Cray QA

IBM® MVS Station Reference Manual

SI–0038 E

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November 1980 - Original printing.

A — June 1981 - Rewrite. This printing supports version 1.10 of the station. Included are new installation variables, a new installation procedure, the Hyperchannel feature, and the following new commands: CANCEL, JINPUT, POSTPONE, and PRINT. Miscellaneous technical and editorial changes are also included. Changes are not noted by change bars. All previous printings are obsolete.

B — July 1982 - Rewrite. The MVS station manuals released with COS 1.11 have been reorganized to accommodate the new IBM MVS Station Internal Reference Manual, CRI publication SM-0048. Information from sections 5, 6, 7, and appendixes A and D now appear in SM-0048. Changes are not noted by change bars. All previous printings are obsolete.

C — January 1984 - Rewrite. Changes include new formats for the CRSUBMIT and SUBDS commands, new CRAYCMD commands, and Cray MVS batch program. Other miscellaneous changes bring the manual into agreement with the 1.12 release of the station. Changes are not noted by change bars. All previous printings are obsolete.

C-01 — November 1984 - Change packet. This printing brings the manual into agreement with the 1.13 release of the station. The change packet includes new commands JSTAT and RSTAT; changes to the CRSUBMIT command, to the LRECL and RECFM operands of the DD statement, to various messages; as well as other miscellaneous changes.

D — June 1986 - Rewrite. This printing brings the manual into agreement with the 2.01 release of the MVS station. Changes include the introduction of the CRAY command processor (CRAY cp), which provides integrated support for station commands and interactive protocol. The TRANSFER command has new parameters RELEASE and SUMMARY. The CRSUBMIT command has a new TRHOLD parameter. The SUBDS command has a new US parameter.

E — January 1989 - Rewrite for 3.01 release of the MVS Station. Changes include new local commands DELETE, HELP, LOAD, QUIT, and SETCHAR; and a new RSTAT default, PROFILE.

PREFACE

This manual describes the external features of the software that logically links an IBM or equivalent computer system to Cray computer systems running under the COS operating system. The software that provides the logical link is a set of authorized application programs running under the IBM Multiple Virtual Storage (MVS) operating system. Cray Research, Inc. (CRI) developed this software link as a service to its customers. This software is referred to as the MVS station.

The MVS station can run with either MVS Job Entry Subsystem 2 (JES2) or MVS Job Entry Subsystem 3 (JES3) present.

This manual is written for users of the COS operating system who wish to transfer jobs and data between the MVS and Cray systems. It is assumed that readers are familiar with the characteristics of MVS and COS.

Some station functions require a familiarity with the following publications:

- CRI publications:

  COS Reference Manual, publication SR-0011

- IBM publications for MVS/XA System users:

  MVS/XA Data Administration Guide

  MVS/XA JCL

  MVS/XA Message Library: System Codes

  MVS/XA Message Library: System Messages

  MVS/XA TSO Command Language Reference

  MVS/XA TSO Terminal Users' Guide

  MVS/XA TSO/E Command Language Reference

- IBM publications for MVS/370 System users:

  MVS/370 JCL Reference

  OS/VS2 Data Management Services Guide

OS/VS2 Message Library: System Messages

OS/VS2 TSO Command Language Reference

Related CRI publications include the following:

- Front-end Protocol Internal Reference Manual, publication SM-0042
- IBM MVS Station Operator's Guide, publication SI-0037
- IBM MVS Station Internal Reference Manual, publication SI-0048
- IBM MVS Station Installation and Maintenance Reference Manual, publication SI-0078
- IBM MVS Station Message Manual, publication SI-0108
- IBM MVS Station Reference Manual for UNICOS, publication SI-2066

All publications referenced is this manual are CRI publications unless otherwise noted.

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1. STATION OVERVIEW

The MVS station is a software product provided and maintained by CRI, controlling the physical link between an International Business Machines (IBM) System/370 compatible computer system and a Cray computer system.

The Cray computer system runs under control of the Cray operating system COS. The IBM or IBM-compatible computer system runs under the control of the Multiple Virtual Storage (MVS) operating system with JES2 or JES3. Running continuously in the MVS machine, the MVS station performs as a subsystem in the IBM MVS operating system.

The physical connection between a Cray computer system and an IBM System/370 or a System/370 compatible processor can be one of the following:

- A Cray/IBM front-end interface (FEI) provided by CRI
- A Network Systems Corporation (NSC) HYPERchannel network adapter
- A CNT LANlord network provided by CNT Corp

The MVS station communicates with COS through the Station Call Processor (SCP) component of COS across the physical connection between the two computer systems. SCP provides a path between the MVS station and other COS components, such as the COS job input and output queues, and jobs running in the COS machine.

The MVS station transfers MVS and COS datasets across the link between the two systems. These transfers occur under the direction of TSO users, MVS batch jobs, or COS jobs. For COS jobs, the MVS station supports the use of a subset of the IBM MVS Job Control Language (JCL) DD statement operands in some COS control statements.

The MVS station communicates with the following components of the MVS system:

Component	Description
System catalog	Allows the MVS station, under the direction of jobs running in the Cray computer system, to locate MVS cataloged datasets required by COS jobs, and to catalog datasets sent from COS jobs to the MVS system
Job Entry Subsystem (JES2 or JES3)	Allows the MVS station to transfer datasets received from jobs running on COS to the MVS system for subsequent processing as job input or job output.
Security system	Communicates with either the RACF or ACF2 security systems in the MVS system. RACF and ACF2 protect data in MVS datasets from unauthorized use.
Tape management	The CA-1 (formerly, UCC ONE) Tape Management System (TMS) communicates with MVS, allowing COS jobs to use its tape catalog facilities.
Operator consoles	Allow the MVS operator to control the Cray computer system and the MVS station

As an MVS user of a Cray computer system, you communicate with COS through the MVS station, using CRI-provided and -maintained facilities in the following ways:

- The CRAY command processor (CRAY cp), which is described in " 2. The CRAY Command Processor (CRAY cp)" on page 7, gives both local and remote users access to the station facilities. These facilities include all subsequently listed features and the ability to establish an interactive session with COS.
- The CRAYCMD TSO command processor, which is described in " 4. CRAYCMD Subcommands" on page 23, allows a TSO user to issue job inquiry and manipulation or dataset inquiry commands to COS through the MVS station, and to receive replies from COS at the TSO terminal.
- The CRSUBMIT facility, which is described in " 5. Job Submission" on page 41, can be run as a TSO command processor or as a directive to the Cray MVS batch program. It allows the user to direct the MVS station to transfer a copy of an MVS dataset containing one or more COS jobs to the COS job input queue.

- The SUBDS facility, which is described in "MVS-initiated Staging - SUBDS and SAVE" on page 56, can be run as a TSO command processor or as a directive to the Cray MVS batch program. It allows the user to request the MVS station to transfer a copy of an MVS dataset and to save it as a COS file.

"Appendix A. Cray MVS Batch Facility" on page 95 describes the Cray MVS batch program, which provides an interface to the MVS station for MVS batch jobs.

A job running on COS can communicate with an MVS station (connected to that Cray computer system) by executing a COS FETCH, ACQUIRE, or DISPOSE control statement. These statements specify the MVS station as the location from which the dataset is fetched or acquired, or the location to which the dataset is to be disposed. The FETCH and ACQUIRE COS control statements direct the MVS station to transfer a dataset on the MVS system to COS. The dataset becomes local to the COS job issuing the FETCH or ACQUIRE.

The FETCH statement always causes a transfer of the specified dataset from the MVS system. The dataset is made local to the job requesting it, but no COS permanent dataset is created. The dataset ceases to exist as a COS file when the COS job terminates or when the COS job issues a RELEASE for the dataset. If a permanent copy of the fetched COS dataset is required, the COS job must issue a SAVE for the fetched dataset.

The ACQUIRE statement initiates a transfer from MVS, subject to the following rules:

1. When an ACQUIRE control statement is issued, COS determines if the requested dataset is already permanently resident as a COS file.

2. If the requested dataset (that is, a permanent dataset with the specified PDN and the specified or default ID, ED and OWN parameters) is already permanently resident as a COS file, COS grants dataset access to the job making the request, and no dataset staging occurs.

3. If the requested dataset is not resident as a COS file, or its COS DSC entry shows that it is partially deleted, COS sends a request for the dataset to the MVS station. The MVS station stages the dataset to COS and makes it permanent as a COS file. COS then grants dataset access to the job making the request. The dataset resides on COS after the requesting job terminates unless a DELETE statement is issued for the dataset.

A DISPOSE statement directs COS to transfer a dataset to the MVS station. The destination and disposition of the dataset in the MVS system is specified in the parameters on the DISPOSE statement.

Datasets can be transferred between any devices on the MVS system, providing the MVS Queued Sequential Access Method (QSAM) can be used. Devices include

real disk devices (for example, IBM 3330, 3330-II, 3350, 3375, 3380, and their equivalents), virtual disks (as maintained by the IBM 3850 Mass Storage System), and magnetic tape devices (for example, IBM 3400-3, 3400-5, 3480, and their equivalents). " 6. Dataset Transfer Management" on page 53 describes FETCH, ACQUIRE, and DISPOSE in the specific context of the MVS station; the COS Reference Manual, publication SR-0011 describes them in detail.

If you submit a COS job through an MVS station, the COS job's $OUT (with the log file appended), $PUNCH, and $PLOT datasets are returned to the submitting MVS station. The MVS station automatically schedules these datasets to be printed, punched, or plotted, either locally to the MVS machine, or at MVS remote sites according to installation-selected defaults. A DISPOSE statement can, of course, alter the destination of the COS job output.

COMMAND CONVENTIONS

The commands described in this manual use the following format conventions:

UPPERCASE	Indicates the command verb or required data and defines the correct syntax. Data must be entered exactly as shown.
UNDERLINED UPPERCASE	Specifies the minimum number of characters for the verb or parameter to be recognized
lowercase	Indicates variable information, usually to be specified by user
Stacked parameters	Indicate that only one of the stacked items must be entered
Brackets	Indicate optional operands

MESSAGE FORMATS

Messages issued by the MVS station appear in the following general format:

```
CSSnnnnt message
```

CSS Identifies the message as an MVS station message

nnnn Indicates the number of the station message

t Indicates one of the following types of message:

- D The issuing task immediately terminates abnormally with an abend code.
- E Error message
- I Informative message
- W Warning

message Message text giving reason for message

Details of all messages issued by the MVS station are described in the IBM MVS Station Message Manual, CRI publication SI-0108.

2. THE CRAY COMMAND PROCESSOR (CRAY CP)

The CRAY command processor (CRAY cp) provides access to station facilities for TSO users connected to an SNA network through a VTAM link. The TSO user can enter station commands, or use the Cray interactive protocol (if available through the station), when executing CRAY cp at the terminal. However, only TSO users logged on to a system that shares DASD with the station's system can use CRSUBMIT and SUBDS facilities.

USER INPUT AND SYSTEM RESPONSES

The input and response cycle begins with a prompt issued to the user for input. When the system has processed the input, the system issues a response to the user, who is then prompted for more input.

When the input is a command (command mode), the command is processed before CRAY cp prompts for another command. When the input is data (interactive mode), the rate of interchange with the user varies, depending on the job and the programs within the job. Even if the response time is rapid, the job sometimes provides several lines or screens of information before requesting more input.

The input and response process can be interrupted and reentered. See "Interrupting Commands" on page 15 and "Interactive Mode" on page 8 for details of this process.

INVOKING CRAY CP

CRAY cp is invoked the same way as any other TSO command. The full syntax of the command is:

```
CRAY [STID(Station id)] [PROMPT(text)] [SETCHAR [charop...]]
```

Station id The VTAM application id of the MVS station (default is installation-defined)

text The prompt text to be used in command mode (default is installation-defined or CRAY:)

charop Associates a terminal key with particular functions and characters.

For most users, the command CRAY is sufficient. Both the prompt text and the SETCHAR operations can be altered by a local command within CRAY cp.

CRAY CP MODES

CRAY cp operates in one of two modes:

- Command mode
- Interactive mode

The basic difference between the modes is in what the user can enter at the terminal. For example, in command mode the user cannot send data to an interactive job on the CRAY system; in interactive mode, the user can enter only interactive data.

Command Mode

Command mode derives its name from the fact that the user is allowed to enter only station commands, that is, local control commands to control CRAY cp or commands that are routed to the station. Activated when CRAY cp is invoked, command mode allows the user to enter all CRAYCMD subcommands. Do not prefix station commands by CRAYCMD when entering them within CRAY cp. Refer to the section on CRAYCMD for more information on the subcommands.

Interactive commands can be entered if the user is connected to a COS interactive job.

If the SUBMIT and SUBDS commands are available, they can also be entered. (Note that in CRAY cp, SUBMIT is the equivalent of CRSUBMIT). See " 5. Job Submission" on page 41 and " 6. Dataset Transfer Management" on page 53 for more information.

Interactive Mode

In interactive mode, only interactive data can be entered. The process begins when a prompt is issued from the Cray system. Prompts can be generated by COS (when a new COS job control statement is needed) or by a program. The text of these prompts defaults to | or ?, respectively. The defaults can be altered only on COS.

The user responds to the prompt by entering data to the interactive job through the interactive facilities of the MVS station. If the input is data, the user must wait until another prompt is issued by the interactive job. The length of this delay varies, depending on the interactive job.

CRAY cp allows the user to return temporarily to command mode in order to enter local or station commands. Press the PA1 key to generate an attention

at the TSO terminal. This form of command mode is considered temporary because interactive mode has not been completely terminated by disconnecting or by logging off. Use the INTERACT command to reenter interactive mode from the temporary command mode. (For more information on use of the interactive mode see " 3. Using COS Interactive Facilities" on page 17.)

LOCAL COMMAND SUMMARY

Local commands control the CRAY cp environment. They are processed entirely within CRAY cp and are not sent to the station. This subsection presents a summary of local commands.

DISCARD

This command requests CRAY cp to discard all interactive data up to the next interactive prompt. DISCARD could be used after the ABORT or ATTN interactive commands to flush data resulting from a program loop.

Syntax:

DISCARD

There are no parameters.

DISPLAY

This command specifies how transparent data is to be presented at the terminal. Transparent data is contained in transparent records of COS interactive blocked format data or it is the entire unblocked text sent from the Cray system. The MVS TPUT service call displays all transparent data. DISPLAY allows the user to specify which editing option will be used.

The IBM publication, TSO Guide to Writing a Terminal Monitor Program or a Command Processor, provides details of these editing options.

Unblocked and blocked data are recognized only by user specification using the IDATA local command.

Syntax:

DISPLAY option

option Specifies one of the following TPUT service call edit options.

- CONTROL
- EDIT

- FULLSCR
- NOEDIT

The default is CONTROL.

END

This command terminates CRAY cp and returns control to TSO.

Syntax:

END

There are no parameters.

HELP

HELP provides a list of all valid CRAY cp commands.

Syntax:

HELP

There are no parameters

IDATA

This command specifies the format of data originating from the Cray interactive process.

Syntax:

IDATA BLOCKED TRANS
UNBLOCKED NOTRANS

BLOCKED Specifies that the data is in COS interactive blocked format containing line records and transparent records

UNBLOCKED Specifies that the data is unblocked; such data is processed as a continuous bit string, which may also be regarded as a string of characters.

TRANS Specifies that the unblocked data is to be translated from ASCII to EBCDIC encoding before being sent to the TSO terminal. Blocked data is always translated. The default is TRANS.

NOTRANS Specifies that the unblocked data to be sent from the Cray system is not to be translated because the data is already in EBCDIC encoding or it is not character data. Specify NOTRANS if the unblocked data is in ASCII encoding and destined for a device managed by the MVS system.

Refer to the COS Reference Manual, publication SR-0011, for details of the two different formats.

LOAD

LOAD makes a module, to process transparent data from the Cray system, available to CRAY cp. The command is of particular use in graphics applications, when such a module could be used to process the output before delivery to a graphics device.

CRAY cp issues an MVS LOAD service call for the specified module, which, if found, is invoked whenever transparent data (or data defined as graphics data) are received from the Cray system. Data can be defined as graphics data by the SETCHAR GRAPHICS command described later. The data are passed to the load module as follows:

Register	Contents
0	Length of the data
1	Address of the data
2 - 12	Undefined
13	Address of a system-supplied register save area that can be used by the routine to save its registers
14	Return address
15	Address of the load module

Syntax:

LOAD modulename

modulename The name of a load module in a library accessible to CRAY cp. Such a library could be in the link list or in the STEPLIB allocated in the TSO logon procedure.

PROMPT

This command specifies the text to be used by CRAY cp when prompting for input in command mode.

Syntax:

PROMPT text

text Specifies the prompt text.

QUIT

The QUIT command is introduced for compatibility with other stations that communicate with UNICOS.

QUIT has the same meaning as ILOGOFF HOLD followed by END. The station is disconnected from the Cray system, but the interactive session continues on the Cray system until completion.

Syntax:

QUIT

There are no parameters.

SETCHAR

SETCHAR associates terminal keys with particular functions and characters so that CRAY cp can interpret and act upon the keys accordingly. Note that certain characters:

- do not appear on TSO terminals
- may affect terminals adversely
- have special meanings for TSO, COS, or UNICOS.

The SETCHAR operands are available also as options on the CRAY command, with exactly the same results.

To disable any function, it is possible to specify a *null string* entered as (''): for example, to disable the CONTROL function enter CONTROL('').

Syntax:

```
SETCHAR        [LSQBR(character)]
               [RSQBR(character)]
               [TILDE(character)]
               [TAB(character)]
               [ESCAPE(character)]
               [CONTROL(character)]
               [CRAYMODE(character)]
               [INTERACT(character)]
               [GRAPHICS(number)]
               [FILTER(number [number1 ..)]
               [NFILTER(ALL|number)]
```

number Decimal value corresponding to the ASCII encoding for a character.

character Specifies the new value for the character specified by the SETCHAR operand it accompanies. This character replaces the current value in both input and output translation tables used by CRAY cp.

LSQBR Specifies that the ASCII left square bracket character ([) is to be replaced by the value of character. The default is the vertical bar (|).

RSQBR Specifies that the ASCII right square bracket character (]) is to be replaced by the value of character. The default is the secondary currency symbol (¢).

TILDE Specifies that the ASCII tilde character (~) is to be replaced by the value of character. There is no default for this character.

TAB Specifies that the ASCII horizontal tab character is to be replaced by the value of character. On output, tabs are expanded at 8-character intervals. There is no default for this character.

ESCAPE Specifies that the ASCII escape character is to be replaced by the value of character. Use of the ASCII escape character (for the CRAY X-MP system only) is described in the UNICOS User Commands Reference Manual. There is no default for this character.

CONTROL Defines the first character of a 2-character sequence as the value of character. When CRAY cp detects this character in an input interactive message, it converts the next character to the corresponding ASCII character and then clears the 3 high-order bits to make it a control character. This can be used to enter the UNICOS CONTROL-S character, for example. The default is the logical not (¬).

There is no special processing of this character on output, but there are two special cases if the CONTROL sequence is at the start of an input record:

CONTROL-backslash (\) generates an ABORT command.
CONTROL-C generates an ATTN command.

CRAYMODE Defines the terminal character that causes a temporary switch to Cray cp command mode as the value of character. The default is the backslash (\). When the CRAYMODE character is the first nonblank character of an input message in interactive mode, the rest of the input buffer is treated as a CRAY cp command.

When the command has been processed and any output displayed, CRAY cp returns to interactive mode and reissues the interactive prompt. To switch to the command mode permanently, use the PA1 key or exit interactive mode.

INTERACT Defines the terminal character that causes a return from CRAY cp command mode to interactive mode as the value of character. The default is the backslash (\). When the INTERACT character is the first nonblank character of an input message in Cray command mode, the rest of the buffer is processed as an interactive message.

If, on the last exit from interactive mode, there was no interactive prompt (for example, PA1 was pressed during screen output), then the rest of the input buffer is ignored. In this case, the interactive data awaiting display is processed.

Note: Use the INTERACT command to enter interactive mode from command mode for the first time in a CRAY cp session.

GRAPHICS Defines the decimal value of number. If this is the first character of the first data message from the Cray system following an interactive prompt, CRAY cp switches to transparent mode. Subsequent data messages are processed in this mode until the next interactive prompt. In transparent mode, data are displayed subject to the control of the last IDATA and DISPLAY commands. There is no default for this character.

FILTER Indicates that the accompanying characters, specified by number, must be sent to the terminal as null characters.

The following characters are filtered by default:

6	ACK	Acknowledge
7	BEL	Ring bell on terminal
11	VT	Vertical tab
16	DLE	Data link escape
17	DC1	Device control 1
18	DC2	Device control 2
19	DC3	Device control 3
20	DC4	Device control 4
22	SYN	Synchronous idle
24	CAN	Cancel
26	SUB	Substitute
31	US	Unit separator
127	DEL	Delete

When any of the characters in the preceding list is sent to the terminal without being filtered, a display error occurs.

NFILTER Removes characters from the table of characters to be suppressed. Characters to be allowed are specified by number. NFILTER(ALL) indicates that all characters currently suppressed can be sent to the terminal.

Note: The LSQBR, RSQBR, TILDE, TAB, ESCAPE, FILTER, and NFILTER operands take effect only after an interactive logon, at the first invocation of the INTERACT command in a CRAY cp session.

INTERRUPTING COMMANDS

The command mode prompt (default CRAY:) is displayed at CRAY cp invocation and redisplayed every time a command is processed and a response (if any) is returned. The user can abort a command while it is processing by

generating an attention interrupt (pressing PA1). The attention interrupt causes the command mode prompt to be displayed, allowing the user to enter another command.

Generating an attention interrupt while the command mode prompt is displayed has the same effect as the END command. However, if the previous command was aborted with the attention interrupt, a message is displayed, asking the user to confirm the CRAY cp termination by entering the END command.

3. USING COS INTERACTIVE FACILITIES

The COS interactive facility is supported by the MVS station and is available to users through the CRAY command processor (CRAY cp). Refer to " 2. The CRAY Command Processor (CRAY cp)" on page 7 for information on how to use CRAY cp.

LOGGING ON TO A COS INTERACTIVE PROCESS

The INTERACT command is used to create an interactive job or to logon to an existing interactive job. The INTERACT command is also used to reenter interactive mode from temporary command mode.

When the user logs on to an interactive job, either the user supplies the job name and user number, or the system is allowed to supply the default installation-defined values (typically the TSO logon id).

If the job is being created on the Cray system, the Control Statement Processor (CSP) will obtain control and prompt for a COS control statement. Once the user has entered an ACCOUNT control statement and it has been accepted, job processing is the same as for a normal Cray batch job except that any references to $IN or $OUT datasets or datasets assigned with DT=CRT will cause I/O to be performed at the terminal.

If the job already exists, the user will be reconnected at logon.

TERMINAL I/O

A COS interactive job prompts for input under control of CSP or a user program. CSP prompts for job control statements (ACCOUNT, ASSIGN, and so on) and uses | or some other installation-defined character as the prompt text. A user program prompts for input with the text ?. The user program can alter this prompt by changing the word JCPROM in the Job Control Block (JCB). The JCB is described in the COS Reference Manual, Appendix A.

When an interactive prompt appears at a terminal, the user can enter a job control statement or some program-dependent data. In addition, when the CRAY cp prompt is displayed, the user can enter interactive commands (or other commands as defined in " 2. The CRAY Command Processor (CRAY cp)" on page 7) that control the job or display status information. The

interactive commands are described in the subsection "Interactive Commands" on page 19.

All interactive commands, except INTERACT, are entered with CRAY cp in interactive mode. INTERACT can be used whether or not the user is in interactive mode. To change from interactive mode to CRAY cp mode, the user should press the PA1 (Attention) key on the terminal. This has no effect on the interactive session or the Cray job.

DISPLAYING DATA AT THE TERMINAL

COS sends interactive data in blocked or unblocked format. Since the station cannot distinguish between the two formats, it is the user's responsibility to signal the type of data by using the CRAY cp local IDATA command.

Blocked format data is the most common data type. Blocked data is similar to the COS blocked format of standard datasets. One difference, however, is that the format of a blocked record can be transparent or line.

A line record has an implied carriage return and line feed (CR/LF) at the end of the record and is displayed in the expected manner. A transparent record does not have an implied CR/LF at the end of the record and is assumed to contain display control characters. A transparent record might not display in an expected manner. The interactive process is responsible for ensuring that the data is correct. An MVS PUTLINE service call with the EDIT option (TSO I/O) is used for line records; an MVS TPUT service call is used for transparent records. The DISPLAY command (a CRAY cp local command) controls the type of editing performed on transparent records.

Unblocked format data is generated when the output dataset is assigned by the Cray job as DT=CRT, DF=TR, U. This data is signalled by the CRAY cp local command:

```
IDATA UNBLOCKED
```

This command causes CRAY cp to assume that all data from COS is in unblocked format. Unblocked data and transparent records of blocked data are processed similarly. The user can display such data with TSO I/O routines that use editing that has been specified with the DISPLAY local CRAY cp command. When using minimal editing, the user must ensure that the data can be displayed at the terminal. This might require embedded screen control characters and commands.

Note: Prompts returned by COS are displayed in the normal manner.

INTERACTIVE COMMANDS

This subsection describes each interactive command available to the user. For associated CRAY cp local commands refer to " 2. The CRAY Command Processor (CRAY cp)" on page 7. To use these local commands the user must be in CRAY cp mode. To enter CRAY cp mode from interactive mode, press the PA1 (Attention) key.

ABORT

ABORT aborts the current job step of the COS interactive process and returns control to CSP, which prompts for another job control statement. If data is being sent to the terminal at the time the ABORT command is entered, data held in buffers between the interactive job and the terminal is displayed before the interactive prompt is displayed. The DISCARD command (see "DISCARD" on page 9) suppresses this data.

Syntax:

ABORT

There are no parameters.

ATTN

ATTN interrupts the current job step of the COS interactive process and enters its reprieve processing, if any. If there is no reprieve processing, the command acts as an ABORT. If data is being sent to the terminal at the time the ATTN command is entered, data held in buffers between the interactive job and the terminal is displayed before the interactive prompt is displayed. Use the DISCARD command (see "DISCARD" on page 9) to suppress this data.

Syntax:

ATTN

There are no parameters.

EOF

EOF sends an end-of-file specifier to the interactive job. EOF is the only way to send an end-of-file specifier because a null line is processed as normal data.

Syntax:

```
EOF
```

There are no parameters.

ILOGOFF

ILOGOFF disconnects a user from a COS interactive job. It can also terminate the COS job.

Syntax:

```
ILOGOFF  CONTINUE
         HOLD
         QUIT
```

CONTINUE — Disconnects the user from the COS job while the job continues processing. If the job requires input, the job is suspended. Output messages from the job might be lost.

HOLD — Similar to CONTINUE except that output messages are saved before the job is suspended.

QUIT — Disconnects the user from the COS job and terminates the job. QUIT is the default.

The CONTINUE and HOLD parameters allow the user to reconnect to the interactive job at a later time.

INTERACT

INTERACT connects the user to a COS interactive job. If the job does not exist, it is created by COS (although this is unknown by the station).

Syntax:

```
INTERACT JN(jobname) US(number) MML(msglnth)
```

jobname — COS interactive job name; 1 to 7 characters. The default is the TSO user ID.

number COS user number; 1 to 7 characters. The default is the TSO user ID.

msglnth Maximum interactive data message length. This is the maximum number of Cray words that can be contained in one terminal message for this user. It cannot exceed the station segment size. The default is 512 Cray words.

ISTATUS

ISTATUS requests COS to send a message containing the status of the COS interactive job. The following information is returned:

- Job name
- Current status (executing, waiting for memory, and so on)
- CPU time used (in seconds)
- Last logfile message

Syntax:

ISTATUS

There are no parameters. The terminal remains in CRAY cp mode.

Note: CRAY cp cannot distinguish this data from any other data that might be returned by the COS interactive job. Issuing this command when DISPLAY EDIT is not in effect causes unpredictable results.

SAMPLE INTERACTIVE SESSION

```
 cray                                        [User enters CRAY cp]
CSS256I Cray environment entered
- CSS 3.xx     - 01/09/89 09.30
CSS257I Station is logged on to the Cray
CSS258I Station ID: VS  Station type: BOTH
CRAY:
interact jn(joan) us(12006)              [User logs on to Cray Interactive]
Cray X-MP Serial 314/nn    Computer Clarity Corp
COS 1.xx Bugfix x          Assembly date: xx/xx/xx
!
 account,ac=joanna,pw=secret.
!                                        [No response except prompt]
 fetch,dn=a,text='dsn=joan.test.fort(demo),disp=shr'.
ICH70001I JOAN    LAST ACCESS AT 07:53.40 ON MONDAY, JANUARY 9, 1989
IEF237I 365  ALLOCATED TO SYS00022
```

```
      DATASET RECEIVED FROM STATION
IEF285I  JOAN.TEST.FORT                          KEPT
IEF285I  VOL SER NOS= MVS001          [Dataset arrives safely]
!
   User presses PA1 key               [To change modes]
|
CRAY:
 istatus
JOB JOAN      SUSPENDED
IEF285I  VOL SER NOS= MVS001
CRAY:
 interact                           [To return to interactive mode]
!
 access,dn=b,pdn=wings,own=appl.    [Refer to a COS dataset]
PD000 - PDN = WINGS              ID =          ED = 1  OWN = JOANNA
PD000 - ACCESS COMPLETE
!
 ldr,dn=b.                          [Execute demonstration program]
     DEMONSTRATION PROGRAM
HOW MANY TIMES?
?                                   [Program prompt]
 10
ENTER THE TEST IDENTIFIER
?
 wing-56                            [User supplies further data]
TEST COMPLETE
!
   User presses PA1 key             [To change modes]
|
CRAY:
 ilogoff quit                       [Deletes the job on the Cray system]
BYE
CRAY:
 end                                [Leaves CRAY cp]
READY
```

4. CRAYCMD SUBCOMMANDS

TSO users can monitor and control COS jobs and datasets with the TSO command CRAYCMD. CRAYCMD has subcommands to process specific requests. These subcommands can also be issued as commands within the CRAY command processor (CRAY cp). Available subcommands are listed in "CRAYCMD Subcommand Summary" on page 24 and described fully in "Subcommand Descriptions" on page 24.

The general format of CRAYCMD is as follows:

```
CRAYCMD subcommand [operand 1...operand n]
```

subcommand
: One of the subcommands listed in "CRAYCMD Subcommand Summary" on page 24; separated from any operands by spaces.

operand 1...operand n
: Required and optional operands separated by spaces

When the subcommands described in this section are issued within CRAY cp, the command name CRAYCMD can be omitted.

The system validates the syntax of the subcommand before processing. If there is a syntax error, the system displays an appropriate message. Some subcommands execute successfully only when the station is logged on to COS.

Only subcommands available to non-privileged TSO users are described in this manual; users with operator authority should refer to the IBM MVS Station Operator's Guide for a full subcommand description.

CRAYCMD SUBCOMMAND SUMMARY

The following lists the CRAYCMD command subcommands and their descriptions.

Subcommand	Description
DATASET	Displays the status of a COS permanent dataset
DROP	Terminates COS processing of a job and saves any output data
JOB	Displays the status of a COS job
JSTAT	Displays the status of a COS job and tasks
KILL	Deletes the job from the COS input queue; terminates processing of a COS job; or deletes job output dataset from output queue.
MESSAGE	Allows a user to enter a message into the logfile of a job with the same TID
RERUN	Terminates processing of a COS job and requeues it for execution
RSTAT	Displays the status of generic resources on the Cray system
STATUS	Displays the status of jobs and input and output datasets known to COS
SWITCH	Sets or clears a sense switch associated with a COS job
TJOB	Displays the status of tape jobs
TRANSFER	Displays or controls active or queued dataset transfers

SUBCOMMAND DESCRIPTIONS

This subsection contains a description of each of the subcommands available through CRAYCMD. The description of each subcommand includes its function, format, availability, and an example. Restrictions are included where appropriate.

Note: For simplicity, the command name CRAYCMD is omitted from the description of each subcommand.

DATASET - Display COS dataset status

FUNCTION: DATASET displays the status of a COS permanent dataset and returns the following dataset status message:

```
CSS462I DATASET pdn WITH ID=userid

ED=ed AND OWN=ov DOES     EXIST
                 DOES NOT
```

FORMAT: DATASET pdn [ID(id)] [ED(ed)] [OWN(ov)]

pdn Name of permanent dataset for which status is requested; 1 to 15 alphanumeric characters.

id User ID of permanent dataset for which status is requested; 1 to 8 alphanumeric characters. If not specified, null is used.

ed Edition number of requested dataset; 1 to 4095. If ed is not specified, the status of the highest numbered edition is returned. If ed is nonzero, the status of the requested edition is returned.

ov Ownership value of the requested dataset. If not supplied, the COS default ownership value is used.

AVAILABILITY:
The TSO user can request the status of any COS permanent dataset. The DATASET subcommand is available only when the station is logged on to COS.

EXAMPLE: CRAYCMD DATASET MYPDNO2 ED(7) OWN(IAMTHEOWNER)

DROP - Drop a COS job

FUNCTION: DROP terminates processing of a job by COS but saves the output datasets associated with that job. DROP causes the job to abort. Job execution continues with control statements encountered after the next EXIT control statement, if one exists.

FORMAT: DROP jsq

jsq Job Sequence Number identifying the job to COS; obtained through the STATUS subcommand.

AVAILABILITY:
TSO users can drop only their own jobs. The DROP subcommand is available only when the station is logged on to COS.

EXAMPLE: CRAYCMD DROP 1935

JOB - Display COS job status

FUNCTION: JOB displays the status of a COS job.

The job status message returned by this subcommand has the following general form:

```
CSS463I JOB jobname JSQ jsq job status
CSS432I LOG last logfile message
```

job status — Reports one of the following conditions:

AWAITING CPU
AWAITING MEMORY
AWAITING TRANSFER
DOES NOT EXIST
DORMANT
EXECUTING
LOCKED BY STARTUP
LOCKED FOR MEMORY
MULTITASKING
QUEUED FOR EXECUTION
QUEUED FOR RESOURCE
ROLLED OUT
ROLLING IN
ROLLING OUT
SUSPENDED BY OPERATOR
SUSPENDED BY RECOVERY
SUSPENDED BY SYSTEM
TRANSFER IN PROGRESS
WAITING FOR I/O
WAITING FOR EVENT

last logfile message — Message displayed unless the job status is DOES NOT EXIST, QUEUED FOR EXECUTION, or QUEUED FOR TAPE.

FORMAT: JOB jobname [jsq]

jobname
Name of job for which status is requested; 1 to 7 alphanumeric characters.

jsq Job Sequence Number identifying the job to COS; obtained through the STATUS subcommand. If jsq is not specified, the status for the first jobname encountered is displayed.

AVAILABILITY:

TSO users can request the status of only their own jobs. The JOB command is available only when the station is logged on to COS.

EXAMPLE: CRAYCMD JOB MYJOB 2067

JSTAT - Display COS job status and associated tasks

FUNCTION: JSTAT displays the status of a specific COS job and its associated tasks.

FORMAT: JSTAT jsq

jsq Job Sequence Number identifying the job to COS; obtained through the STATUS subcommand.

AVAILABILITY:
TSO users can display job status information only for their own jobs. This subcommand is available only when the station is logged on to COS.

EXAMPLE: CRAYCMD JSTAT 2067

KILL - Kill a COS job

FUNCTION: Depending on the status of the COS job, the KILL subcommand performs one of the following.

- Deletes its input dataset from the input queue if processing has not yet begun
- Terminates processing if processing has begun
- Deletes the job's output dataset from the output queue if processing has completed

KILL (unlike DROP) causes the job to terminate immediately, and only the job's logfile is returned.

FORMAT: KILL jsq

jsq Job Sequence Number identifying the job or its output dataset to COS; obtained through the STATUS subcommand.

AVAILABILITY:
TSO users can kill only their own jobs. The KILL subcommand is available only when the station is logged on to COS.

EXAMPLE: CRAYCMD KILL 9350

MESSAGE - Enter a message into a job's log file

FUNCTION: MESSAGE enters a message into the COS log file of a job.

FORMAT:

```
MESSAGE JOB jobname jsq 'message'
        BOTH jobname jsq
```

JOB	Enters a message into the job's log file
BOTH	Enters a message into the job's log file and the COS system log file
jobname	Name of the job; 1 to 7 alphanumeric characters, the first of which must be alphabetic (A through Z).
jsq	Job Sequence Number by which the job is identified; obtained through the STATUS display.
'message'	Character string to be entered into the log file. The message is truncated to 79 characters if necessary.

AVAILABILITY:
TSO users can enter messages only into their own jobs' log files. The MESSAGE subcommand is available only when the station is logged on to COS.

EXAMPLE: CRAYCMD MESSAGE BOTH CRAYJOB 1056 'Step 3 Completed'

RERUN - Reruns a COS job

FUNCTION: RERUN immediately terminates processing of the job identified by the job sequence number. The job input dataset is saved on the Cray system and all output datasets associated with the job are deleted. The job input dataset is then rescheduled so that the job can be rerun. No action is taken if the job has already completed execution or if COS determines that the job cannot be rerun.

FORMAT: RERUN jsq

jsq Job Sequence Number identifying the job to COS; obtained through the STATUS subcommand.

AVAILABILITY:

TSO users can rerun only their own jobs. The RERUN subcommand is available only when the station is logged on to COS.

RESTRICTIONS:

The following functions can cause a job to be declared ineligible for rerun:

- A RERUN, DISABLE job control statement
- A save of a permanent dataset
- A delete of a permanent dataset
- Any write operation involving a permanent dataset
- An adjust or modify of a permanent dataset

If any of these events occurs and a previous NORERUN, DISABLE job control statement is not in effect, COS issues a FUNCTION REJECT message.

EXAMPLE: CRAYCMD RERUN 273

RSTAT - Display COS generic resource status

FUNCTION: RSTAT displays the status of generic resources on COS. Status can be displayed by generic resource name, job sequence number, or queue type. In addition, generic resource definitions (profiles) can be displayed.

FORMAT:

```
RSTAT  PROFILE
       QUEUE(queue)
       GRN(name) [QUEUE(queue)]
       jsq
```

PROFILE	Requests generic resource profile information. The abbreviation is P. PROFILE is the default if no operands are specified.
queue	COS queue type: E (execute) or I (input).
name	Generic resource name to be displayed
jsq	Job sequence number of the job whose generic resource usage is to be displayed; obtained through the STATUS subcommand.

AVAILABILITY:
TSO users can display generic resource status information for only their own jobs.

EXAMPLE: CRAYCMD RSTAT 2067

STATUS - Display COS status

FUNCTION: STATUS displays the status of jobs, input datasets, and output datasets known to COS. Jobs are reported in the order of their job sequence numbers. Status can be requested for any or all of the Cray job queues.

The following information is provided in a STATUS display:

- Job Sequence Number (JSQ)
- Disposition code (DC) as follows:

Code	Description
IN	Dataset is a 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 a punch at the receiving station.
ST	Dataset is to be made a permanent dataset at the receiving station (or on the Cray system if the dataset is being sent to the Cray system because of a SUBDS or CRSUBMIT station subcommand, or an ACQUIRE control statement).

- Job name when submitted at originating station
- Job class name

- Job or dataset status:

Status	Description
EXECUTE	Executing
LOCK-MEM	Locked by system
LOCK-SYS	Locked by memory
MULTASK	Multitasking
Q-RSOURC	Queued for resources
QUEUED	Queued for execution
RESIDENT	Resident in memory (multitasking job)
ROLL-IN	Rolling in
ROLL-OUT	Rolling out
ROLLED	Rolled out
SUSP-OPR	Suspended by operator
SUSP-RCY	Recovery suspended
WAIT-1TH	Suspended to single thread tasks (multitasking job)
WAIT-CPU	Waiting for CPU
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
XFER-IN	Transferring to Cray system
XFER-OUT	Transferring from Cray system

- Job priority. Initial priority is determined by the job class, or operator-assigned priority and time and memory specifications. Subsequent job scheduler adjustments are not

displayed. Output dataset priority is determined by dataset size.

- 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 ID (TID) associated with job or dataset

The display header line lists the queues being displayed.

FORMAT: STATUS [QUEUE(queue1 queue2...queuen)]

queue
A string of one or more of the following designators, each specifying a queue for which status is requested. (The string cannot contain blanks.) The default is to display all of the queues.

Designator	Description
E	Execution queue
I	Input queue
O	Output queue
R	Cray system receiving queue
S	Cray system sending queue

AVAILABILITY:
TSO users can display the status of only their own jobs or datasets. The STATUS subcommand is available only when the station is logged on to COS.

EXAMPLE: CRAYCMD STAT

```
12.51.02 CSS461I CRAY STATUS
         JOB CLASS STRUCTURE = DAY05    STATUS EIORS
 JSQ  DC DATASET  CLASS   STATUS   PRTY  CPUTM LIMIT  FLEN ID  TID
 739  IN TEST05    C7     ROLLED   7.9       1    10   101 JR CXXYIM
END OF DATA
```

SWITCH - Manipulate job sense switches

FUNCTION: SWITCH sets or clears a job sense switch.

FORMAT:

SWITCH jsq ssw ON
OFF

jsq Job Sequence Number identifying the job to COS; obtained through the STATUS subcommand.

ssw Sense switch number; 1 to 6.

ON Sets the switch designated by ssw

OFF Clears the switch designated by ssw

AVAILABILITY:
TSO users can set or clear sense switches for only their own jobs. The SWITCH subcommand is available only when the station is logged on to COS.

EXAMPLE: CRAYCMD SWITCH 237 4 ON

TJOB - Display tape job status

FUNCTION: The TJOB subcommand displays the following job status information for jobs requiring tape devices:

- Job Sequence Number (JSQ)
- Job name
- Job status, as follows:

Status	Description
DELAY	Waiting for time event
EXCTNG	Executing
LK-MEM	Locked for memory
LK-SYS	Locked by system
MULTASK	Multitasking
Q-EXEC	Queued for execution
Q-RSRCE	Queued for resource
R-IN	Rolling in
R-OUT	Rolling out
ROLLED	Rolled out
S-CPU	Waiting for CPU
S-EVENT	Waiting for event
S-I/O	Waiting for I/O
S-MEM	Waiting for memory
S-OP	Operator suspended
S-RECV	Recovery suspended (SHUTDOWN)
S-SYS	System suspended
S-XFER	Waiting for transfer
UNKNOWN	Job unknown
XFERING	Transfer in progress

- Job priority. Initial job priority is determined by the job class, or operator-assigned priority and time and memory specifications. (Subsequent job scheduler adjustments are not displayed.) Output dataset priority is determined by dataset size.
- 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
- Number of tape devices as specified in the tape resources parameter on the JOB parameter
- Number of tape devices in use
- Job rerun status (YES or NO) indicating whether or not a job can be rerun

FORMAT: TJOB

AVAILABILITY:
TSO users can display the status of only their own tape jobs. The TJOB subcommand is available only when the station is logged on to COS.

EXAMPLE: CRAYCMD TJOB

```
11.28.17 CSS469I CRAY TAPE JOBS
 JSQ  DATASET  STATUS  PRI  TIMEUSD  TIMELIM  FLDLN ID  DR  DU  RR
 7374 LPSDMP   DELAY   9.9      0        8      100 JR   1   0  YES
END OF DATA
```

TRANSFER - Display or control dataset transfers

FUNCTION: The TRANSFER subcommand displays or controls all active transfers between the station and COS, and transfers waiting to be sent to COS.

FORMAT:

```
TRANSFER [CANCEL trn]
         [QUERY [type]]
         [      [trn ]]
         [RELEASE trn]
```

CANCEL Cancels an active or queueing transfer

QUERY Displays the status of the active and queueing transfers known to the station. The abbreviation is Q.

RELEASE Allows a held transfer to occur. The abbreviation is REL.

trn Transfer number; a unique number that identifies a transfer

type Transfer type, any combination of the following:

- A ACQUIRE and FETCH transfers
- D DISPOSE transfers (datasets, jobs and SYSOUT)
- J Jobs to COS
- S SUBDS transfers

If TRANSFER is entered without a parameter, the default is QUERY ADJS.

AVAILABILITY:
TSO users can display and cancel their own transfers whether or not the station is logged on to COS.

EXAMPLE: CRAYCMD TRANSFER

```
16.20.46 CSS475I TRANSFER STATUS
 JSQ  JOBNAME  DATASETNAME      TR#   TYPE    STATUS   TID
 2345 JOANABC  --------------- 00009 JOB     WAITING  JOAN
END OF DATA
```

5. JOB SUBMISSION

This section describes the process of sending a dataset containing a COS job from MVS to COS. This process includes creating a job dataset (described in "Job File Creation"), and then submitting jobs (described in "Job Submission Process" on page 42 and "CRSUBMIT Facility" on page 43). This section also describes how, after a job is executed by COS, the station returns the job output to the user (described in "Job Output Control" on page 46).

JOB FILE CREATION

A COS job is a set of COS job control statements beginning with a JOB statement and optionally ending with an end-of-job (/EOJ) statement. A job dataset can consist of several COS jobs, which must be each separated by a /EOJ statement. COS JCL is described in the COS Reference Manual, CRI publication SR-0011.

The user prepares a COS job in an MVS dataset. The job can be in a sequential dataset or it can be a member of a partitioned dataset. The record format can be fixed, variable or undefined, blocked or unblocked. Line numbers should not be used with variable format datasets.

A COS job typically consists of the following JCL statements:

```
JOB(JN=jobname,...other parameters...)              * required  *
ACCOUNT(AC=acctno,...)          * Optional, but may be required   *
*                               * by the installation.  If        *
*                               * present, the ACCOUNT statement  *
*                               * must be the second statement in *
*                               * the job, and may be modified    *
*                               * during processing by the station *
*                               * or an installation routine.     *
   .
   .
   .
   .
*     other COS control statements, for example
*     ACQUIRE, DISPOSE, ACCESS, CFT
   .
   .
   .
/EOF                            * Terminates the JCL statements   *
   .
   .
   .
*     Data records for input to the COS job.  Several sets of
*     data records can be included in a job to COS.  Each set
*     is terminated by a /EOF statement, which is not sent to
*     COS as a statement, but converted by the MVS station to
*     a COS end-of-file control word.
   .
   .
   .
/EOF                            * Terminates the data records     *
/EOJ                            * Terminates the COS job          *
```

The MVS station converts the /EOJ statement to a COS end-of-dataset (EOD) control word. It is not required if it forms the last statement in the dataset. Any number of jobs can be placed in a single dataset or set of concatenated datasets (assuming compatible blocksizes) to be sent to COS. Jobs must be separated by the /EOJ statement. /EOJ and /EOF strings can be modified by an installation at the time the station is installed.

JOB SUBMISSION PROCESS

Job submission is a two-part process which consists of:

- Queuing the job for transfer
- Transferring the job to COS

Queuing is a synchronous process. You request the MVS station to transfer the job to COS. When the job reaches the station's queue, you are informed that it is queued for transfer.

When the MVS station is ready, it transfers the job to COS; that is, when the link to the Cray system is established and all previous job submission requests are satisfied.

The following subsections describe the complete job submission process.

Queuing the Job for Transfer

During the queuing process, the CRSUBMIT processor (see "CRSUBMIT Facility") translates the job from EBCDIC to ASCII encoding and copies it to a temporary dataset. A transfer number is assigned to the job and displayed. During this process, an installation routine can read and modify statements in the job. Such processing might include making the job name unique, adding default parameters to COS control statements, and so on. The actual processing performed is defined by the installation.

When the job is queued for transfer, you can determine its status through the QUERY operand of the CRAYCMD TRANSFER command; or delete it through the CANCEL operand. The job can be held for later transmission to the COS job input queue.

Transferring the Job to COS

The temporary dataset is submitted to COS. If the link from the station to COS is not active, the job waits on the station queue until the link is ready.

When the job is transferred to COS and saved on Cray system mass storage, a job sequence number is assigned. You can find the JSQ by issuing either the JOB or the STATUS subcommand of the CRAYCMD command. If you request, the station sends a message saying the job was submitted.

CRSUBMIT FACILITY

Use the CRSUBMIT facility to submit jobs to COS. The CRSUBMIT facility consists of a TSO command CRSUBMIT and a CRSUBMIT directive in the system input (SYSIN) dataset of the MVS batch program CRSBTCH. Refer to "Appendix A. Cray MVS Batch Facility" on page 95 for a description of the CRSBTCH batch program.

The CRSUBMIT facility can also be invoked with the SUBMIT subcommand of the CRAY command processor (CRAY cp). The SUBMIT subcommand of CRAY cp is

similar to CRSUBMIT. CRAY cp is described in " 2. The CRAY Command Processor (CRAY cp)" on page 7.

The command format is the same in each environment, although there are differences in the default values of the operands. The format of the CRSUBMIT facility is:

```
CRSUBMIT  dsname[(mname)][/MVS password])[DEST(destination)]
SUBMIT    FILE(ddname)                          (node,userid)
          DDNAME(ddname)
          [NOTIFY[(userid)]  [HOLD]      [PRINT(classname)]
          [NONOTIFY]         [NOHOLD]    [PUNCH(classname)]
                             [TRHOLD]    [PLOT(classname)]
          [AC[(acno)]]  [US[(userno)]]   [APW[(password)]]
          [NAPW[(napw)]]  [UPW[(upw)]]   [NUPW[(nupw)]]
```

dsname Name of the cataloged MVS sequential or partitioned dataset containing the job or jobs to be transferred to COS. Under TSO, the usual convention is that the high-level index of the dataset name is not entered at the terminal if it corresponds with the current value of the prefix characters in the TSO user's profile. If the high-level index of the dataset name does not correspond with the current setting of the prefix characteristic, the fully qualified dataset name should be entered, enclosed in single quotes.

The dataset must reside on a volume accessible to the MVS station, or a copy must be available for creation by the CRSUBMIT/SUBMIT command processor on such a volume.

This positional parameter (possibly followed by membername and password parameters) is mutually exclusive with the DDNAME and FILE keyword parameters. Under TSO, either dsname, FILE, or DDNAME must be provided. Under the Cray MVS batch procedure, if none of these parameters is supplied, a default of DDNAME(SYSUT1) is assumed.

mname Name of the member of the partitioned dataset dsname which contains a job or jobs to be transferred to COS. If the dataset is partitioned, and mname is omitted, mname defaults to TEMPNAME.

MVS password
Password if the MVS dataset is password protected

FILE(ddname) or DDNAME(ddname)
Filename (ddname) of a previously allocated dataset or datasets containing the job or jobs to be sent to COS. Under TSO, either

dsname, FILE, or DDNAME must be provided. Under the Cray MVS batch procedure, if none of these parameters is supplied, a default of DDNAME(SYSUT1) is assumed.

DEST(destination) or (node,userid)
: Destination to which the job's output is to be routed. The destination can be any valid system destination. See "Job Output Control" on page 46 for a full description of output routing options.

NOTIFY[(userid)]
: Name or ID of the MVS user to receive all messages issued by the MVS station relating to the job. If userid is omitted, the submitting user receives the messages. NOTIFY is the default.

NONOTIFY
: Messages relating to the job are not sent to the user; important messages are placed in the COS job log.

HOLD
: Job output is to be held for inspection at the TSO terminal.

NOHOLD
: Job output is not to be held. NOHOLD is the default.

TRHOLD
: Job is to be queued for submission to COS but held on the station queue until released by the user or the MVS operator.

PRINT, PUNCH, or PLOT (classname)
: SYSOUT class to be assigned to the PRINT, PUNCH, or PLOT output from the COS job. These classes can be overridden by the SYSOUT= keyword in the TEXT field of a DISPOSE statement in the job. Defaults are set by the installation.

AC[(acno)]
: The characters AC=acno are to be added to the ACCOUNT control statement in the COS job. If acno is omitted, AC indicates that the TSO user is to be prompted for an account number. Prompting is not allowed in MVS batch. acno can have 1 to 15 alphanumeric characters.

US[(userno)]
: The characters US=userno are to be added to the ACCOUNT control statement in the COS job. If userno is omitted, US indicates that the TSO user is to be prompted for a user number. Prompting is not allowed in MVS batch. userno can have 1 to 15 alphanumeric characters.

APW[(password)]
: The characters APW=password are to be added to the ACCOUNT control statement in the COS job. If password is omitted, APW indicates that the TSO user is to be prompted for a password. Prompting

is not allowed in MVS batch. password can have 1 to 15 alphanumeric characters.

NAPW[(napw)]
: The characters NAPW=napw are to be added to the ACCOUNT control statement in the COS job. If napw is omitted, NAPW indicates that the TSO user is to be prompted for a password. Prompting is not allowed in MVS batch. napw can have 1 to 15 alphanumeric characters.

UPW[(upw)]
: The characters UPW=upw are to be added to the ACCOUNT control statement in the COS job. If upw is omitted, UPW indicates that the TSO user is to be prompted for a password. Prompting is not allowed in MVS batch. upw can have 1 to 15 alphanumeric characters.

NUPW[(nupw)]
: The characters NUPW=nupw are to be added to the ACCOUNT control statement in the COS job. If nupw is omitted, NUPW indicates that the TSO user is to be prompted for a password. Prompting is not allowed in MVS batch. nupw can have 1 to 15 alphanumeric characters.

JOB OUTPUT CONTROL

This subsection describes the routing of output from a COS job to the MVS system and the options available to the MVS user to control this output. Also described are the means for holding output for inspection at a TSO terminal.

All COS output datasets (print, punch, or plot) are returned to MVS under the COS job name. MVS assigns a JES2 or JES3 job number to each output dataset. Output is routed to remote or local destinations unless explicit routing is specified.

Routing Output

Several factors influence output routing. An MVS station user can control the routing of job output by one of the methods described below. These are listed in order of diminishing precedence.

1. Selected output can be explicitly routed by means of the DEST operand in the TEXT field of a COS DISPOSE statement for the dataset. (See the appropriate MVS JCL manaual for more information on the DEST operand.) DISPOSE is described in more detail in " 6. Dataset Transfer Management" on page 53.

2. All output produced by a COS job can be explicitly routed by means of the DEST operand in a CRSUBMIT command. CRSUBMIT may be issued as a TSO command or as a directive to the MVS batch procedure CRAY:

```
CRSUBMIT dsname(mname) DEST(destination)
```

3. If neither method 1 nor method 2 above is specified, and if CRSUBMIT is issued by a TSO user and the user's logon profile specifies a destination, all output is routed to that destination.

   If CRSUBMIT is issued as a directive to the MVS batch procedure CRAY, all the output produced by the COS job can be explicitly routed by means of the following job entry subsystem control statements:

```
/*ROUTE PRINT destination   (JES2)
/*ROUTE PUNCH destination   (JES2)

//*MAIN ORG=destination     (JES3)
```

4. If the CRSUBMIT command is issued by a TSO user and no explicit routing is specified, the characteristics of the system on which the TSO session is active define the default routing characteristics.

   If CRSUBMIT is issued as a directive to the MVS batch procedure CRAY and no explicit routing is specified, the environment of the submitting job provides the default routing characteristics. For example, output from a job submitted through a local reader prints on a local printer, while output from a job submitted on a remote reader prints via an appropriate remote printer.

Output Classes

The output class from a COS job can be specified in a number of ways, as described below in order of diminishing precedence.

1. Selected output can be assigned an explicit class with the SYSOUT=class JCL parameter in the TEXT field of a COS DISPOSE statement.

2. All PRINT, PUNCH or PLOT output can be assigned a class using the PRINT, PUNCH or PLOT parameters on the CRSUBMIT command, whether issued as a TSO command or as a control statement to the MVS batch procedure.

3. If the output class is still undefined, the default value is taken from the station's installation options.

   Note: An unheld PRINT class (typically class A) and a held PRINT class (typically class X) are defined as installation options. See "Holding Output" for full details of their use.

Holding Output

PRINT (DC=PR) output from a COS job can be held by various means for inspection at a TSO terminal by the user submitting the job. PUNCH (DC=PU) and PLOT (DC=PT) output are held only if the HOLD=YES JCL parameter is specified in the TEXT field of a COS DISPOSE statement. The methods for holding PRINT output are described below in order of diminishing precedence.

1. Selected output can be explicitly held using the HOLD=YES operand in the TEXT field of a COS DISPOSE statement. The MVS station does not support the HOLD=NO/N/Y operands.

2. If the HOLD operand is used on the CRSUBMIT command, all PRINT output will be held.

   If the NOHOLD operand is used on the CRSUBMIT command, no PRINT output will be held.

3. If the PRINT output class coincides with the single held class defined when the station was installed (typically class X), the output will be held; otherwise it will not be held.

JCL Considerations

The MVS station supports most of the facilities available to the MVS user for the control of output, with the following exceptions:

- The station has no structure corresponding to the FORMAT control statement (JES3).
- The explicit specification of HOLD=NO or Y or N on DD statements is not allowed.
- The second and third subparameters of the UCS parameter (JES3) are not allowed.

Some facilities of these control statements can be obtained by methods already described.

JOB SUBMISSION EXAMPLES

Two examples of job submission to COS follow:

- Submit a job to COS from TSO
- Submit two jobs to COS from TSO

Submit a Job to COS from TSO

In this example, a job consisting of COS JCL statements residing in a member of a cataloged partitioned dataset (PDS) on the MVS system is submitted to the COS job input queue from a TSO session using the CRSUBMIT TSO command. Member COSJOB1 of the MVS dataset COSUSER.TESTJOBS.CNTL is assumed to contain the following COS JCL statements:

```
JOB,JN=JOB1,US=MYUSERNUMBER,...other parameters...
ACCOUNT,AC=COSUSER001.
* COS job execution control statements
  .
  .
  .
  .
/EOJ
```

The job name JOB1 might have to conform to installation standards.

In the ACCOUNT statement, the AC parameter might be required by an installation; if so, COS checks the account number against the password.

The end-of-job indicator /EOJ is optional.

When the job is set up in the dataset, enter the following TSO command:

```
CRSUBMIT TESTJOBS.CNTL(COSJOB1) DEST(REMOTE9) PRINT(X) -
   NONOTIFY APW
```

The CRSUBMIT processor prompts for a password with the message:

```
ENTER CURRENT COS PASSWORD -
```

The password can be entered, but it is not displayed at the terminal.

It is not necessary to specify the high-level index of the dataset name (COSUSER) since it is the same as the current TSO prefix.

The DEST parameter indicates that the output produced by job JOB1 when it runs on COS is routed to the remote location REMOTE9.

The PRINT parameter specifies that printed output is placed in output class X, unless the job contains DISPOSE control statements which specifically override this parameter. If class X is the installation's held output class, the user can inspect the output at the TSO terminal when the job is complete.

The hyphen (-) indicates to TSO that the CRSUBMIT command is continued.

The NONOTIFY keyword specifies that the user does not wish to receive any messages from the station concerning the progress of the job. The COS job

log contains messages about any errors during the execution of ACQUIRE, DISPOSE, and FETCH control statements that refer to the MVS station.

The APW keyword causes the password prompt described above.

The CRSUBMIT processor allocates a temporary dataset and copies the job JOB1 into the temporary dataset. The temporary dataset is translated from EBCDIC to ASCII encoding and COS file structure control words are inserted. When this process is complete, CRSUBMIT returns control to the terminal. The MVS station then transfers the job to COS, where it is queued for execution.

Submit Two Jobs to COS from TSO

In this example, two jobs consisting of COS JCL statements, included in a member of an MVS partitioned dataset TESTJOBS.CNTL, are submitted to the COS job input queue using the CRSUBMIT TSO command.

The COS control statements are as follows:

```
JOB,JN=JOB2,...other parameters...
ACCOUNT(AC=COSUSER002,APW=NECESSARY)
* COS job execution control statements
  .
  .
  .
/EOJ
JOB,JN=JOB3,...other parameters...
ACCOUNT(AC=COSUSER002,APW=NECESSARY)
* COS job execution control statements
  .
  .
  .
  .
/EOJ
```

When the jobs are set up in the dataset, enter the following TSO command:

```
CRSUBMIT TESTJOBS.CNTL(COSJOBS) NOTIFY
```

CRSUBMIT allocates temporary datasets and copies the jobs JOB2 and JOB3 into the datasets. The jobs are translated from EBCDIC to ASCII encoding and COS file structure control words are inserted. The following messages are sent to the TSO user:

```
CSS235I JOB JOB2 (00009) QUEUED FOR TRANSFER
CSS235I JOB JOB3 (00010) QUEUED FOR TRANSFER
```

The MVS station sends the jobs JOB2 and JOB3 to COS. At the end of the transfers, the following messages are sent to the TSO user:

```
CSS301I 12:01:05.39 JOB JOB2 SUBMITTED TO COS
CSS301I 12:01:06.83 JOB JOB3 SUBMITTED TO COS
```

The APW=NECESSARY parameter on the ACCOUNT statement could have been provided by specifying APW(NECESSARY) on the CRSUBMIT statement.

Output from the jobs is routed to the originating location unless the COS JCL directs it elsewhere. The user receives messages concerning the progress of the jobs as a result of the default NOTIFY parameter. Output for printers, punches, and plotters is placed in the default classes for those peripherals, unless a DISPOSE statement specifies otherwise.

6. DATASET TRANSFER MANAGEMENT

Staging is the process of transferring MVS and COS datasets between the two systems.

The MVS user initiates the staging of COS job image datasets (COS job datasets) to the COS job input queue by using the CRSUBMIT facility (see " 5. Job Submission" on page 41).

The MVS user initiates the staging of datasets to the COS system by using the SUBDS or SAVE facility, described in this section.

COS initiates staging from MVS when a FETCH or ACQUIRE control statement is processed. COS initiates staging to MVS when a DISPOSE statement is processed. By default, the COS $OUT dataset is staged to the submitting station at job termination. If present, the COS $PUNCH and $PLOT datasets are also staged to the submitting station at job termination. The user can override this default by providing DISPOSE statements for $OUT, $PUNCH, and $PLOT, as required.

This section describes formats of the MVS station specific parameters of the FETCH, ACQUIRE, and DISPOSE statements. For a general description of these statements, see the COS Reference Manual, publication SR-0011.

The user should be familiar with the operands field of the MVS DD JCL statement. (See the relevant MVS JCL manual.)

See the IBM MVS Station Message Manual, publication SI-0108 for an explanation of error messages issued by the MVS station to the COS job log or to a TSO user's terminal.

Examples of the use of the dataset staging facilities offered by the MVS station are included in "Examples of SUBDS, FETCH, ACQUIRE, and DISPOSE" on page 76.

DATASET STRUCTURES SUPPORTED BY THE MVS STATION

The MVS station supports a substantial subset of MVS record formats (RECFM) and COS dataset formats. During the transfer of a dataset to COS, the MVS station performs all necessary encoding and data format conversions from the MVS encoding and format to the required COS encoding and format. Similarly, when a dataset is transferred from COS to MVS, the station

performs the necessary mapping from the COS encoding and data format into the required MVS encoding and format.

The subset of MVS record formats (RECFMs) supported by the MVS station is listed in "DCB Subparameters" on page 72. For dataset transfer, all the formats listed are supported; for job submission to COS and to MVS, only fixed and variable formats, which may be blocked, are supported.

Internal structures of the COS dataset formats supported by the MVS station include character blocked and deblocked, binary blocked and deblocked, and transparent. For detailed descriptions of these dataset formats, see the COS Reference Manual, CRI publication SR-0011.

Character Blocked (CB) Datasets

CB datasets contain ASCII character data. Typically, CB datasets store program source files, textual data, and output files destined for inspection at a TSO terminal or for eventual printing. CB datasets contain various items of control information describing the structure of the dataset to COS. These items can include block control words (BCWs), record control words (RCWs), and blank compression characters but the user is generally not concerned with these.

Character Deblocked (CD) Datasets

CD datasets contain ASCII character data. Unlike CB files, they contain no COS BCWs or RCWs.

Binary Blocked (BB) Datasets

BB datasets contain control information for use by COS that is similar to CB datasets, except that blank compression cannot be used. However, in the case of BB datasets, the user information stored in the dataset is processed as binary rather than ASCII data. Typically, a BB dataset stores the information generated by a FORTRAN unformatted WRITE, which is the COS internal binary representation of the written data.

Binary Deblocked (BD) Datasets

BD datasets are similar to binary blocked datasets except that they contain no COS RCWs or BCWs. COS processes BD data in the same way as transparent data.

Transparent (TR) Datasets

TR datasets are processed by COS as bit strings and are identical to BD datasets.

MVS Station Mappings Between MVS and COS Datasets

Table 1 shows the mapping the MVS station performs on each MVS dataset transferred to COS dataset format and on each dataset format received from COS.

Table 1. MVS Station Mapping

COS Dataset Format	Transfer to COS	Transfer from COS
CB	Constructs COS format blocks (512 Cray words long), adding control words and compressing embedded blanks	Removes COS control words and expands compressed blanks. If records are short, pads with blanks for RECFM=F datasets. If records are too long, truncates to MVS LRECL.
	Translates character encoding from EBCDIC to ASCII	Translates character encoding from ASCII to EBCDIC
	Replaces any record with the characters '/EOF' (in EBCDIC) in positions 1 through 4 with a COS end-of-file marker	Discards any COS end-of-file markers if a COS dataset transfers to an MVS SYSOUT dataset. Otherwise, it replaces COS end-of-file markers with a record containing the characters '/EOF' (in EBCDIC, and blank-filled if necessary) in positions 1 through 4.
		Converts data to required MVS format (RECFM, LRECL, and BLKSIZE)
CD	Translates character encoding from EBCDIC to ASCII	Translates character encoding from ASCII to EBCDIC

Table 1. MVS Station Mapping (continued)

COS Dataset Format	Transfer to COS	Transfer from COS
	Pads the last segment of the dataset with nulls if the link segment size is not a multiple of the MVS LRECL	Dataset has record and block sizes as specified in the JCL. For variable format datasets, all records are the length specified in the LRECL parameter.
BB	Constructs COS format blocks (512 Cray words long), adding control words. Replaces any record with the characters '/EOF' (in ASCII) in positions 1 through 4 with a COS end-of-file marker.	Removes COS control words. If records are too long, truncates to MVS LRECL. Discards any COS end-of-file markers, if a COS dataset transfers to an MVS SYSOUT dataset. Otherwise, it replaces COS end-of-file markers with a record containing the characters '/EOF' (in ASCII and blank-filled, if necessary) in positions 1 through 4. Converts data to required MVS format (RECFM, LRECL, and BLKSIZE).
TR and BD	Processes the MVS data as a bit string and passes it to the Cray system unaltered. If the link segment size is not a multiple of the MVS LRECL, the last segment of the transfer is padded with nulls.	Dataset has record and block sizes as specified in the JCL. For variable format datasets, all records are the length specified in the LRECL parameter.

MVS-INITIATED STAGING - SUBDS AND SAVE

An MVS user issues the SUBDS or SAVE command (SAVE is an alias of SUBDS under CRAY cp) to request the staging of an MVS dataset to COS. SUBDS can be executed from within CRAY cp, as a TSO command processor, or as a directive to the Cray MVS batch facility. SAVE can be executed only within CRAY cp. The Cray MVS batch facility and its use are described in "Appendix A. Cray MVS Batch Facility" on page 95.

The SUBDS or SAVE program causes the requested dataset to be added to a queue of transfer requests for processing by the MVS station. The MVS station processes the request by transferring the MVS dataset to COS and performing a COS SAVE for the dataset. The process of transferring the dataset to COS does not occur synchronously with the request being issued to and accepted by the MVS station.

Format:

```
SAVE      dsname[(mname)][/MVS password]   PDN(pdn)
SUBDS     FILE(ddname)
          DDNAME(ddname)
          [NOTIFY[(userid)]   [COPY]   [DF(df)]
          [NONOTIFY]          [NOCOPY]
          [US(userno)]   [ID(uid)]   [ED(ed)]   [RT(rt)]
          [M(mn)]   [R(rd)]   [W(wt)]
```

dsname Name of the cataloged MVS sequential or partitioned dataset to be transferred to COS. Under TSO, the usual convention is that the high-level index of the dataset name is not entered at the terminal if it corresponds with the current value of the prefix characters in the TSO user's profile. If the high-level index of the dataset name does not correspond with the current setting of the prefix characteristic, the fully qualified dataset name should be entered, enclosed in single quotes.

The dataset must reside on a volume accessible to the MVS station, or a copy must be available or created by the SUBDS/SAVE command processor on such a volume.

This positional parameter (possibly followed by membername and password parameters) is mutually exclusive with the DDNAME and FILE keyword parameters. Under TSO, either dsname, FILE, or DDNAME must be provided. Under the Cray MVS batch procedure, the system assumes a default of DDNAME(SYSUT1) if the user supplies none of these parameters.

DDNAME(ddname) or FILE(ddname)
DDNAME with which the dataset to be transferred to COS has been allocated. If the dataset has already been allocated, either of these parameters can be used instead of dsname to specify the dataset to be transferred to COS. (For example, the dataset might have been allocated with the TSO ALLOCATE command, or by supplying a DD card in the JCL for a job step invoking the Cray MVS batch procedure referencing the dataset to be sent to COS.)

This parameter allows the specification of uncataloged datasets for transfer to COS and is mutually exclusive with the dsname positional

parameter. Under TSO, either dsname, FILE, or DDNAME must be provided. Under the Cray MVS batch procedure, if the user supplies none of these parameters the system assumes a default of DDNAME(SYSUT1).

mname Name of the member of the partitioned dataset to be transferred to COS. If the dataset is a PDS and mname is omitted, mname defaults to TEMPNAME. If the dataset is a generation data group (GDG), mname is the generation number.

MVS password
Password if password-protected

PDN(pdn)
Name given to the file when it is saved in the COS Dataset Catalog (DSC); 1 to 15 alphanumeric characters (A through Z, 0 through 9, $, @, or %). PDN is a required parameter.

NOTIFY[(userid)]
Name of the MVS user to receive all messages issued by the MVS station relating to the transfer. If userid is omitted, the submitting user receives the messages.

NONOTIFY
Messages relating to the transfer are not sent to the user.

COPY Specifies that a copy of the MVS dataset is made before the station is requested to transfer this copy to COS. This process is mandatory if the FILE parameter is used.

NOCOPY Specifies that the station is to be requested to transfer the original MVS dataset to COS. The original dataset should not be modified before the transfer completes. NOCOPY is the default.

DF(df) COS format in which the dataset is transferred. The following values are supported:

- CB Character blocked (the default if the DF parameter is not specified)
- CD Character deblocked
- BB Binary blocked
- BD Binary deblocked
- TR Transparent

The following parameters correspond to the COS SAVE statement parameters. (See the COS Reference Manual, publication SR-0011 for details of SAVE.)

US(userno)
COS user number; 1 to 15 alphanumeric characters. The default is no user number.

ID(uid)
COS user identifier; 1 to 7 alphanumeric characters. The default is no user identifier.

ED(ed) Edition number; 0 to 4095. If 0, or no ED parameter is supplied, the dataset is saved as a COS file with edition number n+1, where n is the current highest edition. If nonzero and a dataset of the specified edition number already exists, the transfer is canceled.

RT(rt) Retention period in days; 0 to 4095. The default is selected by the installation.

M(mn) Maintenance permission control word; 1 to 8 alphanumeric characters. The default is no maintenance permission control word. If mn is omitted, the user is prompted for the maintenance control word.

R(rd) Read permission control word; 1 to 8 alphanumeric characters. The default is no read permission control word. If rd is omitted, the user is prompted for the read control word.

W(wt) Write permission control word; 1 to 8 alphanumeric characters. The default is no write permission control word. If wt is omitted, the user is prompted for the write control word.

COS-INITIATED STAGING - FETCH, ACQUIRE, AND DISPOSE

COS-initiated staging can be either of the following:

- MVS to COS - the FETCH or ACQUIRE COS control statement
- COS to MVS - the COS DISPOSE control statement

The format of each of these control statements, and parameters supported by the MVS station, follows.

Transfers from MVS to COS - FETCH and ACQUIRE

The FETCH and ACQUIRE COS control statements direct the MVS station to transfer a dataset on the MVS system to COS. The dataset becomes local to the COS job issuing the FETCH or ACQUIRE.

The FETCH statement always causes a transfer of the specified dataset from the MVS system. The dataset is made local to the job requesting it, but no COS permanent dataset is created. The dataset ceases to exist as a COS file when the COS job terminates or when the COS job issues a RELEASE for the dataset. If a permanent copy of the fetched COS dataset is required, the COS job must issue a SAVE for the fetched dataset.

The ACQUIRE statement initiates a transfer from MVS, subject to the following rules:

1. When an ACQUIRE control statement is issued, COS determines if the requested dataset is already permanently resident as a COS file.

2. If the requested dataset (that is, a permanent dataset with the specified PDN and the specified or default ID, ED and OWN parameters) is already permanently resident as a COS file, COS grants dataset access to the job making the request, and no dataset staging occurs.

3. If the requested dataset is not resident as a COS file, or its COS DSC entry shows that it is partially deleted, COS sends a request for the dataset to the MVS station. The MVS station stages the dataset to COS and makes it permanent as a COS file. COS then grants dataset access to the job making the request. The dataset resides on COS after the requesting job terminates unless a DELETE statement is issued for the dataset.

Partially deleted datasets are discussed in the subsection titled "Partially Deleted COS datasets and the ACQUIRE statement" on page 74.

The format of the FETCH and ACQUIRE statements and the operands supported by the MVS station are shown below. For a full description of the FETCH and ACQUIRE statements, see the COS Version 1 Reference Manual, publication SR-0011.

FETCH format:

```
FETCH,DN=dn,TEXT='text'[,MF=mf][,TID=tid][,DF=df].
```

DN=dn Local dataset name identifying the staged dataset to the COS job issuing the FETCH. 1 to 7 alphanumeric characters (A through Z, 0 through 9, $, @, or %), the first of which is non-numeric. DN is a required parameter.

TEXT='text'
Value of this parameter passed by COS to the MVS station. The MVS station interprets the value of the parameter as the operands field of an IBM MVS JCL DD statement that allocates the MVS dataset to the station so it can be copied to COS. (The subset of the MVS JCL DD statement operands supported in the TEXT parameter by the MVS station is documented in "DD Statement Operands" on page 67.)

The length of 'text' cannot exceed 240 characters (excluding the enclosing apostrophes). Blanks are not allowed in the TEXT field; a blank halts interpretation of the TEXT field and all subsequent instructions are ignored. TEXT is a required parameter when FETCH is used with the MVS station.

Note: It is possible for an installation to alter the interpretation of the TEXT field by use of the CRUXTEXT exit. If there are problems with the interpretation of the TEXT field, users should check that the behavior of CRUXTEXT has not been modified at their installation.

MF=mf system identifier of the MVS station from which the FETCH is performed. The MVS station system identifier is an installation dependent value. The default is the system identifier of the station submitting the COS job, or, for a spawned job, that of the parent job.

TID=tid
Terminal identifier of the owner of the dataset to be fetched. The default value of this parameter is the MVS userid that submitted the COS job or, for a spawned job, the TID of the parent job.

DF=df Format used when the dataset is transferred to the COS filebase. The following values are supported:

CB Character blocked (the default if the DF parameter is not specified)
CD Character deblocked
BB Binary blocked
BD Binary deblocked
TR Transparent

ACQUIRE 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][,OWN=ov] [,PAM=mode] [,ADN=adn(m)] [,TA=opt]
[,NOTES=notes].
```

DN=dn Local dataset name identifying the staged dataset to the COS job issuing the ACQUIRE. 1 to 7 alphanumeric characters (A through Z, 0 through 9, $, @, or %), the first of which is non-numeric. DN is a required parameter.

PDN=pdn
Name of COS permanent dataset to be accessed or staged from the MVS station, saved and accessed; 1 to 15 alphanumeric characters (A through Z, 0 through 9, $, @, or %). The default for PDN is the value of DN.

ID=uid User identifier; 1 to 8 alphanumeric characters. The default is no ID.

ED=ed Edition number. A value from 1 to 4095. If ED is not specified and a permanent dataset with the same PDN and ID does not exist, staging occurs and a permanent dataset with ED=1 is created. If ED is not specified and a permanent dataset with the same PDN and ID exists, staging does not occur. The highest existing edition of the permanent dataset is accessed.

RT=rt Retention period in days placed in the COS DSC entry for the permanent dataset if staging occurs. A value from 0 to 4095. The default value is selected by the installation.

R=rd Read permission control word placed in the COS DSC entry for the permanent dataset if staging occurs. The default is no read permission control word unless the dataset being acquired is a partially deleted dataset; then any value for this parameter stored in the COS DSC is used and overrides any value specified on the ACQUIRE control statement.

W=wt Write permission control word placed in the COS DSC entry for the permanent dataset if staging occurs. The default is no write permission control word unless the dataset being acquired is a partially deleted dataset; then any value for this parameter stored in the COS DSC is used and overrides any value specified on the ACQUIRE control statement.

M=mn Maintenance permission control word placed in the COS DSC entry for the permanent dataset if staging occurs. The default is no maintenance permission control word unless the dataset being acquired is a partially deleted dataset; then any value for this parameter stored in the COS DSC is used and overrides any value specified on the ACQUIRE control statement.

UQ Unique access to the COS dataset is granted if this parameter is specified.

TEXT='text'
Value of this parameter passed by COS to the MVS station. The MVS station interprets the value of the parameter as the operands field of an IBM MVS JCL DD statement. This statement allocates the MVS dataset to the station so that it can be copied to COS. See "DD

Statement Operands" on page 67 for a description of the subset of the MVS JCL DD statement operands supported by the MVS station.

The length of 'text' cannot exceed 240 characters (excluding the enclosing apostrophes). TEXT is a required parameter when ACQUIRE is used with the MVS station unless the dataset being acquired is a partially deleted dataset and is being acquired by a job that is not the owner of the dataset. Here, any value for this parameter stored in the COS DSC is used and overrides any value specified on the ACQUIRE control statement.

Note: It is possible for an installation to alter the interpretation of the TEXT field by use of the CRUXTEXT exit. If there are problems with the interpretation of the TEXT field, users should check that the behavior of CRUXTEXT has not been modified at their installation.

MF=mf system identifier of the MVS station from which the ACQUIRE is performed. The MVS station system identifier is an installation-dependent value. The default is the system identifier of the station submitting the COS job, or, for a spawned job, that of the parent job.

TID=tid
Terminal identifier of the owner of the dataset to be acquired. The default value of this parameter is the MVS userid that submitted the job or, for a spawned job, the TID of the parent job.

DF=df COS format in which the dataset is transferred. The following values are supported:

- CB Character blocked (the default if the DF parameter is not specified)
- CD Character deblocked
- BB Binary blocked
- BD Binary deblocked
- TR Transparent

OWN=ov Ownership value. If this parameter is specified, the dataset is made local to the job if the user has been granted access by the owner. If the ov value matches the active ov of the job, this parameter is ignored. The default is no ownership value.

PAM=mode
Public access mode stored in the COS DSC entry for the dataset, if staging occurs. The following modes are supported:

- N No public access allowed
- E Execute only
- R Read only
- W Write only

M Maintenance only

If the dataset being acquired is a partially deleted dataset and is being acquired by a job that is not the owner of the dataset, any value for this parameter stored in the COS DSC is used and overrides any value specified on the ACQUIRE control statement.

ADN=adn(m)

Name of a local dataset from which the attributes indicated by the modifiers, m, are copied, if staging occurs. If no modifiers are specified, all attributes are copied. Attribute parameters such as NOTES=, TEXT=, PAM=, R=, and so on, take precedence over the modifiers. The modifiers must be enclosed in parentheses and multiple values must be separated by colons (:). The default is no ADN value. The following modifiers are supported:

Modifier	Selection from Attributes Dataset
PAM	Public access mode attribute
TRACK	Public access mode tracking attribute
CW	Control words
PERMITS	Permit list
TEXT	Text attribute
NOTES	Notes attribute
ALL	All attributes

TA=opt Track subsequent accesses to the dataset, if staging occurs. opt can be YES or NO. NO is the default value of this parameter. If the dataset being acquired is a partially deleted dataset and the job issuing the ACQUIRE is not the owner of the dataset, any value for this parameter stored in the COS DSC is used and overrides any value specified on the ACQUIRE control statement.

NOTES=notes

Notes (text information) of up to 480 characters to be associated with the dataset if staging occurs. There is no restriction on the content of notes. A caret symbol in notes signifies end-of-line and causes AUDIT to advance to a new line when listing the notes. The caret symbol is included in the 480-character maximum limit.

There is no default value for this parameter unless the dataset being acquired is a partially deleted dataset and the job issuing the ACQUIRE is not the owner of the dataset; then any value for this parameter stored in the COS DSC is used and overrides any value specified on the ACQUIRE control statement.

If the local installation has the IBM Resource Access and Control Facility (RACF), refer to the "Special RACF Considerations" on page 75. If the local

installation has the CA-1 (formerly UCC ONE) Tape Management System (TMS), refer to "Special CA-1 TMS Considerations" on page 76.

Transfers from COS to MVS - DISPOSE

The DISPOSE COS control statement directs COS to transfer a local dataset to the MVS station.

The format of the DISPOSE statement and the parameters supported by the MVS station are shown below. For a full description of the DISPOSE statement, see the COS Reference Manual, publication SR-0011.

DISPOSE format:

```
DISPOSE,DN=dn[,DC=dc][,DF=df][,MF=mf][,TID=tid]
[,TEXT='text'][,WAIT][,DEFER][,NRLS].
              [,NOWAIT]
```

DN=dn Local dataset name identifying the staged dataset to the COS job issuing the DISPOSE. 1 to 7 alphanumeric characters (A through Z, 0 through 9, $, @, or %), the first of which is non-numeric. DN is a required parameter.

DC=dc Disposition code for the dataset. Values supported by the MVS station are as follows:

- PR Print dataset (the default if the DC parameter is not specified).
- PU Punch dataset.
- PT Plot dataset.
- ST Write MVS dataset.
- MT Write dataset to magnetic tape on the MVS system.
- IN Place dataset on the MVS job input queue.

DF=df Format in which the dataset is stored on the COS filebase. The following values are supported:

- CB Character blocked (the default if the DF parameter is not specified)
- CD Character deblocked
- BB Binary blocked
- BD Binary deblocked
- TR Transparent

MF=mf system identifier of the MVS system to which the DISPOSE is performed. The MVS station system identifier is an installation-dependent value.

The default value of this parameter is the system identifier of the station submitting the COS job, or, for a spawned job, that of the parent job.

TID=tid
: Owner terminal identifier of the dataset to be disposed. The default value of this parameter is the MVS userid value of the NOTIFY parameter of CRSUBMIT or, for a spawned job, the TID of the parent job.

TEXT='text'
: Value of this parameter passed by COS to the MVS station. The MVS station interprets the value of the parameter as the operands field of an IBM MVS JCL DD statement that allocates the MVS dataset to the station so it can be copied from COS. (The subset of the MVS JCL DD statement operands supported in the TEXT parameter by the MVS station is documented in "DD Statement Operands" on page 67).

  The length of 'text' cannot exceed 240 characters (excluding the enclosing apostrophes). The default value of this parameter depends upon the value of the disposition code (DC) parameter. A full explanation is given in "Default TEXT Field Parameters with the DISPOSE Statement" on page 73.

  Note: It is possible for an installation to alter the interpretation of the TEXT field by use of the CRUXTEXT exit. If there are problems with the interpretation of the TEXT field, users should check that the behavior of CRUXTEXT has not been modified at their installation.

WAIT/NOWAIT
: If WAIT is specified, the COS job does not resume processing until the disposed dataset is transferred to the MVS system. If the transfer fails to complete successfully, the waiting job aborts and processing continues after the next EXIT statement, if one is present. If NOWAIT is specified, the COS job does not wait for the transfer to MVS to complete, but resumes immediately upon issue of the DISPOSE. If NOWAIT is specified, and the transfer of the dataset to MVS fails to complete successfully, the COS job neither aborts nor is notified. The default is selected by the installation.

DEFER
: If specified, the disposition processing of the MVS dataset is delayed and does not occur until the dataset is released by a RELEASE request, or by COS job termination. The other parameters specified on the DISPOSE statement are saved and used when the dataset is released.

NRLS
: If specified, the disposed dataset remains local to the COS job after the DISPOSE request is processed. When NRLS is specified on a DISPOSE

statement, the user cannot subsequently write to the dataset until the transfer is complete.

If the local installation has the IBM Resource Access and Control Facility (RACF), refer to "Special RACF Considerations" on page 75. If the local installation has the CA-1 (formerly UCC ONE) Tape Management System (TMS), refer to "Special CA-1 TMS Considerations" on page 76.

TEXT FIELD PARAMETERS

The TEXT field on the COS ACQUIRE, FETCH, and DISPOSE control statements is processed by the MVS station. This field contains parameters that enable the station to allocate and process the MVS dataset involved in the transfer. These parameters are equivalent to some of the keyword operands of the MVS JCL DD statement and are processed in a similar manner to the DD statement operands.

This subsection lists the DD statement operands that can be used in the TEXT field and the DCB subparameters that are supported. In addition, it describes default processing for TEXT field parameters supported by the MVS station for the DISPOSE and ACQUIRE statements.

DD Statement Operands

Table 2contains the subset of the MVS JCL DD statement operands supported by the MVS station in the TEXT field of COS FETCH, ACQUIRE, and DISPOSE statements. See the relevant MVS JCL manual, for a detailed explanation of these parameters.

Table 2. DD Statement Parameters

Parameter	Comments
BURST=[Y] [N]	Specifies whether or not paper output is to go to the Burster Trimmer Stacker of the 3800
CHARS=(tablename[,tablename ...])	Specifies character arrangement tables to be used when printing on the 3800
COPIES=(nnn[,(groupvalue[,groupvalue]...)])	Requests multiple copies of the output dataset

Table 2. DD Statement Parameters (continued)

Parameter	Comments
DCB=(list of parameters) DCB=(dsname[,list of parameters])	The DCB parameters supported by the station are shown later in this subsection.
DEST=Rn ANYLOCAL RMn device-name RMTn device-address Un group-name LOCAL name Nn NnRm (node,remote) (node,userid)	Specifies a destination for ouptut datasets for JES2, JES3, TSO, and MVS, respectively.
DISP=([NEW][,DELETE] [,DELETE]) [OLD][,KEEP] [,KEEP] [SHR][,CATLG] [,CATLG] [MOD][,UNCATLG][,UNCATLG]	Assigns a status, disposition, and conditional disposition to the dataset. If a transfer between MVS and COS is canceled, either by the MVS station or COS, disposition processing is carried out according to either any explicit value or the MVS default value of the conditional disposition subparameter.

Table 2. DD Statement Parameters (continued)

Parameter	Comments
DSNAME=dsname(membername) (generation number)	Assigns a name to a new dataset or identifies an existing dataset. For new datasets of a Generation Data Group (GDG), only (+1) is supported by the station as a relative generation number. The MVS catalog is updated immediately after the transfer so that more datasets in the same GDG can be created with the +1 relative generation number. Old datasets of a GDG can be referenced with relative generation numbers of zero or less than zero.
FCB=(image-id,ALIGN) VERIFY	Specifies how many lines are to be printed per inch and the length of the form
FLASH=(overlayname[,count])	Identifies the forms overlay to be used on the 3800
GROUP=groupname	The GROUP parameter is not an MVS DD statement operand. It can be used to specify the RACF group name if the job originated from a system other than MVS. For details, see "Special RACF Considerations" on page 75.
HOLD=YES	Specifies that output processing is to be deferred

Table 2. DD Statement Parameters (continued)

Parameter	Comments
LABEL=([file seq. number][,SL] [,PASSWORD] [,SUL][,NOPWREAD] [,AL] [,AUL] [,NSL] [,NL] [,BLP] [,LTM] [,IN] [,EXPDT=yyddd]) [,OUT][,RETPD=nnnn]	Supplies label information
MODIFY=(modulename[,trc])	Supplies a copy modification module that is to be loaded into the 3800
MSVGP=id	Identifies a mass storage group for a mass storage system (MSS) device
OUTLIM=number	Limits the number of logical records to be included in the output dataset
OUTPUT=name (name1,name2,...)	Gives the name of an output statement in the station started task procedure provided by the systems programmmer. The name must be 1 to 8 bytes in length, and the number of names is limited only by the total length of the text field (240 characters in total). If the DEST parameter of the CRSUBMIT command has been supplied with a text field, then the DEST value overrides the value set by use of OUTPUT.

Table 2. DD Statement Parameters (continued)

Parameter	Comments
PASSWORD=password	The PASSWORD parameter is not an IBM MVS DD statement operand. It can be used in the TEXT field of a COS FETCH, ACQUIRE, or DISPOSE statement to specify the password for an existing password protected dataset or to specify password protection for a new dataset. It has special meaning if the USER parameter is specified. For details, see "Special RACF Considerations" on page 75.
PROTECT=YES	Requests RACF protection for tape volumes or for direct access datasets. This parameter is used only if the IBM RACF system security program product is installed and active on the MVS system. See "Special RACF Considerations" on page 75 for more information regarding systems with RACF.
SPACE=([TRK] ,(primary quantity [CYL] [blocklength] [,secondary quantity][,directory]) [,RLSE][,CONTIG][,ROUND]) [,MXIG] [,ALX]	Assigns space on a direct access volume for a new dataset
SYSOUT=(class-name[,program name][,form-name]) [,code-name]	Assigns an output class to an output dataset

Table 2. DD Statement Parameters (continued)

Parameter	Comments
UNIT=([unit address][,unit count]) [device type] [,P] [group name]	Provides the system with unit information. Use the generic name for device type; use the esoteric name for the group name, which is assigned by the installation.
USER=userid	The USER parameter is not an MVS DD statement operand. It can be used to specify the RACF userid if the job originated from a system other than MVS. For details, see "Special RACF Considerations" on page 75.
VOLUME=([PRIVATE][,,vol seq number][,vol cnt] [,SER=(serial number,...)] [,REF=dsname])	Provides the system with volume information.

DCB Subparameters

Table 3 contains the DCB subparameters supported by the station. See the relevant MVS JCL manual, for a detailed explanation of these parameters.

Table 3. DCB Subparameters

Subparameter	Comments
BLKSIZE=1	Specifies maximum block length (that is, the physical record)
BUFOFF=n/1	Specifies block prefix length for ASCII tape datasets
DEN=t	t Meaning 0 7-track tape, 200 bpi 1 7-track tape, 556 bpi 2 7- or 9-track tape, 800 bpi 3 9-track tape, 1600 bpi 4 9-track tape, 6250 bpi

Table 3. DCB Subparameters (continued)

Subparameter	Comments
DSORG=PS/PO.	Dataset organization (sequential or partitioned)
LRECL=l	Logical record length
OPTCD=c	c Meaning J 3800 printer option Q ASCII/EBCDIC conversion option U Printer/MSS processing option W DASD write validity check option Z Shorter error recovery option
RECFM=options	Options: U[A/M] F[B][S][T][A/M] V[B][S][T][A/M] D[B][A]
TRTCH=r	Recording technique for 7-track tape; can be C, E, T or ET.

Default TEXT Field Parameters with the DISPOSE Statement

The COS system datasets associated with a COS job ($OUT, $PUNCH, and $PLOT) are returned to the station submitting the job by default. The MVS station passes these files to the MVS Job Entry Subsystem (JES2 or JES3) for printing, punching, or plotting, unless a COS DISPOSE statement specifies parameters overriding the defaults. Table 4 shows the default DF and TEXT field values used by the station to process the COS system datasets.

In addition, if a COS dataset is disposed to an MVS station specifying a disposition code (DC) parameter without a TEXT field parameter, the default TEXT field parameters shown in Table 4 (corresponding to the stated DC) are used by the MVS station to process the dataset.

Similarly, if a COS dataset is assigned with a (DC) parameter and the job issuing the ASSIGN was submitted through the MVS station, the COS dataset is transferred to the MVS station and processed according to the implied TEXT parameter. This transfer occurs when the dataset is released at job termination or with a RELEASE request.

Table 4. DC, DF, and TEXT Field Values

COS Job System Dataset	COS Disposition Code (DC)	Default Dataset Format (DF)	Implied DISPOSE Statement TEXT Parameters
$OUT	PR	CB	SYSOUT=A,DCB=(RECFM=VBA, LRECL=4092,BLKSIZE=4096)
$PUNCH	PU	CB	SYSOUT=B,DCB=(RECFM=FB, LRECL=80,BLKSIZE=3120)
$PLOT	PT	CB	SYSOUT=A,DCB=(RECFM=FB, LRECL=133,BLKSIZE=2660)
None	ST	CB	DCB=RECFM=U
None	MT	CB	No default - TEXT field must be supplied
None	IN	CB	SYSOUT=(A,INTRDR)

The default SYSOUT classes can be altered by using the PRINT, PUNCH and PLOT parameters of the CRSUBMIT facility described in "Job Output Control" on page 46, or by specifying DCB parameters in the TEXT field of the DISPOSE control statement. The default classes can also be modified by the installation at station installation time.

If DC=PR/PT/PU and the TEXT field is nonblank, SYSOUT= must be specified. The HOLD and DEST parameters of CRSUBMIT (also described in "Job Output Control" on page 46) can be used to give the effect of HOLD=YES and DEST=destination, respectively, being included in the implied DISPOSE statement TEXT parameter.

Partially Deleted COS datasets and the ACQUIRE statement

When the ACQUIRE COS control statement is used to stage a dataset to COS and to make it permanent, the values of some of the parameters specified on the ACQUIRE statement are saved in the COS DSC. The values of these parameters are described as attributes of the dataset. Included in the attributes stored in the DSC entry for an acquired dataset is the TEXT field specified on the ACQUIRE statement.

By using the PARTIAL parameter of the DELETE COS control statement, the user can delete the data portion of a COS dataset while retaining the attributes of that dataset in the DSC. This dataset is then called a partially deleted dataset.

For a full discussion of COS dataset attributes and partially deleted datasets, see the COS Reference Manual, publication SR-0011.

If the owner of a partially deleted dataset wishes to reacquire this dataset and the values for any of the attributes are not specified on the ACQUIRE statement, the owner must use the values stored in the DSC. Using the values from the DSC means the TEXT field of the reacquired dataset defaults to the value previously used to acquire that dataset.

If, however, the ACQUIRE for a partially deleted dataset is issued by an alternate user (not the owner of the dataset), the alternate user must use the TEXT field stored in the DSC even if a TEXT field is explicitly specified on the ACQUIRE statement.

The values of the system identifier (MF), terminal identifier (TID), and dataset format (DF) parameters of the ACQUIRE control statement are not included in the datasets attributes stored in the DSC. Consequently, when the owner or alternate user acquires a partially deleted dataset, the values for these ACQUIRE statement parameters must be specified if values other than the defaults are required.

SPECIAL RACF CONSIDERATIONS

The following discussion applies only if the system running the MVS station has the RACF program product installed and active and it is using the Cray-supplied station RACF support.

A job submitted to COS through the MVS station retains the user identification of the submitter. A COS job, therefore, has identical RACF access authorities to MVS datasets as the TSO user or batch job submitting it. This applies both to datasets accessed by the MVS station on behalf of a COS job, and to tape datasets being processed directly on the Cray system.

MVS disk datasets created by the MVS station for a COS job as a result of DISPOSE control statement processing are defined to RACF if the user has the RACF Automatic Dataset Protection (ADSP) attribute, or if PROTECT=YES is specified in the TEXT field of the DISPOSE statement.

RACF processing differs between a COS job and an MVS job. Authorization checking for updates to catalogs is not performed for a COS job with RACF support. A CATLG or UNCATLG disposition request for a dataset is not honored unless the user has ALTER authority over the dataset.

If the COS job does not originate from an MVS system, the user must be validated before any of the datasets can be accessed. This can be done by specifying the USER and PASSWORD parameters, and optionally, the GROUP parameter, in the TEXT field on the ACQUIRE, FETCH, or DISPOSE statement.

These parameters identify the user but are not passed to MVS dynamic allocation processing. If RACF is present in the system, the PASSWORD parameter cannot be used to password-protect a dataset.

SPECIAL CA-1 TMS CONSIDERATIONS

CA-1 (formerly UCC ONE) TMS can be installed on the MVS system to manage the allocation and deallocation of magnetic tape volumes.

The TMS Tape Management Catalog (TMC) entry for a tape manipulated by the MVS station on behalf of a COS job appears as if the tape was manipulated directly by the COS job. For example, the job name will be the COS job name.

If the MVS station or COS cancels a transfer between MVS and COS, the TMC entry appears as if the tape was used by an MVS job (with the same job name as the COS job name) which terminated abnormally. Here, the expiration date for a new tape dataset is set to the installation-defined abend expiration period.

When TMS is installed and active, four of the MVS JCL parameters that can be specified in the TEXT field of FETCH, ACQUIRE, and DISPOSE COS control statements have expanded meaning. The four parameters are:
DSNAME (DSN)
VOLUME (VOL)
DISP
LABEL

For full details of the use of these parameters with TMS, see the Computer Associates (formerly UCCEL) document, CA-1 User Manual.

EXAMPLES OF SUBDS, FETCH, ACQUIRE, AND DISPOSE

This subsection presents examples of dataset transfers for the MVS station.

SUBDS Dataset

In this example, a member of a cataloged partitioned dataset (PDS) on the MVS station is copied to COS from a TSO session using the SUBDS TSO command processor. The TSO prefix characteristic is set to COSUSER.

The following TSO command is entered:

```
SUBDS TESTPGM.FORT(SUBRTN1) PDN(TESTPGM@SUBRTN1) -
      ID(COSUID) RT(20) M(MSECRET) W(WSECRET)
```

The member SUBRTN1 of the PDS named COSUSER.TESTPGM.FORT on the MVS system is copied to the COS dataset with the permanent dataset name defined by PDN

name TESTPGM@SUBRTN1. The high-level index of the MVS dataset name is not specified as it corresponds with the current TSO prefix characteristic.

The hyphen indicates to TSO that the command is continued.

Since the dataset format (DF) parameter is not specified, the file is saved in CB format as a COS file. The MVS station translates the MVS file from EBCDIC to ASCII encoding and inserts COS file structure control words during the transfer to COS.

Since no edition number parameter (ED) is specified, the next highest edition number (or 1) is assigned by COS.

The ID parameter specifies that the dataset is saved as a COS file with userid COSUID. The userid COSUID is recorded in the COS DSC as the user identifier of the COS dataset.

The RT parameter specifies that the dataset is to be retained as a COS file for 20 days. The installation file management procedures determine whether the dataset is deleted after the period specified by the RT parameter has expired.

Maintenance and write permission control words of MSECRET and WSECRET are specified in the M and W parameters, but no read permission control word (R parameter) is specified. Although any permitted COS job can access this dataset in order to read it, the appropriate permission control word must be used to modify or to write to the dataset.

Fetch or Acquire Cataloged Dataset

This example shows a cataloged dataset on the MVS system acquired or fetched by a COS job. Depending upon whether ACQUIRE or FETCH is used, the COS job contains one of the following:

```
JOB,...parameters...
 .
 .
 .
ACQUIRE, DN=BEAR, PDN=POOH-BEAR, ID=CROBINS,
 ED=6, RT=101, R=THEMORE, W=ITGOESON, M=SNOWING, UQ,
  TEXT='DSN=WINNIE.THE.POOH,DISP=SHR'.
 .
 .
 .
```

or:

```
JOB,...parameters...
 .
 .
 .
FETCH, DN=BEAR, TEXT='DSN=WINNIE.THE.POOH,DISP=SHR'.
 .
 .
 .
```

No staging occurs with ACQUIRE control statement processing if a dataset already exists in the COS DSC with the specified PDN, OWN, ID, and ED. The already existing dataset is accessed with the local dataset name shown. With FETCH control statement processing, staging is always performed.

For a fetch or an acquire, the DN parameter specifies the local dataset name identifying the dataset to the COS job after the transfer from MVS is complete.

In the ACQUIRE statement, the PDN parameter specifies the permanent dataset name used in the COS DSC before it is made available to the COS job. The ID, ED, and RT parameters specify that the dataset is cataloged with a user identifier of CROBINS, edition number of 6, and retention period of 101 days. The read, write, and maintenance permission control words (R, W, M) are as shown. The UQ parameter specifies that unique access is required to the dataset on the COS filebase. UQ implies that the COS job can, for example, write to the COS dataset.

Since no DF parameter is specified, the default DF=CB is used. This format is used, for example, for the transfer to COS of a FORTRAN source program created on the MVS system using the TSO text editor.

The TEXT parameter specification is passed to the MVS station containing all of the IBM MVS JCL DD statement operands required for the MVS station to allocate the dataset and transfer it to COS. Since the TEXT parameter contains special characters such as commas and periods, which normally have special significance to the COS control statement processor, the entire TEXT specification is enclosed in apostrophes.

As the MVS dataset is cataloged, only the DSN and DISP parameters are required. The DSN operand specifies the (fully qualified) MVS dataset name. The DISP operand set to SHR specifies that other MVS tasks can access the dataset simultaneously and that the dataset is to remain as an MVS file after the transfer to COS is complete. If, for example, DISP=(SHR,DELETE) is specified, the MVS dataset is deleted after the transfer to COS is complete.

COS JCL syntax allows spaces to be inserted anywhere. This facility has been used in these examples to assist readability. Spaces are not permitted in the TEXT field. The MVS station JCL syntax checking routine processes a space as a text delimiter, ignoring the operands that follow it.

Fetch or Acquire Disk Dataset

This example shows a disk-resident but uncataloged dataset on the MVS system acquired or fetched by a COS job. The COS job contains one of the following:

```
JOB,...parameters...
 .
 .
 .
ACQUIRE, DN=BEAR, PDN=POOH-BEAR, ID=CROBINS, ED=6, RT=101,
 R=THEMORE, W=ITGOESON, M=SNOWING, UQ, DF=BB,
  TEXT='DSN=WINNIE.THE.POOH,DISP=SHR,'
       'UNIT=3380,VOL=SER=100ACR'.
 .
 .
 .

or:

JOB,...parameters...
 .
 .
 .
FETCH, DN=BEAR, DF=BB,
 TEXT='DSN=WINNIE.THE.POOH,DISP=SHR,'
      'UNIT=3380,VOL=SER=100ACR'.
 .
 .
 .
```

This example is similar to the example for acquiring a cataloged dataset except that the MVS disk dataset is not cataloged and the dataset format (DF) parameter specifies that the MVS station must translate the dataset structure into COS binary blocked format during the transfer to COS.

BB format specification is used if, for example, the dataset being transferred to COS already contains data encoded in ASCII and no encoding conversion is required by the MVS station.

Since the MVS dataset is not cataloged, volume and unit information must be included in the TEXT parameter so that the MVS station can locate the dataset for transfer to COS. The UNIT operand specifies that the dataset being staged resides on an IBM model 3380 disk. The VOL operand specifies that the volume serial number of the disk is 100ACR.

Fetch or Acquire Tape Dataset

In this example, an uncataloged tape-resident dataset on the MVS system is acquired or fetched by a COS job. The COS job contains one of the following:

```
JOB,...parameters...
 .
 .
 .
ACQUIRE, DN=BEAR, PDN=POOH-BEAR, ID=CROBINS, ED=6, RT=101,
 R=THEMORE, W=ITGOESON, M=SNOWING, UQ,
  TEXT='DSN=WINNIE.THE.POOH,DISP=SHR,'
       'UNIT=TAPE62,VOL=SER=WOOD01,LABEL=(2,,,IN)'.
 .
 .
 .

or:

JOB,...parameters...
 .
 .
 .
FETCH, DN=BEAR,
 TEXT='DSN=WINNIE.THE.POOH,DISP=SHR,'
      'UNIT=TAPE62,VOL=SER=WOOD01,LABEL=(2,,,IN)'.
 .
 .
 .
```

This example is similar to the example for acquiring a cataloged dataset except that the MVS dataset resides on tape and is not cataloged. Volume and unit information is necessary in the TEXT parameter so that the MVS station can locate the dataset for transfer to COS. The UNIT operand specifies an installation-defined name (or esoteric name) which, in this example, defines a group of 6250 bpi tape units. The VOL operand specifies that the volume serial number of the tape is WOOD01.

Tape label information is specified in the LABEL operand. This information indicates that the dataset being transferred is the second file on the tape and that the tape is to be mounted on the drive unit for input processing only (that is, no write permit ring is to be inserted in the tape spool). The tape label type defaults to IBM standard labels because no label type is specified in the LABEL operand.

If the tape is unlabeled, it is necessary to provide the DCB information necessary for the MVS station to read the dataset. For example, assume the

dataset contains 80 column card images in blocks of 10. The FETCH statement for this case is specified as follows:

```
FETCH, DN=BEAR,
 TEXT='DSN=WINNIE.THE.POOH,DISP=SHR,'
      'UNIT=TAPE62,LABEL=(2,NL,,IN),VOL=SER=WOOD01,'
      'DCB=(RECFM=FB,LRECL=80,BLKSIZE=800)'.
```

Fetch or Acquire MSS Dataset

In this example, an uncataloged MSS-resident dataset on the MVS system is acquired or fetched by a COS job. The COS job contains one of the following:

```
JOB,...parameters...
 .
 .
 .
ACQUIRE, DN=BEAR, PDN=POOH-BEAR, ID=CROBINS, ED=6, RT=101,
 R=THEMORE, W=ITGOESON, M=SNOWING,
  TEXT='DSN=WINNIE.THE.POOH,DISP=SHR,'
       'UNIT=3330V,VOL=SER=STUFF1'.
 .
 .
 .

or:

JOB,...parameters...
 .
 .
 .
FETCH, DN=BEAR,
 TEXT='DSN=WINNIE.THE.POOH,DISP=SHR,'
      'UNIT=3330V,VOL=SER=STUFF1'.
 .
 .
 .
```

This example is similar to the example for acquiring a cataloged dataset except that the MVS dataset resides on a mass storage system (MSS) device and is not cataloged.

Acquire Partially Deleted Dataset

In this example, a partially deleted dataset is acquired by a user other than the owner of that dataset. The following COS control statement is used:

```
JOB,...parameters...
 .
 .
 .
ACQUIRE, DN=BEAR, PDN=POOH-BEAR, ID=CROBINS, ED=6, RT=20, OWN=NOTME.
 .
 .
 .
```

In this case, the COS dataset with the permanent dataset name (PDN), userid (ID), and edition number (ED) shown was partially deleted from COS using the DELETE,...,PARTIAL COS control statement. The dataset is being accessed by a COS job other than the owner of the dataset. Here it is necessary to specify only the local dataset name (DN) identifying the COS dataset to the job and the PDN, ID, ED, and OWN parameters.

The user can obtain the TEXT parameter necessary to perform the acquire and the other attributes applied to the COS dataset from the COS DSC. Any parameter not defined as an attribute, and for which a value different from the default is required, must be specified on the ACQUIRE statement. In this example, a retention period is specified in the RT parameter.

Dispose to Cataloged Datasets

In this example, two local datasets are disposed to two existing cataloged MVS datasets. This example demonstrates two alternative ways of adding data produced by COS jobs to existing MVS datasets. The first DISPOSE statement adds a COS dataset to the end of a sequential dataset. The second COS dataset is added as a new member of a partitioned dataset (PDS). The COS job contains the following:

```
JOB,...parameters...
 .
 .
 .
DISPOSE, DN=RABBIT1, DC=ST, TEXT='DSN=RABBITS.BURROW.DATA,DISP=MOD'.
 .
 .
 .
DISPOSE, DN=RABBIT2, DC=ST,
 TEXT='DSN=RABBITS.BURROW.LIB(ALXBETLE),DISP=OLD'.
 .
 .
 .
```

In each case, the DN parameter specifies the local dataset name of the COS dataset being transferred to the MVS system. The DC parameter specifies

the nature of the disposition processing performed by the MVS station. The value of this parameter is ST, indicating that the dataset is written to MVS.

The TEXT parameter specification is passed to the MVS station and contains all of the IBM MVS JCL DD statement operands required to enable the MVS station to allocate the MVS dataset into which the COS dataset is being transferred. Since the TEXT parameter contains special characters, such as commas and periods, which would normally have special significance to the COS control statement processor, the entire TEXT specification is enclosed in apostrophes. The MVS dataset is cataloged, so only the DSN and DISP MVS JCL parameters are required.

In the TEXT parameter on the first DISPOSE statement, the dataset name (DSN) operand specifies a sequential dataset with a disposition of MOD. MOD means that the COS dataset is appended to the data already contained in the MVS dataset.

In the TEXT parameter on the second DISPOSE statement, the DSN operand specifies a member of a PDS into which the dataset is written. Specify DISP=OLD when writing to a member of a PDS.

No dataset format (DF) parameter is specified, so it defaults to DF=CB. DF=CB is suitable for transferring character data resulting from FORTRAN formatted WRITE statements.

Dispose to Disk Dataset

In this example, a dataset is disposed to a new MVS disk dataset. The COS job contains the following:

```
JOB,...parameters...
 .
 .
 .
DISPOSE, DN=RABBITS, DC=ST, WAIT, NRLS,
 TEXT='DSN=RABBITS.BURROW.DATA,DISP=(NEW,CATLG),
      'UNIT=DISK,SPACE=(CYL,(5,1),RLSE),'
      'DCB=(RECFM=FB,LRECL=100,BLKSIZE=1000)'.
 .
 .
 .
```

This example is similar to the example for disposing to cataloged datasets except that the COS dataset is disposed to a new MVS disk dataset. Extra information defining the location, size, and format of the MVS dataset is included in the TEXT parameter.

The DN parameter specifies the name of the COS local dataset being transferred to MVS. The DC parameter specifies the nature of the disposition processing performed by the MVS station. DC=ST specifies that the COS dataset is placed in MVS.

The NRLS parameter specifies that the COS dataset remains local to the COS job after the dispose request is processed. When NRLS is specified on a DISPOSE COS control statement, the user cannot subsequently write to the dataset until the transfer to the station is complete. In this example, however, the WAIT parameter is also included, specifying that the COS job is suspended until the transfer is complete.

In the TEXT parameter, the DSN operand specifies the (fully qualified) MVS dataset name. The disposition (DISP) operand is set to DISP=(NEW,CATLG), so the dataset is created and cataloged by the MVS station. As this is a new dataset, some additional DD statement operands are specified in the TEXT parameter. UNIT=DISK specifies an installation-defined name (esoteric name), which defines a group of Direct Access Storage Devices (DASD). The system selects a particular volume from those available in this group, so it is not necessary to specify a VOLUME operand.

The SPACE operand indicates how much space is allocated for the new dataset. SPACE=(CYL,(5,1),RLSE) specifies a primary and secondary allocation of 5 and 1 cylinders, and any space remaining unused in the dataset at the end of the transfer is released back to the system. The DCB operand supplies information about the arrangement of data in the dataset. In this example, RECFM=FB specifies that the data is comprised of fixed-length records blocked together on disk. LRECL=100 and BLKSIZE=1000 specify that each record is 100 bytes long and that the blocking factor is 10.

No DF parameter is specified on the DISPOSE control statement, so it defaults to DF=CB. During the transfer to MVS from COS, the mapping shown in "MVS Station Mappings Between MVS and COS Datasets" on page 55 for CB format transfers from COS is performed.

Dispose to Tape Dataset

In this example, a dataset is disposed to an MVS tape dataset. The COS job contains the following:

```
JOB,...parameters...
 .
 .
 .
DISPOSE, DN=RABBITS, DC=MT, NRLS, DF=BB,
 TEXT='DSN=RABBITS.BURROW.DATA,DISP=(NEW,KEEP),'
      'UNIT=TAPE62,LABEL=(3,SL,,OUT),'
      'DCB=(RECFM=FB,LRECL=200,BLKSIZE=5000)',
      'VOL=(PRIVATE,,,4,SER=(RABTP1,RABTP2,RABTP3,RABTP4))'.
 .
 .
 .
```

This example is similar to the example for disposing to cataloged datasets except that because the COS dataset is being disposed to a new MVS tape dataset, extra information defining the location and format of the MVS dataset is included in the TEXT parameter.

The DN parameter specifies the name of the COS local dataset being transferred to MVS. The DC parameter specifies the nature of the disposition processing performed by the MVS station. DC=MT specifies that the COS dataset is written to magnetic tape.

The NRLS parameter specifies that the COS dataset remains local to the COS job after the DISPOSE request is processed. When NRLS is specified on a DISPOSE COS control statement, the user cannot subsequently write to the dataset until the transfer to the station is complete. In this example, neither WAIT nor NOWAIT is specified, so the installation default is used.

In the TEXT parameter, the DSN operand specifies the (fully qualified) MVS dataset name. The DISP operand is set to DISP=(NEW,KEEP), so the dataset is created and kept (but not cataloged) by the MVS station. As this is a new dataset, some additional DD statement operands are specified in the TEXT parameter. The UNIT operand specifies an installation-defined name (esoteric name), which defines a group of 6250 bpi tape units. The VOL operand specifies that the MVS dataset extends over a maximum of four tape volumes and that the volume serial numbers of the four tapes are RABTP1, RABTP2, RABTP3, and RABTP4.

The DCB operand supplies information about the arrangement of data in the dataset. In this example, RECFM=FB specifies that the data is fixed-length records, blocked together on tape. LRECL=200 and BLKSIZE=5000 specify that each record is 200 bytes long and the blocking factor is 25. In this example, the MVS dataset is the first file on the group of volumes and the volumes have IBM standard labels. Therefore, a LABEL operand in the TEXT parameter specifying tape label information is not needed.

The DF parameter is set to DF=BB. During the transfer to MVS from COS, the mapping shown in "MVS Station Mappings Between MVS and COS Datasets" on page 55 for BB format transfers from COS is performed.

Dispose to MSS Dataset

In this example, a dataset is disposed to an MVS MSS dataset. The COS job contains the following:

```
JOB,...parameters...
 .
 .
 .

DISPOSE, DN=RABBITS, DC=ST, NOWAIT, DF=TR,
 TEXT='DSN=RABBITS.BURROW.DATA,DISP=(NEW,CATLG),'
      'DCB=(RECFM=FB,LRECL=4096,BLKSIZE=28672'
      'UNIT=3330V,MSVGP=PROJECT9,SPACE=(CYL,3)'.
 .
 .
 .
```

This example is similar to the example for disposing to cataloged datasets except that the COS dataset is disposed to a new MSS dataset, so extra information defining the location and format of the MVS dataset is included in the TEXT parameter.

The DN parameter specifies the name of the COS local dataset being transferred to MVS. The DC parameter specifies the nature of the disposition processing performed by the MVS station. DC=ST specifies that the COS dataset is copied to MVS.

The NOWAIT parameter specifies that the COS job continues processing the next COS control statement immediately after the dispose request is issued and does not wait for the dataset transfer to complete before continuing.

In the TEXT parameter, the DSN operand specifies the (fully qualified) MVS dataset name. The DISP operand is set to DISP=(NEW,CATLG), so the dataset is created and cataloged by the MVS station. As this is a new dataset, some additional DD statement operands are specified in the TEXT parameter. The MSVGP operand specifies the installation-defined identification of a group of mass storage volumes residing on a mass storage system device. UNIT=3330V is specified when accessing datasets on MSS devices.

In this example, the DF parameter is set to DF=TR. No mapping of the COS dataset format is performed by the MVS station during the transfer to the MVS dataset in this case, since RECFM=F specifies that the data is comprised

of fixed-length records and LRECL=4096 specifies that each record is the length of one COS disk block.

Transparent (DF=TR) transfers are the most efficient because they require the least amount of MVS processing. The station does not translate the COS dataset, and has no COS block structure to handle. The COS data is processed as a continuous bit string, and divided into arbitrary MVS records as defined in the TEXT parameter.

Dispose to SYSOUT Datasets

In this example, two datasets, written by a CFT FORTRAN program, are disposed to the MVS front-end system. One of the datasets is printed and the other is sent to a graph plotter. In this example, it is assumed the datasets for plotting are written to SYSOUT class F. The COS job contains the following:

```
JOB,...parameters...
 .
 .
 .
DISPOSE, DN=FT21, DC=PR.
DISPOSE, DN=FT22, DC=PT, TEXT='SYSOUT=F'.
 .
 .
 .
```

On the first DISPOSE COS control statement, it is necessary to specify only the local dataset name of the COS dataset being disposed and the disposition code parameter. The local dataset name of the COS dataset is specified in the DN parameter. DC=PR is specified to request that the dataset be passed by the MVS station to the MVS JES2 or JES3 for printing. The default TEXT parameter for DC=PR datasets shown in Table 4 on page 73.

On the second DISPOSE COS control statement, the local dataset name of the COS dataset being transferred to the MVS statement is again specified in the DN parameter. DC=PT specifies the dataset is destined for a plotter on the MVS system. In the absence of a TEXT parameter, however, the default shown in Table 4 on page 73 is used. Since the COS dataset must go to the class F SYSOUT queue, and this is not the default, the TEXT parameter is specified as shown.

The DF parameter is not specified in either of the DISPOSE control statements, so it defaults to DF=CB. The mappings shown in Table 1 on page 55 are performed by the MVS station as the COS dataset is transferred to MVS.

Dispose to MVS Job Input Queue

In this example, a dataset written by a COS job contains an MVS job image destined for the job input queue on the MVS system submitting the COS job.

The COS job contains the following:

```
JOB,...parameters...
 .
 .
 .
DISPOSE, DN=MVSJOB, DC=IN, NOWAIT.
 .
 .
 .
```

The only required parameters are DN and DC. DN specifies the COS local dataset name of the dataset containing the MVS job image. As DC=IN, a default TEXT field suitable for copying the dataset onto the MVS job input queue is assumed by the MVS station (as shown in Table 4 on page 73). NOWAIT indicates that the COS job continues processing the next control statement immediately. The local dataset is queued for transfer to the MVS station and the job is not suspended while the transfer occurs.

A default dataset format of DF=CB is assumed.

Route COS Job Output for Inspection at TSO Terminal

In this example, the $OUT dataset written by a COS job is held for inspection at a TSO terminal. The COS job contains the following:

```
JOB,...parameters...
ACCOUNT,...parameters...
DISPOSE, DN=$OUT, DC=PR, DEFER, TEXT='SYSOUT=X,HOLD=YES'.
 .
 .
 .
```

The DISPOSE COS control statement is placed immediately following the JOB and ACCOUNT statements. In this way, required disposition processing is requested of COS even if the job aborts. The DEFER parameter specifies that the requested disposition processing is not performed until the COS job terminates or the dataset is released.

The DN parameter specifies the local dataset name of the COS dataset being transferred to the MVS station. The DC parameter describes the nature of the disposition processing performed by the MVS station. DC=PR means that this is a line printer image dataset.

In this example, the TSO held output class on the MVS system is class X. The HOLD=YES operand specifies the dataset is held on the MVS output queue.

7. FRONT-END SERVICING FOR COS TAPES

The MVS station performs a process called front-end servicing for COS. In this process, the MVS station performs checking and supplies information to assist COS in the processing of tapes or devices directly attached to the CRI I/O Subsystem (IOS).

Front-end servicing for a tape dataset is performed when COS processes an ACCESS, SAVE, DELETE, or RELEASE control statement referencing a tape dataset, and when the dataset is opened, closed, or rewound. The MF= parameter on the ACCESS control statement defines which station performs all the front-end servicing for that tape dataset.

At access time, the MVS station supplies volume information for the dataset if none is supplied with the ACCESS control statement. The station performs security checks to verify that the user is allowed to use the dataset.

At open time (and at the beginning of all subsequent volumes of the same dataset), the MVS station again performs security checks and might interface to the tape management system.

At close or rewind time (or at the end of each volume of the dataset) the tape management system is again invoked.

The SAVE control statement indicates that the dataset is to be cataloged in an MVS catalog. The DELETE control statement indicates that a previously cataloged dataset is to be uncataloged. The actual catalog updating is completed when the RELEASE control statement is processed.

Refer to the COS Version 1 Reference Manual, publication SR-0011 for details of the tape processing parameters of the ACCESS control statement.

GENERAL CONSIDERATIONS

Front-end servicing allows the accessing of a cataloged dataset on tape by specifying only the dataset name. The MVS station provides the volume list to COS from the catalog. If the MVS station is the servicing front end, the dataset name must conform to IBM standards for a permanent dataset name (see the relevant MVS JCL manual).

The dataset is cataloged at release time if a SAVE control statement was previously issued and the dataset is not already cataloged. The dataset is not cataloged if a full volume list is not present. (For example, if

the ACCESS control statement specifies a volume list and a volume sequence number (VSEQ or FSEC) greater than one, indicating that the first volume in the list is not the first volume of the dataset, the dataset is not cataloged.)

The dataset is uncataloged at release time if a DELETE control statement was previously issued, the dataset was cataloged, and it was accessed through the catalog.

If a cataloged dataset volume list is extended (for example, an old dataset existing on two volumes is rewritten and now occupies three volumes), the catalog entry for that dataset is updated at release time to reflect the new volume list.

Front-end servicing maintains the same security for tapes processed by COS as for those processed by any other job running at the installation. When performing security checking, one of the following responses is returned by the servicing front-end station to COS:

- Positive response - access allowed
- Negative response - access denied
- No checking performed

COS honors the first two responses. If it receives the third response, access is allowed or denied according to installation specification. Unless changed by the installation, the MVS station always returns a no checking performed response.

Note: Special care should be taken when using generation data groups (GDGs) on tapes. The MVS catalog is updated at release time (equivalent to step end in an MVS job) and not at the end of job stage. All the members of a GDG should be accessed before any members of the same GDG are released, so that the relative generation numbers used refer to the absolute GDG members expected. SAVE control statements must also be issued for all new GDG members created.

CONSIDERATIONS FOR INSTALLATIONS WITH RACF

If RACF is present in the MVS system, the station performs checks similar to those performed by MVS for tapes before allowing a COS job to access or write to a tape. If an unauthorized access is attempted, messages issued by RACF are written in the COS joblog and access is denied.

In addition, new tapes can be protected by RACF under the ownership of the user if the user has the ADSP attribute, or if the PROT keyword is specified on the COS ACCESS statement.

If a tape dataset is to be cataloged or uncataloged as a result of the SAVE or DELETE commands described previously, the user must be authorized to perform the catalog management operation on the catalog in question. In general, if the user can catalog or uncatalog a dataset in an MVS batch job, the MVS station can perform the same operation on behalf of a COS job.

CONSIDERATIONS FOR INSTALLATIONS WITH CA-1 TMS

If an installation has the CA-1 (formerly UCC ONE) Tape Management System (TMS) installed and active, it is interrogated every time a tape volume is mounted. The Tape Management Catalog is accessed and updated as if an MVS job with a job name the same as the COS job name was accessing the tape.

Mounting of nonspecific volumes is repeated if a nonscratch volume is mounted by the operator. Mounting of specific volumes is repeated if the wrong volume is mounted. However, if the volume linkage in the Tape Management Catalog does not agree with the volume list from the MVS catalog or the ACCESS control statement, the job is aborted.

For TMS purposes, a temporary dataset is indicated by a retention period of zero (RT=0) or an expiration date (XDT) not in the future.

APPENDIX SECTION

APPENDIX A. CRAY MVS BATCH FACILITY

The CRSUBMIT and SUBDS MVS station facilities can be used two ways:

- At a TSO terminal, by entering CRSUBMIT or SUBDS as commands
- By entering CRSUBMIT or SUBDS as directives to the CRAY MVS batch procedure

The format of the operands supported by CRSUBMIT and SUBDS is the same for both.

REQUIRED MVS JCL

The CRAY MVS batch facility is invoked by the cataloged procedure named CRAY. The JCL required to use the CRAY cataloged procedure is as follows:

```
//jobname    JOB     ....job card operands...
//stepname   EXEC CRAY
             .
             .
    optional DD cards
             .
             .
//SYSIN      DD      *
             .
             .
    one or more CRAY MVS batch facility directives
             .
             .
/*
//
```

Note: An installation can choose not to install the CRAY cataloged procedure or to modify the procedure. Before attempting to use the CRAY cataloged procedure, consult local installation documentation or support personnel to determine the availability of the procedure and whether any JES2 or JES3 control statement is required to access it.

CRAY MVS BATCH FACILITY DIRECTIVES

Directives supported by the CRAY MVS batch facility have the same format and syntax as the TSO commands supported by the MVS station.

The directives are supplied to the CRAY MVS batch facility in the dataset with ddname of SYSIN. This dataset must consist of 80-character records. The directives can begin in any position in the 80-character record and if necessary, the hyphen (-) character can be specified at the end of a record (with at least one blank character before and after it) to indicate the operands are continued to another record.

The following directives are supported by the CRAY MVS batch facility:

```
CRSUBMIT
SUBDS
```

The following subsections describe their use with the CRAY MVS batch facility.

If the CRAY MVS batch facility is unable to open the SYSIN dataset, (for example, if no valid SYSIN DD statement has been provided), or if the SYSIN dataset is empty, processing continues as if a SYSIN dataset containing a single CRSUBMIT directive was supplied. This has the same effect as specifying the following directive:

```
CRSUBMIT FILE(SYSUT1) NOTIFY.
```

Prompting for missing operands (such as passwords) is not possible with the CRAY MVS batch facility.

CRSUBMIT - Transmit Job to the COS Job Input Queue

The CRSUBMIT directive requests the MVS station to transfer a copy of a dataset from the MVS system (containing one or more COS jobs) to COS, which then places the jobs on the COS job input queue.

The operands supported by this directive are the same as those supported by the CRSUBMIT TSO command processor described in " 5. Job Submission" on page 41. The default values for the operands are also the same, except that if neither the name of the MVS dataset being sent to the COS job queue, nor the FILE or DDNAME parameter is specified, processing continues as if a FILE(SYSUT1) or DDNAME(SYSUT1) parameter was supplied. If neither the dataset name nor the FILE or DDNAME parameter is specified, no other operand of CRSUBMIT can be specified.

If the FILE or DDNAME operand is specified or is assumed, an MVS JCL DD statement must be provided with the specified ddname referencing the dataset being sent to the COS job queue.

If the NOTIFY operand is specified on the JOB statement of the MVS job that invokes the CRAY MVS batch facility, the TSO logon ID specified in that operand is used as the default value of the NOTIFY operand on CRSUBMIT directives to the CRAY MVS batch facility.

If the NOTIFY operand is not specified on the MVS JOB statement, the origin of the default value of the NOTIFY operand on CRSUBMIT directives depends on whether RACF is installed. If RACF is installed and the USER value is available, this value is used for the default value. Otherwise, the default value is constructed from the MVS job name less the last character.

This convention might have been changed by your installation. Consult local site documentation or contact support personnel for further information.

The factors influencing output routing when CRSUBMIT is issued as a directive to the CRAY MVS batch facility are listed in "Routing Output" on page 46.

SUBDS - Transmit Dataset to COS

The SUBDS directive causes the MVS station to transfer a copy of a dataset on the MVS system to COS and to catalog it in the COS DSC.

The operands supported by this directive are the same as those supported by the SUBDS TSO command processor described in " 6. Dataset Transfer Management" on page 53. The default values for the operands are also the same, and either the name of the MVS dataset being sent to COS or the FILE/DDNAME parameter must be specified. This is because the PDN operand is also required.

If the FILE or DDNAME operand is specified, an MVS JCL DD statement must be provided with the specified ddname referencing the dataset being sent to COS.

If the NOTIFY operand is specified on the JOB statement of the MVS job invoking the CRAY MVS batch facility, use the TSO logon ID specified in that operand as the default value of the NOTIFY operand on SUBDS directives to the Cray MVS batch facility.

If the NOTIFY operand is not specified on the MVS JOB statement, the default value of the NOTIFY operand on SUBDS directives is constructed from the MVS job name less the last character (up to a maximum length of the first 7 characters).

Installations where MVS batch job names are not constructed from a 7-character TSO logon ID followed by one optional character can change the default value of the NOTIFY operand. Consult local site documentation or support personnel for further information on the default value of the NOTIFY operand.

CRAY MVS BATCH FACILITY USAGE EXAMPLES

In this example, two jobs consisting of COS JCL statements in the MVS batch job input stream are submitted to the COS job input queue with the CRSUBMIT directive of the CRAY MVS batch facility. Also, a member of an uncataloged partitioned dataset (PDS) is being transferred to COS with the SUBDS directive.

The MVS job consists of the following statements:

```
//MVSJOB1A JOB  ....JOB card operands...,NOTIFY=MVSUSER
//STEP1    EXEC CRAY
//FORTSUBS DD   DSN=MVSUSER.TESTPGM.FORT(SUBRTN1),DISP=SHR,
//            UNIT=DISK,VOL=SER=USER45
//SYSUT1   DD      *
JOB, JN=JOB2,...other parameters...
ACCOUNT(AC=COSUSER002,PW=NECESSARY)
        .
        .
        .
rest of COS job
        .
        .
        .
/EOJ
JOB, JN=JOB3,...other parameters...
ACCOUNT(AC=COSUSER002,PW=NECESSARY)
        .

        .
rest of COS job
        .
        .
        .
/*
//SYSIN   DD      *
CRSUBMIT
SUBDS      FILE(FORTSUBS) PDN(TESTPGM@SUBRTN1) -
           ID(COSUID) RT(20) M(MSECRET) W(WSECRET)
/*
//
```

The EXEC statement invokes the CRAY batch procedure. A SYSIN dataset is supplied containing directives for execution by the CRAY MVS batch facility.

The PW=NECESSARY parameters on the ACCOUNT statements are required because prompting is not permitted in batch. PW(NECESSARY) can be specified on the CRSUBMIT statement in the SYSIN dataset.

The first directive encountered is CRSUBMIT. As no parameters are specified for CRSUBMIT, the defaults are used. They have the same effect as the following directive:

```
CRSUBMIT FILE(SYSUT1) NOTIFY
```

The dataset being transferred to the COS job input queue is that allocated to the MVS batch job with ddname SYSUT1.

CRSUBMIT allocates temporary datasets and copies the jobs JOB2 and JOB3 into the temporary datasets. The jobs are translated from EBCDIC to ASCII and COS file structure control words are inserted. Since NOTIFY=MVSUSER is specified on the MVS job, the following messages are sent to the TSO user with userid of MVSUSER:

```
CSS235I JOB JOB2 (2053) QUEUED FOR TRANSFER

CSS235I JOB JOB3 (2056) QUEUED FOR TRANSFER
```

The MVS station then sends the jobs JOB2 and JOB3 to COS. At the end of the transfers, the following messages are sent to the TSO user with the logon ID of MVSUSER:

```
CSS301I 09:21:06.45 JOB JOB2 SUBMITTED TO COS

CSS301I 09:21:10.57 JOB JOB3 SUBMITTED TO COS
```

Output from the jobs is routed to the originating location unless a DISPOSE COS control statement directs it elsewhere. The user receives messages concerning the progress of the job, as a result of the default NOTIFY parameter. Output for printers, punches, and plotters is placed in the default classes for those peripherals, unless a DISPOSE statement specifies otherwise.

The second directive encountered is SUBDS. In this example, the PDS from which a member is being submitted is assumed uncataloged. Consequently, the FILE(FORTSUBS) operand indicates that the dataset being transferred to COS is specified by the MVS JCL DD statement with ddname FORTSUBS. If the dataset being transferred to COS is cataloged on the MVS system, the dataset and member name can be used in place of the FILE operand of SUBDS, and the FORTSUBS DD statement omitted. The dataset specified on the FORTSUBS DD statement is copied to the COS dataset with permanent dataset name (PDN) TESTPGM@SUBRTN1.

The hyphen (-) indicates the command is continued.

The dataset format (DF) parameter is not specified, so the file is saved in CB format as a COS file. The MVS station translates the MVS file from

EBCDIC to ASCII encoding and inserts COS file structure control words during the transfer to COS.

No edition number parameter (ED) is specified, so a default edition number is assigned by COS.

The ID parameter specifies that the dataset is saved as a COS file with userid COSUID, which is recorded in the COS DSC as the ID of the COS dataset.

The RT parameter specifies that the dataset is to be retained as a COS file for 20 days. The installation file management procedures determine whether or not the dataset is deleted after the period specified by the RT parameter has expired.

Maintenance and write permission control words of MSECRET and WSECRET are specified in the M and W parameters, but no read permission control word (R parameter) is specified. Although any permitted COS job can access this dataset to read it, subject to the default PAM value, the job cannot modify or write to the COS dataset without the appropriate permission control word.

Since neither NOCOPY nor COPY is specified, the default NOCOPY is taken. Since NOTIFY=MVSUSER is specified in the MVS job statement, and no operand specifying any change to the default NOTIFY operand of SUBDS is included, the following message is sent to the TSO user:

```
CSS230I TRANSFER 12152 QUEUED - DATASET SUBRTN1
```

The MVS station sends the dataset to COS. At the end of the transfer, the following message is sent to the TSO user with logon ID MVSUSER:

```
CSS301I 09:22:15.12 DATASET MVSUSER.TESTPGM.FORT(SUBRTN1) SUBMITTED TO
COS
```

GLOSSARY

GLOSSARY

The following terms are defined as they are used in this manual. If you do not find the term you require, refer to the index, or to the IBM Data Processing Glossary glossary or the COS Reference Manual, publication SR-0011.

ACF2: Access Control Facility 2

ACQUIRE: A COS job control statement that requires the specified dataset to be transferred from the front-end processor to the Cray system if it does not exist on the COS filebase.

Allocation: The linking of a dataset to a program for use as a file. In MVS JCL the Data Definition (DD) statement performs this function for a job step. Datasets for transfer to/from COS are allocated to the MVS station during the transfer operation.

APF: Authorized Program Facility

ASCII: American Standard Code for Information Interchange. An encoding for representing characters as 7-bit patterns, used for character data by COS.

BB: Binary blocked

BD: Binary deblocked

Blank Compression: A technique whereby strings of consecutive space characters are replaced by a blank insertion character and a count of spaces; used by COS character blocked datasets.

BLKSIZE: The maximum size of the physical records in an MVS dataset, specified as subparameter of the DCB parameter in MVS JCL. (Equivalent to MBS in a COS ACCESS statement.)

CA-1: CA-1 (formerly UCC ONE) TMS is a product of Computer Associates

CB: Character blocked

CD: Character deblocked

COS: The Cray operating system

CRI: Cray Research, Inc.

DASD: Direct Access Storage Device

Data Definition (DD) Statement: An MVS job control statement describing a dataset associated with a particular job step.

Dataset: The major unit of data storage and retrieval in the operating system, consisting of a collection of data in one of several prescribed arrangements, and described by control information to which the system has access. Under COS a dataset can be subdivided into one or more files.

DCB: Data Control Block

Destination: The name of a remote workstation or connected system which is known to MVS (in particular the Job Entry Subsystem) and to which output from MVS and COS jobs may be sent.

DF: Dataset format

DISPOSE: A COS job control statement that requests the specified dataset to be transferred from the Cray system to the front-end system.

DN: Dataset name under COS

DSC: Dataset Catalog

DSN: Dataset name under MVS

DSORG: The organization of an MVS dataset specified as a subparameter of the DCB parameter in MVS JCL.

Dynamic Allocation: The linking of a dataset to a program during execution instead at a job step (see Allocation). The MVS station dynamically allocates datasets during transfers.

EBCDIC: Extended Binary Coded Decimal Interchange Code. A code for representing characters as 8-bit patterns, used in IBM MVS systems.

END-OF-JOB (/EOJ) Statement: MVS station control statement placed in a dataset containing COS job control statements, which indicates to the MVS station that following statements are to be processed as another job.

F (Fixed): As in RECFM=F, F indicates that all records both logical and physical (that is, the block) in a MVS dataset are the same length.

FB (Fixed Blocked): As in RECFM=FB, FB indicates that the logical records in an MVS dataset are the same length, and that an integral number of records are contained in a physical record (that is, the block).

FBA (Fixed Blocked ANSI): As in RECFM=FBA, FBA is equivalent to RECFM=FB except that the first character of each logical record is processed as an ANSI printer control character.

FEI: Front-end Interface

FETCH: A COS job control statement that requires the specified dataset to be transferred from the front-end processor to the Cray system.

File: (1) In MVS terminology, a dataset as known by a program to which it is allocated. (2) In CRI terminology, a collection of records in a dataset. One or more files comprise a dataset.

Free: To break the link between a dataset and a program formed by allocation.

GDG: Generation Data Group (an MVS dataset structure)

HYPERchannel Network: A physical link between computer systems provided by Network Systems Corporation.

IBM: International Business Machines

IOS: Input/Output Subsystem

JCL: Job Control Language

JES2 or JES3: The IBM Job Entry Subsystem

Job file: A file containing job control statements and associated data

JSQ: Job Sequence Number

Library: See Partitioned Dataset

Log off: To break the link established by LOGON.

Log on: (1) To establish a link between the MVS station and COS so that datasets may be transferred between MVS and COS syatems. (2) To establish a link

between a terminal user and the MVS Time Sharing Option (TSO).

LRECL: The maximum size of the logical records in a blocked MVS dataset specified as a subparameter of the DCB parameter in MVS JCL. For fixed format records, BLKSIZE must be a multiple of LRECL. For Variable format unspanned records, BLKSIZE must be at least LRECL+4.

MF: system identifier

MVS: Multiple Virtual Storage operating system, provided by IBM and running on the IBM computer or equivalent that is the front-end to the Cray computer system.

MVS Station: Software supplied by CRI which provides MVS users with the general facilities of Job and Dataset Submission to COS, dataset transfer between MVS and COS, and control and monitoring facilities.

NSC: Network Systems Corporation

Partitioned Dataset (PDS): An MVS dataset in which the data is divided into separate logical groups called members. The dataset contains a directory used by the control program to locate particular members. Also known as a library.

PDS: See Partitioned Dataset

PO (Partitioned Organization): As in DSORG=PO, PO indicates the dataset is partitioned and therefore contains a directory and members (see PDS)

PS (Physical Sequential): As in DSORG=PS, PS indicates that in a dataset the records are organized on the basis of their successive physical postions, such as on magnetic tape.

QSAM: Queued Sequential Access Method

Queue: A queue of jobs or datasets awaiting transfer or being transferred from MVS to COS, or vice versa. The MVS station queues transfer requests for jobs and datasets by entries in a dataset called the Transfer Request File (TRF).

RACF: Resource Access Control Facility (a security system on MVS)

RECFM: The format of the records in an MVS dataset, specified as a subparameter of the DCB parameter in MVS JCL.

SCP: Station Call Processor

Spawned job: A job submitted to the COS input queue by an existing job.

Staging: The process of transferring datasets in either direction between the Cray system and the MVS system.

Station: See MVS Station.

SYSIN: System Input dataset. A dataset normally containing control statements or directives, forming part of an MVS job, or allocated to a TSO user session, referred to by the DDNAME SYSIN. With the MVS station, contains directives for the CRAY batch program.

SYSOUT: A term that indicates to MVS that output from a program is to be processed by the Job Entry Subsystem and not written directly to the physical device.

TEXT Field: The field of a COS DISPOSE, FETCH, or ACQUIRE control statement that can be used to contain front-end specific information.

TID: Terminal ID

TMS: Tape Management System (see CA-1)

Transfer Mode: A data transfer code that indicates the format of the data being transferred.

Transfer Request File (TRF): An MVS station queue of jobs and datasets awaiting transfer or being transferred from MVS to COS, or vice versa.

TSO User: User of a terminal connected to the MVS Time Sharing Option. The TSO user has access to the TSO commands provided by the MVS station.

U (Undefined): As in RECFM=U, U indicates that each physical record in a MVS dataset is equivalent to a logical record. The record lengths can be different and the actual length of a record is determined at the time of the input or output operation.

UCC ONE: Former name of CA-1 TMS (originally a product of the UCCEL Corporation)

Unit Record File: A file that is processed by a unit record device; for example, a card reader, printer, or punch.

Userid: The identifier of an MVS TSO user

V (Variable): As in RECFM=V, V indicates that each physical record in an MVS dataset represents a logical record and the actual length is contained in a block descriptor word in the first 4 bytes of the record.

VB (Variable Blocked): As in RECFM=VB, VB indicates that each physical record (that is, the block) in an MVS dataset contains 1 or more logical records. The actual length of each logical record is contained in a record descriptor word in the first 4 bytes of the record. The actual length of the physical record, or block, is contained in a block descriptor word in the first 4 bytes.

VBA: As in RECFM=VBA, VBA is equivalent to RECFM=VB except that the first character of each logical record is processed as an ANSI printer control character.

VBS (Variable Blocked Spanned): As in RECFM=VBS, VBS is similar to RECFM=VB except that the logical record can span more than one physical record. This structure is similar to the COS blocked format.

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