IF ... THEN	Compares expressions consisting of symbolic or literal values or, command or program status values and performs a stated action as a result of the test
INITIALIZE	Deletes all existing data, if any, on a mass storage volume, writes a label on the volume, and readies the volume for new data
INITIALIZE/QUEUE[1]	Creates batch queues and print queues
INQUIRE	Requests interactive assignment of a variable value for a symbol name
JOB	Marks the beginning of a batch job submitted through a card reader
Lexical Functions	Alternate representations for symbols or expressions that return information about character strings and attributes of the current process
LIBRARY	Creates or modifies libraries of various kinds
LIBRARY/RSX11	Creates or modifies a macro library or a library of object modules
LINK	Binds one or more object modules into an executable or shareable program image
LINK/RSX11	Invokes the RSX-11M Task Builder to link one or more object modules into an executable image
Login Procedure	Initiates communication between a user and the system
LOGOUT	Terminates the communication between a user and the system
MACRO	Invokes the VAX-11 MACRO assembler to assemble a VAX-11 assembly language program
MACRO/RSX11	Invokes the MACRO-11 assembler to assemble a PDP-11 assembly language program
MAIL	Invokes the Personal Mail Utility which allows users to send messages to other users of the computer system.
MCR	Passes a command line to the RSX-11M Application Migration Executive (AME), or places the terminal in MCR command mode
MCR BAD[2]	See RUN SYS$SYSTEM:BAD

1. Described in this manual.

2. Described in the VAX-11 Utilities Reference Manual.

Command	Description
MCR DSC1[2]	See RUN SYS$SYSTEM:DSC1
MCR DSC2[2]	See RUN SYS$SYSTEM:DSC2
MCR VFY1[2]	See RUN SYS$SYSTEM:VFY1
MCR VFY2[2]	See RUN SYS$SYSTEM:VFY2
MESSAGE	Invokes the Message Utility to compile one or more files of message definitions
MOUNT	Makes a disk or tape volume available for the reading and writing of files and, optionally, assigns a logical name to the device on which the volume is mounted
ON ... THEN	Defines the action to be taken when a command or program incurs errors of particular severity levels, or when the <CTRL/Y> function key is used
OPEN	Establishes a path to a file or a device for input or output operations
PASCAL	Invokes the VAX-11 PASCAL compiler to compile one or more PASCAL source programs
PASSWORD	Provides a password associated with a job entered through a card reader
PATCH	Invokes the VAX-11 Image File Patch Utility to patch an executable image, shareable image, or system image
PRINT	Queues a file for printing on a device
PURGE	Deletes old versions of a file or files
READ	Reads the next record from a sequential file or device and equates the record data to a symbol name
RENAME	Changes the name of a file or group of files
REPLY[1]	Allows the operator to communicate with users, to selectively enable and disable operator status, and to examine the operator's log file
REQUEST	Displays a message at an operator's terminal
RUN (Image)	Places an executable image in execution in the current process
RUN (Process)	Creates a separate process to execute a specific image

1. Described in this manual.

2. Described in the VAX-11 Utilities Reference Manual.

Command	Description
RUN SYS$SYSTEM:BAD [2]	Locates and counts the bad blocks contained on Files-11 disks
RUN SYS$SYSTEM:DSC1 [2]	Transfers files contained on Files-11 Structure Level 1 disks to tapes or disks for back-up storage
RUN SYS$SYSTEM:DSC2 [2]	Transfers files contained on Files-11 Structure Level 2 disks to tapes or disks for back-up storage
RUN SYS$SYSTEM:VFY1 [2]	Checks the readability and validity of Files-11 Structure Level 1 disks
RUN SYS$SYSTEM:VFY2 [2]	Checks the readability and validity of Files-11 Structure Level 2 disks
RUN SYS$SYSTEM:INSTALL [3]	Installs or deletes known images
RUN SYS$SYSTEM:SYE [3]	Creates an error log report from a binary formatted file
SET	Changes the characteristics of a process, job, or device
SET ACCOUNTING [1]	Selectively enables or disables the recording of particular kinds of accounting information
SET CARD_READER	Defines the translation mode for a card reader
SET CONTROL_Y	Enables the use of the <CTRL/Y> function key to interrupt an image
SET DEFAULT	Changes the default devices and/or disk device used to locate and catalog files
SET DEVICE [1]	Establishes the spooling and error-logging status on a device
SET HOST	Establishes a virtual communication link between a terminal and a network node to which the terminal is not directly connected
SET LOGINS [1]	Establishes the maximum number of users able to log in to the system
SET MAGTAPE	Defines the density of a magnetic tape device or rewinds a tape
SET MESSAGE	Overrides or supplements system messages
SET NOCONTROL_Y	Disables the use of the <CTRL/Y> function key to interrupt an image

1. Described in this manual.

2. Described in the VAX/VMS Utilities Reference Manual.

3. Described in the VAX/VMS System Manager's Guide.

Command	Description
SET NOON	Suppresses command interpreter error checking following command execution
SET NOVERIFY	Suppresses display of command lines executed in command procedures subsequently executed
SET ON	Restores command interpreter error checking in a command procedure
SET PASSWORD	Allows users to change their own passwords
SET PRINTER[1]	Establishes the characteristics of a specific line printer
SET PROCESS	Defines execution characteristics of a process
SET PROCESS/PRIORITY	Changes the base priority of a process
SET PROTECTION	Changes the protection applied to a file or a group of files, restricting or allowing access to the file by different categories of users
SET PROTECTION/DEFAULT	Establishes the default protection for all files subsequently created during the terminal session or batch job
SET PROTECTION/DEVICE [1]	Establishes the protection for a non-file-structured device
SET QUEUE/ENTRY	Changes the attributes or status of jobs in print or batch queues that have not yet been processed by the system
SET RMS_DEFAULT	Defines default multiblock and multibuffer counts for VAX-11 RMS file operations
SET TERMINAL	Defines the characteristics of a terminal
SET TIME[1]	Resets the system time
SET UIC[1]	Establishes a new user identification code as the process UIC
SET VERIFY	Causes all command lines in command procedures subsequently executed to be displayed at the terminal or printed in the batch job log file
SET WORKING_SET	Establishes a default working set size for images executed in the current process
SHOW DAYTIME	Displays the current date and time of day on the current output device
SHOW DEFAULT	Displays the current default directory and disk device

1. Described in this manual.

Command	Description
SHOW DEVICES	Displays the status of devices in the system
SHOW LOGICAL	Displays the current logical name assignments for a particular logical name or for all logical names made by the ASSIGN, ALLOCATE, DEFINE, and MOUNT commands
SHOW MAGTAPE	Displays the characteristics of a magnetic tape device
SHOW NETWORK	Displays the status of the DECnet nodes that are connected to the current system
SHOW PRINTER	Displays the characteristics of a line printer
SHOW PROCESS	Displays information about the current process, including subprocesses, privileges, quotas, and accounting information
SHOW PROTECTION	Displays the default protection applied to new files created
SHOW QUEUE	Displays the names, job identification numbers, and status of current and pending jobs in print or batch queues
SHOW QUOTA	Displays the current disk quota that is authorized and used by a user on a disk
SHOW RMS_DEFAULT	Displays the current multiblock and multibuffer counts for VAX-11 RMS operations
SHOW STATUS	Displays information about the image currently executing in the process
SHOW SYMBOL	Displays current local or global symbols and the strings or values assigned to them
SHOW SYSTEM	Displays the current status of all the processes in the system
SHOW TERMINAL	Displays the current characteristics of the current output device
SHOW TIME	Displays the current date and time on the terminal
SHOW TRANSLATION	Displays the result of logical name translation of a specific logical name
SHOW WORKING_SET	Displays the current working set default and limits
SORT	Invokes the VAX-11 SORT Utility to sort the records in a file based on one or more key fields within each record
SORT/RSX11	Invokes the PDP-11 SORT Utility to sort the records in a file based on one or more key fields within each record

Command	Description
START/QUEUE[1]	Starts batch and print queues.
STOP	Halts execution of a command procedure, program, or a subprocess or detached process
STOP/ABORT	Stops printing a job that is currently printing
STOP/ENTRY	Stops executing a batch job that is currently running and deletes it
STOP/QUEUE[1]	Suspends batch and print queues
STOP/REQUEUE	Stops printing a job that is currently printing and requeues that job giving it a priority of 1
SUBMIT	Queues one or more command procedure(s) to a batch job queue
SYNCHRONIZE	Places the current command procedure in a wait state until a specific batch job completes
TYPE	Displays the contents of a file or files on the current output device
UNLOCK	Allows access to a file that was not properly closed
WAIT	Places the current process in a wait state for a specific period of time
WRITE	Writes a single record consisting of one or more character strings or evaluated symbols to a sequential file or device

1. Described in this manual.

APPENDIX B

DEVICE CODES

B.1 DEVICE CODE TABLE

The table below displays the mnemonic device codes for devices supported under VAX/VMS.

Table B-1
Device Codes

Code	Device Type
CR	Card Reader
CS	Console Storage Device
DB	RP05, RP06 Disk
DL	RL02, Cartridge Disk
DM	RK06, RK07 Cartridge Disk
DR	RM03 Disk
DY	RX02 Floppy Diskette
LA	LPA11-K Laboratory Peripheral Accelerator
LP	Line Printer
MB	Mailbox
MS	TS-11 Magnetic tape
MT	TE16, TU45, TU77 Magnetic Tape
NET	Network Communications Logical Device
OP	Operator's Console
RT	Remote Terminal
TT	Interactive Terminal
XF	DR32 Interface Adapter
XJ	DUP11 Synchronous Communications Line
XM	DMC11 Synchronous Communications Line

VAX/VMS
OPERATOR'S NOTES

Subject: Date:

Subject: Date:

Subject: Date:

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- ☐ Assembly language programmer
- ☐ Higher-level language programmer
- ☐ Occasional programmer (experienced)
- ☐ User with little programming experience
- ☐ Student programmer
- ☐ Other (please specify)_____

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Street_____

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