

# **CRAY**

**RESEARCH, INC.**

## **CRAY X-MP AND CRAY-1® COMPUTER SYSTEMS**

**DEC VAX/VMS STATION  
REFERENCE MANUAL**

**SV-0020**

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A	October 1983 - Reprint with revision. Adds COS interactive processing, DECnet <sup>†</sup> node support, new commands, and split screen display capability. Miscellaneous technical and editorial changes are also included to bring the station into agreement with version 2. All previous printings are obsolete.
B	September 1985 - Rewrite. Adds enhanced DECnet facilities for remote nodes, new commands, Cray context redesign, and dataset spooling for remote nodes. Several station commands have been regrouped and redesigned. Sample terminal sessions have been added in the appendix section and examples are presented for most commands. Error messages are no longer included in this publication (see preface). Miscellaneous technical and editorial changes are included to agree with version 3 of the VAX/VMS station and version 4.0 of VMS. All previous printings are obsolete.

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# PREFACE

This publication provides user reference information for the software that logically links a VAX Computer System, manufactured by Digital Equipment Corporation (DEC), to a CRAY X-MP or CRAY-1 Computer System. The software providing the logical link is a set of programs running under the VAX/VMS operating system. This software link was developed by Cray Research, Inc. (CRI) as a service to its customers.

This software is referred to as the VAX/VMS station throughout this publication. The VAX/VMS station requires the Virtual Memory System (VMS) version 4 or higher, and the Cray operating system COS version 1.13 or later. If remote stations are installed, the system must include DECnet.

This publication is intended for users of COS who want to transfer jobs, data, and interactive commands to, from, or through a connected VMS system. The publication provides both tutorial information for new users of the VAX/VMS station and detailed reference information for experienced users.

This publication assumes a general understanding of the characteristics of VMS and COS. In particular, familiarity with the following publications is recommended:

- COS Version 1 Reference Manual, publication SR-0011
- VAX/VMS DCL Dictionary, DEC publication AA-Z200A-TE
- VAX Record Management Services Reference Manual, DEC publication AA-Z503A-TE
- Introduction to VAX/VMS, DEC publication AA-Y500A-TE
- Guide to Using DCL and Command Procedures on VAX/VMS, DEC publication AA-Y501A-TE

The following CRI publications also support the VAX/VMS station:

- DEC VAX/VMS Station Message Manual, publication SV-0101
- DEC VAX/VMS Station Ready Reference, publication SV-0102
- DEC VAX/VMS Station Operator's Guide, publication SV-0063
- DEC VAX/VMS Station Installation and Maintenance Reference Manual, publication SV-0100
- DEC VAX/VMS Station Internal Reference Manual, publication SV-0062



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GLOSSARY

INDEX

This section introduces you to the characteristics, capabilities, and configuration of the VAX/VMS station. The following topics are addressed:

- What is the VAX/VMS station?
- What capabilities does the station provide?
- What is the physical connection?
- Conventions
- Gaining access to VMS

Terminal facilities of the VAX/VMS station are discussed in section 2.

If you are a new user of the VAX/VMS station, see appendix A for two sample terminal sessions that draw on the activities discussed in this manual and provide on-line experience in preparing, submitting, and monitoring jobs that you send to COS. The Command Reference section later in this manual provides descriptions and examples of all VAX/VMS station commands available to users.

## 1.1 WHAT IS THE VAX/VMS STATION?

The VAX/VMS station is a software product that controls the link between a Digital Equipment Corporation (DEC) VAX Computer System and a CRAY X-MP or CRAY-1 Computer System.

By using the VAX/VMS station, you can access CRAY X-MP or CRAY-1 facilities from within the Digital VAX/VMS environment. When at a terminal connected to the VAX/VMS operating system you can, for example, submit a job to COS for processing.

Two types of VAX/VMS stations provide you with access to the Cray Computer System. They are:

- The *attached* VAX/VMS station, which is located at a DEC VAX Computer System connected directly to the Cray Computer System. The attached VAX/VMS station controls the network that is composed of one or more remote VAX/VMS stations.

- The *remote* VAX/VMS station, which is located at a VAX/VMS DECnet remote node. Remote VAX/VMS stations communicate through the attached VAX/VMS station to access the Cray Computer System.

The CRAY X-MP or CRAY-1 Computer System runs under the control of the COS; the VAX front-end computer system runs under the control of the Virtual Memory System (VMS).

## 1.2 WHAT CAPABILITIES DOES THE STATION PROVIDE?

The attached VAX/VMS station provides the following capabilities to users:

- Submission of COS batch jobs at VMS terminals (see section 3)
- Submission of COS batch jobs from within batch jobs running under the VAX/VMS Operating System (see section 3)
- Interactive log on to COS (see section 7)
- Execution of COS job control statements typed in interactive mode (see section 7)
- Interactive dialogue with user applications or COS utilities in interactive mode (see section 7)
- Submission of VMS batch jobs from within jobs running under COS (see section 5)
- Dataset transfer from VMS disks or tapes to Cray mainframe mass storage when requested by a COS job (ACQUIRE or FETCH processing) (see sections 4 and 6)
- Dataset transfer from Cray mainframe mass storage to VMS disks, queues, or tapes when requested by a COS job (DISPOSE processing) (see sections 4 and 5)
- Printing of job output files generated by COS jobs on VMS printers (see section 5)
- Interactive or batch output to specialized graphic devices (see section 5)

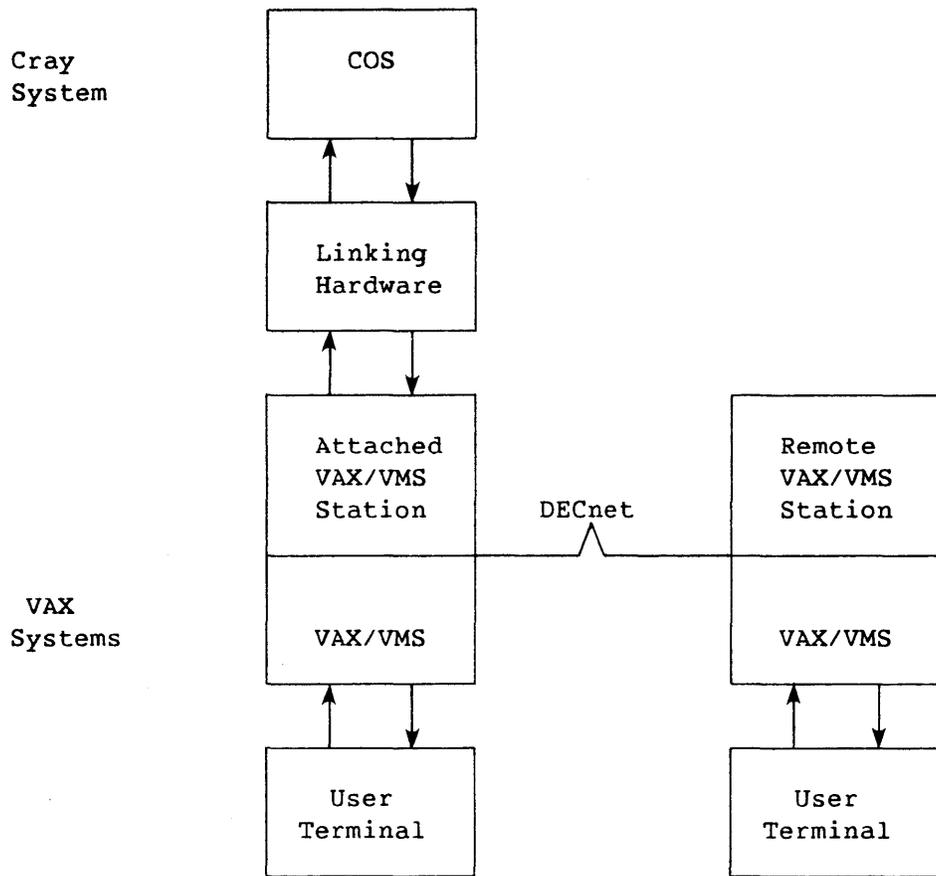
A subset of these features is provided to users of remote VAX/VMS stations that are connected through DECnet to an attached VAX/VMS station. This subset includes all the features previously listed, with the exception of COS interactive processing (which is available to remote station users by using the DEC VAX/VMS SET HOST command).

### 1.3 WHAT IS THE PHYSICAL CONNECTION?

The physical connection between the Cray Computer System and the VAX front-end system is either:

- A channel-to-channel front-end coupler device, manufactured by CRI, or
- A HYPERchannel™ network, manufactured by Network Systems Corporation.

Figure 1-1 shows the resulting configuration.



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Figure 1-1. VMS/COS Hardware Configuration

## 1.4 CONVENTIONS

This manual uses the following conventions:

<u>Convention</u>	<u>Description</u>
UPPERCASE	Indicates the command verb or qualifier parameter
{ } Braces	Encloses stacked literal parameters when only one item can be entered
[ ] Square Brackets	Encloses optional portions of a command format
<i>italics</i>	Indicates variable information
( ) Round Brackets	Identifies an optional argument
<> Angle Brackets	Encloses a formal parameter
" "	Indicates string delimiters for character string data containing: <ul style="list-style-type: none"><li>• Literal lowercase letters</li><li>• Required multiple blank or tab characters</li><li>• Any nonalphanumeric character</li></ul>
,....	Indicates additional parameters can be specified
<i>/qualifier</i>	Denotes the beginning of a command qualifier and is a mandatory component of the qualifier
<b>Boldface</b>	Identifies the part of an example you enter at the terminal; system responses or displays are in regular type.
CTRL/a	Indicates control key sequences. You hold down the CTRL key while pressing a. In some examples, control key sequences are shown as a circumflex (^) and a letter, for example ^Y, because that is how the system echoes when you enter CTRL/Y.
<RET>	Represents the return key on a DEC-compatible terminal

## 1.5 GAINING ACCESS TO VMS

Gaining access to VMS is fully described in the Introduction to VAX/VMS, DEC publication AA-Y500A-TE, but for completeness the following paragraphs provide a brief description of the log on and log out procedures.

### 1.5.1 VMS LOG ON

To begin a VMS terminal session, press the RETURN or the CTRL/Y key at any terminal physically connected to the VAX/VMS system. VMS prompts for your user name. After you enter the user name, VMS prompts for the password associated with the user name. The screen does not display your entry of the password.

Example:

```
Username: CRAYUSER<RET>  
Password:
```

During this sequence, VMS validates that you are authorized to use VMS.

When a VMS log on is successfully completed, the terminal normally enters Digital Command Language (DCL) command state and prompts you with a dollar sign (\$) at the far left side of the terminal. You can enter commands whenever the DCL prompt appears on the terminal.

If you enter the user name or password incorrectly, the system displays an error message and the log-on sequence must be repeated.

### 1.5.2 VMS LOG OUT

When your session is over, disconnect the terminal from the VMS system by typing LOGOUT after the DCL prompt:

```
$ LOGOUT<RET>
```



This section introduces you to the terminal facilities of the VAX/VMS station. Along with providing introductory material, section 2 presents examples that illustrate the performance of basic VAX/VMS station activities. This section discusses the following topics:

- Entering station commands
- Understanding the format of station commands
- Performing station activities
- Entering station commands at DCL level
- Using Cray context
- Command prompting
- Getting help with the VAX/VMS station
- Using the screen-handling facilities
- Handling indirect station command files
- Using commands in VAX/VMS command procedures
- Selecting Cray Computer Systems

The section also presents tables that describe all commands available to users. The commands are listed in functional categories to provide a quick overview of VAX/VMS station capabilities.

If you are a new user of the VAX/VMS station, see appendix A for two sample terminal sessions that draw on the skills discussed in this section and provide on-line experience in preparing, submitting, and monitoring COS jobs. All station commands discussed in this section are described in the Command Reference section.

## 2.1 ENTERING STATION COMMANDS

You can enter station commands in one of two ways to access the facilities of the station:

- At DCL level, by entering the CRAY station command immediately followed by another station command. For example:

```
$ CRAY HELP<RET>
```

This command entered at DCL level calls the station HELP facility. See subsection 2.4 for a more detailed discussion of entering station commands at DCL level.

- By entering the CRAY station command at DCL level, entering Cray context, and issuing commands within Cray context. When you are within Cray context, enter station commands after the CRAY> prompt:

```
$ CRAY<RET>
CRAY> HELP<RET>
```

This command also calls the station HELP facility. Subsection 2.5 discusses entering station commands from within Cray context in more detail.

You can enter station commands in lowercase or uppercase letters at any terminal logged on to VMS. The system prompts for mandatory parameters. With the exception of the SUBMIT station command, entering a carriage return after a prompt terminates the command.

## 2.2 UNDERSTANDING THE FORMAT OF STATION COMMANDS

Station commands have the following format:

```
<station command>/<command qualifier> <parameters>
```

The *station command* describes the station function to be performed; *command qualifiers* modify a station command by providing additional information on how the command should be executed; and *command parameters* specify the object of the command, which is often a VMS file.

If you enter the station command from DCL level, it must be preceded on the same line by the CRAY station command. You can define your own symbols for station commands by using the DCL symbol command in the following format:

```
new-symbol ::= 'CRAY station-command'
```

The following example illustrates this format:

```
CSUBMIT ::= 'CRAY SUBMIT'
```

Station commands can be abbreviated to any length. If an abbreviated command string is ambiguous, the system executes the first eligible station command.

In the following example, the VAX/VMS station command SUBMIT sends the jobfile CRAYJOB.JOB to the the Cray Computer System for processing. Because you enter the command from DCL level, the CRAY station command precedes the SUBMIT station command.

```
$ CRAY SUBMIT/PRINT CRAYJOB.JOB<RET>
%CX-S-SUB_OK, Job: CRAYPRO queued for submission
$
```

\$	VMS prompt for command input
CRAY	Executes a single station command at DCL level
SUBMIT	Station command that queues a file for sending to the COS job input queue
/PRINT	Qualifier to the station command SUBMIT, requesting that when the COS \$OUT file for the job is returned, it is printed
CRAYJOB.JOB	Command parameter naming the job input file to be sent to the Cray Computer System for processing
%CX-S-SUB_OK, Job: CRAYPRO queued for submission	

Message from the station command SUBMIT indicating the file CRAYJOB.DAT is queued in the station COS job input queue. The SUBMIT command extracts the COS job name (CRAYPRO) from line 1 of the job input file which must be a COS JOB control statement.

### 2.3 PERFORMING STATION ACTIVITIES

As a user, you can use station commands to perform the following types of activities:

- Staging datasets
- Manipulating jobs
- Using interactive processing (from attached stations only)
- Displaying information
  - Displaying format
  - Displaying job and dataset status

- Controlling messages
- Using indirect station command files
- Selecting and accessing modes and systems

Tables 2-1 through 2-7 describe the station commands related to each of these activities.

Table 2-1. Station Commands for Staging Datasets

Command	Function
REMOVE	Deletes entries in the VAX/VMS station staging queue to COS
SAVE	Stages a single file to COS mass storage
SHOW QUEUES	Displays entries in the VAX/VMS station dataset staging queue
SUBMIT	Stages a job to COS

Table 2-2. Station Commands for Manipulating Jobs

Command	Function
DROP	Drops a COS job
KILL	Kills a COS job
RELEASE	Releases a dataset held on the COS job queue
RERUN	Reruns a COS job
SWITCH	Manipulates the COS job sense switches

Table 2-3. Station Commands for Using Interactive Processing

Command	Function
ABORT	Interrupts the current interactive COS job step and returns to the Control Statement Processor (CSP)
ATTACH	Redirects COS interactive terminal output
ATTENTION	Interrupts the current interactive COS job step and enters reprieve processing
BYE	Terminates an interactive session
COLLECT	Stores COS interactive output in a VMS file
DISCARD	Discards interactive output from COS
EOF	Sends an end-of-file record to the current COS interactive job
INTERACTIVE	Initiates an interactive session
ISTATUS	Displays the status of the user's interactive job
QUIT	Terminates an interactive session and the corresponding COS job

Table 2-4. Station Commands for Displaying Information

Command	Function
<u>Displaying format</u>	
+	Gets the next page of a refresh display
-	Gets the previous page of a refresh display
CLEAR	Clears the screen display area

Table 2-4. Station Commands for Displaying Information (continued)

Command	Function
SET TERMINAL	Sets the terminal working environment
SNAP	Copies the display screen image to a VAX/VMS file
<u>Displaying job and dataset status</u>	
DATASET	Reports the existence of a COS permanent dataset
ISTATUS	Displays the status of the user's interactive job
JOB	Displays the status of a specific COS job
JSTAT	Displays the status of a specific job and its related tasks
SHOW QUEUES	Displays entries in the VAX/VMS station dataset staging queue
STATUS	Displays COS status
TAPE	Displays COS tape device information

Table 2-5. Station Commands for Controlling Messages

Command	Function
HELP	Displays information from the station help files
LOGFILE	Provides access to the station logfile messages
MESSAGE	Enters a message into the COS job logfile, the COS system logfile, or both

Table 2-6. Station Commands for Using Indirect Command Files

Command	Function
@file-spec	Executes an indirect station command file from this VMS file specification
COMMENT	Inserts comments into a command stream
DELAY	Suspends execution of an indirect station command file for a specified time
LOOP	Restarts execution of an indirect station command file
PAUSE	Suspends execution of an indirect station command file and switches control to the terminal
PLAY	Executes an indirect station command file
RECORD	Starts or stops the recording of terminal input for later use with the PLAY command

Table 2-7. Station Commands for Selecting and Accessing Modes and Systems

Command	Function
\$	Allows entry of DCL commands from within Cray context command mode
CTRL/Z	Returns the user to previous state
CHOOSE	Selects a Cray Computer System to be accessed (installation defined)
CRAY	Enters the user into Cray context or executes a single station command
EXIT	Returns the user from Cray context command mode to DCL command state

## 2.4 ENTERING STATION COMMANDS AT DCL LEVEL

You can enter station commands at DCL level in response to the DCL prompt, which is normally represented by the dollar sign (\$). All station commands you enter at DCL level must be preceded on the same command entry line by the CRAY command. You can enter most station commands from within Cray context, without the CRAY prefix, in response to the prompt CRAY>.

Example:

```
$ CRAY SUBMIT MYJOB1.JOB<RET>
%CX-S-SUB_OK, Job: MYJOB1 queued for submission
$
```

In this example, the station command SUBMIT sends the job file MYJOB1.JOB to the COS staging queue.

## 2.5 USING CRAY CONTEXT

Cray context provides you with a command selection mechanism, a gateway to COS interactive processing, and an optional refreshed display capability. Generally, VAX/VMS station commands are available both at DCL level and from within Cray context. A subset of commands related to refreshed display and interactive processing is, however, available only within Cray context.

Within Cray context you can recall, edit, and reissue commands and Cray interactive input by the same method that is provided by VMS. This facility stores the last 20 lines of input in a recall buffer. See the VAX/VMS DCL Dictionary, DEC publication AA-Z200A-TE, for information on terminal usage, recall, and editing.

To enter Cray context, type the CRAY station command after the DCL prompt at your terminal. The system responds by displaying the CRAY> prompt:

```
$ CRAY<RET>
CRAY>
```

You can now enter station commands after the CRAY> prompt.

```
CRAY> SUBMIT MYJOB1.JOB<RET>
%CX-S-SUB_OK, Job: MYJOB1 queued for submission
CRAY> SUBMIT MYJOB2.JOB<RET>
%CX-S-SUB_OK, Job: MYJOB2 queued for submission
```

You can terminate the session by entering the EXIT station command or CTRL/Z. The system responds by returning you to DCL level and the DCL prompt.

```
CRAY> EXIT<RET>
$
```

Cray context operates in three modes:

- Command mode - in which you enter station commands
- Interactive mode - in which you communicate with COS directly
- DCL mode - in which you enter DCL commands, as if at DCL level, without permanently exiting Cray context

The following subsections discuss command mode, interactive mode, and DCL mode. Figure 2-1 shows the relationship between these modes of command processing.

#### 2.5.1 COMMAND MODE

Cray context command mode is a scrolled terminal environment that makes it convenient for you to enter station commands. In command mode, you enter station commands after the CRAY> prompt. The examples in subsection 2.5 illustrate command mode.

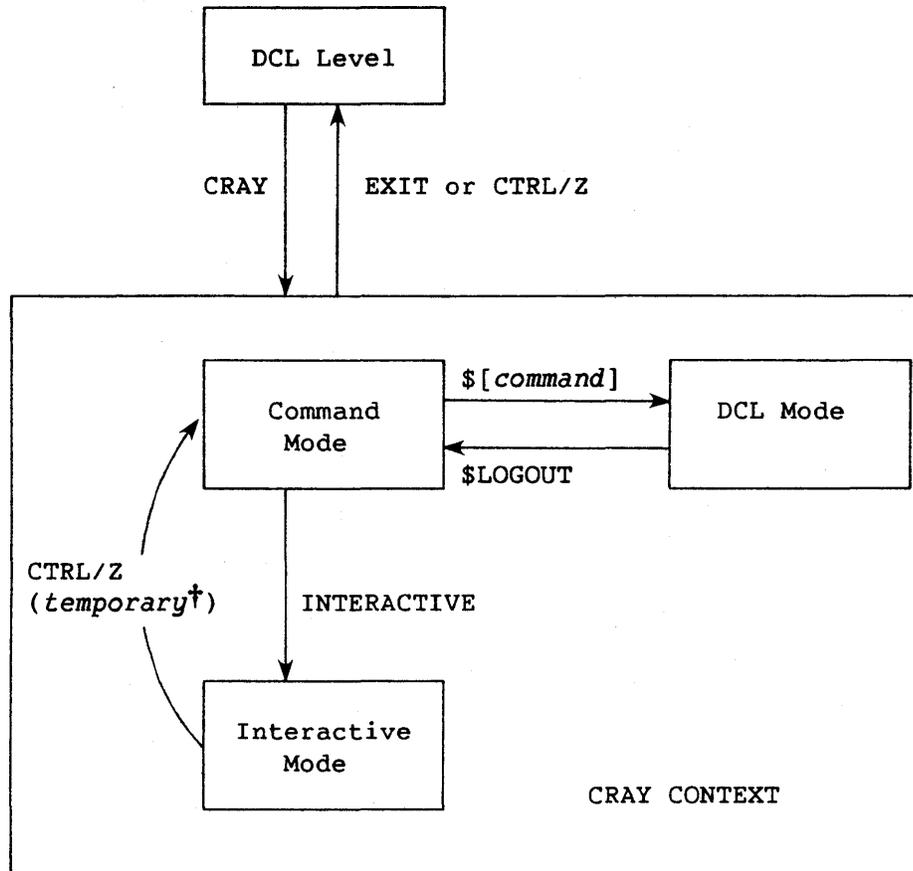
Refresh and nonrefresh are the two display styles available in command mode.

*Refresh style* is available on terminals that have the DEC\_CRT option (for example, the VT100). Refresh style permits you to enter station commands while the requested display is dynamically updated.

Refresh style uses a split-screen environment: the lower part is a *scrolled command region* and the top part is a *refreshed display region* where a number of displays are available. The last requested display is refreshed, or rebuilt at regular intervals, until you enter a new display request command at your terminal.

A *region divider* splits the two screen regions and presents the following summary information:

- Current date and time
- Node name, if the station exists in a DECnet network or cluster environment. On remote stations, both the attached and remote nodes are displayed.
- Current display command
- Current page being displayed



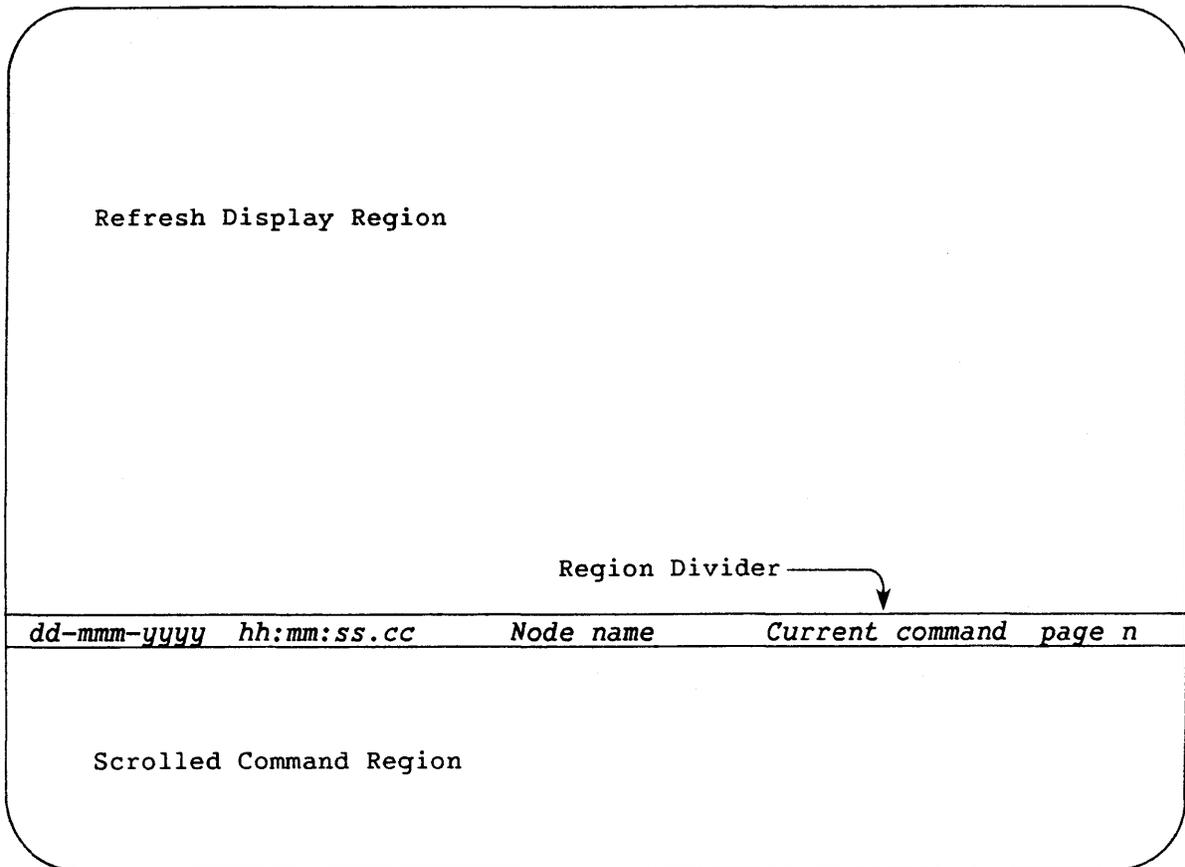
† Change is permanent if the command entered ends the interactive session.

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Figure 2-1. Relationship between DCL, Command Mode, Interactive Mode, and DCL Mode

Figure 2-2 shows the refresh style screen format. The region divider is displayed in reverse video (light background with dark letters) and is updated at each refresh interval.

*Nonrefresh style* provides command selection in a terminal-independent manner. When you enter a display station command (such as STATUS) in nonrefresh style, the system responds by producing a single snapshot display. Nonrefresh style is the default if your terminal does not have the DEC\_CRT facility. The /NOREFRESH qualifier of the CRAY station command activates nonrefresh style on display screens with the advanced video facility.



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Figure 2-2. Cray Context Refresh Style Terminal Use

As a comparison, if you are in refresh style, you need to enter the station command `STATUS` just once to activate a COS status display that is updated at each refresh interval. If you are in nonrefresh style, however, you must enter the `STATUS` station command each time you desire an updated COS status display.

### 2.5.2 INTERACTIVE MODE

Cray context interactive mode allows you to communicate with COS directly. Use the `INTERACTIVE` station command to enter interactive mode.

If you are in refresh command mode when you enter the `INTERACTIVE` command, the split-screen working environment is maintained. The top part (previously the refresh display region) is used as a COS interactive dialogue area. A Cray interactive banner replaces the usual divider.

You can return to command mode by entering CTRL/Z in the COS interactive dialogue area. Normally, you can then enter only one command in the scrolled command region. If the command is, however, either a Cray context display request command or a command that terminates the interactive session, you remain in command mode. To return to interactive mode, issue the INTERACTIVE command.

See section 7 for a detailed discussion of interactive processing.

### 2.5.3 DCL MODE

DCL mode permits you to execute DCL commands or DCL command procedures while inside Cray context. To use DCL command while you are in Cray context command mode, prefix the DCL command with a \$. To return to command mode, issue the DCL command LOGOUT.

### 2.6 COMMAND PROMPTING

When you enter a station command at a terminal, you do not need to enter the entire command on one line. The VAX/VMS station provides prompts for mandatory parameters.

For example, if you enter the SUBMIT station command prefixed by the CRAY command, the station provides the following prompts:

```
$ CRAY SUBMIT<RET>
SUBMIT_file: CRAYJOB.JOB<RET>
SUBMIT_file:<RET>
%CX-S-SUB_OK, Job: CRAYJOB queued for submission
$
```

If you enter Cray context before issuing the SUBMIT station command, the system provides the following prompts:

```
$ CRAY<RET>
CRAY> SUBMIT<RET>
SUBMIT_file: CRAYJOB.JOB<RET>
SUBMIT_file:<RET>
%CX-S-SUB_OK, Job: CRAYJOB queued for submission
CRAY>
```

If you cannot enter a mandatory parameter in response to a system prompt, press the carriage return to either abort or terminate the parameter list. With the exception of the SUBMIT station command, entering a carriage return after a prompt terminates the command.

## 2.7 GETTING HELP WITH THE VAX/VMS STATION

If you are using the VAX/VMS station and do not have easy access to a reference manual, use the on-line station HELP facility for information about all available station commands. You can access the station HELP facility at two levels:

- To get general information about all station commands, use the HELP command as follows:

```
$ CRAY HELP<RET>
```

or

```
$ CRAY<RET>  
CRAY> HELP<RET>
```

- To get command-specific information about station commands, use the HELP command as follows:

```
$ CRAY HELP SUBMIT<RET>
```

or

```
$ CRAY<RET>  
CRAY> HELP SUBMIT<RET>
```

In this example, the system responds by displaying information about the SUBMIT station command.

## 2.8 ALTERING THE REFRESH-STYLE ENVIRONMENT

You can use the SET, CLEAR, and paging commands when working within refresh-style Cray context to alter the split-screen environment. The split-screen working environment is available to terminals with the DEC\_CRT option, such as the VT100. The following subsections explain how to use station commands and command parameters to manage your split-screen terminal environment.

For a more detailed discussion of these commands, see the Command Reference section.

### 2.8.1 USING THE SET TERMINAL STATION COMMAND

The SET TERMINAL station command enables you to set and modify your terminal working environment. For instance, you can alter the proportion of the video screen devoted to command input (that is, the scrolled command region) by using the SCROLL=*lines* command parameter of the SET TERMINAL station command. The following example sets the command scroll region at 10 lines:

```
CRAY> SET TERMINAL SCROLL=10<RET>
```

Use the WIDTH=*size* command parameter of the SET TERMINAL station command to set the terminal width to either 80 or 132 characters. The following example sets the terminal width to 80 characters:

```
CRAY> SET TERMINAL WIDTH=80<RET>
```

Current information displayed on the terminal (CRT) is lost when you use the WIDTH command parameter.

Use the REFRESH command parameter to move from refresh style Cray context and vice versa. The following example instructs the system to format your screen in refresh-style Cray context:

```
CRAY> SET TERMINAL REFRESH<RET>
```

See the Command Reference section for a detailed explanation of the SET TERMINAL station command.

### 2.8.2 MOVING THROUGH A REFRESH-STYLE DISPLAY

When you are in Cray context refresh style, a requested display may be too large for the available refresh display region. To page forward and backward in the display, use the + (page forward) and - (page backward) station commands. The + and - station commands have no affect in nonrefresh-style command mode, since the entire display is delivered.

You can remove the current display by requesting a different display or by using the CLEAR station command.

When you are in Cray context command mode, you can specify whether all information or only one page of information is displayed by using the /CYCLE and /NOCYCLE command qualifiers. /CYCLE and /NOCYCLE are available with station commands that request a display, such as STATUS.

If you include the /CYCLE command parameter and there is more than one page of information, the page number is automatically controlled, making it unnecessary to enter the + and - station commands. /NOCYCLE is the

default, indicating that only one page of the refresh-style display is shown until you enter the + or - commands. For example:

```
CRAY> STATUS/CYCLE<RET>
```

In this example, all STATUS display information is automatically cycled on your terminal screen. See the individual command descriptions for a more detailed discussion of the /CYCLE and /NOCYCLE command qualifiers.

### 2.8.3 COPYING SCREEN DISPLAYS TO A VAX/VMS FILE

When you are in Cray context command mode, you can save the latest display picture in a VAX/VMS file by using the SNAP command, followed by a VAX/VMS file specification. For example:

```
CRAY> SNAP DISPLAY.DAT<RET>
```

In this example, the latest display picture is copied into the VAX/VMS file DISPLAY.DAT.

## 2.9 HANDLING INDIRECT STATION COMMAND FILES

Within Cray context, you may create and execute indirect station command files. Such files contain a list of terminal input (usually commands) that can be carried out as if they were entered at the keyboard.

You can create an indirect station command file by one of two methods:

- From within Cray context, record a terminal session by using the RECORD command. All commands you enter at the keyboard are then stored in a VAX/VMS file. When you are finished recording the terminal session, enter RECORD/OFF after the CRAY> prompt.
- Use a text editor to create the indirect station command file.

For example, to create an indirect station command file that submits a job to the Cray Computer System and calls a status display, enter the following station commands inside a VAX/VMS file:

```
SUBMIT GETPDS.JOB;3  
STATUS
```

You can create the same indirect station command file by entering the RECORD station command from within Cray context command mode, followed by a VAX/VMS file specification:

```
CRAY> RECORD INDCOM.PLAY<RET>
CRAY> STATUS<RET>
CRAY> SUBMIT GETPDS.JOB;3<RET>
%CX-S-SUB_OK, Job: CRAYJOB queued for submission
CRAY> RECORD/OFF<RET>
CRAY>
```

To execute the indirect station command file, enter the PLAY command, followed by the file specification of the indirect station command file:

```
CRAY> PLAY INDCOM.PLAY<RET>
```

You can use the COMMENT station command within the indirect station command file to insert comments that are displayed on your screen when you execute the file. In refresh command mode, use the PAUSE and DELAY commands for more time to observe refreshed displays. See the Command Reference section for more detailed information.

In interactive mode, Cray Computer System prompts regulate the rate that new commands are delivered.

## 2.10 USING COMMANDS IN VAX/VMS COMMAND PROCEDURES

VAX/VMS command procedures will help save you time when creating large or frequently run pieces of work. The Guide to Using Command Procedures on VAX/VMS, DEC publication AA-Y501A-TE, describes these command procedures. In command procedures, you must use the DCL-level form of VAX/VMS station commands.

To test the final completion state, use the DCL command ON or the system global symbols \$SEVERITY or \$STATUS. All station commands that execute normally complete in one of the following two states:

- Success The completion status code is the VMS symbol SS\$\_NORMAL and results from success and informational messages.
- Error The completion status code is the severe error code, VMS symbol SS\$\_ABORT and results from error messages.

In the following example, command procedure THISPROC.COM, a SUBMIT command is tested. If the number of job submissions queued reaches the limit, an error status is returned. It is advisable to rerun the command procedure at a later time.

Example:

```
$! This is THISPROC.COM
$!
$ ON ERROR THEN GOTO RESUB
$ CRAY SUBMIT MYFILE1.JOB
$
      .
      .
      .
      .
$! Normal exit
$ EXIT
$!
$RESUB:
$ WRITE SYS$OUTPUT "THISPROC did not complete"
$! Error exit
$ EXIT
```

## 2.11 SELECTING CRAY COMPUTER SYSTEMS

At sites where more than one Cray Computer System is available, you can access Cray Computer Systems from a single VAX front end. This is accomplished by creating one VAX/VMS station, whether remote or attached, for each Cray Computer System to be accessed. You can change stations by entering the CHOOSE station command (see the Command Reference section).

The CHOOSE command causes the execution of an installation-created VAX/VMS command procedure. The effect of this procedure is to redefine the CRAY station command. Each time you wish to change stations, the CHOOSE command must be reissued at DCL level.

If you define your own synonyms for station commands (see subsection 2.2), place these synonym definitions in a file named CXCOMMANDS.COM in your default login directory (i.e., SYS\$LOGIN: CXCOMMAND.COM). This will ensure that the synonym commands are redefined after a new CHOOSE command is issued.



# SUBMITTING JOBS TO THE CRAY OPERATING SYSTEM

3

This section describes how to submit your COS job files from the VAX Computer System to the Cray Computer System for processing. The section is divided into the following areas:

- Preview of terminal job submission
- Submitting COS jobs from your terminal
- Examples of COS job submission
- Job submission to COS from the VMS batch queue

If you are a new user of the VAX/VMS station, see appendix A for two sample terminal sessions that draw together the skills discussed in this section and provide examples of preparing, submitting, and monitoring COS jobs.

## 3.1 PREVIEW OF TERMINAL JOB SUBMISSION

The process by which you prepare, submit, and monitor terminal jobs that are processed by COS is divided into three stages. Figure 3-1 describes this process.

## 3.2 SUBMITTING COS JOBS FROM YOUR TERMINAL

The first step in terminal job submission is to prepare a COS job file on the VAX Computer System. A COS job file is a collection of COS job control statements and, optionally, source code and data in the format required by COS. Figure 3-2 shows a typical COS job deck consisting of a control statement file, a source file, and a data file. The end-of-file <eof> separator as implemented by the VAX/VMS station is described with the SUBMIT command in the Command Reference section.

1. *Use the VAX Computer System to prepare a file or files that will be submitted to COS.* The first element in the job file must be Cray Job Control Language (JCL), which provides explicit instructions for COS on how to process the job. The job file or files you create on the front-end system can contain other elements, such as code and data to be used by the program.
2. *Use the SUBMIT station command to send the job file or files from the VAX Computer System to the Cray Computer System for processing.* You can use other station commands to monitor and modify the job as it runs. Unless you request otherwise, output from the Cray job is returned to the VAX Computer System and placed in the directory from which the job was submitted.
3. *Use the VAX Computer System to manage the output from the submitted job.* For example, you can read the file at your terminal, print a copy of it, or modify it for resubmission if it contains errors.

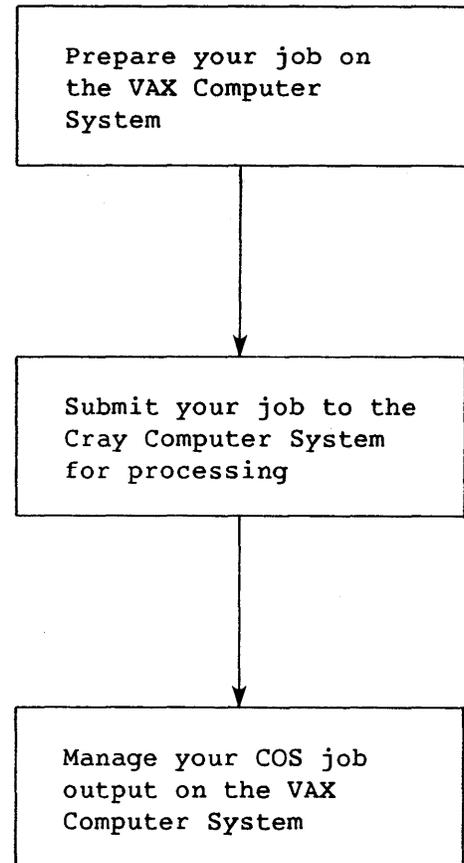


Figure 3-1. Steps in COS Job Preparation, Submission, and Management

After you have prepared your COS job file on the VAX Computer System, you are ready to submit it to the Cray Computer System for processing. VMS terminal users submit COS jobs by using the SUBMIT station command. The minimum format of SUBMIT is quite simple, but can be made more specific with a number of available qualifiers and parameters. The basic SUBMIT format is:

```
SUBMIT/qualifier <file1>({+}<file2>) ... ({+}<filen>)
```

The Command Reference section describes this command and its qualifiers in detail.

```

JOB,JN=jobname.
ACCOUNT.
CFT.
LDR.
EXIT.
/EOF
      J=50
      DO 10 I=1,10
      J=J+1
      PRINT 50,J
10    CONTINUE
      STOP
50    FORMAT(' ',I3)
      END
/EOF
AAA
BBB
CCC
DDD
/EOF

```

*JCL Control Statement File*  
*<eof> Separator*  
*Source File*  
*<eof> Separator*  
*Data File*

Figure 3-2. Typical COS Job Deck

If you use the SUBMIT station command, but do not include input file names, the station returns a prompt. For example:

```

$ CRAY SUBMIT<RET>
SUBMIT file(s):

```

In reply to this prompt, type one or more VAX/VMS file names on the same line. If you type in more than one file name, you must separate the file by either commas (,) or plus signs (+). Plus signs indicate that you want COS to process a series of files as if it were a continuous file; commas separate each file by COS end-of-file separators. For example:

```

$ CRAY SUBMIT<RET>
SUBMIT file(s):CRAYJOB1.JOB+CRAYJOB2.JOB<RET>

```

In this station command, COS processes CRAYJOB1.JOB and CRAYJOB2.JOB as if they were a single file. If the two files are separated by commas, COS end-of-file separators are inserted automatically; COS processes them as separate files.

You can also specify one file at a time in response to the the SUBMIT prompt, by entering a return after each file name. The prompt reappears for additional file names, until you enter <RET> only. For example:

```

$ CRAY SUBMIT<RET>
SUBMIT files(s):CRAYJOB1.JOB<RET>
SUBMIT files(s):CRAYJOB2.JOB<RET>
SUBMIT file(s):<RET>
$

```

If you specify one file at a time, as previously shown, the station assumes that you intend each file to be processed separately. If you intend the files to be processed as one dataset, end each filename with a plus sign.

### 3.3 COS JOB SUBMISSION EXAMPLES

The following examples show three methods of constructing and submitting a COS job similar to that shown in figure 3-2.

Example 1:

In this example, a single job file contains the JCL file, source file, and data file. The /EOF command qualifier designates the COS end-of-file separator as four asterisks (\*\*\*\*).

```

$ CRAY SUBMIT/EOF="****" CRAYJOB.JOB
%CX-S-SUB_OK, Job: CREX1 queued for submission
$

```

The VMS file CRAYJOB.JOB contains the following:

```

JOB,JN=CREX1.
ACCOUNT.
CFT.
LDR.
EXIT.
****
      J=50
      DO 10 I=1,10
      J=J+1
      PRINT 50,J
10  CONTINUE
      STOP
50  FORMAT(' ',I3)
      END
****
AAA
BBB
CCC
DDD
****

```

} *JCL control statement file*

} *<eof> separator*

} *Source file*

} *<eof> separator*

} *Data file*

Example 2:

In this example, the JCL file, source file, and data file are contained in separate VAX/VMS files and are staged to COS with a single SUBMIT station command.

```
$ CRAY SUBMIT CRAYJOB.JOB, SOURCE.FOR, DATA.DAT
%CX-S-SUB_OK, Job: CREX2 queued for submission
$
```

CRAYJOB.JOB contains the following:

```
JOB, JN=CREX2.
ACCOUNT.
CFT.
LDR.
EXIT.
} JCL control statement file
```

SOURCE.FOR contains the following:

```
J=50
DO 10 I=1,10
J=J+1
PRINT 50,J
10 CONTINUE
STOP
50 FORMAT(' ',I3)
END
} Source file
```

DATA.DAT contains the following:

```
AAA
BBB
CCC
DDD
EEE
} Data file
```

Example 3:

In this example, the data file is entered at the terminal and the contents of CRAYJOB.JOB and SOURCE.FOR are identical to the contents of the files in example 2.

```

$ CRAY SUBMIT<RET>
SUBMIT file: CRAYJOB.JOB<RET>
SUBMIT file: SOURCE.FOR<RET>
SUBMIT file: SYSS$INPUT<RET>
AAA<RET>
BBB<RET>
CCC<RET>
DDD<RET>
EEE<RET>
^Z
SUBMIT file:<RET>
%CX-S-SUB_OK, Job: CREX2 queued for submission
$

```

*} Data file typed at terminal*

### 3.4 JOB SUBMISSION TO COS FROM THE VMS BATCH QUEUE

The VMS batch and terminal users employ the same station command syntax to submit a job to COS. Since batch submission inhibits parameter prompting, any missing required parameters cause rejection of the job submission. Figure 3-3 is an example of the COS job deck for a job submission from a VMS batch stream.

The VMS file CRAY1.JOB contains the COS JCL statements and the VMS file CRAY2.DAT contains the COS source file.

If the VAX/VMS station cannot queue a CRAY SUBMIT request, it returns an error message. (See section 2 for details of testing final completion states.)

The JOB and PASSWORD cards are omitted if the VMS job is initiated from a VMS terminal session using the DCL SUBMIT command.

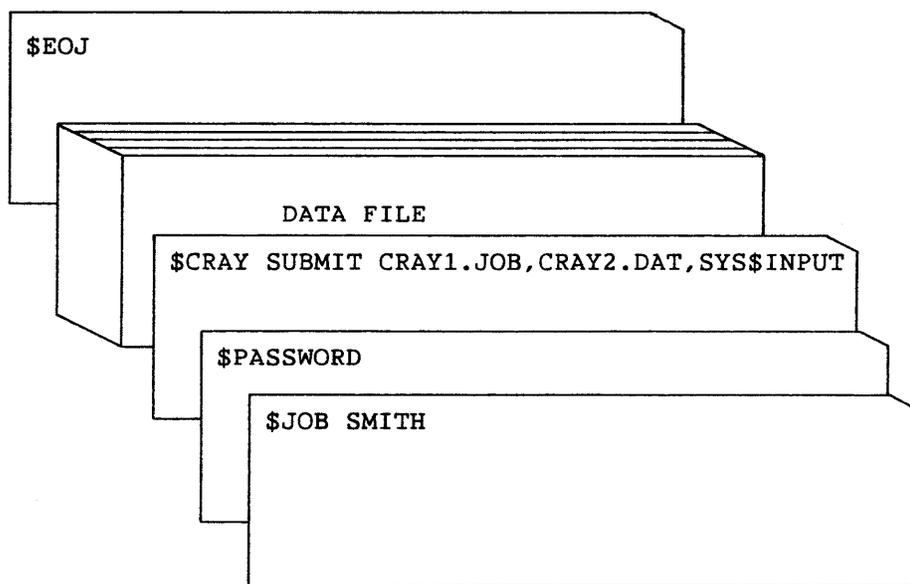


Figure 3-3. COS Job Deck for Batch Job Submission from a Card Reader



This section discusses the management of datasets that are transferred between COS and the VAX front-end computer system. The following topics are addressed:

- Types of dataset staging
- Staging datasets to COS
- Staging datasets to VMS
- Identifying datasets
- Dataset formats
- VMS destination file types
- VMS source file types
- Dataset management defaults in the absence of a text parameter
- Dataset management defaults for jobs not originating from the station

## 4.1 TYPES OF DATASET STAGING

Staging is the process of transferring jobs and data in the form of COS datasets from the VAX front-end computer system to Cray mass storage or from Cray mass storage to the VAX front-end computer system. Staging is initiated by:

- COS end-of-job processing
- A specific request from a job running under COS
- A job submitted to COS by the SUBMIT command
- A SAVE station command, if available at your site

COS jobs can use or create VAX/VMS files with the COS ACQUIRE, FETCH, and DISPOSE control statements. This section briefly describes each of these

job control statements; the COS Version 1 Reference Manual, CRI publication SR-0011, describes the statements in detail. Sections 5 and 6 of this manual discuss specific VAX/VMS station parameters for ACQUIRE, FETCH, and DISPOSE statements.

#### 4.2 STAGING DATASETS TO COS

Two control statements request staging of datasets from the VAX/VMS station to COS. ACQUIRE stages a dataset from the VAX/VMS station to COS and makes the dataset a COS permanent dataset. FETCH stages a dataset from the VAX/VMS station to COS and makes the dataset local to the job requesting it. This dataset is not made a COS permanent dataset.

##### 4.2.1 ACQUIRE PROCESSING

The processing of the COS ACQUIRE control statement is as follows:

1. If the dataset specified by the combination of *pdn*, *id*, and *ed* already exists as a COS permanent dataset, go to step 3.
2. Request staging of the dataset from the VAX/VMS mainframe (*mf*) to create a COS permanent dataset.
3. Make the permanent dataset local to the job with dataset name *dn*.

Format:

```
ACQUIRE, DN=dn, PDN=pdn, ID=uid, ED=ed, RT=rt, R=rd,  
W=wt, M=mn, UQ, TEXT=text, MF=mf, TID=tid, DF=df.
```

DN=*dn* Dataset name consisting of 1 through 7 alphanumeric characters; required parameter.

PDN=*pdn* Permanent dataset name consisting of 1 through 15 alphanumeric characters assigned by the dataset creator; default is *dn*.

ID=*uid* User identification

ED=*ed* Edition number of permanent dataset. Default is ED=1 if *pdn* does not exist; otherwise, ED is equal to the highest edition number.

RT=*rt* Retention period in number of days. Installation-defined parameter.

R=*rd* Read control word

W=*wt* Write control word

M=*mn* Maintenance control word

UQ Unique access. Requests this job be sole user of *pdn* until released. UQ is required if the permanent dataset is to be deleted later in the job.

TEXT=*text* Text to be passed to front-end system. The maximum size of text is 240 characters. See section 6 for details.

MF=*mf* Mainframe identifier for the front-end computer; two alphanumeric characters. Default is mainframe of job origin.

TID=*tid* Terminal identifier consisting of 1 through 8 alphanumeric characters. The default is the TID of originating job. This parameter should not be used for a request to the VAX/VMS station.

DF=*df* Dataset format:

CB Character blocked  
 BB Binary blocked  
 TR Transparent

Default is CB. See subsection 4.5 for details of dataset formats.

#### 4.2.2 FETCH PROCESSING

The processing of the COS FETCH control statement is as follows:

1. Request staging of the dataset from the VAX/VMS mainframe (*mf*) to create a COS local dataset.
2. Make the dataset local to the job with dataset name *dn*.

Format:

```
FETCH, DN=dn, SDN=sdn, TEXT=text, MF=mf, TID=tid, DF=df.
```

DN=*dn* Dataset name consisting of 1 through 7 alphanumeric characters; required parameter.

SDN=*sdn* Staged dataset name consisting of 1 through 15 alphanumeric characters; default is *dn*.

TEXT=*text* Text to be passed to front-end computer system. The maximum size of TEXT is 240 characters. See section 6 for details and defaults.

MF=*mf* Mainframe identifier for VAX/VMS mainframe; 2 alphanumeric characters. The default is mainframe of job origin.

TID=*tid* Terminal identifier consisting of 1 through 8 characters. The default is the TID of originating job. This parameter should not be used for a request to the VAX/VMS station.

DF=*df* Dataset format:

- CB Character blocked
- BB Binary blocked
- TR Transparent

Default is CB. See subsection 4.5 for details of dataset formats.

#### 4.3 STAGING DATASETS TO VMS

The DISPOSE control statement requests staging of the COS dataset (*dn*) to the mainframe (*mf*).

Format:

```
DISPOSE, DN=dn, SDN=sdn, DC=dc, DF=df, MF=mf, SF=sf, ID=uid, TID=tid,  
ED=ed, RT=rt, R=rd, W=wt, M=mn, TEXT=text, { WAIT  
NOWAIT }, DEFER, NRLS.
```

DN=*dn* Dataset name consisting of 1 through 7 alphanumeric characters; required parameter.

SDN=*sdn* Staged dataset name consisting of 1 through 15 alphanumeric characters; default is *dn*.

DC=*dc* Disposition code; default is PR:

- IN Place dataset in mainframe's input queue
- MT Write dataset to magnetic tape
- PR Print dataset
- PT Plot dataset
- PU Punch dataset
- SC Scratch dataset (no transfer occurs)
- ST Write dataset to disk

DF=*df* Dataset format; default is CB:

- CB Character blocked
- BB Binary blocked
- TR Transparent

MF=*mf* Mainframe identifier; default is mainframe of job origin.

SF=*sf* Special forms information to be passed to front-end computer system

ID=*uid* User identification

TID=*tid* Terminal identifier; default is TID of originating job. This parameter should not be used when transferring to the VAX/VMS station.

ED=*ed* Edition number; ignored by the VAX/VMS station.

RT=*rt* Retention period in the range is 1 through 4095. Default depends on destination mainframe. RT=*rt* is used in specifying the expiration date for magnetic tape datasets.

R=*rd* Read control word; ignored by the VAX/VMS station.

W=*wt* Write control word; ignored by the VAX/VMS station.

M=*mn* Maintenance control word; ignored by the VAX/VMS station.

TEXT=*text* Text to be passed to front-end computer system. The maximum size of TEXT is 240 characters. See section 5 for details.

WAIT	Processing of the COS job is suspended until disposed dataset has been staged to front-end computer system.
NOWAIT	Processing of the COS job is resumed immediately.
DEFER	Defers disposition until dataset is released
NRLS	No release; dataset remains local to the COS job.

#### 4.4 IDENTIFYING DATASETS

Datasets are identified on the Cray mainframe by the DN, PDN, ID, and ED fields of the ACQUIRE, FETCH, and DISPOSE control statements.

The optional TEXT field contents identify the VMS file associated with a COS dataset. If the TEXT field is not specified, the defaults as described in subsection 4.8 apply.

When the TEXT field is used, you must specify those components of a VMS file descriptor that uniquely identify that file. The VAX/VMS station supplies defaults for omitted file descriptor components. Sections 5 and 6 discuss these defaults.

The VAX/VMS station permits the use of VMS logical names for the full file descriptor. Logical name translation is performed when the VAX/VMS station receives the ACQUIRE, FETCH, or DISPOSE request; this requires the logical name to reside in the SYSTEM logical name table.

\*\*\*\*\*

#### CAUTION

If a logical name for the file descriptor is used, the logical name equivalence must not change between the CRAY SUBMIT of the COS job and the ACQUIRE, FETCH, or DISPOSE being processed. If you assign the logical name to another VMS file, the VAX/VMS station uses the new equivalence.

\*\*\*\*\*

Although COS allows the TID field to be specified in the ACQUIRE, FETCH, or DISPOSE statements for VAX/VMS station use, the TID field should not be set. The VAX/VMS station uses this field for the VMS User Identification Code (UIC).

The VAX/VMS station does not use the SF=*sf* field; specifying *sf* has no effect.

#### 4.5 DATASET FORMATS

The DF parameter in the ACQUIRE, FETCH, or DISPOSE control statements defines COS dataset formats. The VAX/VMS station supports character blocked (CB), binary blocked (BB), and transparent (TR) dataset formats.

The file organization and the VMS record format defines VMS file formats. The VAX/VMS station supports sequential, relative, and block file organizations. The supported record formats are fixed and variable. Table 4-1 shows the relationship between the various dataset/file formats.

Table 4-1. COS Dataset to VMS File Mapping

COS Dataset Format	VMS File Organization					
	Seq. Fixed	Seq. Variable	Relative Fixed	Relative Variable	Block Tape	Block Disk
CB	+	*	+	+	+	O
BB	+	*	+	+	+	O
TR	x	x	x	x	*	*

+ Allowed

O Not allowed

\* Default

x Although allowed, these modes are extremely inefficient for transferring transparent data. (The user account is billed for all staging performed on their behalf.)

##### 4.5.1 COS CHARACTER BLOCKED DATASETS

A CB dataset contains ASCII character data, block control words (BCWs), record control words (RCWs), and optional blank compression characters.

When the VAX/VMS station transfers a dataset to COS, it reads the VMS file, builds COS blocks by adding appropriate control words, and transmits the data in blocks to COS.

When the VAX/VMS station receives a CB dataset from COS, it reads COS blocks, expands the compressed blanks, removes the RCWs to form VMS records, and writes the data to a VMS storage device.

#### 4.5.2 COS BINARY BLOCKED DATASETS

The VAX/VMS station processes COS BB datasets the same as CB datasets, except that no blank expansion is performed. For BB datasets, be aware of the data reformatting performed by the Cray Computer System/VAX hardware link. Because the two systems address byte strings differently, the interface performs the following assembly/disassembly between 64-bit Cray words and 16-bit VAX words. Figure 4-1 shows the reformatting that occurs between the Cray system and the VAX.

The manipulation required to present the binary data in the correct format to VMS or COS depends on the binary field width. The VAX/VMS station does not perform binary data manipulation. You must manipulate binary data to the correct format before sending a file to COS or after receiving a file from COS.

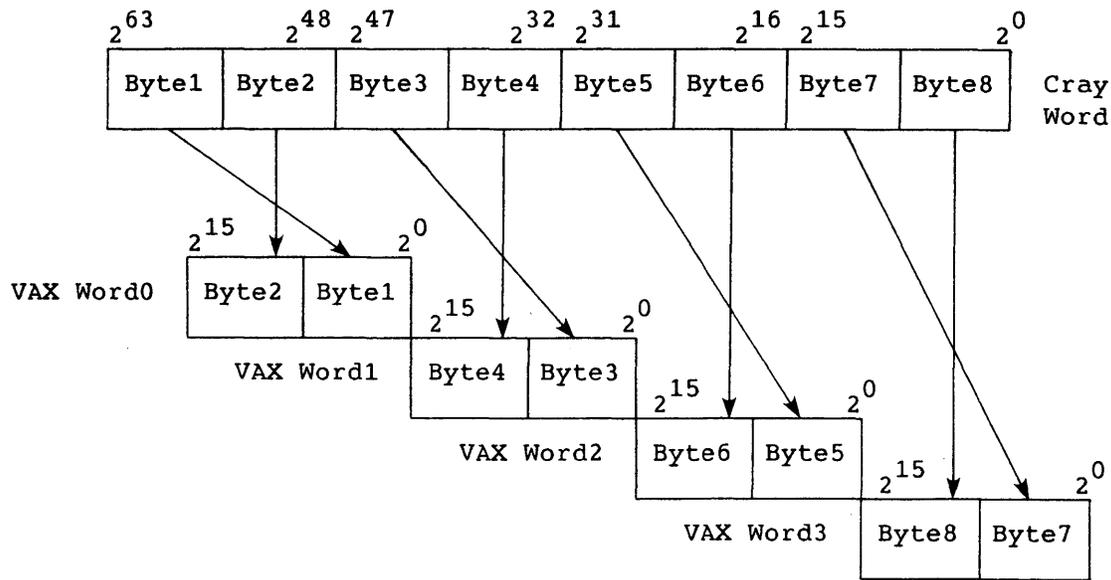
As a special type of BB dataset, the VAX/VMS station can transfer magnetic tape files in a special format called *interchange format*, which is specified by the /FOREIGN qualifier in the DISPOSE, ACQUIRE, or FETCH TEXT field. (See subsections 5.3.1 and 6.3.1.) This format facilitates reading and writing of tapes that are also to be read or written on tape devices connected to other vendors' systems or to a CRI I/O Subsystem (IOS). In interchange format, each tape block of data corresponds to a single logical record in COS blocked format. See the COS Version 1 Reference Manual, publication SR-0011, for further information on interchange format.

#### 4.5.3 COS TRANSPARENT DATASETS

A transparent dataset consists of a bit string. The VAX/VMS station performs no reformatting.

#### 4.5.4 VMS SEQUENTIAL FILE ORGANIZATION

The sequential file organization is supported for all device types.



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Figure 4-1. Blocked Data Reformatting

#### 4.5.5 VMS RELATIVE FILE ORGANIZATION

A relative file is a series of fixed-length positions (or cells) consecutively numbered from 1 to  $n$ . This number is the record number relative to the beginning of the file.

The VAX/VMS station allows only sequential access of records from a relative file.

#### 4.5.6 VMS BLOCK MODE PROCESSING

In block mode, data is organized sequentially in data lengths equal to the physical block size of the VMS device. For disk devices this length is 512 bytes; for magnetic tape devices the station supports block sizes from 14 bytes to 32,768 bytes. VMS block mode is the fastest method of transferring data between the Cray mainframe and the VAX system.

#### 4.6 VMS DESTINATION FILE TYPES

For datasets being staged from COS to VMS, the disposition code (DC) on the DISPOSE statement and the staging command element in the TEXT field determines the VMS destination device type or symbiont. The disposition codes supported are:

<u>DC</u>	<u>Description</u>
IN	Dispose to a VMS batch queue
MT	Dispose to a VMS magnetic tape
PL	Dispose a COS plot dataset to a VMS disk file
PR	Dispose to a VMS print queue
PU	Dispose a COS punch dataset to a VMS disk file
ST	Dispose to a VMS disk file

The staging commands supported are:

<u>Staging Command</u>	<u>Description</u>
\$SUBMIT	Dispose to a VMS batch queue
\$DISK	Dispose to a VMS disk file
\$TAPE	Dispose to a VMS magnetic tape
\$PRINT	Dispose to a VMS print queue
\$USER=nn	Dispose to an installation specific device

Section 5 describes the use of the disposition code and the staging command.

#### 4.7 VMS SOURCE FILE TYPES

For datasets being staged from VMS to COS, the staging command element in the ACQUIRE or FETCH TEXT field determines the source device type.

The staging commands supported are:

<u>Staging Command</u>	<u>Description</u>
\$DISK	Acquire from a VMS disk file
\$TAPE	Acquire from a VMS magnetic tape
\$USER=nn	Acquire from an installation specific device

Section 6 describes the use of the ACQUIRE and FETCH staging commands.

#### 4.8 DATASET MANAGEMENT DEFAULTS IN THE ABSENCE OF A TEXT PARAMETER

If you do not specify a TEXT field in a COS ACQUIRE, FETCH, or DISPOSE control statement, the VAX/VMS station uses certain default parameters. COS can automatically return datasets with disposition code PR to the VAX/VMS station without specific DISPOSE statements. These datasets are treated the same as a DISPOSE with DC=PR and no TEXT parameter. The following subsections discuss VAX/VMS station defaults.

##### 4.8.1 DISPOSE DEFAULTS FOR DC=PR

When PR datasets are returned to the VAX/VMS station, the station either prints the files or creates VMS disk files that you can view from a VMS terminal. The /[NO]PRINT qualifier on the station SUBMIT command determines the type of processing. See the command section for information on the /[NO]PRINT qualifier.

If you use the default /NOPRINT, the VAX/VMS station creates a VMS file with the following format:

(User's default directory)(*filename*).CPR;<version number>

User's default directory

The disk and directory from where the Cray job was submitted

*filename* COS job name which generated the \$OUT

CPR File type indicating the file is COS print file output

*version number*

If the file *filename* already exists, the station creates the file with the existing version number plus 1.

A DISPOSE control statement with the \$PRINT staging command specified in the TEXT field can be used to override a /NOPRINT SUBMIT qualifier. See section 5 for more information concerning the DISPOSE statement TEXT field.

To print COS \$OUT, the station uses the logical print queue SYS\$PRINT. The Process Local Logical Name Table for the user issuing the station SUBMIT command defines SYS\$PRINT. Print output can be routed to any VMS print queue using the \$PRINT staging command. See section 5 for more information about the \$PRINT staging command.

#### 4.8.2 DISPOSE DEFAULTS FOR DC=ST,PL,PU,MT

Disposition code MT does not have a default since a TEXT parameter is required for magnetic tape staging. As the default for all other disposition codes, the station creates a file with the following format:

(User's default directory)(*<filename>*.Cdc;*<version number>*)

User's default directory

The disk and directory from where the Cray job was submitted

*filename sdn*

*Cdc* File type indicating the file staged:

CST if DC=ST

CPL if DC=PL

CPU if DC=PU

*version number*

If the file *filename* already exists, the station creates the file with the existing version number plus 1.

Several DISPOSE default examples follow.

Example 1:

DISPOSE, DN=MYFILE, DC=ST.

This statement creates a VMS file in the device and directory from which the job was submitted with the file name MYFILE.CST;1, assuming that you did not have an existing file named MYFILE.CST. The protection attributes for the file are as specified for your UIC process by the DCL SET PROTECTION command. Since DF is not specified, the VAX/VMS station creates a VMS sequential file with variable length records.

Example 2:

DISPOSE, DN=MYFILE, DC=PL, DF=BB.

This command creates MYFILE.CPL;2 in the device and directory from which the job was submitted, assuming that MYFILE.CPL version 1 already exists. The file organization for MYFILE.CPL;2 is sequential and records within the file are of variable length.

If DF is transparent, the VMS file is written in 512-byte blocks. Because this file has had no processing to remove the COS record structure, it cannot be subsequently read using the Record Management Services (RMS) GET function. This mode is used normally for archiving Cray mainframe mass storage to VMS disk files.

Example 3:

```
DISPOSE, DN=MYFILE, DC=ST, DF=TR.
```

This command creates MYFILE.CST;2 using RMS block mode WRITES. This file can be restaged to COS by the following ACQUIRE statement (provided that both jobs are submitted from the same disk and directory):

```
ACQUIRE, DN=MYFILE, DF=TR.
```

#### 4.8.3 ACQUIRE/FETCH DEFAULTS

The only ACQUIRE parameter affecting the staging of datasets to COS is the dataset format. The file name in your default directory defaults to:

```
pdn.CST; <highest existing version number>
```

If DF is character blocked or binary blocked, the station uses the file organization and record type as defined for the file. For example,

```
ACQUIRE, DN=MYFILE, DF=CB.
```

This statement creates the COS permanent dataset MYFILE using the highest version of MYFILE.CST in your default device and directory. The station reads records sequentially from the file and blocks them into COS blocked format (indexed sequential not allowed). Blocking is performed when the data is transferred to the Cray mainframe. If DF is transparent, the station uses block I/O to read 512-byte VMS blocks. No COS record blocking is performed.

The FETCH default is:

```
sdn.CST; <highest existing version number>
```

#### 4.9 DATASET MANAGEMENT DEFAULTS FOR JOBS NOT ORIGINATING FROM THE STATION

When a COS job is submitted from the VAX/VMS station, control information relating to the user submitting the COS job and the station environment is included. If you define the default print queue, COS routes print datasets without the station control information to this queue. Other datasets are staged to or from the station default device and directory.

If a job originating from some other station makes an ACQUIRE or DISPOSE request to the VAX/VMS station, the TEXT field of the request must specify a complete VMS file specification including the DECnet nodename and username/password information. This is mandatory to protect VMS file security.

The COS DISPOSE control statement stages datasets from Cray mainframe mass storage to VMS files. Section 4 provides the general format of the DISPOSE control statement. Specific DISPOSE parameters used by the VAX/VMS station are as follows:

<u>Parameter</u>	<u>VAX/VMS Station Usage</u>
<i>dn</i>	See staged dataset name ( <i>sdn</i> )
<i>sdn</i>	If the VMS file name is not specified in the TEXT field, this parameter is the default VMS file name. If this parameter is not specified on the DISPOSE statement, the default is <i>dn</i> .
<i>dc</i>	One of the following disposition codes:  IN Dataset entered in VMS batch queue MT Dataset staged to VMS magnetic tape PL Dataset staged to VMS disk file PR Dataset entered in VMS print queue PU Dataset staged to VMS disk file ST Dataset staged to VMS disk file
<i>mf</i>	Mainframe identifier of the VAX/VMS station
<i>tid</i>	Used internally by the VAX/VMS station. This parameter should not be specified by users.
<i>rt</i>	Retention period in days for a magnetic tape file; range, 0 through 4095. (See /EXPIRY qualifier in subsection 5.3.1)
<i>df</i>	One of the following dataset formats:  CB VAX/VMS station deblocks COS dataset and expands blank compression characters.  BB VAX/VMS station deblocks COS dataset.  TR VAX/VMS station treats COS dataset as a bit string.

## 5.1 DISPOSE TEXT FIELD CONTENTS

The DISPOSE TEXT field contains an ASCII string of up to 240 characters. When specified, the staging command and file descriptor must be separated by one or more spaces.

Format:

```
| ($<staging command>(/<command qualifiers>)) |  
| (<file descriptor>(/<file qualifiers>)) |
```

### *staging command*

Optional element identifying the target device or symbiont for datasets staged from COS to the VAX/VMS station. Table 5-1 summarizes all available staging commands.

If the staging command specified in the TEXT field is inconsistent with the DC parameter setting, the DC parameter is overridden.

If you do not specify a staging command, the defaults are as follows:

<u>DISPOSE DC Parameter</u>	<u>Staging Command</u>
IN	\$SUBMIT
PR	\$PRINT
ST, PL, PU	\$DISK

MT does not default to \$TAPE because the *command qualifier* is required for magnetic tape staging.

### */command qualifiers*

Optional element consisting of zero or more qualifiers, each with the general form /QUAL[=<value>]. The command qualifiers are specified only if a staging command is specified. The individual staging command sections describe the qualifiers used.

*file descriptor*

Optional element consisting of a standard VMS file specification uniquely identifying the target file on the specified device type

*/file qualifiers*

Optional element consisting of zero or more qualifiers each with the general form /QUAL[=<value>]

Table 5-1. DISPOSE Staging Commands

Command	Description	Subsection
\$DISK	Stages to VMS disks	5.2
\$TAPE	Stages to VMS tapes	5.3
\$SUBMIT	Stages to VMS input queue	5.4
\$PRINT	Stages to VMS print queue	5.5
\$USER= <i>nn</i>	Installation specific	5.6

5.2 \$DISK DISPOSE STAGING COMMAND

The \$DISK staging command stages COS datasets to disk-resident VMS files. If the DC parameter in the COS DISPOSE statement is set to ST, PL, or PU and no staging command qualifiers are required, \$DISK need not be specified.

Format:

```
($DISK(/<command qualifiers>))  
(<file descriptor>(/<file qualifiers>))
```

### 5.2.1 \$DISK COMMAND QUALIFIERS

The following \$DISK command qualifiers qualify the \$DISK staging command:

<u>Qualifier</u>	<u>Description</u>
/TRNC	The station truncates any records received from COS exceeding the VMS file maximum record length (see /MRS file qualifier) to the VMS maximum record length. If you do not specify the /TRNC qualifier and the station detects an illegal length record, the system cancels the DISPOSE and a message is issued in the job log.
/EOF=<eof>	<eof> specifies a 1- to 80-character ASCII string that is inserted in the VMS target file when the station detects a COS EOF separator. If you do not specify this qualifier, the system uses the station default EOF separator.
/RMS= { REC } { BLK }	Specifies the mode of operation for writing records to VMS files. The default is installation dependent and is set by the VAX/VMS station manager.  REC Records are written using RMS. RMS record transfers across DECnet are restricted to 16,384 bytes.  BLK The station writes and blocks the records. If this mode is used, the LRL field is not set in the file header.

### 5.2.2 \$DISK FILE DESCRIPTOR

The file descriptor element format is as follows:

```
| (<node"username password">:::)(<dev>:)([<directory>])  
|  
| (<filename>)(.<type>)(;<version>)  
|
```

*node"username password"::*  
 Specifies the standard DECnet node name for the target VAX node, together with a valid username and password pair; required only for requests from jobs that did not originate from the target VAX. *username* and *password* must be enclosed in double quotes and separated by one space.

*dev* Standard VMS device name of one the disk devices supported by the VAX running the VAX/VMS station

*directory* Standard VMS directory

*filename* Standard VMS file name

*type* Standard VMS file type

*version* Standard VMS file version number

See the VAX/VMS DCL Dictionary, DEC publication AA-Z200A-TE, for a full description of the \$DISK file descriptor format. Logical names can be used in place of the device and directory components of the file descriptor or in place of the whole file descriptor. The VAX/VMS DCL Dictionary describes logical names in general, as does section 4 of this manual.

Defaults are supplied for missing components as follows:

<u>Parameter</u>	<u>Default</u>
<i>node"username password"::</i>	Standard DECnet node name, username, and password for the target VAX node is required only if the request is from a job that was not submitted from the target VAX.
<i>dev:[&lt;directory&gt;]</i>	If the device component is missing, the station uses the disk and directory from where the job was submitted.
<i>filename</i>	The default <i>filename</i> is the DISPOSE <i>sdn</i> .
<i>type</i>	<i>Cdc</i>
<i>version</i>	Default is the highest existing version number for the file plus 1.

The following five examples illustrates the use of the \$DISK file descriptor:

```
DISPOSE, DN=MYFILE, DC=ST.
```

```
DISPOSE, DN=MYFILE, DC=ST, TEXT='$DISK'.
```

```
DISPOSE, DN=MYFILE, DC=ST, TEXT='MYFILE;3'.
```

```
DISPOSE, DN=MYFILE, TEXT='$DISK DBA2:[MYDIR]MYFILE.CST;3', DC=ST.
```

```
DISPOSE, DN=MYFILE, DC=ST, TEXT='FRED'.
```

All five examples achieve the identical result: the COS dataset MYFILE is disposed to the VMS file MYFILE.CST on device DBA2, in directory MYDIR, with version number 3. The following assumptions are made:

- The file DBA2:[MYDIR]MYFILE.CST;2 already exists.
- The job was submitted from DBA2:[MYDIR].
- The logical name translation for FRED in the system Logical Name Table is DBA2:[MYDIR]MYFILE.CST;3.

### 5.2.3 \$DISK FILE QUALIFIERS

File descriptor qualifiers construct the RMS file access block (FAB) before the station accesses the file. See the VAX Record Management Services Reference Manual, DEC publication AA-Z503A-TE, for further details on FABs. The system recognizes the following qualifiers:

<u>Qualifiers</u>	<u>Description</u>
/PROTECTION=<propt>	VAX/VMS station file protection is specified in the same way as VMS file protection specifications. They may have the following components:  <u>W</u> ORLD:<opt> Set world access protection <u>G</u> ROUP:<opt> Set group access protection <u>O</u> WNER:<opt> Set owner access protection <u>S</u> YSTEM:<opt> Set system access protection

Qualifiers

Description

<opt> Access option; any combination of the following access codes where a specified code grants access:

- R Read access
- W Write access
- E Execute access
- D Delete access

The default file protection is based on the user's process at the time of job submission, which can be changed by the DCL command SET PROTECTION. Specify multiple attributes by separating the attributes with commas and enclosing them in parentheses. For example:

/PROTECTION=(S:RW,GR:R,WORLD)

This protection qualifier allows the system read and write access and group members read access only; prohibits access by all users in the world category and does not change the current access for the owner.

/ORG= {  
BLK  
SEQ  
REL  
}

Target file organization is as follows:

- BLK File is written in block mode; default for COS dataset format TR.
- REL Records are written sequentially to an RMS relative-record file (starting at relative record number 1).
- SEQ Records are written sequentially to an RMS sequential access file; default for COS dataset formats CB and BB.

/RFM= {  
FIX  
VAR  
}

Type of record file. This field is ignored if /ORG=BLK is specified.

- FIX Fixed-length record format
- VAR Variable-length record format. This is the default RFM.

Qualifiers

Description

---

---

NOTE

If the record received from COS is less than the MRS and the format is fixed, the VMS record is padded with blanks.

---

---

`/MRS=<max_rec_size>`

Maximum record size for the file is as follows:

- For fixed-length records, specifies the actual size of each record in the file. This field must be specified if `/RFM=FIX`.
- For variable-length `/ORG=SEQ` records, the value represents the size of the largest record that can be written to the file. If MRS is not specified, there is no user limit on record size.
- For relative files this value determines the size of the record cell. This is a mandatory parameter if `/ORG=REL` is specified.

`/RAT= { CR }  
          { FTN }`

`/NORAT`

Specifies whether control information pertaining to the records in the file is initialized.

CR Indicates each record is to be preceded by a line feed and followed by a carriage return when the record is written to a carriage control device such as a terminal or line printer.

FTN Indicates that the first byte of each record contains a FORTRAN (ASA) carriage control character. This is the default RAT.

`/NORAT` creates a file with no record attributes.

The following example shows a dataset disposed to VMS disk.

```
DISPOSE, DN=CRYFILE, DF=CB, TEXT=' $DISK/TRNC DBA1:[MYDIR]VAXFILE.DAT
/PROT=(O:RWD,G:R)/ORG=REL/RFM=FIX/MRS=132'.
```

In this example,

DN=CRYFILE  
COS dataset name

DF=CB COS dataset format is character blocked.

\$DISK  
Destination VMS file is disk resident.

/TRNC If any records in the COS dataset exceed the maximum record size (132), the VMS records are truncated to the specified /MRS value.

DBA1: Physical device name where the VMS file VAXFILE.DAT is created

[MYDIR] VMS file VAXFILE.DAT is entered in the directory MYDIR on device DBA1.

VAXFILE.DAT  
VMS file name uniquely identifying the file within the directory MYDIR

/PROT=(O:RWD,G:R)  
Protection qualifier that provides group members read access only; provides the owner with read, write, and delete access; and provides the process default protection for the system and world categories.

/ORG=REL VMS file VAXFILE.DAT is relative organization.

/RFM=FIX VMS file VAXFILE.DAT contains fixed-length records.

/MRS=132 VMS VAXFILE.DAT contains fixed-length 132 byte records.

### 5.3 \$TAPE DISPOSE STAGING COMMAND

The \$TAPE staging command stages COS datasets to magnetic tape resident VMS files. \$TAPE is mandatory for magnetic tape staging. The VAX/VMS station supports those magnetic tape structures defined by American National Standards Institute standard ANSI X3.27-1977 and also tapes in interchange format (see subsection 4.5.2).

Format:

```
$TAPE/<command qualifier> (<file descriptor>(/<file qualifier>))
```

#### 5.3.1 \$TAPE COMMAND QUALIFIERS

The following command qualifiers are recognized when the DISPOSE destination device is magnetic tape. /VOLUME is the only required command qualifier.

<u>Qualifiers</u>	<u>Description</u>
/VOLUME=<volnam>	Volume name (label) or names for a multivolume tape set; required qualifier. Maximum 6 characters. The station appends the disposed dataset after the last file already on the volume set. If the dataset exceeds the <i>volnam</i> list, the operator must provide a volume name. Both the COS job log and the station logfile records the name supplied. Specify multiple volumes by separating the volumes with commas and enclosing them in parentheses.
/BLOCKSIZE=<n>	Block size of the magnetic tape that is to be written; optional qualifier. <i>n</i> is an integer in the range 14 to 32,768 specifying the block size in bytes. The default for this qualifier is 4096. For interchange format, this specifies the maximum tape block size.

<u>Qualifiers</u>	<u>Description</u>
/EOF=<eof>	<eof> specifies a 1- to 80-character ASCII string that is inserted in the VMS target file when the station detects a COS EOF separator; optional qualifier. If you do not specify this qualifier, the station uses the station default EOF separator.
/EXPIRY=<date>	Expiration date for a magnetic tape file; optional qualifier. The format of this field is either: <ul style="list-style-type: none"> <li>• <i>dd-mmm-yyyy</i>, a standard VMS date; default is the current date.</li> <li>• <i>+nnnn</i>, where <i>nnnn</i> is an integer from 1 to 9999, specifying the number of days after the current date before expiration. Default is the RT parameter of the DISPOSE statement.</li> </ul>
/FOREIGN	Required for an interchange format tape; optional qualifier.
/TRNC	The station truncates any records received from COS exceeding the VMS file maximum record length (see /MRS file qualifier) to the VMS maximum record length; optional qualifier. If you do not specify the /TRNC qualifier and the station detects an illegal length record, the station cancels the dispose.
/RMS= { BLK } REC }	Specifies the mode of operation for writing records to VMS files; optional qualifier. The default is installation dependent and is set by the VMS station manager. <ul style="list-style-type: none"> <li>BLK The station writes and blocks the records. If this mode is used, the LRL field is not set in the file header.</li> <li>REC Records are written using RMS.</li> </ul>

<u>Qualifiers</u>	<u>Description</u>
/UNLOAD /NOUNLOAD	The volume is physically unloaded from the tape unit when staging is complete; optional qualifier.
/REWIND	The volume is rewound but not unloaded at the end of the transfer; optional qualifier.
/OVERWRITE	The volume is rewound and the data is written at the beginning of the tape; optional qualifier.

### 5.3.2 \$TAPE FILE DESCRIPTOR

The file descriptor element format is:

```
| (<dev>:)(<filename>)(.<type>)|
```

*dev* Standard VMS device name of one of the magnetic tape devices supported by the VAX running the VAX/VMS station. If the controller or unit number is not specified, an available unit on that device is selected automatically.

*filename* Standard VMS file name

*type* Standard VMS file type

Both *filename* and *type* can be replaced by 1 to 17 ASCII character ANSI file name delimited by quotes, as in "ANSI TAPE FILE."

Defaults supplied for missing components are as follows:

<u>Parameter</u>	<u>Default</u>
<i>dev</i>	The default tape device is determined by the VAX/VMS station manager.
<i>filename</i>	The default for the file name is the DISPOSE <i>sdn</i> parameter.
<i>type</i>	CMT

### 5.3.3 \$TAPE FILE QUALIFIERS

The following qualifiers are recognized:

<u>Qualifiers</u>	<u>Description</u>
<code>/MRS=&lt;max_rec_size&gt;</code>	Maximum record size for the file as follows: <ul style="list-style-type: none"><li>• For fixed-length records, specifies the actual size of each record in the file. This field must be specified if <code>/RFM=FIX</code>.</li><li>• For variable-length <code>/ORG=SEQ</code> records, the value represents the size of the largest record that can be written to the file. If MRS is not specified, there is no user limit on record size.</li><li>• For relative files, this value determines the size of the record cell. This is a mandatory parameter if <code>/ORG=REL</code> is specified.</li><li>• For interchange format tape files, this parameter is ignored since the record size is equal to the block size.</li></ul>
<code>/ORG={   BLK   SEQ }</code>	Target file organization as follows: <ul style="list-style-type: none"><li>BLK File is written in block mode; default for COS dataset format TR. BLK must be specified for interchange format tapes.</li><li>SEQ Records are written sequentially to an RMS sequential access file; default for COS dataset formats CB and BB.</li></ul>
<code>/PROTECTION=&lt;propt&gt;</code>	VAX/VMS station file protection is specified in the same way as VMS file protection specifications. They may have the following components: <ul style="list-style-type: none"><li><code>WORLD:&lt;opt&gt;</code> Set world access protection</li><li><code>GROUP:&lt;opt&gt;</code> Set group access protection</li><li><code>OWNER:&lt;opt&gt;</code> Set owner access protection</li><li><code>SYSTEM:&lt;opt&gt;</code> Set system access protection</li></ul>

<u>Qualifiers</u>	<u>Description</u>
/PROTECTION=<propt> (continued)	<opt>      Access option; any combination of the following access codes where a specified code grants access:  <div style="margin-left: 100px;">             R   Read access              W   Write access              E   Execute access              D   Delete access           </div> The default file protection is based on the user's process at the time of job submission, which can be changed by the DCL command SET PROTECTION. Specify multiple attributes by separating the attributes with commas and enclosing them in parentheses.
/RFM= { FIX } { VAR }	Type of record access for file. This field is ignored if /ORG=BLK is specified.  <div style="margin-left: 100px;">             FIX   Fixed-length record format, ANSI F type format               VAR   Variable-length record format, ANSI D type format           </div>

#### 5.4 \$\$SUBMIT DISPOSE STAGING COMMAND

The \$\$SUBMIT DISPOSE staging command stages the dataset from COS to a VMS disk file and then submits that file to a VMS batch queue.

Format:

```

$SUBMIT(/<command qualifiers>
      (<file descriptor>(<file qualifiers>))

```

#### 5.4.1 \$SUBMIT COMMAND QUALIFIERS

In addition the \$DISK command qualifiers (subsection 5.2.1), the following optional \$SUBMIT command qualifiers are recognized:

<u>Qualifiers</u>	<u>Description</u>
<i>/AFTER=absolute-time</i>	Indicates the job is held until a specified time. If that time has already passed, the job is queued for immediate processing. Specify the time value according to the rules for entering absolute times. See VAX/VMS DCL Dictionary, DEC publication AA-Z200A-TE, for more information.
<i>/CPUTIME=n</i>	Indicates CPU time limit for the batch job. The parameter <i>n</i> can be specified as a delta time, the value 0, or the words NONE or INFINITE. Default is established by the batch queue.
<i>/HOLD</i> <i>/NOHOLD</i>	Specifies whether the job is available for immediate processing. If <i>/HOLD</i> is specified, the job is not released for processing until specifically released with the DCL SET QUEUE/RELEASE command. The default is <i>/NOHOLD</i> .
<i>/IDENTIFY</i> <i>/NOIDENTIFY</i>	Specifies whether the system displays the job number and batch queue name when it is successfully queued. By default, the job number and batch queue names are displayed.
<i>/KEEP</i> <i>/NOKEEP</i>	Specifies whether the logfile is deleted after it is printed; default is <i>/NOKEEP</i> .
<i>/LOG_FILE=file-spec</i> <i>/NOLOG_FILE</i>	Specifies whether a specified logfile is created for the job. By default, the logfile is written to a file into the user's default directory having the same name as the command file and a file type of LOG. If the <i>/LOG_FILE</i> qualifier is omitted and the <i>/NAME</i> qualifier is specified, the logfile is written to a file having the same name as that specified by the <i>/NAME</i> qualifier. In this case, the name specification on the <i>/NAME</i> qualifier must be a valid file specification. If <i>/NOLOG_FILE</i> is specified, the logfile is written to a null device.

<u>Qualifiers</u>	<u>Description</u>
<i>/NAME=job-name</i>	Indicates 1 to 8 alphanumeric character name string identifying the job. The job name is displayed by the DCL SHOW QUEUE command and is printed on the flag page of the batch job output log, replacing the file name of the logfile. If /NAME is not specified, the file name (truncated to 8 characters, if necessary) is the default.
<i>/NOTIFY</i> <i>/NONOTIFY</i>	Controls whether a message is broadcast to a terminal on which the user is logged on notifying the user that the VMS job is complete or aborted. Default is NONOTIFY.
<i>/PARAMETERS=parameters</i>	Indicates 1 to 8 optional parameters to be passed to the job. The parameters define values equated to the symbols named P1, P2, P3, and so on, in each command procedure in the job. The symbols are local to the specified command procedures.  If more than one parameter is specified, separate with commas and enclose in parentheses. To specify a parameter that contains special characters or delimiters, enclose the parameter in quotation marks.
<i>/PRINTER=queue-name</i> <i>/NOPRINTER</i>	Controls whether the job log is queued for printing when the job is complete. The /PRINTER qualifier allows the specification of a particular print queue. By default, the job log is printed on SYS\$PRINT.
<i>/PRIORITY=n</i>	Specifies the VMS priority at which the batch job is entered on the queue. Valid range is 0 through 255, with the lowest priority being 0.
<i>/REMOTE</i>	Indicates that the dataset is to be entered on the batch queue of a remote node. The file descriptor must contain the remote node name as specified in subsection 5.2.2.
<i>/QUEUE=queue-name</i>	Indicates the VMS batch queue to which the job is submitted; by default, the job is submitted to the SYS\$BATCH queue.

<u>Qualifiers</u>	<u>Description</u>
/WSDEFAULT= <i>n</i>	Defines a working set default for the batch job. The parameter <i>n</i> can be a positive integer in the range 1 through 65535, 0, or the word NONE.
/WSEXTENT= <i>n</i>	Defines a working set extent for the batch job. The parameter <i>n</i> can be a positive integer in the range 1 through 65535, 0, or the word NONE.
/WSQUOTA= <i>n</i>	Defines the maximum working set size, or the working set quota, for the batch job. The parameter <i>n</i> can be a positive integer in the range 1 through 65535, 0, or the word NONE.

#### 5.4.2 \$SUBMIT FILE DESCRIPTOR

The format for the \$SUBMIT file descriptor is identical to the \$DISK file descriptor element format described in subsection 5.2.2.

#### 5.4.3 \$SUBMIT FILE QUALIFIERS

The file qualifiers, as defined for \$DISK file qualifiers (subsection 5.2.3), apply to the \$SUBMIT staging command. In addition, the \$SUBMIT staging command recognizes the following optional file qualifier:

<u>Qualifier</u>	<u>Description</u>
/DELETE	File is to be deleted after the \$SUBMIT has been processed. The protection code on the file must allow delete access to the user who submitted the COS job with the DISPOSE request. Default is /NODELETE.
/NODELETE	

#### 5.5 \$PRINT DISPOSE STAGING COMMAND

The \$PRINT DISPOSE staging command indicates that the dataset staged from COS is first placed in a VMS disk-resident file and then submitted to a VMS print queue.

Format:

```
$PRINT(/<command qualifiers>
      (<file descriptor>(<file qualifiers>))
```

#### 5.5.1 \$PRINT COMMAND QUALIFIERS

In addition to the \$DISK command qualifiers (subsection 5.2.1), the following \$PRINT command qualifiers are recognized.

<u>Qualifiers</u>	<u>Description</u>
<i>/AFTER=absolute-time</i>	File is not printed until a specific time. Specify time using the standard VMS syntax rules for absolute time values. (See the VAX/VMS DCL Dictionary, DEC publication AA-Z200A-TE, for rules.) If the specified time has passed, the file is queued for printing.
<i>/CHARACTERISTICS=(c[,...])</i>	Specifies one or more characteristics desired for printing the file. To specify more than one characteristic, separate with commas and enclose the list in parentheses. Characteristics codes are installation defined.
<i>/DEVICE=device-name</i>	File is to be queued for printing on a specific device. If you do not specify <i>/DEVICE</i> , default is the user's default <i>SY\$PRINT</i> . This qualifier is synonymous with the <i>/QUEUE</i> qualifier.
<i>/FORM=type</i>	Forms type required; use installation-defined numeric value or alphanumeric code.
<i>/HOLD</i> <i>/NOHOLD</i>	Specifies if file is available for printing immediately. If you specify <i>/HOLD</i> , the system does not release the file for printing until the DCL <i>SET QUEUE/RELEASE</i> command is issued. The default is <i>/NOHOLD</i> .

<u>Qualifiers</u>	<u>Description</u>
/LOWERCASE /NOLOWERCASE	File contents. If the file contains lowercase alphabetic letters, it must be printed on a printer that prints uppercase and lowercase letters. Use /NOLOWERCASE for uppercase only printers.
/NAME= <i>job-name</i>	Indicates 1 to 8 alphanumeric character job name string. The job name is displayed by the DCL SHOW QUEUE command and is printed in the top and bottom rows of the flag page. If you do not specify /NAME, the default is the file name (truncated to 8 characters, if necessary).
/NOTIFY /NONOTIFY	Controls whether a message is broadcast to a terminal on which the user is logged on, notifying the user that the PRINT VMS job is complete or aborted.
/PRIORITY= <i>n</i>	Specifies the VMS priority at which the print job is entered on the queue. Valid range is 0 through 255, with the lowest priority being 0.
/QUEUE= <i>queue-name</i>	File is to be printed on a specific device. This qualifier is synonymous with the /DEVICE qualifier. If not specified, the default is the user's default SYS\$PRINT queue.
/REMOTE	Indicates that the dataset is entered on the print queue of a remote node. The file descriptor must contain the remote node name as specified in subsection 5.2.2.

### 5.5.2 \$PRINT FILE DESCRIPTOR

The format for the \$PRINT file descriptor is identical to the \$DISK descriptor element format described in subsection 5.2.2

### 5.5.3 \$PRINT FILE QUALIFIERS

The \$PRINT file qualifiers are the same as the \$DISK file qualifiers (subsection 5.2.3). In addition, the \$PRINT staging command recognizes the following optional file qualifiers:

<u>Qualifiers</u>	<u>Description</u>
/BURST /NOBURST	Specifies if burst page is included on output. A burst page precedes a flag page and contains the same information; however, it is printed over the perforation between pages. This qualifier overrides the installation-defined defaults set up for printers. The default is /NOBURST.
/COPIES= <i>n</i>	Indicates the number of copies to print. Range is 1 to 255; default is one copy.
/DELETE /NODELETE	Specifies if file is deleted after printing. The file protection must allow delete access to the user who submitted the job with the DISPOSE request. The default is /NODELETE.
/FEED /NOFEED	Controls whether the PRINT command automatically inserts form feeds when it prints files that do not have carriage control characters. By default, the \$PRINT command inserts a form feed when the forms are within four lines of the end of the form. The default is /NOFEED.
/FLAG_PAGE /NOFLAG_PAGE	Specifies if a flag page is printed preceding output. The default is /NOFLAG_PAGE.
/HEADER /NOHEADER	Specifies if the file name is printed at the top of each output page. By default, the file specification is printed only at the top of the first page of output.
/PAGE_COUNT= <i>n</i>	Indicates the number of file pages to print
/SPACE /NOSPACE	Controls whether output is double-spaced. If /SPACE is not specified, output is single-spaced.

## 5.6 \$USER=nn DISPOSE STAGING COMMAND

The format of the \$USER=nn staging command is site specific. Consult your VAX/VMS station manager for details of the available \$USER=nn staging commands.



The COS ACQUIRE and FETCH control statements stage datasets from VMS files to Cray mainframe mass storage. ACQUIRE makes the dataset a permanent COS dataset. With a FETCH statement, the dataset remains local to the job requesting the VMS dataset. Section 4 describes the general formats of the ACQUIRE statement and the FETCH statement. Specific ACQUIRE and FETCH parameters used by the VAX/VMS station are as follows:

<u>Parameter</u>	<u>VAX/VMS Station Usage</u>
<i>dn</i>	See <i>pdn</i>
<i>pdn</i>	If the VMS file name is not specified in the TEXT field of an ACQUIRE statement, this parameter is the default VMS file name. <i>dn</i> is the default.
<i>sdn</i>	If the VMS file name is not specified in the TEXT field of a FETCH statement, this parameter is the default VMS file name. <i>dn</i> is the default.
<i>mf</i>	Mainframe identifier of VAX/VMS station
<i>tid</i>	Used internally by the VAX/VMS station. This parameter should not be specified by the user.
<i>df</i>	One of the following dataset formats:  CB VAX/VMS station blocks the VMS file into COS blocked format and compresses blanks.  BB VAX/VMS station blocks the VMS file with COS blocked format.  TR VAX/VMS station sends the VMS file to COS as a bit string.
<i>text</i>	Used by the VAX/VMS station to determine the VMS device type and file for the ACQUIRE and FETCH statements (see subsection 6.1)

## 6.1 ACQUIRE/FETCH TEXT FIELD CONTENTS

The ACQUIRE or FETCH TEXT field contains an ASCII string of up to 240 characters. When specified, the staging command and file descriptor must be separated by one or more spaces.

Format:

```
| (<staging command>(</command qualifiers>)) |
| (<file descriptor>(</file qualifiers>)) |
```

### *staging command*

Optional element identifying the VMS source device for datasets staged to COS. The valid commands are \$DISK, \$TAPE, and \$USERnn. Table 6-1 summarizes all available staging commands. \$DISK is the default.

### */command qualifiers*

Optional element consisting of one or more qualifiers each having the general form /QUAL[=<value>]. The command qualifier is specified only if the staging command is specified. Individual staging command sections describe the qualifiers.

### *file descriptor*

Optional element consisting of a formatted ASCII string uniquely identifying the VMS source file on the specified device type

### *file qualifiers*

Optional element consisting of 0 or more qualifiers each with the general form /QUAL=<value>

Table 6-1. ACQUIRE/FETCH Staging Commands

Command	Description	Subsection
\$DISK	Stages from VMS disks	6.2
\$TAPE	Stages from VMS tapes	6.3
\$USER=nn	Installation specific	6.4

## 6.2 \$DISK ACQUIRE/FETCH STAGING COMMAND

The \$DISK ACQUIRE or FETCH staging command stages disk resident VMS files to COS datasets. If no command qualifiers are required, \$DISK need not be specified.

Format:

```
($DISK(/<command qualifier>)) (<file descriptor>(/<file qualifier>))
```

### 6.2.1 \$DISK COMMAND QUALIFIER

\$DISK command qualifiers qualify the \$DISK staging command. The following command qualifier is recognized:

<u>Qualifier</u>	<u>Description</u>
/EOF=<eof>	<eof> specifies a 1- to 80-character ASCII string at the beginning of a VMS record that causes a COS end-of-file separator in the COS dataset. If this qualifier is not specified, the station uses the default EOF separator. This qualifier is ignored for transparent datasets.

### 6.2.2 \$DISK FILE DESCRIPTOR

The file descriptor element format is:

```
(<node"username password">:)(<dev>:)([<directory>])  
  
(<filename>)(.<type>)(;<version>)
```

#### *node"username password"::*

Specifies standard DECnet node name for the target VAX node, together with a valid username and password pair; required only for requests from jobs that did not originate from the target VAX. *username* and *password* must be enclosed in double quotes and separated by one space.

*dev* Standard VMS device name of a disk device supported by the VAX running the VAX/VMS station

*directory* Standard VMS directory

*filename* Standard VMS file name

*type* Standard VMS file type

*version* Standard VMS file version number

See the VAX/VMS DCL Dictionary, DEC publication AA-Z200A-TE, for a full description of this format. Logical names can be used in place of the initial components of the file descriptor or in place of the whole file descriptor. The VAX/VMS DCL Dictionary describes logical names in general, as does section 4 of this manual.

Defaults are supplied for missing components as follows:

<u>Parameter</u>	<u>Default</u>
<i>node"username password"::</i>	Standard DECnet node name, username, and password for the target VAX node is required only if the request is from a job that was not submitted from the target VAX.
<i>dev:[&lt;directory&gt;]</i>	If these components are missing, the station uses the equivalence of the logical name SYS\$DISK. SYS\$DISK is defined in the Process Local Logical Name Table for the log-on process of the user submitting the Cray job issuing the ACQUIRE or FETCH transfer.
<i>filename</i>	The default <i>filename</i> is the ACQUIRE <i>pdn</i> or FETCH <i>sdn</i> truncated to 9 characters, if necessary.
<i>type</i>	CST
<i>version</i>	Default is the highest existing version number for the file.

### 6.2.3 \$DISK FILE QUALIFIERS

The \$DISK file qualifiers are as follows:

<u>Qualifiers</u>	<u>Description</u>
/DELETE	Delete the VMS file after it is successfully staged
/RMS= { BLK } { REC }	Specifies the mode of operation for writing records to VMS files. The default is installation dependent and is set by the VAX/VMS station manager.  BLK The station reads and deblocks the records.  REC Records are written using RMS. RMS record transfers across DECnet are restricted to 16,384 bytes.

For example, a FETCH from VMS disk may be specified as follows:

```
FETCH, DN=CRYFILE, DF=BB, TEXT='$DISK/EOF="*****"  
DBA1: [MYDIR]VAXFILE.DAT;2/DELETE'
```

DN=CRYFILE	Specifies that the COS local dataset name is CRYFILE
DF=BB	Specifies that the COS dataset format is binary blocked
TEXT='\$DISK/EOF="*****"	Specifies that the VMS file to be staged is disk resident and that the end-of-file separator is *****.
DBA1:	Specifies that the VMS file to be staged is on VMS device DBA1.
[MYDIR]	Specifies that the VMS file entry to be staged is in the directory MYDIR on device DBA1.
VAXFILE.DAT;2	Specifies that the VMS file to be staged is VAXFILE.DAT in directory MYDIR on device DBA1. The version number is 2.
/DELETE	Specifies that the VMS file DBA1:[MYFILE]VAXFILE.DAT;2 is deleted after it is staged to the Cray mainframe.

### 6.3 \$TAPE ACQUIRE/FETCH STAGING COMMAND

The \$TAPE ACQUIRE or FETCH staging command stages magnetic tape resident VMS files to COS datasets. \$TAPE is a mandatory parameter for tape staging to COS.

Format:

```
$TAPE/<command qualifier> (<file descriptor>(/<file qualifier>))
```

#### 6.3.1 \$TAPE COMMAND QUALIFIERS

The following command qualifiers are recognized when the ACQUIRE or FETCH source device is magnetic tape. /VOLUME is the only required command qualifier.

<u>Qualifiers</u>	<u>Description</u>
/VOLUME=<volnam>,...	Volume name or names for a multivolume tape set; required qualifier. Maximum 6 characters. The station requests each volnam in the VOLUME list to be loaded until it finds the specified file name. It then reads subsequent volumes until the total file is staged.
/BLOCKSIZE=<n>	Maximum block size for interchange format tapes; optional qualifier.
/EOF=<eof>	<eof> specifies a 1- to 80-character ASCII string at the beginning of a VMS record that causes a COS EOF separator in the COS dataset; optional qualifier. If you do not specify this qualifier, the station uses the default EOF separator. This qualifier is ignored for transparent datasets.
/FOREIGN	Required for interchange format tapes
/UNLOAD	The volume is physically unloaded from the tape unit when staging is complete; optional qualifier.

### 6.3.2 \$TAPE FILE DESCRIPTOR

The file descriptor element format is:

```
| _____ |  
| (<dev>:)(<filename>)(.<type>) |  
| _____ |
```

*dev* Standard VMS device name of one of the magnetic tape devices supported by the VAX running the VAX/VMS station. If the controller or unit number is not specified, an available unit on that device will be selected automatically.

*filename* Standard VMS file name

*type* Standard VMS file type

Both *filename* and *type* can be replaced by a 1 through 17 ASCII character ANSI file name delimited by quotes, as "ANSI TAPE FILE."

Defaults are supplied for missing components as follows:

<u>Parameter</u>	<u>Default</u>
<i>dev</i>	The default tape device is determined by the VAX/VMS station manager.
<i>filename</i>	The default for the file name is the ACQUIRE <i>pdn</i> or FETCH <i>sdn</i> parameter.
<i>type</i>	CMT

### 6.3.3 \$TAPE FILE QUALIFIERS

The file qualifiers used when using ACQUIRE or FETCH from a tape file are as follows:

<u>Qualifiers</u>	<u>Description</u>
/ORG=BLK	Required if the tape is read in interchange format

Qualifiers

Description

/RMS= { BLK }  
          { REC }

Specifies the mode of operation for writing records to VMS files. The default is installation dependent and is set by the VAX/VMS station manager.

BLK The station reads and deblocks the records.

REC Records are written using RMS. RMS record transfers across DECnet are restricted to 16,384 bytes.

6.4 \$USER=nn ACQUIRE/FETCH STAGING COMMAND

The \$USER=nn ACQUIRE OR FETCH staging command format is site specific. Consult your VAX/VMS station manager for details of the available \$USER=nn staging commands.

# USING THE COS INTERACTIVE FACILITIES

7

This section describes the COS interactive facilities provided by the VAX/VMS station. The interactive facilities allow you to log on directly to the Cray Computer System to start a COS job. Section 3 describes the COS batch processing facilities.

This section is divided into the following areas:

- Overview
- Starting and ending a COS interactive session
- Using the terminal handling facilities
- Advanced Video Facilities available on VT100-compatible terminals
- Setting screen width
- Line editing

To aid your understanding of the COS interactive facilities, a FORTRAN interactive example is provided at the end of the section.

## 7.1 OVERVIEW

The interactive facility of the VAX/VMS station allows you to log on interactively to the Cray Computer System to start a COS job. In the interactive environment, you enter COS job control statements one at a time after the interactive prompt (!). You can observe the results of each COS job control statement before you proceed to the next. During program or utility execution, references to the COS datasets \$IN and \$OUT cause I/O at your terminal.

Table 7-1 shows the interactive commands available to VAX/VMS station users. The SET TERMINAL station command, described in the Command Reference section, is also used to set terminal characteristics for interactive mode.

Table 7-1. Interactive Station Commands

Command	Function
ABORT	Interrupts the current interactive COS job step and returns to the Control Statement Processor (CSP) for further COS JCL statements.
ATTACH	Redirects Cray interactive terminal output
ATTENTION	Interrupts current interactive COS job step and enters reprieve processing, if any. If no reprieve processing is specified, the command has the same effect as ABORT.
BYE	Terminates an interactive session. Command qualifiers allow the COS job to continue running or to be terminated.
COLLECT	Stores COS interactive output in a VMS file
DISCARD	Discards interactive output from COS up to the next prompt for input from COS
EOF	Sends an end-of-file record to the current COS interactive job
INTERACTIVE	Initiates or restarts an interactive session. Command qualifiers allow the COS job name and user name to be specified.
ISTATUS	Returns the status of the current interactive job, CPU time used, and the last logfile message
QUIT	Terminates the interactive session and the corresponding COS job. Same as BYE/ABORT.

## 7.2 STARTING A COS INTERACTIVE SESSION

Starting a COS interactive session is a two-part process.

1. Enter the VAX/VMS station command CRAY at any terminal logged on to VMS. Issuing this command enters the station into Cray context. For example:

```
$ CRAY<RET>
CRAY>
```

2. Enter the VAX/VMS station command INTERACTIVE, using the /JN= and /US= parameters to specify jobname and username. For example:

```
CRAY> INTERACTIVE/JN=TEST/US=USER<RET>
```

If the INTERACTIVE station command is executed successfully, your VMS terminal is logically connected to the COS interactive job that has been created. If you do not supply a job name and user name, the system prompts you for these values.

When you enter interactive mode, the usual region divider is replaced by a Cray interactive banner.

You can reenter Cray context command mode by using CTRL/Z after the interactive prompt (!). Most commands execute, then reconnect the terminal to the COS interactive job.

## 7.3 EXITING COS INTERACTIVE

You can disconnect your VMS terminal from the COS job permanently by the following process:

1. Enter CTRL/Z after the interactive prompt to reenter Cray context command mode.
2. Enter the BYE or QUIT station commands after the CRAY> prompt.

The QUIT station command terminates both the session and the interactive job. The BYE station command, without qualifiers, terminates the session, but does not terminate the associated interactive job. For example, the following commands terminate both the interactive session and the COS interactive job:

```
! ^Z
CRAY> QUIT<RET>
```

#### 7.4 INTERACTIVE EXAMPLE TERMINAL SESSION

The following example illustrates some of the terminal handling facilities that can be used during an interactive session. A detailed explanation follows the example; the line numbers correspond to the explanation.

```
1)  $ CRAY/NOREFRESH<RET>
2)  CRAY> INTERACTIVE<RET>
3)  Cray Jobname: CRAYJOB<RET>
4)  Cray Username: CRAYUSER<RET>
5)  CRAY-1  -----  site header  -----          09/02/85

      CRAY-1 OPERATING SYSTEM  COS 1.14 ASSEMBLY DATE  06/25/85

6)  ! ACCOUNT,AC=MYACC.<RET>
7)  ! ACCESS,DN=MYFILE,ID=MYID.<RET>
8)  PD000 - ACCESS MYFILE  ED=0002 COMPLETE
9)  ! ^Z
10) CRAY> SET TERMINAL PAGE=10<RET>
11) ! ACCESS,DN=MYFILE1,ID=MYID.<RET>
12) PD000 - ACCESS MYFILE1  ED=0002 COMPLETE
13) ! ^Z
14) CRAY> $ SHOW TIME<RET>
15) 02-SEP-1985 12:00:00.00
16) $ LOGOUT<RET>
17) ! ^Z
18) CRAY> QUIT<RET>
19) BYE
20) CRAY> EXIT<RET>
21) $
```

- 1) **\$ CRAY/NOREFRESH<RET>**  
The VAX/VMS station command CRAY activates Cray context with no screen formatting.
- 2) **CRAY> INTERACTIVE<RET>**  
CRAY> is the prompt from the station; INTERACTIVE requests the station to start a COS interactive session.
- 3) **Cray Jobname: CRAYJOB<RET>**  
Interactive prompt for the COS job name. The job name identifies the job on the Cray Computer System and must be used for any subsequent logons to the same COS interactive job.
- 4) **Cray Username: CRAYUSER<RET>**  
Interactive prompt for the COS user name. The job name and the user name uniquely identify the COS interactive job.
- 5) **CRAY-1 ----- site header ----- 09/02/85**  
**CRAY-1 OPERATING SYSTEM COS 1.14 ASSEMBLY DATE 06/25/85**  
COS introductory message for this installation

- 6) **! ACCOUNT,AC=MYACC.<RET>**  
The ! is the COS prompt for JCL input. If this is a new COS interactive session, the COS ACCOUNT JCL statement must be the first response to the ! prompt.
- 7) **! ACCESS, DN=MYFILE, ID=MYID.<RET>**  
JCL statement to access the COS dataset MYFILE
- 8) PD000 - ACCESS MYFILE ED=0002 COMPLETE  
COS response to the ACCESS statement
- 9) **! ^Z**  
CTRL/Z is input to reenter station command input mode.
- 10) CRAY> **SET TERMINAL PAGE=10<RET>**  
Station interactive command to set the number of COS interactive output lines displayed before the station stops and allows you to intervene.
- 11) **! ACCESS, DN=MYFILE1, ID=MYID.<RET>**  
COS JCL statement to access the COS dataset MYFILE1
- 12) PD000 - ACCESS MYFILE1 ED=0002 COMPLETE  
COS response to the ACCESS statement
- 13) **! ^Z**  
^Z is input to reenter station command input mode.
- 14) CRAY> **\$ SHOW TIME<RET>**  
A \$ prefix allows the DCL command SHOW TIME to be issued.
- 15) 02-SEP-1985 12:00:00.00  
Response to the DCL command SHOW TIME
- 16) **\$ LOGOUT<RET>**  
LOGOUT is input to terminate the DCL subprocess and return to Cray context.
- 17) **! ^Z**  
^Z is input to reenter station command input mode.
- 18) CRAY> **QUIT<RET>**  
Interactive command disconnecting the VMS terminal from the COS interactive job. The QUIT command terminates the COS interactive job at the completion of the current job step.
- 19) BYE  
The COS acknowledgment of the QUIT command

- 20) CRAY> **EXIT**<RET>  
Station command returning you to DCL level
- 21) \$  
DCL prompt

### 7.5 ADVANCED VIDEO FACILITIES

When the COS interactive facility is activated at a terminal with the DEC\_CRT terminal characteristic set, the station splits the screen into a COS interactive region at the top and a scrolled command region at the bottom. The two regions are separated by an interactive banner that replaces the usual region divider. Figure 7-1 shows the screen format.

```

CRAY-1 ----- site header ----- 09/02/85

CRAY-1 OPERATING SYSTEM COS 1.12 06/25/85
! ACCOUNT,AC=MYACC.
! ACCESS,DN=MYFILE,ID=MYID.
PD000 - ACCESS MYFILE ED=0005 COMPLETE
! ^Z
! ACCESS,DN=MYFILE1,ID=MYID.
PD000 - ACCESS MYFILE1 ED=0002 COMPLETE
! ^Z
BYE

-----
dd-mm-yyyy nn:mm:ss:cc Node name INTERACTIVE
-----
CRAY> INTERACTIVE
Cray JOBNAME: CRAYJOB
Cray USERNAME: CRAYUSER
CRAY> SET TERMINAL PAGE=10
CRAY> QUIT

```

Figure 7-1. COS Interactive Facility Split Screen

#### 7.5.1 ALTERING THE COMMAND SCROLL AREA

You can alter the proportion of the screen devoted to command input by using the SCROLL parameter of the SET TERMINAL command. Use the following format:

CRAY> SET TERMINAL SCROLL=*lines*<RET>

*lines* is the size of the command scroll region, which can be a decimal integer from 3 through 13. The following command sets the command scroll area size to 5:

CRAY> SET TERMINAL SCROLL=5<RET>

If the PAGE option is active, this command also sets the page size to 18. If the COS interactive area is reduced in size, any existing output is scrolled up the screen by the number of lines reduced.

### 7.5.2 SETTING SCREEN WIDTH

When you are in COS interactive mode, you can set the screen width to 80 or 132 columns by using the WIDTH parameter of the SET TERMINAL station command. For example:

CRAY> SET TERMINAL WIDTH=132<RET>

This command allows you to view interactive output that would normally exceed 80-character screen widths.

---

---

#### NOTE

Setting the screen width initializes the screen. Any previous output is lost.

---

---

### 7.5.3 SETTING PAGE SIZE OF COS OUTPUT

When you are in COS interactive mode, you can regulate the number of lines you receive from the Cray Computer System without interruption with the PAGE=*lines* command qualifier of the SET TERMINAL station command. For example:

CRAY> SET TERMINAL PAGE=52<RET>

This example specifies 52 as the number of lines in a page of Cray interactive output. To receive the next page of interactive output, press the carriage return.

You can specify whether COS interactive output is continuous with the PAGE and NOPAGE command parameters of the SET TERMINAL command.

## 7.6 FORTRAN INTERACTIVE EXAMPLE

The VAX/VMS station interactive interface provides for direct input and output to a previously written FORTRAN program. The following example illustrates the saving, compilation, and execution of a FORTRAN program through the station. A detailed explanation follows the example; the line numbers correspond to the explanation.

- 1) \$ CRAY<RET>
- 2) CRAY> INTER/JN=CRAYJOB/US=CRAYUSER<RET>
- 3) CRAY-1 ----- site header ----- 09/02/85  
CRAY-1 OPERATING SYSTEM COS 1.14 ASSEMBLY DATE 06/25/85
- \*\*\*\* SITE SPECIFIC MESSAGES \*\*\*\*
- 4) ! ACCOUNT,AC=user-account-number. <RET>
- 5) ! ACQUIRE,DN=SOURCE,PDN=EXAMPLE,ID=FOR,TEXT="EXAMPLE.FOR".<RET>
- 6) PD000 - PDN = EXAMPLE ID = FOR ED = 1 OWN = owner  
PD009 - DATASET NOT FOUND  
VAX TO CRAY: %SYSTEM-S-NORMAL, normal successful completion  
VAX TO CRAY: FILE = UMA0:[HENRY]EXAMPLE.FOR;1  
VAX TO CRAY: 328 BYTES TRANSFERRED  
SS004 - DATASET RECEIVED FROM FRONT END  
PD000 - PDN = EXAMPLE ID = FOR ED = 1 OWN = owner  
PD000 - SAVE COMPLETE
- 7) ! CFT,I=SOURCE,L=0.<RET>  
CFT000 - CFT VERSION - 07/30/83 1.11  
CFT001 - COMPILE TIME = 0.0144 SECONDS  
CFT002 - 31 LINES, 23 STATEMENTS  
CFT003 - 37019 WORDS, 8396 I/O BUFFERS USED
- 8) ! LDR,NX,AB=OUTPUT.<RET>
- 9) ! SAVE,DN=OUTPUT,PDN=EXAMPLE,ID=EXE.<RET>  
PD000 - PDN = EXAMPLE ID = EXE ED = 1  
PD000 - SAVE COMPLETE
- 10) ! OUTPUT.<RET>
- 11) PROGRAM CSTSEN1 - Test SENSE switches

### SENSE SWITCH SETTINGS FOLLOW:

Return is 1 if switch is ON - 2 if OFF

Switch number 1 value = 2.

Switch number 2 value = 2.

Switch number 3 value = 2.

Switch number 4 value = 2.

Switch number 5 value = 2.

Switch number 6 value = 2.

Enter 0 to stop - 1 to repeat display

```

12) ? 0<RET>
13) UTQ10 - STOP IN CSTSEN1
14) ! ^Z
15) CRAY> QUIT<RET>
16) BYE
17) CRAY> EXIT<RET>
18) $

```

- 1) \$ CRAY<RET>  
The VAX/VMS station command CRAY activates Cray context.
- 2) CRAY>INTER/JN=CRAYJOB/US=CRAYUSER<RET>  
Cray interactive is initiated.
- 3) CRAY-1 ----- site header ----- 09/02/85  
CRAY-1 OPERATING SYSTEM COS 1.14 ASSEMBLY DATE 06/25/85  
COS introductory message for this installation
- 4) ! ACCOUNT,AC=user-account-number.<RET>  
The ! is the COS prompt for JCL input. If this is a new COS interactive session, the COS ACCOUNT JCL statement must be the first response to the ! prompt.
- 5) ! ACQUIRE, DN=SOURCE, PDN=EXAMPLE, ID=FOR, TEXT="EXAMPLE.FOR".<RET>  
ACQUIRE control statement specifying that the source FORTRAN file existing on the VAX front-end should be staged to COS mass storage and made local to the job.
- 6) PD000 - PDN = EXAMPLE ID = FOR ED = 1 OWN = owner  
PD009 - DATASET NOT FOUND  
VAX TO CRAY: %SYSTEM-S-NORMAL, normal successful completion  
VAX TO CRAY: FILE = UMA0:[HENRY]EXAMPLE.FOR;1  
VAX TO CRAY: 328 BYTES TRANSFERRED  
SS004 - DATASET RECEIVED FROM FRONT END  
PD000 - PDN = EXAMPLE ID = FOR ED = 1 OWN = owner  
PD000 - SAVE COMPLETE  
Messages indicating that COS did not find the specified dataset on mass storage and then successfully staged the file EXAMPLE.FOR;1 from the VAX front-end. This file contains the source FORTRAN code.
- 7) ! CFT, I=SOURCE, L=0.<RET>  
CFT000 - CFT VERSION - 07/30/83 1.11  
CFT001 - COMPILE TIME = 0.0144 SECONDS  
CFT002 - 31 LINES, 23 STATEMENTS  
CFT003 - 37019 WORDS, 8396 I/O BUFFERS USED  
This statement invokes CFT to compile dataset accessed as DN=SOURCE. L=0 specifies to output only fatal error messages.

- 8) **! LDR,NX,AB=OUTPUT.<RET>**  
This statement loads absolute binary object module to a DN=OUTPUT.  
NX means that the load module is not executed at this step.
- 9) **! SAVE,DN=OUTPUT,PDN=EXAMPLE,ID=EXE.<RET>**  
PD000 - PDN = EXAMPLE ID = EXE ED = 1  
PD000 - SAVE COMPLETE  
This statement saves relocatable load module to a permanent dataset  
for later execution.
- 10) **! OUTPUT.<RET>**  
Execute program
- 11) PROGRAM CSTSEN1 - Test SENSE switches  
  
SENSE SWITCH SETTINGS FOLLOW:  
Return is 1 if switch is ON - 2 if OFF  
  
Switch number 1 value = 2.  
Switch number 2 value = 2.  
Switch number 3 value = 2.  
Switch number 4 value = 2.  
Switch number 5 value = 2.  
Switch number 6 value = 2.  
  
Enter 0 to stop - 1 to repeat display  
User program outputs information to \$OUT/CRT and requests input.
- 12) **? 0<RET>**  
You enter 0 from your terminal, which the program receives as \$IN.
- 13) UT010 - STOP IN CSTSEN1  
FORTRAN program terminates normally.
- 14) **! ^Z**  
A CTRL/Z sequence returns you to station command mode to terminate  
the COS job.
- 15) CRAY> **QUIT<RET>**  
CRAY> is the prompt from the station; QUIT requests the station to  
log you off COS interactive and terminate the COS job.
- 16) BYE  
The COS acknowledgment of the QUIT command
- 17) CRAY> **EXIT<RET>**  
You now exit Cray context and return to DCL.
- 18) \$  
DCL prompt.

The following is a source listing for the FORTRAN program acquired from the VMS file UMA0:[FORTRAN.SOURCE]EXAMPLE.FOR.

```
PROGRAM CSTSEN1
C
INTEGER SW
INTEGER RESULT
INTEGER USERSW
C
WRITE(6,*) 'PROGRAM CSTSEN1 - Test SENSE switches'
WRITE(6,*) ' '
C
100 WRITE(6,*) 'SENSE SWITCH SETTINGS FOLLOW:'
WRITE(6,*) 'Return is 1 if switch is ON - 2 if OFF'
WRITE(6,*) ' '
C
110 DO 150,SW=1,6,1
    CALL SSWITCH(SW,RESULT)
    WRITE(6,1000)SW,RESULT
150 CONTINUE
C
WRITE(6,*) ' '
WRITE(6,*) 'Enter 0 to stop - 1 to repeat display'
READ(5,*) USERSW
IF (USERSW.NE.0)GOTO 100
C
1000 FORMAT(' Switch number ',I1,' value = ',I1,'.')
C
9000 CONTINUE
STOP
END
C
```



# COMMAND REFERENCE

This section describes all VAX/VMS station commands that are available to users.

Each command description starts on a new page and provides the following information:

- Command name
- Brief description
- Command format
- Command qualifiers
- Availability
- Prompts
- Command parameters
- Description

See section 2 for information on the syntax and use of station commands.

## AVAILABILITY CODES

The availability codes used in this section describe:

- When the station commands can be used (When),
- Whether the station commands can be entered at DCL level (DCL), and
- At which type of VAX/VMS station the station commands can be used (station).

Table command-1 and the individual command descriptions later in this section use the following availability codes to describe the station commands.

The *When* codes are:

<u>Code</u>	<u>Description</u>
ANY	The command can be issued at any time, as long as the VAX/VMS station is installed.
INT	The command can be issued if an interactive session has been initiated.
LON	The command can be issued if the station is communicating with COS (logged on).

The *DCL* codes are:

<u>Code</u>	<u>Description</u>
NO	The command is only available inside Cray context.
YES	The command can be executed at DCL level.
ONLY	The command is available only at DCL level.

The *Station* codes are:

<u>Code</u>	<u>Description</u>
ANY	The command is available at both attached and remote VAX/VMS stations.
ATT	The command is available at the attached VAX/VMS station only.
REM	The command is available at the remote VAX/VMS station only.

#### ABBREVIATIONS

Commands can be abbreviated to any length. If an abbreviated command string is ambiguous, the first eligible station command is executed.

Table Command-1. User Station Commands

Station Command	Description	Availability Code When/DCL/Station
+	Gets the next page of a refresh display	ANY/NO/ANY
-	Gets the previous page of a refresh display	ANY/NO/ANY
@file-spec	Executes an indirect station command file from this VMS file specification	ANY/NO/ANY
\$	Allows entry of DCL commands from within Cray context command mode	ANY/NO/ANY
CTRL/Z	Returns the user to previous state	ANY/NO/ANY
ABORT	Interrupts the current interactive COS job step and returns to the Control Statement Processor (CSP)	INT/NO/ATT
ATTACH	Redirects COS interactive terminal output	INT/NO/ATT
ATTENTION	Interrupts the current interactive COS job step and enters reprieve processing	INT/NO/ATT
BYE	Terminates a COS interactive session	INT/NO/ATT
CHOOSE	Selects a Cray Computer System to be accessed	ANY/ONLY/ANY
CLEAR	Clears the screen display area	ANY/NO/ANY
COLLECT	Stores COS interactive output in a VMS file	INT/NO/ATT
COMMENT	Inserts comments into a command stream	ANY/NO/ANY

Table Command-1. User Station Commands (continued)

Station Command	Description	Availability Code When/DCL/Station
CRAY	Enters the user into Cray context or executes a single station command	ANY/ONLY/ANY
DATASET	Reports the existence of a COS permanent dataset	LON/YES/ANY
DELAY	Suspends execution of an indirect station command file for a specified time	ANY/NO/ANY
DISCARD	Discards interactive output from COS	INT/NO/ATT
DROP	Drops a COS job	LON/YES/ANY
EOF	Sends an end-of-file record to the current COS interactive job	INT/NO/ATT
EXIT	Returns the user from Cray context command mode to DCL command state	ANY/NO/ANY
HELP	Displays information from the station help files	ANY/YES/ANY
INTERACTIVE	Initiates an interactive session	LON/YES/ATT
ISTATUS	Displays the status of the user's interactive job	INT/NO/ATT
JOB	Displays the status of a specific COS job	LON/YES/ANY
JSTAT	Displays the status of a specific job and its related tasks	LON/YES/ANY
KILL	Kills a COS job	LON/YES/ANY

Table Command-1. User Station Commands (continued)

Station Command	Description	Availability Code When/DCL/Station
LOGFILE	Provides access to the station logfile messages	ANY/YES/ANY
LOOP	Restarts execution of an indirect station command file	ANY/NO/ANY
MESSAGE	Enters a message into the COS job logfile, the COS system logfile, or both	ANY/NO/ANY
PAUSE	Suspends execution of an indirect station command file and switches control to the terminal	ANY/NO/ANY
PLAY	Executes an indirect station command file	ANY/YES/ANY
QUIT	Terminates an interactive session and the corresponding COS job	INT/NO/ATT
RECORD	Starts or stops the recording of terminal input for later use with the PLAY command	ANY/NO/ANY
RELEASE	Releases a dataset held on the COS job queue	LON/YES/ANY
REMOVE	Deletes entries in the VAX/VMS station staging queue	ANY/YES/ANY
RERUN	Reruns a COS job	LON/YES/ANY
SAVE	Stages a single file to COS mass storage	ANY/YES/ANY
SET TERMINAL	Sets the terminal working environment	ANY/NO/ANY

Table Command-1. User Station Commands (continued)

Station Command	Description	Availability Code When/DCL/Station
SHOW QUEUES	Displays entries in the VAX/VMS station dataset staging queue	ANY/YES/ANY
SNAP	Copies the display screen image to a VAX/VMS file	ANY/NO/ANY
STATUS	Displays COS status	LON/YES/ANY
SUBMIT	Stages a job to COS	ANY/YES/ANY
SWITCH	Manipulates the COS job sense switches	LON/YES/ANY
TAPE	Displays COS tape device information	LON/YES/ANY
TJOB	Displays the status of COS tape jobs	LON/YES/ANY

+

Gets the next page of a refresh display

Format

+		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=ANY	DCL=NO	Station=ANY

Prompts

Appropriate Input

None

None

Command Parameters

None

Description

This command advances the page currently displayed, that is, the next consecutive page of the display is requested. If the existing display indicates the end of data, the command has no effect. This command is available only from within refresh-style Cray context command mode.

-  
Gets the previous page of a refresh display

Format

-		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=ANY	DCL=NO	Station=ANY

Prompts

Appropriate Input

None

None

Command Parameters

None

Description

This command reverses the effect of the + command and displays the previous page of the current display. If the existing display indicates page one, the command has no effect. This command is available only within refresh-style Cray context command mode.

@

Executes an indirect station command file

Format

<i>@file-spec</i>	<u>Alternate Form</u>
	PLAY <i>file-spec</i>
<u>Command Qualifiers</u>	<u>Default</u>
None	None
<u>Availability</u>	
When=ANY      DCL=NO      Station=ANY	

Prompts

Appropriate Input

PLAY filename:

*file-spec*

Command Parameter

*file-spec*

A standard VAX/VMS file specification

Description

This format is a synonym for the PLAY command. It initiates the execution of an indirect station command file. The indirect station command file provides a facility that parallels a VMS command procedure, that is, it provides a mechanism for a series of commands to be issued. Requested refresh displays can be observed for a period of time by including PAUSE and DELAY commands in the indirect command file.

The command currently being processed from the indirect command file is echoed at the terminal.

\$

Allows entry of DCL commands from within Cray context command mode

Format

\$[ <i>command</i> ]		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=ANY	DCL=NO	Station=ANY

Prompts

Appropriate Input

None

None

Command Parameter

[*command*]

Any valid VMS command

Description

This command allows temporary entry of DCL commands from within Cray context command mode. The system carries out this facility by creating a VMS subprocess that temporarily controls the terminal. This implies that a small number of DCL commands may not work as expected, for example, the definition of process logical names. (VMS subprocesses are explained in the VAX/VMS DCL Dictionary, DEC publication AA-Z200A-TE. See the SPAWN command.)

To return to Cray context, enter LOGOUT.

CTRL/Z

Returns the user to previous state

Format

CTRL/Z		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=ANY	DCL=NO	Station=ANY

Prompts

Appropriate Input

None

None

Command Parameters

None

Description

This command can be used in the following circumstances:

- During command parameter prompting; the result is to cancel the previously entered command.
- In response to the Cray context prompt CRAY>; the result is identical to entering the EXIT command, which returns the user to DCL command state.
- During a Cray interactive session at an attached VAX/VMS station; the result is to return the user to command mode.
- During execution of an indirect station command file; the result is to terminate execution.

## ABORT

Interrupts the current interactive COS job step and returns to the Control Statement Processor (CSP)

### Format

ABORT		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=INT	DCL=NO	Station=ATT

### Prompts

### Appropriate Input

None

None

### Command Parameters

None

### Description

ABORT interrupts the current COS job step and returns to CSP, which then issues the ! prompt. Any COS output queued for the terminal is displayed before the ! prompt is issued.

## ATTACH

Redirects COS interactive terminal output

### Format

ATTACH [ <i>alt-device</i> ]		
<u>Command Qualifiers</u>		<u>Default</u>
/CHAR=( <i>char, pos</i> )		
/MRS= <i>max_rec_size</i>		/MRS=132
/OFF		
/ON		/ON
<u>Availability</u>		
When=INT	DCL=NO	Station=ATT

### Prompts

None

### Appropriate Input

None

### Command Parameter

*alt-device*

The device to receive the alternate routing. If not specified, the ATTACH command qualifiers are applied to the current output device.

### Description

ATTACH defines an alternate device to receive Cray interactive output. The command is useful in redirecting graphics output to an alternate device.

## Command Qualifiers

*/CHAR=(char, pos)*

If the character *char* occurs in character position in the Cray interactive record, the entire record is routed to the alternate device.

*/MRS=max\_rec\_size*

If any Cray interactive record exceeds the *max\_rec\_size* parameter, the record is routed to the alternate device. No carriage control character is used when records satisfy the MRS criteria. */MRS=132* is the default.

*/OFF*

Switches alternate routing off. When */OFF* is specified, all other parameters or qualifiers are ignored.

*/ON*

Switches alternate routing on

**ATTENTION**

Interrupts the current interactive COS job step and enters relieve processing

Format

ATTENTION		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=INT	DCL=NO	Station=ATT

Prompts

Appropriate Input

None

None

Command Parameters

None

Description

ATTENTION interrupts the current COS job step and enters relieve processing. If relieve processing has not been specified for the COS job, ATTENTION processing is the same as ABORT. For further information on relieve processing, see the COS Version 1 Reference Manual, publication SR-0011.

**BYE**

Terminates a COS interactive session

Format

BYE		
<u>Command Qualifiers</u>		<u>Default</u>
/ABORT		
/SAVE		/SAVE
<u>Availability</u>		
When=INT	DCL=NO	Station=ATT

Prompts

Appropriate Input

None

None

Description

BYE terminates an interactive session. Depending on the command qualifiers, the COS interactive job may also be terminated.

Command Qualifiers

/ABORT

Terminates interactive session and COS interactive job. QUIT is an alternative way of specifying BYE/ABORT.

/SAVE

Terminates interactive session. The associated interactive job remains active. If the job reaches a COS system threshold for output messages or requires input, the job is suspended. The interactive session can be reactivated by using the INTERACTIVE station command with the appropriate job and username.

## CHOOSE

Selects a Cray Computer System to be accessed

### Format

(No Cray context form)		
<u>DCL-level form</u>		
\$ CHOOSE (installation-defined)		
<u>Command Qualifiers</u>		<u>Default</u>
None		
<u>Availability</u>		
When=ANY	DCL=ONLY	Station=ANY

### Prompts

(Installation-defined)

### Appropriate Input

(Installation-defined)

### Command Parameters

(Installation-defined)

### Description

CHOOSE is used by sites that have more than one Cray Computer System available to users. The CHOOSE command allows users to alternate between Cray Computer Systems. CHOOSE runs an installation-defined VAX/VMS command procedure that redefines the available commands. It is possible to operate in the context of only one Cray Computer System at a time.

Example

```
$ CHOOSE CRAY1<RET>
%CHOOSE-S-SELECTED, Process connected to the CRAY1.
$ CRAY SUBMIT MYJOB1<RET>
%CX-S-SUB_OK, Job: JOB1 queued for submission
$ CHOOSE CRAYXMP<RET>
%CHOOSE-S-SELECTED, Process connected to the CRAY1.
$ CRAY SUBMIT MYJOBX<RET>
%CX-S-SUB_OK, Job: JOB1 queued for submission
```

CLEAR

Clears the screen display area .

Format

CLEAR		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=ANY	DCL=NO	Station=ANY

Prompts

Appropriate Input

None

None

Command Parameters

None

Description

CLEAR is available only within refresh-style Cray context. It removes the current display and leaves the refresh display region clear.

## COLLECT

Stores COS interactive output in a VMS file

### Format

COLLECT <i>file-spec</i>		
<u>Command Qualifiers</u>		<u>Default</u>
/[NO]ECHO		/ECHO
/OFF		
/ON		/ON
<u>Availability</u>		
When=INT	DCL=NO	Station=ATT

### Prompts

### Appropriate Input

COLLECT filename:

*file-spec*

### Command Parameter

*file-spec*

A standard VAX/VMS file specification

### Description

COLLECT directs output generated by a COS interactive job to a VMS file. This command can be used before the interactive job is initiated.

### Command Qualifiers

/ECHO  
/NOECHO

Specifies whether the output generated by the COS job is sent to the terminal. In both /ECHO and /NOECHO, the output generated by the COS job is sent to the VMS file.

Command Qualifiers (continued)

/OFF	Reverses the effect of a previous COLLECT command. The file is closed. When /OFF is specified, all other qualifiers or parameters are ignored.
/ON	Maintains the effect of a previous COLLECT command

## COMMENT

Inserts comments into a command stream

### Format

COMMENT *string*

#### Command Qualifiers

#### Default

None

None

#### Availability

When=ANY

DCL=NO

Station=ANY

### Prompts

### Appropriate Input

None

None

### Command Parameter

*string*

Character string; limit is 256 characters, including the command COMMENT.

### Description

COMMENT allows entry of comments into the output created when an indirect station command file is executed. COMMENT is effectively a null command; all text entered on the same line after COMMENT is echoed to the display screen, but is not executed by VMS.

### Examples

(1) In this example, file PLAY.DAT contains the following:

```
SUBMIT GETPDS.JOB
COMMENT OUTPUT GENERATED BY JOB APPEARS NEXT
JOB GETJOB
```

Examples (continued)

The following output is sent to the terminal:

```
CRAY> PLAY PLAY.DAT<RET>
PLAY> SUBMIT GETPDS.JOB
%CX-S-SUB_OK, Job: GETJOB queued for submission
PLAY> COMMENT OUTPUT GENERATED BY JOB APPEARS NEXT
PLAY> JOB GETJOB
COS JOB GETJOB IS EXECUTING
CRAY>
```

(2) In this example, COMMENT is entered at the terminal:

```
CRAY> COMMENT THIS IS A DEMONSTRATION<RET>
CRAY>
```

## CRAY

Provides entry into Cray context or executes a single station command

### Format

(No Cray context form)

#### DCL-level Form

\$ CRAY [*station-command*]

#### Command Qualifiers

/[NO]BREAKTHROUGH

/[NO]REFRESH

#### Default

/NOBREAKTHROUGH

Determined by terminal type

#### Availability

When=ANY

DCL=ONLY

Station=ANY

### Prompts

CRAY>

### Appropriate Input

*station-command*

### Command Parameter

*station-command*

Any station command also available at DCL level. If this parameter is present, the user is returned to DCL at the completion of the command. Information broadcasting is not affected. To specify lowercase characters from DCL level, the entire station command should be enclosed in quotation marks (").

### Description

CRAY enters the user into Cray context or executes a single station command. If a command parameter is not included after the CRAY command, the user remains in Cray context until entry of the EXIT command.

## Description (continued)

Cray context provides a command selection mechanism, a gateway to COS interactive processing, and an optional refreshed display capability. Commands are available both at DCL level and from within Cray context; however, a subset of these commands related to refreshed display and interactive processing is available only within Cray context. If no command qualifier is used, the style of command input mode entered depends on the terminal type. If the terminal has the DEC\_CRT capabilities, the split screen refresh style is selected, as shown in figure 6-3. Otherwise, nonrefresh style (scroll only) is selected.

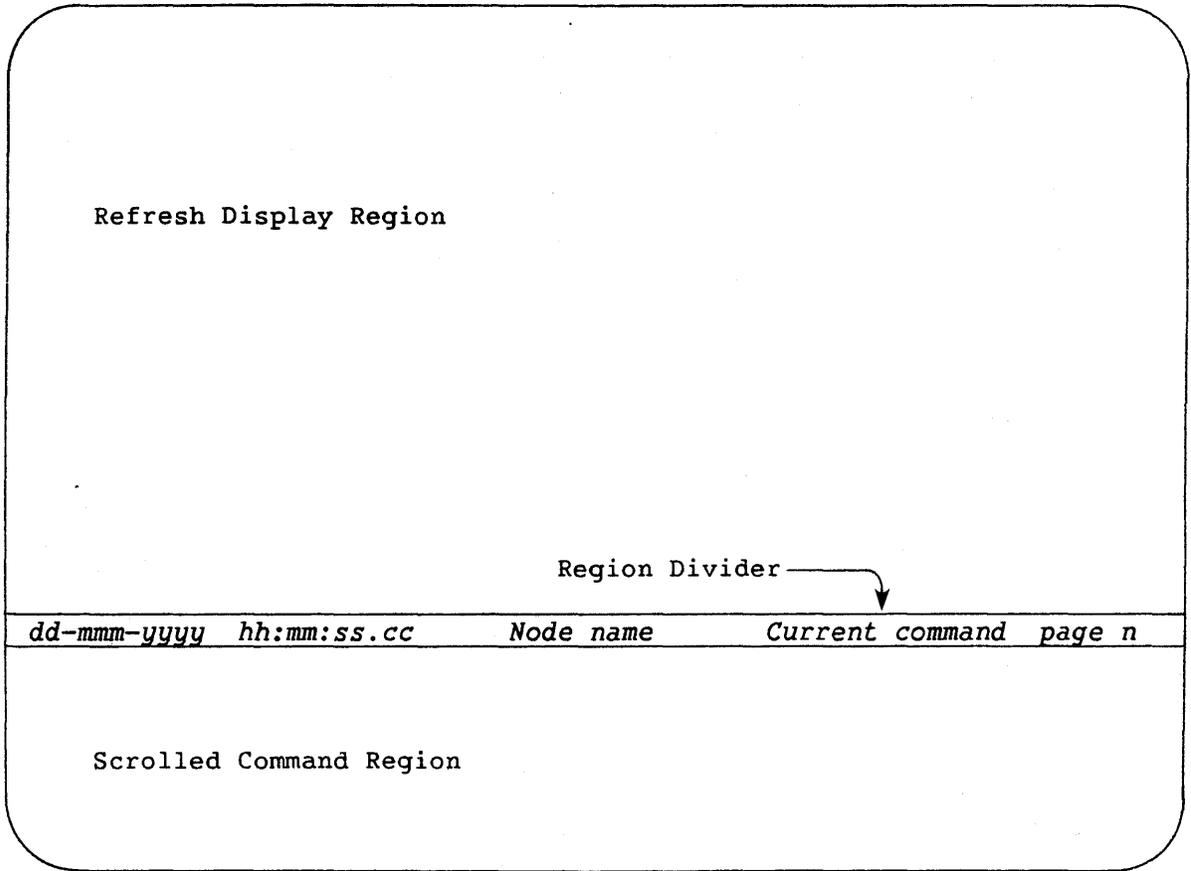
## Command Qualifiers

<code>/BREAKTHROUGH</code>	
<code>/NOBREAKTHROUGH</code>	Controls whether a display refresh occurs during command input. <code>/NOBREAKTHROUGH</code> is suited to terminals that are run at slow speeds. Affects refresh-style Cray context only. If the user performs text editing in <code>/BREAKTHROUGH</code> mode, refresh displays place the cursor at the beginning of the command line. <code>/NOBREAKTHROUGH</code> is the default.
<code>/REFRESH</code>	
<code>/NOREFRESH</code>	Specifies whether refresh-style (split screen) or nonrefresh-style (line-by-line) Cray context is desired. To use refresh-style ( <code>/REFRESH</code> ), the terminal must have the DEC_CRT option. <code>/NOREFRESH</code> is the default for terminals without the advanced display capabilities. <code>/REFRESH</code> is the default for terminals with the advanced display capabilities.

## Examples

```
(1)  $ CRAY<RET>
      CRAY> SUBMIT MYSUB.JOB<RET>
      %CX-S-SUB_OK, Job: MYSUB queued for submission
      CRAY> EXIT<RET>
      $

(2)  $ CRAY SUBMIT MYSUB.JOB<RET>
      %CX-S-SUB_OK, Job: MYSUB queued for submission
      $
```



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Figure Command-1. Cray Context Refresh Style

## DATASET

Reports the existence of a COS permanent dataset

### Format

DATASET <i>pdn</i>	
<u>Command Qualifiers</u>	<u>Default</u>
/ED= <i>ed</i>	
/ID= <i>userid</i>	None
/OV= <i>owner</i>	
<u>Availability</u>	
When=LON	DCL=YES
	Station=ANY

### Prompts

### Appropriate Input

DATASET *pdn*:

*pdn*

### Command Parameter

*pdn*

Name of permanent dataset for which status is requested; 1 through 15 characters (A through Z, 0 through 9, or \$, %, or @), the first character must be alphabetic.

### Description

DATASET determines the existence of a permanent dataset on the Cray Computer System. The returned message is as follows:

```
pdn WITH ID=userid AND ED=ed DOES { EXIST  
                                     }  
                                     { NOT EXIST }
```

### Command Qualifiers

*/ED=ed* Edition number of requested dataset; 1 through 4095. If */ED* is not specified, the status of the current highest edition number is returned. If *ed* is nonzero, the status of the requested edition is returned.

*/ID=userid* User ID of permanent dataset for which status is requested; 1 through 8 alphanumeric characters. If not specified, null is used.

*/OV=owner* Owner value of the dataset

### Example

```
$ CRAY DATASET/OV=U2105/ID=U2105 DATA<RET>  
DATA WITH ID=U2105 ED=1 OWNER=U2105 DOES EXIST  
$
```

## DELAY

Suspends execution of an indirect station command file for a specified time

### Format

DELAY <i>seconds</i>		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=ANY	DCL=NO	Station=ANY

### Prompts

### Appropriate Input

DELAY time in seconds: *seconds*

### Command Parameter

*seconds*

Number of seconds allowed to elapse before processing the next command. This is a decimal integer in the range 1 through 16,000.

### Description

This command delays the execution of the next command within an indirect station command file.

### Example

In this indirect station command file, DELAY causes a suspension of 30 seconds before the JOB station command is executed.

```
SUBMIT GETPDS.JOB
DELAY 30
COMMENT EXECUTION IS NOW SUSPENDED FOR 30 SECONDS
JOB GETJOB
```

DISCARD

Discards interactive output from COS

Format

DISCARD		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=INT	DCL=NO	Station=ATT

Prompts

Appropriate Input

None

None

Command Parameters

None

Description

DISCARD allows the user to discard all output generated by the interactive job until the next COS prompt appears.

DROP

Ends processing of a COS job, but saves the associated output dataset

Format

DROP <i>jsq</i>	
<u>Command Qualifiers</u>	<u>Default</u>
None	None
<u>Availability</u>	
When=LON	DCL=YES      Station=ANY

Prompts

Appropriate Input

DROP *jsq* number:

*jsq*

Command Parameter

*jsq*

Job sequence number (JSQ) identifying job or dataset to COS; may be obtained through the STATUS command.

Description

DROP ends processing of a job at the Cray mainframe, but saves output dataset associated with the job. DROP causes the job to abort. Job execution continues with control statements encountered after the next EXIT control statement.

EOF

Sends an end-of-file record to the current COS interactive job

Format

EOF		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=INT	DCL=NO	Station=ATT

Prompts

Appropriate Input

None

None

Command Parameters

None

Description

EOF sends a COS end-of-file (EOF) record to the Cray Computer System. This command is normally required to terminate COS file input from the terminal.

## EXIT

Returns the user from Cray context command mode to DCL command state

### Format

EXIT	<u>Alternate Form</u>
	CTRL/Z
<u>Command Qualifiers</u>	<u>Default</u>
None	None
<u>Availability</u>	
When=ANY      DCL=NO      Station=ANY	

### Prompts

### Appropriate Input

(See description)

None

### Command Parameters

None

### Description

EXIT returns the user from Cray context to DCL command state. If a RECORD command is issued during the session and the specified file is still open, the file is closed. As an alternative, the user can enter CTRL/Z in command mode to exit from Cray context.

If the user is logged onto the Cray interactively when entering the EXIT command, the station provides warning that the user is logged on interactively and provides the option of returning to Cray context or exiting to DCL level. If the user chooses to exit, a BYE/SAVE station command is performed automatically.

## HELP

Displays information from the station help files

### Format

HELP [ <i>station-command</i> ]		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=ANY	DCL=YES	Station=ANY

### Prompts

### Appropriate Input

Topic:

Station command, <RET>, or CTRL/Z

### Command Parameter

*station-command*

Name of any station command available to normal users. The keyword HELP provides a syntax reference for all commands. Station commands specifically for operator use can be found by using the keyword "Operator."

### Description

HELP provides text describing all user commands. If a command parameter is not specified after the HELP command, the system displays an index of all commands. To display a description of a specific station command, enter HELP plus a *station-command*.

If the COS HELP feature is installed on the system, users can gain information about Cray JCL by entering HELP plus a specific COS library name, as in this example:

```
$ HELP @COS<RET>
```

Terminate the HELP session by pressing carriage return or CTRL/Z.

## INTERACTIVE

Initiates an interactive session

### Format

INTERACTIVE		
<u>Command Qualifiers</u>		<u>Default</u>
/JN=<jobname>		
/MML= <i>n</i>		/MML= <i>site dependent value</i>
/[NO]UPPER		/NOUPPER
/US=<username>		
<u>Availability</u>		
When=LON	DCL=YES	Station=ATT

### Prompts

### Appropriate Input

Cray JOBNAME:

*jobname*

Cray USERNAME:

*username*

### Command Parameters

None

### Description

The INTERACTIVE command initiates or restarts an interactive session. The INTERACTIVE command can be entered after the CRAY> prompt when in Cray context refresh style.

If the user does not enter the job name or user number qualifiers after the initial INTERACTIVE command, the station provides prompts for these values.

Whenever the user enters interactive mode, a Cray interactive banner replaces the usual region divider. Station error messages are displayed during an interactive session in reverse video.

## Description (continued)

You can disconnect your VMS terminal from the COS job temporarily or permanently by the following process:

1. Enter CTRL/Z after the interactive prompt to reenter Cray context command mode.
2. Enter the BYE or QUIT station commands after the CRAY> prompt.

The QUIT station command terminates both the session and the interactive job. The BYE station command, without parameters, terminates the session, but does not terminate the associated interactive job.

## Command Qualifiers

**/JN=<jobname>** COS interactive job name; up to 7 characters.

**/MML=*n*** Maximum message length. (This qualifier is site-dependent. For further information, refer to the DEC VAX/VMS Station Installation and Maintenance Reference Manual, CRI publication SV-0100.)

**/UPPER**  
**/NOUPPER** Specifies whether input is converted to uppercase characters

**/US=<username>** COS username; 1 to 15 characters.

## Examples

- (1) In this example, the jobname is TEST and the username is USER.

```
$ CRAY<RET>
CRAY> INTERACTIVE/JN=TEST/US=USER<RET>
```

- (2) In example 2, the JN=*jobname* or US=*username* parameters are not included after the INTERACTIVE command. As a result, the system provides prompts for these values.

```
$ CRAY<RET>
CRAY> INTERACTIVE<RET>
Cray JOBNAME: TEST<RET>
Cray USERNAME: USER<RET>
```

## ISTATUS

Displays the status of the user's interactive job

### Format

ISTATUS		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=INT	DCL=NO	Station=ATT

### Prompts

### Appropriate Input

None

None

### Command Parameters

None

### Description

ISTATUS returns the CPU time used by the COS interactive job, the job status, and the last COS logfile message.

Job status can be one of the following:

AWAITING CPU  
AWAITING MEMORY  
DOES NOT EXIST  
DORMANT  
EXECUTING  
LOCKED  
QUEUED FOR EXEC  
QUEUED FOR RESOURCES  
ROLLED OUT  
ROLLING IN  
ROLLING OUT  
SUSPENDED  
WAITING FOR I/O

## JOB

Displays the status of a specific COS job

### Format

JOB <i>jobname</i>		
<u>Command Qualifier</u>		<u>Default</u>
/JSQ= <i>jsq</i>		None
<u>Availability</u>		
When=LON	DCL=YES	Station=ANY

### Prompts

### Appropriate Input

JOB name:

*jobname*

### Command Parameter

*jobname*

COS job name for which status is requested

### Description

The job status message returned by this command has the following general format:

```
COS JOB jobname (job status)  
  (last logfile message)
```

Job status reports one of the following conditions:

```
AWAITING CPU  
AWAITING MEMORY  
DOES NOT EXIST  
DORMANT  
EXECUTING  
LOCKED  
QUEUED FOR EXEC  
QUEUED FOR RESOURCES  
ROLLED OUT  
ROLLING IN  
ROLLING OUT
```

Description (continued)

SUSPENDED  
WAITING FOR I/O

The last logfile message is displayed unless the job status is DOES NOT EXIST or QUEUED FOR EXEC.

Command Qualifier

/JSQ=*jsq*

*jsq* identifies the job sequence number from which to start the search for the job identified by *jobname*.

## JSTAT

Displays the status of a specific job and its related tasks

### Format

JSTAT <i>jsq</i>		
<u>Command Qualifiers</u>		<u>Default</u>
/[NO]CYCLE		/NOCYCLE
/[NO]TRANSLATE		/TRANSLATE
<u>Availability</u>		
When=LON	DCL=YES	Station=ANY

### Prompts

JSTAT *jsq* number:

### Appropriate Input

*jsq*

### Command Parameter

*jsq*

COS job sequence number (JSQ) identifying the job or its output dataset to COS; it can be obtained through the STATUS command.

### Description

JSTAT provides detailed information about a COS job.

### Command Qualifiers

/CYCLE  
/NOCYCLE

Specifies whether all information (/CYCLE) or only one page of information (/NOCYCLE) should be displayed when in refresh style. If the user specifies /CYCLE and there is more than one page of information, the page number is automatically controlled to save the user from entering + (page forward) and - (page backward) commands. /NOCYCLE is the default indicating that only one page of the refresh-style display is shown until the user enters the + or - commands.

Command Qualifiers (continued)

/TRANSLATE

/NOTRANSLATE

Specifies whether the terminal ID field is translated to indicate VMS UIC. If not translated (/NOTRANSLATE), the terminal ID field is represented in the station internal form.

## KILL

Kills a COS job

### Format

KILL <i>jsq</i>		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=LON	DCL=YES	Station=ANY

### Prompts

### Appropriate Input

KILL *jsq* number:

*jsq*

### Command Parameter

*jsq*

Job sequence number (JSQ) identifying the job or its output dataset to COS; it can be obtained through the STATUS command.

### Description

Depending on the status of the COS job, KILL either deletes its input dataset from the input queue if processing has not yet begun, terminates processing if processing has begun, or deletes the job's output dataset from the output queue if processing is complete. KILL (unlike DROP) causes the job to terminate immediately.

LOGFILE

Provides access to the station logfile messages

Format

LOGFILE [ <i>file-spec</i> ]		
<u>Command Qualifiers</u>		<u>Default</u>
/ACQUIRE		
/ALL		/ALL
/BEFORE= <i>time</i>		
/DISPOSE		
/ERROR		
/INTERACTIVE		
/JOB		
/MASTER		
/NETWORK		
/NODE= <i>nodename</i>		
/[NO]NOTIFY		/NONOTIFY
/OPERATOR		
/OUTPUT= <i>file-spec</i>		
/PRINT		
/RELEASE		
/SINCE= <i>time</i>		
/SUCCESS		
/STMSG		
/[NO]TRANSLATE		/TRANSLATE
/USER= <i>username</i>		
<u>Availability</u>		
When=ANY	DCL=YES	Station=ANY

Prompts

None

Appropriate Input

None

## Command Parameter

*file-spec*

A standard VAX/VMS file specification used to identify a logfile if not the current station logfile.

## Description

LOGFILE provides access to the station logfile.

## Command Qualifiers

/ACQUIRE

Displays messages related to acquire and fetch transfers

/ALL

Displays all messages that the user is allowed to see. VAX/VMS users with OPER privilege can see any entry.

/BEFORE=*time*

Defines latest time in which messages are of interest to the user (/SINCE qualifier defines earliest time). Time can be in absolute time or combination time. Specify time using the standard syntax rules for specifying date and time given in the VAX/VMS DCL Dictionary, DEC publication AA-Z200A-TE.

/DISPOSE

Displays messages related to dispose transfers

/ERROR

Displays messages that are classified as errors. The effect is to exclude success, warning, and information messages.

/INTERACTIVE

Displays messages related to interactive work

/JOB

Displays messages related to job submission

/MASTER

Displays messages related to COS master operator station

/NETWORK

Displays messages related to DECnet communications

/NODE=*nodename*

Displays messages related to the specified DECnet nodename

Command Qualifiers (continued)

`/NOTIFY`  
`/NONOTIFY` Specifies whether the system should provide notification that the requested operation (which is not synchronous) has completed. `/NONOTIFY` is the default for this command. This qualifier is only useful for the `/RELEASE` qualifier.

`/OPERATOR` Displays messages related to operator commands

`/OUTPUT=file-spec` Specifies a file in which the list of messages that are currently being viewed are collected

`/PRINT` Prints messages that are currently being viewed

`/RELEASE` Closes the existing logfile and creates a new one

`/SINCE=time` Defines earliest time at which station messages are of interest to the user (`/BEFORE` qualifier specifies latest time). Time can be in absolute time or combination time. Specify time using the standard syntax rules for specifying date and time given in the VAX/VMS DCL Dictionary, DEC publication AA-Z200A-TE.

`/SUCCESS` Displays messages which are classified as success, warning, and informational. The effect is to exclude error messages.

`/STMSG` Displays COS station messages and replies

`/TRANSLATE`  
`/NOTRANSLATE` Specifies whether the terminal ID field is translated to indicate VMS UIC. If not translated (`/NOTRANSLATE`), the terminal ID field is represented in the station internal form.

`/USER=username` Specifies that messages with the supplied username only are selected for display. Available only to VAX/VMS users with OPER privilege.

## LOOP

Restarts execution of an indirect station command file

### Format

LOOP		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=ANY	DCL=NO	Station=ANY

### Prompts

### Appropriate Input

None

None

### Command Parameters

None

### Description

LOOP is used within an indirect station command file. The command restarts execution at the top of the file and causes looping. At the terminal, stop looping by entering CTRL/Z to terminate execution of the indirect station command file.

### Example

An indirect station command file constructed with the following contents can be executed indefinitely:

```
STATUS
DELAY 20
SHOW STATION
DELAY 20
LOOP
```

Example (continued)

When this indirect station command file is executed in refresh-style Cray context, the system alternates between the STATUS and SHOW STATION displays at 20 second intervals.

## MESSAGE

Enters a message into the COS job logfile, the COS system logfile, or both

### Format

MESSAGE <i>string</i>		
<u>Command Qualifiers</u>		<u>Default</u>
/BOTH		
/JN= <i>jobname</i>		
/JOB		/JOB
/JSQ= <i>jsq</i>		
/SYSTEM		
<u>Availability</u>		
When=ANY	DCL=NO	Station=ANY

### Prompts

### Appropriate Input

MESSAGE (qualifiers) text: *string* [*command qualifier*]

### Command Parameter

*string*

Message to be entered into the COS job or system logfile; truncated to 79 characters, if necessary. Enclose in quotes to embed blanks in the message.

### Description

MESSAGE allows users to enter a message to a COS logfile. The message may be sent to a job logfile, the COS system logfile, or both. The system also copies the message into the station logfile.

### Command Qualifiers

/BOTH

Specifies that the message goes to both the COS system logfile and the COS job; available only to VAX/VMS users with OPER privilege.

Command Qualifiers (continued)

<code>/JN=jobname</code>	<code>jobname</code> (combined with <code>/JSQ=jsq</code> ) specifies the identity of the job for which a message is destined
<code>/JOB</code>	Specifies that the message goes to the COS job
<code>/JSQ=jsq</code>	<code>jsq</code> (combined with <code>/JN=jobname</code> ) specifies the identity of the job for which a message is destined
<code>/SYSTEM</code>	Specifies that the message goes to the COS system logfile. A copy is also placed in the station logfile. This qualifier is available only to VAX/VMS users with OPER privilege.

## PAUSE

Suspends execution of an indirect station command file and switches control to the terminal

### Format

PAUSE		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=ANY	DCL=NO	Station=ANY

### Prompts

### Appropriate Input

PAUSE>

A carriage return or new command

### Command Parameters

None

### Description

PAUSE can be embedded in an indirect station command file. When PAUSE is encountered, the station suspends interpretation of commands from the indirect file and switches control to the terminal, where the user can either terminate processing from the indirect station command file (by entering a command) or resume processing from the indirect file by entering a null command (<RET> only).

## PLAY

Executes an indirect station command file

### Format

PLAY <i>file-spec</i>	<u>Alternate Form</u>
	@ <i>file-spec</i>
<u>Command Qualifiers</u>	<u>Default</u>
None	None
<u>Availability</u>	
When=ANY      DCL=YES      Station=ANY	

### Prompts

### Appropriate Input

PLAY filename:

*file-spec*

### Command Parameter

*file-spec*

A standard VAX/VMS file specification

### Description

PLAY initiates the execution of an indirect station command file that is created through use of the RECORD command or constructed by an editor. Indirect station command files provide users with a facility that parallels a VMS command procedure, that is, it provides a mechanism for a series of commands to be issued. Requested refresh displays can be observed for a period by including PAUSE and DELAY commands in the indirect station command file.

The command currently being processed from the indirect station command file is shown at the terminal.

Indirect station command files cannot contain PLAY commands.

Example

```
$ CRAY/NOREFRESH<RET>
CRAY> PLAY MYSUBS.PLA<RET>
PLAY> COMMENT "Warm up" submits<RET>
PLAY> SUBMIT JOB1<RET>
%CX-S-SUB_OK, Job: WARM1 queued for submission
PLAY> SUBMIT JOB2<RET>
%CX-S-SUB_OK, Job: WARM2 queued for submission
CRAY>
```

QUIT

Terminates an interactive session and the corresponding COS job

Format

QUIT		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=INT	DCL=NO	Station=ATT

Prompts

Appropriate Input

None

None

Command Parameters

None

Description

QUIT terminates an interactive session and also ends the corresponding COS interactive job. The effect of this command is identical to that of BYE/ABORT. If in refresh mode, the upper terminal region remains in interactive format until a new station display is entered.

## RECORD

Starts or stops the recording of terminal input for later use with the PLAY station command

### Format

RECORD [ <i>file-spec</i> ]		
<u>Command Qualifiers</u>		<u>Default</u>
/OFF		
/ON		/ON
<u>Availability</u>		
When=ANY	DCL=NO	Station=ANY

### Prompts

RECORD filename:

### Appropriate Input

*file-spec*

### Command Parameter

*file-spec*

A standard VAX/VMS file specification

### Description

This command records all commands issued until RECORD/OFF is issued or Cray context is terminated through the EXIT command.

### Command Qualifiers

/OFF

Terminates command recording. When /OFF is specified, all other parameters or qualifiers are ignored.

/ON

Initiates command recording. It is necessary to specify the *file-spec* parameter when /ON is specified.

## RELEASE

Releases a dataset held on the COS job queue

### Format

RELEASE <i>jsq</i>		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=LON	DCL=YES	Station=ANY

### Prompts

### Appropriate Input

RELEASE *jsq* number:

*jsq*

### Command Parameter

*jsq*

COS job sequence number to be released; can be obtained through the STATUS command.

### Description

This command releases a dataset that is held by COS and is waiting to be disposed. Datasets are held by COS when the VAX/VMS station detects that a disk-full or exceeded-quota condition exists while disposing a VMS file. VAX/VMS users with OPER privilege can release any entry that matches their station ID. VAX/VMS users without OPER privilege can release only their own datasets.

## REMOVE

Deletes entries in the VAX/VMS station dataset staging queue

### Format

REMOVE { <q-id> } { ALL }		
<u>Command Qualifiers</u>		<u>Default</u>
/[NO]LOCKED		/NOLOCKED
/SPOOL		
/STAGE		/STAGE
<u>Availability</u>		
When=ANY	DCL=YES	Station=ANY

### Prompts

REMOVE q-id (or ALL):

### Appropriate Input

q-id or ALL

### Command Parameters

q-id

Indicates staging queue member to be deleted; an 8-character hexadecimal number that is determined using the SHOW QUEUES station command. Leading zeros in the identity number can be omitted.

ALL

Removes all entries with the specified staging queue; available only to VAX/VMS users with OPER privilege.

### Description

REMOVE deletes one or more entries in the VAX/VMS station dataset staging queue. However, if the entry is locked, indicating processing by COS has begun, the deletion is not carried out unless the /LOCKED qualifier is specified.

Description (continued)

Where there is an associated file (that is, a job submission file), it is deleted.

VAX/VMS users without OPER privilege can remove only their own entries.

Command Qualifiers

/LOCKED	
/NOLOCKED	Specifies whether locked queue entries are removed. /NOLOCKED is the default.
/SPOOL	Specifies that the q-id is used to remove an entry in the network spooled dispose queue
/STAGE	Specifies that the q-id is used to remove an entry in the Cray staging queue

Examples

```
(1)  $ CRAY REMOVE ALL<RET>
      Confirm removal of whole queue (Y/N): Y<RET>
      %CX-I-REM_ID, Staging queue entry 1000022A removed
      %CX-I-REM_ID, Staging queue entry 0A002259 removed
      $

(2)  $ CRAY REMOVE 100010B4<RET>
      $

(3)  $ CRAY REMOVE 1000AB05<RET>
      %CX-E-BAD_REML, Queue entry found locked, so not removed
      $
```

## RERUN

Immediately ends processing of a COS job and reruns the job, if possible

### Format

RERUN <i>jsq</i>		
<u>Command Qualifiers</u>		<u>Default</u>
None		None
<u>Availability</u>		
When=LON	DCL=YES	Station=ANY

### Prompts

### Appropriate Input

RERUN *jsq* number:

*jsq*

### Command Parameter

*jsq*

Job sequence number identifying the job to COS; obtained through the STATUS command.

### Description

RERUN immediately ends processing of the job identified by its JSQ. The job input dataset at the Cray mainframe is saved and all output datasets associated with the job are deleted. The job input dataset is then rescheduled so the job can be rerun. No action is taken if the job execution is complete or if COS determines the job cannot be rerun.

## SAVE

Stages a single file to COS mass storage

### Format

SAVE <i>file-spec</i>		
<u>Command Qualifiers</u>		<u>Default</u>
/BLOCKSIZE= <i>n</i>		
/DF= <i>df</i>		/DF=CB
/ED= <i>ed</i>		
/EOF= <i>eof</i>		/EOF="/EOF"
/FOREIGN		
/ID= <i>id</i>		
/MN= <i>mn</i>		
/PDN= <i>pdn</i>		
/RD= <i>rd</i>		
/RT= <i>rt</i>		
/UNLOAD		
/US= <i>user-number</i>		
/VOLUME=< <i>volnam</i> >,...		
/WT= <i>wt</i>		
<u>Parameter Qualifiers</u>		
/DELETE		
/ORG=BLK		
<u>Availability</u>		
When=ANY	DCL=YES	Station=ANY

### Prompt

SAVE file:

### Appropriate Input

*file-spec*

### Command Parameters

*file-spec*

A VAX/VMS file to be staged to the Cray Computer System. Incomplete file specifications are resolved by using the user's defaults. The *file-spec* may be qualified as follows:

## Command Parameters (continued)

*file-spec*  
(continued)

- /DELETE** The file is deleted after it is successfully staged to the Cray Computer System. The only file qualifier used when using SAVE from a VMS disk file.
- /ORG=BLK** This qualifier is required if the tape is read in interchange format. The only file qualifier used when using SAVE from a tape file.

These file qualifiers must be appended to the *file-spec* and not to the SAVE command itself.

## Description

SAVE queues a request for the VAX/VMS station to stage a dataset to the Cray Computer System. At the Cray Computer System, the dataset is entered onto a Cray mainframe mass storage device.

## Command Qualifiers

- /BLOCKSIZE=*n*** Specifies the maximum block size for interchange format tapes
- /DF=*df*** Dataset format; can be CB, BB, or TR. The default is CB.
- /ED=*ed*** Optional qualifier allowing the user to specify the edition number. If not specified, COS allocates a number. The *ed* string must be a decimal integer between 0 and 4095.
- /EOF=*eof*** Specifies the string to be used as an end-of-file mark; the default is "/EOF".
- /FOREIGN** Required for interchange format tapes
- /ID=*id*** Optional qualifier allowing the user to set a user identification of 1 through 8 alphanumeric characters
- /MN=*mn*** Maintenance control word

## Command Qualifiers (continued)

<code>/PDN=<i>pdn</i></code>	Sets the name of the dataset to the (uppercase) alphanumeric string <i>pdn</i> . If this qualifier is omitted, the input file name is used, truncated to 15 characters.
<code>/RD=<i>rd</i></code>	Read permission control word
<code>/RT=<i>rt</i></code>	Retention time in number of days
<code>/UNLOAD</code>	Volume is unloaded physically from the tape unit when staging is complete
<code>/US=<i>user-number</i></code>	COS user number
<code>/VOLUME=&lt;<i>volnam</i>&gt;,...</code>	Volume name or names for a multivolume tape set. Must be specified when the source file is on tape. The station requests that each <i>volnam</i> in the VOLUME list is loaded until it finds the specified filename. It then reads subsequent volumes until the total file is staged.
<code>/WT=<i>wt</i></code>	Write permission control word

## Examples

- (1)     \$ CRAY SAVE NEWFILE.DAT<RET>  
       %CX-S-SAV\_OK, PDN: NEWFILE queued for saving  
       \$
- (2)     \$ CRAY SAVE/PDN=TEMP MYTEMP.DAT/DELETE<RET>  
       %CX-S-SAV\_OK, PDN: TEMP queued for saving  
       \$
- (3)     \$ CRAY SAVE/VOLUME=TRND/UNLOAD MTA0:WEATHER.DAT<RET>  
       %CX-S-SAV\_OK, PDN: WEATHER queued for saving  
       \$
- (4)     \$ CRAY SAVE/VOLUME=URNS/FOREIGN/BLOCK=4096 -  
          MTA0:EVENTS.TAP/ORG=BLK<RET>  
       %CX-S-SAV\_OK, PDN: EVENTS queued for saving  
       \$

## SET TERMINAL

Sets the terminal working environment

### Format

SET TERMINAL <i>parameter</i> [= <i>value</i> ]	
<u>Command Qualifiers</u>	<u>Default</u>
None	None
<u>Command Parameters</u>	
[NO]FORTRAN	NOFORTRAN
[NO]INFORM	NOINFORM
[NO]PAGE[= <i>lines</i> ]	NOPAGE
[NO]REFRESH[= <i>seconds</i> ]	REFRESH
SCROLL= <i>lines</i>	
WIDTH= <i>size</i>	
<u>Parameter Qualifiers</u>	
/ALL	
/STMSG	
<u>Availability</u>	
When=ANY	DCL=NO
	Station=ANY

### Prompts

### Appropriate Input

SET TERMINAL parameter:

*command parameter*

### Command Parameters

FORTRAN  
NOFORTRAN

Specifies whether FORTRAN carriage control characters are received. The parameter is useful in COS interactive mode when the output record contains FORTRAN carriage control characters. If the user specifies the FORTRAN command parameter and no valid FORTRAN carriage control character is found, the record is output followed by a new line.

Command Parameters (continued)

INFORM  
NOINFORM

Specifies whether station messages are sent to users logged on to VMS at a VAX terminal. These messages provide information on the progress of a user's work on the Cray Computer System. VAX/VMS users with OPER privilege can use the parameter qualifiers /ALL and /STMSG for this parameter.

/ALL Available only to VAX/VMS users with OPER privilege; permits users to receive all station information broadcasts about their own node (excluding COS station messages).

/STMSG Available only to VAX/VMS users with OPER privilege. Indicates that users should be informed of COS station messages.

PAGE[=*lines*]  
NOPAGE

Specifies whether COS interactive output is to be continuous with no page breaks. *lines* is a decimal integer that defines the number of lines of Cray interactive output in a page. *lines* specifies when the user must enter a carriage return to receive the next page of interactive output. The default is determined by the SCROLL setting.

REFRESH[=*seconds*]  
NOREFRESH

Specifies whether Cray context screen formatting is in refresh or nonrefresh (line-by-line) style. Refresh style is supported only on terminals with the DEC\_CRT attribute. *seconds* defines the rate at which the screen refreshes occur in Cray context refresh style. *seconds* requires that the VAX/VMS user has OPER privilege. Specify the refresh rate interval as a decimal integer in the range 0 through 60 seconds.

Command Parameters (continued)

`SCROLL=lines` Alters the proportion of the video screen devoted to command input. This command parameter can only be used in refresh-style Cray context. *lines* is the size of the command scroll region, which is a decimal integer from 3 through 13. The default is 4.

`WIDTH=size` Resets the terminal width. Current information in the scrolled command region is lost. *Size* is the number of characters per line (80 or 132). The default is 80.

Description

SET TERMINAL sets the terminal working environment.

## SHOW QUEUES

Displays entries in the VAX/VMS station dataset staging queue

### Format

SHOW QUEUES		
<u>Command Qualifiers</u>		<u>Default</u>
/ACQUIRE		/ALL
/ALL		
/[NO]CYCLE		/NOCYCLE
/JOB		
/NODE= <i>node-id</i>		
/OWNER		
/SAVE		
/SPOOL		/SPOOL†
/STAGE		/STAGE
/[NO]TRANSLATE		/TRANSLATE
<u>Availability</u>		
When=ANY	DCL=YES	Station=ANY

### Prompts

None

### Appropriate Input

None

### Command Parameters

None

### Description

SHOW QUEUES displays the entries in the dataset staging queue to COS. Use the command qualifiers /JOB, /SAVE, and /ACQUIRE to see specific queue entry categories.

† Default only for VAX/VMS users with OPER privilege

## Description (continued)

The following information is provided in this display:

- Position in staging queue. The number in column 1 indicates the relative position of the entry in the queue. The letter L in column 1 indicates that it is locked and therefore being processed.
- Request type
- Queue identity (q-id). This hexadecimal number is used in the REMOVE and REQUEUE commands.
- VAX username
- Dataset transfer name (job)
- Terminal identifier (TID) associated with dataset. If the /TRANSLATE qualifier form is used, information is provided on the DECnet node and VAX/VMS UIC.

## Command Qualifiers

/ACQUIRE	Specifies that dataset requests originating from COS (through ACQUIRE or FETCH statements) are included in the display.
/ALL	Specifies that all types are included in the display (that is, /ACQUIRE, /JOB, and /SAVE)
/CYCLE /NOCYCLE	Specifies whether all information (/CYCLE) or only one page of information (/NOCYCLE) should be displayed when in refresh style. If the user specifies /CYCLE and there is more than one page of information, the page number is automatically controlled, making it unnecessary to enter the + (page forward) and - (page backward) commands. /NOCYCLE is the default, indicating that only one page of the refresh-style display will be shown until the user enters the + or - commands.
/OWNER	Specifies that the queued entries owned by the user are displayed
/JOB	Specifies that job submissions resulting from use of the SUBMIT command are displayed

Command Qualifiers (continued)

<code>/NODE=<i>node-id</i></code>	Specifies only entries from a particular DECnet node. <i>node-id</i> is the DECnet node name displayed when the user enters the VAX/VMS DCL command SHOW NETWORK. This qualifier is only useful at the attached VAX/VMS station.
<code>/SAVE</code>	Specifies that dataset save requests resulting from use of the SAVE command are displayed
<code>/SPOOL</code>	Specifies that network spooled disposes only are included in the display. This qualifier has no affect unless the user has the VAX/VMS OPER privilege.
<code>/STAGE</code>	Specifies that the Cray staging entries are included in the display
<code>/TRANSLATE</code> <code>/NOTRANSLATE</code>	Specifies whether the terminal identifier field is translated to indicate VMS UIC. If not translated ( <code>/NOTRANSLATE</code> ), the TID field is represented in the station internal form.

## SNAP

Copies the display screen image to a VAX/VMS file

### Format

SNAP *file-spec*

#### Command Qualifiers

#### Default

/[NO]ESCAPE

/NOESCAPE

#### Availability

When=ANY

DCL=NO

Station=ANY

### Prompts

### Appropriate Input

SNAP filename:

*file-spec*

### Command Parameter

*file-spec*

A standard VAX/VMS file specification

### Description

SNAP is available only within Cray context. If the terminal is in refresh style, the command records the current contents of the display region and region divider. The display is stored in the file specified in *file-spec*. If the command is issued from a terminal in nonrefresh style, the last display requested is recorded in the file.

### Command Qualifiers

/ESCAPE

/NOESCAPE

Specifies whether screen controlling escape sequences are to be removed from the screen image recorded. Escape sequences are available only in refresh-style Cray context.

## STATUS

Displays COS status

### Format

STATUS		
<u>Command Qualifiers</u>		<u>Default</u>
/ALL		/ALL
/CLASS= <i>jcn</i>		
/[NO]CYCLE		/NOCYCLE
/EXECUTING		/EXECUTING
/HOLD		
/ID= <i>id</i>		
/INPUT		/INPUT
/NODE= <i>node-id</i>		
/OUTPUT		/OUTPUT
/OWNER		
/RECEIVING		/RECEIVING
/SENDING		/SENDING
/[NO]TRANSLATE		/TRANSLATE
/VAX		
<u>Availability</u>		
When=LON	DCL=YES	Station=ANY

### Prompts

None

### Appropriate Input

None

### Command Parameters

None

### Description

STATUS returns the status of jobs, input datasets, and output datasets known to COS. Several jobs are reported at a time according to their job sequence numbers. Status can be requested for any or all of the COS job queues. The display header shows the current COS job class name.

Description (continued)

The following information is provided in a status display for each COS dataset:

- Job sequence number (JSQ)
- Disposition code (DC), as follows:

<u>DC</u>	<u>Description</u>
IN	Job dataset
MT	Dataset is to be disposed to magnetic tape at the receiving station
PR	Dataset is to be disposed to a printer at the receiving station
PT	Dataset is to be disposed to a plotter at the receiving station
PU	Dataset is to be disposed to punched cards at the receiving station
ST	Dataset is to be made a permanent dataset at the receiving station or other Cray mainframe

- Job name when submitted at originating station
- Job class assignment
- Job or dataset status, as follows:

<u>Status</u>	<u>Description</u>
EXECUTE	Executing
HOLDING	Dataset held on COS
LOCK-MEM	Locked by memory
LOCK-SYS	Locked by system
QUEUED	Queued for execution
QUEUED-T	Queued for tape
RESIDENT	Resident in memory (multitasking job)
ROLL-IN	Rolling in
ROLLED	Rolled out
SUSP-OPR	Suspended by operator
SUSP-RCY	Recovery suspended
WAIT-1TH	Suspended to single thread tasks (multitasking job)

Description (continued)

<u>Status</u>	<u>Description</u>
WAIT-EVT	Waiting for event
WAIT-I/O	Waiting for I/O
WAIT-MEM	Waiting for memory
WAIT-SYS	System suspended
WAIT-TIM	Waiting for time event
WAIT-TSK	Suspended by task deactivate (multitasking job)
WAIT-XFR	Waiting to transfer
WAIT-CPU	Waiting for CPU
XFER-IN	Transferring into Cray
XFER-OUT	Transferring out of Cray

- Priority displayed as two fields. The integer field gives the assigned priority, and the fractional field gives the calculated priority.
- Time used in seconds and time limit in seconds (decimal). If the job's time used or time limit exceeds the display area, the corresponding entry contains \*\*\*\*. If time used or time limit is not applicable for the dataset, the corresponding entry contains ----.
- Field length of job specified as a decimal count of 512-word blocks. If field length is not applicable, the entry contains ----.
- Station ID associated with job or dataset
- Terminal identifier (TID) associated with job or dataset. If the /TRANSLATE qualifier is used, the DECnet node and VAX/VMS UIC information is provided.

Command Qualifiers

/ALL	Specifies that all COS status display entries may be viewed
/CLASS= <i>jcn</i>	Specifies that the entry with this 7-character job class name be displayed
/CYCLE	Specifies whether all information (/CYCLE) or only one page of information (/NOCYCLE) should be displayed when in refresh style. If the user specifies /CYCLE and there is more than one page of information, the page number is automatically controlled, making
/NOCYCLE	

Command Qualifiers (continued)

/CYCLE /NOCYCLE (continued)	it unnecessary to enter the + (page forward) and - (page backward) commands. /NOCYCLE is the default, indicating that only one page of the refresh-style display is shown until the user enters the + or - commands.
/EXECUTING	Specifies that the status of the execution queue be displayed
/HOLD	Specifies that only COS datasets that are currently held on the COS hold queue are shown
/ID= <i>id</i>	Specifies the COS station identity of a specific front-end station
/INPUT	Specifies that the input queue status be displayed
/NODE= <i>node-id</i>	Specifies entries from a particular DECnet node. <i>node-id</i> is the DECnet node name shown in the VAX/VMS DCL command SHOW NETWORK
/OUTPUT	Specifies that the output queue status be displayed
/OWNER	Restricts the status information to only those entries owned by the user
/RECEIVING	Specifies that the status of the Cray mainframe receiving queue be displayed
/SENDING	Specifies that the status of the Cray mainframe sending queue be displayed
/TRANSLATE /NOTRANSLATE	Specifies whether the terminal identifier field is translated to indicate VMS UIC. If not translated (/NOTRANSLATE), the TID field is represented in the station internal form.
/VAX	Specifies that only work originating from this VAX/VMS station (or network of stations) is shown

## SUBMIT

Stages a job to COS for processing

### Format

SUBMIT *<file-spec>*,...

#### Command Qualifiers

*/AFTER=time*  
*/EOF(=<eof>)*  
*/[NO]PRINT*  
*/OUTPUT=file-spec*

#### Default

*/EOF="/EOF"*  
*/NOPRINT*

#### Availability

When=ANY            DCL=YES            Station=ANY

### Prompts

SUBMIT file:

### Appropriate Input

*file-spec*

### Command Parameter

*file-spec*

Name of one or more input files to be staged to COS. If no file type is specified, the station default file type is used. (This is normally .JOB, but this value may be changed by the station manager at an installation.) The first file must contain COS JCL commands.

In reply to a prompt for files, more than one file can be specified on the same line, but files must be separated by commas or plus signs. A group of files to be regarded as just one file by COS should be separated by plus signs. Commas separating files indicate that COS end-of-file markers should be placed between each file. Prompting allows input of an indefinite sequence of files, until a null entry (carriage return) is received. It is assumed that the first file mentioned on a line is separated from

## Command Parameters (continued)

*file-spec*  
(continued)

the last file of the previous line by a comma, unless a plus sign has been explicitly used.

Specify files in the format defined in the VAX/VMS DCL Dictionary, DEC publication AA-Z200A-TE.

SYSS\$INPUT is a special *file-spec* allowing the user to enter text not already placed in a file. This *file-spec* initiates an immediate entry mode of operation for either batch or interactive users. Input must be terminated by CTRL/Z. SYSS\$INPUT must be placed at the end of a line of input.

## Description

SUBMIT constructs a job submission file that is queued for staging to COS. SUBMIT creates the job submission file from input files. COS <eof> separators are automatically inserted unless files are separated by plus signs overriding the <eof>. COS <eof> and end-of-data indicators terminate the file.

After it is run, job and logfile output is staged back to the directory from which it was submitted with the filename '*job-name.CPR*'.

## Command Qualifiers

*/AFTER=time*

Specifies when the job is to be sent to the Cray Computer System. *time* is represented in absolute time or combination time. Specify *time* using the VAX/VMS standard syntax rules found in the VAX/VMS DCL Dictionary, DEC publication AA-Z200A-TE.

*/EOF=<eof>*

Specifies the embedded COS <eof> separator contained in VMS files submitted to COS. If the user does not specify the value <eof>, the station uses the default <eof> separator /EOF. When <eof> is specified, it is a 1- to 80-character ASCII string defining the COS <eof> separator.

Command Qualifiers (continued)

**/EOF=<eof>**  
(continued) If nonalphanumeric characters are in the string, they must be enclosed in quotation marks (for example, /EOF="E O F").

**/PRINT**  
**/NOPRINT** Determines whether print files associated with this COS job are printed. If the user specifies /NOPRINT, the file is stored in a VMS file in the directory from which the job was submitted. If the user specifies /PRINT, the file is deleted after being spooled to the default print queue.

**/OUTPUT=file-spec** Specifies where COS job output is placed. Allows user to override default file specification information determined at job submission with specific disk and/or directory information.

Examples

(1) \$ CRAY SUBMIT MYFIL.JOB<RET>  
%CX-S-SUB\_OK, Job: EXAMPLE queued for submission  
\$

This example stages the file MYFIL.JOB to COS. If the VMS file contains several COS files, the files are separated by records containing /EOF.

(2) \$ CRAY SUBMIT/NOPRINT<RET>  
SUBMIT File: CRAYJOB.JOB<RET>  
SUBMIT File: <RET>  
%CX-S-SUB\_OK, Job: FRED queued for submission  
\$

Example 2 indicates the prompted dialogue equivalent to:

\$ CRAY SUBMIT/NOPRINT CRAYJOB.JOB<RET>  
%CX-S-SUB\_OK, Job: FRED queued for submission  
\$

(3) \$ CRAY SUBMIT/NOPRINT/EOF="\*\*\*\*\*" MYJOB.JOB<RET>  
%CX-S-SUB\_OK, Job: JIM queued for submission  
\$

Example 3 indicates the file MYJOB.JOB is subdivided by the end of file string "\*\*\*\*\*"

Examples (continued)

```
(4)  $ CRAY SUBMIT SYS$INPUT<RET>
      JOB,JN=LATEST...
      .
      .
      .
      ^Z
      %CX-S-SUB_OK, Job: LATEST queued for submission
      $
```

In example 4, the JCL file is entered at the terminal.

## SWITCH

Manipulates the job sense switches

### Format

SWITCH <i>jsq ssw</i>		
<u>Command Qualifiers</u>		<u>Default</u>
/OFF		
/ON		/ON
<u>Availability</u>		
When=LON	DCL=YES	Station=ANY

### Prompts

### Appropriate Input

SWITCH *jsq* number:

*jsq*

SWITCH *ssw* number:

*ssw*

### Command Parameters

*jsq*

Job sequence number identifying the job to COS; displayed with the STATUS command.

*ssw*

Sense switch number; 1 through 6.

### Description

SWITCH sets or clears a job sense switch. Sense switches can be used for program synchronization on the Cray Computer System.

### Command Qualifiers

/OFF

Clears the switch designated by *ssw*. When /OFF is specified, all other parameters or qualifiers are ignored.

/ON

Sets the switch designated by *ssw*

## TAPE

Displays COS tape device information

### Format

TAPE		
<u>Command Qualifiers</u>		<u>Default</u>
/[NO]CYCLE		/NOCYCLE
<u>Availability</u>		
When=LON	DCL=YES	Station=ANY

### Prompts

None

### Appropriate Input

None

### Command Parameters

None

### Description

TAPE displays the following configuration information for each tape device:

- Device number
- Generic device name
- All access paths
- Associated JSQ (if any assigned)

Description (continued)

- Device status, as follows:

<u>Status</u>	<u>Description</u>
DOWN	Device is down; not available for use.
IDLE	Available for use
MAINTENANCE	Maintenance mode; not available for use.
OFFLINE	Offline; not available for use.
OP - DOWN	Downed by the operator; not available for use.
OP. INTERVNTN	Operator intervention required.
READ	Currently assigned to a job; write disabled.
RD/WT	Currently assigned to a job; write enabled.
SYS - DOWN	Downed by the system; not available for use.

- Density, as follows:

6250 bpi  
1600 bpi

- Assigned volume serial number

Command Qualifiers

/CYCLE  
/NOCYCLE

Specifies whether all information (/CYCLE) or only one page of information (/NOCYCLE) should be displayed when in refresh style. If the user specifies /CYCLE and there is more than one page of information, the page number is automatically controlled, making it unnecessary to enter the + (page forward) and - (page backward) commands. /NOCYCLE is the default, indicating that only one page of the refresh-style display is shown until the user enters the + or - commands.

## TJOB

Displays the status of COS tape jobs

### Format

TJOB		
<u>Command Qualifiers</u>		<u>Default</u>
/[NO]CYCLE		/NOCYCLE
<u>Availability</u>		
When=LON	DCL=YES	Station=ANY

### Prompts

None

### Appropriate Input

None

### Command Parameters

None

### Description

TJOB displays the status of jobs requiring tape devices. The TJOB display provides the following information:

- Job sequence number
- Disposition code, as follows:

IN Job dataset  
MT Dataset is to be disposed to magnetic tape at the receiving station  
PR Dataset is to be disposed to a printer at the receiving station  
PT Dataset is to be disposed to a plotter at the receiving station

Description (continued)

PU Dataset is to be disposed to punched cards at the receiving station

ST Dataset is to be made a permanent dataset at the receiving station

- Job name
- Job status, as follows:

<u>Status</u>	<u>Description</u>
DELAY	Waiting for time event
EXCTNG	Executing
HOLDING	Waiting for release
LOCKED	Locked because of system incompatibility
Q-EXEC	Queued for execution
Q-TAPE	Queued for tape
R-IN	Rolling in
ROLLED	Rolled out
R-OUT	Rolling out
S-CPU	Waiting for CPU
S-EVENT	Waiting for event
S-MEM	Waiting for memory
S-OP	Operator suspended
S-RECV	Recovery suspended (SHUTDOWN)
S-SYS	System suspended
S-XFER	Waiting for transfer
XFERING	Transfer in progress

- Job priority
- Time used in seconds and time limit in seconds (decimal). If the job's time used or time limit exceeds the display area, the corresponding entry contains \*\*\*\*. If time used or time limit is not applicable for the dataset, the corresponding entry contains -----.
- Field length of job specified as a decimal count of 512 word blocks. If field length is not applicable, the entry contains -----.
- Station ID associated with job

## Command Qualifiers

/CYCLE  
/NOCYCLE

Specifies whether all information (/CYCLE) or only one page of information (/NOCYCLE) should be displayed when in refresh style. If /CYCLE is specified and there is more than one page of information, the page number is automatically controlled, making it unnecessary to enter the + (page forward) and - (page backward) commands. /NOCYCLE is the default, indicating that only one page of the refresh-style display is shown until entry of the + or - commands.

## **APPENDIX SECTION**



# SAMPLE TERMINAL SESSIONS

A

This appendix provides two sample terminal sessions in which you use the VAX/VMS station to prepare, submit, and monitor jobs that are sent to the Cray Computer System for processing. These sample terminal sessions draw together activities that are discussed in sections 2 through 7.

Each sample terminal session is divided into three stages:

1. Preparing the job file or job files on the VAX-11 front-end.
2. Submitting the job to the Cray Operating System (COS) with the SUBMIT station command; monitoring the job with other station commands.
3. Managing the returned job output on the VAX-11 front-end.

These three stages are equivalent to the steps of job preparation, submission, and management described in section 3.

This appendix assumes that you can log on to VAX/VMS and use a text editor to prepare a job file on the front-end computer system; if you cannot, refer to the list of publications in the preface.

These sample terminal sessions provide you with basic models to prepare, submit, monitor, and manage COS jobs. After you complete these sample terminal sessions, use the Command Reference section of this publication and the CRAY-OS Version 1 Reference Manual, publication SR-0011, to tailor COS jobs to your specific requirements.

## A.1 FIRST TERMINAL SESSION - MINIMUM JCL

In this sample terminal session you will submit a single job file that contains the minimum Cray JCL necessary for processing by COS.

### A.1.1 PREPARING THE JOB FILE

The first stage of preparing a job for COS processing is to create a file on the VAX-11 front-end computer system. Use EDT or another VAX/VMS text editor to enter the following job control statements and FORTRAN code into file SAMPLE.JOB. (Explanatory notes follow.)

```
JOB,JN=jobname.
ACCOUNT,AC=account#,US=userid,UPW=userpassword.
CFT.
LDR.
EXIT.
/EOF

      J=50
      DO 10 I=1,10
      J=J+1
      PRINT 50,J
10    CONTINUE
      STOP
50    FORMAT(' ',I3)
      END
/EOF
```

The first five lines of this file are the minimum JCL required for job submission. They are briefly explained below:

<u>Statement</u>	<u>Description</u>
JOB,JN= <i>jobname</i>	JOB control statement, which defines the job name you wish to assign to this job. <i>jobname</i> can be from 1 to 7 alphanumeric characters; the Cray Computer System returns your job output to your directory with the format <i>jobname.CPR</i> .
ACCOUNT,AC= <i>account#</i> ,US= <i>userid</i> ,UPW= <i>userpassword</i> .	ACCOUNT control statement, which identifies your account number, user ID, and user password to the system. You will obtain these values when you open an account with the Cray Computer System.
CFT.	CFT control statement, which brings the CFT compiler into execution.
LDR.	LDR control statement, which calls the COS relocatable loader into execution.

<u>Statement</u>	<u>Description</u>
EXIT.	Indicates the point in the JCL file where processing of control statements resumes following a job step abort from a program. If no job step abort occurs, the EXIT control statement indicates the end of JCL processing.

The end of the JCL file is indicated in line 6 with an end-of-file record (/EOF). FORTRAN statements begin in column 7. In this example, FORTRAN line numbers begin in column three. The final statement in the file is indicated with an end-of-file record (/EOF).

When you have prepared your file on the VAX front-end, you are ready to submit and monitor the job for processing on the Cray Computer System.

#### A.1.2 SUBMITTING AND MONITORING THE JOB

Before submitting your job to the Cray Computer System, determine if the station is operating by using the station command SHOW QUEUES. (If you are entering station commands after the DCL prompt, all station commands must be preceded by CRAY. See section 2 for a discussion of entering station commands.)

```
$ CRAY SHOW QUEUES<RET>
```

```
Station queue: STAGING                28-OCT-1984 13:52:12.12
Acquires OPEN      Jobs OPEN          Saves OPEN      Disposes OPEN
  req  q-id  username  job          tid
```

```
----spooled-----
```

In this example, the station responds that it is transmitting with the Cray Computer System by displaying "STAGING". (If the station is not on and staging, your jobs are placed in the station staging queue until they can be submitted to the Cray Computer System.) Because you have not yet submitted a job, the final line of the example indicates that no entries are found to display.

Use the SET TERMINAL INFORM station command to enable the sending of station messages to your display terminal. These messages provide information relevant to the progress of your work on the Cray Computer System.

```
$ CRAY SET TERMINAL INFORM<RET>
```

To submit your job file from the VAX-11 front-end computer system to the Cray Computer System, use the SUBMIT station command, followed by the name of the file you are submitting. In this example, you will submit file SAMPLE.JOB, which you prepared previously.

```
$ CRAY SUBMIT SAMPLE.JOB<RET>
```

If your job submission is successful, the system returns a message like the one below.

```
%CX-S-SUB_OK, Job: jobname queued for submission
```

*jobname* is the jobname you defined with the JN= parameter of the JOB statement in the first line of your sample program.

Now that you have used the SUBMIT station command, use SHOW QUEUES again to check the job's position in the staging queue.

```
$ CRAY SHOW QUEUES<RET>
```

```
Station queue: STAGING                               28-OCT-1984 13:52:21.12
Acquires OPEN      Jobs OPEN      Saves OPEN      Disposes OPEN
  req  q-id  username  job      tid
L JB  7A480011  WHITE      CRAYJOB  CRAYMH  [WHITE]
```

In this example, user WHITE has job TEST on the staging queue to COS. Your own user name, job name, terminal ID, and other values appear on the queue display.

Because you used the SET TERMINAL INFORM command, the station soon begins sending messages that inform you about the progress of your job. For example:

```
$
VAX TO CRAY: %RMS-S-NORMAL, normal successful completion
VAX TO CRAY: FILE = CRAYJOB.SUB;1
VAX TO CRAY: 4096 BYTES TRANSFERRED
$
```

This set of messages indicates that your job has been sent from the VAX-11 front-end to the Cray Computer System.

To monitor processing on the Cray Computer System, enter the STATUS command.

```
$ CRAY STATUS
```

```
Cray system status
jsq  dc  dataset  class  status  pri  used  limit  length  id  tid
4519 IN  CRAYJOB  NORMAL EXECUTE 13.9  3    9    39  DX  [WHITE]
```

To determine if your job is currently executing, look under "status" in column 5. In the above example, the submitted dataset CRAYJOB is executing, indicated by "EXECUTE".

Now use the JOB station command to display the lines most recently written to your job's logfile:

```
$ CRAY JOB CRAYJOB<RET>
COS JOB CRAYJOB IS EXECUTING
LDR.
%CX-S-JOB_OK, JOB request return JSQ=4519
```

The example logfile confirms that COS has begun to process the job.

When the Cray Computer System has finished executing a job, the station displays another set of messages indicating that the job has been sent from the Cray Computer System to the VAX front-end:

```
$
CRAY TO VAX: %RMS-S-NORMAL, normal successful completion
CRAY TO VAX: FILE=UMA1:[WHITE]CRAYJOB.CPR;1
CRAY TO VAX: 3608 BYTES TRANSFERRED
$
```

In this example, line 3 indicates that the output from the job is placed in user WHITE's file CRAYJOB.CPR;1. When you receive the output from COS, it appears under the directory from which you submitted the job with a filename identical to the job name; the default file type is .CPR. For example, if you specified your job name as TESTJOB, the system returns your job to a file under your directory with the name TESTJOB.CPR.

### A.1.3 MANAGING JOB OUTPUT

Now that your job has completed processing, use the VAX/VMS command TYPE or EDIT to display your job output file at your terminal. You can also print your file with the PRINT command.

See the next terminal session for a description of how to read your program output.

## A.2 SECOND SAMPLE TERMINAL SESSION - DATASET STAGING

In the first sample terminal session, you submitted a single job file to the Cray Computer System. The file contained the minimum JCL required for processing and did not stage datasets from the front-end computer system or create permanent datasets on COS mass storage.

This second terminal session provides you with a slightly more complex example. There are three primary differences between this sample session and the first sample session:

- Rather than store your Cray JCL and FORTRAN program code in one VAX/VMS file, you will store them in two separate files. You will use the SUBMIT station command to send only the JCL file to the Cray Computer System; the file containing the FORTRAN code is staged to the Cray Computer System by an ACQUIRE statement contained in the JCL file you submit.
- You will use the AUDIT job control statement to provide a status report of the permanent dataset your program stores on the system.
- Following program execution, the permanent dataset created on the Cray mainframe is returned to the front-end system by a DISPOSE control statement contained in your JCL file.

### A.2.1 PREPARING THE JOB FILES

In this subsection, you will prepare two job files on the VAX-11 front-end system. The first file (which is named JCL.JOB) contains Cray JCL; the second file (which is named FORTRAN.CFT) contains the FORTRAN code.

Use EDT or another VAX/VMS text editor to enter the following statements into file JCL.JOB. (Explanatory notes follow.)

```
JOB,JN=<jobname>.
ACCOUNT,AC=<account#>,US=<userid>,UPW=<userpassword>.
ACQUIRE, DN=CFTFILE,TEXT='FORTRAN.CFT',ID=<userid>,UQ.
AUDIT.
CFT,I=CFTFILE.
LDR.
DISPOSE, DN=CFTFILE,TEXT='RETURN.CFT/RAT=CR'.
EXIT.
/EOF
```

The JOB and ACCOUNT statements have the same function as in the first sample program. The remaining 8 lines of the file are explained below:

<u>Statement</u>	<u>Description</u>
ACQUIRE, DN=CFTFILE, TEXT='FORTRAN.CFT', ID=<userid>, UQ.	Stages the file FORTRAN.CFT from the VAX front-end to the Cray Computer System, assigning it the local and permanent dataset name of CFTFILE. Later in this JCL file, CFTFILE is compiled by the CFT statement and staged back to the front-end system with the DISPOSE control statement.
AUDIT.	Provides a report on the status of each permanent dataset owned by the user that is known to the system. The report should include the permanent dataset CFTFILE, which was created with the previous ACQUIRE statement.
CFT, I=CFTFILE.	Brings the CFT compiler into execution; I=CFTFILE designates CFTFILE as the dataset on which the compiler executes.
LDR.	Calls the COS relocatable loader into execution.
DISPOSE, DN=CFTFILE, TEXT='RETURN.CFT/RAT=CR'.	Stages the local dataset CFTFILE from the Cray Computer System to the VAX front-end. The TEXT= parameter instructs the station to place the dataset under your default VAX/VMS directory with the file specification RETURN.CFT. (After the FORTRAN code in CFTFILE is compiled and loaded, it is no longer required by this example program; CFTFILE is staged to the front-end computer system in this example program only for the purpose of demonstrating DISPOSE processing.) The /RAT=CR qualifier specifies that each record is to be preceded by a line feed and followed by a carriage return.
EXIT.	Indicates the point in the JCL file where processing of control statements resumes following a job step abort from a program. If no job step abort occurs, the EXIT control statement indicates the end of JCL processing.

An end-of-file record (/EOF) in line 9 indicates the end of the JCL file.

To create the FORTRAN file, enter the following code into a VAX/VMS file named FORTRAN.CFT. (You can also use the VAX/VMS COPY command to copy the file from the previous sample terminal session into FORTRAN.CFT.)

```
      J=50
      DO 10 I=1,10
      J=J+1
      PRINT 50,J
10    CONTINUE
      STOP
50    FORMAT(' ',I3)
      END
/EOF
```

FORTRAN statements begin in column 7. FORTRAN line numbers begin in column 3. An /EOF marker follows the program and signals end of data.

When you have prepared files JCL.JOB and FORTRAN.CFT on the VAX front-end system, you are ready to submit them to the Cray Computer System for processing.

#### A.2.2 SUBMITTING AND MONITORING THE JOB

Before submitting your job, use the SHOW QUEUES station command to determine if the station is on and staging. Then turn on information broadcasting by using the SET TERMINAL INFORM station command. The first sample terminal session explains both of these station commands.

In this sample terminal session, you will send file JCL.JOB (which contains your program JCL) to the Cray Computer System; file FORTRAN.CFT (which contains your FORTRAN code) is staged to the Cray Computer System by the ACQUIRE statement contained in file JCL.JOB. To submit file JCL.JOB, use the SUBMIT command as shown below:

```
$ CRAY SUBMIT JCL.JOB<RET>
```

If your job submission is successful, the system returns a message like the one below.

```
%CX-S-SUB_OK, Job: <jobname> queued for submission
```

<jobname> is the job name you defined with the JN= parameter of the JOB statement in the first line of your sample program.

Now that you have submitted your job to the Cray Computer System, use SHOW QUEUES to check the job's position in the staging queue.

**\$ CRAY SHOW QUEUES<RET>**

```
Station queue: ON+STAGING                28-OCT-1984 13:52:12.12
Acquires OPEN      Jobs OPEN             Saves OPEN      Disposes OPEN
  req  q-id  username  job      tid
L JB  7A480011  CASTLE   TEST    CRAYMH  [CASTLE]
```

In this example, user CASTLE has job TEST on the staging queue to COS. Your own user name, job name, and other values will appear on the queue display.

Use the JOB station command, described in the first sample terminal session, to determine the line most recently written to your job's logfile.

Because you used the SET TERMINAL INFORM station command, the station soon begins sending messages that inform you of the progress of your job.

```
$
VAX TO CRAY: %SYSTEM-S-NORMAL, normal successful completion
VAX TO CRAY: FILE = JCL.JOB;1
VAX TO CRAY: 4096 BYTES TRANSFERRED
$
VAX TO CRAY: %SYSTEM-S-NORMAL, normal successful completion
VAX TO CRAY: FILE = <disk>:[<directory>]FORTRAN.CFT;1
VAX TO CRAY: 4096 BYTES TRANSFERRED
$
```

The first set of messages indicates that your job has been sent from the VAX front-end to the Cray Computer System. The second set of messages indicates that the file FORTRAN.CFT;1 was successfully staged from the VAX front-end to the Cray Computer System. (Staging of the file FORTRAN.CFT;1 was accomplished by the ACQUIRE control statement contained in your JCL file.) Your own values for <disk> and <directory> will appear in the second set of messages.

To monitor processing of your job on the Cray Computer System, enter the STATUS station command. To determine if your job is currently executing, look under "status" in column five.

**\$ CRAY STATUS**

```
Cray system status
jsq  dc  dataset  class  status  pri  used  limit  length  id  tid
4519 IN  CRAYJOB  NORMAL EXECUTE 13.9  3    9     39   DX  [CASTLE]
```

In the above example, the submitted dataset CRAYJOB is executing, as indicated by "EXECUTE".

The station continues to send messages that inform you of the progress of your job.

```
$
CRAY TO VAX: %RMS-S-NORMAL, normal successful completion
CRAY TO VAX: FILE=<disk>:[<directory>]RETURN.CFT;1
CRAY TO VAX: 117 BYTES TRANSFERRED
$
CRAY TO VAX: %RMS-S-NORMAL, normal successful completion
CRAY TO VAX: FILE=<disk>:[<directory>]jobname.CPR;1
CRAY TO VAX: 3608 BYTES TRANSFERRED
$
```

The first set of messages indicates that the dataset containing your FORTRAN code has been sent from the Cray Computer System to the VAX front-end; this was accomplished by the DISPOSE statement in your JCL file. Your own values for <disk> and <directory> appear in the message. The second set of messages indicates that the output file from your job has been transferred to your directory on the VAX front-end; your Cray job is finished. The job output appears in the directory from which you submitted the job with the following format:

```
<jobname>.CPR
```

You specified <jobname> with the JN= parameter of the JOB control statement in line 1 of your JCL file.

### A.2.3 READING JOB OUTPUT

This subsection describes how to read the job output file that COS returns to the front-end computer system. Use the VAX/VMS commands TYPE or EDIT to display your job output file at your terminal. You can also print your file with the VAX/VMS command PRINT.

The first page of your COS program output contains a report on permanent datasets stored on the Cray Computer System; this report appears only when you include the AUDIT control statement in your JCL file. By using available parameters, the AUDIT control statement can report on numerous variables, including:

- Permanent dataset name
- Dataset identifier
- Edition number
- User identification
- Creation date/time
- Last access date/time
- Last modified date/time
- Last dumped date/time
- Device name on which dataset resides

Because you used system defaults for the AUDIT statement in your JCL file, the AUDIT report in your job output appears similar to figure A-1.

---

AUDIT	COS 1.14	10/30/84 14:21:50	Page	1
-------	----------	-------------------	------	---

OWN = U2105

---

PDN	SZ	ID RT	ACC TA	ED PAM	CREATED	LAST ACCESSED	LAST MODIFIED	LAST DUMPED	DEVICE
CFTFILE	512	45	3 N N	1	11/29/84 10:02:17	10/07/84 10:03:23		10/07/84 10:05:45	49-A2-24
	1 DATASET,			1 BLOCK,				602 WORDS	

---

Figure A-1. AUDIT Report

The next page of your program output contains a header line and a listing of your executable FORTRAN code. The FORTRAN code is assigned line numbers, as in the following example:

```

1          1.          J=50
2          2.          DO 10 I=1,10
3          3.          J=J+1
4          4.          PRINT 50,J
5          5.  10      CONTINUE
6          6.  50      FORMAT(' ',I3)
7          7.          STOP
8          8.          END

```

The results of your program appear on the bottom of the following page, under the heading TOTAL. In your sample terminal session, your results will appear as follows:

```

TOTAL:
51
52
53
54
55
56
57
58
59
60

```

The logfile for your job appears at the end of the job output. The logfile is an abbreviated history of the progress of your job through the Cray Computer System. Each job control statement is listed sequentially, followed by any message associated with the job step. Clock time, accumulated CPU time, and COS information are also given for each job step.

The numbered headings below describe each part of the job logfile. Refer to your own jobfile output as you read this description.

1. First header line: Appears on the top, right corner of the logfile; an installation-defined message, usually identifying the site and date the job was run.
2. Second header line: Appears below the first header line; an installation-defined message, usually identifying the operating system, its current revision level, and the date of the last revision.
3. Columns: Appear on the left side of the logfile. The leftmost column identifies the wallclock time for each job step and the middle column identifies the accumulated CPU time for the job. The rightmost column identifies a system module or the user as the originator of the message. (All times are in decimal.) Entries commonly noted include the following:

CSP	Control Statement Processor
PDM	Permanent Dataset Manager
EXP	Exchange Processor
ABORT	Abort Message
USER	Program in user field

4. Control statements: Control statements appear below the second header line.
5. Logfile messages: Any messages related to control statement processing appear below each control statement. For example:

```
ACQUIRE, DN=CFTFILE, TEXT='FORTRAN.CFT', ID=<userid>.
PD000 - PDN = CFTFILE      ID = <userid> ED = 1  OWN = U2105
PD000 - ACCESS COMPLETE
```

In this example, line 1 is the ACQUIRE control statement as it appears in your JCL file. Line 2 is the logfile message, which specifies permanent dataset name, ID, edition, and owner. Line 3 verifies that the ACQUIRE statement access was successful.

6. Accounting information: Appears on the bottom, left corner of the logfile, below the control statements and logfile messages. When a job reaches completion, COS writes a summary of basic accounting data onto the logfile for the job. All times given are in hours, minutes, and seconds (to the nearest ten-thousandth of a second). The following accounting information is provided (in decimal):

- Job name and user number
- CPU time used by the job and by each job task in a multitasked job step
- Time waiting to execute, for the job and for each job task in a multitasked job step; includes time waiting for the CPU, memory, operator suspension, and recovery.
- Time waiting for I/O, for the job and for each job task in a multitasked job step
- Time waiting in input queue
- Memory usage based on the execution and I/O wait time in million word-seconds
- Minimum and maximum job size including Job Table Area (JTA) (words)
- Minimum and maximum field length used (words)
- Minimum and maximum JTA used (words)
- Number of 512-word disk blocks (sectors) moved
- Number of user I/O requests made by the job
- Open and close calls
- Memory-resident datasets
- Number of 512-word disk blocks (sectors) used for temporary datasets
- Number of 512-word disk blocks (sectors) accessed and saved for permanent datasets
- Number of 512-word disk blocks (sectors) received from and queued to the front end
- Number of tape devices reserved; message issued only if magnetic tape datasets have been processed.

- Number of tape volumes mounted; message issued only if magnetic tape datasets have been processed.
  - Amount of tape data moved, expressed as a multiple of 512 words; message issued only if magnetic tape datasets have been processed. Each disk sector consists of 512 words, and in COS blocked format each block consists of 512 words.
  - Number of tape blocks moved; message issued only if magnetic tape datasets have been processed.
7. System bulletin: The system bulletin allows the installation to print messages in the logfile, usually about the status of the system environment. It is an installation-maintained message dataset.

See the COS Version 1 Reference Manual, publication SR-0011, for a detailed discussion of reading job output files.

# NEW AND CHANGED STATION COMMANDS

B

The VAX/VMS station has been enhanced considerably for version 3. As a result, several version 2 user station commands have been replaced by new and changed station commands in version 3. Table B-1 compares the version 2 user station commands with their counterparts in version 3 of the station. Note that table B-1 does not outline the extended command capabilities of version 3 of the VAX/VMS station.

See the end of this section for a list of user station commands that are new to version 3 of the VAX/VMS station.

Table B-1. Version 3 Counterparts of Version 2  
Station Commands

Version 2 Station Commands	Version 3 Station Commands
+	+
-	-
@	@
\$	\$
ABORT	ABORT
ATTENTION	ATTENTION
BYE	BYE
CLEAR	CLEAR
COLLECT	COLLECT
COMMENT	COMMENT
CRAY	CRAY
DATASET	DATASET

Table B-1. Version 3 Counterparts of Version 2 Station Commands (continued)

Version 2 Station Commands	Version 3 Station Commands
DELAY	DELAY
DISCARD	DISCARD
DROP	DROP
ECHO	ECHO
EOF	EOF
EXIT	EXIT
GETLOG	LOGFILE/OUTPUT
HELP	HELP
INFORM	SET TERMINAL INFORM
INTERACTIVE	INTERACTIVE
ISTATUS	ISTATUS
JOB	JOB
KILL	KILL
MESSAGE	MESSAGE
PAGE	SET TERMINAL PAGE
PAUSE	PAUSE
PLAY	PLAY
QUEUE	SHOW QUEUES
QUIT	QUIT
RECALL	<i>Withdrawn</i>
RECORD	RECORD

Table B-1. Version 3 Counterparts of Version 2 Station Commands (continued)

Version 2 Station Commands	Version 3 Station Commands
REFRESH	SET TERMINAL REFRESH
REMOVE	REMOVE
RERUN	RERUN
SAVE	SAVE
SCROLL	SET TERMINAL SCROLL
SNAP	SNAP
STATCLASS	<i>Withdrawn for users</i>
STATUS	STATUS
SUBMIT	SUBMIT
SWITCH	SWITCH
TIME	<i>Withdrawn for users</i>
TSTATUS	TAPE
WIDTH	SET TERMINAL WIDTH

The following user station commands are new to version 3 of the VAX/VMS station. Note that several of these commands have counterparts in version 2 of the station.

- ATTACH
- CHOOSE (site-dependent)
- JSTAT
- LOGFILE
- LOOP
- RELEASE
- SET TERMINAL
- SHOW QUEUES
- TAPE
- TJOB



# **GLOSSARY**



# GLOSSARY

## A

Access protection - In the context "system, owner, group, world," files may be protected as to read, write, execute, and delete privileges by category. See also: group, owner, system, and world.

ACQUIRE - A COS job control statement that causes the specified dataset to be transferred from the front-end computer system to the Cray computer system and made a permanent dataset.

## B

Binary Blocked (BB) Dataset Format - Contains ASCII character data, block control words (BCWs), and record control words (RCWs).

BLK - Block mode file organization.

Blocked dataset format - A fixed number of contiguous characters preceded by a block control word as the first word of a block.

Block I/O file - A VMS sequential or random access file that contains a series of numbered records. Each record in the file corresponds to one physical block on the storage device. The record size varies depending on the storage medium.

Block mode - Mode in which data is processed in data lengths equal to the physical blocksize of the device.

Block size - Physical block size of the device. For disk device, 512 bytes; for magnetic tape device, 14 to 32,768 bytes.

## C

Character blocked (CB) dataset format - Contains ASCII character data, block control words (BCWs), record control words (RCWs), and optional blank compression characters.

Command mode - A scrolled terminal environment that facilitates command selection. Two display styles are available: refresh and nonrefresh.

Command qualifier - A keyword that modifies a station command and provides additional information on how the command should be executed. A qualifier is always preceded by a slash character (/).

COS - Cray Operating System.

Cray context - A command state that provides users with a command selection mechanism, a refreshed display capability, and a gateway to COS interactive processing. Most VAX/VMS station commands are available both at DCL level and from within Cray context. However, a subset of commands related to refreshed display and interactive processing are available only within Cray context.

Cray mainframe - The CRAY X-MP or CRAY-1 computer systems.

D

DCL - Digital Command Language.

Directory - A group of VMS files stored on a disk.

DISPOSE - A COS control statement that causes the specified dataset to be transferred from COS mass storage to VMS disks or tapes.

Disposition code (DC) - A code used in ACQUIRE, DISPOSE, and FETCH processing to indicate the disposition to be made of a dataset staged to or from the Cray computer system.

F

FAB - See File Access Block.

FETCH - A COS job control statement that causes the specified dataset to be transferred from the front-end computer system to the Cray Computer System. The dataset remains local to the job requesting the VMS dataset.

File Access Block (FAB) - A RMS user data structure that describes a particular file and contains file-related information needed for data operations.

File descriptor - An optional element in the TEXT field of an ACQUIRE, FETCH, or DISPOSE control statement consisting of an ASCII string uniquely identifying the target file on the specified device.

File name - A 1- to 9-character component of a VMS file specification.

File organization - Data arrangement with a file. The VAX/VMS station supports binary blocked (BB), character blocked (CB), and transparent (TR) organization.

File qualifier - A keyword that modifies the operation of a command by giving further specification. A qualifier is always preceded by a slash character.

G

Group - In the context "system, owner, group, world," group refers to a set of VMS users who have special access privileges to each other's directories and the files within those directories.

M

Maximum record size (MRS) - File qualifier that depends on record type: for fixed-length records, the actual size of each record; for variable-length records, the largest record that can be written to the file; for relative files, this value determines the size of the record cell.

MRS - See maximum record size.

N

Nonrefresh style - Available within Cray context command mode; provides command selection in a terminal-independent manner. Display request commands issued in nonrefresh style produce single snapshot displays.

O

\$OUT - A dataset that contains the list output unless the user designates some other dataset. At job end, the job logfile is added to the \$OUT dataset and the dataset is sent to the front-end computer system.

ORG - See organization.

Organization - File arrangement. The VAX/VMS station recognizes block mode, relative organization, and sequential organization.

Owner - An owner, in the context "system, owner, group, world," is the particular member of a group to which a file global section, mailbox, or event flag cluster belongs.

Q

Queuename - In staging commands, the queuename specifies the queue to which the job is submitted.

## R

RAT - The file qualifier that initializes control information pertaining to records of the file.

Record file mode - The VAX/VMS station supports fixed-length (FIX) record format and variable-length (VAR) record format.

Refresh display region - In a Cray context split-screen working environment, the refresh display region is the top part of the display screen. Display request commands produce a refreshed display on this part of the screen.

Refresh style - A command mode within Cray context; available only to terminals with the DEC advanced video option.

Region divider - In the split-screen working environment, the screen has two regions; the lower part is a scrolled command region and the top part is a refreshed display region. The two screen regions are divided by a region divider that presents the summary information about the current session.

REL - See relative file organization.

Relative file organization - File organization in which fixed-length records are written to an RMS relative record format file sequentially, starting at relative record 1.

RFM - See record file mode.

RMS - Record Management Services (RMS), which is used to open and close files, read from files, write to files, and extend and delete files.

## S

Scrolled command region - In the Cray context split-screen working environment, the scrolled command region is the bottom half of the display screen. Users enter commands here in response to the CRAY> prompt.

SEQ - File organization in which records are written sequentially to an RMS sequential access file.

Split screen working environment - In Cray context refresh style command mode, the screen is split into two regions; the lower part is a scrolled command region and the top part is a refreshed display region where displays are available.

Station - The combination of VAX hardware and software, and the CRI supplemental software.

Symbiont - A full process that transfers record-oriented data to or from a mass storage device. For example, an input symbiont transfers data from card readers to disks; an output symbiont transfers data from disks to line printers.

System - In the context "system, owner, group, world," system refers to the group members that are used by the operating system and its controlling users, the system operators, and the system manager.

SY\$INPUT - Input device associated with the process.

SY\$PRINT - Default line printer queue for a particular VAX.

T

TEXT field - An ASCII string used in a COS control statement that provides information for the dataset transfer.

TID - Terminal identifier field in control statements used by the VAX/VMS station for the VAX user identification code.

Transparent (TR) dataset format - An ASCII bit string.

U

UIC - See user identification code.

UNIBUS - A DEC hardware component. An asynchronous bidirectional pathway within a VAX to which various system components and peripherals connect.

User identification code - The pair of numbers assigned to users and to files, global sections, comment event flag clusters, and mailboxes that specify the type of access available to the owners, group, world, and system.

V

VAX - A computer system manufactured by Digital Equipment Corporation (DEC).

W

World - In the context "system, owner, group, or world," world refers to all users, including the system operators, the system manager, and users both in an owner's group and in any other group.



# INDEX



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